# AAOS 2016 ANNUAL MEETING Focused on you



Meeting Dates: March 1-5 Exhibit Dates: March 2-4 Orlando, Florida



**Final Program** 

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- Minimize time and complexity
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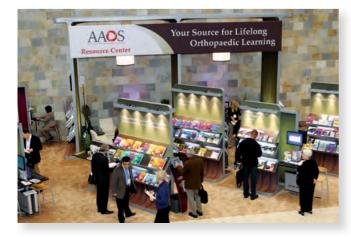
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# General



# **Special Events**

Orange County Convention Center, West Building, Chapin Theater

# **Opening Ceremony**

Wednesday, March 2 4:00 – 5:30 PM



**David D. Teuscher, MD** President's Remarks *"Art and Science"* 

- Welcome to Colombia as the Guest Nation
- Recognition of Industry Donors
- Chief Executive Officer Report

# **Business Meetings**

Thursday, March 3, 9:00 AM

# **Ceremonial Meeting**

Thursday, March 3, 10:00 AM



**Gerald R. Williams, Jr, MD** Incoming Presidential Address *"The Family—Revisited"* 

- Kappa Delta & OREF Awards
- Humanitarian Award



William J. Maloney, MD Incoming First-Vice Presidential Remarks "A Seat at the Table"

- Diversity Award
- William W. Tipton, Jr, MD, Leadership Award

### Roger Staubach, AAOS Presidential Guest Speaker Thursday, March 3, 11:00 AM



Roger T. Staubach is Executive Chairman of JLL Americas, a financial and professional services firm specializing in real estate. A 1965 graduate of the United States Naval Academy with a bachelor of science in engineering, Staubach served four years as a Navy officer including a tour in Vietnam. After the Navy he joined the Dallas Cowboys and launched his real

estate career at the same time becoming a football legend.

As Executive Chairman of The Staubach Company, Staubach built a market-leading global real estate advisory firm that delivered cost-effective solutions for office, industrial and retail clients. Known for its unparalleled standard of business and personal ethics, The Staubach Company completed transactions totaling \$28 billion in 2007. The following year, The Staubach Company merged with JLL, bringing together two powerful organizations into one integrated global company. Recognized for his business skills, civic and charitable work as well as his abilities on the grid iron, Staubach has been bestowed many honors—Commercial Property News' "Corporate Services Executive of the Year" (four times), the 2006 Congressional Medal of Honor "Patriot Award," the NCAA "Teddy Roosevelt Award" for being one of the "100 Most Influential NCAA Student-Athletes," the United States Naval Academy "Distinguished Graduate" and in 2009 the Vince Lombardi Award of Excellence.

The list of recognitions Staubach received while playing football is long. In 1963 he won the Heisman Trophy. While at the Naval Academy he was named the best all-around athlete winning the Thompson Trophy Cup three years in a row. He appeared in five Super Bowls, winning two. In 1971 he was the NFL's Most Valuable Player and the following year he was the Most Valuable Player in Super Bowl VI. Known as "Captain America" and "Roger the Dodger" he was a fivetime NFC Pro Bowl selection. And, in 1985, he was inducted into the Pro Football Hall of Fame.

Special Events



Welcome to Orlando for the American Academy of Orthopaedic Surgeons 2016 Annual Meeting. Your participation and support are essential. The experiences you share with colleagues, your challenging questions for our presenters, and your dedication to our mission will all contribute to an outstanding event.

The AAOS 2016 Annual Meeting is *Focused on You*. Only here can you customize a unique educational experience, selected from an unparalleled array of topics, learning styles, and expert viewpoints. Annual Meeting Committee Chair Paul Tornetta III, MD, and his team have created an exceptional program. Along with their respective committees, Central Program Committee Chair James R. Ficke, MD; Central Instructional Course Committee Chair Tad L. Gerlinger, MD; and Exhibits Committee Chair Joseph T. Moskal, MD, have produced an exciting selection of educational opportunities—a commitment to education that includes

32 symposia by the world's experts on exciting and timely topics, over 900 papers and 575 posters on the latest scientific and clinical studies, over 245 instructional courses presented by world-renowned faculty, more than 88 scientific exhibits on extended studies or complex procedures and to conclude the meeting, Specialty Day on Saturday, where 14 Specialty Societies will feature the latest news in their areas of expertise.

All-new sessions will recharge your perspective on today's hottest issues. Don't miss "Flash Five: What's Coming Down the Pike" (page 57), "The Way I See It ...." (page 57), and "Showdowns" (page 57).

Be sure to see the latest advances in surgical and diagnostic technology at the Exhibit Hall. More than 700 technical exhibits offer new solutions for your practice and the "latest and greatest" in orthopaedic products and services.

Other important Annual Meeting events include the Opening Ceremony on Wednesday, at 4:00 PM, where we kick off the meeting and recognize Colombia as this year's Guest Nation. On Thursday, the Ceremonial Meeting incorporates the presentations of the Humanitarian, Diversity, and Tipton Leadership Awards, Gerald R. Williams Jr, MD, incoming president's address, and the presidential guest speaker, Roger T. Staubach, former Dallas Cowboys quarterback, naval officer and currently Executive Chairman of JLL Americas, a firm specializing in real estate.

On behalf of the Board of Directors, I sincerely want to thank all the supportive volunteers and staff for their continued time and efforts that make this meeting the foremost orthopaedic educational experience.

Enjoy the meeting!

Davil Teuscher M.I

David D. Teuscher, MD *President* 

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David D. Teuscher, MD President Beaumont, Texas



**Gerald R. Williams, Jr, MD First Vice-President** *Philadelphia, Pennsylvania* 



William J. Maloney, MD Second Vice-President Redwood City, California



Frederick M. Azar, MD Treasurer & Past-President Memphis, Tennessee



David J. Mansf eld, MD Chair Board of Councilors El Paso, Texas



Lawrence S. Halperin, MD Chair-Elect Board of Councilors Orlando, Florida



Daniel K. Guy, MD Secretary Board of Councilors Lagrange, Georgia



David A. Halsey, MD Chair Board of Specialty Societies South Burlington, Vermont



Brian G. Smith, MD Chair-Elect Board of Specialty Societies New Haven, Connecticut



Lisa K. Cannada, MD Secretary Board of Specialty Societies Saint Louis, Missouri

**Board of Directors** 

### BOARD OF DIRECTORS



Ken Sowards Lay Member Colleyville, Texas



Howard R. Epps, MD Member-at-Large Houston, Texas



Daniel C. Farber, MD Member-at-Large Philadelphia, Pennsylvania



**Raj D. Rao, MD Member-at-Large** *Washington, DC* 



Jennifer M. Weiss, MD Member-at-Large Los Angeles, California



Karen L. Hackett, FACHE, CAE Chief Executive Off cer (Ex-Off cio) Rosemont, Illinois

### **About our Board of Directors**

The Board of Directors manages the affairs of the ACADEMY and the ASSOCIATION. It is the administrative authority of the ACADEMY and the ASSOCIATION and considers all of its activities and determines its policies. 7

#### **Annual Business Meetings**

All Fellows are urged to attend the Annual Business Meetings held in the Chapin Theater. The meetings are held on Thursday, March 3, 2016, starting at 9:00 AM. There is one business meeting for the American Academy of Orthopaedic Surgeons ("Academy"), the 501(c)(3) organization, immediately followed by the business meeting of the American Association of Orthopaedic Surgeons ("Association"), the 501(c)(6) organization.

#### 2016 Nominating Committee

In May 2015, the Fellowship elected six members of the 2016 Nominating Committee by ballot. The Board of Directors appointed the Chair of the Nominating Committee in March 2015. The members of the 2016 Nominating Committee are:

John R. Tongue, MD (OR), Chair Timothy J. Bray, MD (NV) Lawrence D. Dorr, MD (CA) Thomas A. Einhorn, MD (NY) John T. Gill, MD (TX) Richard F. Kyle, MD (MN) Thomas P. Sculco, MD (NY)

The 2016 Nominating Committee provides its slate of nominees for each vacancy to be filled to the Fellowship in November 2016. If unopposed, this slate is voted on during the Association Business Meeting on Thursday, March 3, 2016.

#### **2017 Nominating Committee**

Nominations for the 2017 Nominating Committee are accepted from the floor during the Association Business Meeting on Thursday, March 3, 2016. All Fellows receive a ballot after the 2016 Annual Meeting, with an opportunity to cast their votes for nominees to fill the elected positions on the 2017 Nominating Committee.

#### **Bylaws Committee**

Proposed amendments to the Academy and the Association Bylaws are considered at the 2016 Annual Meeting if submitted by September 1, 2016. The AAOS Bylaws Committee conducts an Open Hearing to receive comments on the proposed bylaw amendments on Wednesday, March 2, 2016, beginning shortly after the conclusion of the Resolutions Committee Open Hearing in Room W308A. It is anticipated that the Bylaws Committee Open Hearing will begin around 1:30 PM. At the business meetings on Thursday, March 3, 2016, the Bylaws Committee presents its recommendations regarding each set of the proposed amendments to the Bylaws. Shortly after the Annual Meeting, these recommendations are voted on by the Fellowship.

#### **Resolutions Committee**

Any 20 or more Fellows, the majority of the members of the Board of Directors of a State Orthopaedic Society, a majority of the members of the Board of Directors of an orthopaedic specialty society that is a member of the Board of Specialty Societies, the AAOS Board of Directors, a supermajority of the Board of Councilors, or a supermajority of the member societies of the Board of Specialty Societies may offer a resolution for consideration by the Fellowship at the 2016 Annual Meeting.

To be binding on the Academy or the Association, a resolution must be submitted and considered by the Board of Councilors and Board of Specialty Societies before being voted upon by the Fellowship after the Annual Meeting at which it was discussed. To be considered by the Board of Councilors and the Board of Special Societies at the Fall Meeting, AAOS must receive a resolution on or before September 1, 2016, or it must be submitted to and be voted on by the Board of Councilors and the Board of Specialty Societies prior to consideration at the Fall Meeting. Emergency resolutions are accepted until February 2, 2016, but only if all other conditions are met. Copies of each duly submitted resolution are available and sent by email to the Fellowship in January 2016. The AAOS Resolutions Committee holds an Open Hearing on the resolutions on Wednesday, March 2, 2016, beginning at 1:00 PM in Room W308A. During the Open Hearing, proponents and opponents discuss those resolutions under consideration. At the business meetings on Thursday, March 3, 2016, the Resolutions Committee presents its proposed recommendation regarding each resolution under consideration. Shortly after the Annual Meeting, these recommendations are voted on by the Fellowship.

#### Agenda for the Business Meeting of the American Academy of Orthopaedic Surgeons

Thursday, March 3, 2016, at 9:00 AM Orange County Convention Center, Chapin Theater David D. Teuscher, MD, Presiding

- 1. Call to Order and Appointments
- 2. Report of the Treasurer
- 3. Report of the Orthopaedic Research and Education Foundation (OREF)
- 4. Report of the Resolutions Committee [DISCUSSION]
- 5. Adjournment

# Agenda for the Business Meeting of the American Association of Orthopaedic Surgeons

Thursday, March 3, 2016, at 9:20 AM Orange County Convention Center, Chapin Theater David D. Teuscher, MD, Presiding

- 1. Call to Order and Appointments
- 2. Nominations for the 2017 Nominating Committee. Those ineligible to serve on the 2017 Nominating Committee, pursuant to Article XII, Paragraph 12.2 of the Association

Bylaws, are Inactive Fellows, Emeritus Fellows, current members of the Board of Directors, and:

Annunziato (Ned) Amendola, MD ('15) Daniel J. Berry, MD ('15) Louis C. Bigliani, MD (elected 3-plus terms) Kevin J. Bozic, MD ('15) David S. Bradford, MD (elected 3-plus terms) Timothy J. Bray, MD ('16) Stephen S. Burkhart, MD ('14) Michael W. Chapman, MD (elected 3-plus terms) John J. Callaghan, MD ('14) Robert D. D'Ambrosia, MD (elected 3-plus terms) Kenneth E. DeHaven, MD (elected 3-plus terms) Lawrence D. Dorr, MD ('16 and elected 3-plus terms) Thomas A. Einhorn, MD ('16) Charles H. Epps, Jr, MD (elected 3-plus terms) Freddie H. Fu, MD (elected 3-plus terms) Richard H. Gelberman, MD ('14)

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John T. Gill, MD ('16) Robert N. Hensinger, MD ('14) Joseph P. Jannotti, MD (elected 3-plus terms) Douglas W. Jackson, Jr, MD (elected 3-plus terms) Richard F. Kyle, MD ('16) Amy L. Ladd, MD ('15) Bernard F. Morrey, MD ('14) Vincent D. Pellegrini, Jr, MD ('15) Chitranjan S. Ranawat, MD ('15 and elected 3-plus terms) Charles A. Rockwood, Jr, MD (elected 3-plus terms) Roy W. Sanders, MD ('15) Thomas P. Sculco, MD ('16) Peter J. Stern, MD ('14 and elected 3-plus terms) Marc F. Swiontkowski, MD (elected 3-plus terms) Roby C. Thompson, Jr, MD (elected 3-plus terms) Vernon T. Tolo, MD ('14) John R. Tongue, MD ('16) James R. Urbaniak, MD (elected 3-plus terms) Russell F. Warren, MD (elected 3-plus years) Augustus A. White III, MD (elected 3-plus terms) Robert A. Winquist, MD (elected 3-plus years)

- 3. Report of the Political Action Committee of the American Association of Orthopaedic Surgeons (Orthopaedic PAC)
- 4. Report of the Resolutions Committee [DISCUSSION]
- 5. Report of the Bylaws Committee [DISCUSSION]
- 6. Election of AAOS Officer and Other Positions
- 7. Recognition of Retiring Members of the Board of the American Academy of Orthopaedic Surgeons and the American Association of Orthopaedic Surgeons

- 8. Recognition of New Members of the Board of the American Academy of Orthopaedic Surgeons and the American Association of Orthopaedic Surgeons
- 9. Adjournment

#### **Agenda for the Ceremonial Meeting**

Thursday, March 3, 2016, 10:00 AM Orange County Convention Center, Chapin Theater David D. Teuscher, MD, Presiding

- 1. Call to Order
- 2. Presentation of Awards
  - A. Kappa Delta Awards
  - B. OREF Award
  - C. Diversity Award
  - D. Humanitarian Award
  - E. William W. Tipton, Jr, MD, Leadership Award
- 3. Introduction of William J. Maloney, MD, Incoming First Vice-President
- 4. Incoming First Vice-Presidential Remarks William J. Maloney, MD
- 5. Introduction of Gerald R. Williams, MD, Incoming President
- 6. Incoming Presidential Address Gerald R. Williams, MD
- 7. Recognition of Past President David D. Teuscher, MD, and Presentation of Past President's Pin, Gavel, and Silver Seal
- 8. Adjournment

### Award Presentations at the Annual Meeting Join the American Academy of Orthopaedic Surgeons as we recognize the 2016 Kappa Delta and OREF Clinical Research Award Winners

#### Thursday, March 3 10:00 – 11:00 AM Chapin Theater



**2016 Kappa Delta Young Investigator Award** *The effects of ACL Graft Placement on In Vivo Knee Function and Cartilage Thickness Distributions* Louis DeFrate, ScD Institution: Duke University Medical Center



2016 Kappa Delta Ann Doner Vaughn Award Targeting Innate Immune Inf ammatory Pathways in Osteolytic Disorders: Unmasking the Two Faces of Osteoprogenitor Cells Francis Lee, MD, PhD Institution: Columbia University



2016 Kappa Delta Elizabeth Winston Lanier Award On Knee Function and ACL Injury Edward Wojtys, MD Co-Author: James A. Ashton-Miller, PhD Institution: University of Michigan



2016 OREF Clinical Research Award Mechanisms and Prevention of ACL Injuries: Cutting ACL Injury Risk with Finely Sharpened Tools Timothy Hewett, PhD Co Authors: Creason: D. Muer. PhD: Kevin P. Ford

Co-Authors: Gregory D. Myer, PhD; Kevin R. Ford, PhD; Mark Paterno, PhD; Carmen Quatman, MD, PhD Institution: The Ohio State University

	TUESDAY, MARCH 1			
ြ	Education	Orange County Convention Center		
	Posters	Academy Hall C		
lec	Scientif c Exhibits	Academy Hall C		
ch	Orthopaedic Video Theater	Academy Hall C		
S	Career Development	See page 49		
Daily Schedule	Instructional Courses	See Schedule or pages 58-235 for room numbers #192 1:30 – 4:30 PM		
	Symposia & Paper Presentations	See pages 58-235 for room numbers		
	CPT and ICD-10 Coding Fundamentals for Starting Your Practice #190	Room W224		
	Practice Management Seminar for Practicing Orthopaedic Surgeons #199	Room W300		
	Nursing and Allied Health Course – CAST1	Rosen Centre Hotel, Junior Ballroom G		
	Poster Tours	Academy Hall C, See page 50		
	Practice Management Course for Residents and Fellows-in-Training #191	Room W224		
	Flash Five	Room W311A		
	The Way I See It	Room W311A		
	General	Orange County Convention Center		
	Speaker Ready Rooms	Rooms W206 and W312		
	Registration – Physician	Academy Hall C		
	Registration – Social Program	Level 1 Lobby		

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Flash Five	Room W311A	1:30 – 2:30 PM	*******
The Way I See It	Room W311A	4:00 – 5:00 PM	
General	Orange County Convention Center	Time	
Speaker Ready Rooms	Rooms W206 and W312	6:30 AM – 6:00 PM	
Registration – Physician	Academy Hall C	7:00 AM – 6:00 PM	
Registration – Social Program	Level 1 Lobby	7:00 AM – 6:00 PM	
Housing Booth	Academy Hall C	7:00 AM – 6:00 PM	
Playground Build	Shuttles depart hourly from Level 1 Lobby	7:00 AM – 2:30 PM	
Career Center	Academy Hall C	7:00 AM – 6:00 PM	
Resource Center	Academy Hall C	7:00 AM – 6:00 PM	
Guest Nation Booth – Colombia	Academy Hall C	7:00 AM – 6:00 PM	
American Board of Orthopaedic Surgery Booth	Academy Hall C	7:00 AM – 6:00 PM	
American Joint Replacement Registry Booth	Academy Hall C	7:00 AM – 6:00 PM	
Orthopaedic Research & Education Foundation Booth	Academy Hall C	7:00 AM – 6:00 PM	

#### WEDNESDAY, MARCH 2

Education	Orange County Convention Center	Time	
Posters	Academy Hall C	7:00 AM – 6:00 PM	
Scientif c Exhibits	Academy Hall C	7:00 AM – 6:00 PM	
Orthopaedic Video Theater	Academy Hall C	7:00 AM – 6:00 PM	
Career Development	See page 49	8:00 AM – 5:30 PM	
Instructional Courses	See Schedule or pages 58-235 for room numbers #208 8:00 – 11:00 AM		
Symposia & Paper Presentations	See pages 58-235 for room numbers	8:00 – 10:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM	
Effective Surgeon-Patient Communication #290 & #291	Room W303B	8:00 AM – 12:00 PM 1:30 – 5:30 PM	
Nursing and Allied Health Courses – CAST2	Rosen Centre Hotel, Junior Ballroom G	8:15 AM – 5:45 PM	

Time

7:00 AM - 6:00 PM 7:00 AM - 6:00 PM 7:00 AM - 6:00 PM 8:00 AM - 5:30 PM 8:00 - 10:00 AM

10:30 AM - 12:30 PM 1:30 - 3:30 PM 4:00 - 6:00 PM 8:00 - 10:00 AM 10:30 AM - 12:30 PM 1:30 - 3:30 PM 4:00 - 6:00 PM 8:00 AM - 5:00 PM 8:15 AM - 5:45 PM 10:00 AM - 5:30 PM 12:30 - 5:00 PM

Poster Tours	Academy Hall C, See page 50	8:30 AM – 5:30 PM
The Way I See It	Hall B, Booth 2987, Technology Theater	10:30 – 11:30 AM
Exhibit Hall	Orange County Convention Center	Time
Technical Exhibits	Halls A – B	9:00 AM – 5:00 PM
AAOS Advocacy Booth	Hall A, Booth 2137	9:00 AM – 5:00 PM
AAOS Board of Councilors Booth	Hall A, Booth 2133	9:00 AM – 5:00 PM
AAOS Exhibit Hall Resource Center	Hall A, Booth 1933	9:00 AM – 5:00 PM
Ask an Expert Sessions	Hall A, Booth 672, See page 431 for schedule	9:00 AM – 5:00 PM
Technology Theater	Hall B, Booth 2987, See page 432 for schedule	9:00 AM – 5:00 PM
Orthopaedic Learning Center Booth	Hall A, Booth 4017	9:00 AM – 5:00 PM
Exhibit Time*	Halls A – B	12:30 – 1:30 PM
Complimentary Beverage Break	Halls A – B, Booths 1509, 2493 & 3209	3:30 – 4:00 PM
General	Orange County Convention Center	Time
Speaker Ready Rooms	Rooms W206 and W312	6:30 AM – 6:00 PM
Resident Assembly Open Forum	Room W308A	6:30 AM – 7:30 AM
Registration – Physician	Academy Hall C	7:00 AM – 6:00 PM
Registration – Social Program	Level 1 Lobby	7:00 AM – 6:00 PM
Housing Booth	Academy Hall C	7:00 AM – 6:00 PM
Career Center	Academy Hall C	7:00 AM – 6:00 PM
Resource Center	Academy Hall C	7:00 AM – 6:00 PM
Guest Nation Booth – Colombia	Academy Hall C	7:00 AM – 6:00 PM
American Board of Orthopaedic Surgery Booth	Academy Hall C	7:00 AM – 6:00 PM
American Joint Replacement Registry Booth	Academy Hall C	7:00 AM – 6:00 PM
Orthopaedic Research & Education Foundation Booth	Academy Hall C	7:00 AM – 6:00 PM
Resolutions Committee Open Hearing	Room W308A	1:00 PM
Bylaws Committee Open Hearing	Room W308A	1:30 PM (estimated)
Opening Ceremony	Chapin Theater	4:00 – 5:30 PM
*No educational activities are scheduled.		
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#### THURSDAY, MARCH 3

Education	Orange County Convention Center	<b>Time</b> 7:00 AM – 6:00 PM	
Posters	Academy Hall C		
Scientif c Exhibits	Academy Hall C	7:00 AM – 6:00 PM	
Orthopaedic Video Theater	Academy Hall C	7:00 AM – 6:00 PM	
Nursing and Allied Health Courses – NUR1 & NUR2	Rosen Centre Hotel, Junior Ballroom F	7:30 AM – 12:00 PM 1:30 PM – 6:00 PM	
Flash Five	Room W311A	8:00 – 9:00 AM	
Career Development	See page 49	8:00 AM – 5:30 PM	
Instructional Courses	See Schedule or pages 58-235 for room numbers	8:00 – 10:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM	
Symposia & Paper Presentations	See pages 58-235 for room numbers	8:00 – 10:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM	
TeamSTEPPS #390 & #391	Room W303B	8:00 AM – 12:00 PM 1:30 – 5:30 PM	
Poster Tours	Academy Hall C, See page 50	8:30 AM – 5:30 PM	
Гhe Way I See It	Room W311A	1:30 – 2:30 PM	
Showdown – Hip	Valencia Room B	4:00 – 5:00 PM	

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Exhibit Hall	Orange County Convention Center	Time	
Technical Exhibits	Halls A – B	9:00 AM – 5:00 PM	
AAOS Advocacy Booth	Hall A, Booth 2137	9:00 AM – 5:00 PM	
AAOS Board of Councilors Booth	Hall A, Booth 2133	9:00 AM – 5:00 PM	
AAOS Exhibit Hall Resource Center	Hall A, Booth 1933	9:00 AM – 5:00 PM	
Ask an Expert Sessions	Hall A, Booth 672, See page 431 for schedule	9:00 AM – 5:00 PM	
Technology Theater	Hall B, Booth 2987, See page 432 for schedule	9:00 AM – 5:00 PM	
Orthopaedic Learning Center Booth	Hall A, Booth 4017	9:00 AM – 5:00 PM	
Exhibit Time*	Halls A – B	12:30 – 1:30 PM	
Complimentary Beverage Break	Halls A – B, Booths 1509, 2493 & 3209	3:30 – 4:00 PM	
General	Orange County Convention Center	Time	
Speaker Ready Rooms	Rooms W206 and W312	6:30 AM – 6:00 PM	
Registration – Physician	Academy Hall C	7:00 AM – 6:00 PM	
Registration – Social Program	Level 1 Lobby	7:00 AM – 6:00 PM	
Housing Booth	Academy Hall C	7:00 AM – 6:00 PM	
Career Center	Academy Hall C	7:00 AM – 6:00 PM	
Resource Center	Academy Hall C	7:00 AM – 6:00 PM	
Guest Nation Booth – Colombia	Academy Hall C	7:00 AM – 6:00 PM	
American Board of Orthopaedic Surgery Booth	Academy Hall C	7:00 AM – 6:00 PM	
American Joint Replacement Registry Booth	Academy Hall C	7:00 AM – 6:00 PM	
Orthopaedic Research & Education Foundation Booth	Academy Hall C	7:00 AM – 6:00 PM	
Business Meetings	Chapin Theater	9:00 AM	
Ceremonial Meeting	Chapin Theater	10:00 AM	
Forum for Young Orthopaedic Surgeons	Room W308A	10:30 AM – 12:30 PM	
Presidential Guest Speaker, Roger T. Staubach	Chapin Theater	11:00 AM	
Resident Assembly	Room W308A	1:30 – 3:30 PM	
Resident Bowl	Room W224	4:00 – 6:00 PM	

#### FRIDAY, MARCH 4

Education	Orange County Convention Center	Time	
Poster Award Ceremony and Breakfast	Academy Hall C	7:00 AM	
Posters	Academy Hall C	7:00 AM – 6:00 PM	
Scientif c Exhibits	Academy Hall C	7:00 AM – 6:00 PM	
Orthopaedic Video Theater	Academy Hall C	7:00 AM – 6:00 PM	
Nursing and Allied Health Courses – NUR3 & NUR4	Rosen Centre Hotel, Junior Ballroom F	7:30 AM – 12:00 PM 1:30 – 6:00 PM	
Orthopaedic Review Course #490	Hyatt Regency Orlando, Regency Ballroom R	7:30 AM – 4:45 PM	
Career Development	See page 49	8:00 AM – 12:00 PM	
Instructional Courses	See Schedule or pages 58-235 for room numbers	8:00 – 10:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM	
aposia & Paper Presentations See pages 58-235 for room numbers		8:00 – 10:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM	
Showdown – Shoulder & Elbow	Valencia Room B	8:00 – 9:00 AM	
Poster Tours	Academy Hall C, See page 50	8:30 AM – 4:00 PM	
The Way I See It	Valencia Room B	1:30 – 3:30 PM	

# DAILY SCHEDULE 13

Exhibit Hall	Orange County Convention Center	Time
Technical Exhibits	Halls A – B	9:00 AM – 4:00 PM
AAOS Advocacy Booth	Hall A, Booth 2137	9:00 AM – 4:00 PM
AAOS Board of Councilors Booth	Hall A, Booth 2133	9:00 AM – 4:00 PM
AAOS Exhibit Hall Resource Center	Hall A, Booth 1933	9:00 AM – 4:00 PM
Ask an Expert Sessions	Hall A, Booth 672, See page 431 for schedule	9:00 AM – 4:00 PM
Technology Theater	Hall B, Booth 2987, See page 432 for schedule	9:00 AM – 4:00 PM
Orthopaedic Learning Center Booth	Hall A, Booth 4017	9:00 AM – 4:00 PM
Complimentary Beverage Break	Halls A – B, Booths 1509, 2493 & 3209	10:00 AM – 10:30 AM
Exhibit Time*	Halls A – B	12:30 – 1:30 PM
Complimentary Exhibit Hall Social	Halls A – B, Booths 1509, 2493 & 3209	2:30 – 3:30 PM
General	Orange County Convention Center	Time
Speaker Ready Rooms	Rooms W206 and W312	6:30 AM – 6:00 PM
Registration – Physician	Academy Hall C	7:00 AM – 6:00 PM
Registration – Social Program	Level 1 Lobby	7:00 AM – 6:00 PM
Housing Booth	Academy Hall C	7:00 AM – 6:00 PM
Career Center	Academy Hall C	7:00 AM – 6:00 PM
Resource Center	Academy Hall C	7:00 AM – 6:00 PM
Guest Nation Booth – Colombia	Academy Hall C	7:00 AM – 6:00 PM
American Board of Orthopaedic Surgery Booth	Academy Hall C	7:00 AM – 6:00 PM
American Joint Replacement Registry Booth	Academy Hall C	7:00 AM – 6:00 PM
Orthopaedic Research & Education Foundation Booth	Academy Hall C	7:00 AM – 6:00 PM
*No educational activities are scheduled.		

#### SATURDAY, MARCH 5 – SPECIALTY DAY

Education	Orange County Convention Center	Time	
Specialty Day	See page 36	Times vary	
Posters	Academy Hall C	7:00 AM – 3:00 PM	
Scientif c Exhibits	Academy Hall C	7:00 AM – 3:00 PM	
Orthopaedic Video Theater	Academy Hall C	7:00 AM – 3:00 PM	
General	Orange County Convention Center	Time	
Speaker Ready Rooms	Rooms W206 and W312	6:00 AM – 5:30 PM	
Registration – Physician (Hall C Lobby 3:00-5:30 PM)	Academy Hall C	6:30 AM – 5:30 PM	
Registration – Social Program	Level 1 Lobby	7:00 AM – 12:00 PM	
Housing Booth	Academy Hall C	7:00 AM – 3:00 PM	
Career Center	Academy Hall C	7:00 AM – 3:00 PM	
Resource Center	Academy Hall C	7:00 AM – 3:00 PM	
Guest Nation Booth – Colombia	Academy Hall C	7:00 AM – 3:00 PM	
American Board of Orthopaedic Surgery Booth	Academy Hall C	7:00 AM – 3:00 PM	
American Joint Replacement Registry Booth	Academy Hall C	7:00 AM – 3:00 PM	
Orthopaedic Research & Education Foundation Booth	Academy Hall C	7:00 AM – 3:00 PM	

#### Accreditation

The American Academy of Orthopaedic Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

#### CME Credit

U.S. Physicians: The AAOS designates this live activity for a maximum of *37 AMA PRA Category 1 Credits*<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

International Physicians: The AMA has determined that physicians not licensed in the United States but who participate in this CME activity are eligible for AMA PRA Category 1 Credits<sup>TM</sup>.

Allied Health Professionals: The AAOS is not accredited to offer credit for nurses and other Allied Health Professionals. To determine if activities offering *AMA PRA Category 1 Credits*<sup>TM</sup> are acceptable for your licensing or certification needs please contact the relevant organizations directly.

#### IMPORTANT - It is important for you to check in as soon as

you arrive. The AAOS transcript system will not allow you to claim CME credit for any educational activities you participated in before you officially check in to the meeting. For instance, if you arrive at the meeting on Tuesday but do not check in until Wednesday, you will not be able to claim CME credits for your Tuesday attendance. Please remember to check in before attending any educational activities. The CME credit system is an honor system. You should claim only the number of credits for the learning activities at the Annual Meeting in which you actively participated. For example, if you attend only on Wednesday and Thursday, the maximum amount you may claim is 18 credits. The grid below outlines the number of credit hours available per day:

Checked In OR Register at the Meeting on:	Maximum Daily Credit	Maximum Meeting Credits
Tuesday, March 1	Up to 10 Credits	37 Credits
Wednesday, March 2	Up to 9 Credits	27 Credits
Thursday, March 3	Up to 9 Credits	18 Credits
Friday, March 4	Up to 9 Credits	9 Credits

#### **CME Certif cates**

The AAOS transcript system will not allow you to claim available CME credit before you officially check in to the meeting. Therefore it is important to check in as soon as you arrive. Physicians should claim only the number of credits for the learning activities at the Annual Meeting in which they actively participated. The grid below outlines the types of activities that are available at the Annual Meeting and notes which qualify for *AMA PRA Category 1 Credit*<sup>TM</sup>.

Activity	CME Credit Available
CPT and ICD-10 Coding Fundamentals for Starting Your Practice #190	Yes
Flash Five	Yes
Forum for Young Orthopaedic Surgeons with the ABOS	Yes
Instructional Courses	Yes
Orthopaedic Review Course	Yes
Orthopaedic Video Theater	Yes
Papers	Yes
Posters and Scientific Exhibits (only when the presenter is required to be present and during the poster tours)	Yes
Practice Management Seminar for Practicing Orthopaedic Surgeons #199	Yes
Showdowns	Yes
Specialty Day	Yes
Symposia	Yes
The Way I See It	Yes
Ask an Expert	No
Technology Theater	No
Practice Management Course for Residents and Fellows-in-Training #191	No
Technical Exhibits	No

Listed below are the Specialty Societies designations of *AMA PRA Category 1 Credits*<sup>TM</sup>. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

American Orthopaedic Foot and Ankle Society - 9 credits

American Orthopaedic Society for Sports Medicine - 6.5 credits

American Shoulder and Elbow Surgeons - 7.25 credits

American Society of Surgery of the Hand/American Association for Hand Surgery – 8.5 credits

Arthroscopy Association of North America - 7.75 credits

Federation of Spine Associations - 8 credits

Hip Society/American Association of Hip and Knee Surgeons – 7.75 credits

Knee Society/American Association of Hip and Knee Surgeons – 7.75 credits

Limb Lengthening and Reconstruction Society - 7.25 credits

Musculoskeletal Tumor Society - 5.5 credits

Orthopaedic Trauma Association - 5.75 credits

Pediatric Orthopaedic Society of North America - 6.75 credits

#### Disclaimer

The material presented at the Annual Meeting has been made available by the American Academy of Orthopaedic Surgeons for educational purposes only. This material is not intended to represent the only, nor necessarily best, method or procedure appropriate for the medical situations discussed, but rather is intended to present an approach, view, statement or opinion of the faculty which may be helpful to others who face similar situations. The AAOS disclaims any and all liability for injury or other damages resulting to any individual attending a session and for all claims which may arise out of the use of the techniques demonstrated therein by such individuals, whether these claims shall be asserted by a physician or any other person.

#### **FDA Statement**

Some drugs or medical devices demonstrated at the Annual Meeting have been cleared by the FDA for specific purposes only or have not been cleared by the FDA. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical devices he or she wishes to use in clinical practice. Academy policy provides that "off label" uses of a drug or medical device may be described in the Academy's CME activities so long as the "off label" use of the drug or medical device is also specifically disclosed (i.e. it must be disclosed that the FDA has not cleared the drug or device for the described purpose). Any drug or medical device is being used "off label" if the described use is not set forth on the products approval label.

#### 2016 Annual Meeting Objectives

#### **Global Objectives**

- Develop and refine a perspective on the broad range of orthopaedic knowledge, care and surgical practice.
- Expand and integrate an understanding of the scientific and clinical tenets of orthopaedic surgery to better prevent and treat musculoskeletal disease.
- Develop an understanding of economic and practice management challenges that can lead to strategies that protect continued access to care for patients and viability of the profession.
- Provide a forum to strengthen professional relationships and develop networks that lead to better patient care, individual surgeon career satisfaction, and a more robust profession as a whole.

#### Instructional Objectives

- To facilitate a personalized educational experience through a comprehensive offering of instructional courses, symposia, and scientific presentations.
- Support a forum for discussion of current issues in orthopaedics including patient safety, advocacy, practice management, technology, and culturally competent care.
- Offer complementing formats to facilitate career-long education that meets the expectations of patients, colleagues and Maintenance of Certification.
- To provide a forum for the presentation of basic and clinical research with current as well as future potential applications in the management of patients with musculoskeletal disease or injury.

#### Learner Objectives

- Synthesize a basis for the practice of delivering evidence-based, cost effective orthopaedic care.
- Integrate current basic science, translational research, and stateof-the art procedures and technology into clinical practice.
- Become more informed and involved in advocacy issues related to orthopaedics.
- To provide a forum for resident education on current clinical practice, relevant basic science, practice management, and advocacy issues in preparation for careers as competent and ethical orthopaedic surgeons.

# **Thank You!** Annual Meeting Sponsors

The American Academy of Orthopaedic Surgeons wishes to thank the following companies for their financial support of the AAOS 2016 Annual Meetin promotional opportunities:

























# HOTEL MAP 17

Conroy Rd

3 Majo

Way

akehurst Dr

15 18

Destination Pkwy.

22

EXIT

482

Beachline

435

Sand Lake Rd

International Drive

urkey Lake Rd

EXIT 8

H

17

(482) State Road

Toll Road

interstate

Vineland Road

Carr

7

19

6

#### Walkable Hotels

- 2. Hyatt Regency Orlando (formerly Peabody)
- 3. Rosen Centre Hotel
- 4. Rosen Plaza Hotel

#### .5–2 miles North of OCCC

- 5. Castle Hotel An Autograph Collection Hotel
- 6. Courtyard by Marriott I-Drive/Conv. Center
- 7. Crowne Plaza Orlando Universal
- 8. Embassy Suites Hotel I-Drive/Jamaican Ct
- 9. Embassy Suites Hotel -I Drive/Conv. Center
- 10. Extended Stay America Conv. Center/I-Drive 11. Fairfield Inn & Suites Orlando I-Drive/Conv. Center
- 12. Hampton Inn I-Drive/Conv. Center
- 13. Homewood Suites I-Drive/Conv. Center
- 14. Hyatt Place Conv. Center/I-Drive
- 15. Residence Inn by Marriott/Conv. Center
- 16. Rosen Inn at Pointe Orlando
- 17. Sonesta ES Suites Orlando
- 18. Springhill Suites Conv. Center/I-Drive Area
- 19. Wyndham Orlando Resort I-Drive

#### .5-2 miles South of OCCC

- 20. Doubletree by Hilton Orlando at SeaWorld
- 21. Extended Stay America Conv. Center Westwood Blvd South mestaurant
- 22. Fairfield Inn & Suites Orlando at SeaWorld
- 23. Hilton Garden Inn Orlando at SeaWorld
- 24. Hilton Grand Vacations Club at SeaWorld
- 1. Hilton Orlando
- 25. Renaissance Orlando at SeaWorld
- 26. Residence Inn Orlando at SeaWorld®
- 27. Rosen Shingle Creek
- 28. Springhill Suites Orlando at SeaWorld
- 29. Vista Cay Resort by Millenium
- 30. The Westin Orlando at Universal Blvd

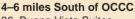
#### 2.5–4 miles North of OCCC

- 31. DoubleTree by Hilton at the Entrance to Universal Orlando
- 32. Hard Rock Hotel® at Universal Orlando®
- 33. Loews Portofino Bay Hotel at Universal Orlando®
- 34. Loews Royal Pacific Resort at Universal Orlando®

Lake Buena Vista

35. Universal's Cabana Bay Beach Resort





SeaWorld

- 36. Buena Vista Suites
- 37. Caribe Royale All-Suite Hotel & Convention Center
- 38. Courtyard Orlando Lake Buena Vista at Marriott Village 39. Fairfield Inn & Suites Orlando Lake Buena Vista at
- 40. Springhill Suites Orlando Lake Buena Vista
- in the Marriott Village
- 41. Wyndham Lake Buena Vista Resort

#### 6-8 miles South of OCCC

- 42. Buena Vista Palace Hotel & Spa
- 43. Doubletree Suites by Hilton Lake Buena Vista
- 44. Hilton Orlando Bonnet Creek
- 45. Hyatt Regency Grand Cypress
- 46. Waldorf Astoria® Orlando
- 47. Walt Disney World Swan and Dolphin Resort
- 48. Wyndham Grand Orlando Resort Bonnet Creek

	Н	DTEL AND AIRPO	ORT SHUTTLE SCH	EDULE	
HOTEL	<b>March 1</b> 6:30 AM – 10:00 AM 6:30	Wednesday March 2 D AM – 10:00 AM D0 PM – 6:30 PM	<b>Thursday</b> <b>March 3</b> 6:30 AM – 10:00 A 2:00 PM – 6:30 F	<b>Friday</b> <b>March 4</b> AM 6:30 AM – 10:00 AM PM 2:00 PM – 6:30 PM	<b>Saturday</b> <b>March 5</b> 6:30 AM – 10:00 AM 2:00 PM – 6:00 PM
	No Sh	uttle Service be	tween 10:00 AM -	- 2:00 PM	
AIRPORT	No Service 8:0	0 AM – 6:30 PM	8:00 AM - 6:30 P	M 8:00 AM – 6:30 PM	8:00 AM – 6:30 PM
Route #	Hotel		1	Boarding Location at Ho	otel
Route 10	Buena Vista Palace Hotel & Spa	l	(	Convention Entrance	
Route 9	Buena Vista Suites		(	@ Caribe Royale (Main En	trance)
Route 8	Cabana Bay at Universal Orland	lo®	1	Main Entrance Bus Stop	
Route 9	Caribe Royale All-Suite Hotel 8	c Convention Cen	ter 1	Main Entrance	
Route 2	Castle Hotel		(	Curbside Universal Bouleva	ard
Route 1	Courtyard by Marriott Internat	ional Drive/Conve	ntion Center (	Curbside on Austrian Cour	t
Route 9	Courtyard Orlando Lake Buena	Vista at Marriott	Village I	Hotel Bus Depot	
Route 1	Crowne Plaza Orlando Universa		-	Curbside on Universal Bou	levard
Route 5	Doubletree by Hilton Orlando-S	SeaWorld	1	Main Entrance (Outer Lan	e)
Route 10	Doubletree Suites WDW		1	Lobby Entrance	,
Route 7	Doubletree Universal		(	Convention Entrance	
Route 1	Embassy Suites Hotel Internatio	nal Drive/Jamaica	n Court	Curbside on Jamaican Court	
Route 1	Embassy Suites Hotel Internation	-		Curbside on International Drive	
Route 2	Extended Stay Deluxe Convention Center - Pointe Orlando			Curbside Universal Boulevard @ Castle Hotel	
Route 5	Extended Stay Deluxe Convention Center - Westwood Boulevard			Curbside Lobby Entrance	
Route 2	Fairfield Inn & Suites International Drive/Convention Center			Curbside Universal Bouleva	ard
Route 4	Fairfield Inn & Suites Orlando at SeaWorld		(	Curbside West Lobby behii	nd Friday's Restaurant
Route 9	Fairfield Inn & Suites Orlando I Village	Lake Buena Vista a		Hotel Bus Depot	
Route 2	Hampton Inn Orlando Internati	onal Drive/Conve	ntion Center I	Roundabout @ Residence I	nn/Universal Boulevard
Route 7	Hard Rock Hotel® at Universal	Orlando®	1	Abbey Road Bus Stop	
Route 5	Hilton Garden Inn SeaWorld		(	Curbside in Front/Westwoo	od
Route 4	Hilton Grand Vacations Club at	SeaWorld	(	Curbside on Sea Harbor D	rive @ Guard House
Route 6	Hilton Orlando			Four Lobby Entrance	
Route 11	Hilton Orlando Bonnet Creek		1	Main Entrance (Outer Lan	e)
Route 2	Homewood Suites By Hilton - I	nternational Drive	1	Roundabout @ Residence Inn/Universal Bouleva	
Route 2	Hyatt Place Orlando Conventio	n Center/Internati	onal Drive I	Roundabout @ Residence Inn/Universal Bouleva	
Route 10	Hyatt Regency Grand Cypress			Convention Entrance	
🛠 Walk	Hyatt Regency Orlando			Walkable	
Route 6	Las Palmeras, a Hilton Grand V Universal Boulevard	acation Club (aka	Westin)	Main Entrance	
Route 7	Loews Portofino Bay Hotel at U	niversal Orlando	0	Bus Piazza	
Route 8	Loews Royal Pacific Resort at U			Main Entrance	
Route 5	Renaissance Orlando Resort At			Convention Entrance (Ocea	ans Ballroom Entrance)
Route 2	Residence Inn by Marriott/Conv			Roundabout @ Residence I	
Route 4	Residence Inn SeaWorld			Front Entrance	

Route #	Hotel	Boarding Location at Hotel
🛠 Walk	Rosen Centre	Walkable
Route 1	Rosen Inn at Pointe Orlando	Curbside on International Drive/ Bus Stop
🛠 Walk	Rosen Plaza	Walkable
Route 3	Rosen Shingle Creek	Transportation Lobby Entrance
Route 1	Sonesta ES Suites Orlando	Curbside on Austrian Court
Route 2	Springhill Suites by Marriott Convention Center International Drive	Roundabout @ Residence Inn/Universal Boulevard
Route 4	Springhill Suites Orlando at SeaWorld	Curbside West Lobby behind Friday's Restaurant
Route 9	Springhill Suites Orlando Lake Buena Vista at Marriott Village	Hotel Bus Depot
Route 3	Vista Cay by Millenium	Clubhouse/Pool Entrance on Cayview Avenue
Route 11	Waldorf Astoria Orlando Bonnet Creek	Main Entrance (Outer Lane)
Route 11	Walt Disney Swan & Dolphin Resort	Swan Conference Center
Route 11	Wyndham Grand Orlando Bonnet Creek	Convention Entrance
Route 10	Wyndham Lake Buena Vista	Lobby Entrance
Route 2	Wyndham Orlando Resort	Convention Entrance

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NEW! Resident Assembly Open Forum Wednesday, March 2, 6:30 to 7:30 AM, Room W308A

Resident Assembly Thursday, March 3 1:30 to 3:30 PM, Room W308A

#### Make Your Voice Heard

Here's your opportunity to influence the future direction of AAOS programs, resources, policies and strategy. Meet with other AAOS Resident Members focused on helping AAOS remain relevant to current residency training and transition needs by attending the first Resident Assembly Open Forum, **Wednesday, March 2, from 6:30 to 7:30 AM, Room W308A**.

#### Meet with AAOS Leadership

Take advantage of this gathering to meet and share your concerns with the AAOS Presidential Line and volunteer leaders. The Assembly is a dynamic way to engage with top performing orthopaedic surgeons and influential leaders who shape the long-term agenda for AAOS.

#### Make a Difference

Join a committee or become a delegate to evaluate new policies and programs and develop recommendations that will be presented regularly to the AAOS leadership.

Make a contribution to AAOS and toward your own professional advancement. Attend the AAOS Resident Assembly,

Thursday, March 3, from 1:30 to 3:30 PM, Room W308A.

Membership Means More!





**Our Orthopaedic PAC** 

As we battle new federal regulations including the implementation of ICD-10, Meaningful Use Stage 3, and the new CMS bundled payment program (Comprehensive Care for Joint Replacement), one thing is clear: we need a strong voice in Washington, DC. Over the last 16 years, the Orthopaedic PAC has provided us with that voice, helping AAOS achieve a number of legislative wins.

The Orthopaedic PAC is our PAC, regardless of practice type or location, we're committed to you. We are the only national political action committee in Washington, DC representing Orthopaedic Surgeons before Congress and continuously rank as one of the largest association PACs in the United States.

To learn more about AAOS' legislative and regulatory activities and the Orthopaedic PAC, visit the AAOS Advocacy Booth located in Hall A, Booth 2137 or attend the Orthopaedic PAC Thank You Lunch, open to all current 2016 donors, Wednesday, March 2, 11:30AM-1:30PM.

#### www.aaos.org/PAC







AAQS AMERICAN ASSOCIATION OF ORTHOPAEDIC SURGEONS

#### GENERAL INFORMATION 21

# Genera

# 2015-16 **Annual Meeting** Committee

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The Academy would like to thank the Annual Meeting Committee for their hard work and contributions to the 2016 Annual Meeting



# SUPPORT RESEARCH SUPPORT OREF

Imagine your treatment options if the last 60 years of research never happened.

> Support your patients, your practice and your profession.

Advancing excellence in orthopaedic research for 60 years. www.oref.org/annualfund





# AAOS meets my professional education and practice improvement needs

From self-assessment exams, surgical videos, and membership questions, to app assistance, new publications, and practice improvements, the AAOS Resource Center and experienced Academy staff are at your service.

#### Save 10% on all orders of \$300 or more!

This is your on-site opportunity to try out new resources that evolve your clinical skills, challenge your problemsolving aptitude, and keep you current in your field all year long.

 Tuesday – Friday:
 7:00 AM – 6:00 PM

 Saturday:
 7:00 AM – 3:00 PM

Visit the AAOS Resource Center Academy Hall C aaos.org/store



# **Technology at the Annual Meeting**

#### **Audience Response System**

Selected Instructional Courses and Symposia will feature the Audience Response System, allowing interactive participation with the faculty by responding to their questions utilizing a keypad to indicate your choices.

#### **Case Presentation Courses**

Several Case Presentation instructional courses will take place during the Annual Meeting. Tables will be facilitated by expert faculty who will introduce and discuss cases on laptops. The entire audience will discuss results and pearls.

#### **Electronic Handouts**

Handouts for all Instructional Courses were available electronically two weeks prior to the meeting if you have purchased a ticket for a course. Please note these are the same printed handouts course registrants will receive at the course rooms.

#### ePosters and eScientif c Exhibits – Academy Hall C

ePosters and eScientific Exhibits provide a digital version of the poster or scientific exhibit. The audio recorded by the presenter will be a narrative of the poster or scientific exhibit and offered on playback by Smartphone and tablets as the attendee views the poster and scientific exhibit. A blog will allow viewers to question the authors creating an ongoing dialog. eScientific Exhibits also may contain video. Kiosks are available within Academy Hall C where attendees can view them, hear the audio, and play the video. The ePosters and eScientific Exhibits create an excellent post meeting opportunity to view this important research in your office or home, allowing you to create your own grouping of Posters and/or Scientific Exhibits to view and share with colleagues.

#### **Evaluations**

Instructional Courses and Symposia evaluations can be accessed through the *My Academy App* available for your Smartphone or internet connected device. You can easily complete and submit your evaluation form for the sessions you attended. Also, Poster Tour evaluations can be completed at the ePoster and eScientific Exhibits Kiosks or by QR code.

#### **Event Touch Digital Signage**

Touch screens are available at the Info Centers located throughout the convention center and will function as an interactive "You Are Here". This technology allows you to engage directly with the display, assisting with a visual guide to meeting rooms, educational sessions, technical exhibits, Academy Hall, and special events.

#### Internet Connections – Academy Hall C, Levels 3 & 4 Lobbies, Exhibit Hall B

These "all-in-one" stations allow you to utilize the following key connections: Exhibitor Directory, 2017 Member Housing, Email sites, and Flight Check-in.

#### My Academy App

The Annual Meeting *My Academy App* is available free from the App Store or Google Play. View, search, and schedule all educational opportunities, Technical Exhibitor information, Social Program, Committee and Affiliate



Meetings, and Special Events. You may even add personal events to your schedule to help you stay organized and make the most of your time at the Annual Meeting. A mapping program for meeting room locations and exhibiting companies within the Orange County Convention Center is also included. You may browse or search the list of participants and use the messaging feature within the app to help you connect or reconnect with colleagues. The app also includes an electronic business card exchange to help you stay in touch with new connections. Need some assistance? Visit the help desk located in the Resource Center in Academy Hall C.

#### **Poster Tours**

Poster Tours are guided by experts in each classification with them quizzing selected poster authors, highlighting pears and answering your questions during the tour; and are uniquely viewed using monitors while the poster authors navigate through their important data via laptop to create a memorable experience.

#### **Proceedings**

Be sure to visit our website to view the 2016 Annual Meeting Proceedings. A website will be available at the start of the meeting to view the Proceedings on a PC, tablet, or mobile device at www.aaos.org/proceedings.

#### Technology Theater- Hall B, Booth #2987

Presentations that showcase current technology, products, and applications that are beneficial to orthopaedic surgeons take place here. Handouts will be accessible electronically through QR codes available on-site at the Technology Theater.

#### Webcasting

View 13 symposia webcasts as they are simulcast live from the Annual Meeting. Choose from a variety of topics addressing the hot topics of the day in shoulder, hip, knee, spine, pediatrics, hand and wrist, trauma, sports, and practice management. Did you miss the live simulcasts? You will be able to view replays on demand at your convenience following the Annual Meeting. Visit the <u>www.aaos.org/amwebcasts</u> website to learn more.

AAOS Members and AAOS Residents: Free! Non-Members: \$79

#### **Annual Meeting Policies**

#### **Attendee Conduct**

- Selling and/or marketing activities are reserved exclusively for registered exhibitors and can only be conducted from an exhibit booth space.
- Annual Meeting attendees that plan to sell and/or market products at the Annual Meeting can only do so from an exhibit booth in the Technical Exhibit Hall. To secure a paid exhibit booth space, visit <u>www.aaos.org/exhibits</u> for information.
- At the sole discretion of AAOS, attendees found in violation of this requirement may be escorted from the meeting and have all meeting privileges revoked without refund of fees paid.

#### **Image Capture**

Attendees grant AAOS (and its employees and agents) permission to capture, retain, and utilize the attendees' image, likeness, voice, and actions, whether captured live or recorded and in any format, during the Annual Meeting, for display, exhibition, publication, or reproduction in any medium or context for any purpose, including, but not limited to, commercial or promotional purposes, without further notice, authorization, or compensation.

#### **Non-Smoking Policy**

Per the Florida Clean Indoor Air Act (FCIAA), smoking is prohibited inside the Orange County Convention Center. There are designated smoking areas located outside the buildings at various locations.

#### **Privacy Policy – Use of Personal Information**

Annual Meeting registration lists, including the medical registrant's name, postal mailing address, and phone number, are available for sale to exhibitors in advance of and after the Annual Meeting. In addition, certain personal information, including the medical registrant's name, postal mailing address, phone number, hospital affiliation, and practice focus, is available at the Annual Meeting to exhibitors through a "lead retrieval system" mechanism. For additional information, please refer to the entire AAOS Privacy Policy by visiting **www.aaos.org/privacy**.

#### **Private Meeting**

The AAOS 2016 Annual Meeting is a private meeting. The AAOS reserves the right to control space and ask people to leave the meeting who are not qualified to attend or who cause disruptions, at AAOS' sole discretion.

#### **Refund Policy**

The Academy does not issue refunds on-site during the meeting. All requests for refunds (registration, instructional courses, and/or Specialty Day) must have been received in the Academy office on or before January 25, 2016.

#### **Registration of Children Restricted**

The following guidelines have been approved for the Annual Meeting. Only children 16 or over are admitted to the educational programs, including the exhibit hall.

Children and individuals of any age, providing they are not disruptive to the meeting, are welcome in the following activities:

- Opening Ceremony
- Posters
- Scientific Exhibits

Children under the age of 16 are not permitted in the following areas of the meeting:

- Technical Exhibit Hall
- Educational Sessions (paper presentations, symposia, instructional courses)
- Business Meetings
- Ceremonial Meeting
- Guest Speaker Presentation

The Academy does provide a Social Program that is open to all spouse, family members, and guests accompanying members and attendees to the meeting. Tours and events are offered daily during the meeting.

#### **Reproduction Policy**

The Academy reserves any and all of its rights to materials presented at the Annual Meeting, including Posters and Scientific Exhibits. Reproductions of any kind, by any person or entity, without prior written permission from the Academy, are strictly prohibited. Prohibited reproductions include, but are not limited to, audiotapes, videotape, and/or still photography. Persons violating this policy may have their badge confiscated and be escorted from the meeting. No unapproved surveys, handouts, or literature may be distributed at the meeting.



# 2017 Annual Meeting

March 14 – 18 San Diego, California

## 2018 Annual Meeting

March 6 – 10 New Orleans, Louisiana

All Academy members will automatically receive an Annual Meeting Registration Packet in mid-October.

#### AAOS Now The Daily Edition of AAOS Now, the

official newspaper of the AAOS Annual Meeting, is published Tuesday through Friday. Pick up a copy from the newspaper racks located throughout the convention center and near the shuttle bus drop off. Each issue contains coverage of events and scientific presentations, scheduled events, and reports on guest speakers and award winners, along with late-breaking news. It's your best source for news and information during the Annual Meeting!



### Safety

#### **Emergency Numbers**

Fire/Police Emergency: In case of an emergency please use any house phone located throughout the Orange County Convention Center, and dial extension 49311.

Security 24 hours: (407)685-1119 Emergency: 911 Non-Emergency: (407)685-1119 Poison Control: (800)222-1222 (Nationwide)

#### **Nearest Hospitals**

Dr. P. Phillips Hospital	3.7 miles
9400 Turkey Lake Road (407)351-8500	

Lake Buena Vista Centra Care6.2 miles12500 S. Apopka Vineland Road (407)934-2273

#### First Aid – Orange County Convention Center

These stations are fully equipped and staffed by licensed medical professionals.

Room Med 3 - Hall C Lobby and Room Med 4 – Level 1 Lobby • Hours of Operation:

#### **For Your Safety**

#### When you are outside you should:

- Get directions before leaving the hotel or restaurant.
- Take taxis or shuttles you recognize.
- Walk with another person. Single targets are the most likely victims of crime.
- Do not wear your badges or carry conference bags. Both identify out-of-towners.
- Avoid dark, isolated areas, such as closed plazas and apparent shortcuts back to the hotel.

#### **Drug Stores**

#### Walgreens, 8959 International Drive (407)345-0473

(Northeast corner of I Drive & Plaza Drive) No Pharmacy

## Sandlake Pharmacy, 7300 Sandlake Commons Blvd. (407)351-8002

• Hours of Operation:

Monday – Friday	9:00 AM – 8:00 PM
Saturday	9:00 AM – 5:00 PM
Sunday	9:00 AM – 3:00 PM

0 00 11 C 0 00 D1 C

CVS Pharmacy, 10701 International Drive (407)355-0929

• Hours of Operation:

Monday – Sunday ...... 24 hours

Publix Super Market Pharmacy, 5350 Central Florida Pkwy (407)239-0844

#### • Hours of Operation:

Monday – Friday	8:30 AM – 7:30 PM
Saturday	
Sunday	

reduciny Lounges		
Academy Hall C, Technical Exhibit Halls A & B		
Need a comfortable place to surf the web, catch up with a		
colleague, and keep up with the Annual Meeting Twitter feed?		

#### **ADA Needs**

**Academy Lounges** 

Orlando has ADA accessible guestrooms at every hotel. Please specify your needs when making your reservations so that the hotel can ensure your comfort. The AAOS hotel shuttle is not available from the Hyatt Orlando, Rosen Centre and Rosen Plaza hotels,

Relax with your colleagues in an Academy Lounge.



which are located within walking distance of the Orange County Convention Center.

Electric scooter rentals are available through the following company: Scootaround – Mobility Solutions (888)441-7575 or <u>www.scootaround.com</u>. Advance reservations are required. FedEx Office in Hall C Lobby serves as a drop-off and pick-up location.

#### **Advocacy Booth**

#### Hall A, Booth 2137

Learn more about AAOS' legislative and regulatory activities and the Orthopaedic PAC.

• Hours of Operation:

Wednesday – Thursday	9:00 AM – 5:00 PM
Friday	9:00 AM – 4:00 PM

#### **Airline Check-In Service, Bags**

#### Level 1 Lobby and Hall D Lobby

This service gives you the ability to avoid the long check-in lines at the airport. The morning of your departure, bring your luggage that is to be checked to the convention center. You need to show the bags agents your government issued I.D. All boarding passes/luggage tags are issued. Bags agents then tag, secure, and transport your luggage to the airport allowing you to proceed directly to the airline gate. Your luggage will be waiting in baggage claim at your final destination. The cost per attendee is \$15 (not including airline luggage fees per airline). *Luggage must be checked in three hours prior to f ight departure*.

#### • Hours of Operation:

#### **Airline Information**

If you need to make, change, or reconfirm your reservation, please contact the airline directly. Toll free numbers for major airlines and CorpTrav are listed below. Change fees may apply and will be charged according to the airline's policy at the time the change is made.



#### **Airport Shuttle Reservation Counter**

#### Hall C Lobby

The most economical way to get to the airport is on an airport shuttle. Shuttle service prices range from \$18-\$25 (one-way) and \$32-\$40 (round trip). Use the special AAOS Group or Promo code to receive the AAOS discount. Advance reservations are required.

SuperShuttle, go to www.supershuttle.com or call (800)258-3826 (Group Code - BFZJC).

Mears, go to www.mears.com or call (800)759-5219 (Promo Code - 507633539)

• Hours of Operation:	
Wednesday – Saturday	8:00 AM – 6:30 PM

#### **Audio Sales**

#### Academy Hall C

Digital audio downloads of selected sessions may be ordered for post-meeting delivery. Orders may be placed at the sales desk. Most educational sessions are recorded.

• Hours of Operation:

Tuesday – Friday	7:00 AM – 6:00 PM
Saturday	7:00 AM – 3:00 PM

#### **Badge Information**

Everyone who attends the AAOS Annual Meeting must register. Badges are required for entrance to the Exhibit Halls and to attend all other official AAOS sessions. The following badge holder and badge stock colors have been issued:

#### **Badge Holders**

Yellow	AAOS Fellow
Tan	AAOS Member,
	Resident/Candidate Member,
	International Affiliate Members
Blue	Non-Member Physician,
	International Attendee, and
	U.S. Residency, U.S. Fellowship
Gray	U.S. Allied Health
Black	AAOS Staff
Pink	Press

#### **Badge Stock Colors**

Lavender	Family Badge
Orange	Industry Non-Exhibitor
Green	

#### Business & Package Center - FedEx Off ce - (407)363-2831 Hall C Lobby

This center is available to serve as your full-service business center. Packing, shipping, printing, copying, equipment rental, and office supplies cannot be more conveniently located.

#### • Hours of Operation:

#### **Career Center**

#### Academy Hall C

The AAOS Career Center offers the opportunity for employers and candidates of orthopaedic surgery positions to meet in person.

• Hours of Operation:

Tuesday – Friday	7:00 AM – 6:00 PM
Saturday	7:00 AM – 3:00 PM

#### Participants

The Career Center has been established for the benefit of the Academy membership. In addition, hospital or practice administrators and medical staff personnel are permitted to access the Career Center. Professional recruiters are not allowed to participate in this service.

- All participants must have an active listing on the website www.aaos.org/careercenter.
- We ask that you limit attendance to two representatives per company.
- All participants MUST be registered for the Annual Meeting to gain entry.

#### Listings on the Career Center Website and Onsite Booklets

- You can submit a new listing for an employment opportunity on-site for a fee.
- There is no fee to orthopaedic surgeons looking for employment.
- · Listings can be submitted or edited directly on the website www.aaos.org/careercenter.

#### **Bulletin Boards**

Post a graphic ad for your orthopaedic opportunity on the bulletin boards in the Career Center.

- An active listing on the website is required to post your ad on the bulletin boards.
- Only orthopaedic surgery opportunities are posted.
- Posted items should NOT exceed 8.5" x 11".
- Due to space limitations, only one ad per practice is allowed.

#### Interview Booths

- Private interview space may be reserved on-site at the Career Center.
- These rooms are not intended to be used as exhibit space nor may they be occupied by a candidate or employer for an extended period of time.

#### Free CV consultation

· Get advice on the best way to show your accomplishments with an updated CV. Visit the on-site Career Center to make an appointment for a one-on-one consultation and remember to bring your CV!

#### Cash Station/ATM

ATMs are located throughout the lobby areas of the Orange County Convention Center.

ATMs/Banks within close proximity to the convention center:

#### Wells Fargo

10375 Orangewood Blvd. (407)649-5360

Hours of Operation:	
Monday – Thursday	9:00 AM – 5:00 PM
Friday	9:00 AM – 6:00 PM
Saturday – Sunday	Closed
ATM	

#### Chase ATM

8959 International Drive (800)935-9935	
ATM	24 hours

#### Bank of America

7220 Sand Lake Road (407)351-4220 Hours of Operation:

Monday – Thursday	9:00 AM – 4:00 PM
Friday	
Saturday – Sunday	
ATM	

#### **Charging Stations**

Academy Hall C, Academy Lounges, Exhibit Halls A & B, Levels 3 & 4 Lobbies Stop by the electrical plug-in stations to recharge your cell phones, laptops, and tablets.

#### **CME Kiosks**

#### Academy Hall C, Hall D Lobby, Level 1 Lobby

Print your CME certificate of attendance for the Annual Meeting and participating Specialty Societies.

#### **Coat and Luggage Check**

#### Level 1 Lobby and Hall D Lobby

For identification, please leave a business card in your pocket. There is a checked item fee of \$4.00.

#### Focus Groups (invitation only)

Focus Group discussions are being held in Rooms W305B and W306A Tuesday, Wednesday, and Thursday. Those who have been invited to observe the discussion groups, please meet in Room W305A for focus groups taking place in Rooms W305B and in Room W306B for focus groups taking place in Rooms W306A. For additional details, please reference the *My Academy* App.

#### • Hours of Operation:

Tuesday	
•	6:00 – 7:30 AM & 12:00 – 1:30 PM
Thursday	

#### **Food Service**

The Orange County Convention Center has ample food and beverage concession areas to satisfy any appetite. Detailed menu and location information is available at the Info Centers.

AAOS Bistro is located in Hall A with an all-inclusive buffet lunch and available table reservations, Wednesday – Friday, from 11:00 AM – 2:30 PM. Tickets can be purchased at the Bistro or in advanced at the Bistro Ticket Sales Booth in Academy Hall C.

#### Forum for Young Orthopaedic Surgeons with the American Board of Orthopaedic Surgery

Thursday, 10:30 AM - 12:30 PM, Room W308A This free annual forum provides senior residents and new practitioners a unique opportunity to meet informally with Executive Director Shepard Hurwitz, MD, of the American Board of Orthopaedic Surgery (ABOS). He provides you with insightful information about Board requirements and procedures. This special program is a "must attend," as it answers your questions about this important step in your career. If you are looking at ABOS Part 1 or Part 2 of the exam in the near future, you should not miss this forum.

#### **Guest Nation - Colombia**

Help us welcome Colombia as the Guest Nation for the AAOS 2016 Annual Meeting. Look for special events and activities including a



collaborative symposium, "*Gun Shot and Explosive Wounds*" to be held on Wednesday, special poster tours given in Spanish, 10 featured posters from Colombia and remarks by the President of the Sociedad Colombiana de Cirugía Ortopédica y Traumatología (SCCOT) during the Opening Ceremony. Please stop by the Guest Nation exhibit, located in Academy Hall C, to learn more.

#### **Handout Sales**

Resource Center, Academy Hall C

Selected Instructional Course handout flash drives are available.

#### **Hotel Shuttle Bus**

Complimentary shuttle service runs between the official AAOS hotels and the Orange County Convention Center. Hotels without shuttle service are the Hyatt Orlando, Rosen Centre and Rosen Plaza hotels.

Shuttle service is not provided between the hours of 10:00 AM – 2:00 PM.

#### • Hours of Operation:

Morning Service, Tuesday - Saturday: 6:30 - 10:00 AM
Afternoon Service, Tuesday - Friday2:00 - 6:30 PM*
Afternoon Service, Saturday2:00 – 6:00 PM*

#### \*Last Hotel Departure is at 5:00 PM

Items left on the shuttles will be turned in to the Academy Headquarters Office, Hall C Lobby.

For complete details see pages 18-19.

For wheelchair-accessible vehicles, please call (407)346-8927 and allow two hour notice for this service.

#### Hotel Reservations – 2017 Annual Meeting

AAOS Members attending this year's Annual Meeting can make hotel reservations for the 2017 Annual Meeting in San Diego. Stop by and book today at the Housing Desk in Academy Hall C or an Internet Connections kiosk located throughout the lobby areas.



#### **Housing Help Desk**

#### Academy Hall C

Please visit the helpdesk if you have a problem with your reservation or need to change hotels.

#### • Hours of Operation:

Monday	
Tuesday – Friday	
Saturday	

#### Instructional Course Ticket Exchange

#### Academy Hall C

Tickets purchased in advance may be exchanged at the Ticket Sales counter. The registrant must pay the difference between the advance purchase price and the on-site purchase price in order to exchange a ticket. The difference for the Orthopaedic Review Course is \$100. No exchanges after the start of a course.

#### **International Business Off ce**

#### Room W209C

Academy Staff are available to assist you with inquiries. For membership inquiries, please visit the membership desk in the Resource Center, Academy Hall C.

• Hours of Operation:

Tuesday – Friday	7:00 AM – 6:00 PM
Saturday	7:00 AM – 5:30 PM

#### **International Groups Department**

Physician Registration, Academy Hall C

Hotel and registration assistance is available to international guests who used this service.

#### **International Surgeons Lounge**

#### Room W209C

We invite surgeons visiting the U.S. to come and relax, meet with other international colleagues, and browse information on AAOS international activities. Refreshments (coffee, tea, and water) are provided.

#### • Hours of Operation:

Tuesday – Friday	7:00 AM – 6:00 PM
Saturday	7:00 AM – 5:30 PM

#### **Internet Connections**

Academy Hall C, Levels 3 & 4 Lobbies,

Technology Theater, Hall B, Booth 2987

These "all-in-one" stations allow you to utilize the following key connections:

• Email sites

· Flight Check-in

• 201	5 Ex	hibitor	Directory	
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• 2017 Member Housing

#### Lost and Found

#### Academy Headquarters Office, Hall C Lobby

• Hours of Operation:	
Monday	
Tuesday – Friday	
Saturday	

#### **Media Training**

## From Insights to Sound bites: Your Orthopaedic Expertise and the News Media #701

Wednesday, 8:00 AM - 12:00 PM, Room W303A

Feel more confident and learn to make the most of every media encounter and public presentation. Participants will gain an understanding of how the news media works. In this fast-paced, interactive session, you'll learn the keys to a successful interview and the ways to best present your most important information in any discussion.

This session is limited to 15 attendees and is offered complimentary on a f rst-come, f rst-served basis to active AAOS Fellows, Candidate Members, and Emeritus Fellows.

Registration is required.

#### **My Academy App**

The Annual Meeting *My Academy* App is available free from the App Store or Google Play. View, search, and schedule all educational opportunities, Technical Exhibitor information, Social Program, Committee and Affiliate Meetings,



and Special Events. You may even add personal events to your schedule to help you stay organized and make the most of your time at the Annual Meeting. A mapping program for meeting room locations and exhibiting companies within the Orange County Convention Center is also included. You may browse or search the list of participants and use the messaging feature within the app to help you connect or reconnect with colleagues. The app also includes an electronic business card exchange to help you stay in touch with new connections. Need some assistance? Visit the help desk located in the Resource Center in Academy Hall C.

#### **Nursing and Allied Health Program**

#### CAST 1 & 2, Rosen Centre Hotel, Junior Ballroom G NUR 1-4, Rosen Centre Hotel, Junior Ballroom F AAOS, the National Association of Orthopaedic Nurses (NAON), and the National Association of Orthopaedic Technologists (NAOT) have collaborated to develop this program. Applications have been made to the orthopaedic technologists, physician assistants, and the American Nursing Credentialing Center in

order to provide multiple types of contact hours for these courses. To attend any of these courses, you need to register for the AAOS Annual Meeting and purchase a ticket for each course. The Annual Meeting on-site registration fee is \$250.

Tickets for the NUR courses are \$145 per course. Tickets for the CAST courses are \$220. A complete listing of the courses can be found on pages 329-332.

#### **Off ces**

Academy Headquarters	Hall C Lobby	(407)685-5401
Exhibits Office	Hall C Lobby	(407)685-5418
International Business Office	Room W209C	(407)685-4018
Media Briefing	Room W221D	No Telephone
Newspaper Office	Room W221C	(407)685-4022
Press Office	Room W222A	(407)685-5425
Speaker Ready Rooms	Room W206	(407)685-4017
	Room W312	(407)685-4015

#### **Other Organization Displays**

#### Academy Hall C

- American Board of Orthopaedic Surgery ABOS
- American Joint Replacement Registry AJRR

• Orthopaedic Research and Education Foundation – OREF

These booths are staffed during the fo	llowing hours:
Tuesday – Friday	7:00 AM – 6:00 PM
Saturday	7:00 AM – 3:00 PM

#### Parking

Parking is abundant in Orlando. The fee for parking at the Orange County Convention Center is \$15.00 per car.

#### **Planning Committees**

2016 Central Program Committee James R. Ficke, MD, Baltimore, MD, Chair Brian J. Cole, MD, MBA, Chicago, IL William M. Mihalko, MD, PhD, Germantown, TN Marc Safran, MD, Redwood City, CA Alexander Vaccaro, MD, PhD, Gladwyn, PA

#### 2016 Central Instructional Course Committee

Tad L. Gerlinger, MD, Chicago, IL, Chair Craig J. Della Valle, MD, Chicago, IL James I. Huddleston III, MD, Redwood City, CA Javad Parvizi, MD, Philadelphia, PA Thomas (Quin) Throckmorton, MD, Germantown, TN

#### 2016 Exhibits Committee

Joseph T. Moskal, MD, Roanoke, VA, Chair Jonathan J. Carmouche, MD, Roanoke, VA Karen S. Duane, MD, Newberry, FL Steven I. Grindel, MD, Milwaukee, WI Tim P. Lovell, MD, Spokane, WA Vivek Mohan, MD, MS, Naperville, IL Jeffrey M. Schwartz, MD, FACS, New York, NY Fernando Techy, MD, Fort Collins, CO Scott D. Weiner, MD, Akron, OH Dean W. Ziegler, MD, Milwaukee, WI

#### 2016 Orthopaedic Video Theater Committee

James (Jay) M. Bennett, MD, Houston, TX, Chair Stephen Bartol, MD, Detroit, MI Shariff K. Bishai, DO, St. Clair Shores, MI David M. Bloome, MD, Houston, TX H. John Cooper, MD, New York, NY Christopher Matthews, MD, Gainesville, FL Philip D. Nowicki, MD, Grand Rapids, MI Christopher E. Pelt, MD, Salt Lake City, UT L. Eric Rubin, MD, East Greenwich, RI Mark A. Vann II, MD, Sugar Land, TX J. Michael Wiater, MD, Beverly Hills, MI

#### **Playground Shuttle**

#### AAOS Safe and Accessible Playground Build Buses depart hourly from the Orange County Convention Center, outside Level 1 Lobby.

#### **Proceedings**

Be sure to visit our website to view the Proceedings on a PC, tablet, or mobile device at <u>www.aaos.org/proceedings</u>.

#### **Public Transportation**

Lynx is Orlando's public bus network, which makes scheduled stops at area hotels and attractions. The buses depart from the airport every 30 minutes for the city center and International Drive. Please visit <u>http://www.golynx.com/</u> or call (407)841-2279 for more details.

#### **Redemption Centers**

#### Booths 538, 2593, and 4195

Visit the Redemption Centers to pick up a complimentary tote bag and AAOS T-shirt. Enter to win an iPad, GoPro camera, and more! Check your registration packet for special coupons, redeemable exclusively at AAOS Redemption Centers.

#### • Hours of Operation:

Wednesday – Thursday	9:00 AM – 5:00 PM
Friday	9:00 AM – 4:00 PM

#### **Registration On-Site**

### Academy Hall C

Registration Fees	
Members in good standing including AAOS Fellows, Candidate,	
Resident, Associate, and International Affiliate Member\$150	
International Resident Member\$150	
Annual Meeting Official Speaker No Fee	
Annual Meeting Official Co-Author\$150	
U.S. Non-Member Physician\$1,000	
International Non-Member Medical Attendee\$800	
International Non-Member Resident (approval required) \$600	
U.S. Fellowship/U.S. Residency\$150	
U.S. Allied Health is limited to individuals directly employed by a hospital, healthcare network, university, or freestanding facility administering to patients (i.e. RN, OPA, PA, OTC, ATC, PT,	

office staff, medical students) ......\$250 U.S. Career Center approved participant (non-member/non-physician – a current listing is required).....\$250

#### • Hours of Operation:

riours of operations	
Monday	
Tuesday – Friday	
Saturday	

#### **Rental Cars**

AAOS has negotiated special rates for rental cars during the meeting. Cars can be picked up at the Orlando International Airport (MCO) or at select hotels. Use the AAOS Meeting Code at the time of reservation to receive AAOS discounted rates.

Car Company	Meeting Code	Phone	Internet
Hertz	CV# 02KS0021	(800)654-2240	www.hertz.com
Avis	AWD# J095822	(800)331-1600	www.avis.com

#### **Resident Assembly Open Forum**

#### Wednesday, 6:30 - 7:30 AM, Room W308A

New this year, all residents are invited to attend an open forum to discuss proposed Action Items to be brought before the Resident Assembly the following day. An Action Item is defined as an initiative/opportunity for residents or a stance taken on resident issues. At the open forum, residents have the chance to present Action Items they have sponsored and discuss Action Items proposed by other residents and educational programs. This is an exciting opportunity for residents to make a difference in the AAOS.

#### **Resident Assembly**

#### Thursday, 1:30 - 3:30 PM, Room W308A

All residents are invited to attend the AAOS Resident Assembly. The primary purpose of the Resident Assembly is to serve as an advisory body to the AAOS on issues of importance to orthopaedic residents. This is your opportunity to make a contribution to AAOS and toward your own professional advancement. Join a committee or become a delegate, and let your voice be heard!

#### **The Resident Bowl**

#### Thursday, 4:00 - 6:00 PM, Room W224

The Resident Bowl is a new opportunity for residents to compete against one another in a game-style setting. AAOS President David Teuscher, MD, quizzes up to 40 teams of 5 Residents to test their knowledge in orthopaedics, orthopaedic history, and non-orthopaedic trivia. Prizes and a trophy are awarded to the winning team. In order to participate on a team, residents were required to submit an application ahead of time, but anyone can be in the audience and cheer for their colleagues.

#### **Resource Center**

#### Academy Hall C

Explore this once-a-year showcase of Academy education resources, practice tools and membership benefits on site. Consult with experienced AAOS staff who can answer questions, help you navigate Academy apps, and walk you through the wide selection of publications, courses, eBooks, digital content, self-assessment exams, and interactive programs created for you.

Download and try the Academy's suite of content and video apps, including My Academy, JAAOS, Patient Education, Physical Examinations, Injections, Ortho Guidelines, Code-X Lite, and AAOS Access featuring the 500+ surgical videos of Orthopaedic Video Theater. Find print and eBook editions of the new Orthopaedic Knowledge Update: Sports Medicine 5, Instructional Course Lectures Volume 65, Atlas of Amputations and Limb Def ciencies, 4th edition and more!

This is your on-site opportunity to try out new resources that evolve your clinical skills, challenge your problem-solving aptitude, and keep you current in your field all year long. Find support and answers to your AAOS membership benefits questions, MOC needs, and educational pursuits – from your knowledgeable AAOS staff.

*Instructional Course handouts are available for purchase in the Resource Center.* 

#### **Exhibit Hall Resource Center**

#### Hall A, Booth 1933

For your convenience, when you are in the exhibit hall, visit the AAOS Exhibit Hall Resource Center located in Publishers' Row.

<b>Hours:</b> Tuesday Wednesday – Thursday Friday	<b>Resource Center</b> 7:00 AM – 6:00 PM 7:00 AM – 6:00 PM 7:00 AM – 6:00 PM	Exhibit Hall Booth Closed 9:00 AM – 5:00 PM 9:00 AM – 4:00 PM Closed
Saturday	7:00 AM – 3:00 PM	Closed

#### Restaurant Concierge

#### Hall C Lobby and Level 1 Lobby

Visit Orlando is available to assist you in selecting restaurants and evening entertainment venues during your stay in Orlando.

• Hours of Operation: Tuesday – Friday......8:00 AM – 6:00 PM

#### **Ribbons**

If you did not receive your participant/volunteer ribbon(s) in advance, please stop by the Ribbon Counter located in Academy Hall C. Committee members and Board of Councilors receive their ribbons from their liaisons.

#### **Social Media**

Follow the AAOS Annual Meeting on Facebook and Twitter to receive meeting news, updates, and reminders in real-time. Use #AAOS2016 to join the conversation!



AAOS Annual Meeting

@AAOSAnnual

#### **Social Program**

Level 1 Lobby Tour and seminar information is listed on page 32.

#### **Speaker Ready Rooms**

- Rooms W206 and W312
- Hours of Operation:

Monday (Room W312 only)	
Tuesday – Friday	6:30 AM – 6:00 PM
Saturday	

#### **Specialty Day**

Saturday, Orange County Convention Center, West Building Specialty Day is a day set aside for scientific programs presented by organizations that are members of the Board of Specialty Societies (BOS). Refer to the listing on page 36.

#### **Taxi Service**

Taxi service from the airport costs \$35-\$50 (one way) according to the location of your hotel. All taxicabs picking up at the airport are regulated by the City of Orlando's Vehicle-for-Hire ordinance which requires fares to be determined by a taximeter.

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#### **Technical Exhibits**

#### Halls A-B

• Hours of Operation:

Wednesday – Thursday	9:00 AM – 5:00 PM
Friday	9:00 AM – 4:00 PM

#### Admission

Admission to the exhibit halls is by badge only. Individuals under the age of 16 are not permitted in the exhibit halls.

#### Beverage Breaks

#### Booths 1509, 2493, and 3209

Complimentary beverage stations are provided in the exhibit hall each afternoon during the 30-minute break between scientific sessions at 3:30 PM Wednesday – Thursday and on Friday at 10:00 AM and 2:30 PM.

#### Technology Theater – It's Free, No Ticket Needed! Booth 2987

It is totally free, no ticket needed! Presentations that showcase current technology, products, and applications that are beneficial for orthopaedic surgeons and their staff take place in the Technology Theater. A schedule of the dates and times of presentations can be found on page 432, in the daily edition of *AAOS Now*, and at Booth 2987.

#### • Session Hours:

Wednesday-Thursday	9:00 AM – 5:00 PM
Friday	9:00 AM – 4:00 PM

#### Exhibitor Directory Kiosk

Stop at an Internet Connections station to view a listing of all exhibitors, their contact and product information, and create and print your personal *My Expo Plan*.

#### Lead System

There's no need to tote a bulging bag or cram papers in your suitcase when you leave. Simply present your badge to exhibitors whose literature you want to receive. After scanning the bar code, exhibitors are able to mail materials directly to you after the meeting, enabling you to spend more time in face-to-face discussions with exhibitors.

#### Seeking Advice? Ask an Expert

#### Booth 672

Here's an interactive opportunity for you to present a perplexing case to an expert in orthopaedics. Audience participation is encouraged to complement the exchange of ideas. The schedule of topics and the expert leaders is listed on page 431.

• Session Hours:

Wednesday-Thursday	9:00 AM – 5:00 PM
Friday	9:00 AM – 4:00 PM

#### Exhibit Time

One hour of exhibit time is provided each exhibit day from 12:30 - 1:30 PM.

#### You are Here - Floor Plan and Exhibitor Listing

To assist you in navigating the exhibit halls, pick up an updated floor plan and exhibitor listing at the You Are Here signs located at select entrances to the exhibit halls. These signs and maps are color coded to help you find your way around the exhibit halls.

#### Webcasting

View 12 symposia webcasts as they are simulcast live from the Annual Meeting. Choose from a variety of sessions addressing the hot topics of the day in shoulder, hip, knee, spine, pediatrics, hand and wrist, trauma, sports, and practice management. If you are unable to view the live simulcasts, you will be able to view replays on demand following the Annual Meeting. Visit <u>www.aaos.org/</u><u>amwebcasts</u> for more details.

AAOS Members and AAOS Residents: Free Non-Members: \$79

#### Wi-Fi

Wireless Internet access – at no charge – is available throughout the Orange County Convention Center Lobbies, Meeting Rooms, Academy Hall, Technology Theater, Ask An Expert, and the food service areas in the exhibit halls.

#### **Academy Executive Staff**

Chief Executive Officer	Karen L. Hackett, FACHE, CAE
Chief Operating Officer/	
Chief Financial Officer	. Richard J. Stewart, CPA, MBA
Chief Education Officer	Ellen C. Moore
General Counsel, Corporate Secret	taryRichard N. Peterson, JD
Medical Director	William O. Shaffer, MD
Chief Technology Officer	William C. Bruce, MBA, CAE

#### **Academy Senior Staff**

Director, Convention and Meeting Services Susan A. McSorley	
Director, Electronic Media, Evaluation Programs,	
and Course Operations Howard Mevis	
Director, Finance Tina D. Slager	
Director, Human Resources Laura Abrahams	
Director, Office of Government Relations Graham Newson	
Director, Marketing Maureen Geoghegan	
Director, Public Relations Melissa H. Leeb	
Director, PublicationsHans J. Koelsch, PhD	
Director, Research	
and Scientific Affairs Deborah S. Cummins, PhD	
Director, Society Relations Jennifer Wolff Jones	

#### **Convention and Meeting Services Staff**

Airlines, Committee Meetings and Events Tara Long
Affiliate and Alumni EventsJustin Clark
Board of DirectorsKristy Glass
EducationApril Holmes, Nicole Williams, Domenic Picardo
Exhibits Patricia Whitaker, Ken Schott, Jason Raymond
Headquarters Office Sue Leicht and Lane Compton
Housing and Shuttle Anita Cooper, CMP
Operations Lynn Mondack and Kierstin Noack
Orthopaedic Society Events and Meetings Tara Long
Registration Lynn Haase and Heather Welcing
Social Program Tara Long

The Social Program is open to all participants registered for the AAOS 2016 Annual Meeting and their families.

#### **Social Program Registration**

Visit us online at <u>www.aaos.org/tours</u> or on-site at Orange County Convention Center, West Building Level 1 Lobby to register for Social Program tours and seminars.

#### **Registration Hours**

Orange County Convention Center,	West Building Level 1 Lobby
Monday	
Tuesday-Friday	
Saturday	

#### **Badges and Tickets**

The Social Program is not an Annual Meeting registration and will not provide a name badge. For access to Academy Hall, the Ceremonial Meeting (Guest Speaker), Opening Ceremony, or Technical Exhibits please see Family Badges.

Family badges will be available in Orange County Convention Center, West Building, Academy Hall C to non-medical spouses or immediate family on-site during registration hours. In order to receive a family badge, you must be accompanied by a registered attendee. There is a limit of 2 family badges per registered attendee.

Family Badge attendees cannot purchase Instructional Course tickets and no CME credits or verification of attendance will be issued.

Co-workers or those associated within the Orthopaedic industry do not qualify for a Family Badge. These individuals must register in the appropriate professional or exhibitor category.

#### **Tickets**

All pre-registered tickets will be available for pick up on-site at the Social Program desk at Orange County Convention Center, West Building Level 1 Lobby starting Monday, February 29 at 2:00 PM. Tickets will not be mailed.

Stop by any time prior to your first tour. (See Social Program Desk hours above). You or your spouse will need to provide an ID and confirmation letter to pick up your tickets.

#### **Cancellations and Refunds**

AAOS must purchase tour tickets in advance; as a result, tickets are non-refundable on-site. The cancellation deadline was February 1, 2016. Refunds will not be given after this date. Participant illness, changes in travel, inclement weather, and late arrival to the tour departure area are beyond the Academy's control and will not be considered a reason for providing a refund.

#### Attire

Comfortable walking shoes and layered clothing are recommended for all tours. Tours will not be cancelled due to inclement weather, so please plan accordingly.

#### Tours

All Social Program tours will depart from the Orange County Convention Center. Please plan to board the tour bus 15 minutes prior to the posted departure time on your ticket. Tour and seminar costs include all current taxes, gratuities, and service changes, turnkey facilitation and tour pre-Planning.

#### Tuesday, March 1

1:00 PM - 5:00 PM	Alligators and Wildlife Adventure \$121
1:15 PM – 5:15 PM	Disney's Animal Kingdom Africa Awaits \$166
1:30 PM-4:30 PM	I-Drive 360 \$106

#### Wednesday, March 2

8:00 AM – 10:00 AM	Locals Overview of Orlando: Complimentary
8:00 AM – 11:00 AM	ICL 208 Life after Orthopaedics: \$80
8:45 AM - 12:30 PM	Active in Nature Tour \$113
9:00 AM - 5:00 PM	Kennedy Space Center \$255
10:00 AM - 5:15 PM	The Wonders of Winter Park \$169
10:30 AM – 3:30 PM	Fulton's Cooking Class \$184
12:00 PM - 5:00 PM	An Afternoon of Art at Café Tu Tu Tango \$233
1:00 PM – 5:00 PM	Alligators and Wildlife Adventure \$121
1:30 PM- 4:30 PM	Charlie and the Chocolatier \$81

#### Thursday, March 3

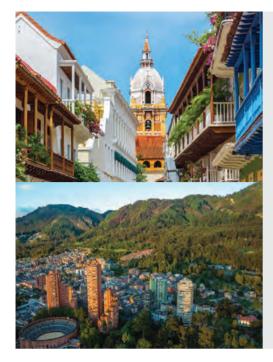
· · · ·	
8:00 AM – 4:00 PM	Kennedy Space Center \$255
8:30 AM - 12:15 PM	Alligators and Wildlife Adventure \$121
8:45 AM - 1:30 PM	Art among Southern Gardens \$111
10:00 AM - 5:15 PM	The Wonders of Winter Park \$169
11:45 AM - 4:00 PM	Cooking at Wolfgang Puck \$134
12:00 PM-5:00 PM	An Afternoon of Art at Café Tu Tu Tango \$233
1:00 PM-5:00 PM	Disney's Animal Kingdom Africa Awaits \$166
1:30 PM- 4:30 PM	Charlie and the Chocolatier \$81

#### Friday, March 4

• •	
8:15 AM – 12:00 PM	Active in Nature \$113
8:45 AM - 1:30 PM	Art among Southern Gardens \$111
9:00 AM - 5:00 PM	Kennedy Space Center \$255
10:00 AM - 5:15 PM	The Wonders of Winter Park \$169
10:30 AM - 3:30 PM	Fulton's Cooking Class \$184
1:00 PM-5:00 PM	Alligators and Wildlife Adventure \$121
1:15 PM-5:15 PM	Disney's Animal Kingdom Africa Awaits \$166
1:30 PM- 4:30 PM	Charlie and the Chocolatier \$81

#### Saturday, March 5

8:30 AM - 12:15 PM	Alligators and Wildlife Adventure \$121
9:00 AM -12:00 PM	I-Drive 360 \$106





Help us welcome Colombia as the Guest Nation for the Orlando meeting. Please stop by the Guest Nation exhibit located in Academy Hall C to learn more about the accomplishments of the Colombian orthopaedic community.

Look for special events and activities including a collaborative symposium, "Gun Shot and Explosive Wounds" that will be held on March 2, special poster tours given in Spanish, ten featured Posters from Colombia and remarks by Antonio Solano Urrutia, MD, President of the Sociedad Colombiana de Cirugía Ortopédica y Traumatología (SCCOT) during the Opening Ceremony.

Inaugurated in 2005, the AAOS Guest Nation program was established to foster greater recognition and awareness of the contributions made to the practice of orthopaedics from the many nations of the world, and to further enhance the robust international flavor and excitement of the AAOS Annual Meeting. AAOS is honored to welcome Colombia as the 2016 Guest Nation.



Visit the AAOS Career Center Academy Hall C

#### MORE OPTIONS to help build and staff your practice

**Employers:** find more options to advertise your open positions, meet with potential candidates, and schedule and conduct interviews at the on-site AAOS Career Center. Learn about the many enhancements on the online Career Center as well!

# MORE OPPORTUNITIES to find the right practice and launch your career

Job Seekers: benefit from more opportunities to meet with recruiters, view and search more career postings on the Bulletin Boards, access job search resources on the online Career Center, and much more.

#### NEW! Free CV Consultation.

Make an appointment at the on-site Career Center for a one-onone consultation to update and improve your CV!

#### Visit us today to learn more!

Orange County Convention Center West Building, Academy Hall C **Tuesday – Friday:** 7:00 AM to 6:00 PM **Saturday:** 7:00 AM to 3:00 PM

Online at: www.aaos.org/careercenter





# Benefit From All Of The Outstanding Courses You May Have Missed!

### Bring home all of this year's hot topics, including:

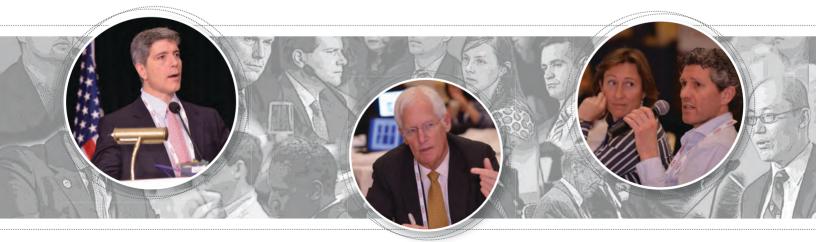
- Three- and Four-Part Humerus Fractures – The Gambler Edition (#245)
- Avoiding and Managing Complications in Cervical Spine Surgery (#310)
- Athletic Hip Injuries: Presentation, Evaluation, and Return to Play (#370)
- Limb Deformity Evaluation and Principles (#125)
- Modern Blood Conservation Strategies for the Orthopaedic Surgeon (#263)
- Differentiating Cervical Spine and Shoulder Pathology: Common Disorders and Key Points of Evaluation and Treatment (#304)
- And hundreds more!

### Get your Course Handouts at the AAOS Resource Center - Academy Hall C



#### Also available at the Resource Center:

Orthopaedic Review Course #490: AAOS Members on-site \$75 (\$95 post-meeting)







# **GET MORE from your AAOS membership**

Learn MORE about the wealth of resources available to you from AAOS Membership Services at the Resource Center, Academy Hall C

### MORE VALUE NOW

### Take advantage of the full spectrum of AAOS member benefits to gain MORE:

- MORE access to clinical best practices and practice management programs
- MORE variety for live and online learning resources
- MORE tools and publications to help you stay in the forefront of the profession
- MORE opportunities to network with your peers

Find MORE programs and benefits relevant to your needs on the new AAOS web site: www.aaos.org

### MORE VALUE TOMORROW

AAOS Member Services staff is here to assist you with all your membership needs – from applying for or renewing your membership, to updating your current information.

### WE LOOK FORWARD TO SEEING YOU!

AAOS Membership Services at the Resource Center, Academy Hall C Tuesday – Friday: 7:00 AM-6:00 PM Saturday: 7:00 AM-3:00 PM



For more information, please visit www.aaos.org/member

### Saturday, March 5, Orange County Convention Center, West Building

Specialty Day is a day set aside for scientific programs presented by organizations that are members of the Board of Specialty Societies (BOS). Those organizations include:



**American Orthopaedic Foot & Ankle Society** Room W224 7:00 AM – 5:20 PM 9 AMA PRA Category 1 credits<sup>™</sup>



The Hip Society/American Association of **Hip and Knee Surgeons** Valencia Room A 8:00 AM - 5:15 PM 7.75 AMA PRA Category 1 credits<sup>™</sup>



**American Orthopaedic Society for Sports Medicine** Chapin Theater 7:35 AM - 5:00 PM 6.5 AMA PRA Category 1 credits<sup>TM</sup>



The Knee Society/American Association of **Hip and Knee Surgeons** Valencia Room B 8:00 AM - 5:00 PM 7.75 AMA PRA Category 1 credits<sup>™</sup>



**American Shoulder and Elbow Surgeons** Room W311 7:25 AM – 4:35 PM 7.25 AMA PRA Category 1 credits<sup>™</sup>



**Limb Lengthening and Reconstruction** Society Room W308A 8:00 AM - 4:15 PM 7.25 AMA PRA Category 1 credits<sup>TM</sup>



American Society for Surgery of the Hand/ **American Association for Hand Surgery** Room W304A 7:30 AM – 5:15 PM AAHS 8.5 AMA PRA Category 1 credits<sup>TM</sup>



**Musculoskeletal Tumor Society** Room W314 8:00 AM - 4:00 PM 5.5 AMA PRA Category 1 credits<sup>TM</sup>



Arthroscopy Association of North America Valencia Room D 7:50 AM - 5:15 PM 7.5 AMA PRA Category 1 credits<sup>TM</sup>



**Orthopaedic Trauma Association** Room W414 7:30 AM - 5:00 PM 5.75 AMA PRA Category 1 credits<sup>TM</sup>



#### **Federation of Spine Associations**

- American Spinal Injury Association
- Cervical Spine Research Society
- North American Spine Society
- Scoliosis Research Society Room W304E 8:00 AM - 5:00 PM 8 AMA PRA Category 1 credits<sup>TM</sup>

POSNA

**Pediatric Orthopaedic Society of North America** Room W315 8:00 AM - 4:15 PM 6.75 AMA PRA Category 1 credits<sup>TM</sup>

# **Collaborating in the Science of Patient Care**



Sunday, March 6 ORS 2016 Annual Meeting Disney's Coronado Springs Resort

The ORS invites AAOS registrants interested in collaborating in the science of patient care to attend the ORS Annual Meeting on Sunday, March 6, when we will provide the opportunity for you to attend the meeting at no charge.

#### **Complimentary Programs:**

- Paper Presentations 10:00 11:00 AM, 11:15 AM – 12:15 PM, 2:15 – 3:15 PM
- Scientific Posters 9:00 AM 6:30 PM
- 2016 Kappa Delta, OREF Clinical Research and CORR<sup>®</sup> ORS Richard A. Brand Award paper presentations – 3:30 – 5:00 PM
- ORS Clinical Research Forum: The Basis for Clinical Decision Making in Orthopaedics 12:30 5:00 PM
- Professional Advancement Session: Healthcare Economics in Orthopaedics - What You Need to Know Organized by the ORS Corporate Affairs Committee – 8:00 – 9:30 AM

#### Scientific Workshops - 8:00 – 9:30 AM:

- Building Better Bone: The Weaving of Biologic and Engineering Strategies for Managing Bone Loss *Collaboration of the ORS and OTA* Organizers: Jaimo Ahn, MD, PhD and Mara L. Schenker, MD
- Strategies to Improve Total Knee Arthroplasty Collaboration of the ORS and Knee Society Thomas P. Vail, MD and Kevin L. Garvin, MD
- How to Accelerate Basic Discoveries to Patient Benefit Organizers: Jeffrey C. Lotz, PhD and Vijay K. Goel, PhD

# Registration and course fee is required for the following program:

#### **ORS/OREF Basic Science Course**

Richard L. Lieber, PhD, Marjolein C. van der Meulen, PhD, Theodore Miclau, MD Part II: Sunday, March 6, 8:00 – 11:30 AM Registration: <u>www.ors.org/2016annualmeeting</u>

#### **HOW TO REGISTER:**

There is no fee to register for the ORS Annual Meeting on Sunday, March 6. A sticker (to be placed on your badge) is required for access to the ORS Annual Meeting on Sunday, March 6. The sticker can be obtained at ORS satellite check-in located at Orange County Convention Center, West Building, Academy Hall C on Friday, March 5 or at the ORS Registration Desk at the Disney's Coronado Springs Resort on Sunday, March 6. The American Academy of Orthopaedic Surgeons gratefully acknowledges the following companies, organizations and individuals for their financial support of AAOS programs and projects throughout 2015. (as of 1/12/16)

### Diamond Level - \$200,000 and up

DePuy Synthes

ZIMMER BIOMET

### Platinum Level – \$100,000-\$199,999

Alliance of Automobile Manufacturers Arthrex Stryker Orthopaedics

### Gold Level - \$50,000-\$99,999

Medtronic OrthoPediatrics Pacira Pharmaceuticals Smith & Nephew Orthopaedics

### Silver Level – \$10,000-\$49,999

Acelity/KCI Acumed American Association of Hip and Knee Surgeons American Orthopaedic Society for Sports Medicine Arthroscopy Association of North America BioMarin Pharmaceutical Bioventus Global Brainlab CareCredit DJO Global Ellipse Technologies Federación Mexicana de Colegios de Ortopedia y Traumatología, A.C. (FEMECOT) Houston Methodist K2M Orthofix Orthopaedic Research & Education Foundation Orthopaedic Trauma Association Pediatric Orthopaedic Society of North America Pega Medical Scoliosis Research Society Shriners Hospitals for Children THINK Surgical Wright Medical Technology

### Bronze Level – \$1,000-\$9,999

Alexandra's Playground American Association of Orthopaedic Executives American Orthopaedic Foot and Ankle Society American Shoulder and Elbow Surgeons American Society for Surgery of the Hand American Spinal Injury Association Association of Residency Coordinators in Orthopaedic Surgery AVID TruCustom & OR Products Bonutti Technologies Danna-Gracey Dr. Alan & Gittel Hilibrand Dr. Basil & Amirra Besh Dr. David & Katie Halsey Dr. David L. & Gail Cannon Dr. Gerald R. & Robin K. Williams Dr. Howard R. & Phyllis G. Epps Dr. Michael F. & Eileen Schafer Dr. Richard Gayle Dr. Stephen & Sonny Hurst Dr. Stuart & Lisa Hirsch Drs. Elizabeth Matzkin & Eric Smith Drs. Lawrence Robinson & Jane Benton Foundation for Orthopedic Trauma Foundation of Orthopedics and Complex Spine (FOCOS) Hospital for Special Surgery

Indonesian Orthopaedic Association J. Robert Gladden Orthopaedic Society Kinamed Limb Lengthening and Reconstruction Society Massachusetts General Hospital Mayo Clinic, Rochester, Minnesota National Association of Orthopaedic Nurses New England Baptist Hospital Newton-Wellesley Hospital Charitable Foundation Orchid Orthopedic Solutions Orlando Orthopaedic Center Foundation OrthoBullets Orthopaedic Nurses Certification Board Orthopaedic Research Society Paragon Medical Permanente Medical Group Physician Assistants in Orthopaedic Surgery Ruth Jackson Orthopaedic Society Société Internationale de Chirurgie Orthopédique et de Traumatologie (SICOT) Sociedad Chilena de Ortopedia y Traumatolgia (SCHOT) Stanford Orthopaedic Surgery Stetson Powell Orthopedics and Sports Medicine Tecomet Tecres S.P.A.

### **Thanks for your support**

The Academy would also like to thank the following companies for their support for its 2015 Skills Courses and international activities by providing essential equipment and supplies:

- Acumed Arthrex Brainlab Buxton Biomedical ConMed DePuy Mitek DePuy Synthes DePuy Synthes DePuy Synthes Spine Exactech Fluoroscan Innomed Integra
- Kinamed Kraft Medical LDR Spine Life Instruments Medtronic Musculoskeletal Transplant Foundation Orthofix Orthosonics Pivot Medical SeaSpine Smith & Nephew Endoscopy
- Smith & Nephew Orthopaedics Stryker Instruments Stryker Orthopaedics ToLTech TriMed Wright Medical Zeiss Meditech Ziehm Zimmer Biomet Zimmer Spine

# **Call for Abstracts**

# AAOS 2017 Annual Meeting

March 14-18 | San Diego, California



# **Contribute to the advancement of orthopaedic science and practice**

Share your research with orthopaedic surgeons from around the world at the **2017 Annual Meeting**. Nowhere else will your discoveries reach such a wide-ranging orthopaedic audience.

Submissions open April 1, 2016. Watch for announcements!

Submit full-page abstracts, attach images, and more!

Present your research to its best advantage on our user-friendly website.

### ATTENTION SUBMITTERS. Disclosure Rules: Abstract Submissions due June 1, 2016

All presenters and co-authors must disclose financial relationships in the AAOS Orthopaedic Disclosure Program. The disclosure must be entered or updated as of April 1, 2016. Abstracts will not be graded without all disclosures.



# Educational Programs



#### From the Tried and True to Cutting Edge – In Your Preferred Learning Style

The Central Instructional Courses Committee and the Central Program Committee, with the assistance of the Instructional Courses and Program Committees in each classif cation, selected an outstanding array of educational opportunities for the 2016 Annual Meeting.

#### **Cornerstones for Your Academy Meeting**

Instructional Course Lectures present tried and true solutions in orthopaedics, "the standard of care," and insightful opinions from expert surgeons. These courses require a ticket purchase ([\_\_\_\_\_]) with prices ranging from \$50 to \$400. Several Instructional Courses feature an Audience Response System, noted by \_\_\_\_.

Symposia bring you cutting-edge topics, debates, and the latest thinking from a world-class faculty. They offer a wide variety of subject matter, featuring innovative research and information. Several Symposia sessions are highly interactive and feature an Audience Response System, noted by \_\_\_\_\_\_\_\_\_ included free with your registration.

Paper Presentations explore new and exciting research, updates of previous studies, and advances in orthopaedics. The moderator's goal is to stimulate discussion. There are more than 920 papers in all; included free with your registration.

Scientif c Exhibit format is used to graphically illustrate a study or a complex procedure. It differentiates itself from a poster presentation in the amount of material that is presented and uses audiovisual, interactive demonstration, or some other type of enhancement in its presentation. The authors of the exhibits are requested to be present Wednesday through Friday between 11:30 AM and 12:30 PM to discuss their ideas and presentation. Schedule your time to visit them when the author is present and they can discuss the exhibit with you. Allow 10-15 minutes for the exhibits you are most interested in so that the author has time to properly discuss his or her presentation. The complete listing is included beginning on page 251.

Scientif c Exhibits have been grouped in the following categories:

• Adult Reconstruction Hip	SE01-SE10
Adult Reconstruction Knee	SE11-SE21
• Basic Research	SE22-SE23
• Foot and Ankle	SE24-SE26
• Hand and Wrist	SE27
Pediatrics	SE28-SE30
Practice Management	SE31-SE37
• Shoulder and Elbow	SE38-SE50
• Spine	SE51-SE54
• Sports Medicine and Arthroscopy	SE55-SE73
• Trauma	SE74-SE85
• Tumor and Metabolic Bone Disease	SE86-SE88

AAOS Committee Scientif c Exhibits:

Research and Development Committee – SE55 Women's Health Issues Advisory Board – SE64 EWI Project Team – SE84

#### BOS Scientif c Exhibits:

Pediatric Orthopaedic Society of North America – SE28

Posters are visual presentations of medical, clinical, or scientif c research; and are often multi-center or multi-disciplinary studies, exciting new research, or a follow up to a previous study. Enjoy unlimited viewing at your convenience; included free with your registration. The poster presenter and/or co-authors are requested to be present daily between 11:30 AM and 12:30 PM to discuss their research and answer questions. Special focus posters include those by Allied Health, Board of Specialty Societies and the Orthopaedic Research Society. A complete listing is included beginning on page 262.

Posters are grouped in the following classif cations:

• Adult Reconstruction Hip	P001-P105
Adult Reconstruction Knee	
Foot and Ankle	
Hand and Wrist	
Pediatrics	
Practice Management/Rehabilitation	
Shoulder and Elbow	
• Spine	
Sports Medicine and Arthroscopy	
Trauma	
Tumor and Metabolic Disease	
Guest Nation – Colombia	
Orthopaedic Research Society	P300-P3/3
Board of Specialty Societies     Alliad Haaleh	r3/6-P3//
Allied Health	P3/8

ePosters and eScientif c Exhibits are interactive video presentations of research to illustrate a study or procedure. Visit the Academy's website for access to all ePosters and eScientific Exhibits

Orthopaedic Review Course: Update for Your Practice and Preparation for Your Test is newly refocused to help you prepare for the Board Exam. This all-day review of general orthopaedics is presented by experts from each of these subspecialties: pediatrics, upper and lower extremities, tumors and metabolic bone disease, and spine. This course requires a ticket purchase (

Orthopaedic Video Theater presents videos and multimedia programs created by your orthopaedic surgeon colleagues. These peer-reviewed programs bring you the very latest in surgical technique, leading-edge devices, and new technologies. Enjoy unlimited viewing at your convenience, Tuesday through Saturday; included free with your registration. A complete listing of the Orthopaedic Video Theater programs begins on page 236.

#### Tuesday - Wednesday

Award Programs	Stations 1-10
Adult Reconstruction Hip	
Adult Reconstruction Knee	Stations 15-22
Foot and Ankle	Stations 23-26
• Trauma	Stations 27-33
• Tumors	Station 34
Pediatrics	Stations 35-39
• Spine	Station 40

In addition, 8 self-service stations are available for you to view any Orthopaedic Video Theater title online.

Technology Theater, formerly known as the Electronic Skills Pavilion, showcases the latest technology and applications benef cial to orthopaedic surgeons and their staff. Presentations take place Wednesday through Friday in Booth 2987 in the Technical Exhibit Hall. Sessions are totally free and no ticket is needed to attend.

National Association of Orthopaedic Nurses, the National Association of Orthopaedic Technologists and the AAOS worked in collaboration to bring forth world-class programming especially designed for the orthopaedic nurses and technologists. These courses requires a ticket purchase (

# Special Highlights – all included free with your registration:

### New Showdowns

Orthopaedic colleagues debating topics and techniques that demonstrate their point of view. YOU decide who wins! Join us for this special one hour event that will utilize the Audience Response System for you to declare the winner of the showdown. The Hip Showdown will be presented on Thursday, 4:00 – 5:00 PM with Marc J. Philippon, MD as the moderator and the Shoulder and Elbow Showdown will be presented on Friday, 8:00 – 9:00 AM with William N. Levine, MD as the moderator. Don't miss this engaging new learning format. See page 57 for details.

#### Flash Five: What's Coming Down the Pike

A f ve minute burst of knowledge! Fast and focused, each expert takes on a hot topic – and drills down to the most critical points and takeaways. Presented on Tuesday, 1:30 – 2:30 PM with James R. Ficke, MD as the moderator and Thursday, 8:00 – 9:00 AM with Paul Tornetta III, MD as moderator. See page 57 for details.

#### The Way I See It...

Learn the "whys" of what the experts do. Benef t from the inside story – what each presenter wants you to know about a top-of-mind issue. Ride a Jetstream of consciousness as experts share their candid, personal thoughts, "just the way they see it". Presented on Tuesday, 4:00 – 5:00 PM; Wednesday, 10:30 – 11:30 AM; Thursday, 1:30 –2:30 PM; Friday, 1:30 – 3:30 PM in conjunction with Game Changers Paper session. See page 57 for details.

#### Timely Topics – New and Interactive Learning Experiences

More of the newly favorite learning format, Case Presentation Courses offer collaborative table discussions led by an expert faculty facilitator. The course moderator presents the case to the participants, sharing images and data via a monitor at each table. The facilitator then leads individual table discussion and reviews the case information provided by the moderator, with each table sharing conclusions. The moderator presents the f nal solution using evidence-based data and teaching points with references to support the selected treatment. These are noted by

Technical Skills Courses focus on positioning, approach, and step-by-step technical tips via edited videos, followed by discussion on the pearls. Course attendees will receive a short video with techniques and pearls of procedures discussed. These are noted by

Poster Tours, electronically given in the Poster Theater at the presentation stage, are virtually guided by experts in each classif cation and a unique way to view the best posters. Internationally recognized experts create a memorable experience by highlighting pearls and answering your questions; included free with your registration.

Career Development Courses benef t everyone who would like to further ref ne or develop their presentation skills and create an environment benef cial to learning. The Central Instructional Courses Committee has developed themed daily curriculums which are Leadership, Research and Education, Maintenance of Certif cation, Teaching and Communication, and Marketing. Free with your registration, no ticket necessary, and are noted by

Ask an Expert sessions welcome you to bring case challenges on a f ash drive and present them for diagnosis and recommendation. Offered Wednesday through Friday in Booth 672 in the Technical Exhibit Hall; included free with your registration.

The following symbols appear next to educational sessions and indicate one or more of the following:

- U.S. Food and Drug Administration has not cleared the drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an off label use). For full information, refer to page 15.
- Ticket required. For those who have not registered or purchased these tickets in advance, available tickets may be purchased when registering on site.
  - An Audience Response System is featured.

Case Presentation - offer collaborative table discussions led by an expert faculty facilitator. The course moderator presents the case to the participants, sharing images and data via a monitor at each table. The facilitator then leads individual table discussion and reviews the case information provided by the moderator, with each table sharing conclusions. The moderator presents the f nal solution using evidence-based data and teaching points with references to support the selected treatment.



Technical Skills - focus on positioning, approach, and step-by-step technical tips via edited videos, followed by discussion on the pearls.



Symposia that are being webcast; you can watch live on your smartphone, laptop, or tablet.

The Board of Specialty Societies logo next to an educational session indicates the session is co-branded with AAOS and that society.

#### Scientif c Program Highlights and What's New

#### **Global Perspectives Paper Session**

**Tuesday, March 1, 1:30 – 3:30 PM, Valencia Room D** *Moderators: Xaiver A. Duralde, MD and Scott P. Steinmann, MD* The best papers from counties outside of the United States are presented in one session. Come hear the experts discuss important topics from outside the US. This paper session is presented in English.

#### **Poster Awards Ceremony**

Friday, March 4, 7:00 AM, Academy Hall C Join us for a free continental breakfast and the Poster Awards Ceremony. Central Program Committee Chair James R. Ficke, MD, presents the winners of the Best Poster in each classif cation and the best overall poster for the 2016 Annual Meeting.

#### Game Changers Paper Session and The Way I See It... Orthopaedists Changing the Game

Friday, March 4, 1:30 PM – 3:30 PM, Valencia Room B Moderators: Brian J. Cole, MD, MBA and Marc Safran, MD The Central Program Committee is pleased to present this very special session that focuses on cutting edge research that could change the way you might practice in the next two to three years. It represents research that could change the way you think or address a diff cult problem that impacts current practice; and hear from "Game Changing" orthopaedists who have performed innovative and revolutionary techniques. This session includes the most inf uential and progressive research likely to shape the way we practice in the near term.

#### **Annual Meeting Highlights Symposium**

Friday, March 4, 1:30 – 3:30 PM, Chapin Theater Moderators: William M. Mihalko, MD, PhD and Alexander Vaccaro, MD, PhD

This symposium features a synopsis of the best papers and posters from each of the 11 classif cations that represent Annual Meeting education. Members of the Program Committees present the best three to f ve "shouldn't be missed" studies presented at the 2016 Annual Meeting. The symposium provides attendees with an opportunity to maximize their Academy experience.

#### **Special Program for Residents**

Symposium CC – Residency Core Competencies Friday, March 4, 10:30 AM – 12:30 PM, Valencia Room A Moderator: James R. Ficke, MD

This special educational event has been developed especially for residents. Core competencies required for completion of an orthopaedic residency program will be presented. This highly interactive session is webcast live to advance registered Resident programs and the remote audience is encouraged to submit questions via Twitter,@AAOSPearls.

#### ePosters and eScientif c Exhibits

ePosters and eScientif c Exhibits provide audio for many of the Posters and Scientif c Exhibits. The audio is a narrative of the exhibit recorded by the presenter and offered on playback by smartphone and tablet as the attendee views the exhibit. A blog allows viewers to question the authors creating an ongoing dialog. This area in Academy Hall C features a workstation with PCs where attendees can view the ePosters and eScientif c exhibits, hear the audio, and also decide whether or not to view the actual exhibit. Take the Annual Meeting home with you by accessing the ePoster and eScientif c Exhibits for up to two years following the meeting, <u>www.aaos.org/ePostersandeSE</u>

#### **Proceedings**

Access the Proceedings online! Now you can view the symposia handouts and abstracts from the Papers, Posters, Scientif c Exhibits, and Orthopaedic Video Theater at <u>www.aaos.org/</u><u>proceedings</u>.

#### **Instructional Courses Highlights and What's New**

#### Teparing for and Transitioning into Life after Orthopaedics (#208)

#### Wednesday, March 2, 8:00 – 11:00 AM, Room W307C Moderator: Dempsey S. Springf eld, MD Faculty: Joseph S. Barr Ir. MD, Cymthia K. Hinds, CLU

Faculty: Joseph S. Barr Jr, MD, Cynthia K. Hinds, CLU, Michael McCaslin, CPA

Offers expert advice from a senior orthopaedic surgeon who has made the transition, an investment/retirement planning specialist, and a practice management consultant for planning the transition from full-time practicing orthopaedic surgeon to your life after orthopaedics. No CME credit.

#### Effective Surgeon-Patient Communication: The Key to Patient Satisfaction, Patient-Centered Care, and Shared Decision Making (#290 & #291)

Wednesday, March 2, 8:00 AM – 12:00 Noon & 1:30 – 5:30 PM, Room 303B

Moderator: Dwight W. Burney III, MD

Faculty: John R. Tongue, MD

Newly revised and updated, this course uses the 4E model (Engage, Empathize, Educate, Enlist) to enable surgeons to effectively and eff ciently communicate with patients. Positive effects include increased patient and surgeon satisfaction, improved adherence to treatment plans, and decreased malpractice risk. Limited space, purchase your tickets early!

#### TeamSTEPPS (#390 & #391)

Thursday, March 3, 8:00 AM – 12:00 Noon & 1:30 – 5:30 PM, Room 303B

Moderator: Harpal S. Khanuja, MD

Faculty: Dwight W. Burney III, MD, Mary I. O'Connor, MD, William J. Robb III, MD, Kristy L. Weber, MD An evidence-based team building and communication program

designed to enhance patient safety and eff ciency in health care. This fundamentals workshop gives members of the healthcare team the tools to help lead highly effective medical teams. The goal is to optimize the use of information, people, and resources to achieve the best clinical outcomes for patients. In the workshop, team members increase team awareness and clarify team roles and responsibilities to produce a functional unit based on patient care. Team members also lean to resolve conficts and improve information sharing to help eliminate barriers to quality and safety. Limited space, purchase your tickets early!

#### **General Education Information**

Symposia and Instructional Courses noted with the logo of a Board of Orthopaedic Specialty Society are co-branded by that society and AAOS. Over 7,500 abstracts were submitted for presentation at the 2016 Annual Meeting. Of these, the Program Committee selected the best for presentation in over 920 paper presentations and 576 poster presentations. There are 88 scientif c exhibits displays, and 74 videos were selected for the Orthopaedic Video Theater. From over 200 applications, the Central Program Committee has selected 32 symposia, 2 Flash Five, 4 The Way I See It... and 2 Showdowns. The Central Instructional Courses Committee presents over 240 courses and special sessions.

Applications for Symposia and Instructional Courses were evaluated and rated by the Central Program and Central Instructional Courses Committees. Countless hours were spent reviewing and rating these applications resulting in the excellent curriculum featured at the 2016 Annual Meeting.

Each Symposium and Instructional Course provides an evaluation form; your critical and constructive assessment of each session is essential. Please complete the evaluation in written or smartphone format for each session you attend. The evaluations are reviewed by the committees and are used to determine the curriculum that helps us maintain the high standards expected by those attending the Annual Meeting. The Central Program Committee and Central Instructional Courses Committee are very appreciative of the efforts extended by those who submitted abstracts and applications and congratulates them on the high quality submitted for the 2016 Annual Meeting. They are also grateful for the assistance of the Program and Instructional Courses Committees in developing an outstanding educational curriculum. Finally we thank the faculty, instructors, moderators, and paper and poster presenters and co-authors for their efforts in presenting an excellent educational program. Their willingness to share their research and knowledge are gratefully acknowledged by all who attend the Annual Meeting.

#### Instructional Course Ticket Fees

#### Academy Hall C

For those who have not registered and purchased their tickets in advance, available tickets may be purchased when registering on site. The following fee is applied:

2-hour Case Presentation Courses	\$95.00
Instructional Course Lecture (ICL) 2-hour	\$70.00
ICL 2-hour US Orthopaedic Resident	\$25.00
3-hour Course	\$80.00
290 & 291 Effective Surgeon-Patient Communication	\$80.00
390 & 391 TeamSTEPPS	\$80.00
Orthopaedic Review Course (ORC) Physician	\$400.00
ORC US Orthopaedic Residents	\$160.00

Persons who have registered in advance but wish to exchange a ticket may do so as long as neither course has taken place. Persons

exchanging tickets must pay the difference between the advance registration ticket fee and the increased on-site fee.

#### Posters, Scientif c Exhibits, and the Orthopaedic Video Theater

Academy Hall	C
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Tuesday – Friday	
Saturday	

#### **Presentation of Fraudulent Research**

The Central Program Committee makes every attempt to ensure that the research activities and f ndings presented in the scientif c program are genuine and valid. It should be understood, however, that it is not possible to vet each and every study that is presented during the Annual Meeting. The abstracts of presentations submitted for grading are rated by qualif ed and expert graders. In some instances the paper presentation or poster may not ref ect its related abstract submitted six months earlier. The Central Program Committee considers these instances to be errors in the presenters' judgment when they occur. Presentation of fraudulent research violates the AAOS Standards of Professionalism on Research and Academic Responsibilities. If you feel you have witnessed a knowingly fraudulent presentation, please address your concern to a member of the Central Program Committee or Academy staff. The Central Program Committee will review the matter and may determine to bar the submission of future abstracts from the speaker(s) and/or to publish a retraction of the abstract in AAOS Now or other AAOS publications or communications. If there is a suff cient ground, any AAOS member may also f le a grievance with the AAOS Professional Compliance Program. In addition, any AAOS member may also f le a grievance against another member with the AAOS Professional Compliance Program. Based upon review of the Committee on Professionalism and, as applicable, the Judiciary Committee, the AAOS Board of Directors may determine to issue a letter of concern, censure, suspend, or expel the Fellow or Member who presented the fraudulent research.

#### **Education Committees**

The Central Program, Central Instructional Courses, Exhibits, and Orthopaedic Video Theater Committees gratefully acknowledge the efforts of all the committee members who work so hard to put on an excellent educational experience for all attendees.

#### 2016 Exhibits Committee

Joseph T. Moskal, MD, Roanoke, VA, Chair Jonathan J. Carmouche, MD, Roanoke, VA Karen S. Duane, MD, Newberry, FL Steven I. Grindel, MD, Milwaukee, WI Tim P. Lovell, MD, Spokane, WA Vivek Mohan, MD, MS, Naperville, IL Jeffrey M. Schwartz, MD, FACS, New York, NY Fernando Techy, MD, Fort Collins, CO Scott D. Weiner, MD, Akron, OH Dean W. Ziegler, MD, Milwaukee, WI

#### 2016 Central Instructional Courses Committee

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#### 2016 Central Program Committee

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#### 2016 Orthopaedic Video Theater Committee

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#### 2016 Program Committees

#### **Adult Reconstruction Hip**

David C. Ayers, MD, Worcester, MA, Chair John Antoniou, MD, FRCSC, Montreal, QC, Canada Michael J. Archibeck, MD, Albuquerque, NM Paul E. Beaule, MD, Ottawa, ON, Canada Holly K. Brown, MD, Jupiter, FL George F. Chimento, MD, Metairie, LA John C. Clohisy, MD, Saint Louis, MO John M. Cuckler, MD, Burnsville, NC Michael R. Dayton, MD, Aurora, CO Gregory K. Deirmengian, MD, Broomall, PA Craig J. Della Valle, MD, Chicago, IL Harry A. Demos, MD, Charleston, SC Kevin B. Fricka, MD, Alexandria, VA Kevin L. Garvin, MD, Omaha, NE Andrew H. Glassman, MD, Columbus, OH Beau S. Konigsberg, MD, Omaha, NE William B. Macaulay, MD, New York, NY Arthur L Malkani, MD, Louisville, KY

Paul A. Manner, MD, Seattle, WA Theodore T. Manson, MD, Bel Air, MD David J. Mayman, MD, New York, NY Richard W. McCalden, MD, London, ON, Canada Michael A. Mont, MD, Baltimore, MD Amar S. Ranawat, MD, New York, NY Peter F. Sharkey, MD, Media, PA Kipling P. Sharpe, MD, Gilbert, AZ James D. Slover, MD, New York, NY Scott M. Sporer, MD, Wheaton, IL Andrew M. Star, MD, Willow Grove, PA Creighton C. Tubb, MD, Olympia, WA James P. Waddell, MD, Toronto, ON, Canada Glenn D. Wera, MD, Cleveland, OH Steven T. Woolson, MD, Palo Alto, CA

#### **Adult Reconstruction Knee**

Michael A. Kelly, MD, Hackensack, NJ, Chair David Backstein, MD, Toronto, ON, Canada James B. Benjamin, MD, Tuscon, AZ Thomas J. Blumenfeld, MD, Sacramento, CA Daniel J. Del Gaizo, MD, Chapel Hill, NC Geoffrey F. Dervin, MD, Ottawa, ON, Canada Harold G. Dossett, MD. Scottsdale, AZ Thomas H. Eickmann, MD, Longmont, CO David A. Fisher, MD, Indianapolis, IN Alejandro Gonzalez Della Valle, MD, New York, NY Jason A. Grassbaugh, MD, Tacoma, WA Stephen M. Howell, MD, Sacramento, CA Yair D. Kissin, MD, Upper Saddle River, NJ Harlan B. Levine, Tenaf y, NJ Phillip F. Ludkowski, MD, Arlington Heights, IL Robert A. Malinzak, MD, Mooresville, IN John L. Masonis, MD, Charlotte, NC Wade P. McAlister, MD, Houston, TX Simon Mears, MD, Little Rock, AR Sumon Nandi, MD, Lima, OH Alexander P. Sah, MD, Fremont, CA Sirai A. Saveed, MD, San Antonio, TX Vernon F. Sechriest, MD, San Diego, CA Eoin C. Sheehan, MD, FRCS, Durrow, Ireland Anand Srinivasan, MD, Park Ridge, IL Alfred J. Tria, Jr, MD, Princeton, NJ Marc E. Umlas, MD, Miami Beach, FL Russell E. Windsor, MD, New York, NY

#### **Foot and Ankle**

Jamal Ahmad, MD, Philadelphia, PA, Chair Michael S. Aronow, MD, West Hartford, CT Timothy Charlton, MD, Los Angeles, CA John A. DiPreta, MD, Albany, NY Thomas G. Harris, MD, Altadena, CA Sandra E. Klein, MD, Saint Louis, MO Jeremy J. McCormick, MD, Saint Louis, MO

#### **Hand and Wrist**

Charles F. Leinberry, MD, Chester Springs, PA, Chair Joshua M. Abzug, MD, Timonium, MD James H. Calandruccio, MD, Germantown, TN Jeffrey A. Greenberg, MD, Indianapolis, IN Mark S. Rekant, MD, Cherry Hill, NJ John S. Taras, MD, Philadelphia, PA

### **EDUCATIONAL PROGRAMS**

#### **Pediatrics**

Ken J. Noonan, MD, Madison, WI, Chair Alexandre Arkader, MD, Philadelphia, PA Paul Caskey, MD, Spokane, WA Lawrence L. Haber, MD, Jackson, MS Christopher A. Iobst, MD, Winter Park, FL William M. Mirenda, MD, Danville, PA Kristan Pierz, MD, Hartford, CT Paul M. Saluan, MD, Hinckley, OH Jonathan G. Schoenecker, MD, Nashville, TN Tim Schrader, MD, Atlanta, GA

#### **Practice Management/Rehabilitation**

Thomas A. Malvitz, MD, Grand Rapids, MI, Chair John D. Campbell, MD, Bozeman, MT Josef K. Eichinger, MD, Gig Harbor, WA Brian J. Galinat, MD, Wilmington, DE Chad E. Mathis, MD, Pelham, AL

#### **Shoulder and Elbow**

Keith Kenter, MD, Kalamazoo, MI, Chair Joseph A. Abboud, MD, Philadelphia, PA Francis G. Alberta, MD, Glen Rock, NJ Kyle Anderson, MD, West Bloomf eld, MI Ryan T. Bicknell, MD, Kingston, ON, Canada Julie Y. Bishop, MD, Columbus, OH John G. Costouros, MD, Los Gatos, CA Joshua S. Dines, MD, New York, NY Sara L. Edwards, MD, San Francisco, CA Donald P. Endrizzi, MD, Falmouth, ME Reuben Gobezie, MD, Mavf eld Heights, OH Gordon I. Groh, MD, Asheville, NC Ranjan Gupta, MD, Orange, CA Samer S. Hasan, MD, PhD, Cincinnati, OH Steven J. Hattrup, MD, Phoenix, AZ Andrew Jawa, MD, Cambridge, MA Michael S. Khazzam, MD, Southlake, TX Robert B. Litchf eld, MD, London, ON, Canada Sameer H. Nagda, MD, Alexandria, VA Wesley M. Nottage, MD, Laguna Hills, CA Wesley P. Phipatanakul, MD, Loma Linda, CA Vani J. Sabesan, MD, Kalamazoo, MI Kaveh R. Sajadi, MD, Lexington, KY Robert Z. Tashjian, MD, Salt Lake City, UT Brian R. Wolf, MD, Iowa City, IA

#### Spine

Norman B. Chutkan, MD, Augusta, GA, Chair Patrick J. Cahill, MD, Philadelphia, PA Theodore J. Choma, MD, Columbia, MO Jason C. Datta, MD, Mesa, AZ Robert V. Dawe, MD, Fairf eld, CT William F. Donaldson III, MD, Pittsburgh, PA Daryll C. Dykes, MD, JD, Minneapolis, MN John C. France, MD, Morgantown, WV Michael A. Gleiber, MD, West Palm Beach, FL Krishna V. Gumidyala, MD, Marietta, GA William F. Lavelle, MD, East Syracuse, NY Michael J. Lee, MD, Chicago, IL Alexander Lenard, MD, Jupiter, FL Peter G. Passias, MD, Westbury, NY Mark D. Rahm, MD, Temple, TX Faisal A Siddiqui, MD, Manassas, VA

Vincent J. Silvaggio, MD, Pittsburgh, PA Kern Singh, MD, Chicago, IL Robert L. Tatsumi, MD, Lake Oswego, OR Jed S. Vanichkachorn, MD, MBA, Manakin Sabot, VA F. Todd Wetzel, MD, Wilmington, DE

#### **Sports Medicine and Arthroscopy**

Dean K. Matsuda, MD, Los Angeles, CA, Chair Champ Baker III, MD, Columbus, GA Srino Bharam, MD, New York, NY David R. Diduch, MD, Charlottesville, VA Christopher T. Donaldson, MD, Johnstown, PA Greg J. Folsom, MD, Lenexa, KS Robert A. Gallo, MD, Hersey, PA Trevor R. Gaskill, MD, Manhattan, KS Peter G. Gerbino II, MD, Monterey, CA Thomas J. Gill, MD, Boston, MA John R.T. Green III, MD, Seattle, WA Christopher C. Kaeding, MD, Columbus, OH John D. Kelly IV, MD, Newtown Square, PA Michael A. Kuhn, MD, Cape Carteret, NC Christian Lattermann, MD, Lexington, KY Ethan Lichtblau, MD, Montreal, OC, Canada Edward R. McDevitt, MD, Annapolis, MD George A. Paletta Jr. MD, Chesterf eld, MO Anil S. Ranawat, MD, New York, NY Stephen R. Soffer, MD, Wyomissing, PA Allston J. Stubbs IV, MD, Winston-Salem, NC Armando F. Vidal, MD, Denver, CO David Yucha, MD, Berwyn, PA

#### Trauma

Ivan S. Tarkin, MD, Pittsburgh, PA, Chair Timothy S. Achor, MD, Bellaire, TX Jeffrey Anglen, MD, FACS, Indianapolis, IN Robert H. Blotter, MD, Evansville, IN Henry M. Broekhuyse, MD, Vancouver, BC, Canada Kyle F. Dickson, MD, Bellaire, TX Jason M. Evans, MD, Franklin, TN Wade T. Gordon, MD, Bethesda, MD Eric M. Hammerberg, MD, Boulder, CO James C. Krieg, MD, Philadelphia, PA Anna N. Miller, MD, Winston-Salem, NC Amer J. Mirza, MD, Portland, OR Yvonne M. Murtha, MD, Wichita, KS Brent L. Norris, MD, Tulsa, OK Jacob M. O'Neill, MD, Evansville, IN Edward Perez, MD, Memphis, TN Bogadi R. Prashanth, MD, Mysore Karnataka, India John C. Weinlein, MD, Memphis, TN Patrick Yoon, MD, Minneapolis, MN

#### **Tumor and Metabolic Disease**

Jeffrey S. Kneisl, MD, Charlotte, NC, Chair Matthew R. DiCaprio, MD, Charlotte, NC Francis Young-In Lee, MD, New York, NY Thomas J. Scharschmidt, MD, Westerville, OH Felasfa M. Wodajo, MD, Arlington, VA

#### 2016 Instructional Courses Committee

#### **Adult Reconstruction Hip**

Paul J. Duwelius, MD, Portland, OR, Chair George J. Haidukewych, MD, Orlando, FL Wayne G. Paprosky, MD, Winf eld, IL Christopher L. Peters, MD, Salt Lake City, UT Andrew A. Shinar, MD, Nashville, TN

#### **Adult Reconstruction Knee**

Adolph V. Lombardi Jr., MD, New Albany, OH, Chair Hari Bezwada, MD, Princeton, NJ Michael Bolognesi, MD, Durham, NJ Terry A. Clyburn, MD, Houston, TX William J. Long, MD, New York, NY

#### Foot and Ankle

Paul J. Juliano, MD, Hershey, PA, Chair J Chris Coetzee, MD, Edina, MN John S. Early, MD, Dallas, TX Steven L. Haddad, MD, Glenview, IL David S. Levine, MD, Bedford, NY Vinod K. Panchbhavi, MD, FACS, Galveston, TX

#### Hand and Wrist

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#### Pediatrics

Martin J. Herman, MD, Philadelphia, PA, Chair Shevaun M. Doyle, MD, New York, NY Meghan N. Imrie, MD, Menlo Park, CA Richard W. Kruse, DO, Wilmington, DE Ernest L. Sink, MD, New York, NY Lewis E. Zionts, MD, Pacif c Palisades, CA

#### **Practice Management**

Kerwyn Jones, MD, Akron, OH, Chair David L. Flood, MD, Columbia, MO Ira H. Kirschenbaum, MD, Bronx, NY Paul A. Marchetto, MD, Philadelphia, PA Bryan T. Wall, MD, Peoria, AZ

#### **Shoulder and Elbow**

Mark D. Lazarus, MD, Philadelphia, PA, Chair David M. Dines, MD, Uniondale, NY Hussein A. Elkousy, MD, Houston, TX Leesa M. Galatz, MD, Saint Louis, MO Tim R. Lenters, MD, Grand Rapids, MI Felix H. Savoie, MD, New Orleans, LA

#### Spine

Thomas J. Errico, MD, New York, NY, Chair Charles J. Banta II, MD, Dallas, TX Eric O. Klineberg, MD, Sacramento, CA Yu-Po Lee, MD, San Diego, CA Timothy A. Moore, MD, Shaker Heights, OH Mark A. Palumbo, MD, Providence, RI Michael Vives, MD, Mendham, NJ

#### **Sports Medicine and Arthroscopy**

Bradley J. Nelson, MD, Minneapolis, MN, Chair Jonathan E. Buzzell, MD, Omaha, NE James C. Dreese, MD, Monkton, MD Mary L. Ireland, MD, Lexington, KY Kevin R. Murray, MD, Los Gatos, CA Bashir A. Zikria, MD, Baltimore, MD

#### Trauma

John T. Ruth, MD, Tucson, AZ, Chair Patrick M. Osborn, MD, San Antonio, TX Judith Siegel, MD, Worcester, MA

#### **Tumor and Metabolic Disease**

Carol D. Morris, MD, MS, New York, NY, Chair Susan V. Bukata, MD, Los Angeles, CA David S. Geller, MD, New York, NY Michael P. Mott, MD, Detroit, MI **Career Development Sessions** benef t everyone who would like to further ref ne or develop their presentation, research, education, teaching, Maintenance of Certif cation and marketing skills. These courses are free to registrants and a ticket is not required. Descriptions and faculty can be found throughout Final Program at noted dates and times.

#### Tuesday, March 1 – Leadership

8:00 - 9:00 AM CD1 Perspectives on Mentorship

9:30 – 10:30 AM CD2 Principles of Orthopaedic Leadership: Local, Regional, National

11:00 AM – 12:00 PM CD3 Leadership 2.0: How to be a More Effective Leader \*Secondary Classif cation: Practice Management

1:30 – 2:30 PM CD4 Getting Your Ideas Supported: Effective Techniques

#### Tuesday, March 1 – Research and Education

3:00 – 4:00 PM CD5 Lifelong Learning: Principles of Peer Education in Orthopaedics

4:30 – 5:30 PM CD6 Collaboration Within and Between Institutions

#### Wednesday, March 2 – Research and Education

8:00 - 9:00 AM CD7 How to Assemble a Competitive ICL, Symposium and Abstract Application

9:30 – 10:30 AM CD8 Preparation and Delivery of the Orthopaedic Lecture

11:00 AM – 12:00 PM CD9 Writing a Competitive Grant Application

1:30 – 2:30 PM CD10 Cliff Notes on Clinical Research: What You Need to Get Started

3:00 – 4:00 PM CD11 Expert Pearls and Funding Strategies for Basic and Translational Research

4:30 – 5:30 PM CD12 Writing an Abstract that Gets Accepted

#### Wednesday, March 2 – Research and Education

8:00 - 9:00 AM CD13 Selection, Implementation, and Interpretation of Patient-Centered Orthopaedic Outcomes

9:30-10:30 AM CD14 Statistics for Orthopaedists

11:00 AM – 12:00 PM CD15 The Art and Science of Reviewing Manuscripts for Orthopaedic Journals

#### Thursday, March 3 – Maintenance of Certif cation

8:00 - 10:00 AM CD16 Maintenance of Certif cation Do's and Don'ts and Case List Review: Preparation for your Recertif cation Exam

10:30-11:30 AM CD17 Brushing Up On Your Test Taking Skills

#### Thursday, March 3 – Teaching and Communication

8:00 – 9:00 AM CD18 Shared Decision Making and Informed Consent: Understanding the Goals and the Responsibility of the Orthopaedic Surgeon \*Secondary Classif cation-Practice Management

9:30 - 10:30 AM CD19 Video Production for Orthopaedic Surgeons: Getting the Award, Making the Difference

11:00 AM -12:00 PM CD20 Imagine Them Naked: Public Speaking and Teaching

1:30 – 2:30 PM CD21 Principles of Teaching Across Differences in Culture and Language

3:00 – 4:00 PM CD22 Dealing with the Underperforming Orthopaedic Resident

4:30 – 5:30 PM CD23 The Art of Teaching Orthopaedic Surgery

4:30 – 5:30 PM CD24 Cross Cultural Patient Communication

#### Friday, March 4 – Marketing

8:00 – 9:00 AM CD25 Getting Your Work Published and Achieving the Highest Impact

9:30 – 10:30 AM CD26 Social Media and Orthopaedics: Opportunities and Challenges

11:00 AM – 12:00 PM CD27 Building Your Practice

#### **Guided Poster Tours**

#### Academy Hall C

Guided poster tours provide an opportunity for meeting attendees, asking questions and gaining insights while earning CME credit. Each tour will be guided by an expert in the feld – utilizing ePosters. The expert will question the presenter, point out highlights and give interesting tips about selected posters in each classif cation. Poster Tours will be given at the Presentation Stage for your viewing pleasure on two 80" monitors while the presenter showcases their ePoster. Included with registration, limited space available.



Date	Classif cation	Tour Expert	
Tuesday, March 1			
10:00 - 11:00 AM	Adult Reconstruction Knee	James I. Huddleston III, MD	
11:30 AM - 12:30 PM	Trauma	Edward Perez, MD	
3:00 - 4:00 PM	Sports Medicine/Arthroscopy	Kenneth E. DeHaven, MD	
4:30 - 5:30 PM	Adult Reconstruction Hip	Joshua J. Jacobs, MD	
Wednesday, March 2			
8:30 - 9:30 AM	Pediatrics	Stuart L. Weinstein, MD	
10:00 - 11:00 AM	Shoulder and Elbow	Thomas (Quin) Throckmorton, MD	
11:30 AM - 12:30 PM	Spine	Alexander Vaccaro, MD, PhD	
3:00 - 4:00 PM	Foot and Ankle	G. Andrew Murphy, MD	
4:30 - 5:30 PM	Adult Reconstruction Hip	William M. Mihalko, MD, PhD	
Thursday, March 3			
8:30 - 9:30 AM	Tumor and Metabolic Disease	Valerae O. Lewis, MD	
10:00 - 11:00 AM	Spine	Patrick Cahill, MD	
11:30 AM - 12:30 PM	Pediatrics	Martin J. Herman, MD	
3:00 - 4:00 PM	Hand and Wrist	Thomas R. Hunt, MD	
4:30 - 5:30 PM	Sports Medicine/Arthroscopy	Matthew T. Provencher, MD	
Friday, March 4			
8:30 - 9:30 AM	Adult Reconstruction Knee	Giles R. Scuderi, MD	
10:00 - 11:00 AM	Practice Management	Daniel B. Murrey, MD	
11:30 AM - 12:30 PM	Trauma	Wade T. Gordon, MD	
3:00 - 4:00 PM	Shoulder and Elbow David M. Dines, MD		

#### **International Poster Tours Schedule**

Portuguese and Spanish language poster tours are available. The tour guide expert will give a tour in the specif ed language discussing posters in the identif ed classif cation.

Date	Time	Language	Classif cation	Tour Expert
Tuesday, March 1	1:30 - 2:30 PM	Portuguese	Adult Reconstruction Hip and Knee	Marco Antônio Percope de Andrade, MD
Wednesday, March 2	1:30 - 2:30 PM	Spanish	Shoulder and Elbow/Sports Medicine/Arthroscopy	Luis Fernando Calixto, MD
Thursday, March 3	1:30 - 2:30 PM	Portuguese	Sports Medicine/Arthroscopy	André Pedrinelli, MD
Friday, March 4	1:30 - 2:30 PM	Spanish	Adult Reconstruction Hip and Knee	Nicolas Restrepo, MD

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### Now YOU decide when and where to see and hear these Annual Meeting Symposia \_

### Annual Meeting Symposia Webcasts

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Annual Meeting Symposia bring you today's hottest topics, presented by surgeons who are shaping the future of the orthopaedic specialty. Now, no matter how busy your schedule—you can "attend" 12 symposia—anytime and anywhere:

- During the meeting, webcasts will be streamed live to your mobile device or to your computer (www.aaos.org/amwebcasts)
- On demand streaming will be available after the meeting. Symposia webcasts will be available for on demand streaming from the AAOS website (www.aaos.org/amwebcasts).

Please note that CME credit is not available for the live or on-demand symposia webcasts.

AAOS Members and AAOS Residents: Free for unlimited viewing through June 30 (Including AAOS Fellows, Candidate Members, Residents, Emeritus Members, and International Affiliate Members)

Non-Members: \$79 for unlimited viewing through June 30

Annual Meeting Symposia provide a rich overview of various viewpoints on specific topics. Symposia available as webcasts include:

Title and Moderator	Symposium & Live Webcast
The Essentials for Creating Value in a Knee Arthroplasty Practice Moderator: Kevin Bozic, MD	Tuesday, 8:00 - 10:00 AM
The Athletic Hip: From Impingement to Arthroplasty Moderator: Christopher Larson, MD	Tuesday, 10:30 AM - 12:30 PM
Hot Topics and Controversies in Revision Total Hip Arthroplasty Moderator: Paul Lachiewicz, MD	Tuesday, 1:30 - 3:30 PM
Debating Controversies in Spine Surgery Moderator: Alan Hilibrand, MD	Wednesday, 8:00 - 10:00 AM
Gun Shot and Explosive Wounds Moderators: James Ficke, MD and Camilo Restrepo, MD	Wednesday, 10:30 AM - 12:30 PM
Quality is in the Eye of the Beholder: What's Measured, What Matters, and How Do We Reconcile This? <i>Moderator: Rachel Rohde, MD</i>	Wednesday, 1:30 - 3:30 PM
Challenges and Controversies in Total Hip Arthroplasty in 2016 Moderator: Daniel J. Berry, MD	Thursday, 8:00 - 10:00 AM
Combined Multi-Ligament, Meniscus, and Cartilage Injuries of the Knee <i>Moderator: Bruce Levy, MD</i>	Thursday, 10:30 AM - 11:30 PM
Computer Modeling and 3-D Printing in Upper Extremity Surgery Moderator: Lisa Lattanza, MD	Thursday, 1:30 - 3:30 PM
Challenges in Pediatric Trauma: What We All Need to Know Moderator: Jeffrey Sawyer, MD	Thursday, 4:00 - 6:00 PM
Bundled and Emerging Payment Models in Orthopaedics Moderator: Kevin J. Bozic, MD, MBA	Friday, 8:00 - 10:00 AM
Residency Core Competencies Moderator: James Ficke, MD	Friday, 10:30 AM - 12:30 PM
Upper Extremity Trauma: How to Define and Expand Your Comfort Zone Moderator: David Ring, MD	Friday 1:30 - 3:30 PM

All of these Symposia will be held in Valencia Room A.





### **Orthopaedic Review Course:** Update for Your Practice and Preparation for Your Test (#490)

Friday, March 4

Hyatt Regency Orlando, Regency Ballroom R Course Chairman: Jeffrey R. Sawyer, MD

- Review of current knowledge on diagnosis and management of clinical problems from a nationally accepted orthopaedic practice perspective
- Major sections of the course are upper and lower extremities, metabolic bone disease, pediatrics, spine and tumors
- Each section includes discussion of fractures, complications, infections, and trauma and Q&A with faculty
- Handout is key takeaways of faculty presentations and references.

Time	Events	Faculty				
7:30 - 9:30 AM	LOWER EXTREMITY	Moderator: Donald A. Wiss, MD				
7:30 AM	Hip and Knee Reconstruction	Matthew Austin, MD				
8:00 AM	Trauma	Donald A. Wiss, MD				
8:30 AM	Foot and Ankle	Steven L. Haddad, MD				
9:00 AM	Sports Knee	Mark D. Miller, MD				
9:30 - 9:45 AM	STRETCH BREAK					
9:45 -11:45 AM	UPPER EXTREMITY/METABOLIC	Moderator: Leesa M. Galatz, MD				
9:45 AM	Hand and Wrist	Robert J. Strauch, MD				
10:15 AM	Forearm and Elbow	Leesa M. Galatz, MD				
10:45 AM	Shoulder and Humerus	Je <sup>~</sup> rey S. Abrams, MD				
11:15 AM	Metabolic Bone Disease	Joseph M. Lane MD				
11:45 AM - 12:30 PM	LUNCH (box lunch included)					
12:30-2:30 PM	PEDIATRICS	Moderator: William C. Warner Jr, MD				
12:30 PM	Нір	William C. Warner Jr, MD				
1:00 PM	Infection, Congenital, Developmental Problems/Miscellaneous	Je <sup>~</sup> rey R. Sawyer, MD				
1:30 PM	Fractures of the Upper and Lower Extremities	Amy L. McIntosh, MD				
2:00 PM	Lower Extremity	Todd A. Milbrandt, MD				
2:30-2:45 PM	STRETCH BREAK					
2:45-4:15 PM	SPINE/TUMOR	Moderator: Jens R. Chapman, MD				
2:45 PM	Pediatric	David L. Skaggs MD				
3:15 PM	Degenerative	Todd J. Albert, MD				
3:45 PM	Trauma	Jens R. Chapman, MD				
4:15 PM	Tumors	Albert J. Aboulaÿa MD				
4:45 PM	Adjourn					

Continental breakfast and a box lunch are included in the fee, which is \$400 for physicians.

Attention U.S. Orthopaedic Residents! Discounted tickets are available for the Orthopaedic Review Course at \$160.

# CROSS-CLASSIFICATION CHART FOR ICLS AND SYMPOSIA

	Adult Reconstruction Hip and Knee	<b>Basic Research</b>	Foot and Ankle	General	cation Hand and Wrist	Classifics	<mark>1000 Practice</mark> Management	Elbow	Spine	Sports Medicine/ Arthroscopy	Trauma	Tumor and Metabolic Disease
Adult Reconstruction Hip and Knee	AA, 381			C, 123, 263					429	B, 466	172, 185, 272, 467	
Basic Research				0								
Foot and Ankle						207					151, 351, 431	
General	102, 161, 202, 241, 283, 285, 322, 342, 361, 384	323			206, 224, 405	346	F, N, X, 106, 126, 266, 427	447	148	H, 129, 249, 488	131, 251	230, 331
Hand and Wrist						225						152
Pediatrics	141		242		326				247, 409	311, 410	111, 388, 485	
Practice Management	A			Y, CD3, CD18								
Shoulder and Elbow					∍					110, 170, 182, 228, 248, 411	EE, 210	
Spine				304		145, 265, 328, 426				386		
Sports Medicine/ Arthroscopy	R, 341		K, 103, 143, 204	364		M, 105, 244, 327, 382, 445		G, 147, 167, 168, 209, 246, 267, 268, 329, 368, 408, 428, 448, 464	269			
Trauma	201, 401		162, 262, 363		104, 124, 164, 264, 286, 345, 425	P, 125, 165, 406, 463		107, 108, 127, 186, 227, 245	D, 349	387	Ø	
Tumor and Metabolic Disease				243					309			

This Cross-Classif cation Chart shows which Instructional Course Lectures (ICL) and Symposia "crosses" over into another classif cation. The Primary Classif cation (down the left side) is the session's main focus; and placing the ICL number and/or Symposia letter in the Secondary Classif cation column, shows its cross-classif cation element. For example ICL 225 has a Primary Classif cation of Pediatrics with a Secondary Classif cation of Hand and Wrist. For further details on a session, please go to the descriptions on pages 58-235.

**Educational Programs** 

Secondary Classif cation

### NEW at this year's Academy Meeting... Translated Sessions

There will be select Instructional Course Lectures and Symposia simultaneously translated in Spanish and Portuguese. Translation services provided by a grant from Smith & Nephew Latin America. The sessions are:

NOVO na reunião da Academy deste ano...

Haverá palestras e simpósios limitados traduzidos simultaneamente em espanhol e português. Para participar, basta obter um fone de ouvido ao ingressar na sala e escolher o canal do idioma.

Serviços de traduções oferecidos e outorgados pela Smith & Nephew América Latina.

 $\begin{bmatrix} \pi c \kappa ET \end{bmatrix} = \acute{E}$  requerido um bilhete

#### Terça-feira, 1º de março

#### 8h00 – 10h00 Sala Valencia A Simpósio A Os fundamentos para criar valor na prática da artroplastia do joelho

O sistema de saúde dos Estados Unidos está evoluindo rumo à promoção e ao incentivo do valor sobre o volume. Essa mudança exige que os prestadores de serviços de saúde que cuidam de pacientes com problemas no joelho modif quem suas estratégias de tratamento e desenvolvam novas habilidades.

Moderador: Dr. Kevin J. Bozic

#### 10h30 – 12h30 Sala Valencia A Simpósio B O guadril do esportista: do impacto à artroplastia

Fornece uma discussão abrangente e atual, com base em evidências, sobre a administração da dor na virilha e no quadril em pacientes ativos e que praticam esportes ao longo de diversas gerações. Também será considerado o complexo processo de tomada de decisão entre a preservação do quadril versus a artroplastia na fase inicial degenerativa do quadril e serão revisadas as considerações técnicas sobre abordagem, superfícies de suporte e longevidade da artroplastia.

Moderador: Dr. Christopher M. Larson

#### 13h30 – 15h30 Sala Valencia A Simpósio E Principais temas e controvérsias na revisão de artroplastia total do guadril

Abordará de maneira didática, com base em casos reais e com o uso de videoclipes, as controvérsias atuais na revisão de artroplastia total do quadril. Entre os temas incluídos estarão: as opções de exposição - por que e quando; alternativas de revisão acetabular quando há perda óssea; opções de deslocamento; hemi-explantação do quadril infectado e; a controvérsia dos componentes femorais estriados modulares versus não modulares.

Moderador: Dr. Paul F. Lachiewicz

#### Quarta-feira, 2 de março

(TICK 202 Sala W202 8h00 – 10h00

Prevenção das readmissões hospitalares e redução das complicações associadas à artroplastia total do quadril

Com o aumento dos cuidados nas readmissões hospitalares após a artroplastia total do quadril, surge a necessidade de compreender e evitar as complicações responsáveis por essas readmissões.

Moderador: Dr. Kevin L. Garvin

#### 10h30 – 12h30 Sala Valencia A Simpósio L

#### Ferimentos provocados por armas de fogo e explosivos

Será discutido o impacto dos ferimentos provocados por armas de fogo de velocidade alta, intermediária e baixa e de outros ferimentos violentos, bem como o modo de avaliação desses pacientes, tratamentos operatórios e não operatórios e reabilitação. Este simpósio é uma colaboração entre a AAOS e o país sede do evento de 2016, a Colômbia.

Moderador: Dr. James R. Ficke, Dr. Camilo Restrepo

#### (TERE ) ICL 249 Sala W202 13h30 – 15h30

# Artrite patelofemoral: estratégias de tratamento desde a restauração da cartilagem até a artroplastia

Fornecerá uma visão geral abrangente da administração cirúrgica de lesões condrais de espessura total da articulação patelofemoral, desde procedimentos de restauração da cartilagem até a artroplastia.

Moderadora: Dr. Diane L. Dahm

ICL 271

Sala W202 16h00 – 18h00

Retorno às atividades após a reconstrução do ligamento cruzado anterior: quando e qual exame realizar... prevenir ou remediar?

Fornecerá conhecimento científ co básico e oferecerá a perspectiva de um cirurgião ortopédico sobre o retorno às atividades ao mostrar exames específ cos, análise da locomoção e cronograma de realização desses exames. Será apresentada uma abordagem com base em casos reais, segundo a observação de padrões de movimento e análise da locomoção. Também será apresentada uma perspectiva sobre o mecanismo de lesões, programas de prevenção e semelhanças nos padrões de movimento.

Moderadora: Dr. Mary L. Ireland

#### Quinta-feira, 3 de março

#### ICL 302 Sala W202

#### 8h00 – 10h00

Revisão de artroplastia total do joelho: planejamento e desempenho (técnica em vídeo)

Abordará o problema da def ciência óssea grave durante a cirurgia de revisão do joelho. Serão discutidas opções para lidar com esse problema.

Moderador: Dr. Peter F. Sharkey

#### ICL 321

Sala W202

#### 10h30 – 12h30 Vamos realizar uma reposição di

# Vamos realizar uma reposição direta do quadril anterior (sem uma mesa especial)

Este é um curso em vídeo com foco na anatomia local relacionada à abordagem direta anterior, bem como nas técnicas cirúrgicas de artroplastia total primária do quadril e revisão de artroplastia total do quadril, utilizando uma abordagem direta anterior sem uma mesa especial. Serão fornecidas dicas para os principiantes sobre como reduzir a curva de aprendizado.

Moderador: Dr. William J. Hozack

#### ICL 342 Sala W202 13h30 – 15h30 Como realizar uma artroplastia total primária do joelho: vinhetas de vídeo

As técnicas exigidas para realizar uma artroplastia total do joelho com êxito serão detalhadas em vinhetas de vídeo, incluindo o planejamento pré-operatório, seleção da prótese, exposições cirúrgicas, equilíbrio dos ligamentos, f xação e substituição patelar.

Moderador: Dr. Gwo-Chin Lee

#### (Incker) ICL 362 Sala W202 16h00 – 18h00

#### O continuum da restrição na artroplastia do joelho

Os designs de implante para a artroplastia primária do joelho foram ampliados para incluir opções mais abrangentes de restrição, no intuito de lidar melhor com a variedade de deformidades e aprimorar os resultados e o nível de satisfação em pacientes com doenças articulares degenerativas em fase terminal.

Moderador: Dr. Adolph V. Lombardi Jr

### NEW at this year's Academy Meeting... Translated Sessions

There will be select Instructional Course Lectures and Symposia simultaneously translated in Spanish and Portuguese. Translation services provided by a grant from Smith & Nephew Latin America. The sessions are:

NOVEDADES de la Reunión de la Academia de este año...

Habrá traducciones simultáneas al español y al portugués de una cantidad limitada de charlas de cursos de formación y simposios. Para participar, simplemente tome unos auriculares al entrar a la sala y seleccione el canal para su idioma.

Servicios de traducción facilitados mediante una subvención de Smith & Nephew Latinoamerica.

**Se requiere un boleto** 

#### Martes 1 de marzo

#### 08h00 a 10h00

Sala Valencia A Simposio A

### Fundamentos para aportar valor en una práctica de artroplastia de rodilla

El sistema de atención médica de los Estados Unidos está evolucionando para promover e incentivar el valor por sobre el volumen. Este cambio requiere que los proveedores que tienen pacientes con afecciones de rodilla modif quen sus estrategias para brindar atención y desarrollen nuevos conjuntos de habilidades.

Moderador: Dr. Kevin J. Bozic

#### 10h30 a 12h30 Sala Valencia A Simposio B

#### Cadera de deportista: del pinzamiento a la artroplastia

Este simposio brinda una discusión completa y actualizada basada en evidencias sobre el manejo del dolor en la ingle y en la cadera en pacientes activos y deportistas a lo largo de varias generaciones. También se considera la complejidad de la decisión de preservar la cadera frente a la opción de la artroplastia en las caderas con procesos degenerativos iniciales, y se revisan algunas consideraciones técnicas acerca del enfoque, las superf cies de apoyo y la longevidad de la artroplastia.

Moderador: Dr. Christopher M. Larson

#### 13h30 a 15h30 Sala Valencia A

Simposio E

# Temas polémicos y controversiales respecto de la revisión de la artroplastia total de cadera

Este simposio aborda las controversias actuales en torno a la revisión de la artroplastia total de cadera de manera didáctica, basada en casos y por medio del uso de videos. Los temas incluidos son las opciones de exposición (por qué y cuándo); las opciones de revisión acetabular en casos de pérdida ósea; las opciones de dislocación; la media explantación de cadera infectada; y la controversia de los componentes femorales acanalados modulares frente a los no modulares.

Moderador: Dr. Paul F. Lachiewicz

#### Miércoles 2 de marzo

(noter) ICL 202 Sala W202 08h00 a 10h00

**Prevención de una nueva hospitalización y limitación de las complicaciones asociadas con la artroplastia total de cadera** Debido a una creciente atención a las nuevas hospitalizaciones

después de una artroplastia total de cadera, surge la necesidad de comprender mejor y de prevenir las complicaciones que provocan la necesidad de una nueva hospitalización.

Moderador: Dr. Kevin L. Garvin

#### Sala Valencia A Simposio L 10h30 a 12h30 Heridas por armas de fuego y por explosiones

Se discutirá el impacto de los disparos de armas de fuego a alta, media y baja velocidad y otras heridas violentas, como así también la forma de evaluar a estos pacientes, los tratamientos operatorios y no operatorios y la rehabilitación. El simposio es una colaboración entre la AAOS y la Nación Invitada de 2016, Colombia.

Moderador: Dr. James R. Ficke, Dr. Camilo Restrepo

#### [merr] ICL 249 Sala W202 13h30 a 15h30 Artritis patelofemoral: estrategias de tratamiento desde la restauración del cartílago hasta la artroplastia

Proporciona un panorama amplio del tratamiento quirúrgico de las lesiones condrales de espesor completo en la articulación patelofemoral. Esta descripción abarca desde la operación de restauración de cartílago hasta la artroplastia.

Moderador: Dr. Diane L. Dahm

#### ICL 271

Sala W202

16h00 a 18h00

# Regreso al deporte después de la reconstrucción del ligamento cruzado anterior: qué examen realizar y cuándo... ¿Prevenir o curar?

Proporciona los fundamentos científ cos y brinda la opinión de un cirujano ortopédico respecto del regreso al deporte, mostrando pruebas específ cas, el análisis de la marcha y la línea de tiempo para realizar estas pruebas. Se presenta un enfoque basado en casos en los que se observan los patrones de movimiento y el análisis de la marcha. También se presenta una perspectiva sobre el mecanismo de la lesión, los programas de prevención y los factores comunes en los patrones de movimiento.

Moderador: Dr. Mary L. Ireland

#### Jueves 3 de marzo

ICL 302

Sala W202

08h00 a 10h00

### Revisión de la artroplastia total de rodilla: planif cación y realización (técnica de video)

Aborda el problema de una gran def ciencia ósea durante la cirugía de revisión de rodilla. Se discuten las opciones para manejar este problema.

Moderador: Dr. Peter F. Sharkey

(Treef) ICL 321 Sala W202 10h30 a 12h30

# Hagamos un reemplazo anterior directo de cadera (sin una mesa especial)

Este es un curso de video centrado en la anatomía local relacionada con el enfoque anterior directo, como así también en las técnicas quirúrgicas para la artroplastia primaria y de revisión total de cadera, por medio de un enfoque anterior directo sin una mesa especial. Se brindan consejos para principiantes acerca de cómo acortar la curva de aprendizaje.

Moderador: Dr. William J. Hozack

#### (Incker) ICL 342 Sala W202 13h30 a 15h30

# Cómo realizar una artroplastia primaria total de rodilla: viñetas de video

Se detallan, mediante el uso de viñetas de video, las técnicas requeridas para realizar de manera exitosa una artroplastia total de rodilla, incluidas la planif cación preoperatoria, la selección de la prótesis, las exposiciones quirúrgicas, la nivelación de los ligamentos, la fjación y la sustitución de la superf cie patelar.

Moderador: Dr. Gwo-Chin Lee

(TCKET) ICL 362 Sala W202 16h00 a 18h00

La continuidad de las restricciones en la artroplastia de rodilla

Los diseños de los implantes para la artroplastia primaria de rodilla se han expandido para incluir opciones más amplias de restricciones a f n de adaptarse mejor a las diversas deformidades y mejorar los resultados y la satisfacción de los pacientes con enfermedad articular degenerativa en fase f nal.

Moderador: Dr. Adolph V. Lombardi Jr.

#### 🔽 Flash Five: What's Coming Down the Pike

A burst of knowledge given in f ve minutes on topics benef ting orthopaedists. Fast and focused...each expert takes on a hot topic and drills down to the most critical points and takeaways.

#### Tuesday, March 1, 1:30 – 2:30 PM, Room W311A Master of Ceremonies – James R. Ficke, MD

Fracture Healing	Thomas A. Einhorn, MD
Bearing Surfaces	Joshua J. Jacobs, MD
Periarticular Fractures	J. Lawrence Marsh, MD
Young Adult OA of the Hip	Young Jo Kim, MD
The Diabetic Foot and Ankle	Vincent J. Sammarco, MD
The Rotator Cuff	Ken Yamaguchi, MD
Preventing Infection in Joint Replacement	Tad L. Gerlinger, MD
Preventing Infection in Fractures	Andrew H. Schmidt, MD
Geriatric Hip Fractures	Thomas A. Russell, MD
Minimally Invasive Spine Surgery	Alexander Vaccaro, MD

#### Thursday, March 3rd 8:00 – 9:00 AM, Room W311A Master of Ceremonies – Paul Tornetta III, MD

Fracture Healing	Thomas A. Einhorn, MD
Bearing Surfaces	Joshua J. Jacobs, MD
Periarticular Fractures	J. Lawrence Marsh, MD
Young Adult OA of the Hip	John C. Clohisy, MD
The Diabetic Foot and Ankle	Vincent J. Sammarco, MD
The Rotator Cuff	Ken Yamaguchi, MD
Preventing Infection in Joint Replacement	Tad L. Gerlinger, MD
Preventing Infection in Fractures	William M. Ricci, MD
Geriatric Hip Fractures	Thomas A. Russell, MD
Minimally Invasive Spine Surgery	Alexander Vaccaro, MD

#### Showdowns

You decide who wins when four surgeons demonstrate their personal points of view in an unrehearsed debate. Join us and declare the winners via the Audience Response System.

# Hip Showdown, Thursday, March 3, 4:00 – 5:00 PM Valencia Room B

Master of Ceremonies - Marc J. Philippon, MD

#### Debaters:

Robert E. Boykin, MD	My Approach to Labral Def ciency:
vs.	When to ReconstructWhen Not to
S. Clifton Willimon, MD	Reconstruct
Marc Safran, MD	My Approach to Capsular
vs.	Def ciency:When to Reconstruct
Allston I. Stubbs IV. MD	When Not to Reconstruct

#### Shoulder and Elbow Showdown: Management of 4-part Humeral Fractures, Friday, March 4, 8:00 – 9:00 AM Valencia Room B

Master of Ceremonies - William N. Levine, MD

#### Debaters:

Christopher S. Ahmad, MD	
Evan L. Flatow, MD	
Anthony A. Romeo, MD	
John W. Sperling, MD	

ORIF Non-operative Management Reverse TSA HHR

Learn the "whys" of what the experts do and benef t from the inside story – what each presenter wants you to know about a top-of-the-mind issue. Experts share their candid, personal points of view...*just the way the way they see it.* 

#### 🕬 🧹 The Way I See It...

The Way I See It...Healthcare, Tuesday, March 1 4:00 – 5:00 PM, Room W311A Master of Ceremonies – Douglas W. Lundy, MD

- 1. The Way I See It...Brandon D. Bushnell, MD, MBA *Bundled Payments*
- 2. The Way I See It ... Alexandra E. Page, MD, MBA Healthcare
- 3. The Way I See It...Hassan Mir, MD, MBA Obamacare

The Way I See It...Marketing Yourself, Wednesday, March 2 10:30 – 11:30 AM, Technology Theater (in Exhibit Hall) Master of Ceremonies – James R. Andrews, MD

- 1. The Way I See It...Howard Luks, MD How Social Media is Changing Healthcare
- 2. The Way I See It...Bill Champion Building Your Practice
- 3. The Way I See It...Roger Holstein Managing Your Online Reputation

#### The Way I See It... Team Physicians: Challenges of Sports Medicine, Thursday, March 3, 1:30 –2:30 PM, Room W311A Master of Ceremonies – Frederick M. Azar, MD

- 1. The Way I See It...Brian J. Cole, MD, MBA (*Chicago Bulls and Chicago White Sox*)
- 2. The Way I See It...James R. Andrews (Andrews Institute)
- 3. The Way I See It...Anthony Miniaci, MD (MLB, NFL, NHL)

#### The Way I See It...Orthopaedists Changing the Game Friday, March 4, 1:30 –3:30 PM, Valencia Room B Game Changers Paper Session will be presented 1:30 – 2:30 pm

- 1. The Way I See It ... L. Scott Levin, MD Hand Transplantation
- 2. The Way I See It...Brian J. Cole, MD, MBA Biologics, Stem Cells and PRP in OA and cartilage Disease
- 3. The Way I See It...Andrew D. Pearle, MD *Robotics in Orthopaedics*

#### **Symposium**

8:00 AM - 10:00 AM Valencia Room A

#### The Essentials for Creating Value in a Knee Arthroplasty Practice (A)



Moderator: Kevin J. Bozic, MD, MBA, Austin, TX

The United States healthcare system is evolving topromote and incentivize value over volume. This change requires providers who manage patients with knee conditions to modify their strategies for delivering care, and to develop new skill sets. Traducción simultánea en español. Tradução simultânea em português.

- I. **Reducing Readmissions** Robert L. Barrack, MD, Saint Louis, MO
- II. The Most Important Things That I Do To Avoid Infection Thomas K. Fehring, MD, Charlotte, NC
- III. Debate: I Do Not Use Injections in My Practice William L. Griff n, MD, Charlotte, NC
- IV. Avoiding the Most Common Complications in TKA--Infection and Instability Arlen D. Hanssen, MD, Rochester, MN
- V. Managing Risk--Population Health and Knee Arthritis William L. Healy, MD, Newton, MA
- VI. How Bundled Payment Works In My Practice Richard Iorio, MD, New Rochelle, NY
- VII. **Opportunities to Create Value** William A. Jiranek, MD, Richmond, VA
- VIII. **Outpatient Knee Surgery** Adolph V. Lombardi, MD, New Albany, OH
- IX. How I Balance the Primary Knee Steven J. MacDonald, MD, London, ON, Canada
- Х. Debate: The Evidence for HA, PRP, and Stem Cells in Knee Arthritis Giles R. Scuderi, MD, New York, NY
- XI. What is Value-Based Payment? Thomas P. Sculco, MD, New York, NY
- XII. Managing the Post-Discharge Expenses: SNF, HH Bryan D. Springer, MD, Charlotte, NC
- XIII. New Concepts Robert T. Trousdale, MD, Rochester, MN
- XIV. Can New Technology Improve Communication with Patients? Thomas P. Vail, MD, San Francisco, CA

#### **INSTRUCTIONAL COURSE LECTURE**

#### 8:00 AM — 9:00 AM



**Perspectives on Mentorship** Moderator: Steven L. Frick, MD, Orlando, FL

History, def nition, and description of the mentoring process are presented, emphasizing the importance of good mentorship to career and personal satisfaction. Specif c examples of successful and less successful approaches to mentoring are described.

#### **INSTRUCTIONAL COURSE LECTURE**

#### 8:00 AM - 10:00 AM

#### 101 Safe Adaptation of Anterior Total Hip Arthroplasty TICKET With and Without a Specialized Table Moderator: J. Bohannon Mason, MD, Charlotte, NC John L. Masonis, MD, Charlotte, NC Joseph T. Moskal, MD, Roanoke, VA Michael M. Nogler, MD, Innsbruck, Austria Room W204 Utilizes video and didactic material to introduce the audience to direct anterior total hip arthroplasty and outlines best practice strategies for adaptation including discussion of risks and pitfalls of the procedure. **102** Ensuring a Winner: The A, B, Cs of Primary TICKET

### **Total Knee Arthroplasty**



W203

Moderator: Michael E. Berend, MD, Indianapolis, IN Michael P. Bolognesi, MD, Durham, NC Jason M. Hurst, MD, New Albany, OH Raymond H. Kim, MD, Denver, CO

Offers information on patient selection, achievingreproducible limb alignment, balancing the varus and valgus knee, appropriate component sizing and positioning, and best cementing techniques. Interesting cases of primary total knee arthroplasty are presented.

#### 103 **Management of Complex Foot and Ankle Injuries** in the Athlete TICKET

Room W205A

Moderator: Robert B. Anderson, MD, Charlotte, NC

I. Chris Coetzee, MD, Edina, MN Kenneth Hunt, MD, Aurora, CO Kevin E. Varner, MD, Houston, TX

Treating foot and ankle injuries in the athlete requires an understanding of their unique mechanism, surgical options, and rehabilitation issues. These are addressed for stress fractures, ligament injuries, achilles/peroneal tendon disorders, and the syndemosis.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.



ASSH

Room

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N/EI

Room

W310

106

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Room

W307A

TICKET

#### Scaphoid Fractures and Nonunions: What's Hot, What's Not

Moderator: Dean G. Sotereanos, MD, Pittsburgh, PA Gregory I. Bain, MD, North Adelaide, Australia Joe Dias, MD, Leicester, United Kingdom Thomas G. Sommerkamp, MD, Crestview Hills, KY

**W205B** Covers current concepts for diagnosis and treatment of scaphoid fractures and nonunions, including arthroscopic percutaneous vascularized and nonvascularized techniques.

# 105 Skeletally Immature Anterior Cruciate Ligament: Immetrie Controversies and Management

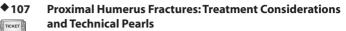
Moderator: Shital N. Parikh, MD, Cincinnati, OH Allen F. Anderson, MD, Nashville, TN Theodore J. Ganley, MD, Philadelphia, PA Mininder S. Kocher, MD, MPH, Boston, MA

Focuses on pearls and pitfalls of management of the immature anterior cruciate ligament (ACL). Videos of surgical technique help the audience with technical considerations during ACL reconstruction. Cases bring forward the pros and cons of each form of treatment.

#### Online Reputation Management

Moderator: Glenn B. Pfeffer, MD, Los Angeles, CA Basil R. Besh, MD, Fremont, CA Clay Calvert, JD, PhD, Gainesville, FL Roger C. Holstein, Denver, CO

Takes a unique perspective on how to work review these sites, and examines the importance of online reputation management from the point of view of the physician, hospital, and the largest online medical review company in the United States.



Moderator: James C. Krieg, MD, Philadelphia, PA Michael J. Gardner, MD, Saint Louis, MO Charles L. Getz, MD, Newton Square, PA Jay D. Keener, MD, Saint Louis, MO

Room W308A

Provides the attendee with step-by-step descriptions of each of four treatment techniques for fractures of the proximal humerus. Experts provide their technical pearls and pitfalls for open and mini-open plating, intramedullary nailing, hemiarthroplasty, and reversearthroplasty of the shoulder.

#### Infected Shoulder Arthroplasty: Diagnostic Dilemmas, Treatment Challenges, and Current Controversies



Room

W314

108

Moderator: Surena Namdari, MD, MSc, Philadelphia, PA Mark A. Frankle, MD, Temple Terrace, FL Jason Hsu, MD, Seattle, WA

Joseph P. Iannotti, MD, PhD, Cleveland, OH

All hot topics related to management of periprosthetic joint infection (PJI) in the shoulder are discussed. The course is divided into three sections: diagnostic challenges, spotlight on P. acnes, and surgical treatmentof PJI.

# ◆109 Avoiding and Managing Complications in Routine ☐ Lumbar Spine Surgery

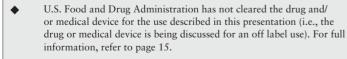
Room W307C Moderator: Joseph R. O'Brien, MD, Washington, Dist. of Columbia

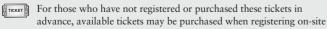
Alpesh A. Patel, MD, River Forest, IL Faisal A. Siddiqui, MD, Manassas, VA Harvey E. Smith, MD, Penn Valley, PA

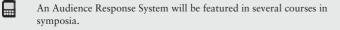
Focused on general spinal practice with discussion on prevention and management of complications.

59

The following symbols appear next to educational sessions and indicate one or more of the following:







Career Development - benef t everyone who would like to further ref ne or develop their presentation, research, education, teaching and Maintenance of Certif cation and marketing skills . These courses are free to registrants and a ticket is not required.

Case Presentations - Features a participant's round table with an expert faculty facilitator and an iPad for showing images and data from faculty selected cases. The moderator will present the case to the participants and the facilitator leads individual table discussion. The case is then discussed by all course participants' with individual tables showing their conclusions. The moderator will present the f nal solution using evidence-based data including teaching points with references to support the selected treatment. Four to f ve cases will be discussed during the highly interactive two hour session.



Technical Skills - Focused on positioning, approach, and step-by-step technical tips in an edited video followed by discussion on the pearls. The courses will feature four to f ve cases.



Symposia that are being Webcast, you can watch it live on your smart phone, laptop or tablet.

The Board of Specialty Societies logo next to an educational session indicates the session is co- branded with AAOS and that society.

#### 110 How to Reverse Reversomania: Arthroscopic Repair of **Massive Cuff Tears** TICKET

Moderator: John D. Kelly IV, MD, Newtown Square, PA Stephen S. Burkhart, MD, San Antonio, TX Laith M. Jazrawi, MD, New York, NY Miltiadis H. Zgonis, MD, Newtown Square, PA

Conveys the most recent techniques in managingmassive rotator cuff tears arthroscopically. The attendee appreciates the proposal that most massive tears are indeed repairable and that partial repair does truly serve a very useful purpose. The role of graft augmentation and superior capsule reconstruction are developed.

#### 111 TICKET

Room

W308C

112

Room

W304E

Room

W202

#### International Perspectives on the Masquelet Technique for the Treatment of Segmental Defects in Bone

Moderator: Laurent Obert, MD, Besancon, France Peter Giannoudis, MD, FRCS, Leeds, United Kingdom Alain C. Masquelet, MD, PhD, Paris, France Paul R. Stafford, MD, Tulsa, OK

The Masquelet technique implies a two-stage procedure. In the f rst stage, a polymethylmethacrylate (PMMA) block manages the dead space resulting from segmental bone defect and produces a bioactive membrane. In the secondstage, the PMMA spacer is removed and fresh cancellous bone autograft is placed into the defect with the bioactive membrane surrounding it. The membrane prevents graft resorption by promoting vascularization and corticalization.

#### **Surgical Exposure Trends and Controversies in Extremity Fracture Care** TICKET

Moderator: Stephen Kottmeier, MD, Stony Brook, NY Clifford B. Jones, MD, FACS, Grand Rapids, MI Dean Lorich, MD, New York, NY Paul Tornetta III, MD, Boston, MA

Half of this course is dedicated to upper extremity, and the second half to lower extremity contemporary plating techniques. Emphasis is directed to surgical access routes, trends, and controversies, as well as anatomic dissection, patient positioning, and preoperative planning. Indication, implant insertion, outcomes, and complications are deemphasized or omitted. Questions and answers and well-edited video dissections complete the course.

# Femoroacetabular Impingement: Current

Understanding of Pathomechanics, Disease Staging, **Relationship to Osteoarthritis, and Contemporary** Treatment

# Room

W207

181

TICKET

Moderator: Christopher L. Peters, MD, Salt Lake City, UT Paul E. Beaule, MD, Ottawa, ON, Canada

Martin Beck, MD, Luzern, Switzerland Asheesh Bedi, MD, Ann Arbor, MI J. W. Thomas Byrd, MD, Nashville, TN John C. Clohisy, MD, Saint Louis, MO Christopher M. Larson, MD, Edina, MN Michael Leunig, PhD, Zurich. Switzerland Klaus Siebenrock, MD, Bern, Switzerland Ernest L. Sink, MD, New York, NY Ira Zaltz, MD, Royal Oak, MI

Will succinctly present current experiential, clinical, and basic science information supporting the above concepts with the goal of improving knowledge of the disease process, and ref nement of patient selection and treatment. Specif c information regarding the relationshipbetween FAI and hip OA, the pathological mechanisms underlying FAI (from both an in-vivo and in-vitro perspective), unique approaches to disease staging, and contemporary treatment perspectives are presented by international experts in hip preservation surgery.

#### 182 TICKET

W208

#### **MRI-Arthroscopy Correlations of the Knee and** Shoulder: A Case-based Approach

Moderator: Stephen F. Brockmeier, MD, Charlottesville, VA Steven B. Cohen, MD, Media, PA F. Winston Gwathmey, MD, Charlottesville, VA Room Darren L. Johnson, MD, Lexington, KY Robert G. Marx, MD, New York, NY Eric C. McCarty, MD, Boulder, CO Mark D. Miller, MD, Charlottesville, VA Michael J. O'Brien, MD, New Orleans, LA Frank Petrigliano, MD, Santa Monica, CA Hollis Potter, MD, New York, NY James E. Voos, MD, Cleveland, OH

> In this brief introduction to MRI, a series of knee and shoulder cases are presented and discussed. MRI and arthroscopy correlation is emphasized.

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#### **INSTRUCTIONAL COURSE LECTURE**

#### 8:00 AM — 11:00 AM

 190
 CPT and ICD-10 Coding Fundamentals for

 Image: Image of the starting Your Practice
 Starting Your Practice

Moderator: Margaret Maley, BSN, MS, Chicago, IL

Room W224

By the end of the course residents can identify how ICD-10 diagnosis coding will impact your documentation for f ve common orthopaedic diagnoses; demonstrate how to use technology to f nd the correct ICD-10 diagnosis in real time; understand how relative value units (RVUs) may be used to calculate your reimbursement or bonus if you are an employed physician; know how procedures are discounted by payors and how arthroscopic procedures are discounted differently; describe how modif ers protect reimbursement; and understand what is included in the global surgical package. Join us for thiscomplimentary workshop that is so important to your career! Due to the nature of this course, it is limited to US residents only.

#### INSTRUCTIONAL COURSE LECTURE

#### 8:00 AM - 5:00 PM

- 199
   Practice Management Seminar for Practicing

   Image: Image of the second second
- Co-Moderators: Michael C. Albert, MD, Dayton, OH, John Cherf, MD, MPH, Chicago, IL Thomas F. Murray, Jr, MD, Portland, ME William R. Beach, MD, Richmond, VA Scott Becker, JD, CPA, Chicago, IL Bill Champion, Omaha, NE Kathleen L. DeBruhl, JD, New Orleans, LA Vicki Giambrone, MPA, FACHE, Dayton, OH Aimee Greeter, MPH, Charlotte, NC Max Reiboldt, CPA, Alpharetta, GA Steven F. Schutzer, MD, Hartford, CT Derek Theodor, MBA, Dayton, OH Adam Waytz, PhD, Evanston, IL

Provides up-to-date information about the state of orthopaedic practice, including business and technology trends, changes in regulations and laws, and best practices to manage an orthopaedic practice in today's environment. Learn from leading experts on value-based payment methodologies, transitioning practice models, the impact of the Affordable Care Act, and how to maximize patient satisfaction.

#### **Symposium**

10:30 AM — 12:30 PM Valencia Room A The Athletic Hip: From Impingement to Arthroplasty (B) Moderator: Christopher M. Larson, MD, Edina, MN

Provides a comprehensive and current, evidence-based discussion on the management of groin and hip pain in the active and athletic patient across generations. The complex decision-making process of hip preservation versus arthroplasty in the early degenerative hip also are considered, and technical considerations regardingapproach, bearing surfaces, and longevity of arthroplasty reviewed. Traducción simultánea en español. Tradução simultânea em português.

- I. Hip Arthroplasty and Athletes: Optimal Bearing Surfaces Paul E. Beaule, MD, Ottawa, ON, Canada
- II. FAI and Athletes: Arthroscopy Asheesh Bedi, MD, Ann Arbor, MI
- III. Sports Hernia / Athletic Pubalgia / Core Muscle Injury: What is it? Patrick M. Birmingham, MD, Winnetka, IL
- IV. Abductor Tears and Peritrochanteric Disorders J. W. Thomas Byrd, MD, Nashville, TN
- V. Dysplasia and Athletes: PAO John C. Clohisy, MD, Saint Louis, MO
- VI. Myotendinous Pelvic Injuries: Proximal Hamstring / Rectus / Adductor injuries Bryan T. Kelly, MD, New York, NY
- VII. Hip Arthroplasty and Athletes: What's the Best Surgical Approach Michael Leunig, PhD, Zurich, Switzerland
- VIII. Sports after Hip Arthroplasty: Recommendations and Risks? *Michael A. Mont, MD, Indianapolis, IN*
- IX. Prevalence of Hip Disorders in Athletes Shane J. Nho, MD, Chicago, IL
- X. The Degenerative Hip: Preservation vs Arthroplasty Christopher L. Peters, MD, Salt Lake City, UT
- XI. FAI & Athletes: Surgical Dislocation Klaus Siebenrock, MD, Bern, Switzerland

#### **Symposium**

10:30 AM — 12:30 PM Valencia Room B

#### • Expanding the Role of Outpatient Surgery Centers to Include Total Joint Arthroplasty and Selective Spine Procedures (C)

Moderator: Adolph V. Lombardi, MD, New Albany, OH

Minimizing surgical trauma with minimally invasivesurgical approaches and multimodal pain managementhas allowed patients to mobilize quickly after total joint arthroplasties and spinal procedures and be safely discharged to home the same day.

- I. Yes, Patients Can Have a Total Hip or Total Knee and Go Home the Same Day *Keith R. Berend, MD, New Albany, OH*
- II. Why Has Partial Knee Arthroplasty Moved Almost Exclusively Into the Outpatient Surgery Setting? *Michael E. Berend, MD, Indianapolis, IN*
- III. Selecting the Proper Patient: Preoperative Education, Preoperative Physiotherapy, and Medical Optimization *Richard A. Berger, MD, Chicago, IL*
- IV. What's New in Anesthesia That Makes Outpatient Arthroplasty and Selective Spine Procedures Feasible? Craig J. Della Valle, MD, Chicago, IL
- V. Blood Management in the Outpatient Setting William G. Hamilton, MD, Alexandria, VA
- VI. Selective Anterior Cervical Fusions can be Performed in the Outpatient Surgery Setting *Milan B. Herceg, MD, Dublin, OH*
- VII. Discharge Protocols for Patients Undergoing Arthroplasty in the Outpatient Surgery Setting *William J. Hozack, MD, Philadelphia, PA*
- VIII. How to Manage the Total Shoulder Arthroplasty Patient in the Outpatient Surgery Arena Jason M. Hurst, MD, New Albany, OH
- IX. Patient Selection Criteria for Lumbar Fusion in the Outpatient Surgery Center Daniel S. Husted, MD, Stuart, FL
- X. Can the Surgeon Improve Postoperative Pain Management by Utilization of Local Inf Itration? *Michael J. Morris, MD, New Albany, OH*
- XI. Laminectomy / Discectomy Procedures Are Appropriate for the Outpatient Surgery Setting / Discharge Protocols for Patients Undergoing Spine Procedures in the Outpatient Surgery Setting Derek L. Snook, MD, Columbus, OH

#### **PAPER PRESENTATION**

8:00 AM — 10:00 AM Valencia Room D

#### Adult Reconstruction Hip I: Bearing Couple

Moderator(s): Jean-Claude Theis, FRACS, Dunedin, New Zealand David Mayman, MD, New York, NY, Arthur Malkani, MD, Louisville, KY

Paper 001

Paper 002

Paper 003

#### 8:00 AM

#### **13-Year Evaluation of Highly Cross-Linked Polyethylene Articulating with 28mm and 36mm Heads Using RSA** *Audrev Nebergall, Boston, MA*

Meridith E. Greene, Boston, MA Harry E. Rubash, MD, Boston, MA Orhun K. Muratoglu, PhD, Boston, MA Henrik Malchau, MD, Cambridge, MA Anders Troelsen, MD, PhD, Koege, Denmark Ola Rolfson, MD, PhD, Boston, MA

The RSA results show no change in femoral head penetration into or steady state wear of highly cross-linked polyethylene (HXLPE) liners with 28 or 36mm femoral heads over 13 years in vivo.

#### 8:06 AM

#### What is the Natural History of 'Asymptomatic' Pseudotumors in MoM THA? Minimum 4-Year MARS MRI Longitudinal Study

Dimitris Dimitriou, MD, Cambridge, MA Tsung-Yuan Tsai, PhD, Boston, MA Guoan Li, PhD, Boston, MA Andrew A. Freiberg, MD, Boston, MA Harry E. Rubash, MD, Boston, MA Young-Min Kwon, MD, PhD, Boston, MA

At minimum 4 years follow-up, the natural history of cystic pseudotumours on MARS MRI appears to be non-progressive in the majority of 'asymptomatic' MoM THA patients.

#### 8:12 AM

#### • Chromium Content in Periprosthetic Tissue is Strongly Associated with the Type of Tissue Response

Lari A. Lehtovirta, MB, Tampere, Finland Aleksi Reito, MD, PhD, Tampere, Finland Jyrki Parkkinen, MD, PhD, Tampere, Finland Jouko Vepsalainen, PhD, Kuopio, Finland Sirpa Peraniemi, PhD, Kuopio, Finland Antti Eskelinen, MD, PhD, Tampere, Finland

In the current study, periprosthetic chrome concentration was found to have signif cant correlation with the type of inf ammatory response in patients with failed metal-on-metal hip arthroplasties.

Discussion – 6 minutes

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

#### 8:24 AM

#### Paper 004

#### Medial Calcar Erosion and Synovial Thickness in Patients with Metal-on-Metal Hip Arthroplasty

Rami Madanat, MD, Helsinki, Finland Ola Rolfson, MD, PhD, Gothenburg, Sweden Gabrielle Donahue, BA, Boston, MA Daniel Hussey, BA, Boston, MA Hollis Potter, MD, New York, NY Robert Wallace, Stepney, Australia Orhun K. Muratoglu, PhD, Boston, MA Henrik Malchau, MD, Cambridge, MA

Medial calcar erosion is associated with synovial thickness in patients with metal-on-metal hip arthroplasty.

#### 8:30 AM

Paper 005

#### ALVAL Scores Do Not Correlate with Metal Ion Levels or Unreadable Synovial Fluid WBC Counts

Darren R. Plummer, MBA, Columbus, OH Paul H. Yi, MD, San Francisco, CA Joshua J. Jacobs, MD, Chicago, IL Robert M. Urban, Chicago, IL Mario Moric, MS, Chicago, IL Craig J. Della Valle, MD, Chicago, IL

The diagnosis of ALVAL remains challenging. Although serum metal ion levels are typically elevated in failed MOM bearings, higher levels do not appear to correlate with ALVAL grade.

#### 8:36 AM

Paper 006

#### Metal Ion Levels are not a Useful Test for Failed Metal-On-Metal Hip Implants: A Systematic Review and Meta-Analysis

Mark Pahuta, MD, Ottawa, ON, Canada Paul R. Kim, MD, Ottawa, ON, Canada Paul E. Beaule, MD, Ottawa, ON, Canada Jose M. Smolders, MD, Lent, Netherlands Job L. Van Susante, MD, PHD, Arnhem, Netherlands

We report a systematic review and meta- analysis of the screening and diagnostic value of metal ion testing for Adverse Reactions to Metal Debris (ARMDs)

Discussion – 6 minutes

#### 8:48 AM

#### Paper 007

#### • RCT Comparison After a Minimal Four-Year Follow Up of Vitamin E Doped Versus Conventional Polyethylene in THA

Caroline Scemama, Issy Les Moulineaux, France Philippe Anract, MD, Paris, France Valerie Dumaine, New York, NY Antoine Babinet, Paris, France Jean-Pierre Courpied, PhD, Paris, France Moussa Hamadouche, PhD, Paris, France

This randomized in vivo wear measurements of Vitamin E doped highly cross-linked polyethylene, found signif cant reduced when compared to conventional polyethylene, using the Martell system.

#### 8:54 AM

#### How Common is Trunnionosis in Metal-on-Polyethylene Total Hip Replacements?

Harry Hothi, BEng, MSc, Stanmore, United Kingdom Robert K. Whittaker, BS, Stanmore, United Kingdom Jayantilal M. Meswania, PhD, Stanmore, Middx, United Kingdom

Antti Eskelinen, MD, PhD, Tampere, Finland Daniel Kendoff, MD, Hamburg, Germany Christian Lausmann, Hamburg, Germany Gordon W. Blunn, MD, Middlesex, United Kingdom John Skinner, FRCS, London, United Kingdom Alister Hart, FRCS, London, United Kingdom

We found that MOP hips exhibited signif cantly less evidence of trunnionosis than equivalently sized MOM hips with less corrosion and material lost at the taper junction.

#### 9:00 AM

#### Does the Use of a Ceramic Head Eliminate the Risk of Trunnionosis?

Anna Di Laura, MSc, Ruislip, United Kindgom Robert K. Whittaker, BS, Stanmore, United Kingdom Harry Hothi, BEng, MSc, PhD, Stanmore, United Kingdom Jayantilal M. Meswania, PhD, Stanmore, Middx, United Kingdom

Young-Min Kwon, MD, PhD, Boston, MA Gordon W. Blunn, MD, Middlesex, United Kingdom John Skinner, FRCS, London, United Kingdom Alister Hart, FRCS, London, United Kingdom

Retrieved hips showed that ceramic heads do not eliminate, but dramatically reduce, the risk of trunnionosis in patients.

Discussion – 6 minutes

#### 9:12 AM

#### Highly Cross-Linked Polyethylene Provides Decreased Osteolysis and Reoperation at Minimum 10 Years Follow Up Paul F. Lachiewicz, MD, Chapel Hill, NC

Highly cross-linked polyethylene provided for a decreased frequency of reoperation and osteolysis compared to standard polyethylene at minimim 10 years follow-up time.

#### 9:18 AM

#### Are There Gender Differences in Wear with Ceramic on Highly Cross-Linked Polyethylene Hip Arthroplasty?

Jeffrey B. Stambough, MD, Saint Louis, MO Gail Pashos, St Charles, MO Jacob Haynes, MD, Saint Louis, MO John M. Martell, MD, Park Ridge, IL John C. Clohisy, MD, Saint Louis, MO

Ceramic-on-HXLPE THA affords improved wear properties at midterm follow-up in young patients, but a signif cant increased wear rate was detected in females with 32 vs. 28mm heads.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### Paper 008

Paper 009

Paper 010

Paper 011

63

#### 9:24 AM

#### Surface Analysis of Metal-on-Metal Hips Shows Rolling/Sliding Articulation at the Acetabular Bearing Rim

John H. Currier, MS, Hanover, NH Michael B. Mayor, MD, Lebanon, NH Rayna Levine, BA, Hanover, NH Lindsay A. Holdcroft, BA, Hanover, NH Barbara H. Currier, MChE, Hanover, NH Douglas Van Citters, PhD, Hanover, NH

Wear damage features on MoM bearings provide evidence of unlubricated rolling/sliding articulation in vivo that has negative implications for bearings that rely on synovial f uid lubrication.

#### Discussion – 6 minutes

#### 9:36 AM

Paper 013

Paper 012

**Poor Mid-Term Outcome with a Metal-On-Metal Total Hip Arthroplasty** *Michael J. Lim, MD, La Jolla, CA* 

Kace A. Ezzet, MD, La Jolla, CA Pamela A. Pulido, RN, BSN, La Jolla, CA

Mid-term outcome of a commercially available metal-on-metal total hip arthroplasty from a single manufacturer was 33% aseptic failure rate contrasted with 0% failure rate in control group at 5 years.

#### 9:42 AM

#### Paper 014

#### Wear of Highly Cross-Linked Polyethylene in Primary Total Hip Replacement

Stuart A. Callary, BS, Adelaide, Australia Lucian B. Solomon, MD, Hyde Park, Australia Oksana Holubowycz, PhD, MPH, Adelaide, Australia David G. Campbell, MD, Adelaide, Australia Donald Howie, MD, PhD, Adelaide, Australia

The wear of XLPE in 157 hips, within six different cohorts was measured using RSA. XLPE manufacturing method, articulation size and patient age did not affect XLPE wear between one and f ve years.

#### 9:48 AM

Discussion – 6 minutes

#### Paper 015

#### Comparison of 10-Year Follow-Up Wear between Annealed and Remelted Highly Cross-Linked Polyethylenes

Satoshi Hamai, MD, Fukuoka, Japan Yasuharu Nakashima, MD, Fukuoka, Japan Naohiko Mashima, Shitukawa, Toon, Japan Takuaki Yamamoto, MD, Fukuoka, Japan Tomomi Kamada, Ehime, Japan Goro Motomura, MD, Fukuoka, Japan Hiroshi Imai, PhD, Ehime, Japan Yukihide Iwamoto, MD, Fukuoka, Japan

The f ndings of this multicenter study document the equivalent PE wear in the annealed and remelted XLPEs at average follow-up periods of 10 years.

#### 9:56 AM

#### Comparing Complications of Metal-on-Metal Total Hip Arthroplasty with Other Hip Bearings

Lindsay T. Kleeman, MD, Durham, NC Thorsten M. Seyler, MD, PhD, Winston-Salem, NC Colin T. Penrose, BA, BS, Durham, NC Abiram Bala, BA, Durham, NC Samuel S. Wellman, MD, Durham, NC Michael P. Bolognesi, MD, Durham, NC

We use population-level data to show that corticosteroid injections within 3 months of primary total hip arthroplasty is associated with increased risk of infection within one year.

#### PAPER PRESENTATION

8:00 AM – 10:00 AM Room W414

#### Sports Medicine/Arthroscopy I: Basic Science

Moderator(s): Christian Lattermann, MD, Lexington, KY, James C. Dreese, MD, Lutharville, MD

#### 8:00 AM

### What is Platelet-Rich Plasma (PRP) Really Doing to Tendon Fibroblasts?

Joshua L. Hudgens, MD, Ann Arbor, MI Kristoffer Sugg, MD, Ann Arbor, MI Jonathan P. Gumucio, BS, Ann Arbor, MI Jeremy Grekin III, MS, Ann Arbor, MI Asheesh Bedi, MD, Ann Arbor, MI Christopher L. Mendias, PhD, ATC, Ann Arbor, MI

In tendon cell culture PRP induces the inf ammatory  $TNF\alpha$  pathway and activates genes related to cellular proliferation and tendon collagen remodeling, but not collagen synthesis.

#### 8:06 AM

#### Differences in Cellular Composition of Platelet-Rich Plasma from Commercial Separation Systems

Ryan Degen, FRCSC, MD, MSc, London, ON, Canada Johnathan Bernard, MD, MPH, Ashburn, VA Kristin S. Oliver, MD, MPH, Columbia, MO Joshua S. Dines, MD, New York, NY

This study provides a comparative analysis of the compositional differences of platelet rich plasma produced from different commercially available separation systems.

#### 8:12 AM

#### **Comparison of Cell Composition and Cytokine Kinetics According to Different Preparations of Platelet-Rich Plasmas** *Joo Han Oh, Seoul, Republic of Korea*

Young Hak Roh, Incheon, Republic of Korea

The cytokine content was not necessarily proportional to the cellular composition of the PRPs since a greater content have differences between the SS or DS method depending on the type of cytokine.

Discussion – 6 minutes

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

**PAPER 917** 

Paper 016

Paper 017

#### 8:24 AM

#### Paper 019

#### Chondrotoxicity of Liposomal Bupivacaine in Articular Chondrocytes: Preliminary Findings

Kenneth A. Shaw, DO, Grovetown, GA Peter C. Johnson, MD, Fort Gordon, GA Steven Zumbrun, PhD, Fort Gordon, GA Augustine Chuang, Fort Gordon, GA Craig D. Cameron, DO, Fort Gordon, GA

We assessed chondrocyte viability following exposure to liposomal bupivacaine, bupivacaine, or ropivacaine, f nding found that greater viability with liposomal bupivacaine after 1 hour of treatment.

#### 8:30 AM

Paper 020

Bone-Marrow Derived Human Mesenchymal Stem Cells in a Rodent Rotator Cuff Repair: Is Regenerative Healing Possible?

Ryan Degen, FRCSC, MD, London, ON, Canada Andrew Carbone, BS, New York, NY Camila Carballo, MSc, Rego Park, NY Jianchun Zong, PhD, New York, NY Amir H. Lebaschi, MD, New York, NY Lilly Ying, VBS, New York, NY Xiang-Hua Deng, MD, New York, NY Scott A. Rodeo, MD, New York, NY

We augmented an athymic rat rotator cuff repair with multipotent bone marrow derived human mesenchymal stem cells, identifying early improvements in biomechanical strength and histologic appearance.

#### 8:36 AM

#### Paper 021

#### • Recombinant Human Parathyroid Hormone Improves Early Load to Failure in a Rat Rotator Cuff Repair Model

Kyle Duchman, MD, Iowa City, IA Jessica Goetz, PhD, Iowa City, IA Andrew Amendola, Coralville, IA Allison Malandra, DVM, Coralville, IA Bastian Uribe-Echevarria, Iowa City, IA Joshua Barber, MD, Columbia, MO Carolyn Hettrich, MD, MPH, Iowa City, IA

Delayed administration of rhPTH beginning on postoeprative day seven signif cantly increased load to failure at 2 weeks postoperatively in a rat rotator cuff repair model.

#### Discussion – 6 minutes

#### 8:48 AM

#### Tranexamin Acid: A Possible Intra-Articular Use to Prevent Haemarthrosis?

Antongiulio Marmotti, MD, Torino, Italy Federico Dettoni, MD, Torino, Italy Davide E. Bonasia, MD, Torino, Italy Giuseppe Peretti, MD, Milan, Italy Matteo Bruzzone, MD, Torino, Italy Davide Blonna, MD, Rochester, MN Silvia Mattia, Torino, Italy Filippo Castoldi, MD, Torino, Italy Roberto Rossi, MD, Torino, Italy

The use of Tranexamin acid did not inf uence the chondrocyte behavior during cartilage explant culture; this is clinically relevant in order to validate the intra-articular TA administration.

#### 8:54 AM

### Understanding the Mechanics of Focal Chondral Defects in the Hip: A Framework to Advance Treatment Options

Brenden Klennert, Salt Lake City, UT Benjamin Ellis, Salt Lake City, UT Travis G. Maak, MD, Salt Lake City, UT Ashley L. Kapron, PhD, Salt Lake City, UT Tyler Kaiser, West Jordan, UT Jeffrey A. Weiss, Salt Lake Cty, UT

This subject-specif c f nite element modeling study demonstrates that chondral defects increase the stress and strain in the acetabular cartilage in a dysplastic hip.

#### 9:00 AM

#### In Vivo Evaluation of Ultra High Molecular Weight Polycaprolatone Scaffold for Engineered ACL Graft Natalie Leong, MD, Los Angeles, CA

Natalie Leong, MD, Los Angeles, CA Nima Kabir, MD, Los Angeles, CA Armin Arshi, BS, Los Angeles, CA Azadeh Nazemi, BS, Newport Beach, CA Ben Wu, PhD, DDS, Los Angeles, CA Frank Petrigliano, MD, Los Angeles, CA David R. McAllister, MD, Los Angeles, CA

This study describes the results of implantation of Ultra High Molecular Weight Polycaprolactone scaffolds in rat knees at 16 weeks postoperatively in terms of histology and mechanical testing.

Discussion – 6 minutes

Paper 022

Paper 023

#### 9:12 AM

#### Subchondral and Epiphyseal Bone Remodeling following Anterior Cruciate Ligament Rupture

Tristan Maerz, PhD, Royal Oak, MI Michael Kurdziel, MS, Royal Oak, MI Michael D. Newton, BS, Warren, MI Perry Altman, MD, Royal Oak, MI Kyle Anderson, MD, Southf eld, MI Howard Matthew, PhD, Detroit, MI Kevin C. Baker, PhD, Royal Oak, MI

Subchondral bone loss, increases in trabecular density and thickness, and decreases in trabecular number were observed in a non-invasive model of ACL rupture-induced post-traumatic osteoarthritis.

#### 9:18 AM

#### Paper 026

Paper 025

Adjustable Loop Anterior Cruciate Ligament Reconstruction Device: The Value of Retensioning and Knot Tying

Benjamin Noonan, MD, West Fargo, ND Joshua S. Dines, MD, New York, NY Answorth A. Allen, MD, New York, NY David W. Altchek, MD, New York, NY Asheesh Bedi, MD, Ann Arbor, MI

Combined retensioning and knot tying enhances the operating characteristics of an adjustable loop ACL suspensory f xation device.

#### 9:24 AM

#### Paper 027

Biomechanical Testing of Quadriceps versus Patellar Tendons: Is Quadriceps Tendon a Better Choice?

Leslie E. Schwindel, MD, Cincinnati, OH Farid Amirouche, MD, Chicago, IL Giovanni F. Solitro, PhD, Chicago, IL Mark R. Hutchinson, MD, Elmhurst, IL

Our results show further that the quadriceps tendon graft in ACL reconstruction provide better kinematics and less stress on the bone when completely healed.

Discussion – 6 minutes

#### 9:36 AM

#### Paper 028

Structural Properties of the Anterolateral Capsule and Iliotibial Band of Knee: Implication for Clinical Practice

Amir Ata Rahnemai Azar, MD, Pittsburgh, PA Robert M. Miller, MS, Pittsburgh, PA Daniel Guenther, MD, Pittsburgh, PA Freddie H. Fu, MD, Pittsburgh, PA Bryson P. Lesniak, MD, Pittsburgh, PA Volker Musahl, MD, Pittsburgh, PA Richard E. Debski, PhD, Pittsburgh, PA

The ITB is 3 times stiffer and has 50% higher ultimate load compared to the anterolateral capsule, questioning the value of this graft for extra-articular reconstruction in ACL injured knees.

#### 9:42 AM

#### Stem Cell Mobilization and Changes in Articular Cartilage Morphology following Anterior Cruciate Ligament Rupture

Tristan Maerz, PhD, Royal Oak, MI Michael Kurdziel, MS, Royal Oak, MI Michael D. Newton, BS, Warren, MI Perry Altman, MD, Royal Oak, MI Kyle Anderson, MD, Southf eld, MI Howard Matthew, PhD, Detroit, MI Kevin C. Baker, PhD, Royal Oak, MI

ACL rupture causes mobilization of mesenchymal stem cells into circulation and compartment-dependent changes in articular cartilage morphology in a preclinical model of post-traumatic osteoarthritis.

#### 9:48 AM

#### ◆ Fibrosis Following Skeletal Muscle Laceration, After Use of Losartan, Hydrocortisone, and Acetylsalicylic Acid Otavio Melo Silva Jr, MD, MSc, Nova Lima, Brazil

The healing of skeletal muscle produced less f brous scar tissue when exposed to losartan, than when compared to the control group or the use of hydrocortisone.

Discussion – 6 minutes

#### PAPER PRESENTATION

8:00 AM – 10:00 AM W304A

#### Trauma I: Ankle, Distal Tibia

Moderator(s): Henry M. Broekhuyse, MD, Vancouver, BC, Canada, Patrick Yoon, MD, Minneapolis, MN

#### 8:00 AM

#### Surgical versus Nonsurgical Treatment of Displaced Ankle Fractures in Diabetics

Andrew Lovy, MD, New York, NY James E. Dowdell III, MD, New York, NY Aakash Keswani, BA, New York, NY Steven Koehler, MD, New York, NY Jaehon M. Kim, MD, New York, NY Steven B. Weinfeld, MD, New York, NY David Joseph, MD, Brooklyn, NY

Nonoperative treatment of displaced diabetic ankle fractures is associated with unacceptably high complication rates compared to operative treatment.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 029

Paper 030

#### 8:06 AM

#### Paper 032

# Low Energy Open Ankle Fractures in the Elderly: Outcome and Treatment Algorithm

Asanka Wijendra, MBBS, Middlesex, United Kingdom Rupali Alwe, MSc, PT, Oxford, United Kingdom George A. Grammatopoulos, MRCS, Oxford, United Kingdom Michael Lamyman, Oxford, United Kingdom Gregoris Kambouroglou, MD, London, United Kingdom

Low energy fractures in the elderly (n=62) are associated with a 3-month mortality rate of 15%, complication rate of 23% and a mean Enneking functional outcome score of 35.7 out of 40.

#### 8:12 AM

#### Paper 033

# Combined Randomized and Observational Study of Surgery for Type B Ankle Fracture Treatment (CROSSBAT)

Rajat Mittal, MBBS, MS, Oatlands, NS, Australia Ian Harris, MBBS, FRACS, Caringbah, Australia Sam Adie, MBBS, Liverpool, Australia Justine M. Naylor, PhD, Liverpool, Australia

Surgical management is not superior to non-surgical management for the treatment of isolated minimally displaced Type B ankle fractures.

Discussion – 6 minutes

#### 8:24 AM

Paper 034

Paper 035

#### Postoperative Complications In 32307 Ankle Fractures With Or Without Ankle Arthroscopic Procedures

Youichi Yasui, MD, Tokyo, Japan Christopher D. Murawski, Pittsburgh, PA Christopher J. Egan, PA-C, Dix Hills, NY Alberto Marangon, Lazise, Italy Ethan J. Fraser, New York, NY Ichiro Tonogai, MD, PhD, New York, NY John G. Kennedy, MD, New York, NY

The current analysis revealed that more invasive re-operations were performed in the case received with ankle f xation alone.

#### 8:30 AM

### Weight Bearing After Open Reduction and Internal Fixation of Ankle Fractures

Fernando A Pena, MD, Minneapolis, MN Jordan Hauschild, Farmington, MN Megan T. Reams, OTR/L, Bloomington, MN

In patients with a normal sensory exam, it is safe to allow weight bearing as tolerated after undergoing open reduction internal f xation of an ankle fracture regardless of the fracture pattern.

#### 8:36 AM

#### Loading and Ambulatory Behavior of Lower Extremity Fracture Patients

Ami Stuart, Park City, UT, Park City, UT Matthew P. Ackerman, MSc, Salt Lake City, UT Arad Lajevardi-Khosh, Salt Lake City, UT Robert W. Hitchcock, Salt Lake City, UT Erik Kubiak, MD, Salt Lake Cty, UT

An inexpensive, convenient, continuously recording insole sensor for monitoring limb loading has provided data that shows our ability to record the data required to develop limb loading curves

Discussion – 6 minutes

#### 8:48 AM

#### Medial Clamp Tine Positioning Affects Syndesmosis Malreduction

Christopher T. Cosgrove, MD, Saint Louis, MO Steven M. Cherney, MD, Saint Louis, MO Christopher McAndrew, MD, Saint Louis, MO William M. Ricci, MD, Saint Louis, MO Michael J. Gardner, MD, Saint Louis, MO

This study describes a technique for syndesmotic reduction clamp positioning, using a true talar dome lateral f uoroscopy view. It provides surgeons objective guidelines to optimize reduction quality.

#### 8:54 AM

#### Intraoperative Computed Tomography versus Fluoroscopy in Syndesmosis Repair: A Retrospective Series

Scott A. Mitchell, Westwood, KS Archie A. Heddings, MD, Kansas City, KS

Surgical repair of syndesmosis injuries continues to have a high malreduction and reoperation rate. Intraoperative CT imaging may help identify malreductions previously missed on f uoroscopy.

#### 9:00 AM

#### The Trans-Syndesmotic Axis and Intraoperative Fluoroscopic Imaging Guide Anatomic Syndesmotic Reduction

Sara Putnam, MD, Saint Louis, MO Michael S. Linn, MD, Dix Hills, NY Christopher McAndrew, MD, Saint Louis, MO William M. Ricci, MD, St Louis, MO Michael J. Gardner, MD, Saint Louis, MO

Reduction clamp placement along the trans-syndesmotic axis has a predictable appearance on lateral ankle imaging that can guide anatomic clamp positioning during syndesmotic reduction.

Discussion – 6 minutes

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Paper 036

Paper 037

#### 9:12 AM

#### Suprapatellar Intramedullary Nail Technique Improves Rate of **Malalignment of Distal Tibia Fractures**

Frank Avilucea, MD, Salt Lake City, UT Konstantinos Triantaf llou, MD, Memphis, TN Paul S. Whiting, MD, Nashville, TN Edward Perez, MD, Memphis, TN Hassan R. Mir, MD, MBA, Nashville, TN

The suprapatellar IMN technique results in lower rates of malalignment following surgical treatment of distal tibia fractures compared to infrapatellar IMN insertion.

#### 9:18 AM

Paper 041

Paper 043

Paper 040

Minimizing Knee Discomfort Following IM Nailing of the Tibia by Using a Semi-Extended Approach: A Multi Center RCT

Alan J. Johnstone, MD, Aberdeen, United Kingdom

Minimising anterior knee discomfort following IM nailing of the tibia by using a semi-extended approach: a multi centre RCT

#### 9:24 AM

#### Paper 042 **Proper Distal Placement of Tibial Nail Improves Rate of Malalignment for Distal Tibia Fractures**

Konstantinos Triantaf llou, MD, Memphis, TN Eric A. Barcak, DO, Fort Worth, TX Arturo D. Villarreal, MD, Memphis, TN Cory A. Collinge, MD, Fort Worth, TX Edward Perez, MD, Memphis, TN

Proper placement of intramedullary nail just lateral to center of talus when treating distal tibial fractures improves rate of malalignment.

Discussion – 6 minutes

#### 9:36 AM

#### **Posterior Pilon Fracture, More Common Than Previously** Thought

Christian Bastias, MD, Santiago, Chile Felipe A. Chaparro, MD, Santiago, Chile Ximena Ahumada, Santiago, Chile Christian Urbina, MD, Santiago, Chile Leonardo A. Lagos, MD, Santiago De Chile, Chile Mauricio Parra, Santiago, Chile Fernando Vargas, MD, Santiago, Chile Felipe J. Pino, MD, Santiago, Chile

Posterior pilon is more common than previously described, high awareness must be had. Posteromedial approach is a good option in these fractures. Syndesmotic instability after f xation is prevalent.

#### 9:42 AM

#### Energy Absorbed in Fracturing is Similar in Tibial Plateau and **Pilon Fractures Over a Full Spectrum of Severity**

Kevin Dibbern, BS, Iowa City, IA Donald D. Anderson, PhD, Iowa City, IA Laurence Kempton, MD, Indianapolis, IN Saam Morshed, MD, Berkelev, CA Thomas F. Higgins, MD, Salt Lake City, UT Todd O. McKinley, MD, Indianapolis, IN John L. Marsh, MD, Iowa City, IA

Tibial plateau and pilon fractures are created over similar ranges of fracture energy.

#### 9:48 AM

Paper 045

Paper 046

Paper 044

#### **CT Scan Assessment of Peroneal Tendon Displacement and Posteromedial Structure Entrapment in Pilon Fractures**

Samuel R. Huntley, BS, Miami Beach, FL Alex Fokin, MD, San Diego, CA Spencer Summers, BA, Miami, FL Charles M. Lawrie, MD, Miami, FL Alberto Caban-Martinez, MPH, PhD, Miami, FL Steven D. Steinlauf, MD, Weston, FL

CT scans of 200 pilon fractures were reviewed to determine 1) the prevalence of peroneal tendon displacement, and 2) proportions of missed diagnosis on preoperative CT scan by radiologists.

Discussion – 6 minutes

#### PAPER PRESENTATION

#### 8:00 AM - 10:00 AM **ROOM W315**

#### Spine I: Cervical – Trauma, Deformity

Moderator(s): Sanford E. Emery, MD, MBA, Morgantown, WV, Patrick J. Cahill, MD, Philadelphia, PA

#### 8:00 AM

**Drivers of Cost for Anterior Cervical Discectomy and Fusion for Cervical Degenerative Disease** 

Silky Chotai, Nashville, TN Harrison F. Kay, BS, Nashville, TN Ahilan Sivaganesan, MD, Nashville, TN Scott L. Parker, MD, Nashville, TN Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

Payment bundling following elective ACDF should account for diabetes, length of surgery, need for inpatient hospital stay, and readmission within 90-days as potential drivers of increased cost.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

#### 8:06 AM

#### **Risk Factors for Cerebrospinal Fluid Leak Following Anterior Cervical Discectomy and Fusion**

Bhaveen H. Kapadia, MD, Indianapolis, IN Samuel I. Decker, BA, Brooklyn, NY Matthew R. Boylan, Brooklyn, NY Fred Xavier, MD, Brooklvn, NY Carl B. Paulino, MD, Brooklyn, NY

Increased age and black race are absolute and obesity and hypertension are modif able risk factors of CSF leak. Length of stay and cost of admission were higher in patients who experienced CSF leak.

#### 8:12 AM

Paper 048

Paper 047

#### **Diabetes as a Predictor for Extended Hospital Stay and Complications in Surgical CSM Patients**

Nancy Worley, MS, New York, NY Cyrus Jalai, BA, New York, NY Shaleen Vira, MD, Silver Spring, MD Shenglin Wang, MD, Beijing, China Thomas J. Errico, MD, New York, NY Michael C. Gerling, MD, Manhattan, NY Peter G. Passias, MD, Westbury, NY

Diabetes (33% insulin-dependent) was detected in 19% of surgical CSM patients, and was asosciated with extended LOS (43% of cases) and complications (12.6% developed  $\geq 1$ complication).

Discussion – 6 minutes

#### 8:24 AM

#### Paper 049 **Stand-Alone Cage versus Anterior Plating for Anterior Cervical Discectomy and Fusion**

Ehsan Tabaraee, MD, Walnut Creek, CA Junyoung Ahn, BS, Chicago, IL Daniel D. Bohl, MD, MPH, Chicago, IL Michael Collins, BS, Park Ridge, IL Khaled Aboushaala, MD, MS, Oak Park, IL Kern Singh, MD, Chicago, IL

Peri-operative outcomes, complications, re-operation rates, narcotics consumption, and total costs may be similar with use of a plate versus use of a stand alone construct.

#### 8:30 AM

#### Stratif ed In-Hospital Costs of Elderly Odontoid Fractures by **Treatment Modality**

Abdul-Kareem Ahmed, BS, MS, Wakef eld, RI John M. Depasse, MD, Providence, RI Charles A. Adams, FACS, MD, Providence, RI Mark A. Palumbo, MD, East Greenwich, RI Alan H. Daniels, MD, Providence, RI

In this retrospective study we determine that operative intervention and halo-vest immobilization for elderly odontoid fractures are associated with longer length of stay and higher inhospital costs.

#### 8:36 AM

#### Predicting Postoperative C5 Palsy Using Measures of Sagittal **Balance, Foraminal Stenosis, and Spinal Cord Rotation**

Paper 051

Paper 052

Paper 053

Paper 054

Arunit J. Chugh, Cleveland Heights, OH Douglas S. Weinberg, MD, Cleveland, OH Jason D. Eubanks, MD, Waite Hill, OH

Compared with sagittal balance and foraminal stenosis, cord rotation was the only variable to show signif cance in predicting postoperative C5 palsy, as evidenced by multiple statistical analyses.

Discussion – 6 minutes

#### 8:48 AM

#### Focal and Dynamic Cervical Alignment Correlates with Health-**Related Quality of Life in Cervical Deformity Patients**

Renaud Lafage, New York, NY Virginie Lafage, PhD, New York, NY Themistocles S. Protopsaltis, MD, Closter, NJ Robert A. Hart, MD, Portland, OR Eric O. Klineberg, MD, Dvais, CA Justin S. Smith, MD, Charlottesville, VA Brian J. Neuman, MD, Indianapolis, IN Christopher Ames, MD, San Francisco, CA International Spine Study Group, Brighton, CO

Focal alignment parameters such as the maximum kyphosis and dynamic parameters such as the kinematic area were more correlated with patient reported outcome than regional parameters.

#### 8:54 AM

#### A Novel Index for Quantifying the Surgical Risk for Patients with **Cervical Spine Disorders**

Peter G. Passias, MD, Westbury, NY Bryan J. Marascalchi, MD, New York, NY Bassel Diebo, MD, New York City, NY Nancy Worley, MS, New York, NY Cyrus Jalai, BA, New York, NY Virginie Lafage, PhD, New York, NY

An index to quantify the risk for cervical surgical intervention was proposed using baseline comorbidities and procedure-related complications, to evaluate morbidity and mortality.

#### 9:00 AM

Paper 050

#### The Fracture Healing Rate of Type II Odontoid Fracture Treated with Posterior Atlantoaxial Screw-Rod Fixation

Dageng Huang, MD, Xi'An, China DingJun Hao, Shanghai China

To investigate the healing rate of type odontoid fracture treated with posterior atlantoaxial screw-rod f xation by CT image.

Discussion – 6 minutes

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 9:12 AM

Paper 055

#### Prospective Multicenter Assessment of Early Complication Rates Associated with ACD Surgery in 78 Patients

Justin S. Smith, MD, Charlottesville, VA Virginie Lafage, PhD, New York, NY Christopher I. Shaffrey, MD, Charlottesville, VA Themistocles S. Protopsaltis, MD, New York, NY Peter G. Passias, MD, Westbury, NY Eric O. Klineberg, MD, Sacramento, CA K Daniel Riew, MD, Saint Louis, MO Christopher Ames, MD, San Francisco, CA International Spine Study Group, Brighton, CO

Surgery for ACD is associated with high early complication rates. Complications maybe be major or minor. Surgical approach and number of levels fused are associated with complication rates.

#### 9:18 AM

#### Length of Stay and 30-Day Readmission Predictors in CSM Patients: Analysis of 3,057 ACS-NSQIP Patients

Peter G. Passias, MD, Westbury, NY Cyrus Jalai, BA, New York, NY Nancy Worley, MS, New York, NY Shaleen Vira, MD, Silver Spring, MD Michael C. Gerling, MD, Manhattan, NY Virginie Lafage, PhD, New York, NY Thomas J. Errico, MD, New York, NY

Pre-operative comorbidities (such as diabetes, increased ASA class) and surgical factors (operative time) are associated with extended LOS, hospital readmission, and re-operation in CSM patients

#### 9:24 AM

#### Paper 057

Paper 056

**Complications of Iliac Crest Bone Graft in Cervical Spine Surgery** 

Michael L. Golden III, MD, Chapel Hill, NC Steven Leckie, MD, Duxbury, MA John G. Heller, MD, Atlanta, GA

Patients who had a posterior iliac crest bone graft for posterior cervical fusion showed no difference in back pain or disability when compared to a similar group of laminoplasty patients.

Discussion – 6 minutes

#### 9:36 AM

#### Predictors of Upper Body Post-Operative Pain/Disability in Surgical Cervical Radiculopathic Patients

Paper 058

Paper 059

Paper 060

Peter G. Passias, MD, Westbury, NY Kris Radcliff, M.D., Egg Hbr Twp, NJ Robert E. Isaacs, MD, Durham, NC Kristina Bianco, New York, NY Cyrus Jalai, BA, New York, NY Paul M. Arnold, MD, FACS, Kansas City, KS Patrick C. Hsieh, MD, MSc, Los Angeles, CA Alexander Vaccaro, MD, PhD, Philadelphia, PA

Baseline factors, symptom localization, and HRQoL scores were associated with post-op pain and disability improvement. Baseline arm>neck pain and older age had greatest impact on patient improvement.

#### 9:42 AM

#### Is it Necessary to Extend a Multilevel Posterior Cervical Decompression and Fusion to the Upper Thoracic Spine?

Gregory D. Schroeder, MD, Philadelphia, PA Christopher Kepler, MD, Philadelphia, PA Mark F. Kurd, MD, Bryn Mawr, PA Kristen E. Radcliff, MD, Egg Hbr Twp, NJ Loren B. Mead, BA, Philadelphia, PA Jeffrey A. Rihn, MD, Media, PA D Greg Anderson, MD, Moorestown, NJ Alan S. Hilibrand, MD, Philadelphia, PA Alexander Vaccaro, MD, PhD, Gladwyne, PA

Stopping a posterior cervical fusion at the C7 does not lead to an increase risk of early revision, and it does not affect the ability to restore sagittal alignment

#### 9:48 AM

#### Anterior Cervical Spine Surgery, Dysphagia, and Steroids: A Randomized, Prospective, Blinded Study

Sanford E. Emery, MD, MBA, Morgantown, WV John C. France, MD, Morgantown, WV Scott D. Daffner, MD, Morgantown, WV Gerald Hobbs, PhD, Morgantown, WV

Perioperative intravenous steroids can reduce dysphagia symptoms following anterior cervical operative procedures.

Discussion – 6 minutes

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### **INSTRUCTIONAL COURSE LECTURE**

#### 9:30 AM - 10:30 AM



Room

Principles of Orthopaedic Leadership: Local, Regional, National

Moderator: Aaron G. Rosenberg, FACS, MD, Chicago, IL Daniel J. Berry, MD, Rochester, MN W209B John L. Marsh, MD, Iowa City, IA Joseph D. Zuckerman, MD, New York, NY

> Designed to help you implement your leadership skills at the local, regional, and national levels. Specif cs of successful leadership arediscussed.

#### **INSTRUCTIONAL COURSE LECTURE**

#### 10:30 AM - 12:30 PM

#### 121 **Practical Techniques for Revision Total Hip Arthroplasty**

Moderator: George J. Haidukewych, MD, Orlando, FL TICKET Thomas L. Bernasek, MD, Tampa, FL Room Richard F. Kyle, MD, Minneapolis, MN W205B Frank A. Liporace, MD, Englewood Cliffs, NJ

> This video-rich course focuses on specif c tips and tricks from the experts on common, practical techniques useful during revision total hip arthroplasty. Videos supplement short, key point slide presentations. Case-based discussion with audience response system highlights key points of exposure, implant removal, and reconstructionstrategies.

#### 122 The Fab Five of the Foot and Ankle



Moderator: Mark J. Berkowitz, MD, Cleveland, OH Michael P. Clare, MD, Bradenton, FL Mark C. Drakos, MD, New York, NY James J. Sferra, MD, Pittsburgh, PA

Tips and techniques for the surgical treatment of Lisfranc injuries, hallux rigidus, 5th metatarsal fractures, ankle instability, and insertional Achilles tendinopathy are presented.



#### Qué podemos aprender de las Prácticas de reemplazo de cadera y rodilla en Estados Unidos? (presentado en español) / Lessons Learned from US Hip and Knee Room Practice (presented in Spanish) W308A

Moderator: Rafael J. Sierra, MD, Rochester, MN Miguel E. Cabanela, MD, Rochester, MN Claudio Diaz, MD, Santiago, Chile Carlos J. Lavernia, MD, Coral Gables, FL Juan Lopez, MD, Bogata, Colombia Fabio Orozco, MD, Linwood, NJ Camilo Restrepo, MD, Philadelphia, PA

Este curso instruccional en espa??ol tiene comoobjectivo compartir con el auditorio la experiencia de cirujanos de cadera y rodilla que trabajan en Estados Unidos

con el f n de mejorar las pr??ctica quir??rgica en otros paises de habla hispana. (Intended for Spanish speaking international attendees. The aim of the courseis to share US total hip arthroplasty (THA) and total knee arthroplasty (TKA) practice experiences with the audience in order to improve THA and TKA care in other countries.)

#### 124 Management of the Mangled Upper Extremity



Moderator: Benjamin K. Potter. MD. Bethesda, MD George P. Nanos, MD, Rockville, MD Leon Nesti, MD, PhD, Crownsville, MD



Room

W310

Peter C. Rhee, MD. San Antonio, TX

Salient points regarding both limb salvage and amputation following severe upper extremity trauma are discussed. Illustrative cases emphasize recent advances in reconstructive and amputation surgery as well as prosthetic improvements.

#### 125 **Limb Deformity Evaluation and Principles**



Room

Moderator: Jenny Frances, MD, New York, NY David S. Feldman, MD, New York, NY Christopher A. Iobst, MD, Winter Park, FL Sanjeev Sabharwal, MD, Chatham, NJ

Reviews the basic and more complex principles inevaluation and treatment of lower extremity W308C deformities, applicable to both adult and pediatric deformity correction.

#### 126 **Stress Management and Balance for the Orthopaedic** TICKET Surgeon



Moderator: John D. Kelly IV, MD, Newtown Square, PA Eric C. McCarty, MD, Boulder, CO Claude T. Moorman III, MD, Durham, NC Denver T. Stanf eld, MD, Cincinnati, OH

Room W205A

Orthopaedic surgeons work hard and stress cancompromise performance. We address managing timeand stress, life balance, maintaining happy families, and issues unique to the female orthopaedic surgeon.



W204

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### **Proximal Humerus Fractures: Current Treatment Options, Pearls, and Pitfalls**

Moderator: O. Alton Barron, MD, New York, NY Louis W. Catalano III, MD, New York, NY Bradford O. Parsons, MD, New York, NY Thomas (Quin) Throckmorton, MD, Germantown, TN

Provide thorough review of literaturesupportedtreatment options; compare and contrast differenttechniques that are applicable to a given fracture pattern; review the basic techniques with pearls and pitfalls in an effort to minimize intraoperative and postoperative complications; and present case examples to further elucidate the teaching points covered by each speaker.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

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Room

Room

W304E

#### Shoulder Arthroplasty: Key Steps to Improve Outcomes and Minimize Complications

Moderator: John W. Sperling, MD, MBA, Rochester, MN George S. Athwal, MD, London, ON, Canada Emilie V. Cheung, MD, Redwood City, CA Joaquin Sanchez-Sotelo, MD, Rochester, MN

Course faculty discuss challenges and the latest surgical advances in the treatment of osteoarthritis and cuff tear arthropathy, as well as the salvage of a failed arthroplasty. The course includes case-based discussions.

# ◆ 129 The Four Most Common Types of Cartilage Damage You Image Will See in Practice: How We Treat Them and Why

Moderator: Andreas H. Gomoll, MD, Chestnut Hill, MA Brian J. Cole, MD, MBA, Chicago, IL Jack Farr II, MD, Greenwood, IN

Christian Lattermann, MD, Lexington, KY

Course faculty discuss cartilage disease based oncommon real-life patient presentations, includingosteochondritis dissecans, patellofemoral pain,postmeniscectomy pain, and incidental defects found during arthroscopy. They focus on patient selection and indications, leaving ample time for discussion.

#### 130 Elbow Arthritis in the Young Athlete

Moderator: Laith M. Jazrawi, MD, New York, NY Christopher S. Ahmad, MD, New York, NY E. Lyle Cain Jr, MD, Birmingham, AL Mandeep Virk, MD, Brookf eld, IL

Reviews the elbow injuries of the throwing athlete and those that are associated with long-term osteoarthritis (OA). We discuss surgical technique and ways to lower the risk of OA after surgery in an athlete.

### 131 Proper Usage and Understanding of Antibiotics in the Treatment of Musculoskeletal Infections

Moderator: David W. Lowenberg, MD, Redwood City, CA Douglas R. Osmon, MD, Rochester, MN Javad Parvizi, MD, FRCS, Philadelphia, PA

Knowledge of how microbes gain a foothold and thenevade common modes of treatment in the host arecovered. The proper usage of antibiotics as well as their role and limitations in treatment of these infections are def ned, including implant related factors in infection.

#### Periarticular Fractures of the Tibia: The Case for Going Prone

Moderator: Lisa K. Cannada, MD, Saint Louis, MO Timothy S. Achor, MD, Bellaire, TX Jeffrey Anglen, MD, FACS, Indianapolis, IN Cory A. Collinge, MD, Fort Worth, TX Kenneth A. Egol, MD, New York, NY

Room W207

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TICKET

Clifford B. Jones, MD, New York, NY Clifford B. Jones, MD, FACS, Grand Rapids, MI Stephen Kottmeier, MD, Stony Brook, NY Hassan R. Mir, MD, MBA, Nashville, TN Paul Tornetta III, MD, Boston, MA J. Tracy Watson, MD, Saint Louis, MO Judith Siegel, MD, Worcester, MA

Prone positioning in the operating room can be a hassle. In addition, the perception of more dangerous structures and less familiarity with the approach makes this plan less popular. By review of periarticular tibial fractures with cases, including surgical video, you leave this session eager to choose prone, when appropriate.

#### ◆184 Cervical Spine Smackdown: Ask the Experts



Moderator: Darrel S. Brodke, MD, Salt Lake City, UT Cedric Barrey, MD, PhD, Lyon, France Byung-wan Choi, MD, Busan, Republic of Korea Ken Ishii, MD, PhD, Tokyo, Japan Louis G. Jenis, MD, Boston, MA Thomas E. Mroz, MD, Cleveland, OH Themistocles S. Protopsaltis, MD, New York, NY K. Daniel Riew, MD, Saint Louis, MO

Room W208 Themistocles S. Protopsaltis, MD, New York, K. Daniel Riew, MD, Saint Louis, MO Rick C. Sasso, MD, Carmel, IN Kern Singh, MD, Chicago, IL Jeffrey C. Wang, MD, Sherman Oaks, CA

Cases presented and arguments made regardingtreatment, followed by "smackdown" by participants. Then, participant cases are shown and treatment debated in small groups.

Tuesday

Room

W314

#### **INSTRUCTIONAL COURSE LECTURE**

#### 12:30 PM - 5:00 PM

Room

W224

# 191 Practice Management Course for Residents and Image: The second second

Co-Moderators: Gail S. Chorney, MD, New York, NY, Charles A. Goldfarb, MD, St. Louis, MO Brent A. Ponce, MD, Birmingham, AL John Cherf, MD, MPH, Chicago, IL Erin Collins, Rosemont, IL Nicholas Colyvas, MD, Campbell, CA

John Corsetti, MD, Springf eld, MA Kathleen DeBruhl, JD, New Orleans, LA Ryan Dopirak, MD, Manitowoc, WI William J. Maloney, MD, Redwood City, CA

New topics this year! This information f lled session uses didactic lectures, demonstrations and panel discussions to provide the foundation for an effective transition from resident to practicing physician. This course provides two education tracks: Practice Management Essentials and Career Planning, including elements of practice management not covered in most residency/ fellowship programs. Topics covered in the course include vital practice management information necessary to succeed in practice, as well as sessions on job search tips and negotiating physician employment agreements to help residents locate a job. While all residents are welcome, the course is especially benef cial for fourthyear and f fth-year residents and fellows. PLEASE NOTE: This course focuses on issues uniquely relevant to the practice of orthopaedic surgery in the United States. For this reason, registration for this course is restricted to orthopaedic residents living in the United States.

#### PAPER PRESENTATION

#### 10:30 AM — 12:30 PM Valencia Room D

#### **Adult Reconstruction Knee I: Surgical Technique**

Moderator(s): Timothy J. Wilton, MD, Derby, United Kingdom, Thomas J. Blumenfeld, MD, Sacramento, CA

#### 10:30 AM

#### The Mid Sulcus Line is a Reliable Landmark for Tibial Resection During Total Knee Arthroplasty

David F. Dalury, MD, Indianapolis, IN Luke Aram, MS, Warsaw, IN Danielle M. Chapman, Towson, MD

A midsulcus line, a bi-planer and easily identif able landmark on the tibia is an accurate guide for placing both sagittal and coronal alignment for tibial preparation during TKA.

#### 10:36 AM

# Is Synovectomy Necessary in Total Knee Arthroplasty with Rheumatoid Arthritis?

Philippe Hernigou, PhD, Creteil, France Charles-henri H. Flouzat-lachaniette, MD, Créteil Cedex, France

Knees treated with complete synovectomy at the time of primary TKA had lower knee f exion and inferior KS pain scores, and more complications as compared with contralateral knees without synovectomy.

#### 10:42 AM

#### Raising the Joint Line in Total Knee Arthroplasty Causes Signif cant Mid-Flexion Instability

Thomas Luyckx, MD, PhD, Bertem, Belgium Hilde Vandenneucker, MD, Pellenberg-Lubbeek, Belgium Evie E. Vereecke, PhD, Kortrijk, Belgium Lennart Scheys, PhD, Pellenberg, Belgium Jan M. Victor, MD, Gent, Belgium

Raising the joint line in TKA caused signif cant mid-f exion instability despite an equal and well-balanced f exion and extension gap.

Discussion – 6 minutes

#### 10:54 AM

#### **Cement Fixation has Better Outcomes in Total Knee Arthroplasty**

Stephen Graves, MD, Adelaide, Australia Richard De Steiger, MD, Richmond, Australia Peter L. Lewis, MB, Adelaide, Australia David Davidson, MD, University Of Adelaide, Australia Michelle Lorimer, Adelaide, Australia Ann Tomkins, Adelaide, Australia

Cementing the tibial component improves the outcome for most TKA procedures and when using a PS knee cementing both the tibial and femoral components is associated with the lowest rate of revision.

#### 11:00 AM

Peri-Articular Morphine Injection in Simultaneous Bilateral Total Knee Arthroplasty

Kentaro Iwakiri, MD, Ikoma, Japan Akio Kobayashi, MD, Nara, Japan

In a prospective randomized controlled trial in patients undergoing simultaneous bilateral TKAs, adding morphine to the peri-articular injection on one side was not locally effective for pain relief.

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Paper 062

Paper 063

Paper 064

Paper 065

#### 11:06 AM

#### Area of Skin Numbness Following TKA: Does MIS Approach Make Any Difference from Standard Approach?

Aree Tanavalee, MD, Bangkok, Thailand Pathomporn Veerasethsiri, Ratchaburi, Thailand Arak Limtrakul, MD, Bangkok, Thailand Chavarin Amarase, Bangkok, Thailand Srihatach G. Ngarmukos, MD, Bangkok, Thailand

Skin numbness following MIS-TKA and STD-TKA was similar. Cadaveric study conf rmed no branch of IPBSN supplied above superior patellar pole.

Discussion – 6 minutes

#### 11:18 AM

#### Paper 067

Paper 066

#### Comparison of Stability and Clinical Outcomes in TKA between Cruciate Retaining and Ultra-Congruent Insert

Jong-Keun Seon, MD, Hwasungun, Republic of Korea Eun K. Song, MD, Hwasun-Gun, Jeollanam-Do, Republic of Korea

Youngjun Seol, Hwasun-Gun, Republic of Korea Seunghun Lee, Hwasun, Republic of Korea Hona-An Lim, MD, Gwangju, Republic of Korea Young-Joo Shin, MD, Gwangju, Republic of Korea

The posterior cruciate ligament resection using ultra-congruent insert in TKA showed better in-vivo anteroposterior stability wiht similar clinical outcomes compared with cruciate retaining design.

#### 11:24 AM

#### Paper 068

Paper 069

#### Prospective Comparative Study of TKA by Navigation and Conventional System after Nine-Year Follow Up

Eun K. Song, MD, Hwasun-Gun, Jeollanam-Do, Republic of Korea

Jong-Keun Seon, MD, Hwasungun, Republic of Korea Youngjun Seol, Hwasun-Gun, Republic of Korea Seunghun Lee, Hwasun, Republic of Korea

There was no concrete evidences whether small improvements of alignment by navigated TKA improve long term clinical outcomes or survivals or not.

#### 11:30 AM

#### No Improvement in Functional Outcomes with Kinematic Alignment in TKA - A Randomized Controlled Trial

Simon Young, MD, FRACS, Auckland, New Zealand Matthew L. Walker, MD, Auckland, New Zealand Ali Bayan, FRACS, Auckland, New Zealand Paul Pavlou, FRCS (Ortho), Bournemouth, United Kingdom Toby Briant-Evans, FRCS, Winchester, United Kingdom Bill Farrington, FRACS, FRCS (Ortho), MBBS, Albany, New Zealand

In this prospective, randomized controlled trial we were unable to demonstrate a functional advantage to kinematic versus mechanical alignment in TKA.

#### 11:42 AM

#### Patient Specif c Instruments in Total Knee Arthroplasty: A Randomized Controlled Trial with Two Years Follow Up

Chunhoi Yan, MB, Dr, Hong Kong, Hong Kong Peter K. Chiu, MD, Pokfulam, Hong Kong Fu Yuen Ng, MD, Hong Kong Sar, Hong Kong Ping Keung Chan, FRCS (Ortho), Hong Kong, Hong Kong Christian X. Fang, FRCS (Ortho), MBBS, Hong Kong, Hong Kong

In our randomized controlled study, PSI in TKA demonstrated no superiority in radiological or clinical outcomes than conventional method or computer navigation at 2 years.

#### 11:48 AM

Paper 071

Paper 072

Paper 073

# Patient-Specif c Instrumentation in TKA Does Not Show Better in Clinical Outcomes: Mid-term Results

Dong-Geun Kang, MD, Jinju, Republic of Korea Kang-Il Kim, MD, Seoul, Republic of Korea

The use of PSI in TKA did not lead to a better clinical outcome than conventional instrumentation, nor did it lead to signif cant improvement in the accuracy of limb alignment and component position.

#### 11:54 AM

#### Patient-Specif c Instrumentation in Total Knee Arthroplasty: A Meta-Analysis of Alignment and Outcomes

Richard Huijbregts, MD, PhD, Houten, Netherlands Riaz Khan, FRCS, Cottesloe, Australia Daniel P. Fick, MBBS, FRACS, Nedlands, Australia Emma Sorensen, MBBS, Geraldton, Australia Samantha Haebich, Scarborough, Australia

A meta-analysis of randomized controlled trials comparing radiographic alignment, surgical eff ciency and clinical outcomes after usage of patient-specif c instrumentation in total knee arthroplasty.

#### Discussion – 6 minutes

#### 12:06 PM

#### Patellar Component Failure Rates in Total Knee Arthroplasty: Inset vs. Onlay Techniques

Rami El-Shaar, MD, Rochester, NY Colin D. Canham, MD, Rochester, NY Benjamin Strong, MD, Rochester, NY Sandeep Soin, MD, Rochester, NY Allen D. Boyd Jr, MD, Cottonwood, AZ Christopher J. Drinkwater, MD, Rochester, NY

Structural failure of patellar components following TKA only occurred in three-peg onlay designs compared to inset designs. Elevated BMI and active lifestyles may be risk factors for failure.

Discussion – 6 minutes

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#### 12:12 PM

#### Thick or Thin? Patellar Thickness: The Inf uence on Motion and **Complications after Total Knee Arthroplasty**

William G. Hamilton, MD, Arlington, VA Debbie Ammeen, BS, Alexandria, VA Nitin Goyal, MD, Arlington, VA Kevin B. Fricka, MD, Alexandria, VA C Anderson Engh Jr, MD, Alexandria, VA Nancy L. Parks, Alexandria, VA Gerard A. Engh, MD, Arlington, VA

Patellar composite thickness or the relative change in thickness after total knee arthroplasty could not be associated with motion achieved, revision or extensor complications.

#### 12:18 PM

#### Frequency, and Radiographic and Clinical Features of Patella Instability in Kinematically Aligned TKA

Alexander J. Nedopil, MD, Sacramento, CA Stephen M. Howell, MD, Sacramento, CA Maury L. Hull, PhD, Davis, CA

Patella instability following KA TKA is infrequent. Avoiding f exion of the femoral component and designing the femoral component to accommodate KA might reduce patella instability.

Discussion – 6 minutes

#### **PAPER PRESENTATION**

10:30 AM - 12:30 PM Valencia Room D

#### **Shoulder & Elbow I: Treatment of Painful Shoulder Conditions** (The Biceps Tendon and Frozen Shoulder

Moderator(s): Robin R. Richards, MD, Toronto, ON, Canada, Julie Y. Bishop, MD, Columbus, OH

#### 10:30 AM

Paper 076

**Psychological Distress Inf uences Perceived Disability and Pain** in Patients Presenting to Shoulder Clinic

Mariano Menendez, MD, Boston, MA Dustin K. Baker, BS, Birmingham, AL Lasun O. Oladeji, MS, Chicago, IL Charles T. Fryberger III, BS, Birmingham, AL Gerald McGwin Jr, PhD, Birmingham, AL Brent A. Ponce, MD, Birmingham, AL

Psychological factors, including catastrophic thinking and pain self-eff cacy, inf uence perception of pain and disability in shoulder conditions to a greater extent than physical diagnosis alone.

#### 10:36 AM

Paper 074

Paper 075

#### Agreement between Patient Self-Assessment and Physician **Assessment of Shoulder Range of Motion**

Bastian Uribe-Echevarria, Iowa City, IA Youssef El Bitar, MD, Iowa City, IA Matthew J. Bollier, MD, Iowa City, IA Brian R. Wolf, MD, Iowa City, IA Carolyn Hettrich, MD, MPH, Iowa City, IA

Shoulder ROM has moderate to high level of agreement between patient-reported and physician performed measurements. This is time and cost-saving and can increase follow up.

#### 10:42 AM

#### Advanced Glycation End-Products (AGEs) in Idiopathic Frozen Shoulder

Kyu Rim Hwang, Hornsby, Australia Neal L. Millar, MD, Glasgow, United Kingdom Fiona Bonar, MBBCh MRCP1, Macquarie Park, Australia Patrick H. Lam, PhD, Sydney, Australia Judie Walton, PhD, Sydney, Australia George A. Murrell, MD, Kogarah, NS, Australia

The role of Advanced Glycation End-products in the pathogenesis of frozen shoulder.

Discussion – 6 minutes

#### 10:54 AM

#### Paper 079 Proper Site of Steroid Injection for the Treatment of Idiopathic **Frozen Shoulder: A Randomized Controlled Trial**

Chul-Hyun Cho, MD, PhD, Joongu, Republic of Korea Byung-Woo Min, MD, Daegu, Republic of Korea Ki-Cheor Bae, MD, Daegu, Republic of Korea Kyung-Jae Lee, MD, Daegu, Republic of Korea Sungyun Lee, Dae-Gu, Republic of Korea Donghu Kim, MD, Daegu,, Republic of Korea

The eff cacy of SA steroid injection in idiopathic FS was inferior to IA injection up to 12 weeks; however, combination injections had an additive effect on increasing internal rotation angle.

### 11:00 AM

#### **Surgical Treatment of Adhesive Capsulitis**

Daniel Huttman, MD, Washington, Dist. of Columbia Usman Ali M. Syed, BS, Philadelphia, PA Mark D. Lazarus, MD, Philadelphia, PA Joseph A. Abboud, MD, Bryn Mawr, PA

This study set out to determine the relative success of different adhesive capsulitis treatment options and compare the clinical outcomes

75

Paper 077

Paper 078

#### 11:06 AM

#### Arthroscopic Capsular Release versus Manipulation under Anesthesia in the Management of Adhesive Capsulitis

Walid S. Osman, MD, Cairo, Egypt John Elfar, MD, Rochester, NY Ahmed M. Saeed SR, DMed, Cairo, Egypt

Follow up results for arthroscopic release and manipulation in adhesive capsulitis nonresponsive to conservative treatment showed similar and substantial improvements in function and pain relief.

Discussion – 6 minutes

#### 11:18 AM

#### Paper 082

Paper 081

#### **Dynamometer Strength Testing Following Subpectoral Proximal Biceps Tenodesis with Cortical Button Fixation**

Adam Lipman, MD, Huntington, NY Steven Shamah, Brooklyn, NY Alan W. McGee, MD, New York, NY Maxwell Weinberg, MD, New York, NY Eric J. Strauss, MD, New York, NY Orrin H. Sherman, MD, New York, NY Andrew J. Feldman, MD, New York, NY Laith M. Jazrawi, MD, Brooklyn, NY

Subpectoral biceps tenodesis with cortical button f xation is an effective surgical treatment option to relieve pain and restore function and strength with proximal biceps pathology.

#### 11:24 AM

#### Paper 083 Subpectoral Biceps Tenodesis with Interference Screw: A **Biomechanical Analysis of Humeral Fracture Risk**

Christen R. Mellano, MD, Torrance, CA Jason Shin, MD, Saskatoon, SK, Canada Akshay Jain, Oak Brook, IL Elizabeth Shewman, MS, Chicago, IL Vincent Wang, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL Anthony A. Romeo, MD, Chicago, IL Nikhil N. Verma, MD, Chicago, IL Brian Forsythe, MD, Chicago, IL

The trends of load reduction exhibited in comparison to the intact group show that the combination of a PEEK tenodesis screw and a LHB tendon partially restores the load and energy to fracture.

#### 11:30 AM

#### Which Method is Better for Biecps Tenodesis? Prospective **Randomized Comparaive Study**

Jisoon Park, MD, Seoul, Republic of Korea Hojin Jung, Seoul, Republic of Korea Tae-Yon Rhie, MD, PhD, Seoul, Republic of Korea Sae Hoon Kim, MD, Seoul, Republic of Korea Joo Han Oh, Seoul, Republic of Korea Joo Han Oh, Seoul, Republic of Korea

Interference screw f xation seemed to have higher risk in terms of the anatomic failure of biceps tenodesis than suture anchor f xation even though functional outcome was not different.

#### Discussion – 6 minutes

#### 11:42 AM

#### Prospective Randomized Study of Arthroscopic Proximal vs. **Open Subpectoral Biceps Tenodesis: Is One Better?**

Reuben Gobezie, MD, Cleveland, OH Yousef Shishani, MD, Cleveland, OH Janice Flocken, MS, Solon, OH Ryan M. Carr, MD, Chicago, IL

Directly comparing arthroscopic proximal vs. open subpectoral biceps tenodesis using a prospective study, found no signif cant difference in functional outcomes or pain relief.

#### 11:48 AM

#### Long Head of Biceps Management: Prospective Cohort Study of **High Versus Subpectoral Tenodesis**

Francesco Franceschi, MD, Rome, Italy Edoardo Franceschetti, MD, Roma, Italy Alessio Palumbo, MD, Roma, Italy Biagio Zampogna, MD, Rome, Italy Michele Paciotti, MD, Avezzano, Italy Guglielmo Torre, MS, Roma, Italy Nicola Maffulli, MD, FRCS(Orth), London, United Kingdom Rocco Papalia, MD, PhD, Rome, Italy Vincenzo Denaro, MD Prof, Rome, Italy

The open subjectoral tenodesis is a is an easy and reproducible technique, leading to better clinical and cosmetic results when compared to the high arthroscopic tenodesis.

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Paper 084

Paper 085

#### 11:54 AM

#### Paper 087

Does the Release of Transverse Ligament Improve the Results of High Arthroscopic Tenodesis?

Francesco Franceschi, MD, Rome, Italy Edoardo Franceschetti, MD, Roma, Italy Alessio Palumbo, MD, Roma, Italy Biagio Zampogna, MD, Rome, Italy Michele Paciotti, MD, Avezzano, Italy Guglielmo Torre, MS, Roma, Italy Nicola Maffulli, MD, FRCS(Orth), London, United Kingdom Rocco Papalia, MD, PhD, Rome, Italy Vincenzo Denaro, MD Prof, Rome, Italy

The high arthroscopic tenodesis with release of transverse ligament lead to better clinical results when compared to the AHT.

Discussion – 6 minutes

#### 12:06 PM

#### Paper 088

Paper 089

#### • Liposomal Bupivacaine Versus Interscalene Nerve Block in Managing Pain After Shoulder Arthroplasty

Kelechi Okoroha, MD, Northville, MI Robert A. Keller, MD, Detroit, MI Jonathan Lynch, MD, Royal Oak, MI John Korona, BS, Farmington Hills, MI Brian K. Rill, MD, Sterling Heights, MI Patricia A. Kolowich, MD, Detroit, MI Stephanie J. Muh, MD, Birmingham, MI

Following a randomized clinical trial we found Liposomal Bupivacaine provides similar pain relief as Interscalene nerve block and is an effective alternative to manage pain post shoulder arthroplasty.

#### 12:12 PM

#### Randomized Controlled Trial of Interscalene Block vs. Injectable Liposomal Bupivacaine in Shoulder Arthroplasty

Surena Namdari, MD, MSc, Philadelphia, PA Thema A. Nicholson, MS, Philadelphia, PA Joseph A. Abboud, MD, Philadelphia, PA Mark D. Lazarus, MD, Philadelphia, PA Dean Steinberg, Philadelphia, PA Gerald R. Williams Jr, MD, Philadelphia, PA

Patients treated with extended release liposome bupivacaine required less postoperative narcotics and greater intraoperative narcotics compared to interscalene nerve block.

#### 12:18 PM

# Liposomal Bupivacaine: Equal Pain Relief and Less Complication versus Interscalene Block in Shoulder Arthroplasty

Paper 090

Paper 091

Paper 092

William J. Weller, MD, Memphis, TN Michael G. Azzam, MD, Memphis, TN Frederick M. Azar, MD, Germantown, TN Richard A. Smith, PhD, Memphis, TN Thomas W. Throckmorton, MD, Memphis, TN

Liposomal bupivacaine has equivalent pain relief and signif cantly fewer complications at less cost compared to indwelling interscalene catheter in shoulder arthroplasty

Discussion – 6 minutes

#### **PAPER PRESENTATION**

10:30 AM – 12:30 PM Room W414

#### **Pediatrics I: Spine**

Moderator(s): Lawrence L. Haber, MD, Jackson, MS, Laurel C. Blakemore, MD, Gainesville, FL

#### 10:30 AM

### Cervical Spine Disease after Pediatric Treatment of Adolescent Idiopathic Scoliosis at Mean 30-Year Follow Up

Ernest Young, MD, Rochester, MN Bradford L. Currier, MD, Rochester, MN Annalise N. Larson, MD, Rochester, MN

At mean 30 years after spinal surgery for adolescent idiopathic scoliosis, cervical sagittal plane abnormalities and cervical degenerative changes were common in two-thirds of patients.

#### 10:36 AM

#### Reciprocal Changes in Sagittal Alignment with Operative Treatment of Adolescent Scheuermann's Kyphosis

Baron Lonner, MD, New York, NY Suken A. Shah, MD, Wilmington, DE Amer Samdani, MD, Philadelphia, PA Patrick J. Cahill, MD, Philadelphia, PA Joshua M. Pahys, MD, Wynnewood, PA Yuan Ren, PhD, MS, New York, NY Stefan Parent, MD, Montreal, QC, Canada Harry L. Shuff ebarger, MD, Miami, FL Peter O. Newton, MD, San Diego, CA

PJK incidence was 24.2%. Both thoracic and lumbar apices migrated closer to the gravity line after surgery. Pre-operative apices caudal to T8 moved up to the normal region in >2/3 of patients.

#### 10:42 AM

#### Preventing DJK by Applying the Stable Sagittal Vertebra Concept to Selective Thoracic Fusion in AIS

Alexander M. Broom, South Pasadena, CA Lindsay M. Andras, MD, Los Angeles, CA Kody K. Barrett, BA, Los Angeles, CA Andrew G. Georgiadis, MD, Philadelphia, PA John M. Flynn, MD, Philadelphia, PA David L. Skaggs, MD, Los Angeles, CA

The rate of DJK was 17% when the LIV was superior to the SSV.

#### Discussion – 6 minutes

10:54 AM

#### Paper 094

Paper 093

#### Improving Quality and Safety in Pediatric Spine Surgery: The Team Approach

Firoz Miyanji, MD, Vancouver, BC, Canada John S. Choi, BS, North Vancouver, BC, Canada Janice Mok, Vancouver, BC, Canada Michael Nitikman, Richmond, BC, Canada Sameer Desai, BS, Surrey, BC, Canada

Implementation of a homogeneous and consistent pediatric spine surgical team signif cantly improved infection rates, OR time, hospital stay, blood transfusion rates and unplanned staged procedures.

#### 11:00 AM

Paper 095

More Than Just Early Discharge: Improving the Value and Quality of Care Post Spinal Fusion for Idiopathic Scoliosis

Alex L. Gornitzky, BS, Toms River, NJ John M. Flynn, MD, Philadelphia, PA Wallis T. Muhly, MD, Philadelphia, PA Wudbhav N. Sankar, MD, Wynnewood, PA

Implementation of a standardized multimodal analgesic and rehabilitation protocol results in reduced pain, earlier discharge and fewer opioid-related side effects for patients undergoing PSF for AIS.

#### 11:06 AM

#### Paper 096

#### Accelerated Discharge following Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis

Austin Sanders, BA, Los Angeles, CA Lindsay M. Andras, MD, Los Angeles, CA Ted Sousa, MD, Huson, MT David L. Skaggs, MD, Los Angeles, CA

Reducing length of stay to 3 days following posterior spinal fusion for adolescent idiopathic scoliosis reduces post-operative charges by 22% without increasing post-operative complications.

Discussion – 6 minutes

#### 11:18 AM

#### An Increasing Risk of Late Onset Infection in the Years After Adolescent Idiopathic Scoliosis Surgery

Jahangir Asghar, MD, Coral Gables, FL Christopher Emerson, BS, MS, South Miami, FL Stephen G. George, MD, Miami, FL Harry L. Shuff ebarger, MD, Miami, FL

In a large, prospectively collected multi-center study, the incidence of late infection was 2.25%, however the predicted probability of late infection increased with time to 4.8% at 10 years

#### 11:24 AM

#### Delayed Quadraparesis After Posterior Spinal Fusion for Scoliosis: A Case Series

Milad Alam, MD, Miami, FL Harry L. Shuff ebarger, MD, Miami, FL Lucas Suder, BA, Miami, FL William F. Lavelle, MD, East Syracuse, NY Paul D. Sponseller, MD, Indianapolis, IN Jahangir Asghar, MD, Coral Gables, FL

A multi-institutional case series of 9 patients with delayed quadraparesis after thoracolumbar deformity surgery

#### 11:30 AM

### Paper 099

Paper 100

History and Physical Versus Radiographs as Determinants for Early Revision After Pediatric Posterior Spinal Fusion

Nicholas Peters, MD, Toledo, OH Ryan D. Muchow, MD, Lexington, KY Vishwas R. Talwalkar, MD, Lexington, KY Henry J. Iwinski, MD, Lexington, KY David Hamilton, MD, Lexington, KY Alexander Caughran, MD, Huntington, WV Joshua D. Schwind, MD, Toledo, OH

Radiographs very rarely lead to revision in the absence of correlative f ndings on H&P following pediatric posterior spinal fusion.

Discussion – 6 minutes

#### 11:42 AM

# Classif cation of Early Onset Scoliosis Predicts Complications after Initiation of Growth Friendly Spine Surgery

Christen M. Russo, MD, Brooklyn, NY Hiroko Matsumoto, MA, New York, NY Nicholas A. Feinberg, BA, New York, NY John T. Smith, MD, Salt Lake City, UT Amer Samdani, MD, Philadelphia, PA Sumeet Garg, MD, Aurora, CO John M. Flynn, MD, Wallingford, PA Michael G. Vitale, MD, MPH, Irvington, NY

The Classif cation of Early Onset Scoliosis (C-EOS) has predictive validity for complications at 5-years in patients with growing spinal instrumentation. More severe CEOS , higher complication rates.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 097

#### 11:48 AM

#### Paper 101

#### Surgical Treatment of Progressive Idiopathic Early-Onset Scoliosis: A Comparison of Growing Rods Versus VEPTR

Paul D. Sponseller, MD, Indianapolis, IN Anna McClung, RN, Dallas, TX Jeff Pawelek, La Jolla, CA Ron El-Hawary, MD, Bedford, NS, Canada George H. Thompson, MD, Cleveland, OH John T. Smith, MD, Salt Lake City, UT Michael G. Vitale, MD, MPH, New York, NY Children's Spine Study Group, Valley Forge, PA Growing Spine Study Group, Milwaukee, WI

A comparison of idiopathic EOS patients treated with GR or VEPTR; at 5-year follow up GR patients had greater curve correction, gains in thoracic height, and less kyphosis.

#### 11:54 AM

#### Paper 102

#### Does the Law of Diminishing Returns Apply to Guided Growth **Shilla Constructs?**

Lindsay M. Andras, MD, Los Angeles, CA Haleh Badkoobehi, MD, Los Angeles, CA Alexander M. Broom, South Pasadena, CA Frances L. McCullough, NP, Little Rock, AR Richard E. McCarthy, MD, Little Rock, AR David L. Skaggs, MD, Los Angeles, CA Growing Spine Study Group, Milwaukee, WI

The law of diminishing returns observed in growing rods does not appear to affect guided growth Shilla constructs in the same manner.

Discussion – 6 minutes

#### 12:06 PM

#### Paper 103 Is There any Role for Standard Growing Rod Instrumentation for the Treatment of Scoliosis in Spinal Muscle Atrophy?

Joshua Holt, MD, Iowa City, IA Lori Dolan, PhD, Iowa City, IA Stuart L. Weinstein, MD, Iowa City, IA

Outcomes of Def nitive Posterior Spinal Fusion for Treatment of Scoliosis in Spinal Muscle Atrophy: Questioning the Use of Standard Growing Rod Instrumentation After 30 Years of Experience

#### 12:12 PM

#### Does Implant Density Affect Outcomes in Scoliosis Related to **Cerebral Palsy?**

Paper 104

Paper 105

Paper 106

Anuj Singla, MD, Charlottesville, VA Joshua M. Pahys, MD, Philadelphia, PA Jahangir Asghar, MD, Coral Gables, FL Kimberly Hayes, Philadelphia, PA Craig D. Steiner, MD, Bala Cynwyd, PA Amer Samdani, MD, Philadelphia, PA Paul D. Sponseller, MD, Indianapolis, IN Patrick J. Cahill, MD, Philadelphia, PA

Pedicle screws are widely utilized for neuromuscular scoliosis correction. We evaluated the impact of screw density on curve correction. More screws did not translate into better deformity correction.

#### 12:18 PM

#### Impact of a Comparative Study on the Surgical Management of **Scoliosis in Duchenne Muscular Dystrophy**

Addisu Mesf n, MD, Rochester, NY Caroline Thirukumaran, Rochester, NY Brandon L. Raudenbush, DO, Rochester, NY James O. Sanders, MD, Rochester, NY Paul T. Rubery Jr, MD, Rochester, NY

Duchenne muscular dystrophy (DMD) can result in scoliosis. Our objective was to identify the impact of a comparative study on the surgical treatment of scoliosis in DMD.

Discussion – 6 minutes

#### PAPER PRESENTATION

10:30 AM - 12:30 PM Room W315

#### Hand & Wrist I

Moderator(s): John S. Taras, MD, Philadelphia, PA, Charles F. Leinberry, MD, Newtown, PA

### 10:30 AM

### **Effects of Pain-Coping Strategies on Joint Stiffness and Functional Outcomes in Patients with Hand Fractures**

Young Hak Roh, Incheon, Republic of Korea Jong Ryoon Baek, Incheon, Republic of Korea Jung Ho Noh, MD, PhD, Chuncheon-Si, Republic of Korea Do Hyun Moon, Incheon, Republic of Korea Beom Koo Lee, Incheon, Republic of Korea

The patients' pain-coping strategies are associated with delayed recovery in patients with hand fractures, as evidenced by the scores for both the objective and subjective measures of function.

#### 10:36 AM

#### Distal Radius Fractures: AAOS Appropriate Use Criteria versus Actual Management at a Level One Trauma Center

James Kyriakedes, MD, Cleveland, OH Eugene Tsai, MD, Boston, MA Charles C. Yu, MD, Detroit, MI Harry A. Hoven, MD. Cleveland, OH Kevin I. Malone, MD, Cleveland, OH B T. Bafus, MD, Cleveland, OH

The AAOS Appropriate Use Criteria (AUC) for distal radius fractures recommends a higher frequency of operative management than is actually performed at a high-volume, level one urban trauma center.

#### 10:42 AM

#### Paper 108 The Prevalence and Timing of Carpal Tunnel Release in Open **Reduction Internal Fixation of Distal Radius Fractures**

Bilal Mahmood, MD, Rochester, NY Lucas Nikkel, MD, Rochester, NY Michael A. Maceroli, MD, Rochester, NY John Elfar, MD, Rochester, NY

Our data show routine Carpal Tunnel Release after Open Reduction Internal Fixation of Distal Radius Fractures being uncommon. However, when necessary, 34.9% of patients are receiving the surgery late.

Discussion – 6 minutes

#### 10:54 AM

#### **Do Repeated Closed Reduction Attempts of Distal Radius Fractures Help Avoid Surgery?**

Haggai Sherman, MD, Tel Aviv, Israel Assaf Kadar, MD, Givaatayim, Israel Tamir Pritsch, MD, Herzelia, Israel

Our radiographic study shows that repeated closed reduction attempts of distal radius fractures improve fracture alignment, but compromise their stability and do not reduce the need for surgery.

#### 11:00 AM

#### Paper 110

Paper 109

#### Early Unprotected Return to Play after Metacarpal Fixation in **Professional Athletes**

Matthew Yalizis, MBBS, FRACS, Sans Souci, Australia Gregory Hoy, MD, Windsor, Australia Eugene Ek, MD, PhD, Melbourne, Australia

Operative f xation of metacarpal fractures in professional athletes allows unprotected return to professional play at mean of 2 weeks.

#### 11:06 AM

Paper 107

#### **Diagnosis of Occult Scaphoid Fractures: A Cost Effectiveness** Analysis

John Karl, MD, Brooklyn, NY Eric F. Swart, MD, New York, NY Robert J. Strauch, MD, New Rochelle, NY

Using cost analysis modeling, we determined that advanced imaging for suspected scaphoid fractures in the setting of negative x-rays is a cost-effective strategy for reducing both costs and morbidity.

Discussion – 6 minutes

#### 11:18 AM

#### **Factors Associated with Subluxation in Mallet Fracture**

Ali Moradi, MD, Boston, MA David C. Ring, MD, Boston, MA Neal C. Chen, MD, Boston, MA

Articular surface involvement, fragment displacement and interval between injury and treatment are strongly related to mallet fracture subluxation.

#### 11:24 AM

#### Nonoperative Treatment for Displaced Intraarticular Distal **Radius Fractures in 'Low Demand' Elderly Patients**

Raymond E. Anakwe, FRCS (Ortho), MBCHB, London, United Kingdom

Emma Burke, MBCHB, London, United Kingdom Scott Middleton, MD, Edinburgh, United Kingdom

Non operative treatment for 'low demand' elderly patients with distal radius fractures may not be as benign as previously considered

#### 11:30 AM

#### **Distal Scaphoid Resection Arthroplasty versus Four Corner Fusion for Scaphoid Nonunions**

Kevin Krul, MD, Honolulu, HI Jason M. Cage, DO, Mechanicsville, VA Jeffrey B. Knox, MD, Honolulu, HI Matthew L. Drake, MD, Bethesda, MD Rey Dominique L. Gumboc, MD, Kailua, HI

In carefully selected patients, Distal Scpahoid Resection Arthroplasty may lead to higher functional levels compared with four corner fusion.

Discussion – 6 minutes

#### Paper 113

Paper 114

Paper 112

Paper 111

#### 11:42 AM

#### Paper 115

Complex Intra-Articular Distal Radius Fractures Treated with Cross-Pin Fixation & A Non-Bridging External Fixator

Justin Mirza, DO, Nissequogue, NY Ather Mirza, MD, Smithtown, NY Brian Lee, MD, Philadelphia, PA Shawn Adhya, BS, Smithtown, NY Joshua Litwa, BS, Smithtown, NY Daniel J. Lorenzana, BA, Los Angeles, CA

This study aims to assess the outcomes of complex, intra-articular distal radius fractures treated with closed reduction, cross pin multiplanar f xation, and a non-spanning external f xator.

#### 11:48 AM

## Paper 116

#### New Classif cation of Distal Ulna Fractures and their Impact on Distal Radius Fracture Outcomes

Laura Sims, MD, Saskatoon, SK, Canada Geoffrey H. Johnston, MD, Saskatoon, SK, Canada Samuel Stewart, PhD, Saskatoon, SK, Canada

A new, location-specif c and outcome-based classif cation of distal ulna fractures associated with 781 distal radius fractures in women 50 years and older was devised and analyzed.

#### 11:54 AM

Paper 117

# Is Distal Radius Malunion Truly Asymptomatic in the Older Patient?

Wei Kang Wu, BA, Cambridge, MA Katherine Gray, MD, San Jose, CA Charles S. Day, MD, MBA, Boston, MA

Despite evidence demonstrating that radiographic outcome does not correlate with functional outcome in the elderly, the osteotomy rate for distal radius malunions in the older population remain high.

#### Discussion – 6 minutes

#### 12:06 PM

Paper 118

#### Ulnar Shortening vs. Distal Radius Osteotomy for Ulnar Impaction after Distal Radius Malunion

Ali Izadpanah, FRCSC, MD, Westmount, QC, Canada William R. Aibinder, MD, Rochester, MN Bassem T. Elhassan, MD, Rochester, MN Bassem T. Elhassan, MD, Rochester, MN

Ulnar shortening osteotomy and distal radius corrective osteotomy are both reasonable procedures for ulnar impaction after distal radius malunion.

#### 12:12 PM

#### 25-Hydroxy-Vitamin D and Bone Turnover Marker Levels in Patients with Distal Radius Fractures

Paper 119

Paper 120

Tamara D. Rozental, MD, Boston, MA Kempland C. Walley, BcS, Boston, MA Lindsay Herder, BA, Boston, MA Kathleen Coyle, Farmington, CT David Zurakowski, PhD, Boston, MA Mary L. Bouxsein, PhD, Boston, MA Jennifer M. Wolf, MD, Farmington, CT

The purpose of the study is to determine any relationship between Vitamin D levels and bone turnover markers in patients presenting with distal radius fractures, when compared to agematched controls.

### 12:18 PM

#### ◆ Primary Wrist Hemiarthroplasty for Irreparable Distal Radius Fractures in the Autonomous Elderly

Guillaume Herzberg, MD, Lyon Cedex 03, France

Our current results suggest that wrist hemiarthroplasty is viable to treat complex wrist fractures in elderly autonomous patients.

Discussion – 6 minutes

#### INSTRUCTIONAL COURSE LECTURE

#### 11:00 AM — 12:00 PM



#### Leadership 2.0: How to be a More Effective Leader

Moderator: Thomas K. Fehring, MD, Charlotte, NC Daniel J. Berry, MD, Rochester, MN John J. Callaghan, MD, Iowa City, IA David A. Halsey, MD, South Burlington, VT

Room W209B

Understanding that leaders are developed not born, this course helps leaders of all levels cast a bold vision and equip their teams to achieve stated goals. Team building, mentoring, and inertia avoidance are discussed along with time management and strategies to maintain balance.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### **Symposium**

#### 1:30 PM — 3:30 PM Chapin Theater

**What Keeps Me Awake at Night: Cervical Spine Surgery (D)** *Moderator: Alan S. Hilibrand, MD, Philadelphia, PA* 

Discusses/debates three challenges of cervical spine surgery: management and avoidance of intraoperative neurological def cits, timing and intervention for acute spinal injury, and safe/effective treatment of myelopathy due to ossif cation of posterior longitudinal ligament.

- I. Management and Avoidance of Neurological Injury Darrel S. Brodke, MD, Salt Lake City, UT
- II. If Surgery is Needed, Delayed Surgery is Safer Louis G. Jenis, MD, Boston, MA
- III. How to Respond to Intraoperative Neurological Injury Joon Y. Lee, MD, Pittsburgh, PA
- IV. Early Surgery for SCI Leads to Better Outcomes Kristen E. Radcliff, MD, Egg Harbor Township, NJ
- V. OPLL: Best Approach is Laminoplasty John J. Rhee, MD, Atlanta, GA
- VI. OPLL: The Case for ACDF, AP, or Laminectomy / Fusion *Rick C. Sasso, MD, Carmel, IN*

#### Symposium 1:30 PM — 3:30 PM Valencia Room A



Hot Topics and Controversies in Revision Total Hip Arthroplasty (E)

Moderator: Paul F. Lachiewicz, MD, Chapel Hill, NC

Covers, in didactic, case-based, and using video clips, the current controversies in revision total hip arthroplasty. The topics included are exposure options - why and when; acetabular revision choices when there is bone loss; dislocation options; hemi-explantation for infected hip; and the controversy of modular vs. non-modular f uted femoral components. Traducción simultánea en español. Tradução simultânea em português.

- I. Hemi-explantation is a Reasonable Choice for Infected Hips with Well-f xed Femoral Components *Keith R. Berend, MD, New Albany, OH*
- II. Constrained Components are My Choice for the Recurrent Dislocator John J. Callaghan, MD, Iowa City, IA

- III. Non-modular Tapered Fluted Stems are Easier and Just as Effective for Femoral Revisions *Clive P. Duncan*, MD, MSc, Vancouver, BC, Canada
- IV. Custom Trif age is Best for Revisions with Massive Bone Loss Thomas K. Fehring, MD, Charlotte, NC
- V. Posterior Approach for Revisions Kevin L. Garvin, MD, Omaha, NE
- VI. Direct Anterior Approach for Revisions is GreatAlso William G. Hamilton, MD, Alexandria, VA
- VII. Take All Components Out in an Infected Hip Arlen D. Hanssen, MD, Rochester, MN
- VIII. ETO is Best for Most Revisions Wayne G. Paprosky, MD, Winf eld, IL
- IX. Cup-cage Construct for Most Revisions with Massive Bone Loss Oleg Saf r, MD, Toronto, ON, Canada
- X. Jumbo Cups, With or Without Augments, for Massive Defects *Rafael J. Sierra, MD, Rochester, MN*
- XI. Modular Tapered Fluted Stems for all Femoral Revisions Scott M. Sporer, MD, Wheaton, IL

### Symposium

1:30 PM — 3:30 PM Valencia Room B

Performance Measures: Clinical Quality – Medicare PQRS Pathways for Payment (F) Moderator: George F. Muschler, MD, Cleveland, OH

Medicare "quality" standards guide both governmentand commercial reimbursement. The business case for PQRS participation, including reputation and f nancial necessity, is presented with practical general and "specialty-specif c" reporting options.

- I. Performance Measures Science, Myth, Stakeholders and Politics *William T. Brox, MD, Fresno, CA*
- II. Private Practice Perspective Douglas K. Dew, MD, MBA, St. Augustine, FL
- III. The Quality and Value Imperative Concepts, Principles and Practicality Warren Dunn, MD, MPH, Madison, WI

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Tuesday

- IV. Payment Implications Running the Gauntlet of Carrots and Sticks Alexandra E. Page, MD, La Jolla, CA
- V. Compliance Options Specialty-Specif c Options Paths through the Swamp *William Shaffer, Washington, Dist. of Columbia*

#### **INSTRUCTIONAL COURSE LECTURE**

#### 1:30 PM — 2:30 PM



**Getting Your Ideas Supported: Effective Techniques** *Moderator: Mary I. O'Connor, MD, New Haven, CT Michael L. Parks, MD, New York, NY* 

**Room** W209B Understand the types of information people want to make decisions and learn how to use this knowledge to gain support for your proposals. Highlight techniques to achieve consensus, avoid unproductive conf icts, and enhance your leadership skills.

### **FLASH FIVE**

1:30 PM — 2:30 PM Room W311A

#### FF1 Flash Five: What's Coming Down the Pike

Moderator: James R. Ficke, MD, Baltimore, MD Thomas A. Einhorn, MD, New York, NY Tad L. Gerlinger, MD, Chicago, IL Joshua J. Jacobs, MD, Chicago, IL Young Jo Kim, MD, PhD, Boston, MA John L. Marsh, MD, Iowa City, IA Thomas A. Russell, MD, Eads, TN Vincent J. Sammarco, MD, Cincinnati, OH Andrew H. Schmidt, MD, Minneapolis, MN Alexander Vaccaro, MD, PhD, Gladwyne, PA Ken Yamaguchi, MD, St Louis, MO

A burst of knowledge given in f ve minutes on topics benef ting orthopaedists. Hear from leading experts providing insight on critical points and what lies ahead.

### INSTRUCTIONAL COURSE LECTURE

#### 1:30 PM — 3:30 PM

- **Room** W205B Paul E. Beaule, MD, Ottawa, ON, Canada Asheesh Bedi, MD, Ann Arbor, MI Klaus Siebenrock, MD, Bern, Switzerland

Complications and early treatment failures are seen after arthroscopic and open joint preservation procedures. Contemporary strategies to avoid and manage suboptimal outcomes are discussed. 142

Room

W202

#### Indications and Techniques for Bi- and Unicompartmental Knee Arthroplasty

Moderator: Adolph V. Lombardi Jr, MD, New Albany, OH Fred D. Cushner, MD, New York, NY Jess H. Lonner, MD, Philadelphia, PA Michael J. Morris, MD, New Albany, OH

Interest in partial knee arthroplasty has resurgedbecause of its less invasive nature, lower complication rate, and more normal kinematics provided. A better understanding of indications and enhanced prosthetic designs have led to improved results.

- 143
- Surgical Treatment of Ankle Instability: No More Big Incisions

Room

W308C

Moderator: Mark Glazebrook, MD, Halifax, NS, Canada Stephane Guillo, MD, Bordeaux, France James W. Stone, MD, Franklin, WI Masato Takao, MD, Itabashi, Japan

Recently, there have been advances in the f eld of ankle stabilization which utilize arthroscopic or percutaneous procedures that are both minimally invasive and allow complete anatomic reconstruction or repair of the ATFL and CFL. In this course, new arthroscopic and percutaneous techniques are described for surgical stabilization of the ankle that avoid large open incisions.



Room

W205A

#### Is Medical Clearance Enough? Understanding Medical Issues that Can Affect Your Patients' Outcomes

Moderator: William M. Mihalko, MD, PhD, Germantown, TN

Joseph M. Lane, MD, New York, NY Javad Parvizi, MD, FRCS, Philadelphia, PA Khaled J. Saleh, MD, MSc, Springf eld, IL

Discusses the many systemic, endocrine, and nutritional issues that can affect your patient's outcome that are not addressed by medical clearance.

#### ♦ 145 Skeletal Dysplasia – Evaluation and Management



W209A

Moderator: William G. Mackenzie, MD, Wilmington, DE Benjamin Alman, MD, Durham, NC John E. Herzenberg, MD, Indianapolis, IN Klane K. White, MD, Seattle, WA

Reviews the clinical and genetic diagnosis andmanagement of common spine and extremity problemsin children with skeletal dysplasia using a didactic, case presentation, and discussion format.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

Room

TICKET

Room

W204

#### 146 **MIPS, Alternate Payment Models, and Bundled** Payments - What You Need to Know TICKET

Moderator: Jack M. Bert, MD, Woodbury, MN William R. Beach, MD, Richmond, VA W308A Louis F. McIntyre, MD, White Plains, NY Ranjan Sachdev, MD, Bethlehem, PA

> Discusses the Medicare Incentive Payment System.describes alternative payment models with specif c focus on bundled payments, and discusses the role of outcomes and technology in enabling positive reimbursement adjustments.

#### 147 **Rotator Cuff Controversies**

Moderator: Richard J. Hawkins, MD, Greenville, SC Neal S. ElAttrache, MD, Los Angeles, CA John E. Kuhn, MD, Nashville, TN Theodore F. Schlegel, MD, Greenwood Village, CO

Course faculty discuss the basic science of cuff healing and the issues of repairing or not repairing, single vs. double row, and knotless systems. The future related to tissue engineering, scaffolding, and healing also is covered.

#### 148 MRI of the Spine: Essentials for the Orthopaedic TICKET Surgeon

Moderator: John A. Carrino, MD, New York, NY Room Yoshimi Endo, MD, New York, NY W307C William B. Morrison, MD, Philadelphia, PA Brian J. Neuman, MD, Indianapolis, IN

> Will help clinicians develop a systematic structured checklist approach to the accurate interpretation of spine MRI exams emphasizing standardized nomenclature and grading schemes.

**International Perspective in Revision ACL Reconstruction: What Have We Been Missing?** Moderator: Aaron J. Krych, MD, Rochester, MN Steven A. Claes, MD, PhD, Herentals, Belgium

Philippe Neyret, MD, Lyon - Cedex, France Michael J. Stuart, MD, Rochester, MN

Provides international perspective on treatmentstrategies for revision anterior cruciate ligament (ACL) reconstruction. Surgical indications, anatomy, and techniques are reviewed for anterolateral ligament reconstruction, osteotomy, concomitant meniscus/ cartilage injury, and technical considerations.

#### **Shoulder Instability: An American Perspective**

Moderator: Nikhil N. Verma, MD, Chicago, IL TICKET Robert A. Arciero, MD, Farmington, CT CDR (ret) Matthew T. Provencher, MD, Boston, MA Room W304E Scott Trenhaile, MD, Rockford, IL

> Provide a case-based overview discussing surgicalmanagement of shoulder instability with an emphasis on North American opinions. Signif cant controversy exists regarding indications for soft tissue stabilization, particularly among surgeons from the US versus Europe. Although bone loss procedures are increasing in frequency, techniques and indications differences persist.

#### 151 The Not-So-Simple Ankle Fracture: Avoiding **Problems and Pitfalls to Improve Patient Outcome**



Room

150

Moderator: Christopher McAndrew, MD, Saint Louis, MO Julius A. Bishop, MD, Palo Alto, CA William W. Cross III, MD, Rochester, MN David Dalstrom, MD, San Diego, CA

W203

Focusing on four themes, challenges to care for therotational ankle fracture are highlighted and tips for management are provided.

152 TICKET

#### **Diagnosis and Management of Tumors of the** Hand and Upper Extremity

Moderator: Peter J. Jebson, MD, Grand Rapids, MI Edward A. Athanasian, MD, New York, NY Peter M. Murray, MD, Jacksonville, FL Matthew R. Steensma, MD, Byron Center, MI

Room W307A

Course faculty present an overview of the most common benign and malignant tumors in the upper limb; and review the clinical and radiographic features, biopsy principles, and treatment options for each tumor type as well as the anticipated outcomes and recurrence ratefollowing treatment. Indications for neoadjuvant and adjuvant therapy are reviewed.

185

#### **Fractures of the Proximal Femur:** TICKET

- **A Case-based Approach**
- Moderator: Kenneth A. Egol, MD, New York, NY Lisa K. Cannada, MD, Saint Louis, MO Roy Davidovitch, MD, New York, NY Jonathan M. Gross, MD, Brooklyn, NY Room Joseph R. Hsu, MD, Charlotte, NC W207 Kyle J. Jeray, MD, Greenville, SC Madhav A. Karunakar, MD, Charlotte, NC Sanjit R. Konda, MD, Rye, NY Philipp Leucht, MD, New York City, NY Sagib Rehman, MD, Moorestown, NJ Philip R. Wolinsky, MD, Sacramento, CA Focuses on the management of femoral neck

andpertrochanteric fracture. Attention is given to surgical tips and tricks.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

149

TICKET

# **186** TICKET W208

#### How to Avoid Complications in Elbow Trauma: **A Case-based Interactive Discussion**

Moderator: Graham J. King, MD, London, ON, Canada George S. Athwal, MD, London, ON, Canada Gregory I. Bain, MD, North Adelaide, Australia Denise Eygendaal, Teteringen, Netherlands Jeffery S. Hughes, MBBS, FRACS, Chatswood, NS, Australia Mark A. Mighell, MD, Tampa, FL Lars P. Mueller, PhD, Cologne, Germany Bradford O. Parsons, MD, New York, NY Joaquin Sanchez-Sotelo, MD, Rochester, MN Scott P. Steinmann, MD, Rochester, MN Thomas (Quin) Throckmorton, MD, Germantown, TN

An international panel of experts and participantsare challenged with a series of cases of commonelbow injuries and their complications. Groups of participants facilitated by a faculty member discuss and debate critical issues to prevent and treat common complications. Additionally, the moderator probes the faculty on controversial topics.

### **INSTRUCTIONAL COURSE LECTURE**

#### 1:30 PM - 4:30 PM

192 Ten Hot ICD-10 and CPT Coding Issues Facing **Practicing Orthopaedic Surgeons** TICKET

Moderator: Margaret Maley, BSN, MS, Chicago, IL

.... Room W310

At the conclusion of this course you are able todemonstrate how to use technology to f nd the correct ICD-10 diagnosis in real time; identify the category of any injury diagnosis in ICD10-CM; appropriately document fracture treatment to support ICD-10 coding; use the modif er 58 for staged procedures correctly; def ne the common use of the modif er 59 in hip, knee, and shoulder surgery; understand and use Modif er 22 for unusual service with conf dence.

#### PAPER PRESENTATION

## 1:30 PM — 3:30 PM

RoomW414

1:30 PM

#### Trauma II: Knee/Tibia

Moderator(s): Eric M. Hammerbag, Boulder, CO, John C. Weinlein, MD, Memphis, TN

#### Paper 121

### **Small Fragment Fixation of Bicondylar Tibial Plateau Fractures**

Adam Sassoon, MD, Seattle, WA Jeffrey Petrie, MD, Orlando, FL Kenneth J. Koval, MD, Orlando, FL George J. Haidukewych, MD, Orlando, FL Joshua Langford, MD, Orlando, FL

Small fragment f xation constructs can be used to treat bicondylar tibial plateau fractures. With a low prof le design, they are an attractive option when the soft tissue envelope is compromised.

#### 1:36 PM

#### MRI and Tibial Plateau Fractures: Is it Feasible to Predict Soft **Tissue Injuries Using X-rays and CT Scans?**

Maximiliano Scheu, MD, Santiago, Chile Daniel Paccot SR, Santiago, Chile Guillermo Izquierdo, MD, Santiago, Chile Diego Montenegro SR, MD, Santiago, Chile Maria J. Tuca, MD, Santiago De Chile, Chile Gonzalo Espinoza, Santiago, Chile

The aim of this retrospective study (130 patients) was to assess the incidence of soft tissue injury using MRI, correlating those f ndings with parameters obtained in CT scans and x-rays.

#### 1:42 PM

Paper 123

Paper 124

Paper 122

#### **Tibial Plateau Functional Outcome Score Identif es Patients at Risk of Diminished Functional Outcome**

Sanjit R. Konda, MD, Rye, NY Arthur Manoli III, MD, New York, NY Roy Davidovitch, MD, New York, NY Kenneth A. Egol, MD, New York, NY

The tibial plateau functional outcome score is a signif cant predictor of 6 month functional outcome.

Discussion – 6 minutes

#### 1:54 PM

#### A Predictive Model of Tibial Shaft Fracture Nonunion at the Time of Def nitive Fixation

Kevin P. O'Halloran, MD, Indianapolis, IN Max Coale, BA, Indianapolis, IN Timothy Costales, Indianapolis, IN Timothy J. Zerhusen JR, BS, Indianapolis, IN Renan C. Castillo, MD, Indianapolis, IN Jason W. Nascone, MD, Highland, MD Robert V. O'Toole, MD, Indianapolis, IN Renan C. Castillo, MD, Indianapolis, IN

We hypothesized that commonly collected data can predict nonunions and can be formed into a union prediction model to allow clinicians to determine nonunion risk early in the treatment course.

#### 2:00 PM

Paper 125 Low Intensity Pulsed Ultrasound in Acute Tibial Shaft Fractures Treated with IM Nails: The Results of the TRUST Trial Paul Tornetta III, MD, Boston, MA Jason Busse, Hamilton, ON, Canada Mohit Bhandari, MD, FRCSC, PhD, Hamilton, ON, Canada Thomas A. Einhorn, MD, New York, NY Emil H. Schemitsch, MD, Toronto, ON, Canada James D. Heckman, MD, San Antonio, TX Kwok S. Leung, MD, Hong Kong, Hong Kong Diane Heels-Ansdell, MSc, Hamilton, ON, Canada Sun Makosso-Kallyth, MSc, PhD, Hamilton, ON, Canada

The purpose of the study was to evaluate the use of LIPUS on validated functional outcomes of patients with acute tibial fractures treated with IM nails and to evaluate healing using the RUST method.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 2:06 PM

Association between Tibial Malunion Deformity Parameters and Degenerative Hip and Knee Disease

Douglas S. Weinberg, MD, Cleveland, OH Paul Park, BA, Cleveland Heights, OH Raymond W. Liu, MD, Cleveland, OH

The results of this study suggest that shortening, coronal and axial plane malalignment are of the greatest consequence following fractures of the tibia.

Discussion – 6 minutes

#### 2:18 PM

#### Paper 127

Paper 126

Open Tibia Fractures: Does Timing of Surgery Affect Their Outcomes?

Oscar A. Duyos-Garcia, MD, San Juan, Puerto, Rico Christian A. Foy-Parrilla, MD, Guaynabo, Puerto Rico Francisco M. Lopez-Gonzalez, MD, San Juan, Puerto Rico

Does a delay from the time of injury to the time of the f rst surgical intervention inf uence the rate of acute infection and nonunion in open tibia fractures in both adult and pediatric patients.

#### 2:24 PM

Paper 128

**Comparison of Routine Microbiology Results at Def nitive Closure and Wound Infection in Type III Tibia Fractures** *CAPT (ret) Michael J. Bosse, MD, Charlotte, NC* 

METRC Bioburden Investigators, Indianapolis, IN We found a moderate correlation between wound bioburden at

the time of def nitive closure and subsequent infection as well as weak correlation of pathogens between these time points.

#### 2:30 PM

#### Paper 129

#### Does Vancomycin Powder Decrease Surgical Site Infection in High-Risk Operatively Treated Fractures?

Rabah Qadir, MD, The Woodlands, TX Timothy Costales, Indianapolis, IN Max Coale, BA, Indianapolis, IN Timothy J. Zerhusen JR, BS, Indianapolis, IN Manjari Joshi, Indianapolis, IN Robert V. O'Toole, MD, Indianapolis, IN

Vancomycin powder may play an important role in lowering the rate of surgical site infection after open reduction internal f xation of tibial pilon, bicondylar plateau, and calcaneus fractures.

#### Discussion – 6 minutes

#### 2:42 PM

#### Anatomical Study of the Medial Knee for Minimally Invasive Plate Osteosynthesis in Medial Femoral Condylar Fracture

Paper 130

Paper 131

Paper 132

Paper 133

Norachart Sirisreetreerux, MD, Nottingham, MD Babar Shaf q, MD, Clarksville, MD Adam C. Shaner, MD, Indianapolis, IN Stephen Belkoff, PhD, Indianapolis, IN Erik A. Hasenboehler, MD, Indianapolis, IN

MIPO approach for distal medial femur condyle fractures is safe. Risks are minimal and limited to branches of the descending genicular artery. Plates can be positioned safely up Hunter's canal.

#### 2:48 PM

#### The Effect of Knee Flexion Contracture on Outcomes of Distal Femur Fractures

Paul Tornetta III, MD, Boston, MA Margaret Cooke, MD, Boston, MA Kenneth A. Egol, MD, New York, NY Clifford B. Jones, MD, FACS, Grand Rapids, MI Janos P. Ertl, MD, Carmel, IN Brian Mullis, MD, Indianapolis, IN Edward Perez, MD, Memphis, TN Cory A. Collinge, MD, Fort Worth, TX Robert F. Ostrum, MD, Chapel Hill, NC

The purpose of this study is to compare the demographics and validated outcomes of patients with and without a f exion contracture after operative treatment for distal femur fractures.

#### 2:54 PM

#### Arthroscopic Lysis of Adhesions Improves Range of Motion after Fixation of Fractures about the Knee

Daniel J. Gittings, MD, Philadelphia, PA Patrick J. Hesketh, BS, Philadelphia, PA John D. Kelly IV, MD, Philadelphia, PA Samir Mehta, MD, Philadelphia, PA

This study examines the immediate and sustainable range of motion changes after surgical arthroscopic lysis of knee adhesions for posttraumatic knee stiffness after open reduction internal f xation.

Discussion – 6 minutes

#### 3:06 PM

#### Risk Factors for Neurovascular Injury Associated with Knee Dislocations

Robert Stewart, MD, Chicago, IL David C. Landy, MD, Chicago, IL Joseph B. Cohen, MD, Chicago, IL Douglas R. Dirschl, MD, Chicago, IL Sherwin S. Ho, MD, Chicago, IL

This retrospective database study of 1344 knee dislocations, showed the rate of nerve and vessel injury was 4.2% and 15%, respectively. Obesity is a risk factor for concomitant neurovascular injury.

#### 3:12 PM

#### Paper 134

# When are CT Angiograms Indicated for Lower Extremity Fractures?

Shafagh Monazzam, MD, Sacramento, CA Parker Goodell, BS, Sacramento, CA Edgardo Salcedo, MD, Sacramento, CA Sandahl Nelson, San Diego, CA Philip R. Wolinsky, MD, Sacramento, CA

In a review of 275 lower extremity CTAs we found no evidence for routine use of CTAs in lower extremity fracture trauma without soft or hard signs of a vascular injury presents on physical exam.

#### 3:18 PM

Paper 135

#### The Morbidity and Mortality of Floating Knee Injuries

Ronald Auer, MD, Louisville, KY Kevin J. Himschoot, MD, Louisville, KY John Riehl, MD, Pensacola, FL

A retrospective review of 66 f oating knee injuries, complications, associated injuries and morbidity.

#### PAPER PRESENTATION

#### 1:30 PM – 3:30 PM Room W304A

#### Tumor I:Spine/Pelvis/Infection

Moderator(s): Francis Y. Lee, MD, PhD, New York, NY, Felasfa, M. Wodajo, MD, Potomac, MD

#### 1:30 PM

#### Prognostic Factors in the Operative Management of Sacral Chordomas

Mathew Sewell, Twickenham, United Kingdom Kimberly-Anne Tan, Randwick, Australia Babar Kayani, MBBS BSc, Herts, United Kingdom Sammy A. Hanna, MD, FRCS, London, United Kingdom Richard Williams, MD, Brisbane, Australia

Retrospective review of 58 cases of sacrectomy for chordoma (mean follow-up: 45.3 months) identifying factors associated with recurrence, metastasis and survival.

#### 1:36 PM

#### Paper 137

Paper 136

# Patient Reported Outcomes after Sacral Resection based on the Nerve Roots Sacrif ced

Olivier Van Wulfften Palthe, MD, Cambridge, MA Patrick J. Boland, MD, New York, NY Peter S. Rose, MD, Rochester, MN Michael J. Yaszemski, MD, PhD, Rochester, MN Franklin H. Sim, MD, Rochester, MN Francis J. Hornicek, MD, Boston, MA John H. Healey, MD, FACS, New York, NY Joseph H. Schwab, MD, Boston, MA

A tri-institutional effort to collect outcomes on physical health, mental health, pain, bowel function and sexual function after sacral resection based on which nerve roots were sacrif ced.

#### 1:42 PM

#### Curative Surgical Resection of Spinal Metastases from Differentiated Thyroid Carcinoma Can Prolong Survival

Noritaka Yonezawa, Kanazawa, Japan Hideki Murakami, MD, Kanazawa, Japan Satoru Demura, MD, Kanazawa, Japan Satoshi Kato, MD, Kanazawa, Japan Katsuhito Yoshioka, MD, Kanazawa, Japan Moriyuki Fujii, MD, Kanazawa, Japan Takashi Igarashi, MD, Kanazawa, Japan Naoki Takahashi, MD, Kanazawa-Shi, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Curative surgical resection of isolated spinal metastases from differentiated thyroid carcinomas has the potential to improve quality of life and survival.

Discussion – 6 minutes

#### 1:54 PM

#### Risk Factors for Acute Postoperative Mortality following Surgery for Spinal Metastases

Andrew J. Schoenfeld, MD, Medf eld, MA Dana A. Leonard, BA, Boston, MA Christopher M. Bono, MD, Concord, MA Mitchel B. Harris, MD, Boston, MA Marco Ferrone, MD, FRCSC, Boston, MA

This effort is one of the f rst to identify signif cant predictors of acute post-operative survival in a large series of patients treated for spinal metastases.

#### 2:00 PM

#### An Augmented-Reality-Based Navigation System for Pelvic Tumor Resection

Hwan-Seong Cho, MD, Seongnam-Si, Republic of Korea Yeong Kyoon Park, Seongnam-Si, Republic of Korea Ilkyu Han, Seoul, Republic of Korea Han-Soo Kim, Seoul, Republic of Korea

we evaluated the accuracy of AR-based navigation assistance in resection of the bone tumor model of pig pelves.

#### 2:06 PM

#### An Analysis of 138 Reconstructions After Periacetabular Resection for Bone Tumors from Two Institutions

Pietro Ruggieri, MD, PhD, Bologna, Italy Odion Binitie, MD, Tampa, FL Giulia Trovarelli, Bologna, Italy Ilaria Piraino, MD, Bologna, Italy G D. Letson, MD, Tampa, FL Andrea Angelini, MD, Bologna, Italy

Purposes of this study were to assess the outcome, recurrence rate and complications in 136 patients (from two institutions) after resection with reconstruction for periacetabular pelvic bone tumors.

Discussion – 6 minutes

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

Paper 138

Paper 139

Paper 140

#### 2:18 PM

#### Resection of the Acetabulum and Pelvis: Should We Still Offer Reconstructive Options?

Joseph Benevenia, MD, Newark, NJ Francis R. Patterson, MD, Newark, NJ Kathleen S. Beebe, MD, Newark, NJ Steven Rivero, MD, Warren, NJ

Despite complications there is a trend in patients implanted with allograft/APC to have better MSTS scores than those with resection arthroplasty and psuedoarthrosis after pelvic sarcoma resection.

#### 2:24 PM

#### Paper 143

Paper 142

#### Pelvis and Lower Limb Reconstruction Using the Double-Barrel Free Vascularized Fibular Transplant

Moahmmed M. Kotb, MD, Assiut, Egypt

The double-barrel f bula osteoseptocutaneous f ap is an effective and reliable technique in reconstruction of pelvis and lower extremity that results in early restoration of weight-bearing function.

#### 2:30 PM

#### Paper 144

Paper 145

#### Infection After Surgical Resection for Pelvic Bone Tumors: An Analysis of 274 Cases from a Single Institution

Pietro Ruggieri, MD, PhD, Bologna, Italy Teresa Calabrò, Bologna, Italy Giulia Trovarelli, Bologna, Italy Giulio Pierateli, MD, Bologna, Italy Andrea Angelini, MD, Bologna BO, Italy

Surgery of pelvic tumors is challenging and it is marked by signif cant morbidity and complications. We analyzed the infection rate, treatment and its outcome in 274 patients with pelvic bone tumors.

Discussion – 6 minutes

#### 2:42 PM

#### The Hidden Enemy: MRSA-Osteoblast Interaction and Its Consequences in Tissue Destruction and Recurrence

Hyunwoo P. Kang, BS, MA, New York, NY Jocelyn T. Compton, MD, Iowa City, IA Saqib Nizami, Staten Island, NY Danielle Stamer, Pleasant Valley, NY Jon-Michael E. Caldwell, MD, New York, NY Do Yu Soung, New York, NY Jungho Back, PhD, New York, NY Lee Song, PhD, New York, NY Francis Y. Lee, MD, PhD, New York, NY

An investigation of MRSA intracellular invasion of osteoblasts. Bacteria translocate into cells within minutes, causing MAPKmediated inf ammatory cytokine release and cell death.

#### 2:48 PM

#### Paper 146

Paper 147

Paper 148

Paper 149

#### • Doxycycline Attachment to Bone Allograft Protects Against Bacterial Colonization and Biof Im Formation

Constantinos Ketonis, MD, PhD, Philadelphia, PA Isabelle Mortalena, DDS, Biarritz, France Javad Parvizi, MD, FRCS, Gladwyne, PA Christopher S. Adams, PhD, Philadelphia, PA John A. Abraham, MD, Philadelphia, PA Noreen J. Hickok, PhD, Philadelphia, PA

Doxycycline-modif ed bone allografts resist bacterial colonization and biof lm formation while remaining biocompatible and could prevent infections following graft implantation.

#### 2:54 PM

# • Surgical Treatment of Infected Tumor Megaprostheses with Staged Reconstruction

Joseph Benevenia, MD, Newark, NJ Francis R. Patterson, MD, Newark, NJ Kathleen S. Beebe, MD, Newark, NJ Steven Rivero, MD, Warren, NJ

In patients with infected tumor prostheses radical debridement, antibiotics, and custom spacers followed by selective one- and two-stage reimplantation can result in successful limb salvage.

Discussion – 6 minutes

#### 3:06 PM

#### Tumor Prosthesis Infection: Revision Outcomes with Retained Compressively Osseointegrated Anchors

Christopher Langhammer, MD, San Francisco, CA Richard O'Donnell, MD, San Francisco, CA Rosanna L. Wustrack, MD, San Francisco, CA

In a compressively osseointegrated implant, two-stage revision with anchor retention is a viable treatment strategy, with acceptable infection eradication (66.7%) and limb salvage (77.8%) rates.

#### 3:12 PM

#### The Outcome of Frozen Autograft Using Iodine-Coated Implants: Comparison with Non-Coated Implants

Toshiharu Shirai, MD, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan Ryu Terauchi, MD, PhD, Kyoto, Japan Shinji Miwa, MD, Ishikawa, Japan Akihiko Takeuchi, MD, Kanazawa, Japan Hiroaki Kimura, MD, PhD, Nagoya, Japan Katsuhiro Hayashi, MD, Kanazawa, Japan Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan Toshikazu Kubo, MD, Kyoto, Japan

We compared iodine-coated implants with non-coated implants for frozen autograft. The 5-year survival rates of autograft were 86.7% and 79.3%, respectively. Infection rate was low in the coated group.

#### 3:18 PM

#### Paper 150

The Prognostic Nutritional Index as a Predictor of Wound Complications in Soft Tissue Sarcoma Patients

Tae W. Kim, MD, New York, NY Samuel Hardy, MD, Camden, NJ Ryan C. Milller, BA, Voorhees, NJ Richard D. Lackman, MD, Philadelphia, PA Mark Angelo, MD, FACP, Camden, NJ

Pre-operative nutritional status, measured by Onoderas Prognostic Nutritional Index, is predictive of wound complications in patients with soft tissue sarcomas undergoing radiation therapy.

Discussion – 6 minutes

#### PAPER PRESENTATION

#### 1:30 PM – 3:30 PM Room W315

#### **Adult Reconstruction Knee II: Primary TKA**

Moderator(s): Marc E. Umlas, MD, Miami Beach, FL, Siraj A. Sayeed, MD, San Antonio, TX

#### 1:30 PM

Paper 151

Paper 152

# Complications after Total Knee Arthroplasty in Patients with Hemophilia or Von Willebrand's Disease

Jourdan M. Cancienne, MD, Charlottesville, VA Brian C. Werner, MD, Charlottesville, VA James A. Browne, MD, Charlottesville, VA

Patients with hemophilia A and von Willebrand's disease are at a signif cantly increased risk for complications following TKA compared to matched controls.

#### 1:36 PM

#### Readmissions and Complications for Dialysis Patients Undergoing a Primary Total Knee Arthroplasty

Louis C. Okafor, MD, Indianapolis, IN Anne Kuwabara, BA, Indianapolis, IN Mostafa H. El Dafrawy, MD, Indianapolis, IN Zan Naseer, Forest Hill, MD Clayton Alexander, MD, Indianapolis, IN Karthikeyan E. Ponnusamy, MD, Indianapolis, IN Robert S. Sterling, MD, Owings Mills, MD Richard L. Skolasky Jr, ScD, Indianapolis, IN Harpal S. Khanuja, Cockeysville, MD

For primary TKA patients, dialysis-status is an independent risk factor for signif cantly greater rates of readmissions, complications, and 2-year mortality and infections, but not for revisions.

#### 1:42 PM

#### Readmission and Complication Rates Among Parkinson Patients Undergoing a Primary Total Knee Arthroplasty

Paper 153

Paper 154

Paper 155

Mostafa H. El Dafrawy, MD, Indianapolis, IN Louis C. Okafor, MD, Indianapolis, IN Clayton Alexander, MD, Indianapolis, IN Zan Naseer, Forest Hill, MD Karthikeyan E. Ponnusamy, MD, Indianapolis, IN Robert S. Sterling, MD, Owings Mills, MD Richard L. Skolasky Jr, ScD, Indianapolis, IN Harpal S. Khanuja, MD, Indianapolis, IN

Primary TKA patients with Parkinson's are at greater risk for complications and readmissions after discharge and should be followed closely to avoid these problems.

#### Discussion – 6 minutes

#### 1:54 PM

#### Psychiatric Disorders Increase Complication Rate After Primary Total Knee Arthroplasty

Mitchell R. Klement, MD, Durham, NC Brian T. Nickel, MD, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Abiram Bala, BA, Durham, NC Samuel S. Wellman, MD, Durham, NC Michael P. Bolognesi, MD, Durham, NC Thorsten M. Seyler, MD, PhD, Winston-Salem, NC

A diagnosis of depression, bipolar, or schizophrenia doubles the risk of periprosthetic infection and revision after total knee arthroplasty.

#### 2:00 PM

#### Quality of Life and Satisfaction Rates in Young Active Patients Aged 50 Years or Younger Undergoing TKA

Graham S. Goh, Singapore, Singapore Ming Han Liow, MD, MBBS, Singapore, Singapore Hamid Rahmatullah Bin Abd Razak, MBBS, Singapore, Singapore

Hee-Nee Pang, MBBS, MRCS, Singapore, Singapore Darren Tay, MBBS, FRCS (Ortho), Singapore, Singapore Ngai-Nung Lo, MD, Singapore, Singapore Seng-Jin Yeo, FRCS, Singapore, Singapore

Young active patients undergoing TKA experience signif cant improvement to their quality of life, have their expectations met and are satisf ed with their surgeries.

#### 2:06 PM

#### Are Post-TJR Readmissions Associated with Poorer Functional Gain After Total Joint Replacement?

Patricia Franklin, MD, MBA, Worcester, MA Wenjun Li, PhD, Worcester, MA Celeste Lemay, RN, MPH, Worcester, MA David C. Ayers, MD, Worcester, MA

Patients with 30 day readmissions after TJR have poorer 6 month global function, but no difference in pain relief or function. Joint-specif c PRO measures are needed to assess TJR impact.

#### Discussion – 6 minutes

2:18 PM

### Paper 157

Paper 158

Paper 159

Paper 156

#### Hospital Inpatient versus Home-Based Rehabilitation after Knee Arthroplasty - The HIHO Study

Mark Buhagiar, Prairiewood, NS, Australia Justine M. Naylor, PhD, Liverpool, Australia Ian Harris, MBBS, FRACS, PhD, Caringbah, Australia Wei Xuan, PhD, Sydney, NS, Australia Friedbert Kohler, MBBS, FACRM, Wetherill Park, NS, Australia Rachael J. Wright, BAppSc (OT), Fairf eld, NS, Australia Renee Fortunato, BAppSc (Physio), Sydney, NS, Australia

A two-arm parallel randomised controlled trial across two sites comparing the effectiveness of inpatient to home-based rehabilitation following total knee arthroplasty.

#### 2:24 PM

#### Short Stay Total Joint Replacement: Any Difference Between Day 0 and Day 1 Discharge?

Jesse E. Otero, MD, Iowa City, IA Andrew J. Pugely, MD, Coralville, IA Nicholas Bedard, MD, Iowa City, IA Christopher T. Martin, MD, Coralville, IA Yubo Gao, PhD, Iowa City, IA Nicolas O. Noiseux, MD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

In the population studied, the complication rate for patients discharged on POD 0 is signif cantly greater than for patients discharged on POD 1 following TJA.

#### 2:30 PM

#### Metal or Modularity: Why Do Metal-Backed Tibias Have Inferior Outcomes to All-Polyethylene Tibial Components

Matthew Houdek, MD, Rochester, MN Eric R. Wagner, MD, Rochester, MN Cody Wyles, BS, Rochester, MN Joseph R. Cass, MD, Rochester, MN Robert T. Trousdale, MD, Rochester, MN Michael J. Taunton, MD, Rochester, MN

All-polyethylene tibial components have signif cantly improved survival when compared to metal backed tibial components, regardless of modularity.

#### 2:42 PM

#### Long-Term Survival and Reoperation Rates in Primary Total Knee Arthroplasty Using Constrained Implants

Taylor Beahrs, MD, Rochester, MN John R. Martin, MD, Rochester, MN Robert T. Trousdale, MD, Rochester, MN

When varus/valgus constrained or rotating hinge implants are required at the time of primary total knee arthroplasty, the risk of revision is over three times higher at 20 years postoperatively.

#### 2:48 PM

#### 10-Year Results of a Randomized Clinical Trial of Mobile-Bearing vs. Fixed-Bearing Total Knee Arthroplasty

Matthew P. Abdel, MD, Rochester, MN Meagan E. Tibbo, Atlanta, GA Robert T. Trousdale, MD, Rochester, MN Arlen D. Hanssen, MD, Rochester, MN Mark W. Pagnano, MD, Rochester, MN

This large randomized clinical trial of one modern, cemented TKA design detected no difference in durability, range of motion, or function between mobile- and f xed-bearing TKAs at 10 years.

#### 2:54 PM

#### Ceramicised Metal Compared to Cobalt-Chromium in Knee Replacement: Results of 70,323 Primary TKR from the AOANJRR

Peter L. Lewis, MB, Adelaide, Australia Stephen Graves, MD, Adelaide, Australia David Davidson, MD, University Of Adelaide, Australia Richard De Steiger, MD, Richmond, Australia Christopher Vertullo, MBBS, FRACS, Benowa, Australia Ann Tomkins, Adelaide, Australia Michelle Lorimer, Adelaide, Australia Sophia Rainbird, Adelaide, Australia

Ceramicised metal knee replacements showed overall a signif cantly higher rate of revision after 9 months.

#### Discussion – 6 minutes

#### 3:06 PM

### Prospective, Randomized Trial of Two Cement Types in Patients Undergoing Simultaneous Bilateral Knee Replacement

John T. Dearborn, MD, Fremont, CA Alexander P. Sah, MD, Fremont, CA

In a study of 200 bilateral TKA patients with different cement used in each knee, a signif cantly higher rate of tibial sclerotic lines and progressive lucencies occurred with one cement type.

#### Discussion – 6 minutes

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 160

Paper 161

Paper 162

**PAPER 286** 

**PAPER 348** 

**PAPER 359** 

**PAPER 354** 

## **Tuesday, March 1**

#### 3:12 PM

#### Paper 164

#### Simultaneous Bilateral vs. Unilateral Knee Replacement: Comparing Readmissions and Major Complications

Adam Hart, MD, Montreal, QC, Canada John Antoniou, MD, FRCSC, PhD, Montreal, QC, Canada Yaron S. Brin, MD, Kfar-Saba, Israel Laura M. Epure, Montreal, QC, Canada Olga Huk, MD, Westmount, QC, Canada David Zukor, MD, Montreal, QC, Canada Stephane Bergeron, MD, kirkland, QC, Canada

We queried the National Surgical Quality Improvement Program database to compare the rate of 30-day readmission and major complications between simultaneous bilateral TKA and unilateral TKA.

#### 3:18 PM

Paper 165

Bilateral Simultaneous versus Staged Total Knee Replacement: A Comparison of Complications and Mortality

Dhiren S. Sheth, MD, Irvine, CA Guy Cafri, PhD, La Jolla, CA Liz Paxton, MA, Rcho Santa Fe, CA Robert S. Namba, MD, Santa Ana, CA

After adjusting for patients, surgeon and hospital characteristics, we found no evidence of increased risk of revision, infection, death, or complications in bilateral simultaneous versus staged TKR.

Discussion – 6 minutes

#### PAPER PRESENTATION

#### Valencia Room D

#### **Global Perspectives Paper Session**

Moderator(s): Xavier A. Duralde, MD, Atlanta, GA, Dean G. Sotereanos, MD Pittsburg, PA

#### 1:36 PM

**PAPER 300** 

**PAPER 299** 

Reverse Total Shoulder Arthroplasty After Failed Open Reduction and Internal Fixation of Proximal Humerus Fracture

Florian Grubhofer, Zurich, Switzerland Karl Wieser, MD, Zurich, Switzerland Christian Gerber, MD, Zurich, Switzerland

In this retrospective study, we analyze outcome data of patients treated with reversed total shoulder arthroplasty after failed open reduction and internal f xation of a proximal humerus fracture

#### 1:42 PM

#### **Revision of Reverse Shoulder Arthroplasty**

Michael J. Koch, MD, Munich, Germany Judith Lifka, M.D., Ismaning, Germany Ashish Gupta, MD, Brisbane, Australia Ludwig Seebauer, MD, Munchen, Germany

Revisoin Surgery of Reverse Shoulder Arthroplasty requieres precise analysis and preoperative planning to avoid further revision procedures and implant removal

#### 1:48 PM

#### Electromyographic and Kinectic Function of Reverse Total Shoulder Arthroplasty

Stephane Pelet, MD, PhD, Québec, Quebec, Canada Mathieu Ratte-Larouche, MD, Quebec, Quebec, Canada

The sequence of muscular activation in RTSA is different than in normal shoulder and demonstrates a signif cant contribution of both the trapezius and latissimus dorsi.

Discussion – 6 minutes

#### 2:00 PM

#### How Long Should We Monitor High-grade Partial Thickness Rotator Cuff Tears?

Oh Joo Han, MD, Seongnam, Republic of Korea Jieun Kwon, Seoul, Republic of Korea Sae Hoon Kim, MD, Seoul, Republic of Korea Jeong Dong Lee, MD, Seongnam-Si, Republic of Korea Je Kyun Kim, MD, Seongnam-Si, Republic of Korea Do Yeon Kim, Seongnam-Si, Republic of Korea Tae-Yon Rhie, MD, PhD, Seoul, Republic of Korea

Thirty-one percent of high-grade partial thickness rotator cuff tears would progress to full thickness tears as time went by. Therefore regular monitoring should be considered.

#### 2:06 PM

#### Superior Capsule Reconstruction For Irreparable Rotator Cuff Tear; A Prospective Study in 100 Consecutive Patients

Teruhisa Mihata, MD, PhD, Takatsuki, Osaka, Japan Thay Q. Lee, PhD, Long Beach, California Yasuo Itami, MD, Ibaraki, Osaka, Japan Masashi Neo, Takatsuki, Japan

Arthroscopic superior capsule reconstruction restored shoulder function and resulted in high rates of return to recreational sport and work with a few complications.

### 2:12 PM

# Does Stiffness Impair or Enhance Healing Post Rotator Cuff Repair?

William J. McNamara, Goulburn, Australia Patrick H. Lam, PhD, Sydney, Australia George A. Murrell, MD, Kogarah, Australia

Pre and post-operative pain is benef cial for rotator cuff tendon to bone healing.

Discussion – 6 minutes

#### 2:18 PM

#### Revision Rotator Cuff Repair with Mesenchymal Stem Cells Decreases Subsequent Revision Risk

Philippe Hernigou, PhD, Creteil, France Charles-henri f ouzat-lachaniette, MD, Créteil Cedex, Fance

This study showed that signif cant improvement in healing outcomes could be achieved by the use of BMC containing MSC as an adjunct therapy in revision rotator cuff repair.

#### 2:30 PM

#### **PAPER 840**

**PAPER 871** 

#### Extent of Motor and Sensory Recovery in Patients with Cubital Tunnel Syndrome

Takao Omura, MD, PhD, Hamamatsu, Japan Yukihiro Matsuyama, MD,PhD, Hamamatsu, Japan

We show that the sensory and motor recovery in patients with cubital tunnels syndrome depends on the severity of disease and that patients regain more sensory recovery than motor.

#### 2:36 PM

#### PAPER 836

Outcomes Following Hemiarthroplasty of the Elbow: Minimum Two-Year Follow Up

Jean-David Werthel, Paris, France Bradley S. Schoch, MD, Rochester, MN Julie E. Adams, MD, Hixson, TN Scott P. Steinmann, MD, Rochester, MN

Elbow HA is an option for young/active patients with end stage elbow arthritis or unreconstructable distal humerus fractures in whom alternative procedures have failed.

Discussion – 6 minutes

#### 2:42 PM

#### Anatomy of the Origin of the Supinator Muscle and its Role in Lateral Elbow Pain

Jairo F. Gomez Ramirez, MD, Bogota, Colombia Luis F. Calixto, MD, Bogota, Colombia

The supinator is implicated in persistent pain of the elbow lateral epicondylitis and its Origen is in direct relationship with the extensor carpi radialis brevis

#### 2:54 PM

#### PAPER 084

**PAPER 831** 

## Which Method is Better for Biecps Tenodesis? Prospective Randomized Comparaive Study

Jisoon Park, MD, Seoul, Republic of Korea Hojin Jung, Seoul, Republic of Korea Tae-Yon Rhie, MD, PhD, Seoul, Republic of Korea Sae Hoon Kim, MD, Seoul, Republic of Korea Joo Han Oh, Seoul, Republic of Korea Joo Han Oh, Seoul, Republic of Korea

Interference screw f xation seemed to have higher risk in terms of the anatomic failure of biceps tenodesis than suture anchor f xation even though functional outcome was not different.

#### 3:00 PM

#### Long Head of Biceps Management: Prospective Cohort Study of High Versus Subpectoral Tenodesis

Paper 086

**PAPER 081** 

**PAPER 544** 

Francesco Franceschi, MD, Rome, Italy Edoardo Franceschetti, MD, Roma, Italy Alessio Palumbo, MD, Roma, Italy Biagio Zampogna, MD, Rome, Italy Michele Paciotti, MD, Avezzano, Italy Guglielmo Torre, MS, Roma, Italy Nicola Maffulli, MD, FRCS(Orth), London, United Kingdom Rocco Papalia, MD, PhD, Rome, Italy Vincenzo Denaro, MD Prof, Rome, Italy

The open subpectoral tenodesis is a is an easy and reproducible technique, leading to better clinical and cosmetic results when compared to the high arthroscopic tenodesis.

Discussion – 6 minutes

#### 3:06 PM

### Arthroscopic Capsular Release versus Manipulation under Anesthesia in the Management of Adhesive Capsulitis

Walid S. Osman, MD, Cairo, Egypt John Elfar, MD, Rochester, NY Ahmed M. Saeed SR, DMed, Cairo, Egypt

Follow up results for arthroscopic release and manipulation in adhesive capsulitis nonresponsive to conservative treatment showed similar and substantial improvements in function and pain relief.

#### 3:12 PAPER 833

# Can the Use of Platelet-Rich Plasma (PRP) in Chronic Elbow Tendinitis Avoid Surgery?

Nimesh Patel, MRCS, MBBS, BSc, London, United Kingdom Edward C. Matthews, MBCHB, Devon, United Kingdom Darren Munn, Torquay, United Kingdom Rangaraju Ramesh, FRCS (Ortho), Paignton, Devon, United Kingdom

The use of PRP to treat chronic elbow tendonitis gives a signif cant improvement in symptoms, avoiding the need for surgery. PRP preparation technique is stipulated to provide the benef cial results.

#### 3:18 PM

# Randomized Trial on Proximal Humerus Fractures: Locking Plate or Intramedullary Nailing

Mauro E. Gracitelli, MD, Lapa, Brazil Eduardo A. Malavolta, MD, São Paulo, Brazil Jorge H. Assunção, São Paulo, Brazil Arnaldo Ferreira, MD, Sao Paulo, Brazil Paulo R. Reis, MD, Sao Paulo, Brazil Jorge D. Silva, Sao Paulo, Brazil Kodi E. Kojima, MD, Sao Paulo, Brazil

Proximal humerus fractures, classif ed as 2 and 3 parts of Neer, showed similar Constant and DASH scores between the groups, but complications were higher in the Nail Group

#### Discussion – 6 minutes

### **INSTRUCTIONAL COURSE LECTURE**

#### 3:00 PM - 4:00 PM



### Lifelong Learning: Principles of Peer Education in **Orthopaedics**

Room W209B Moderator: Evan L. Flatow, MD, New York, NY L. Scott Levin, MD, Philadelphia, PA William N. Levine, MD, New York, NY

Provides orthopaedic surgeons with tips to endeavor toward a life of learning and teaching.

#### **Symposium**

4:00 PM — 6:00 PM **Chapin Theater** 

#### Game Changers in Elbow Surgery: New Paradigms that **Transformed My Practice (G)**

Moderator: Joaquin Sanchez-Sotelo, MD, Rochester, MN

The practice of elbow surgery has been transformed by a number of elements, from newly described diagnostic physical examination f ndings to modern techniques for sport injuries, elbow arthroscopy, fracture f xation, and elbow arthroplasty.

- I. Ligament Reconstruction and the Thrower's Elbow Christopher S. Ahmad, MD, New York, NY
- II. Radial Head Replacement: Make it Work Short and Long-Term George S. Athwal, MD, London, ON, Canada
- III. The Ulnar Nerve: To transpose/not transpose, is that the question? Michael Hausman, MD, New York, NY
- IV. Elbow Arthroscopy: New Indications and Techniques Jay D. Keener, MD, Saint Louis, MO
- V. Primary Total Elbow Arthroplasty: The Triceps and Modern Implants Graham J. King, MD, London, ON, Canada
- VII. Plating Distal Humerus Fractures: Exposures and Techniques Michael D. McKee, MD, Toronto, ON, Canada
- VIII. Lateral Elbow Pain Is Not Always Tennis Elbow Mark E. Morrey, MD, Rochester, MN
- IX. Physical Examination Findings That Are Diagnostic Shawn W. O'Driscoll, MD, Rochester, MN
- Х. When and How To Fix the Coronoid? David C. Ring, MD, Boston, MA

### **INSTRUCTIONAL COURSE LECTURE**

#### 4:00 PM — 6:00 PM

#### 161 Primary Total Hip Arthroplasty: Everything You Need to Know TICKET

Moderator: Jay R. Lieberman, MD, Los Angeles, CA Room

John J. Callaghan, MD, Iowa City, IA W304F J. Bohannon Mason, MD, Charlotte, NC Robert T. Trousdale, MD, Rochester, MN

> Course presenters review preoperative and postoperative strategies to improve outcomes, component preparation and implantation techniques (video demonstrations), and bearing surface selection.

162 TICKET

W307C

#### The Land of Ligaments: Navigating Sprains, Strains, and **Ruptures about the Foot and Ankle**

Room

Moderator: Robert B. Anderson, MD. Charlotte, NC James A. Nunley II, MD, Durham, NC Martin J. O'Malley, MD, New York, NY David A. Porter, MD, Fishers, IN

A spectrum of ligamentous injuries about the ankle and foot are presented with emphasis on those occurring in sport. Case studies and videos are used to illustrate.



#### Accountable Care Organizations: A Discussion of **Bioethical Conficts**

Moderator: Paul Levin, MD, Bronx, NY Daniel K. Moon, MD, Newton, MA



Lisa Taitsman, MD, Seattle, WA Designed to analyze many of the common and relevant ethical dilemmas faced by practicing orthopaedic surgeons. The session is case-based and utilizes the

audience response answer system. It is designed to stimulate and encourage signif cant audience participation.

164 Hand Fractures: Simple to Complex



Moderator: Richard A. Bernstein, MD, Hamden, CT Michael S. Bednar, MD, Maywood, IL Randipsingh R. Bindra, MD, Bundall, Australia Craig S. Williams, MD, Des Plaines, IL

Presents the latest advances in the treatment of fractures of the hand, metacarpals, and phalanges in adults and the pediatric population. The pros and cons of open, limited incision, and percutaneous methods are presented. Through a series of didactic lectures and case discussion, participants are presented with the most current approaches to simple and complex injuries of the hand.

S C SVI I

Room

#### 165 **Do Not Fear Elbow Fractures in Children**

Moderator: David L. Skaggs, MD, Los Angeles, CA TICKET John M. Flynn, MD, Philadelphia, PA Mininder S. Kocher, MD, MPH, Boston, MA Peter M. Waters, MD, Boston, MA W209A

Helps prepare an orthopaedic surgeon covering anemergency department to diagnose, treat, and avoid complications in pediatric elbow fractures such aslateral condyle fractures, radial neck fractures, medial epicondyle fractures, and supracondylar fractures based on the latest literature.

#### 166 Anatomy of a Medical Liability Lawsuit: Practical Issues in Malpractice Avoidance TICKET

Moderator: John P. Lyden, MD, New York, NY Room Theodore J. Clarke, MD, Golden, CO W205B Anisa Kelley, JD, Fairfax, VA Joseph L. Messa Jr., Esq., Philadelphia, PA

> A medical negligence defense attorney and orthopaedic experts in medical liability present techniques and tips to use during medical negligence lawsuits and plaintiff depositions.

#### 167 **Arthroscopic Rotator Cuff Repair:** Indication and Technique TICKET

Moderator: Felix H. Savoie, MD, New Orleans, LA Jeffrey S. Abrams, MD, Princeton, NJ Joshua S. Dines, MD, New York, NY Peter J. Millett, MD, MSc, Vail, CO

Reviews current physical examination, imaging, andoptimal surgical and biologic repair techniques in the injured rotator cuff patient, as well as costeff cient postoperative care via a case-based, interactive approach.

#### **168 Pitfalls in the Operative Management of Common** Shoulder Problems: How to Avoid and What To Do TICKET When They Occur ....

Moderator: Joseph D. Zuckerman, MD, New York, NY Asheesh Bedi, MD, Ann Arbor, MI Room Michael J. Gardner, MD, Saint Louis, MO W314 Andrew S. Rokito, MD, New York, NY

> Focuses on avoiding common pitfalls in performingrotator cuff repairs, acromioclavicular joint repairs, open reduction/internal f xation of proximal huneral fractures, shoulder arthroplasty, and how to treat problems when they occur.

#### **169 Surgical Management of Cervical Spondylotic** Myelopathy TICKET

Moderator: James Kang, MD, Pittsburgh, PA Room Chris A. Cornett, MD, Omaha, NE W308C

Clinton J. Devin, MD, Nashville, TN Joon Y. Lee, MD, Pittsburgh, PA

> Pathophysiology of cervical spondylotic myelopathyis discussed followed by a thorough discussion on the rationale for surgical treatment. Indications for anterior, posterior, as well as combined approaches, are discussed.

#### 170 **Dilemmas of the Throwing Shoulder**

Moderator: James R. Andrews, MD, Gulf Breeze, FL James P. Bradley, MD, Pittsburgh, PA Neal S. ElAttrache, MD, Los Angeles, CA Anthony A. Romeo, MD, Chicago, IL

The presenters discuss the various pathologies of the throwing shoulder, including the role of retroversion and soft tissue, physical examination signs, and treatment options.

#### 171 Young Femoral Neck Fractures -

#### Why Are They So Scary?

TICKET

Room

W202

TICKET

Room

W204

Moderator: Brett D. Crist, MD, Columbia, MO Tania Ferguson, MD, MS, Gig Harbor, WA Christopher G. Finkemeier, MD, Granite Bay, CA Mark A. Lee, MD, Sacramento, CA

A "young" femoral neck fracture is a case that causes signif cant stress for orthopaedic surgeons. When should they be f xed, how can I get it anatomically reduced and avoid complications? This ICL reviews it all throughdidactics, debate, and case discussion.

#### 172 **Geriatric Trauma: Acute Arthroplasty for Fractures**

TICKET

Room

W205A

Moderator: Jonathan P. Braman, MD, Minneapolis, MN William W. Cross III, MD, Rochester, MN

Scott B. Marston, MD, Dellwood, MN

Thomas F. Varecka, MD, Minneapolis, MN

Using a case-based format, discussion focuses onshoulder, elbow, acetabular, hip, and knee fractures treated acutely with arthroplasty.

Room

W203



Room

W207

#### The Scary Total Knee Arthroplasty -

A Case-based Approach to Complex Knees Moderator: Fred D. Cushner, MD, New York, NY Keith R. Berend, MD, New Albany, OH Henry D. Clarke, MD, Phoenix, AZ Craig J. Della Valle, MD, Chicago, IL Steven B. Haas, MD, New York, NY Michael A. Kelly, MD, Hackensack, NJ Adolph V. Lombardi Jr, MD, New Albany, OH William J. Long, MD, New York, NY David J. Mayman, MD, New York, NY Jose A. Rodriguez, MD, New York, NY Giles R. Scuderi, MD, New York, NY Geoffrey H. Westrich, MD, New York, NY

Focuses on special situations where standard kneeprotocols need to be modif ed to address specif c patient needs. The case is presented followed by an approach on how to best treat each patient scenario. Following the case, a short literature review is offered with specif c treatment modif cation options stated.

#### **188** TICKET

Room

W208

#### How to Approach and Treat Metastatic Disease -**Interactive and Case-based Discussion**

Moderator: Valerae O. Lewis, MD, Houston, TX Megan E. Anderson, MD, Boston, MA Patrick J. Boland, MD, New York, NY Susan V. Bukata, MD, Los Angeles, CA Ginger E. Holt, MD, Nashville, TN Francis J. Hornicek, MD, Boston, MA G. Douglas Letson, MD, Tampa, FL Bryan S. Moon, MD, Houston, TX Carol D. Morris, MD, MS, Indianapolis, IN Peter S. Rose, MD, Rochester, MN Kristy L. Weber, MD, Philadelphia, PA

It is crucial for the general orthopaedic surgeon to know how to effectively recognize and work up osseous metastatic (or presumptive metastatic) disease. As the survival for this patient population continues to improve, appropriate and durable f xation/management is imperative. Case scenarios and surgical, non-invasive, and minimally invasive treatment options are discussed.

### THE WAY I SEE IT...

4:00 PM - 5:00 PM Room W311A

#### The Way I See It...Healthcare

Moderator: Douglas W. Lundy, MD, Marietta, GA Brandon D. Bushnell, MBA, MD, Rome, GA Hassan R. Mir, MD, MBA, Nashville, TN Alexandra E. Page, MD, La Jolla, CA

Learn the varying opinions of the experts do in healthcare. Beneft from the inside story - what each presenter wants you to know about a top-of-the-mind issue. Experts share their experience and views, just the way they see it.

### **PAPER PRESENTATION**

4:00 PM — 6:00 PM Valencia Room D

#### **Adult Reconstruction Hip II: Complications I**

Moderator(s): Theodore T. Manson, MD, Bel Air, MD, Andrew H. Glassman, MD, Columbus, OH

#### 4.00 PM

Paper 166 Hypoalbuminemia Predicts Joint Infection, Pneumonia, and **Readmission After Total Joint Arthroplastv** Daniel D. Bohl, MD, MPH, Chicago, IL

Mary R. Shen, MS, Chapel Hill, NC Erdan Kayupov, Troy, MI Craig J. Della Valle, MD, Chicago, IL

Among 49,603 patients, hypoalbuminemia (a proxy for malnutrition) independently predicted joint infection, pneumonia, and readmission after total joint arthroplasty.

#### 4:06 PM

#### The Serum Albumin Threshold for Increasing Perioperative complications After THA is 3.0 g/dL

Charles L. Nelson, MD, Philadelphia, PA Atul F. Kamath, MD, Philadelphia, PA Nabil M. Elkassabany, MD, Philadelphia, PA Zhenggang Guo, MD, Philadelphia, PA JIABIN LIU, MD, PhD, Philadelphia, PA

Low serum albumin is associated with peri-operative complications following THA. The threshold def ning a signif cant increase in complications appears to be an albumin level of less than 3.0 g/dL.

#### 4:12 PM

#### The Interaction of Obesity and Diabetes in Determining Risk of **Complication Following Total Joint Arthroplasty**

Linda Suleiman, MD, Chicago, IL Hasham M. Alvi, MD, Chicago, IL Adam Edelstein, MD, Chicago, IL Mary J. Kwasny, PhD, Chicago, IL Matthew D. Beal, MD, Chicago, IL David W. Manning, MD, Elmhurst, IL

Diabetes increases risk for CMS-reportable complications following TJA irrespective of BMI. Obesity, when represented as a continuous variable, shows the arbitrary nature of surgical BMI cutoffs.

Discussion – 6 minutes

Paper 167

Paper 168

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 4:24 PM

#### Morbid Obesity is a Risk Factor for Early Deep Surgical Site Infection Following Revision Total Joint Arthroplasty

David Sing, San Francisco, CA Derek Ward, MD, Philadelphia, PA Alfred C. Kuo, MD, San Francisco, CA

Surgeons should anticipate increased risk for deep surgical site infection in morbidly obese patients undergoing revision total joint arthroplasty.

#### 4:30 PM

#### **Total Hip Arthroplasty Risk after Bariatric Surgery**

Brian T. Nickel, MD, Durham, NC Mitchell R. Klement, MD, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Cynthia L. Green, Durham, NC Abiram Bala, BA, Durham, NC Michael P. Bolognesi, MD, Durham, NC Thorsten M. Seyler, MD, PhD, Winston-Salem, NC

Bariatric weight loss surgery prior to total hip arthroplasty does not ameliorate complications perhaps due to malnourishment secondary to rapid weight loss and/or lingering comorbities.

#### 4:36 PM

Paper 171

Paper 169

Paper 170

# Development and Evaluation of a Preoperative Risk Calculator for Periprosthetic Joint Infection

Timothy Tan, MD, Philadelphia, PA Mitchell Maltenfort, PhD, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA Alisina Shahi, MD, Philadelphia, PA Amber R. Madden, BA, Sicklerville, NJ Javad Parvizi, MD, FRCS, Philadelphia, PA

This study on a large number of patients from a single institution, has determined the relative weight of various risk factors for PJI following total joint arthroplasty.

Discussion – 6 minutes

#### 4:48 PM

#### Paper 172

# Which Hospital and Clinical Factors Drive 30-Day Readmission after THA?

Steven M. Kurtz, PhD, Philadelphia, PA Edmund Lau, MS, Menlo Park, CA Kevin Ong, PhD, Philadelphia, PA Edward M. Adler, MD, New York, NY Frank R. Kolisek, MD, Greenwood, IN Michael T. Manley, PhD, Wyckoff, NJ

We observed signif cant variability among hospitals 30 day readmission across the US, suggesting several different potential strategies for reducing 30d RA after THA by optimizing clinical pathways.

#### 4:54 PM

#### 10 Year Trends In Complications After 540,623 Primary Hip Replacements Using A National Database

Tom Partridge, MBBS, New Castle, United Kingdom Simon Jameson, Stockton-on-Tees, United Kingdom Paul Baker, MB, ChB, Newcastle Upon Tyne, United Kingdom David Deehan, MD FRCS, England, United Kingdom James Mason, PhD, Stockton-on-Tees, United Kingdom Mike R. Reed, MBBS MD, Northumberland, United Kingdom

540,623 patients underwent THR between 2005 and 2014 in England and Wales. The HES database was used to evaluate trends in mortality and complications and quantify risk.

### 5:00 PM

#### Paper 174

Paper 175

#### Iliopsoas Impingement After Primary Total Hip Arthroplasty: Operative And Non-operative Treatment Outcomes

Brian Chalmers, MD, Rochester, MN Peter K. Sculco, MD, Rochester, MN Rafael J. Sierra, MD, Rochester, MN Robert T. Trousdale, MD, Rochester, MN Daniel J. Berry, MD, Rochester, MN

Operative management has a higher groin pain resolution rate than conservative treatment. Amount of preoperative acetabular cup prominence affects success rates of tenotomy and acetabular revision.

Discussion – 6 minutes

#### 5:12 PM

#### Primary Total Hip Arthroplasty Patients with Parkinson's have Increased Two-Year Dislocation and Revision Rates

Karthikeyan E. Ponnusamy, MD, Indianapolis, IN Mostafa H. El Dafrawy, MD Louis C. Okafor, MD, Indianapolis, IN Clayton Alexander, MD, Indianapolis, IN Zan Naseer, Forest Hill, MD Robert S. Sterling, MD, Owings Mills, MD Richard L. Skolasky Jr, ScD, Indianapolis, IN Harpal S. Khanuja, MD, Indianapolis, IN

After a primary THA, patients with Parkinson's disease have more short-term complications and readmissions, and in addition have greater rates of 2-year dislocations and revisions.

#### 5:18 PM

#### Paper 176

#### Should We Think Twice About Psychiatric Disease In Total Hip Arthroplasty?

Mitchell R. Klement, MD, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Abiram Bala, BA, Durham, NC Daniel J. Blizzard, MD, Durham, NC Samuel S. Wellman, MD, Durham, NC Michael P. Bolognesi, MD, Durham, NC Thorsten M. Seyler, MD, PhD, Winston-Salem, NC

Overall, any psychiatric diagnosis nearly doubles the risk of periprosthetic infection, dislocation, and THA revision after total hip arthroplasty.

#### 5:24 PM

Paper 177

# Late Complications Following Elective Primary THA and TKA: Who, When, and How?

Joshua C. Rozell, MD, Philadelphia, PA Paul M. Courtney, MD, Philadelphia, PA Jonathan R. Dattilo, MD, Philadelphia, PA Chia H. Wu, MD, MBA, Philadelphia, PA Gwo-Chin Lee, MD, Philadelphia, PA

Comorbidities associated with signif cantly increased risk of complications include cirrhosis, CHF, and CKD. These patients should be excluded from early discharge total joint arthroplasty protocols.

Discussion – 6 minutes

#### 5:36 PM

#### Paper 178

### Myocardial Cobalt Levels Are Elevated After Joint Arthroplasty and Associated with Cardiac Pathology

Cody Wyles, BS, Rochester, MN Robert T. Trousdale, MD, Rochester, MN

This study demonstrates that Co levels are increased in the myocardium of patients with Co/Cr-containing prosthetics and that increased Co levels are correlated with pathologic cardiac changes.

#### 5:42 PM

#### Paper 179

#### Heart Failure after ASR XL Metal-on-Metal Hip Replacements in Men

Stephen Graves, MD, Adelaide, Australia Marianne H. Gillam, M.D., Ph.D, Adelaide, Australia Nicole Pratt, PhD, Adelaide, Australia Elizabeth E. Roughead, Ph.D, Adelaide, Australia

Men with ASR XL prostheses are at increased risk of developing heart failure and may need close monitoring and measures to prevent serious complications.

#### 5:48 PM

# Patient-Reported Metal Allergy: A Risk Factor for Poor Outcomes following Total Joint Arthroplasty?

Paper 180

**PAPER 916** 

Paper 181

Denis Nam, MD, Saint Louis, MO Kevin Li, BS, Saint Louis, MO Staci Johnson, M.Ed, Saint Louis, MO James A. Keeney, MD, Columbia, MO Ryan Nunley, MD, Saint Louis, MO Robert L. Barrack, MD, Saint Louis, MO

3.0% of patients undergoing total joint arthroplasty report a metal allergy with nearly all being female. Mental health scores were decreased postoperatively in patients reporting a metal allergy.

Discussion – 6 minutes

#### 5:54 PM

#### Preoperative Hip Injections Increase the Rate of Periprsthetic Infection After Total Hip Arthroplasty

William W. Schairer, MD, New York, NY Benedict U. Nwachukwu, MD, MBA, New York, NY Stephen Lyman, PhD, New York, NY David J. Mayman, MD, New York, NY Seth A. Jerabek, MD, Lake Nebagamon, WI

We use population-level data to show that corticosteroid injections within 3 months of primary total hip arthroplasty is associated with increased risk of infection within one year

#### PAPER PRESENTATION

#### 4:00 PM — 6:00 PM Room W414

#### Practice Management I: Health Care Policy

Moderator(s): Thomas A. Malvitz, MD, Grand Rapids, MI, Karl C. Roberts, MD, Grand Rapids, MI

### 4:00 PM

Incorporating Hip Fracture Hemiarthroplasty into a Bundled Payment System for TJA Is Not Economically Viable.

Elisabeth M. Graboski, BS, Danville, PA James E. Murphy, MD, Shavertown, PA David J. Kolessar, MD, Shavertown, PA Thomas R. Bowen, MD, Danville, PA Carmen D. Crofoot, MD, Danville, PA Elie S. Ghanem, MD, Danville, PA

The cost of treating a hip fracture using a hemiarthroplasty is nearly double that of performing an elective total joint arthroplasty in a patient with osteoarthritis.

#### 4:06 PM

#### Impact of Medicaid Expansion on Academic Practice Management in Elective Orthopedics

David Sing, San Francisco, CA Dana Pong, MPH, San Francisco, CA Matthew K. Callahan, MSBA, San Francisco, CA Dana Pong, MPH, San Francisco, CA Erik N. Hansen, MD, San Francisco, CA

Academic institutions experiencing growth in Medicaid patients from the Affordable Care Act are likely to institute strategies to manage reduced reimbursement.

#### 4:12 PM

#### Paper 183

Paper 184

Paper 182

Attitudes of Orthopedic Surgery Residents Towards Public Health Advocacy: The Affordable Care Act and Orthopedics Mohamad Shaath, MD, Hoboken, NJ

Wayne S. Berberian, MD, Newark, NJ

We surveyed orthopaedic residents with regards to their knowledge of healthcare advocacy, using the Affordable Care Act as an example.

Discussion – 6 minutes

#### 4:24 PM

#### Differences in Cost and Length of Stay for Hip, Distal Femoral and Pelvic Fractures

Arthur Manoli III, MD, New York, NY Sanjit R. Konda, MD, Rye, NY Anthony V. Christiano, New York, NY Kenneth A. Egol, MD, New York, NY

Differences in hospital costs and length of stay between hip and distal femur fractures are statistically, but not clinically different.

#### 4:30 PM

#### Paper 185

Geographic Variations in Orthopedic Trauma Billing & Reimbursements for Pelvis, Acetabular and Hip Fractures

Catherine Bulka, MPH, Nashville, TN Rachel V. Thakore, BS, Hoffman Estates, IL Melinda B. Buntin, PhD, Nashville, TN William T. Obremskey, MD, MPH, Nashville, TN Jesse Ehrenfeld, MD, MPH, Nashville, TN David Joyce, MD, Riverview, FL Manish K. Sethi, MD, Nashville, TN

This study is the f rst to evaluate variability in hospital charges and Medicare reimbursement in patients with DRG 536.

#### 4:36 PM

## The Fate of the Acutely-injured Uninsured Patient in Orthopaedic Surgery

Michelle M. Phelps, MD, Houston, TX Laura N. Medford-Davis, MD, Houston, TX Paul Hausknecht, Houston, TX Zachary F. Meisel, MD, Philadelphia, PA Angela Siler-Fisher, MD, Houston, TX Charles A. Reitman, MD, Charleston, SC

Patient dumping after incomplete orthopaedic treatment remains a problem for uninsured patients, leading to duplicated care and hospital charges that strain the uncompensated care system.

Discussion – 6 minutes

#### 4:48 PM

#### Relationship Status Affects the Discharge Location for Trauma Patients

Kari J. Broder, BA, New York, NY Anthony V. Christiano, New York, NY Sanjit R. Konda, MD, Rye, NY Kenneth A. Egol, MD, New York, NY

Relationship status affects the discharge location for trauma patients.

#### 4:54 PM

# • Risk Factors for Complication After Total Knee Arthroplasty in the California Joint Replacement Registry

Jay J. Patel, MD, Orange, CA Zhongmin Li, PhD, Sacramento, CA Nelson F. SooHoo, MD, Santa Monica, CA Kevin J. Bozic, MD, MBA, Austin, TX James I. Huddleston III, MD, Redwood City, CA

CHF, VTE, peripheral artery disease, ASA class 3 or 4, chronic lung disease, and increased age are independent risk factors for complication after TKA in the California Joint Replacement Registry

#### 5:00 PM

Paper 189

Paper 186

Paper 187

Paper 188

# Risk Factors for Complication After Total Hip Arthroplasty in the California Joint Replacement Registry

Jay J. Patel, MD, Orange, CA Zhongmin Li, PhD, Sacramento, CA Nelson F. SooHoo, MD, Santa Monica, CA Kevin J. Bozic, MD, MBA, Austin, TX James I. Huddleston III, MD, Redwood City, CA

CHF and ASA class of 3 or 4 are independent risk factors for complication after THA in the California Joint Replacement Registry.

Discussion – 6 minutes

#### 5:12 PM

#### Paper 190

#### Comparing Primary Total Hip Arthroplasty Post-Discharge Care Duration, Costs, and Outcomes

Karthikeyan E. Ponnusamy, MD, Indianapolis, IN Zan Naseer, Forest Hill, MD Anne Kuwabara, BA, Indianapolis, IN Mostafa H. El Dafrawy, MD, Indianapolis, IN Louis C. Okafor, MD, Indianapolis, IN Clayton Alexander, MD, Indianapolis, IN Robert S. Sterling, MD, Owings Mills, MD Harpal S. Khanuja, MD, Indianapolis, IN Richard L. Skolasky Jr, ScD, Indianapolis, IN

After primary elective total hip arthroplasty, post-discharge care involving an extended-care facility can account for 20% of costs and increased readmission and mortality rates.

#### 5:18 PM

#### Paper 191

Automated EHR Surveillance System for Early Identif cation of Total Joint Replacement Failures

Liz Paxton, MA, Rcho Santa Fe, CA Priscilla H. Chan, MS, San Diego, CA Rebecca Love, BSN, RN, San Diego, CA Mary-Lou Kiley, LCSW, San Diego, CA Robert S. Namba, MD, Santa Ana, CA Maria C. Inacio, PhD, Adelaide, Australia

EHR indicators provide a novel and cost-effective TJR surveillance mechanism for large cohorts of patients to enhance patient safety and reduce surveillance costs.

#### 5:24 PM

Paper 192

# Post-market Changes To Orthopaedic Devices Cleared Via The FDA Premarket Approval Supplement Pathway

Andre Samuel, New Haven, CT Vinay K. Rathi, BA, Reston, VA Jonathan N. Grauer, MD, New Haven, CT Joseph Ross, MD, New Haven, CT

Among the 70 high-risk orthopaedic devices cleared via the FDA Premarket Approval (PMA) pathway, a median of one postmarket device change was cleared per year, often with no new clinical evidence.

Discussion – 6 minutes

#### 5:36 PM

### Decreasing Arthroplasty Implant Cost & Preserving Choice: Request for Proposal Process at a Regional Health System

Matthew DeHart, MPH, Portland, OR Kevin Fleming, MBA, Maple Valley, WA Kirsten Juul-Music, Renton, WA James W. Pritchett, MD, Seattle, WA Cecily Froemke, MS, Portland, OR John Dugger, Portland, OR Andrew Yun, MD, Manhattan Bch, CA Thomas D. Kowalik, MD, Portland, OR Paul J. Duwelius, MD, Portland, OR

The RFP process articualted in this research has decreased the cost of implants within this system, achieved price parity across all hospitals and states, and maintained surgeons choice.

#### 5:42 PM

#### Paper 194 ver Mix and Volume

Paper 193

#### The Relationship Between Hospital Payer Mix and Volume Growth in Total Joint Arthroplasty

Anthony A. Catanzano, Manhasset, NY Raj Karia, MPH, New York, NY Joseph A. Bosco III, MD, New York, NY

The purpose of our study is to use a large statewide data base to analyze the effect on payer mix on individual hospital total joint volume over a 13 year period.

### 5:48 PM

#### Physician Empathy is the Strongest Driver of Patient Satisfaction in Hand Surgery

Mariano Menendez, Boston, MA Neal C. Chen, MD, Newtonville, MA Chaitanya S. Mudgal, MD, Boston, MA Jesse B. Jupiter, MD, Boston, MA David C. Ring, MD, West Hartford, CT

This prospective study of 112 patients showed that physician empathy is the strongest driver of patient satisfaction in the hand surgery off ce setting.

Discussion – 6 minutes

Paper 195

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### PAPER PRESENTATION

4:00 PM — 6:00 PM W304A

#### Trauma III: Pelvis/Acetabulum

Moderator(s): Anna N. Miller, MD, Winston-Salem, NC, Timothy S. Achor, MD, Bellaire, TX

#### 4:00 PM

#### Paper 196

**APC Injuries with Symphyseal Fixation: What Affects Outcome?** 

Paul Tornetta III, MD, Boston, MA Kyle Lybrand, MD, Waltham, MA David C. Templeman, MD, Minneapolis, MN Deirdre Rodericks, Boston, MA Anthony Bell, MD, Neptune Beach, FL

The purpose was to evaluate the inf uence of position at union, hardware failure, ISS, and the type of posterior ring injury on outcomes of patients treated operatively for symphyseal separation.

#### 4:06 PM

#### Paper 197

#### What Factors Affect Superior Pubic Medullary Ramus Fixation?

David Hamilton, MD, Lexington, KY Raymond D. Wright Jr, MD, Lancaster, KY Milton L. Routt Jr, MD, Houston, TX

Sacral dysmorphism does not affect likelihood of successful supra-acetabular region to the pubic tubercle screw insertion for standard or "best f t" preoperative planning technique.

#### 4:12 PM

#### Paper 198

**Posterior Fixation in APC-2 Pelvic Fractures Decreases the Rates of Anterior Plate Failure and Malunion** *Frank Avilucea*, MD, Salt Lake City, UT

Paul S. Whiting, MD, Nashville, TN Hassan R. Mir, MD, MBA, Nashville, TN

APC-2 pelvis injuries treated with anterior plating and posterior screw f xation have signif cantly less anterior hardware failure and malunion than those treated with anterior plating alone.

Discussion – 6 minutes

#### 4:24 PM

#### Comparison of Magnetic Resonance Imaging-Detected Pelvic Ligament Injury to Displacement on Pelvic Stress Exam.

Brendan O'Daly, MD, FRCS, Co Dublin, Ireland Michael Mulligan, MD, Indianapolis, IN Lina Chen, MD, Catonsville, MD Derik L. Davis, MD, Indianapolis, IN Joshua L. Gary, MD, Houston, TX Theodore T. Manson, MD, Bel Air, MD Jason W. Nascone, MD, Indianapolis, IN Marcus F. Sciadini, MD, Indianapolis, IN Robert V. O'Toole, MD, Indianapolis, IN

Stress exams and MRI have recently been reported as techniques for evaluation of pelvic ring fracture stability. This study seeks to def ne the relation of f ndings on these two tests to each other.

#### 4:30 PM

Paper 200

Paper 201

#### **Safety of Percutaneous Fixation for Pelvic Trauma**

James Learned, MD, Cleveland, OH Clay A. Spitler, MD, Jackson, MS Milton T. Little, MD, Alhambra, CA Jonah Hebert-Davies, MD, Plattsburgh, NY Milton L. Routt Jr, MD, Houston, TX Reza Firoozabadi, MD, Seattle, WA

A review of all patients over a f ve year period treated with percutaneous f xation for pelvis and acetabular trauma to evaluate the safety of placing screws under f uoroscopic guidance alone

#### 4:36 PM

#### Low Complication Rates Associated with Open Anterior Approach to the Posterior Pelvic Ring

Paul S. Whiting, MD, Mission Viejo, CA Eduardo J. Burgos, MD, Nashville, TN Frank Avilucea, MD, Nashville, TN Robert H. Boyce, MD, Nashville, TN Jason M. Evans, MD, Franklin, TN

In our analysis, the open anterior approach demonstrated to be effective obtaining an anatomic reduction and is associated with very low complication rates.

Discussion – 6 minutes

#### 4:48 PM

#### Paper 202

#### Surgery for Unilateral Sacral Fractures: Are the Indications Clear?

Paul Tornetta III, MD, Boston, MA Julie Agel, ATC, Seattle, WA Sean E. Nork, MD, Seattle, WA Clifford B. Jones, MD, FACS, Grand Rapids, MI Heather A. Vallier, MD, Cleveland, OH Brian Mullis, MD, Indianapolis, IN Zachary V. Roberts, MD, OK City, OK James A. Goulet, MD, Ann Arbor, MI Anna N. Miller, MD, Winston-Salem, NC

The purpose is to compare the demographic, fracture, and displacement characteristics of 250 patients to determine what differences exist between the groups treated operatively vs. nonoperatively.

#### 4:54 PM

### Paper 203

Paper 204

Paper 205

Does Transsacral-Transiliac Screw Fixation of An Uninjured Sacroiliac Joint Affect Outcomes at One Year Follow Up?

John A. Heydemann, MD, Houston, TX Mary Elizabeth Gibson, MD, Orlando, FL Braden E. Hartline, MD, Houston, TX John W. Munz, MD, Bellaire, TX Mark L. Prasarn, MD, Bellaire, TX Matthew C. Galpin, Houston, TX Timothy S. Achor, MD, Bellaire, TX Joshua L. Gary, MD, Houston, TX

There is no effect on pain or functional outcomes at one-year after transsacral transiliac screw placement compared with iliosacral screw placement.

### 5:00 PM

#### Spinopelvic Dissociation: Have We Finally Got It Right?

Ibraheim El-Daly, MBBS, London, United Kingdom Paul Culpan, FRCS (Ortho), London, United Kingdom Arun Ranganathan, FRCS (Ortho), London, United Kingdom Alexander S. Montgomery, MB, London, United Kingdom Peter Bates, FRCS (Ortho), MBBS, Kent, United Kingdom

We present a novel reduction manoeuvre and percutaneous f xation of 10 patients with spinopelvic dissociation treated at a level I trauma centre over two years.

#### Discussion – 6 minutes

#### 5:12 PM

### The Impact of Quality of Reduction on the Risk of Post-traumatic Arthritis after Posterior Wall Acetabular Fracture

David Shearer, MD, San Francisco, CA Benjamin Hamilton, MS, Seattle, WA Paul Toogood, MD, Seattle, WA Reza Firoozabadi, MD, Seattle, WA

We found a strong correlation between reduction quality measured using post-operative CT on subsequent conversion to THA among patients with posterior wall acetabular fractures treated with ORIF.

#### 5:18 PM

#### Comparing Acute with Delayed Total Hip Arthroplasty for Medicare Patients with Acetabular Fractures

Paper 206

Paper 207

Paper 208

Paper 209

Lindsay T. Kleeman, MD, Durham, NC Abiram Bala, BA, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Cynthia L. Green, Durham, NC Thorsten M. Seyler, MD, PhD, Durham, NC Samuel S. Wellman, MD, Durham, NC Michael P. Bolognesi, MD, Durham, NC

Retrospective review of medicare patients with acetabular fractures showing higher complication and revision rates in patients with acute total hip arthroplasty compared to delayed hip arthroplasty.

#### 5:24 PM

Excellent outcome of Acute Total Hip replacement in Acetabular fractures using modern porous metal cups

Deepak Gautam, New Delhi, India Rajesh Malhotra, MS, New Delhi, India

The modern porous metal cups have suff cient primary stability and appear suitable for primary Total Hip Arthroplasty in acute acetabular fractures.

Discussion – 6 minutes

#### 5:36 PM

#### Randomized Controlled Trial of Tranexamic Acid in Acetabular Fracture Surgery: Early Results

William D. Lack, MD, Maywood, IL Rachel Seymour, PhD, Charlotte, NC Brett D Crist, MD, Columbia, MO Madhav A. Karunakar, MD, Charlotte, NC

We present the preliminary results of the use of tranexamic acid in acetabular fracture surgery.

### 5:42 PM

Does Pelvic Embolization Increase Infection Rates in Patients Who Undergo Open Treatment of Acetabular Fractures?

Milton T. Little, MD, Alhambra, CA Timothy B. Alton, MD, Seattle, WA Matthew Kogut, MD, Seattle, WA Reza Firoozabadi, MD, Seattle, WA

Evaluation of the impact of the pre-operative angiography on post-operative infection following open reduction internal f xation of acetabular fractures.

#### 5:48 PM

#### Timing and Cause of Mortality in Patients with Blunt Pelvic Ring Injuries using Modern Algorithms

Alesha Scott, DO, Pontiac, MI Rahul Vaidya, MD, Ann Arbor, MI Ian L. Hudson, DO, MPH, Killeen, TX Frederick E. Tonnos, DO, Novi, MI Bryant W. Oliphant, MD, Ann Arbor, MI Anil Sethi, MD, Detroit, MI

Death after Pelvic injury is due to Abdomino-pelvic hemmorhage < 6hrs, Head injury 6-24 hrs or MSOF >24 hrs . Isolated pelvic hemmorage is rarely a cause of death with modern pelvic algorithms.

Discussion – 6 minutes

#### PAPER PRESENTATION

4:00 PM — 6:00 PM Room W315

#### Spine II: Thoracolumbar – Trauma, Deformity

Moderator(s): Theodore J. Choma, MD, Colombia, MO, Norman B. Chutkan, MD, Phoenix, AZ

#### 4:00 PM

Paper 211

Development of a Preop Predictive Model for Intra- or Perioperative Major Complications for Adult Spinal Deformity

Justin K. Scheer, BS, Chicago, IL Justin S. Smith, MD, Charlottesville, VA Frank J. Schwab, MD, New York, NY Virginie Lafage, PhD, New York, NY Christopher I. Shaffrey, MD, Charlottesville, VA Malla K. Keefe, BS, San Francisco, CA Eric O. Klineberg, MD, Sacramento, CA Christopher Ames, MD, San Francisco, CA International Spine Study Group, Brighton, CO

A predictive model (87.6% correct, AUC of 0.89) using 45 baseline demographic, radiographic, and surgical variables for sustaining a major intra- or perioperative complication was constructed.

#### 4:06 PM

#### Paper 212

Prospective Multicenter Assessment of Intra- and Perioperative Complication Rates Associated with ASD Surgery

Eric O. Klineberg, MD, Sacramento, CA Justin S. Smith, MD, Charlottesville, VA Virginie Lafage, PhD, New York, NY Christopher I. Shaffrey, MD, Charlottesville, VA Robert S. Bess, MD, Castle Rock, CO Douglas C. Burton, MD, Kansas City, KS Justin K. Scheer, BS, Chicago, IL Christopher Ames, MD, San Francisco, CA International Spine Study Group, Brighton, CO

In this prospective multicenter study, ASD surgery had high rates of early complications, with 47.3% of patients having at least one complication (overall mean 0.79 complications/patient).

#### 4:12 PM

Paper 210

#### Effect of Complications on the Patient-reported Outcomes after Elective Surgery for Lumbar Degenerative Disease

Paper 213

Paper 214

Paper 215

David Stonko, BS, MS, Nashville, TN Silky Chotai, Nashville, TN John Sielatycki, MD, Nashville, TN Ahilan Sivaganesan, MD, Nashville, TN Scott L. Parker, MD, Nashville, TN Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

The occurrence of major complications did not signif cantly affect the PROs 12-month after surgery. These patients achieve clinically meaningful outcomes and patient satisfaction.

Discussion – 6 minutes

#### 4:24 PM

# Extensive Corrective Fixation Surgeries For Adult Spinal Deformity Improve Gait Posture And Gait Ability

Hideyuki Arima, MD, Fujinomiya, Shizuoka, Japan Yu Yamato, MD, PhD, Hamamatsu, Japan Tomohiko Hasegawa, MD, Shizuoka, Japan Daisuke Togawa, MD, Hamamatsu, Japan Sho Kobayashi, MD, Hamamatsu, Japan Tatsuya Yasuda, MD, Hamamatsu, Japan Tomohiro Banno, MD, Shizuoka, Japan Shin Oe, MD, Hamamatsu, Japan Yukihiro Matsuyama, MD, PhD, Hamamatsu, Japan

We performed corrective surgery in patients with adult spinal deformity. Postoperative gait posture and step length were improved when optimal correction of the deformity was well achieved.

#### 4:30 PM

#### Shilla Growing Rods with Greater than 5 Years of Follow-up: Curve and Implant Characteristics

John T. Wilkinson, MD, Little Rock, AR Chad E. Songy, MD, Little Rock, AR Frances L. McCullough, NP, Little Rock, AR Richard E. McCarthy, MD, Little Rock, AR

A retrospective review of patients treated with the Shilla system with implants in place for greater than 5 years assessing the affects of the Shilla growing rods on curve and implant characteristics.

#### 4:36 PM

#### Paper 216

# Drop Foot Due To Lumbar Degenerative Disease:Surgical Outcome And Prognostic Factors.

Jun Tanaka, MD, Fukuoka, Japan Yoshihiro Takamori, Fukuoka, Japan Shinri Nobuto, Fukuoka-shi,Fukuoka, Japan Hitoshi Shirachi, MD, Fukuoka, Japan Masatoshi Naito, MD, Fukuoka, Japan

Duration of palsy before surgery and presence of radicular leg pain might greatly affect the postoperative outcome of drop foot recovery with degenerative lumbar disease.

Discussion – 6 minutes

#### 4:48 PM

Paper 217

#### A Comparison of Patients Treated with Shilla Growing Rods for Early Onset Scoliosis

Wesley S. Greer, MD, Little Rock, AR Paula Roberson, PhD, Little Rock, AR Richard E. McCarthy, MD, Little Rock, AR

Utilization of larger rod sizes with the Shilla technique increased the time before the f rst return to the operating room and improved resistance to rod fracture without increased screw pullout.

#### 4:54 PM

#### Paper 218

# Incidence of Complications After Therapeutic Anticoagulation in the Spine Trauma Patient

Brian Shiu, MD, Indianapolis, IN Elizabeth Le, MD, Indianapolis, IN Ehsan Jazini, MD, Indianapolis, IN Timothy Costales, Indianapolis, IN Nicholas Caffes, BS, Indianapolis, IN Ebrahim Paryavi, MD, MPH, Indianapolis, IN Eugene Y. Koh, MD, PhD, Indianapolis, IN Daniel E. Gelb, MD, Indianapolis, IN Steven C. Ludwig, MD, Indianapolis, IN

A nearly three times higher rate of complications requiring reoperation was found after postoperative initiation of therapeutic anticoagulation compared to control (17.5 vs 6.3%).

#### 5:00 PM

#### Postoperative Daily Activities After Long Corrective Fusion To Pelvis For Elderly Spinal Deformity

Paper 219

Paper 220

Paper 221

Daisuke Togawa, MD, Hamamatsu, Japan Tomohiko Hasegawa, MD, Shizuoka, Japan Yu Yamato, MD, PhD, Hamamatsu, Japan Sho Kobayashi, MD, Hamamatsu, Japan Tatsuya Yasuda, MD, Hamamatsu, Japan Shin Oe, MD, Hamamatsu, Japan Tomohiro Banno, MD, Shizuoka, Japan Yuuki Mihara, MD, Kikugawa, Japan Yukihiro Matsuyama, MD,PhD, Hamamatsu, Japan

Even with the successful realignment by corrective long fusion, bending activities are getting more diff cult for elderly deformity patients postoperatively, thus needs to be informed preoperatively.

#### Discussion – 6 minutes

#### 5:12 PM

Performance Analysis Of 573 Three-column Osteotomy Procedures: Improvement In Adverse Events Over The Last Decade

Bassel Diebo, MD, New York City, NY Virginie Lafage, PhD, New York, NY Christopher Ames, MD, San Francisco, CA Khaled M. Kebaish, MD, Indianapolis, IN Christopher I. Shaffrey, MD, Charlottesville, VA Richard A. Hostin, MD, Westlake Village, CA Ibrahim Obeid, Bordeaux, France Frank J. Schwab, MD, New York, NY International Spine Study Group, Brighton, CO

Performance analysis of 9 years of 3-column osteotomy for spinal deformity revealed operating on more disabled patients with diminishing OR time by 48 mins, signif cant improvement of adverse events.

#### 5:18 PM

### Adult Spinal Deformity Knowledge in Orthopaedic Spine Surgeons: Impact of Training and Practice Experience

Zachary Grabel, Atlanta, GA Robert A. Hart, MD, Portland, OR Aaron Clark, Memphis, TN Christopher I. Shaffrey, MD, Charlottesville, VA Justin K. Scheer, BS, Chicago, IL Justin S. Smith, MD, Charlottesville, VA Michael P. Kelly, MD, Saint Louis, MO Christopher Ames, MD, San Francisco, CA Alan H. Daniels, MD, Providence, RI

The purpose of this study was to investigate adult spine deformity knowledge amongst orthopaedic spine surgeons.

#### 5:24 PM

# Important Differences in Facet Angle Exist in a large osteological collection

Douglas S. Weinberg, MD, Cleveland, OH Katherine K. Xie, BS, Cleveland, OH Raymond W. Liu, MD, Cleveland, OH Jeremy Gebhart, MD, Cleveland, OH Zachary Gordon, MD, Cleveland, OH

Increasing age, African-American race, and decreasing pelvic incidence predict a more sagittal facet orientation: a cadaveric review of 599 lumbar spines.

#### Discussion – 6 minutes

#### 5:36 PM

#### Paper 223

Paper 222

#### Impact of the Number of Levels on Adverse Events Following Posterior Lumbar Fusion Procedures

Daniel D. Bohl, MD, MPH, Chicago, IL Junyoung Ahn, BS, Chicago, IL Philip Louie, MD, Chicago, IL Dustin H. Massel, BS, Northbrook, IL Daniel J. Johnson, BS, Towson, MD Bryce A. Basques, MD, Chicago, IL Kern Singh, MD, Chicago, IL

Data suggest that increasing the number of operative levels by one level has minimal impact on the rates of most short-term postoperative adverse events following posterior lumbar fusion procedures.

#### 5:42 PM

### Paper 224

#### Radiographic Variability Among Scheuermann's Kyphosis Patients: Appreciating Differences of the Deformity

David B. Bumpass, MD, Saint Louis, MO Lawrence G. Lenke, MD, Saint Louis, MO Michael P. Kelly, MD, Saint Louis, MO Kathy Blanke, RN, Saint Louis, MO Randal R. Betz, MD, Lawrenceville, NJ David H. Clements III, MD, Camden, NJ Hubert H. Labelle, MD, Montreal, QC, Canada Ronald A. Lehman, MD, Creve Coeur, MO Baron Lonner, MD, New York, NY

In the largest Scheuermann's kyphosis series to date, we identif ed substantial radiographic variability in this patient population. Current categorization over-simplif es this deformity.

#### 5:48 PM

#### Postoperative Pain Following Posterior Iliac Crest Bone Graft Harvesting in Spine Surgery: A Randomized Trial

Grant Shiff ett, MD, New York, NY Evan Sheha, MD, New York, NY Evan Sheha, MD, New York, NY Benjamin T. Bjerke, MD, Rochester, MN Sravisht Iyer, MD, New York, NY Joseph Nguyen, MPH, New York, NY Russel C. Huang, MD, New York, NY

Subjects underwent left or right-sided ICBG harvesting and pain scores were recorded over 1 year. Donor site pain was not clinically or statistically different from the non-surgical side after 6 weeks.

#### Discussion – 6 minutes

### **INSTRUCTIONAL COURSE LECTURE**

#### 4:30 PM — 5:30 PM



Room

W209B

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

#### **Collaboration Within and Between Institutions**

Moderator: Brian R. Wolf, MD, Iowa City, IA Kurt P. Spindler, MD, Garf eld Heights, OH Nikhil N. Verma, MD, Chicago, IL Rick W. Wright, MD, Saint Louis, MO

Recognizing that successful collaboration among, within, and between institutions is an important factor, this course provides you with steps on how to create and cultivate those relationships.

## Wednesday, March 2

#### **Symposium**

8:00 AM — 10:00 AM Chapin Theater



**Sex and Sports: Caring for the Female Athlete in 2016 (H)** *Moderator: Cordelia W. Carter, MD, Westport, CT* 

Promote scientif c discussion regarding sex-baseddifferences in musculoskeletal medicine by reviewing f ve common sports injuries with supportive case examples whose incidence, presentation, and outcomes vary by sex. This symposium is also co-branded with the AAOSWomen's Health Issues Advisory Board.

- I. Femoroacefabular Impingement Asheesh Bedi, MD, Ann Arbor, MI
- II. Concussion Kevin M. Guskiewicz, PhD ATC-L, Chapel Hill, NC
- III. Anterior Cruciate Ligament Injury Mary L. Ireland, MD, Lexington, KY
- IV. Shoulder Instability Anthony E. Johnson, MD, Fort Sam Houston, TX
- V. Shoulder Instability William N. Levine, MD, New York, NY
- VI. Femoroacetabular Impingement Scott D. Martin, MD, Boston, MA
- VII. Female Athlete Triad Elizabeth G. Matzkin, MD, Boston, MA

### Symposium

8:00 AM — 10:00 AM Valencia Room A



**Debating Controversies in Spine Surgery (I)** *Moderator: Alan S. Hilibrand, MD, Philadelphia, PA* 

Debates three contemporary controversies in spinesurgery.1) Sacroiliac fusion: can it help post-fusion lower back pain?2) Is cervical arthroplasty appropriate for 2-level disease?3) Minimally invasive spine surgery: is the evidence f nally there?

- I. Argument in Favor of 2 Level Cervical Disc Arthroplasty Christopher M. Bono, MD, Boston, MA
- II. Arguments Against MIS TLIF Michael D. Daubs, MD, Las Vegas, NV
- III. The argument Against SI Fusion Edward J. Dohring, MD, Scottsdale, AZ
- IV. It is Unlikely that Fusing the SI Joint Will Help Kristen E. Radcliff, MD, Edgg Hbr Twp, NJ

- V. Argument in Favor of SI Fusion David W. Polly, MD, Minneapolis, MN
- VI. MIS TLIF for Lumbar Spinal Pathology Kern Singh, MD, Chicago, IL
- VII. Argument Against 2 Level Cervical Arthroplasty Jeffrey C. Wang, MD, Sherman Oaks, CA

#### **Symposium**

8:00 AM — 10:00 AM Valencia Room B

Soft Tissue Tumors: A Pictorial and Case-Based Guide to Diagnosis and Treatment (J)

Moderator: Valerae O. Lewis, MD, Houston, TX

Reviews the diagnosis and management of soft tissue tumors through case-based presentations with an emphasis on imaging and clinical pictorial presentation. Participants develop an understanding of which tumors can be managed by the general orthopaedic surgeon and which tumors should be referred to an orthopaedic oncologist.

- I. Management and Treatment of Common Benign Soft Tissue Tumors *Timothy A. Damron, MD, Lafayette, NY*
- II. Soft Tissue Tumor Mimickers Ginger E. Holt, MD, Nashville, TN
- III. Presentation of Soft Tissue Tumors Adam S. Levin, MD, Indianapolis, IN
- IV. Diagnostic Modalities –Indication and Options Carol D. Morris, MD, MS, Indianapolis, IN
- V. Management and Treatment of Malignant Soft tissue Tumors Scott D. Weiner, MD, Akron, OH

#### **INSTRUCTIONAL COURSE LECTURE**

#### 8:00 AM — 9:00 AM

#### CD7 How to Assemble a Competitive ICL, Symposium and Abstract Application

Room W209B

Co-Moderators: James R. Ficke, MD, Baltimore, MD Tad L. Gerlinger, MD, Chicago, IL James M. Bennett, MD, Houston, TX

Joseph T. Moskal, MD, Roanoke, VA Javad Parvizi, MD, FRCS, Philadelphia, PA

Focuses on describing the different types of Instructional Course Lectures (ICL) and offers tips on completing the application to present an ICL, Symposium and Abstract at the Annual Meeting.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

## Wednesday, March 2

#### Room 209A



Room

W209B

#### Selection, Implementation, and Interpretation of **Patient-Centered Orthopaedic Outcomes**

Moderator: John E. Kuhn, MD, Nashville, TN Richard I. Hawkins, MD, Greenville, SC Robert B. Litchf eld, MD, London, ON, Canada Nicholas G. Mohtadi, MD, Calgary, AB, Canada

Covers model strategies for tool selection, implementation, and interpretation to optimize musculoskeletal patient care and practicesustainability.

#### **INSTRUCTIONAL COURSE LECTURE**

#### 8:00 AM - 10:00 AM

201 Arthroplasty as an Option in Unreconstructable Acute Fractures or Failed Fracture Fixation About the Hip and TICKET **Knee in the Active Elderly** Room

Moderator: Richard F. Kyle, MD, Minneapolis, MN W204 Paul J. Duwelius, MD, Portland, OR George I. Haidukewych, MD, Orlando, FL Andrew H. Schmidt, MD, Minneapolis, MN

> Learn which fractures about the hip and knee areunreconstructable or have a high failure rate andwhy acute arthroplasty in these fractures is best in the active elderly patient. Course participants learn technical procedures after failed fracture f xation and in acute fractures at risk to optimize the success rate ofarthroplasty.

#### 202 **Preventing Hospital Readmissions and Limiting the Complications Associated with Total Hip Arthroplasty** TICKET

Room W202

Moderator: Kevin L. Garvin, MD, Omaha, NE William L. Healy, MD, Newton, MA Richard Iorio, MD, New Rochelle, NY Vincent D. Pellegrini Jr, MD, Charleston, SC

**Perioperative Management in** 

Pete Caccavallo, MD, Fishers, IN

Ryan Nunley, MD, Saint Louis, MO

prevention, and wound management.

**Total Knee Arthroplasty** 

With increasing attention on hospital readmissionafter total hip arthroplasty, there is a need to better understand and prevent complications responsible for readmission to the hospital. Traducción simultánea en español. Tradução simultânea em português.

Moderator: Brett R. Levine, MD, Elmhurst, IL

Carl A. Deirmengian, MD, Wynnewood, PA

This course addresses perioperative care of kneearthroplasty patients focused on evidence- and value-driven recommendations for medical management, blood conservation, pain management, infection

203	
TICKET	

Room W314

#### 204 **Osteochondral Lesions of the Talus:** TICKET

**Current Treatment Dilemmas** 

Moderator: Alastair S. E. Younger, MD, Vancouver, BC, Canada

Eric Giza, MD, Sacramento, CA John G. Kennedy, MD, New York, NY Iames W. Stone, MD. Franklin, WI

Explore the natural history of the untreatedosteochondral lesion of the talus as well as the current treatment options, including arthroscopic autograft, allograft, or autologous chondrocyte implantation.

#### 205 **Owning Osteoporosis Care in Your Practice**

Moderator: Amy L. Ladd, MD, Palo Alto, CA Clifford B. Jones, MD, FACS, Grand Rapids, MI Joseph M. Lane, MD, New York, NY Aenor J. Sawyer, MD, Oakland, CA



TICKET

Room

W310

Room

W205B

Osteoporosis is not just a disease of women and isrelevant to patients of all ages. By attending this course, participants can improve treatment of patients with fragility fractures and learn the mechanics of setting up an inpatient and outpatient osteoporosis practice.

#### **Compression Neuropathies – Getting It Right So You**



206

Don't Have To Do It Again or Deal with Complications Moderator: A. Lee Osterman, MD, Villanova, PA Joshua M. Abzug, MD, Timonium, MD Dean G. Sotereanos, MD, Pittsburgh, PA

David S. Zelouf, MD, King Of Prussia, PA

The management of compression neuropathiesthroughout the upper extremity are presented in a casebased manner. Detailed discussion regarding pearls and pitfalls of initial treatment, and avoiding the potential complications as well as managing them, aid the orthopaedic surgeon in practice.

#### 207 **Advanced Ponseti Course and Minimally Invasive Management of Vertical Talus** TICKET



Moderator: Vincent S. Mosca, MD, Seattle, WA Jose A. Morcuende, MD, Iowa City, IA Monica P. Nogueira, MD, Sao Paulo, Brazil Lewis E. Zionts, MD, Pacif c Palisades, CA

nu Ponseti clubfoot and reverse congenital vertical talus STE 1 management are methods and not strictly techniques. All aspects of the treatments are important for success and are detailed in this didactic and hands-on course.



Room W308C

#### **Rotator Cuff: Spectrum of Repair**

Moderator: Ionathan B. Ticker, MD, Merrick, NY Richard L. Angelo, MD, Woodinville, WA Pascal Boileau, MD, Nice, France Felix H. Savoie, MD, New Orleans, LA

A variety of techniques for arthroscopic rotator cuff repair, from partial tear repairs, as well as single- and double-row repairs, to subscapularis repairs, are highlighted, along with pearls and technical tips.



#### Fractures and Dislocations about the Elbow and their **Adverse Sequelae: Contemporary Perspectives**

Moderator: Graham J. King, MD, London, ON, Canada April D. Armstrong, MD, Hershey, PA Ken Faber, MD, FRCSC, London, ON, Canada Michael D. McKee, MD, Toronto, ON, Canada

Room Based upon clinical cases and surgical videos, this course W203 addresses contemporary treatments and controversies regarding traumatic injuries about the elbow and their sequel.

281 TICKET 

Room

W207

#### **Management of Most Common Foot and Ankle Pathologies**

Moderator: Ashish Shah, MD, Birmingham, AL Judith F. Baumhauer, MD, MPH, Rochester, NY Stephen F. Conti, MD, Pittsburgh, PA John E. Femino, MD, Iowa City, IA Naren G. Gurbani, MD, FACS, Capistrano Beach, CA Jeffrey E. Johnson, MD, Saint Louis, MO Mark S. Myerson, MD, Indianapolis, IN Vinod K. Panchbhavi, MD, FACS, Galveston, TX David B. Thordarson, MD, Los Angeles, CA Keith L. Wapner, MD, Philadelphia, PA Troy S. Watson, MD, Las Vegas, NV

Discusses the fundamentals of conservative and surgical management of most common foot and ankle pathologies like acute achilles rupture, plantar fasciitis, equinus contracture [gastrocnemius tightness], sesamoiditis, metatarsalgia; and also helps to understand the different controversies in treatment of these common pathologies by active discussion with the faculties.

282	Primary Anterior Cruciate Ligament Failure: How Do I
TICKET	Get it Right the Second Time!

Moderator: Darren L. Johnson, MD, Lexington, KY Annunziato Amendola, MD, Iowa City, IA Allen F. Anderson, MD, Nashville, TN Robert A. Arciero, MD, Farmington, CT James P. Bradley, MD, Pittsburgh, PA Charles A. Bush-Joseph, MD, Chicago, IL David R. McAllister, MD, Los Angeles, CA Eric C. McCarty, MD, Boulder, CO Mark D. Miller, MD, Charlottesville, VA Claude T. Moorman III. MD. Durham. NC Kurt P. Spindler, MD, Garf eld Heights, OH

Will help you to understand in-depth potential etiologies of anterior cruciate ligament (ACL) failure and ways to improve our outcomes. Also understand the importance of meniscal, collateral knee ligament injury, alignment, and chondral injury in the f nal outcome of ACL surgery. Technical pearls to deal with the above are provided in detail using a case-based format.

#### **INSTRUCTIONAL COURSE LECTURE**

#### 8:00 AM - 11:00 AM

Room

W208

#### 208 Preparing for and Transitioning into Life after Orthopaedics TICKET

Moderator: Dempsey S. Springf eld, MD, Palm Coast, FL Room Joseph S. Barr Jr, MD, Jamaica Plain, MA

W307C Cynthia K. Hinds, CLU, Lakewood, CO Michael McCaslin, CPA, Indianapolis, IN

> Offers expert advice from a senior orthopaedic surgeon who has made the transition, an investment/retirement planning specialist, and a practice management consultant for planning the transition from full-time practicing orthopaedic surgeon to your life after orthopaedics. No CME credit.

#### **INSTRUCTIONAL COURSE LECTURE**

#### 8:00 AM - 12:00 PM



#### **Effective Surgeon-Patient Communication: The Key to** Patient Satisfaction, Patient-Centered Care, and Shared **Decision Making**

Room W303B

Moderator: Dwight W. Burney III, MD, Albuquerque, NM John R. Tongue, MD, Tualatin, OR

Newly revised and updated, this course uses the 4Emodel (Engage, Empathize, Educate, Enlist) to enable surgeons to effectively and eff ciently communicate with patients. Positive effects include increased patient and surgeon satisfaction, improved adherence to treatmentplans, and decreased malpractice risk.

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An alphabetical faculty f nancial disclosure list can be found starting on page 334.
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#### PAPER PRESENTATION

8:00 AM — 10:00 AM Valencia Room D

#### Adult Reconstruction Knee III: TKA Infection

Moderator(s): Eoin C. Sheehan MD, FRCS (ORTHO), Tullamore, Ireland, Michael A. Kelly, MD, Hackensack, NJ

#### 8:00 AM

Paper 226

#### Smoking Increases the Risk of Surgical Site Infection Following Total Knee Arthroplasty

Matthew R. Boylan, Brooklyn, NY Bhaveen H. Kapadia, MD, Indianapolis, IN Steven Daniels, MD, Brooklyn, NY Carl B. Paulino, MD, Brooklyn, NY Michael A. Mont, MD, Indianapolis, IN

For current and past cigarette smokers, there is an increased risk of SSI following total knee arthroplasty.

#### 8:06 AM

#### Paper 227

Paper 228

# Routine Work-up of Patients with Postoperative Pyrexia following Total Joint Arthroplasty is Not Necessary

Je Hyun Yoo, MD, PhD, Anyang, Republic of Korea Camilo Restrepo, MD, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA Javad Parvizi, MD, FRCS, Philadelphia, PA

Only postoperative TJA patients with temperatures >102°F, fever occurring after POD 3, those with multiple fever spikes, and those with fever after revision TJA should receive routine fever workup.

#### 8:12 AM

# Pre-operative MRSA Colonization Screening Increases Risk of PJI following Total Joint Arthroplasty

Ying-Ying J. Kao, MD, San Francisco, CA Kaitlin M. Carroll, BS, New York, NY Michael B. Cross, MD, New York, NY

In a high risk group of patients, 9% of MRSA colonized patients developed a PJI, representing a signif cant risk for a PJI, however, MRSA colonization may be a surrogate for a poor host.

Discussion – 6 Minutes

#### 8:24 AM

#### Paper 229

Do Injections Increase the Risk of Infection Following TKA?

Nicholas Bedard, MD, Iowa City, IA Andrew J. Pugely, MD, Coralville, IA Jacob Elkins, MD, PhD, Iowa City, IA Kyle Duchman, MD, Iowa City, IA Robert W. Westermann, MD, Iowa City, IA Yubo Gao, PhD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

Injections up to 7 months prior to TKA were associated with a higher odds of 90-day post-operative infection and closer proximity of the injection increased the chance of post TKA infection.

#### 8:30 AM

#### Does Timing Of Previous Intra-articular Steroid Injection Affect Post-operative TKA Infection Rates?

Jourdan M. Cancienne, MD, Charlottesville, VA Brian C. Werner, MD, Charlottesville, VA James A. Browne, MD, Charlottesville, VA

Ipsilateral intra-articular knee injection within 3 months prior to TKA is associated with signif cantly increased rates of postoperative infection.

#### 8:36 AM

#### No False Positive Results With Leukocyte Esterase Reagent Strips In Uninfected Osteoarthritic Knees

David C. McNabb, MD, Raleigh, NC Douglas A. Dennis, MD, Denver, CO Charlie C. Yang, MD, Cherry Hills Village, CO Todd Miner, MD, Denver, CO Raymond H. Kim, MD, Cherry Hills Village, CO Jason M. Jennings, MD, Denver, CO

In a prospective analysis of uninfected osteoarthritic knees leukocyte esterase has no false positive results

#### Discussion – 6 Minutes

#### 8:48 AM

#### The CRP Test May Not Detect PJIs Cause by Less-Virulent Organisms

Carl A. Deirmengian, MD, Wynnewood, PA Patrick Citrano, Indianapolis, IN Simmi Gulati, Indianapolis, IN Erick Kazarian, BA, Ann Arbor, MI James Stave, PhD, Claymont, DE Keith Kardos, PhD, Wynnewood, PA

This study demonstrated a high dependence of the synovial f uid CRP on the identity of the organism causing PJI, frequently resulting in false-negative results among less-virulent organisms.

#### 8:54 AM

#### D-dimer: A Potential Serum Biomarker for Diagnosis of Periprosthetic Joint Infection

Alisina Shahi, MD, Philadelphia, PA Michael M. Kheir, BS, Philadelphia, PA Timothy Tan, MD, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA Javad Parvizi, MD, FRCS, Philadelphia, PA

This study showed that the serum D-dimer may be a promising marker for PJI.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 230

Paper 231

Paper 232

Paper 233

#### 9:00 AM

#### Paper 234

#### The Alpha-Defensin Test for PJI is Not Affected by Prior **Antibiotic Administration**

Carl A. Deirmengian, MD, Wynnewood, PA Alisina Shahi, MD, Philadelphia, PA Javad Parvizi, MD, FRCS, Gladwyne, PA Greg Kazarian, BA, Media, PA Carlos A. Higuera Rueda, MD, Bay Village, OH Salvatore J. Frangiamore, MD, MS, Cleveland, OH Salvatore J. Frangiamore, MD, MS, Cleveland, OH Joshua Bingham, MD, Phoenix, AZ Christopher P. Beauchamp, MD, FRCS (Ortho), Phoenix, AZ

The alpha-defensin test for PJI maintains its diagnostics

performance in the setting of antibiotic administration.

#### Discussion – 6 Minutes

#### 9:12 AM

#### Paper 235 **Culture of the Synovial Fluid Has Variable Results: A Multicenter** Study

Joshua Bingham, MD, Mesa, AZ Christopher P. Beauchamp, MD, FRCS (Ortho), Phoenix, AZ Gregg R. Klein, MD, Livingston, NJ Carlos A. Higuera Rueda, MD, Bay Village, OH Javad Parvizi, MD, FRCS, Gladwyne, PA Gregory K. Deirmengian, MD, Media, PA Carl A. Deirmengian, MD, Wynnewood, PA

There is great variability in culture results from PJIs when synovial f uid is processed at two different laboratories. Efforts are needed to identify optimal culture practices and techniques.

#### 9:18 AM

#### **Oral Antibiotics Reduce Reinfection Following 2-Stage Exchange: A Multi-Center, Randomized Controlled Trial**

Jonathan M. Frank, MD, Chicago, IL Erdan Kayupov, MS, Troy, MI Gregory K. Deirmengian, MD, Media, PA Scott M. Sporer, MD, Winf eld, IL Curtis W. Hartman, MD, Omaha, NE James J. Purtill, MD, Philadelphia, PA Erik N. Hansen, MD, San Francisco, CA Antonia Chen, MD, MBA, Philadelphia, PA Craig J. Della Valle, MD, Chicago, IL

This multicenter randomized trial suggests that at short-term follow-up, the addition of three months of oral antibiotics signif cantly improved infection-free survival.

#### 9:24 AM

#### **Risk of Reinfection Following Treatment of Infected Total Knee** Arthroplasty.

Paper 237

Paper 238

Paper 239

Adam Cochran, MD, Louisville, KY Kevin Ong, PhD, Philadelphia, PA Edmund Lau, MS, Menlo Park, CA Michael A. Mont, MD, Indianapolis, IN Arthur L. Malkani, MD, Louisville, KY

Two stage revision had highest success following treatment of infected TKA. Given the higher failure rate with I & D, and one stage revision guidelines needs to be established for their indications.

Discussion – 6 Minutes

#### 9:36 AM

#### Articulating vs. Static Spacers in the Management of **Periprosthetic Knee Infection: A Randomized Clinical Trial**

Peter N. Chalmers, MD, Chicago, IL Erdan Kayupov, MS, Troy, MI Scott M. Sporer, MD, Wheaton, IL Keith R. Berend, MD, New Albany, OH Gregory K. Deirmengian, MD, Broomall, PA Javad Parvizi, MD, FRCS, Philadelphia, PA Matthew Austin, MD, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA Craig J. Della Valle, MD, Chicago, IL

This randomized trial demonstrates that articulating spacers provide signif cantly better range of motion than static spacers for periprosthetic joint infection after total knee arthroplasty.

#### 9:42 AM

Paper 236

#### **Acute Kidney Injury after Antibiotic Spacer Placement: Risk Factors and Impact of Antibiotic Dosing**

Gregory Cunn, MD, Brooklyn, NY Thomas A. Herschmiller, MD, New York, NY Priscilla K. Cavanaugh, MS, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA Christopher Haas, New York, NY Jeffrey A. Geller, MD, New York, NY

Acute kidney injury can occur at a high rate following 2 stage revision procedures for periprosthetic joint infections, regardless of antibiotic dose used.

#### 9:48 AM

#### **Two-stage Debridement with Prosthesis Retention for Acute** Infections Following Primary Hip or Knee Arthroplasty

Matthew Niesen, MD, Middleton, WI Mark J. Spangehl, MD, Scottsdale, AZ Henry D. Clarke, MD, Scottsdale, AZ Adam Schwartz, MD, Phoenix, AZ Christopher P. Beauchamp, MD, FRCS (Ortho), Phoenix, AZ

We successfully treated 90.7% of patients with an acute periprosthetic joint infection (APJI) following primary hip or knee arthroplasty with a two-stage debridement and prosthesis retention protocol

Discussion – 6 Minutes

#### **PAPER PRESENTATION**

#### 8:00 AM - 10:00 AM Room W414

#### **Pediatrics II: Trauma/Hip**

Moderator(s): Alexandre Arkader, MD, Philadelphia, PA, Wudbhav N. Sankar, MD, Wynnewood, PA

#### 8:00 AM

#### Paper 241

Paper 242

Time to Return to School Following 10 Common Orthopaedic **Surgeries Among Children and Adolescents** 

S. Clifton Willimon, MD, Atlanta, GA M. M. Johnson, Atlanta, GA Mackenzie M. Herzog, MPH, Atlanta, GA Michael T. Busch, MD, Atlanta, GA

This study identif es average time missed from school following 10 common orthopaedic surgeries among children and adolescents.

#### 8:06 AM

Wednesday

#### **Flexible Intramedullary Nails for Femur Fractures in Pediatric Patients Heavier Than 100 Pounds**

James S. Shaha, MD, Kailua, HI Jason M. Cage, DO, Mechanicsville, VA Sheena R. Black, MD, Dallas, TX Robert L. Wimberly, MD, Dallas, TX Steve Shaha, Draper, UT Anthony I. Riccio, MD, Dallas, TX

Stainless steel f exible IM nails are able to maintain fracture alignment without an increase in complications in a population weighing more than 100 lbs.

#### 8:12 AM

Paper 240

#### Pediatric Femur Fracture Treatment: A Multicenter Review of the Pre and Post 2009 AAOS Clinical Practice Guidelines

Paper 243

Paper 244

Paper 245

Paper 246

John D. Roaten, MD, Memphis, TN Jeffrey R. Sawyer, MD, Germantown, TN Joseph L. Yellin, BA, Philadelphia, PA John M. Flynn, MD, Philadelphia, PA Sumeet Garg, MD, Aurora, CO Micaela Cyr, BA, Aurora, CO Lindsay M. Andras, MD, Los Angeles, CA Alexander M. Broom, South Pasadena, CA

This multicenter review of 2646 pediatric femur fractures demonstrates a continued strong trend toward surgical treatment in patients younger than recommended in the 2009 AAOS CPG publication.

Discussion – 6 Minutes

#### 8.24 AM

#### The Lost Art of Fracture Reduction: Development and Validation of a Distal Radius Fracture Reduction & Casting Model Mark Seelev, MD, Danville, PA

Peter D. Fabricant, MD, MPH, Philadelphia, PA John Todd R. Lawrence, MD, PhD, Philadelphia, PA

Teaching and assessing technical competency of fracture reduction is challenging. This is the f rst distal radius fracture model to incorporate objective feedback in its assessment.

#### 8:30 AM

#### Use of Removable Long-Arm Soft Cast to Treat Non-Displaced **Pediatric Elbow Fractures: A Randomized Controlled Trial**

Mauricio Silva, MD, Los Angeles, CA Gal S. Sadlik, BA, Los Angeles, CA Tigran Avoian, MD, Tujunga, CA Edward Ebramzadeh, PhD, Los Angeles, CA

We investigated the use of a removable long-arm soft cast for the treatment of non-displaced pediatric elbow fractures, using a randomized, controlled trial

#### 8:36 AM

#### **Incarcerated Medial Epicondyles with Elbow Dislocation - Risk Factors Associated with Morbidity**

Carley Vuillermin, Halifax, Australia Kyna S. Donohue, Boston, MA Patricia Miller, MS, Boston, MA Andrea S. Bauer, MD, Boston, MA Dennis E. Kramer, MD, Boston, MA Yi-Meng Yen, MD, Boston, MA

Incarcerated medial epicondyle fractures are commonly associated with ulnar nerve symptoms however they are not associated with a signif cant rate of other complications in the postoperative period.

Discussion – 6 Minutes

#### 8:48 AM

#### The "skinny" SCFE

Rachel Y. Goldstein, MD, Los Angeles, CA Erin Dawicki, PA, Halifax, MA Alexander M. Broom, South Pasadena, CA Kody K. Barrett, BA, Los Angeles, CA Lindsay M. Andras, MD, Los Angeles, CA Michael B. Millis, MD, Boston, MA

SCFE occurs in underweight and normal weight patients, with similar demographic characteristics and radiographic f ndings. However, these slips are more commonly unstable.

#### 8:54 AM

Paper 248

Paper 247

#### **Continued Delay in Diagnosis of Slipped Capital Femoral Epiphysis**

Alexander M. Broom, South Pasadena, CA Lindsay M. Andras, MD, Los Angeles, CA Kody K. Barrett, BA, Los Angeles, CA Rachel Y. Goldstein, MD, Los Angeles, CA Herman Luther, Winchester, MA Nicholas D. Fletcher, MD, Atlanta, GA Robert Runner, MD, Atlanta, GA Christine Bowman, MD, Kalamazoo, MI

There was no improvement in the delayed diagnosis of SCFE. Decreased delay for the contralateral SCFE suggests education of at risk children may be an effective strategy to improving this delay.

#### 9:00 AM

Paper 249

#### Is Three-Dimensional Imaging Better than Plain Radiographs for **Def ning Pincer FAI Subtypes?**

Jeffrey Nepple, MD, Saint Louis, MO James Ross, MD, Fort Lauderdale, FL Asheesh Bedi, MD, Ann Arbor, MI John C. Clohisy, MD, Saint Louis, MO

Three-dimensional imaging allows for more accurate and precise characterization of pincer-type morphologies in patients with FAI, compared to plain radiographs.

#### Discussion – 6 Minutes

#### 9:12 AM

#### Paper 250 The Effects of Periacetabular Osteotomy-Induced Changes in Joint Mechanics on Short-Term Patient Outcomes

Kevin Townsend, Iowa City, IA Jessica Goetz, PhD, Iowa City, IA Saran Tantavisut, Bangkok, Thailand Todd O. McKinley, MD, Indianapolis, IN Michael C. Willey, MD, Iowa City, IA

DEA is used to calculate pre- and post-operative joint contact stress (JCS) in patients that undergo periacetabular osteotomy. Reduction in JCS is predictive of improved short term clinical outcomes.

#### 9:18 AM

#### Is Acetabular Rim Trimming Safe & Effective For Idiopathic Femoroacetabular Impingement in the Adolescent Patient?

Kevin Smit, MD, Dallas, TX Adriana De La Rocha, PhD, Dallas, TX David A. Podeszwa, MD, Dallas, TX Daniel J. Sucato, MD, MS, Dallas, TX

An acetabular rim trimming is safe and effective when it is deemed appropriate in the adolescent patient with symptomatic femoroacetabular impingement.

#### 9:24 AM

#### Long Term Outcomes after Pediatric Treatment of **Developmental Hip Dysplasia**

Ernest Young, MD, Rochester, MN Todd A. Milbrandt, MD, Rochester, MN William J. Shaughnessy, MD, Rochester, MN Annalise N. Larson, MD, Rochester, MN

Total hip arthroplasty is a common sequalae in patients treated with childhood surgery for development hip dysplasia. At mean 30 year followup 22 out of 114 hips had undergone replacement.

#### Discussion – 6 Minutes

#### 9:36 AM

Paper 253

Paper 254

Paper 251

Paper 252

#### **Evaluation of Brace Treatment for Dislocated Infantile Developmental Dysplasia of the Hip in a Prospective Cohort**

Vidyadhar V. Upasani, MD, San Diego, CA James D. Bomar, San Diego, CA Travis H. Mathenev, MD, Boston, MA Kishore Mulpuri, MD, Vancouver, BC, Canada Charles T. Price, MD, Winter Park, FL Scott J. Mubarak, MD, San Diego, CA

Brace treatment was successful in 82% of dislocated hips in this series. Five variables were found to be signif cant risk factors of failure.

#### 9:42 AM

#### **Does Perfusion MRI Following Closed Reduction of DDH Reduce** the Incidence of Avascular Necrosis?

Alex L. Gornitzky, BS, Toms River, NJ Andrew G. Georgiadis, MD, Philadelphia, PA Mark Seeley, MD, Danville, PA Bernard D. Horn, MD, Philadelphia, PA Wudbhav N. Sankar, MD, Wynnewood, PA

Use of a perfusion MRI-based protocol immediately following closed reduction/spica casting for DDH may reduce the proportion of patients who develop AVN as compared to traditionally treated patients.

#### 9:48 AM

#### Paper 255

Contrast-Enhanced MRI After Reduction of Infant Hip Dislocation Predicts Avascular Necrosis on Initial Scan Only

Travis H. Matheney, MD, Boston, MA Benjamin J. Shore, MD, MPH, Boston, MA Michael P. Glotzbecker, MD, Boston, MA Samantha A. Spencer, MD, Boston, MA Michele Walters, MD, Boston, MA Young Jo Kim, MD, PhD, Boston, MA

Poor femoral epiphysis enhancement on MRI after reduction of infant hip dislocation can predict AVN. Improvement in enhancement is commonly seen by 6 weeks but does not portend a better outcome.

Discussion – 6 Minutes

#### PAPER PRESENTATION

8:00 AM — 10:00 AM Room W304A

#### Foot & Ankle I: Pre-operative/Post-operative Management & Diabetes

Moderator(s): Jamal Ahmad, MD, Philadelphia, PA, Michael S. Aronow, MD, West Hartford, CT

#### 8:00 AM

Paper 256

#### Vitamin D Supplementation and Awareness in Patients Presenting to an Orthopaedic Foot and Ankle Clinic

Kevin J. McCarthy, MD, Germantown, TN Adam Baker, MD, Happy Valley, OR Garnett A. Murphy, MD, Germantown, TN David R. Richardson, MD, Memphis, TN Ben Grear, MD, Germantown, TN Susan N. Ishikawa, MD, Cordova, TN

This study examines vitamin D knowledge and supplementation rates of 359 new patients at a foot and ankle clinic. Data was gathered from questionnaires at the initial visit and 1-2 months follow-up.

# Wednesday

#### 8:06 AM

#### Paper 257

Pre-operative Narcotic and Alcohol Use are Risk Factors for Complication in Ankle and Hindfoot Reconstruction

Ryan P. Mulligan, MD, Memphis, TN Kevin J. McCarthy, MD, Germantown, TN Ben Grear, MD, Germantown, TN David R. Richardson, MD, Germantown, TN Susan N. Ishikawa, MD, Collierville, TN Garnett A. Murphy, MD, Germantown, TN

Pre-operative narcotic use and alcohol use are risk factors for complications after total ankle arthroplasty, ankle fusion, and hindfoot fusion.

#### 8:12 AM

#### Resident Involvement Increases Morbidity but not Mortality in Foot and Ankle Surgery

Christopher E. Gross, MD, Durham, NC David C. Chang, MBA, MPH, Boston, MA Selene G. Parekh, MBA, MD, Cary, NC Samuel B. Adams Jr, MD, Chapel Hill, NC Jordan Bohnen, MD, Boston, MA

Resident involvement in foot and ankle surgery was associated with an increase in total morbidity and medical complications.

Discussion – 6 Minutes

#### 8:24 AM

Paper 259

Paper 260

Paper 261

Paper 258

#### Resident Involvement Does Not Increase Complications after Open Reduction Internal Fixation of Ankle Fractures

Philip Louie, MD, Chicago, IL William W. Schairer, MD, New York, NY Bryan Haughom, MD, Chicago, IL Joshua A. Bell, MD, Chicago, IL Kevin J. Campbell, MD, Chicago, IL Brett R. Levine, MD, Elmhurst, IL

Short-term post-operative major medical complications do not increase with resident participation in surgery for open reduction internal f xation of ankle fractures.

#### 8:30 AM

#### Postoperative Narcotic Prescription Practice in Orthopaedic Foot and Ankle Surgery

Thomas M. Hearty, MD, Bethesda, MD Paul Butler, MD, Grand Rapids, MI John G. Anderson, MD, Grand Rapids, MI Donald R. Bohay, MD, Grand Rapids, MI

There is a prescription pain medication misuse problem in the US. This study demonstrates variability in postoperative pain medication type and dispensing in orthopaedic foot and ankle surgery.

#### 8:36 AM

# Psychosocial Risk Factors of Post-operative Pain in Ankle and Hindfoot Reconstruction

Ryan P. Mulligan, MD, Memphis, TN Kevin J. McCarthy, MD, Germantown, TN Ben Grear, MD, Germantown, TN David R. Richardson, MD, Germantown, TN Susan N. Ishikawa, MD, Collierville, TN Garnett A. Murphy, MD, Germantown, TN

Pre-operative narcotic use, chronic pain disorder, mood disorder, and tobacco use are risk factors for pain after total ankle arthroplasty, ankle fusion, and hindfoot fusion.

Discussion – 6 Minutes

#### 8:48 AM

#### Paper 262

Eff cacy of Immediate Postoperative Pain Control Modalities after Ankle Fracture Fixation

David Y. Ding, MD, San Francisco, CA Christian A. Pean, MS, New York, NY Sudheer Jain, New York, NY Kenneth A. Egol, MD, New York, NY Nirmal C. Tejwani, MD, New York, NY

This study compares the eff cacy of single shot nerve block, continuous infusion of anesthesia by catheter, and general anesthesia in postoperative pain control for ankle fractures.

#### 8:54 AM

Paper 263

#### Incidence of Venous Thromboembolism in Open Ankle Surgery

David Sing, San Francisco, CA Daniel Thuillier, MD, San Francisco, CA Alfred C. Kuo, MD, San Francisco, CA

Venous thromboembolic events after elective open ankle surgery occurred in <1% of 8,291 cases in a large national database.

#### 9:00 AM

#### Paper 264

Cost-effectiveness of Routine Pharmacologic DVT Prophylaxis Following Select Foot And Ankle Surgeries

Adam Fleischer, DPM, MPH, North Chicago, IL Richmond Robinson, DPM, North Chicago, IL Craig Wirt, PhD, Chicago, IL Carolina Barbosa, PhD, Chicago, IL Arezou Amidi, DPM, Chicago, IL Mitchell B. Sheinkop, MD, Chicago, IL Robert Joseph, DPM, PhD, North Chicago, IL

This is a cost-effectiveness analysis comparing routine use of low molecular weight heparin to no chemical prophylaxis for several foot/ankle surgeries with varied venous thromboembolism risk.

#### Discussion – 6 Minutes

#### 9:12 AM

Paper 265

# Spray-applied Epidermal Growth Factor for the Treatment of Diabetic Foot Ulcers

Kwang Hwan Park, MD, Seodaemun-Gu, Republic of Korea Jaewan Suh, MD, Seoul, Republic of Korea Moses Lee, MD, Seoul, Republic of Korea Yoo Jung Park, MD, Seoul, Republic of Korea Dongwoo Shim, Namyangju-Si, Republic of Korea Seung Hwan Han, MD, Seoul, Republic of Korea Woojin Choi, MD, Seoul, Republic of Korea Jin Woo Lee, MD, Seoul, Republic of Korea

The results of the present study indicate that a spray formulation of rhEGF improves the outcome of chronic diabetic foot ulcers in uncontrolled diabetic patients with adequate arterial f ow.

#### 9:18 AM

#### Allogenic Keratinocytes Therapy for the Chronic Diabetic Foot Ulcer

Paper 266

Paper 267

Paper 268

Kwang Hwan Park, MD, Seodaemun-Gu, Republic of Korea Jaewan Suh, MD, Seoul, Republic of Korea Moses Lee, MD, Seoul, Republic of Korea Yoo Jung Park, MD, Seoul, Republic of Korea Dongwoo Shim, Namyangju-Si, Republic of Korea Seung Hwan Han, MD, Seoul, Republic of Korea Woojin Choi, MD, Seoul, Republic of Korea Jin Woo Lee, MD, Seoul, Republic of Korea

The results of the present study indicate the allogenic keratinocytes therapy may be one of useful treatment options for the chronic diabetic foot ulcers.

#### 9:24 AM

#### Factors Affecting Hospital Stay And Mortality Of Patients With Infected Diabetic Foot Ulcers

Kyoung Min Lee, MD, Sungnam, Republic of Korea Chin Y. Chung, MD,PhD, Seongnam, Republic of Korea Sang Hyeong Lee, Goyang-Si, Republic of Korea Dae Gyu Kwon, Incheon, Republic of Korea Ki Hyuk Sung, MD, Kyungki, Republic of Korea Myungki Chung, Seongnam-Si, Republic of Korea Gye Wang Lee, MD, Seongnam, Republic of Korea In Hyeok Lee, Seongnam-Si, Gyeonggi-Do, Republic of Korea Moon Seok Park, MD, Sungnam, Republic of Korea

The length of hospital stay was affected by ESR,HbA1c,BMI,and major vascular disease, whereas patient mortality was affected by age and BUN.

Discussion – 6 Minutes

#### 9:36 AM

# Conservative treatment and management of Charcot foot arthropathy

Stefan Cristea, FRCS (Ortho), MD, PhD, Bucuresti, Romania Radu Visan, Bucuresti, Romania Andrei I. Prundeanu, MD, Bucuresti, Romania

Nicholas Marandici, MD, Bucharest, Romania

The goal of our study is to prove the eff cacy of conservative treatment and management of Charcot foot and decreased risk of amputation. Conservative treatment is the option of choice.

#### 9:42 AM

#### Paper 269 Do Systemic Inf ammation Parameters Correlate With The

**Radiographic Stages Of Charcot neuro-osteoarthropathy ?** 

Andreas M. Hingsammer, MD, Zürich, Switzerland Thomas Boeni, MD, Zurich, Switzerland Niklas Renner, MD, Engelburg, Switzerland Paul Borbas, MD, Zurich, Switzerland Pascal Schenk, MD, Sursee, Switzerland Martin Berli, MD, Basel, Switzerland

Charcot neuro-osteoarthropathy can be associated with increased inf ammatory markers, especially in the acute stages.

#### 9:48 AM

Paper 270

**Intramedullary Nailing Versus External Ring Fixation For Tibiotalocalcaneal Arthrodesis In Charcot Arthropathy** 

James Richman, MD, New York, NY Adam G. Cota, FRCSC, MD, New York, NY Steven B. Weinfeld, MD, New York, NY

In Charcot deformities requiring TTC arthrodesis, IM nails and external ring f xators result in high limb salvage rates but complications requiring further surgery are more likely with IM nails.

Discussion – 6 Minutes

#### PAPER PRESENTATION

8:00 AM — 10:00 AM Room W315

#### Hand & Wrist II:

Moderator(s): Mark S. Rekant, MD, Cherry Hill, NJ, James H. Calandruccio, MD, Germantown, TN

#### 8:00 AM

#### Paper 271

Effects of Metabolic Syndrome on Surgical Outcome of Carpal **Tunnel Release: A Matched Case-Control Study** 

Young Hak Roh, Incheon, Republic of Korea Jong Ryoon Baek, Incheon, Republic of Korea Jung Ho Noh, MD, PhD, Chuncheon-Si, Republic of Korea Do Hyun Moon, Incheon, Republic of Korea Beom Koo Lee, Incheon, Republic of Korea

Patients with CTS and metabolic syndrome have delayed functional recovery after CTR that continues for at least 1 year.

#### 8:06 AM

#### Paper 272

#### Intercostal Nerve Transfer to Restore Elbow Flexion

Eric R. Wagner, MD, Rochester, MN Michelle Kircher, RN, Rochester, MN Robert J. Spinner, MD, Rochester, MN Allen T. Bishop, MD, Rochester, MN Alexander Yong Shik Shin, MD, Rochester, MN

Intercostal nerve transfer in the setting of a complete or near complete brachial plexus injury leads to reasonable rates of recovery of elbow f exion.

#### 8:12 AM

#### A Minimally-Invasive Method for Cubital Tunnel Decompression

Paper 273

Paper 274

Paper 275

Paper 276

Andrew Lovy, MD, MS, New York, NY Steven Koehler, MD, New York, NY Sara Guerra, FRCSC, MD, Lakeshore, ON, Canada Harshvardhan Chawla, BS, New York, NY Michael Hausman, MD, New York, NY

We describe a technique for minimally-invasive cubital tunnel decompression that addresses all points of compression with excellent functional and cosmetic results.

Discussion – 6 Minutes

#### 8:24 AM

**Effects of Sustained VPA-Release Conduits on Peripheral Nerve Regeneration: An In Vitro and In Vivo Study** Fei Wu, Wuhan, China

The sustained nanocomposite VPA-release conduit promoted axonal regeneration after peripheral nerve injury.

#### 8:30 AM

#### **Prospective Evaluation of Opioid Consumption Following Carpal Tunnel Release Surgery**

Talia Chapman, MD, Philadelphia, PA Nayoung Kim, Philadelphia, PA Mitchell Maltenfort, PhD, Philadelphia, PA Asif M. Ilvas, MD, Wayne, PA

The type of carpal tunnel release surgery and anesthetic type had no effect on opioid use, but patient age did. Overall, opioid use was low and patients were routinely over-prescribed.

#### 8:36 AM

#### Pronator Teres Transfer to Radial and Ulnar Wrist Extensors To **Improve Hand Strength in Radial Nerve Palsv**

Mohamed A. Quolquela Sr, MD, PhD, Tanta, Egypt

PT tendon transfer to ECRB & ECU tendons improves ulnar deviation with signif cant increase of hand gripping strength.

Discussion – 6 Minutes

#### 8:48 AM

#### Paper 277 **Displacement of Non-Operative Distal Radius Fractures**

following Splint Removal: A Prospective Study Lakshmanan Sivasundaram, BS, Granada Hills, CA Brock Foster, BS, Pasadena, CA Nathanael D. Heckmann, MD, Los Angeles, CA William Pannell, MD, Los Angeles, CA Ram Alluri, MD, Los Angeles, CA Ieffrey R. Hill, BA, BS, Los Angeles, CA Braden M. McKnight, BS, Poway, CA Alidad Ghiassi, MD, Pacif c Plsdsades, CA

Acute distal radius fractures do not displace following removal of cast or splint and physical examination irrespective of fracture pattern and radiographic stability.

Paper 282

Paper 283

Paper 284

Paper 285

# Wednesday, March 2

#### 8:54 AM

#### Paper 278

Outcome of Nerve Transfer versus Nerve Graft in Proximal Ulnar Nerve Injuries to Restore Intrinsic Hand Function

Asser Sallam, MD, PhD, Ismailia, Egypt Mohamed El-Deeb, MSc, MD, Ismailia, Egypt Mohamed A. Imam, MD, PhD, London, United Kingdom

Nerve transfer provides a superior alternative surgical option for restoration of intrinsic hand function when compared to nerve grafting in the management of proximal isolated ulnar nerve injuries.

#### 9:00 AM

#### Paper 279

#### Matched-Diameter Decellular Allograft vs Cabled Sural Nerve Autograft Reconstruction in a Rat Nerve Defect Model

Peter Tang, MD, Sewickley, PA Hongkyun Kim, MD, Seoul, Republic of Korea Daniel R. Whiteman, BS, Philadelphia, PA Clifford Voigt, MD, Pittsburgh, PA Mark Carl Miller, PhD, Pittsburgh, PA

In a 10 mm rat sciatic nerve defect model, matched-diameter decellular allograft, sural nerve cable (4-5) grafting, and reverse autograft had equal functional outcomes at 12, 16 and 20 wks.

Discussion – 6 Minutes

#### 9:12 AM

Paper 280

#### Do Surgeons Agree on What Constitutes Tension at Nerve Repair Sites?

Joshua M. Abzug, MD, Timonium, MD Fraser J. Leversedge, MD, Durham, NC John P. Taras, Philadelphia, PA Peter Tang, MD, Sewickley, PA Harry A. Hoyen, MD, Cleveland, OH Jonathan E. Isaacs, MD, Richmond, VA Peter J. Evans, MD, FRCSC, Cleveland, OH Scott H. Kozin, MD, Philadelphia, PA

How much "tension" is present in a nerve repair is not agreed upon by surgeons when no nerve or 2 mm of nerve is transected.

#### 9:18 AM

Paper 281

# SBRN versus Sural Nerve Grafting; a case-control analysis of 75 patients

Eric R. Wagner, MD, Rochester, MN Nina Suh, MD, Toronto, ON, Canada Michelle Kircher, RN, Rochester, MN Robert J. Spinner, MD, Rochester, MN Allen T. Bishop, MD, Rochester, MN Alexander Yong Shik Shin, MD, Rochester, MN

Ipsilateral dennervevated SBRN nerve grafts in brachial plexus injures has worse outcomes when compared to sural nerve grafts in the treatment of brachial plexus injuries in a matched series.

#### 9:24 AM

#### Incidence of Surgery Post Collagenase Injection in the Treatment of Dupuytren's Contracture

Tsun Yee Law, MD, Fort Lauderdale, FL Samuel Rosas, MD, Fort Lauderdale, FL Rishabh Jethanandani, BS, Boca Raton, FL Frank McCormick, MD, Pompano Beach, FL Olukemi Fajolu, MD, Cherry Hill, NJ

Incidence of surgery after collagenase injection with manipulation in Dupuytren's Contracture.

Discussion – 6 Minutes

#### 9:36 AM

#### The Diagnostic Role of Nerve Conduction Study Results in Cubital Tunnel Syndrome

Justin J. Koh, MA, Los Angeles, CA Kodi Azari, MD, Los Angeles, CA Nelson F. SooHoo, MD, Santa Monica, CA Prosper Benhaim, MD, Los Angeles, CA

Nerve conduction study results are better suited for assessing disease severity than for diagnosis of cubital tunnel syndrome

#### 9:42 AM

#### Simultaneous Steroid Injection After Percutaneous A1 Pulley Release: a Double-Blind Randomized Controlled Trial

Midum Jegal, MD, Cheonan, Republic of Korea Sung Jong Woo, Busan, Republic of Korea Hyun-Il Lee, MD, Gangneung-Si, Republic of Korea Min Jong Park, MD, PhD, Seoul, Republic of Korea

A simultaneous steroid injection after percutaneous A1 pulley release provides a greater range of motion and improvement in symptoms during the early postoperative period.

#### 9:48 AM

#### Predictors of Return to Work After Carpal Tunnel Release in a Workers' Compensation Population

Jenniefer Y. Kho, MD, Modesto, CA Michael Gaspar, MD, Philadelphia, PA Patrick Kane, MD, Strathmere, NJ Sidney M. Jacoby, MD, Gladwyne, PA Eon K. Shin, MD, Philadelphia, PA

Psychosocial factors play a predominant role in delayed return to work (RTW) after carpal tunnel release in the Workers' compensation population, while disease severity and job type do not.

Discussion – 6 Minutes

#### **INSTRUCTIONAL COURSE LECTURE**

#### 9:30 AM — 10:30 AM



W209B

**Preparation and Delivery of the Orthopaedic Lecture** Moderator: James H. Beaty, MD, Memphis, TN James J. McCarthy, MD, Cincinnati, OH Theodore W. Parsons III, MD, FACS, Detroit, MI David L. Skaggs, MD, Los Angeles, CA

Focuses on utilizing PowerPoint especially for the medical professional and developing a lecture for an orthopaedic audience. Learn tips and tricks you can use to enhance your teaching skillswhen participating in educational sessions for your colleagues and for patient education – both individually and community wide.



Statistics for Orthopaedists

Moderator: Mohit Bhandari, MD, PhD, Hamilton, ON, Canada

W209A

Reviews and provides statistical methods that are useful in orthopaedic research.

#### **Symposium**

10:30 AM — 12:30 PM Chapin Theater

#### Foot and Ankle Surgery for the Sports Medicine Physician (K)

Moderator: Timothy Charlton, MD, Los Angeles, CA

Foot and ankle problems account for over 20% of the sports medicine injuries seen on the f eld of play, yet understanding of these problems is often limited to the fellowship trained foot and ankle surgeon. The primary objective of this symposia is to discuss the most common problems seen on f eld, the management of these problems, and the most advanced treatment options.

- I. Lis Franc Fractures and Sprains in the Elite Athlete Robert B. Anderson, MD, Charlotte, NC
- II. Lateral Ankle Instability and Peroneal Tendon Pathology Richard D. Ferkel, MD, Van Nuys, CA
- III. Cartilage and OCD Lesions of the Talus Current Treatment Options in the Elite Athlete *Eric Giza, MD, Sacramento, CA*
- IV. Jones Fracture and Stress Fractures Treatment Choices in the Elite Athlete Martin J. O'Malley, MD, New York, NY

#### Symposium

10:30 AM — 12:30 PM Valencia Room A



#### Gun Shot and Explosive Wounds (L)

Co-Moderators:James R. Ficke, MD, Baltimore, MD Camilo Restrepo, MD, Philadelphia, PA

Will discuss the impact of high, intermediate and low velocity gun shot and other violent wounds as well as how to evaluate these patients, operative and nonoperative treatments and rehabilitation. This symposium is a collaboration between AAOS and the 2016 Guest Nation of Colombia.

- I. Introduction James R. Ficke, MD, Baltimore, MD
- II. Impact of Gun Shot Wounds James R. Ficke, MD, Baltimore, MD and Camilo Restrepo, MD, Philadelphia, PA
- III. How to Put Them Back Together Again / Bone Trauma of High Velocity Gun Shot Wound Camilo Restrepo, MD, Philadelphia, PA
- IV. Civil Gun Shot Wounds: How Do We Manage It *Juan M. Concha, MD, Popayan, Colombia*
- V. Gun Shot Wounds in the Upper Extremity Fabio Suarez, MD – Bogotá, Colombia
- VI. Gun Shot Wounds in the Lower Extremity Oscar Calderón, MD - Colombia
- VII. Pelvic and Acetabular Gun Shot Wounds Jorge Alonso, MD – Mobile, AL
- VIII. Evaluation and Management of Articular Lesions Carlos Satizabal, MD - Bogotá, Colombia
- IX. High Speed Spinal Gun Shot Wounds in the USA *Carlo J. Bellabarba*, *MD Seattle*, *WA*
- X. Antipersonal Mine Wounds: Rational Management Carlos Valderrama, MD – Medellia, Colombia
- XI. Amputations Decision Making First Surgery James R. Ficke, MD – Baltimore, MD
- XII. Massive Attacks Rami Mosheiff, MD – Jerusalem, Israel
- XIII. Terrorist Attacks: What Can We Learn From Our Experience in Colombia? Luis Carlos Morales, MD – Bogotá, Colombia
- XIV. Hand Violence Lesions: Treatment and Reconstruction Elkin Lozano-González, MD – Tomila, Colombia

#### **Symposium**

10:30 AM - 12:30 PM Valencia Room B

#### **Controversies in Pediatric Sports Medicine:** A Case-based Approach (M)

Co-Moderators: Eric W. Edmonds, MD, San Diego, CA Matthew Milewski, Farmington, CT

Case-based debate examining treatment options for four common pediatric sports injuries. Shoulder instability discussion includes f rst-time traumatic dislocation and multidirectional instability. Patella instability andosteochondritis dissecans of the knee discussion covers the various scenarios that these children may present and then there is a discussion of pediatric anterior cruciate ligament and tibial spine fractures.

- I. Anterior Cruciate Ligament Michael T. Busch, MD, Atlanta, GA
- II. Anterior Cruciate Ligament Theodore J. Ganley, MD, Philadelphia, PA
- III. Patella Instability Daniel W. Green, MD, New York, NY
- IV. Co-moderator and Shoulder Instability Matthew Milewski, MD, Farmington, CT
- V. OCD of the Knee Kevin G. Shea, MD, Boise, ID
- VI. OCD of the Knee Jennifer M. Weiss, MD, Los Angeles, CA
- VII. Patella Instability Lawrence Wells, MD, Philadelphia, PA

#### **INSTRUCTIONAL COURSE LECTURE**

#### 10:30 AM - 12:30 PM

221 **Recurrent Dislocation after Total Hip Arthroplasty: Controversies and Solutions** TICKET Moderator: Paul F. Lachiewicz, MD, Chapel Hill, NC Stephen A. Jones, MD, Room Vale Of Glamorgan, United Kingdom W202 Samuel S. Wellman, MD, Durham, NC

> Provides an in-depth discussion of the biomechanics, indications, techniques, and results of these procedures for recurrent dislocation in a didactic and case-based approach.

2	222
Í	TICKET

Room

#### The Total Knee Infection: From Prevention to Treatment

Moderator: Khaled I. Saleh, MD, MSc, Springf eld, IL William A. Jiranek, MD, Richmond, VA William M. Mihalko, MD, PhD, Germantown, TN W205B Wayne G. Paprosky, MD, Winf eld, IL

> By better understanding how to effectively prevent, diagnose, and treat the infected total knee arthroplasty (TKA), the orthopaedic surgeon can improve and optimize care for TKA patients.

#### 223 **Orthopaedic Basic Science for the Practicing Physician**

Moderator: Philipp Leucht, MD, New York City, NY TICKET

Room

W308C

Geoffrey D. Abrams, MD, Atherton, CA

Thomas A. Einhorn, MD, New York, NY

The purpose of this course is to educate the practicing orthopaedic surgeon in the most recent developments in orthopaedic basic science with a special focus on fracture healing, osteoarthritis, and orthobiologics.

#### The Management of Thumb Basilar Joint Arthritis

TICKET Room W307A

224

Moderator: Sanjeev Kakar, MD, Rochester, MN Ryan P. Calfee, MD, Saint Louis, MO Amy L. Ladd, MD, Palo Alto, CA A. Lee Osterman, MD, Villanova, PA

Provides an overview to the pathophysiology ofbasilar thumb joint arthritis and reviews the treatment options/available evidence including arthroscopic debridement, trapeziectomy alone or with interposition, trapeziectomy with suspension arthroplasty, arthrodesis, and joint replacement. Areas of controversy such as how to address metacarpophalangeal (MCP) joint hyperextension and the management of failed primary basilar thumb joint reconstructions are covered. Casesfor panel and audience discussion and an algorithm are presented.

225 TICKET

Room

W205A

#### Pediatric Hand and Wrist Fractures: An Approach to their Management and the Ability to Treat the **Complications that Inevitably Occur**

Moderator: Joshua M. Abzug, MD, Timonium, MD Andrea S. Bauer, MD, Boston, MA Roger Cornwall, MD, Cincinnati, OH Theresa O. Wyrick, MD, Little Rock, AR

Management of pediatric hand and wrist fractures is presented in a case-based manner. Detailed discussion regarding pearls and pitfalls of initial treatment, and avoiding the potential complications as well as managing them, aid the orthopaedic surgeon in practice.

#### 226 Practical Tips for Implementing Bundled Payments in **Your Practice** TICKET

Moderator: Kevin J. Bozic, MD, MBA, Austin, TX Mark I. Froimson, MD, Hunting Valley, OH Richard Iorio, MD, New Rochelle, NY Steven F. Schutzer, MD, Hartford, CT

Provides attendees with a greater understanding of the policy trends driving new payment methodologies, their readiness for participation in bundled payments, and strategies for successful implementation of value-based payment models.

#### 227 **Elbow Trauma Gone Bad**

TICKET Room W204

Room

W300

Moderator: Emilie V. Cheung, MD, Redwood City, CA April D. Armstrong, MD, Hershey, PA Robert Z. Tashjian, MD, Salt Lake City, UT



Complications ensuing from elbow trauma can bechallenging to manage. We discuss current understanding on recognizing and treating instability patterns. Critical concepts regarding soft tissue complications such as stiffness, wound healing, and nerve injury are discussed.

228
TICKET
Room

W314

229

TICKET

Room

W203

#### From the Glenoid to the Radial Tuberosity -Management of Biceps Pathology in 2016

Moderator: Anthony A. Romeo, MD, Chicago, IL Rachel M. Frank, MD, Chicago, IL Laith M. Jazrawi, MD, New York, NY Eric J. Strauss, MD, New York, NY

Provides a comprehensive overview of managementof the biceps from the glenoid to the radial tuberosity, with an evidence-based approach focusing on the cost-effectiveness and value of all available surgical approaches.

#### **Complex Proximal Tibia Fractures:** Work Up, Surgical Approaches, and Def nitive **Treatment Options**

Moderator: Philip R. Wolinsky, MD, Sacramento, CA Nirmal C. Tejwani, MD, New York, NY Brad J. Yoo, MD, Portland, OR Bruce Ziran, MD, FACS, Atlanta, GA

Discusses intra- and extra-articular proximal tibia fracture evaluation and management, including soft tissue injuries, surgical approaches, and reduction and f xation strategies.

#### What's Wrong with the Bone?

230

TICKET

Room

W310

MSTS

Moderator: Kristy L. Weber, MD, Philadelphia, PA Richard L. McGough, MD, Pittsburgh, PA Michael P. Mott, MD, Detroit, MI

Provides an overview of common metabolic lesions, infection, and benign and malignant bone tumorsoccurring in children and adults. Imaging characteristics and the appropriate diagnostic workup are reviewed. A robust discussion and case-based format is used.

#### **Management of Common Complications of** ♦ 283 **Total Knee Arthroplasty: A Case-based Discussion** TICKET Moderator: Mark W. Pagnano, MD, Rochester, MN Daniel J. Berry, MD, Rochester, MN Michael P. Bolognesi, MD, Durham, NC Henry D. Clarke, MD, Phoenix, AZ Room David F. Dalury, MD, Indianapolis, IN W207 Brian R. Hamlin, MD, Pittsburgh, PA

Arlen D. Hanssen, MD, Rochester, MN Adolph V. Lombardi Jr, MD, New Albany, OH Aaron G. Rosenberg, FACS, MD, Chicago, IL Robert T. Trousdale, MD, Rochester, MN Thomas P. Vail, MD, San Francisco, CA

The topics that are covered include the most common complications and reasons for reoperation after total knee arthroplasty (TKA): instability after TKA (tibiofemoral and patello-femoral), infection after TKA (early and late), wound healing problems after TKA, stiffness after TKA, extensor mechanism disruption after TKA, and periprosthetic fracture after TKA. This course does not cover the generic topic of knee revision for implant loosening, which is covered in other ICLs.

#### **Degenerative Spondylolisthesis: An Evidence-based**

284

Room

W208

**Assessment of Treatment Options and Outcomes** Moderator: John C. France, MD, Morgantown, WV

Ivan Cheng, MD, Redwood City, CA Theodore I. Choma, MD, Columbia, MO Scott D. Daffner, MD, Morgantown, WV Michael D. Daubs, MD, Las Vegas, NV John G. Devine, MD, Augusta, GA Mitchel B. Harris, MD, Boston, MA James Kang, MD, Pittsburgh, PA Ronald A. Lehman, MD, Creve Coeur, MO Robert W. Molinari, MD, Pittsford, NY Kern Singh, MD, Chicago, IL Seth K. Williams, MD, Madison, WI

Covers treatment options and outcomes for degenerative spondylolisthesis. The cases review diagnostic, nonsurgical, and surgical techniques to show interventions that the literature supports and those that need further investigation.

TICKET 

#### THE WAY I SEE IT...

10:30 AM - 11:30 AM **Technology Theater (in Exhibit Hall)** 

#### The Way I See It...Marketing Yourself

Moderator: James R. Andrews, MD, Gulf Breeze, FL Bill Champion, Omaha, NE Roger C. Holstein, Denver, CO Howard J. Luks, MD, Katonah, NY

Learn the "whys" of what the experts do in marketing. Benef t from the inside story - what each presenter wants you to know about a top-of-the-mind issue. Experts share their experience and views, just the way they see it.

#### PAPER PRESENTATION

#### 10:30 AM - 12:30 PM Valencia Room D

#### Shoulder & Elbow II: Reverse Shoulder Arthroplasty

Moderator(s): Joseph A. Abboud, MD, Philadelphia, PA, Gordon I. Groh, MD, Asheville, NC

#### 10:30 AM

Paper 286

#### **Electromyographic And Kinetic Function Of Reverse Total** Shoulder Arthroplastv

Stephane Pelet, MD, PhD, Québec, QC, Canada Mathieu Ratte-Larouche, MD, Québec, QC, Canada

The sequence of muscular activation in RTSA is different than in normal shoulder and demonstrates a signif cant contribution of both the trapezius and latissimus dorsi.

#### 10:36 AM

#### Paper 287 **Reverse Total Shoulder Arthroplasty Outcomes With And** Without Repair Of The Subscapularis

Richard J. Friedman, MD, Charleston, SC Pierre-Henri Flurin, MD, Merignac, France Thomas W. Wright, MD, Gainesville, FL Joseph D. Zuckerman, MD, New York, NY Christopher Roche, MS, MBA, Gainesville, FL

Signif cant improvements in clinical outcomes and motion were seen in both cases, but not repairing the subscapularis had a higher complication rate, including dislocations and scapular notching.

#### 10:42 AM

#### Clinical Outcomes of Reverse Shoulder Arthroplasty in Patients 65 Years of Age or Younger

Paper 288

Paper 289

Paper 290

Paper 291

Brian T. Samuelsen, MD, Rochester, MN Eric R. Wagner, MD, Rochester, MN Matthew Houdek, MD, Rochester, MN Bassem T. Elhassan, MD, Rochester, MN Joaquin Sanchez-Sotelo, MD, Rochester, MN Robert H. Cof eld, MD, Rochester, MN John W. Sperling, MD, MBA, Rochester, MN

This investigation assessed clinical and radiographic outcome measures in a consecutive series of young patients (<65) after Reverse Shoulder Arthroplasty.

#### Discussion – 6 Minutes

#### 10:54 AM

#### **Radiographic and Clinical Results of an Adjustable Press-Fit** Humeral Stem in Reverse Shoulder Arthroplasty

Samuel Harmsen, MD, San Francisco, CA Tom R Norris, MD, San Francisco, CA

Excellent, predictable humeral f xation is achievable with use of an adjustable press-f t humeral stem in reverse shoulder arthroplasty.

#### 11:00 AM

#### **Neutral Humeral Version In Reverse Shoulder Arthroplasty Can Reduce Impingement In Activities Of Daily Living**

Xiang Chen, MS, New York, NY Andreas Kontaxis, MSc, PhD, New York, NY Julien Berhouet, MD, Saint Lyr Sur Loire, France David M. Dines, MD, Uniondale, NY Edward V. Craig, MD, Bloomington, MN Russell F. Warren, MD, New York, NY Lawrence V. Gulotta, MD, New York, NY

The study performed virtual RSA in 30 pre-op OA subjects and calculated impingement for a set of daily activities. Results showed that impingement was minimized for 0° humeral component version

#### 11:06 AM

#### The Effect of Shoulder Humeral Component Length and Material on Bone Stresses: A Finite Element Analysis

Najmeh Razfar, MSc, London, ON, Canada Jacob Reeves, MSc, London, ON, Canada G Daniel G. Langohr, MSc, London, ON, Canada Ryan Willing, PhD, Binghamton, NY George S. Athwal, MD, London, ON, Canada James A. Johnson, PhD, London, ON, Canada

Shoulder arthroplatsy humeral implant material and length have a substantial effect on proximal humeral bone stresses.

Discussion – 6 Minutes

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 11:18 AM

#### Prediction of Scapular Notching using 3D CT Simulation Software and Video-Based Motion Analysis

Joel Kolmodin, MD, Cleveland Hts, OH Iyooh Uchechukwu Davidson, MD, Shaker Heights, OH Bong-Jae Jun, PhD, Cleveland, OH Nipun Sodhi, BA, Cleveland, OH Naveen Subhas, MD, Cleveland, OH Thomas E. Patterson, PhD, Cleveland, OH Zong-Ming Li, PhD, Cleveland, OH Joseph P. Iannotti, MD, PhD, Cleveland, OH Eric T. Ricchetti, MD, Cleveland, OH

A 3D CT computer simulation model was developed that uses patient-specif c range of motion, bony anatomy, and implant location to predict impingement events that can lead to scapular notching.

#### 11:24 AM

#### Paper 293

Paper 292

**Comparison of Outcomes with Reverse Total Shoulder Arthroplasty in Patients with and without Scapular Notching** *Joseph D. Zuckerman, MD, New York, NY* 

Joseph D. Zuckerman, MD, New Tork, NT Lynn A. Crosby, MD, Augusta, GA Pierre-Henri Flurin, MD, Merignac, France Thomas W. Wright, MD, Gainesville, FL Christopher Roche, MS, MBA, Gainesville, FL

The clinical impact of scapular notching is controversial This clinical study of 415 rTSA patients demonstrates negative impact of scapular notching.

#### 11:30 AM

#### Paper 294

#### **Reverse Shoulder Outcomes with Scapular Deformities: Augmented Glenoid Baseplates vs Bone Grafting** *Thomas W. Wright, MD, Gainesville, FL*

Richard B. Jones, MD, Asheville, NC Pierre-Henri Flurin, MD, Merignac, France Joseph D. Zuckerman, MD, Mamaroneck, NY Christopher Roche, MS, MBA, Gainesville, FL

This study compares rTSA clinical outcomes using augmented baseplates and bone grafting in patients with severe glenoid wear and demonstrates each technique achieves equivalent outcomes.

Discussion – 6 Minutes

#### 11:42 AM

#### Paper 295

#### Shaped-Bio Reverse Shoulder Arthroplasty for Primary Glenohumeral Osteoarthitis with Posterior Glenoid Bone Loss

Samuel Harmsen, MD, San Francisco, CA Danielle Casagrande, MD, San Francisco, CA Tom R Norris, MD, San Francisco, CA

Shaped Bio-Reverse Shoulder Arthroplasty for treatment of primary glenohumeral osteoarthritis with posterior glenoid bone loss is associated with excellent clinical outcomes.

#### 11:48 AM

# Angled BIO-RSA: a Solution for Asymetrical Glenoid Erosion and Def ciency

Pascal Boileau, MD, Nice, France Nicolas Morin-Salvo, Nice, France Marc-Olivier GAUCI, Nice, France Gregory Moineau, Brest, France Pierric Deransart, Saint-Martin D'Uriage, France Gilles Walch, MD, Lyon, France

The use of asymetrical humeral bone graft combined with eccentric reaming restores the glenoid bone stock and allows to obtain correct alignement of the glenoid implant with minimum morbidity.

#### 11:54 AM

# Revision Reverse Arthroplasty (RSA): A 12 Year Review of a Lateralized Implant

Brent Stephens, MD, Decatur, GA Peter Simon, PhD, Tampa, FL Rachel Clark, BA, Tampa, FL Lisa Vaccaro, Tampa, FL Adam Lorenzetti, MD, Loma Linda, CA Geoffrey P. Stone, MD, Houma, LA Mark A. Frankle, MD, Temple Terrace, FL

RSA revisions are becoming increasingly common. Although revision RSA is a challenging procedure with a higher risk for complications, patients still exhibit signif cant clinical improvements.

Discussion – 6 Minutes

#### 12:06 PM

#### Outcomes of the Reverse Prosthesis in Revision Shoulder Arthroplasty

Eric R. Wagner, MD, Rochester, MN Matthew Houdek, MD, Rochester, MN Matthew Crowe, MD, Rochester, MN Bassem T. Elhassan, MD, Rochester, MN Joaquin Sanchez-Sotelo, MD, Rochester, MN Robert H. Cof eld, MD, Rochester, MN John W. Sperling, MD, MBA, Rochester, MN

RSA in the revision setting has reasonable implant survival rates, with a relatively high rate of glenoid loosening, especially in patients with a history of tobacco use and diabetes.

#### 12:12 PM

#### **Revision of Reverse Shoulder Arthroplasty**

Michael J. Koch, MD, Munich, Germany Judith Lifka, MD, Ismaning, Germany Ashish Gupta, MD, Brisbane, Australia Ludwig Seebauer, MD, Munchen, Germany

Revisoin Surgery of Reverse Shoulder Arthroplasty requieres precise analysis and preoperative planning to avoid further revision procedures and implant removal

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# Wednesday

# Paper 297

Paper 298

Paper 299

Paper 296

#### 12:18 PM

Paper 300

#### Reverse Total Shoulder Arthroplasty After Failed Open Reduction And Internal Fixation Of Proximal Humerus Fracture

Florian Grubhofer, Zurich, Switzerland Karl Wieser, MD, Zurich, Switzerland Christian Gerber, MD, Zurich, Switzerland

In this retrospective study, we analyze outcome data of patients treated with reversed total shoulder arthroplasty after failed open reduction and internal f xation of a proximal humerus fracture

Discussion – 6 Minutes

#### PAPER PRESENTATION

10:30 AM — 12:30 PM W414

#### Adult Reconstruction Knee IV: TKA Complications

Moderator(s): Yair D. Kissin, MD, Saddle River, NJ, Russell E. Windsor, MD, New York, NY

#### 10:30 AM

Paper 301

Incidence of Symptomatic DVT/PE and Bleeding Complications Following Knee and Hip Arthroplasty

Ryan Nunley, MD, Saint Louis, MO Denis Nam, MD, MSc, St Louis, MO James A. Keeney, MD, Columbia, MO Staci Johnson, M.Ed, Saint Louis, MO Douglas J. McDonald, MD, MS, Webster Groves, MO John C. Clohisy, MD, Saint Louis, MO Robert L. Barrack, MD, Saint Louis, MO

Patients receiving mobile compression devices were equivalent in the prevention of VTEs, with reduced major bleeding events, wound complications, days of drainage, and hospital readmissions.

#### 10:36 AM

Paper 302

VTE prophylaxis in Primary Total Knee Arthoplasty: an examination of 30,499 patients from a US Total Joint Registry *Guy Cafri, PhD* 

Michael K. Gould, MD, MS, Pasadena, CA T Craig Cheetham, Pasadena, CA T. C. Cheetham, Pasadena, CA Liz Paxton, MA, Rcho Santa Fe, CA Stefano A. Bini, MD, Oakland, CA Monti Khatod, MD

# Fondaparinux and Coumadin were more eff cacious than aspirin in PE prophylaxis after TKA.

#### 10:42 AM

#### Low Dose Aspirin Is Effective for Venous Thromboembolism Prophylaxis Following Total Joint Arthroplasty

Paper 303

Paper 304

Paper 305

Javad Parvizi, MD, FRCS, Philadelphia, PA Ronald Huang, MD, Philadelphia, PA Camilo Restrepo, MD, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA Matthew Austin, MD, Philadelphia, PA William J. Hozack, MD, Philadelphia, PA Jess H. Lonner, MD, Philadelphia, PA

This study demonstrates that ASA 81mg BID is as effective for venous thromboembolism prophylaxis following total joint arthroplasty as ASA 325mg BID.

#### Discussion – 6 Minutes

#### 10:54 AM

#### Validated Risk Stratif cation System for Pulmonary Embolism After Primary Total Joint Arthroplasty

Daniel D. Bohl, MD, MPH, Chicago, IL Mitchell Maltenfort, PhD, Philadelphia, PA Ronald Huang, MD, Philadelphia, PA Javad Parvizi, MD, FRCS, Philadelphia, PA Jay R. Lieberman, MD, Los Angeles, CA Craig J. Della Valle, MD, Chicago, IL

We present a risk stratif cation system for PE following primary TJA that was developed using a nationwide prospective registry and validated among a population of patients from a single institution.

#### 11:00 AM

# Which Hospital and Clinical Factors Drive 30-Day Readmission after TKA?

Steven M. Kurtz, PhD, Philadelphia, PA Edmund Lau, MS, Menlo Park, CA Kevin Ong, PhD, Philadelphia, PA Edward M. Adler, MD, New York, NY Frank R. Kolisek, MD, Greenwood, IN Michael T. Manley, PhD, Wyckoff, NJ

We observed impressive variability in 30 day readmission among hospitals across the US, suggesting potential strategies for reducing 30d RA after TKA by optimizing clinical pathways.

#### 11:06 AM

#### Timing of Complications Following Total Joint Arthroplasty

Daniel D. Bohl, MD, MPH, Chicago, IL Andre Samuel, New Haven, CT Matthew L. Webb, BA, New Haven, CT Adam Lukasiewicz, MSc, New Haven, CT Bryce A. Basques, MD, Chicago, IL Brett R. Levine, MD, Elmhurst, IL Jonathan N. Grauer, MD, New Haven, CT

These precisely described time periods enable heightened awareness amongst orthopaedic surgeons during the f rst month following total joint arthroplasty procedures.

#### Discussion – 6 Minutes

#### 11:18 AM

Paper 307

Paper 306

**Predictors of Acute Ischemic Stroke after Total Knee Arthroplasty** *Mariano Menendez, Boston, MA* 

Eric M. Greber, MD, Little Rock, AR Charles S. Schumacher, MD, Boston, MA C L. Barnes, MD, Little Rock, AR

This population-based study showed that patients undergoing bilateral TKA are nearly 3 times more likely to develop acute ischemic stroke compared with unilateral TKA patients.

#### 11:24 AM

Paper 308

# Inpatient Falls after Total Knee Arthroplasty: Outcomes and National Trends

Yi-Loong C. Woon, MD, Chicago, IL Vincent M. Moretti, MD, Chicago, IL Brian E. Schwartz, MD, Chicago, IL Alexander C. Gordon, MD, Morton Grove, IL

0.11% of total knee arthroplasty patients sustain inpatient falls. This frequency was stable over the past decade. Fall risk appears greatest in older patients and those with multiple co-morbidities.

#### 11:30 AM

#### Paper 309

Do Glycemic Markers Predict The Occurrence Of Complications In Diabetic Patients After Total Knee Arthroplasty?

Young Gon Na, MD, Seongnam-Si, Republic of Korea Ji Sup Hwang, Seoul, Republic of Korea Seok Jin Kim, MD, Gyeonggi-Do, Republic of Korea Ankur B. Bamne, MD, Navi Mumbai, India Tae Kyun Kim, MD, Seongnam-si, Republic of Korea

there is a positive correlation among the various available glycemic markers among patients with diabetes undergoing TKA

Discussion – 6 Minutes

#### 11:42 AM

#### Complication Rates after Total Hip and Knee Arthroplasty in Patients with Hepatitis C Compared to Matched Controls

Brian C. Werner, MD, Charlottesville, VA Jourdan M. Cancienne, MD, Charlottesville, VA Quanjun Cui, MD, Charlottesville, VA James A. Browne, MD, Charlottesville, VA

Patients with hepatitis C are at a signif cantly increased risk for complications following TKA and THA, including infection, revision arthroplasty, medical complications and blood transfusion

#### 11:48 AM

#### Readmissions and Complications for Patients Requiring a Blood Transfusion After Primary Total Knee Arthroplasty

Zan Naseer, Forest Hill, MD Clayton Alexander, MD, Indianapolis, IN Mostafa H. El Dafrawy, MD, Indianapolis, IN Louis C. Okafor, MD, Indianapolis, IN Karthikeyan E. Ponnusamy, MD, Indianapolis, IN Robert S. Sterling, MD, Owings Mills, MD Richard L. Skolasky Jr, ScD, Indianapolis, IN Harpal S. Khanuja, MD, Indianapolis, IN

For primary TKA patients, transfusion was an independently risk factor for 30-day surgical complications, 60-day readmissions, and 60-day periprosthetic joint infections, but not revisions.

#### 11:54 AM

#### Complications after TKA in Patients with Inf ammatory Arthritis

Jourdan M. Cancienne, MD, Charlottesville, VA Brian C. Werner, MD, Charlottesville, VA James A. Browne, MD, Charlottesvle, VA

Rheumatoid, Psoriatic Arthritis, and Ankylosing Spondylitis are associated with signif cantly increased rates of infection, VTE, medical complications, and revision surgery after primary TKA.

Discussion – 6 Minutes

12:06 PM

### Risk Factors For Infection In Lower Limb Arthroplasty

Jon Clarke, Glasgow, United Kingdom Alistair M. Ewen, PhD, Clydebank, United Kingdom Mohammed Almustafa, MBBS, MA, Wigan, United Kingdom Frederic Picard, MD, FRCS, Glasgow, United Kingdom

Low blood MCV, Dermabond<sup>®</sup> and more aggressive chemical DVT prophylaxis associated with higher risk for infection after primary total knee arthroplasty.

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Paper 310

Paper 311

Paper 312

Paper 313

#### 12:12 PM

# The Impact of Patient and Surgical Factors for TKA Infection: An analysis of 64,566 joints from the NZJR

Edward Tayton, Bournemouth, United Kingdom Chris Frampton, Christchurch, New Zealand Gary J. Hooper, MD, Christchurch, New Zealand Simon Young, MD, FRACS, Wellington, New Zealand

This NZJR study of 64,566 primary TKAs linked male sex, previous surgery, laminar f ow, and antibiotic laden cement to the development of prosthetic joint infection via a multivariate analysis.

#### 12:18 PM

Paper 315

Paper 316

Paper 314

#### ◆ Botox to Treat Flexion Contracture After TKA: A Double-Blinded RCT

Eric B. Smith, MD, Media, PA Jenny Cai, BS, Philadelphia, PA Mitchell Maltenfort, PhD, Philadelphia, PA Ari Greis, DO, Philadelphia, PA

This double-blinded, prospective, randomized controlled study showed that Botulinum toxin A can improve knee extension for subjects with a f exion contracture in routine patients following TKA.

Discussion – 6 Minutes

#### PAPER PRESENTATION

10:30 AM — 12:30 PM W304A

#### Sports Medicine/Arthroscopy II: Shoulder/Elbow I

Moderator(s): George A. Paletta Jr., MD, Chesterf eld, MO Michael A. Kuhn, MD, Cape Carteret, NC

#### 10:30 AM

#### Fastball Pitch Velocity Predicts Ulnar Collateral Ligament Reconstruction in MLB Pitchers

Peter N. Chalmers, MD, Chicago, IL Brandon Erickson, MD, Chicago, IL Brian Ball, ATC, Chicago, IL Anthony A. Romeo, MD, Chicago, IL Nikhil N. Verma, MD, Chicago, IL

Among MLB pitchers, pitch velocity and weight are signif cant predictive factors of the subsequent risk for UCL reconstruction.

#### 10:36 AM

#### Outcomes in Revision Tommy John Surgery in Major League Baseball Pitchers

Paper 317

Paper 318

Paper 319

Paper 320

Joseph Liu, MD, New York, NY Grant Garcia, MD, New York, NY Stan Conte, PT, San Carlos, CA Neal S. ElAttrache, MD, Los Angeles, CA David W. Altchek, MD, New York, NY Joshua S. Dines, MD, New York, NY

The rate of revision Tommy John surgery in MLB pitchers is substantially higher than previously reported; additionally, pitching performance declines across the majority of performance categories.

#### 10:42 AM

#### Safety of Arthroscopic Removal of Heterotopic Ossif cation Around the Elbow

Daniel R. Bachman, MD, Rochester, MN James S. Fitzsimmons, BSc, Rochester, MN Shawn W. O'Driscoll, MD, Rochester, MN

Removal of elbow HO by a skilled arthroscopist, staying within the limits of their technical ability, should be considered safe.

Discussion – 6 Minutes

#### 10:54 AM

# MRI and Plain Radiographs have poor co-relation for symptomatic ACJ Arthritis

Bijayendra Singh, FRCS (Ortho), Maidstone, United Kingdom Arpit Goyal, MS, MBBS, Agra, India Pallavi Gupta, MD, MBBS, Agra, India Rajesh Bawale, MBBS, MRCS, Barkingside, Essex, United Kingdom

The purpose of this study was to compare the radiologic changes in symptomatic and asymptomatic patients undergoing arthroscopic ACJ excision.

#### 11:00 AM

#### Radiographic and Clincal Outcomes after Anatomic Coracoclavicular Reconstruction: Does Graft Size Matter?

Emmanuel Eisenstein, MD, Brownsville, TX Brian R. Waterman, MD, El Paso, TX Joseph T. Lanzi Jr, MD, El Paso, TX Mark P. Pallis, DO, El Paso, TX

Anatomic coracoclavicular reconstruction outcomes amongst a large cohort of patients.

#### 11:06 AM

#### The Less Shoulder Examination Of Acromioclavicular Joint Pathology: A Clinical Diagnosis Decision Analysis

Samuel Rosas, MD, Fort Lauderdale, FL Benedict U. Nwachukwu, MD, MBA, New York, NY Michael K. Krill, ATC, MS, Columbus, OH Shawna L. Watson, BA, Shalimar, FL Frank McCormick, MD, Pompano Beach, FL

The purpose of this study was to identify and create a decision analysis scenario to diagnose acromioclavicular joint pathology in the clinic based on level I-II physical exam and ultrasound studies.

#### Discussion – 6 Minutes

#### 11:18 AM

#### Paper 322

Paper 321

Survivorship after Arthroscopic Management of Glenohumeral Osteoarthritis with a Minimum 5 year Follow-up

Peter J. Millett, MD, MSc, Vail, CO Joshua A. Greenspoon, Vail, CO Marilee P. Horan, MPH, Vail, CO

CAM was developed as a joint preservation surgery in young or active patients with glenohumeral OA. The purpose of this study was to determine the 5 year survivorship after arthroscopic CAM procedure.

#### 11:24 AM

Paper 323

**The Natural History of Primary Anterior Glenohumeral Joint Dislocation in Adolescent Patients** *Nick Beattie, BA, MBCHB, Edinburgh, United Kingdom Simon B. Roberts, MBCHB, MSc, Edinburgh, United Kingdom* 

Christopher M. Robinson, MD, Edinburgh, United Kingdom

Natural history of primary anterior shoulder dislocation in adolescents. Prospective data of 133 patients. These patients have a high rate of repeat dislocation, which occurs within two years.

#### 11:30 AM

#### Paper 324

Intra Articular Bone Graft on the Latarjet Procedure Increases Range of Motion without Compromising Joint Stability

Yoshiaki Itoigawa, MD, Rochester, MN Alexander W. Hooke, MA, Rochester, MN John W. Sperling, MD, MBA, Rochester, MN Scott P. Steinmann, MD, Rochester, MN Kristin D. Zhao, Rochester, MN Nobuyuki Yamamoto, MD, Sendai, Japan

During the Latarjet procedure, an intra-articular bone graft results in a greater external rotation range of motion versus an extra-articular bone graft with no compromise to the stabilizing effect.

Discussion – 6 Minutes

#### 11:42 AM

#### Outcomes Of Distal Tibia Allograft Reconstruction for Recurrent Anterior Shoulder Instability

Paper 325

Paper 326

Paper 327

Paper 328

Rachel M. Frank, MD, Chicago, IL Petar Golijanin, BS, Boston, MA Saleh Aiyash, MA, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL Nikhil N. Verma, MD, Chicago, IL Anthony A. Romeo, MD, Chicago, IL Matthew T. Provencher, MD, Boston, MA

Fresh distal tibia allograft reconstruction for recurrent anterior shoulder instability results in a clinically stable joint with excellent clinical outcomes and minimal graft reabsorption.

#### 11:48 AM

# Tenotomy or Tenodesis of the Biceps Tendon? How Surgeons Decide.

Justin L. Hodgins, MD, Toronto, ON, Canada David Kovacevic, MD, Brooklyn, NY Janice He, BA, New York, NY Charles M. Jobin, MD, New York, NY William N. Levine, MD, New York, NY Christopher S. Ahmad, MD, New York, NY

Surgeons have strong biases for biceps tenodesis versus tenotomy despite a lack of high quality evidence and patient activity level and cosmesis are the most important surgeon considerations.

#### 11:54 AM

#### Arthroscopic Proximal Biceps versus Subpectoral Tenodesis: Short-Term Differences and Long-term Follow-up Station C. Wahm MD. Samemento CA

Stephen C. Weber, MD, Sacramento, CA

Arthroscopic proximal biceps tenodesis is shown to be equivalent to open distal tenodesis at long-term follow-up, with less cost

Discussion – 6 Minutes

#### 12:06 PM

#### Complication and Re-operation Rates following Pectoralis Major Tendon Repair in the Young Active Population

Drew W. Nute, MD, El Paso, TX Nicholas A. Kusnezov, MD, El Paso, TX John Dunn, MD, El Paso, TX Brian R. Waterman, MD, El Paso, TX

In the largest study on clinical outcomes after pectoralis major repair in a young athletic cohort, we show that 94% of patients are able to return to full activity with less than a 6% rerupture rate.

#### 12:12 PM

#### Difference in Site of PASTA Lesion between Shoulders with Recurrent Anterior Instability and Throwing Injuries

Yusuke Ueda, MD, Tokyo, Japan Hiroyuki Sugaya, MD, Chiba, Japan Keisuke Matsuki, MD, Funabashi, Japan Norimasa Takahashi, MD, Funabashi, Japan Nobuaki Kawai, MD, Chiba, Japan Morihito Tokai, MD, Funabashi, Chiba, Japan Kazutomo Onishi, MD, Chiba, Japan Shota Hoshika, MD, Funabashi, Japan Hiroshige Hamada, Funabashi-Shi, Japan

In shoulders with traumatic instability, 5.3% had PASTA tears which involves anterior rotator cable insertion; however, in throwers, 38% had PASTA lesion without involving the cable insertion.

#### 12:18 PM

Paper 330

Paper 331

Paper 329

Shoulder Arthroscopy in the Older Adult Population: Who's at Risk for Postoperative Complications?

Alexis C. Colvin, MD, New York, NY Christian A. Pean, MS, New York, NY William J. Rubenstein, BA, New York, NY

Independent patient characteristics associated with increased risk of adverse event occurrence in shoulder arthroscopy included age above 80, BMI greater than 35, and functional dependent status.

Discussion – 6 Minutes

#### PAPER PRESENTATION

#### 10:30 AM — 12:30 PM W315

#### **Practice Management II: Quality Improvement**

Moderator(s): Josef K. Eichinger, MD, Gig Harbor, WA, John D. Campbell, MD, MBA, Bozeman, MT

#### 10:30 AM

#### Incidence of Unplanned Admission from an Outpatient Orthopaedic Surgery Center

Michael S. Day, MD, New York, NY Germaine Cuff, PhD, RN, New York, NY Hersh Shroff, MS, New York, NY Lorraine Hutzler, BA, New York, NY Samir Kendale, New York, NY Jeanna Blitz, New York, NY Andrew D. Rosenberg, MD, New York, NY Joseph A. Bosco III, MD, New York, NY

Performance of outpatient surgery at a stand-alone surgery center not physically associated with a tertiary care hospital may allow for streamlined surgical care of ambulatory patients.

#### 10:36 AM

#### Comparison of perioperative times at an Ambulatory Surgery Center and an outpatient hospital

Paper 332

Paper 333

Paper 334

Michael Ryan, MD, New York, NY William Rossy, MD, Hoboken, NJ Daniel Bunger, Bronx, NY Raj Karia, MPH, New York, NY Joseph A. Bosco III, MD, New York, NY

With the current state of healthcare reform and the increasing population of insured patients, it is imperative that all ineff ciencies be identif ed and addressed.

#### 10:42 AM

#### The Five-Year Experience of an Orthopaedic Specialty Hospital: An Assessment of the Safety and the Eff ciency

Eric M. Padegimas, MD, Philadelphia, PA Matthew L. Ramsey, MD, Philadelphia, PA Matthew Austin, MD, Philadelphia, PA Gerald R. Williams Jr, MD, Philadelphia, PA Kelly Doyle, RN, Bensalem, PA Michael West, CEO, Philadelphia, PA Richard H. Rothman, MD, Philadelphia, PA Alexander Vaccaro, MD, PhD, Philadelphia, PA Surena Namdari, MD, MSc, Philadelphia, PA

We have performed over 8,000 surgeries in the f rst f ve years of our specialty hospital. Orthopedic care has been delivered safely and eff ciently with low transfer rates and short hospital courses.

Discussion – 6 Minutes

#### 10:54 AM

# Medicare's Hospital Acquired Conditions Policy: A Problem of Non-Payment After Total Joint Arthroplasty

Andrew J. Pugely, MD, Iowa City, IA Nicholas Bedard, MD, Iowa City, IA Christopher T. Martin, MD, Coralville, IA Kyle Duchman, MD, Iowa City, IA Robert W. Westermann, MD, Iowa City, IA Yubo Gao, PhD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

The NIS database was used to analyze 2.6 million cases of Total Joint Arthroplasty (TJA) for the presence of Hospital Acquired Conditions (HACs), as defined by CMS.

#### 11:00 AM

# Improvement in TJA Quality Metrics: Year One vs. Year Three of the Bundled Payment for Care Initiative

Richard Iorio, MD, New Rochelle, NY Joseph D. Zuckerman, MD, Mamaroneck, NY Joseph A. Bosco III, MD, Irvington, NY James D. Slover, MD, New York, NY Stephen Yu, M.D., Garden City, MI John M. Dundon, MD, Dayton, OH Yousuf Sayeed, BS, Ponce, Puerto Rico

Changes in care coordination, clinical care pathways, and evidence-based protocols are the key to improving the quality of BCPI, thus bringing increased value to our TJA patients.

#### 11:06 AM

#### Paper 336

Paper 335

# The Tortoise and the Hare Increase Complications During Total Joint Arthroplasty

Kyle Duchman, MD, Iowa City, IA Andrew J. Pugely, MD, Coralville, IA Christopher T. Martin, MD, Coralville, IA Yubo Gao, PhD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

Operative time >150 minutes was associated with increased wound and overall 30-day complication rates. There was also a trend toward increased complications with operative time <30 minutes.

Discussion – 6 Minutes

#### 11:18 AM

#### Paper 337

Paper 338

#### Validating a Predictive Score for Cardiac Events Following Total Joint Arthroplasty

Brian R. Waterman, MD, El Paso, TX Philip J. Belmont Jr, MD, El Paso, TX Julia O. Bader, PhD, El Paso, TX Andrew J. Schoenfeld, MD, Medf eld, MA

Our Cardiac Risk Index score accurately predicted post-operative cardiac complications following primary total hip and knee arthroplasty and performed better than existing utilities.

#### 11:24 AM

#### Joint Replacement Surgical Home: Impact of Patient Characteristics and Comorbidities on Length of Stay

Ran Schwarzkopf, MD, Irvine, CA Kyle S. Ahn, MD, Orange, CA Joseph B. Rinehart, MD, Orange, CA Maxime Cannesson, Orange, CA Zeev Kain, MD, MBA, Irvine, CA

Even in a Perioperative Surgical Home care model, ASA score and BMI plays a signif cant role in post-operative outcomes in joint arthroplasty patients.

#### 11:30 AM

#### Effect Of 3 Dimensional Visual Aids On Patient Satisfaction In Orthopaedic Consent: A Randomized Controlled Trial

Kapil Sugand, MBBS, London, United Kingdom Hammad H. Malik, London, United Kingdom Simon Newman, BS, FRCS (Ortho), London, United Kingdom Chinmay Gupte, PhD, FRCS, London, United Kingdom

Three dimensional models signif cantly improve patient satisfaction during orthopaedic consenting in a single blinded randomized controlled trial using qualitative and validated quantitative measures.

Discussion – 6 Minutes

#### 11:42 AM

#### Does the Charlson Comorbidity Index Impact an Orthopaedic Trauma Patient's Hospital Length of Stay?

Sarah Greenberg, BA, Nashville, TN Jacob P. Vanhouten, MS, Nashville, TN Amir A. Jahangir, MD, Nashville, TN Hassan R. Mir, MD, MBA, Nashville, TN William T. Obremskey, MD, MPH, Nashville, TN Manish K. Sethi, MD, Nashville, TN

Our study demonstrates that a patient's CCI score can be utilized as a predictor for increased hospital LOS for lower extremity patients.

#### 11:48 AM

#### Ultra Low Dose Computed Tomography Scanning: A Reliable Modality with an Improved Patient Safety Prof le

Sanjit R. Konda, MD, Rye, NY Abraham M. Goch, New York, NY Philipp Leucht, MD, New York City, NY Anthony V. Christiano, New York, NY Soterios Gyftopoulos, MD, Long Is City, NY Kenneth A. Egol, MD, New York, NY

This protocol produces images that appear comparable to conventional computed tomography for fracture evaluation with a near fourteen fold reduction in estimated effective dose.

#### 11:54 AM

#### Performance of PROMIS in Healthy Patients Undergoing Meniscal Surgery

Kyle J. Hancock, MD, Iowa City, IA Natalie A. Glass, PhD, Iowa City, IA Christopher Anthony, MD, Iowa City, IA Brian R. Wolf, MD, Iowa City, IA Annunziato Amendola, MD, Iowa City, IA Carolyn Hettrich, MD, MPH, Iowa City, IA John P. Albright, MD, Iowa City, IA Matthew J. Bollier, MD, Iowa City, IA

A study evaluating the relative performance of PROMIS and potential ceiling effects in a healthy population of patients undergoing meniscal surgery.

#### Discussion – 6 Minutes

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Paper 339

Paper 340

Paper 341

Paper 342

#### 12:06 PM

#### The Silent Money Pit - The Cost of Poorly Managed Central Supply

Bruce Ziran, MD, FACS, Atlanta, GA William Min, MD, Chamblee, GA

Our study f nds that equipment preparation f aws that require opening of additional surgical trays incur a signif cant cost.

#### 12:12 PM

#### Inpatient Rehabilitation Following Hip Fracture: Recent Trends and Implications for Post-acute Care Reform

Arthur Manoli III, MD, New York, NY Sanjit R. Konda, MD, Rye, NY Christian A. Pean, MS, New York, NY Kenneth A. Egol, MD, New York, NY

Younger, healthier patients who undergo operative management of hip fractures are more likely to be discharged to an IRF over a SNF.

#### 12:18 PM

#### Paper 345 An Innovative Model for Postoperative Rehabilitation in Total **Joint Arthroplasty**

William Dieter, Cherry Hill, NJ Antonia Chen, MD, MBA, Philadelphia, PA Tim Fox, DPT, PT, Cherry Hill, NJ Jason M. Mattioli, MS, PT, Cherry Hill, NJ Ryan Cummings, PT, Cherry Hill, NJ Travis King, DPT, Avalon, NJ Anthony Buccafurni, DPT, PT, Cherry Hill, NJ

As healthcare evolves, value-based models are being emphasized. This innovative rehabilitation model reduces costs while maintaining patient safety and outcomes during early rehabilitation after TJA.

Discussion – 6 Minutes

#### **INSTRUCTIONAL COURSE LECTURE**

#### 11:00 AM - 12:00 PM



#### Writing a Competitve Grant Application

Moderator: Kurt P. Spindler, MD, Garf eld Heights, OH John J. Callaghan, MD, Iowa City, IA

Room Grants can be competitive and non-competitive. This W209B course provides helpful tips and examples on writing a competitive grant application.



Room W209A

#### The Art and Science of Reviewing Manuscripts for **Orthopaedic Journals**

Moderator: William N. Levine, MD, New York, NY John M. Flynn, MD, Philadelphia, PA

Journal editors help reviewers and authors learn how to craft more effective manuscripts by emphasizing specif c assessment criteria forclinical, research, and review articles.

#### **Symposium**

Paper 343

Paper 344

1:30 PM - 3:30 PM Valencia Room A



Quality is in the Eye of the Beholder: What's Measured, What Matters, and How Do We Reconcile This? (N) Moderator: Rachel S. Rohde, MD, Southfeld, MI

Inf uences of patient and physician characteristics on outcomes and satisfaction metrics are discussed. Strategies to implement measures and positively impact quality of care are suggested.

- Patient Reported Outcomes (PRO) and EHR Real Time I. Integration: The Process and the Impact Judith F. Baumhauer, MD, MPH, Rochester, NY
- On What Should We Be Measured? Your Role in II. **Creating Performance Measures** Alexandra E. Page, MD, La Jolla, CA
- III. Physician/Patient Interactions: How Orthopaedic Workforce Changes Affect Quality Ann E. Van Heest, MD, Minneapolis, MN
- IV. Sex, Age, and Outcomes: Are We Measuring What Is Clinically Important to Our Patients? Jennifer M. Wolf, MD, Farmington, CT

## **Symposium**

1:30 PM - 3:30 PM Valencia Room B

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Discusses key advances and unanswered questionsin order to continue the advancement in clinical care of patients with musculoskeletal infection in the 21st century.

I. Identifying and Targeting Bacterial Factors Lawson A. Copley, MD, Dallas, TX

Key Concepts of Musculoskeletal Infection (O)

Moderator: Scott B. Rosenfeld, MD, Houston, TX

- II. Imaging Musculoskeletal Infection Megan Mignemi, MD, Dallas, TX
- III. Improved Recognition and Treatment of Infection Induced Comorbidity and Mortality Jonathan G. Schoenecker, MD, Nashville, TN

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### **INSTRUCTIONAL COURSE LECTURE**

#### 1:30 PM - 2:30 PM



**Cliff Notes on Clinical Research:** What You Need to Get Started

Moderator: Leesa M. Galatz, MD, New York, NY Ryan P. Calfee, MD, Saint Louis, MO Aaron M. Chamberlain, MD, Saint Louis, MO Jay D. Keener, MD, Saint Louis, MO

Understand the scientif c method and be able to design and complete a clinical research project. Formulate a clinically relevant hypothesis, perform a power analysis, collect and analyze data. Determine when your results are worthy of abstract submission.

#### **INSTRUCTIONAL COURSE LECTURE**

#### 1:30 PM - 3:30 PM



#### **Outpatient Arthroplasty: Same Day, Home Safe**

Moderator: Keith R. Berend, MD, New Albany, OH Michael E. Berend, MD, Indianapolis, IN Room Richard A. Berger, MD, Chicago, IL W204 Mark A. Hartzband, MD, Franklin Lakes, NJ

> Understanding and addressing safely the reasons that surgeons and patients believe they 'need' a hospital admission is the cornerstone to outpatient arthroplasty. Course faculty review the surgical techniques and perioperative factors.

#### 242 Pes Planovalgus: From Adolescent to Adulthood

TICKET Room W300

243

RIG

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Room

W310

Moderator: Lew C. Schon, MD, Indianapolis, IN Matthew B. Dobbs, MD, Saint Louis, MO Steven L. Frick, MD, Orlando, FL Gregory P. Guyton, MD, Indianapolis, IN Jeffrey E. Johnson, MD, Saint Louis, MO

Course faculty review all aspects of treatment of painful pes planovalgus feet, from idiopathic pathology in children through neuromuscular deformity to adult pathology using a case-based approach. Current concepts with regard to surgical indications, operative techniques, and pearls and pitfalls in each treatment group also are covered.

#### The Answer is Vitamin D! From Pediatrics to **Geriatrics in Orthopaedics** TICKET

Moderator: Barbara Minkowitz, MD, Morristown, NJ Joseph M. Lane, MD, New York, NY Aenor J. Sawyer, MD, Oakland, CA

Reviews the importance of Vitamin D in orthopaedics from pediatrics to geriatrics.

#### 244 TICKET Room

W307A

Pathology in the Pediatric Athlete: Current Concepts Moderator: Nirav K. Pandya, MD, Oakland, CA Eric W. Edmonds, MD, San Diego, CA Jason Jagodzinski, MD, Atlanta, GA Andrew T. Pennock, MD, San Diego, CA

Management of Shoulder and Elbow

Pediatric participation in sports with repetitiveupper extremity activity has increased tremendously. Appropriate management of shoulder instability, internal impingement, capitellar osteochondritis dissecans lesions, and overuse in these patients is essential.

#### Three and Four Part Proximal Humerus Fractures – **The Gambler Edition**

Moderator: Jonathan C. Levy, MD, Fort Lauderdale, FL Mark A. Frankle, MD, Temple Terrace, FL Richard J. Hawkins, MD, Greenville, SC Mark A. Mighell, MD, Tampa, FL

Room W203

245

TICKET

Surgical management of complex three- and four-part proximal humerus fractures has improved with new technologies such as locked plates and the reverse shoulder arthroplasty. The goal is to better understand when to hold 'em (f x), when to fold 'em (arthroplasty), and when to walk away (nonoperative management). Focuses on technical tips to assist in each surgical option together with expert opinion and literature review.

#### 246 **Massive Rotator Cuff Tears:** Arthroscopy to Arthroplasty



Room

W314

Moderator: Reuben Gobezie, MD, Cleveland, OH Christian Gerber, MD, Zurich, Switzerland Peter J. Millett, MD, MSc, Vail, CO Curtis R. Noel, MD, Copley, OH

Covers the diagnosis, classif cation, and treatment of massive cuff tears, including open and arthroscopic repair, the use of grafts and transfers, and arthroplasty options.

#### 247 TICKET

**Correction Strategies and Implant Placement in Spine Deformity Surgery – How I Do It** Moderator: Annalise N. Larson, MD, Rochester, MN



Peter O. Newton, MD, San Diego, CA Matthew Oetgen, MD, Chevy Chase, MD David W. Polly Jr, MD, Minneapolis, MN

Through videos and technical discussion, this fast-paced Room course covers classic and contemporary spinal correction W308C maneuvers outside of osteotomies with a focus on intraoperative assessment and appropriate intervention to optimize correction.

# 248 Arthroscopic Management of Shoulder Instabilities: Image: Imag

Room<br/>W205BModerator: Larry D. Field, MD, Jackson, MS<br/>Jeffrey S. Abrams, MD, Princeton, NJ<br/>CDR (ret) Matthew T. Provencher, MD, Boston, MA<br/>Richard K. Ryu, MD, Santa Barbara, CA

This is a comprehensive overview featuring advanced, cutting-edge arthroscopic shoulder instability techniques. Clinical pearls and technique tips are emphasized. Casecontroversies are presented and discussed.

# 249 Patellofemoral Arthritis: Treatment Strategies from Cartilage Restoration to Arthroplasty

Room W202 Moderator: Jack Farr II, MD, Greenwood, IN Elizabeth A. Arendt, MD, Minneapolis, MN David Dejour, MD, Lyon, France Andreas H. Gomoll, MD, Chestnut Hill, MA

> Provides a comprehensive overview of the surgicalmanagement of full thickness chondral lesions of the patellofemoral joint from cartilage restoration procedures to arthroplasty.

Traducción simultánea en español. Tradução simultânea em português.



#### Femur Fractures: Subtrochanteric to Supracondylar

Moderator: Robert F. Ostrum, MD, Chapel Hill, NC Paul Tornetta III, MD, Boston, MA

Philip R. Wolinsky, MD, Sacramento, CA

Room W307C Femoral shaft fractures are common injuries but still can have management issues. This course uses a short didactic session combined with case-based discussions on femoral shaft fractures, from the subtrochateric to the supracondylar regions, to examine treatment options and methods to avoid complications in the treatment of these fractures.

#### 251 Making It Through the Night

Moderator: Lisa K. Cannada, MD, Saint Louis, MO Robert P. Dunbar, MD, Mercer Island, WA Samir Mehta, MD, Philadelphia, PA James P. Stannard, MD, Columbia, MO

> During this Instructional Course Lecture, the faculty discuss clinical situations necessitating urgent or emergent management by the on call orthopaedic surgeon. This is an interactive session with case-based scenario.

#### **INSTRUCTIONAL COURSE LECTURE**

#### 1:30 PM — 5:30 PM

#### 291 Effective Surgeon-Patient Communication: The Key to Patient Satisfaction, Patient-Centered Care, and Shared

Room W303B

285

TICKET

**Decision Making** Moderator: Dwight W. Burney III, MD, Albuquerque, NM John R. Tongue, MD, Tualatin, OR

Newly revised and updated, this course uses the 4Emodel (Engage, Empathize, Educate, Enlist) to enable surgeons to effectively and eff ciently communicate with patients. Positive effects include increased patient and surgeon satisfaction, improved adherence to treatmentplans, and decreased malpractice risk.

#### Trunions, Tapers, and Corrosion in Total Hip Arthroplasty: What's All the Fuss About? What Every Surgeon Should Know

Co-Moderators: Daniel J. Berry, MD, Rochester, MN John J. Callaghan, MD, Iowa City, IA Room Robert L. Barrack, MD, Saint Louis, MO W207 Mathias Bostrom, MD, New York, NY Iames A. Browne, MD, Charlottesville, VA A. Seth Greenwald, DPhil Oxon, Cleveland Heights, OH Joshua J. Jacobs, MD, Chicago, IL Atul F. Kamath, MD, Philadelphia, PA Arthur L. Malkani, MD, Louisville, KY Douglas E. Padgett, MD, New York, NY Christopher L. Peters, MD, Salt Lake City, UT Peter K. Sculco, MD, Rochester, MN Michael J. Taunton, MD, Rochester, MN Thomas P. Vail, MD, San Francisco, CA

> Faculty evaluates what we know about the frequency of the problem and the clinical circumstances under which the problem occurs. Next we cover the current state of knowledge about how various factors including taper design and materials affect the likelihood of this problem developing. Finally we cover how to best treat the problem when revision is required, when to remove and when to retain implants, what materials to use if a taper is retained (ceramic head etc.), and how to manage soft tissues that may have been damaged by taper corrosion.

286

Room

W208

#### Distal Radius Fractures: From Pediatrics to Geriatrics

Moderator: A. Lee Osterman, MD, Villanova, PA Joshua M. Abzug, MD, Timonium, MD Julie E. Adams, MD, Rochester, MN Mark E. Baratz, MD, Bethel Park, PA Roger Cornwall, MD, Cincinnati, OH Jesse B. Jupiter, MD, Boston, MA Amy L. Ladd, MD, Palo Alto, CA Robert Medoff, MD, Kailua, HI Jorge L. Orbay, MD, Miami, FL Blane A. Sessions, MD, Philadelphia, PA

The management of distal radius fractures occurring in all age groups is presented in a case-based manner. Detailed discussion regarding pearls and pitfalls of initial treatment and avoiding the potential complications as well as managing them aid the orthopaedic surgeon inpractice.

#### **PAPER PRESENTATION**

#### 1:30 PM — 3:30 PM Valencia Room D

#### Shoulder & Elbow III: The Rotator Cuff I: Clinical Aspects

Moderator(s): Kyle Anderson, MD, Southf eld, MI, Steven J. Hattrup, MD, Phoenix, AZ

#### 1:30 PM

#### Long Term MRI Findings And Functional Outcome After Arthroscopic Rotator Cuff Repair : Mean 8 Years Follow-up Study

Koichi Ichikawa, Osaka City, Japan Yoichi Ito, MD, PhD, Osaka, Japan Tomoya Manaka, ATC, BA, Osaka, Japan Yoshihiro Hirakawa, Osaka, Japan Yoshinobu Matsuda, MD, Osaka, Japan Hayato Shimizu, Osaka, Japan Hiroaki Nakamura, MD, Osaka, Japan

Functional results remain constant and cuff repair integrity was relatively good at average 8 years follow up, though the risk to retear was thought to be about 10% during follow up period.

#### 1:36 PM

#### 10-year Clinical and Radiological Outcome following Arthroscopic Rotator Cuff Repair: A prospective study.

Philip R. Heuberer, MD, Vienna, Austria Leo Pauzenberger, MD, Vienna, Austria Fabian Plachel SR, Vienna, Austria Brenda Laky, PhD, MSc, Vienna, Austria Bernhard Kriegleder, MD, Vienna, Austria Werner Anderl, MD, Vienna, Austria

All-arthroscopic rotator cuff repair showed good clinical longterm results despite a high rate of re-tears.

#### 1:42 PM

#### How Long Should We Monitor High-grade Partial Thickness Rotator Cuff Tears?

Paper 348

Paper 349

Paper 350

Oh Joo Han, MD, Seongnam, Republic of Korea Jieun Kwon, Seoul, Republic of Korea Sae Hoon Kim, MD, Seoul, Republic of Korea Jeong Dong Lee, MD, Seongnam-Si, Republic of Korea Je Kyun Kim, MD, Seongnam-Si, Republic of Korea Do Yeon Kim, Seongnam-Si, Republic of Korea Tae-Yon Rhie, MD, PhD, Seoul, Republic of Korea

Thirty-one percent of high-grade partial thickness rotator cuff tears would progress to full thickness tears as time went by. Therefore regular monitoring should be considered.

Discussion – 6 Minutes

#### 1:54 PM

#### Prevalence Of The Rotator Cuff Tear Concomitant With Neuropathy Using Needle Electromyogram In 651 Cases

Nobuyasu Ochiai, MD, PhD, Chiba City, Japan Hiroyuki Sugaya, MD, Chiba, Japan Norimasa Takahashi, MD, Chiba, Japan Keisuke Matsuki, MD, Funabashi, Japan Yu Sasaki, MD, Chiba, Japan Takeshi Yamaguchi, MD, Inohana, Chuo-Ku, Chiba,, Japan Takehiro Kijima, Chiba, Japan Eiko Hashimoto, Chiba, Japan Yasuhito Sasaki, Chiban, Japan

Prevalence of cervical spine lesion concomitant with massive rotator cuff tear was 40.4% which were higher than suprascapular neuropathy. Needle electromyogram was useful in massive rotator cuff tear.

#### 2:00 PM

Paper 346

Paper 347

# Sleep Disturbance following Rotator Cuff Repair: A Prospective 2-year Investigation

Luke S. Austin, MD, Linwood, NJ Fotios P. Tjoumakaris, MD, Ocean View, NJ Bradford S. Tucker, MD, Ocean City, NJ Alvin C. Ong, MD, Linwood, NJ Nicholas J. Lombardi, BS, Egg Harbor Township, NJ Matthew D. Pepe, MD, Linwood, NJ

Sleep disturbance is common in patients undergoing rotator cuff repair. After surgery, sleep disturbance improves to levels comparable with the general public and is preserved in long term follow-up.

#### 2:06 PM

#### Do Patients Undergoing Arthroscopic Rotator Cuff Repair Prioritize Pain Relief or Return of Strength?

David M. Levy, MD, Chicago, IL Mandeep Virk, MD, Brookf eld, IL James Kercher, MD, Atlanta, GA Benjamin Kuhns, Chicago, IL Annemarie K. Tilton, BS, Chicago, IL Stephen S. Burkhart, MD, San Antonio, TX Anthony A. Romeo, MD, Chicago, IL Nikhil N. Verma, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL

Patients undergoing arthroscopic rotator cuff repair value the recovery of strength signif cantly more than pain relief and continue to prioritize strength even after surgery.

#### Discussion – 6 Minutes

#### 2:18 PM

#### Paper 352

Paper 353

Paper 354

Paper 351

Do Statin Medications Affect Clinical Outcomes in Patients with Rotator Cuff Tears?

Austin L. Taylor, MD, Ann Arbor, MI Christopher B. Robbins, Ann Arbor, MI Asheesh Bedi, MD, Ann Arbor, MI James E. Carpenter, MD, Ann Arbor, MI Joel J. Gagnier, PhD, Ann Arbor, MI Bruce S. Miller, MD, MS, Ann Arbor, MI

Neither statin use nor lipid levels were associated with clinical outcomes in patients being treated for rotator cuff tears.

#### 2:24 PM

#### Tendon Delamination is Associated with Poor Healing after Single-Row Cuff Repair

Olivier Andreani, MD, Nice, France Martin Schramm, MD, Nice, France Thomas D'Ollonne, MD, Nice, France Patrick Gendre, MD, Nice, France Charles Bessiere, MD, Nice, France Nicolas Holzer, MD, PhD, Genève, Switzerland Pascal Boileau, MD, Nice, France

Tendon delamination in large to massive cuff tears is associated with poor tendon healing after single-row repair; these tears should be preferentially repaired with a "double-layer" technique.

#### 2:30 PM

# Does Stiffness Impair or Enhance Healing Post Rotator Cuff Repair?

William J. McNamara, Goulburn, Australia Patrick H. Lam, PhD, Sydney, Australia George A. Murrell, MD, Kogarah, Australia

Pre and post-operative pain is benef cial for rotator cuff tendon to bone healing.

Discussion – 6 Minutes

#### 2:42 PM

#### Longterm MRI-Followup and Quantif cation of Biodegradable Suture Anchor Drill Holes

Paper 355

Paper 356

Paper 357

Philip R. Heuberer, MD, Vienna, Austria Dipal Chatterjee, MD, Forest Hills, NY Manfred Neumaier, Vienna, Austria Brenda Laky, PhD, MSc, Vienna, Austria Sergei Pushilin, MD, Brooklyn, NY Bernhard Kriegleder, MD, Vienna, Austria Werner Anderl, MD, Vienna, Austria

Biodegradation of the poly-L-DL-lactic acid and concomitant replacement by newly formed bone takes much longer than the period suggested by the manufacturer.

#### 2:48 PM

#### Arthroscopic Anchored vs. Anchorless Rotator Cuff Repair: Comparison of Outcomes and Costs

Umasuthan Srikumaran, MD, MBA, Clarksville, MD Catherine Hannan, BS, Indianapolis, IN Meera R. Chappidi, Indianapolis, IN Kelly G. Kilcoyne, MD, El Paso, TX Steve A. Petersen, MD, Indianapolis, IN Edward G. McFarland, MD, Lutherville, MD Bashir A. Zikria, MD, MSc, Indianapolis, IN

This case-control analysis demonstrates arthroscopic anchorless, transosseous rotator cuff repair is clinically equivalent and cost effective compared to traditional anchored rotator cuff repair.

#### 2:54 PM

#### Arthroscopic Transosseous vs. Anchored Rotator Cuff Repair: A Prospective Cost & Outcome Analysis

Adam J. Seidl, MD, Aurora, CO Nicholas J. Lombardi, BS, Egg Harbor Township, NJ Mark D. Lazarus, MD, Philadelphia, PA Eric M. Black, MD, Livingston, NJ Mitchell Maltenfort, PhD, Philadelphia, PA Matthew D. Pepe, MD, Linwood, NJ Luke S. Austin, MD, Linwood, NJ

Arthroscopic anchorless rotator cuff repair provides signif cant cost savings when compared to anchor-based repair with no signif cant difference in operative time or compromise in outcomes.

Discussion – 6 Minutes

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 3:06 PM

#### Superior Capsule Reconstruction Using Human Dermal Allograft: A Biomechanical Cadaveric Study

Teruhisa Mihata, MD, PhD, Takatsuki, Osaka, Japan Christopher Bui, MD, Gardena, CA Matthew A. Cavagnaro, MD, Hermosa Beach, CA Masaki Akeda, MD, Redondo Beach, CA Michael Kuenzler, MD, Long Beach, CA Alexander B. Peterson, BA, Marina Dl Rey, CA Yasuo Itami, MD, Ibaraki, Osaka, Japan Masashi Neo, Takatsuki, Japan Thay Q. Lee, PhD, Long Beach, CA

Superior capsule reconstruction using human dermal allograft only partly restores superior translational stability of the glenohumeral joint due to graft elongation that occurs with shoulder motion.

#### 3:12 PM

#### Paper 359

Paper 358

Superior Capsule Reconstruction For Irreparable Rotator Cuff **Tear: A Prospective Study In 100 Consecutive Patients** 

Teruhisa Mihata, MD, PhD, Takatsuki, Osaka, Japan Thay O. Lee, PhD, Long Beach, CA Yasuo Itami, MD, Ibaraki, Osaka, Japan Masashi Neo, Takatsuki, Japan

Arthroscopic superior capsule reconstruction restored shoulder function and resulted in high rates of return to recreational sport and work with a few complications.

#### 3:18 PM

#### Paper 360

**Outcome of Lower Trapezius Transfer to Reconstruct Massive Irreparable Posterior-Superior Rotator Cuff Tear** 

Bassem T. Elhassan, MD, Rochester, MN Eric R. Wagner, MD, Rochester, MN Iean-David Werthel, Paris, France

The lower trapezius prolonged with Achilles tendon allograft to reconstruct massive irreparable posterior-superior rotator cuff tear may lead to good outcome in most patients.

Discussion – 6 Minutes

#### PAPER PRESENTATION

1:30 PM — 3:30 PM W414

#### Sports Medicine/Arthroscopy III: Knee I

Moderator(s): Greg J. Folsom, MD, Maple Grove, MN, Thomas J. Gill, MD, Dedham, MA

#### 1:30 PM

#### **Repeat Meniscus Repair: What Result Can We Expect?**

Paul Sousa, MBA, MD, Rochester, MN Patrick Reardon, BS, Rochester, MN Bruce A. Levy, MD, Byron, MN Diane L. Dahm, MD, Rochester, MN Michael J. Stuart, MD, Rochester, MN Aaron J. Krych, MD, Rochester, MN

With an overall failure rate of 39%, repeat meniscal repair should be considered in select cases as knee function was superior in patients that had successful repeat repairs.

Paper 361

Paper 362

Paper 363

#### 1:36 PM

#### The Role of the Lateral Meniscus Posterior Root in providing **Anterolateral Knee Joint Stability**

Timothy Lording, MD, Malvern, Australia Gillian G. Corbo, London, ON, Canada Timothy Burkhart, PhD, London, ON, Canada Alan Getgood, MD, FRCS (Ortho), London, ON, Canada

This biomechanical study shows that an injury to the LMPR has as great of an effect as the ALL on anterolateral instability in the presence of an ACL injury.

#### 1:42 PM

#### **Meniscus Allograft Transplantation: Clinical Outcomes and** Survivorship at Mean 5-Year Follow-Up

Youssef El Bitar, MD, Iowa City, IA Taylor Den Hartog, BS, Iowa City, IA Biagio Zampogna, MD, Rome, Italy Sebastiano Vasta, MD, Rome, Italy Bastian Uribe-Echevarria, Iowa City, IA Annunziato Amendola, MD, Iowa City, IA

Meniscus allograft transplantation is a feasible option for properly selected patients, with a def cient meniscus and minimal pre-operative OA changes of the knee joint.

Discussion – 6 Minutes

#### 1:54 PM

#### Paper 364 **Biomechanical Effects Of A Horizontal Medial Meniscus Tear And Subsequent Leaf et Resection**

Matthew J. Brown, MD, Buffalo, NY John M. Marzo, MD, Williamsville, NY

Resection of a single inferior leaf et in a horizontal medial meniscus tear preserves function of the meniscus while resection of both leaf ets increases contact pressure over the same contact area.

#### 2:00 PM

#### Paper 365

Paper 366

Immediate Weight Bearing Vs. Protected Weight Bearing Following Meniscal Repair Greater Than 5 Years Post Surgery Marc Tompkins, MD, Minneapolis, MN

Bryan Perkins, Edina, MN

Weight bearing as tolerated after meniscal repair does not result in a higher failure rate than traditional, non-weight bearing over a f ve year follow-up period.

#### 2:06 PM

# Meniscal Allograft Transplantation in the Pediatric and Adolescent Population

Annemarie K. Tilton, BS, Chicago, IL Jonathan C. Riboh, MD, Chicago, IL Gregory L. Cvetanovich, MD, Chicago, IL Kirk A. Campbell, MD, New York, NY Brian J. Cole, MD, MBA, Chicago, IL

Meniscal allograft transplantation using a physis sparing bridgein-slot technique should be considered in the treatment of symptomatic meniscal def ciency in children and adolescents.

#### Discussion – 6 Minutes

#### 2:18 PM

Paper 367

# Isolated Lateral Meniscectomy Versus Repair - Is There a Difference?

Jay V. Kalawadia, MD, Philadelphia, PA Alexis C. Colvin, MD, New York, NY Mitchell S. Fourman, MD, Turtle Creek, PA Raymond Pahk, MD, Bayside, NY Volker Musahl, MD, Pittsburgh, PA James J. Irrgang, PhD, Pittsburgh, PA Christopher D. Harner, MD, Houston, TX

Compared to partial lateral meniscectomy, lateral meniscal repair results in improved patient reported outcomes and decreased radiographic evidence of osteoarthritis at average 5-year followup.

#### 2:24 PM

Paper 368

# Clinical Outcomes after Arthroscopic Centralization of an Extruded Lateral Meniscus

Hideyuki Koga, MD, PhD, Tokyo, Japan Takeshi Muneta, MD, Tokyo, Japan Ichiro Sekiya, MD, PhD, Tokyo, Japan

Arthroscopic centralization of the lateral meniscus improved clinical and radiographic outcomes for meniscus extrusion as well as discoid menisci at 2-year follow-up.

#### 2:30 PM

#### Paper 369

# Survival After Osteochondral Allograft Transplantation of the Knee: Analysis of Failures at 5 Years

Rachel M. Frank, MD, Chicago, IL David M. Levy, MD, Chicago, IL Simon Lee, MD, Ann Arbor, MI Pamela Scalise, BS, Chicago, IL Margaret E. Smith, BA, Milwaukee, WI Gregory L. Cvetanovich, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL

In a series of 149 osteochondral allograft transplants, there is a 41% reoperation rate, with arthroscopic debridement the most common (90%), and an 83% allograft survival rate at average of 5 years.

#### Discussion – 6 Minutes

#### 2:42 PM

#### Paper 370

Paper 371

Paper 372

#### ◆ Allogeneic Mesenchymal Stem Cells are Safe and Stimulate Cartilage Repair upon Co-implantation with Chondrons

Lucienne A. Vonk, PhD, Utrecht, Netherlands Tommy S. De Windt, MD, Utrecht, Netherlands Roel De Weger, PhD, Utrecht, Netherlands Ineke Slaper-Cortenbach, PhD, Utrecht, Netherlands Daniel B. Saris, MD, Ph D, Utrecht, Netherlands

A one-stage application of 90% allogeneic MSCs mixed with 10% autologous chondrons to cartilage defects in the knee resulted in repair with hyaline cartilage-like tissue one year post-operatively.

#### 2:48 PM

#### Return to Sport after Articular Cartilage Repair in the Knee

Aaron J. Krych, MD, Rochester, MN Ayoosh Pareek, BS, Rochester, MN Alexander H. King, BS, Rochester, MN Michael J. Stuart, MD, Rochester, MN Riley J. Williams, MD, New York, NY

In a review of 2549 athletes, cartilage restoration surgery had a 76% return to sport at mid-term follow-up. OAT offered a faster recovery and a higher rate of return to pre-injury athletics

#### 2:54 PM

#### Reoperation Rates After Cartilage Restoration Procedures: Analysis of a Large US Commercial Database

Frank McCormick, MD, Pompano Beach, FL Samuel Rosas, MD, Fort Lauderdale, FL Rachel M. Frank, MD, Chicago, IL Brandon Erickson, MD, Chicago, IL Tsun Yee Law, MD, Fort Lauderdale, FL Benedict U. Nwachukwu, MD, MBA, New York, NY Bernard R. Bach Jr, MD, River Forest, IL Brian J. Cole, MD, MBA, Chicago, IL

While failure/revision rates are similar comparing microfracture, ACI, OATS, and osteochondral allograft transplantation, cell-based approaches yield a statistically increased risk for reoperation.

Discussion – 6 Minutes

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

Wednesday

#### 3:06 PM

#### Patellofemoral Osteochondral Lesions Treated With Structural Grafts In Patients Aged 40 Years Or Older

Ryan Degen, FRCSC, MD, MSc, London, ON, Canada Nathan W. Coleman, MD, Seattle, WA Danielle Tetreault, BA, New York, NY Gregory T. Mahony, BA, New York, NY Riley J. Williams, MD, New York, NY

Treatment of patellofemoral chondral lesions in >40 y.o. with structural grafts is a viable treatment option with signif cant improvements in clinical outcome scores and maintained activity levels

#### 3:12 PM

Paper 374

Paper 373

# Native Joint Septic Arthritis - What Happens To The Joint In The Long Term?

Rhys Clement, MD, Edinburgh, United Kingdom Seng J. Wong, MBCHB, United Kingdom, United Kingdom Sarah Howie, PhD, Edinburgh, United Kingdom Sarah Howie, PhD, Edinburgh, United Kingdom Andrew C. Hall, Edinburgh, United Kingdom Hamish R. Simpson, DMed, ChB, Edinburgh, United Kingdom

We report outcomes at a mean of 6 years in 141 patients who had native hip or knee SA highlighting that secondary joint degeneration is a concern.

#### 3:18 PM

Paper 375

Corticosteroid Injection at the time of Knee Arthroscopy is Associated with Increased Infection Rates

Jourdan M. Cancienne, MD, Charlottesville, VA Brian C. Werner, MD, Charlottesville, VA F W. Gwathmey, MD, Charlottesvle, VA

Ipsilateral intra-articular steroid injection at the time of knee arthroscopy is associated with increased infection rates.

#### Discussion – 6 Minutes

#### PAPER PRESENTATION

#### 1:30 PM — 3:30 PM Room W304A

#### Trauma IV: Geriatric

Moderator(s): Jeffrey Anglen, MD, FACS, Indianapolis, IN, Jason M. Evans, MD, Franklin, TN

#### 1:30 PM

#### Paper 376

#### Risk Stratif cation of Geriatric Hip Fracture Patients using a New Geriatric Trauma Triage Score Sanjit R. Konda, MD, Rye, NY Rachel Seymour, PhD, Charlotte, NC

Kachel Seymour, PhD, Charlotte, NC Madhav A. Karunakar, MD, Charlotte, NC

Our Low-Energy Geriatric Trauma Triage Score (LE-GTTS) is a valid triage tool in geriatric hip fracture patients.

#### 1:36 PM

# Institution-Specif c Modif cations to the Score for Trauma Triage in the Geriatric and Middle Aged Patient

Sanjit R. Konda, MD, Rye, NY Kari J. Broder, BA, New York, NY Sebastian Schubl, MD, Jamaica, NY Kenneth A. Egol, MD, New York, NY

The Score for Trauma Triage in Geriatric and Middle Aged Patients maintains the ability to predict inpatient mortality when utilized real-time in the ED setting.

#### 1:42 PM

#### Incidence Of Bone Protection And Associated Fragility Injuries In Patients With Proximal Femoral Fractures

Ignacio Aguado-Maestro, MD, Valladolid, Spain Michalis Panteli, MD, Leeds, United Kingdom Manuel Garcia-Alonso, MD, PhD, Valladolid, Spain Roberto Escudero-Marcos Sr., Valladolid, Spain Alejandro Bañuelos SR, Valladolid, Spain Peter Giannoudis, MD, FRCS, Leeds, United Kingdom

Observational assessment of bone protection medication and fragility fractures on a serie of 1004 patiens. Patients sustaining a hip fracture are undertreated for osteoporosis.

Discussion – 6 Minutes

#### 1:54 PM

#### Role of Computed Tomography (CT) Scan of the Head in Low Energy Geriatric Femur Fractures

Hemil H. Maniar, MD, Danville, PA Akhil Tawari, MBBS, MD, Danville, PA Jove Graham, PhD, Danville, PA Andrew J. Marcantonio, DO, Wellesley, MA Kasey Bramlett, PA-C, Burlington, MA Harish Kempegowda, MD, Danville, PA Michael Suk, MD, Danville, PA Daniel S. Horwitz, MD, Danville, PA

Head CT scans should be reserved for patients with a history and physical f ndings that support head injury namely presence of head trauma, new onset confusion or GCS score of less than 15.

#### 2:00 PM

#### Utility of Advanced Imaging in Treating Pelvic Insuff ciency Fractures in the Geriatric Population

Harold Fogel, MD, Chicago, IL Roman Natoli, MD, Indianapolis, IN Daniel Holt JR, Chicago, IL Adam P. Schiff, MD, Highland Park, IL Mitchell Bernstein, MD, Maywood, IL Hobie D. Summers, MD, Chicago, IL William D. Lack, MD, Maywood, IL

Our retrospective review supports that it may be unnecessary to obtain advanced imaging studies in geriatric patients that sustain pelvic insuff ciency fractures identif ed on plain radiographs.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

#### Paper 377

Paper 378

Paper 379

Paper 380

#### 2:06 PM

#### Paper 381

#### Sacral Insuff ciency Fractures: Determining Frequency and Def ning the Patient Prof le

Matthew DeHart, MPH, Portland, OR Blake Obrock, DO, Corvallis, OR Paxton A. Gehling, Portland, OR Jacob Coleman, BS, Portland, OR Thomas D. Kowalik, MD, Portland, OR Paul J. Duwelius, MD, Portland, OR Amer J. Mirza, MD, Portland, OR

We utilized the HCUP NIS to identify the annual incidence, patient characteristics, treatment trends, and f nancial burden associated with Sacral Insuff ciency Fractures.

Discussion – 6 Minutes

2:18 PM

#### Paper 382

#### Hip Osteoarthritis As A Predictor Of The Fracture Pattern In **Proximal Femur Fractures.**

Ignacio Aguado-Maestro, MD, Valladolid, Spain Michalis Panteli, MD, Leeds, United Kingdom Manuel Garcia-Alonso, MD, PhD, Valladolid, Spain Roberto Escudero-Marcos Sr, MD, Valladolid, Spain Alejandro Bañuelos SR, Valladolid, Spain Peter Giannoudis, MD, FRCS, Leeds, United Kingdom

Higher grades of hip osteoarthritis are signif cantly related to extracapsular hip fractures, whereas lower grades of hip osteoarthritis are related to intracapsular patterns.

#### 2:24 PM

#### Paper 383

Paper 384

**Complications and Transfusion Rates after Hemi- and Total Hip Arthroplasty for Femoral Neck Fractures** 

Emmanouil Liodakis, MD, Hannover, Germany John Antoniou, MD, FRCSC, Montreal, QC, Canada Olga Huk, MD, Westmount, OC, Canada David Zukor, MD, Montreal, OC, Canada Laura M. Epure, Montreal, QC, Canada Stephane Bergeron, MD, kirkland, QC, Canada

The incidence of major complications is inf uenced by patient factors rather than the type of procedure. Contrary to that, the incidence of transfusions is higher for THA.

#### 2:30 PM

#### Survivorship of Cemented Bipolar Hemiarthroplasty after Femoral Neck Fracture: A Final Follow-up

Philipp Von Roth, MD, Berlin, Germany Matthew P. Abdel, MD, Rochester, MN Daniel J. Berry, MD, Rochester, MN

The long-term implant survival rate of bipolar hemiarthroplasties utilized to treat displaced femoral neck fractures in the elderly was high, and the procedure can be considered as def nitive.

Discussion – 6 Minutes

#### 2:42 PM

#### Paper 385

#### Tranexamic Acid Safely Reduced Blood Loss: Randomized **Clinical Trial of 138 Femoral Neck Fractures**

Chad Watts, MD, Rochester, MN Matthew Houdek, MD, Rochester, MN William W. Cross III, MD, Rochester, MN Stephen A. Sems, MD, Oronoco, MN Mark W. Pagnano, MD, Rochester, MN

In this large randomized clinical trial, tranexamic acid was safe and effective in reducing blood loss but not the proportion of patients transfused after hip arthroplasty for femoral neck fracture.

#### 2:48 PM

#### Paper 386

#### **Incidence and Sources of Sepsis Following Geriatric Hip Fracture** Surgery

Daniel D. Bohl, MD, MPH, Chicago, IL Erdan Kayupov, MS, Troy, MI Craig J. Della Valle, MD, Chicago, IL

The rate of sepsis following geriatric hip fracture surgery is about 1 in 40, and that the most common source of sepsis is urinary tract infection, accounting for as many as 35% of cases

#### 2:54 PM

#### Paper 387 Femural Fractures And Dementia: Surgical Or Conservative **Treatment? Evaluation Of Mortality And Complications.**

Stefania De Sanctis, MD, Ischia, Italy Raffaella Alonzo, Rome, Italy Silvia Frontini, Rome, Italy Floriana Di Salvo, MD, Rome, Italy Antonio Vadala, MD, Rome, Italy Carmelo D'Arrigo, Rome, Italy Andrea Ferretti, MD, Rome, Italy Priscilla Di Sette, Rome, Italy

Patients with femoral intracapsular neck fracuteres and dementia conservatively treated showed higher mortality and worse quality of life than surgically treated.

#### Discussion – 6 Minutes

#### 3:06 PM

#### Geriatric Distal Femur Fracture: One in Three Chance of Death or **Nonunion at One Year**

Gele Moloney, MD, Pittsburgh, PA Tiffany Pan, MD, Pittsburgh, PA Carola F. Van Eck, MD, Pittsburgh, PA Devan D. Patel, BS, Pittsburgh, PA Ivan S. Tarkin, MD, Pittsburgh, PA

In 176 geriatric patients with low energy distal femur fractures treated with laterally based locked plating there is a 20% one year mortality and a 25% rate of nonunion in survivors at one year.

Paper 388

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 3:12 PM

#### Operative Fixation Versus Distal Femur Replacement Arthroplasty for Comminuted Distal Femur Fractures

Gavin P. Hart, MD, Charlotte, NC Jeffrey S. Kneisl, MD, Charlotte, NC Bryan D. Springer, MD, Charlotte, NC Joshua C. Patt, MD, Charlotte, NC Madhav A. Karunakar, MD, Charlotte, NC

One year after treatment of comminuted distal femur fractures, operative f xation was associated with a two-fold incidence of secondary surgery compared to distal femoral replacement arthroplasty

#### 3:18 PM

#### Paper 390

Paper 389

Distal Femoral Replacement in the Treatment of Fractures: Low Complication Rates and Early Ambulation

Adam Sassoon, MD, Seattle, WA Frank C. Bohnenkamp, MD, Huntley, IL Joseph R. Cass, MD, Rochester, MN Stephen A. Sems, MD, Rochester, MN William W. Cross III, MD, Rochester, MN James A. Keeney, MD, Columbia, MO Denis Nam, MD, MSc, St Louis, MO Ryan Nunley, MD, Saint Louis, MO

DFR provides a good option in the treatment of acute distal femur fractures, periprosthetic femur fractures, and fracture nonunions in an geriatric patient population

Discussion – 6 Minutes

#### PAPER PRESENTATION

1:30 PM — 3:30 PM W315

#### Foot & Ankle II: Soft Tissue is the Issue: Tendons

Moderator(s): Sandra E. Klein, MD, Saint Louis, MO, Timothy Charlton, MD, Los Angeles, CA

#### 1:30 PM

Is Flexor Hallicus Longus Transfer Needed for Surgical Treatment of Insertional Achilles Tendinopathy?

Gregory P. Witkowski, MD, Warrenville, IL Jeffrey A. Senall, MD, Naperville, IL Thea Rogers, MPH, Winf eld, IL Marjorie Delaney, NP, Warrenville, IL

A randomized prospective study to evaluate the need for Flexor Hallicus Longus transfer in the surgical treatment of insertional Achilles tendinopathy, with data collection at 6, 12 and 24 months.

#### 1:36 PM

#### Age Associated Risk of Achilles Tendon Rupture in Patients with Achilles Tendinopathy

Paper 392

Paper 393

Paper 394

Paper 395

Ichiro Tonogai, MD, PhD, New York, NY Youichi Yasui, MD, Tokyo, Japan Christopher D. Murawski, Pittsburgh, PA Ethan J. Fraser, New York, NY Christopher J. Egan, PA-C, Dix Hills, NY John G. Kennedy, MD, New York, NY

Caution for the possibility that Achilles tendinopathy can lead to Achilles rupture must be taken in the treatment for Achilles tendinopathy, if patients are late-middle aged or early-elderly people.

#### 1:42 PM

#### Is Increased Body Mass Index (BMI) a Major Risk Factor for Achilles Tendon Rupture?

Eugene Jang, MD, New York, NY Derly O. Cuellar III, MD, University City, MO Peter Noback, BA, Alpine, NJ Emiliano Malagoli, MD, New York, NY Justin K. Greisberg, MD, New York, NY James T. Vosseller, MD, New York, NY

In a case control study an increased BMI was not associated with an increased risk of rupture of the Achilles tendon.

#### 1:54 PM

#### The Effect of Obesity on Surgical Treatment of Achilles Tendon Ruptures

Jamal Ahmad, MD, Philadelphia, PA Kennis Jones, BA, Philadelphia, PA

This is a retrospective comparison of outcomes of surgically treating acute Achilles tendon ruptures in non-obese and obese patients.

Discussion – 6 Minutes

#### 2:00 PM

Paper 391

#### Risk Factors for Complications after Primary Repair of Achilles Tendon Ruptures

Christian A. Pean, MS, New York, NY William J. Rubenstein, BA, New York, NY Anthony V. Christiano, New York, NY Sanjit R. Konda, MD, Rye, NY Kenneth A. Egol, MD, New York, NY

This study is an evaluation of risk factors for complications after primary repair of achilles tendon ruptures utilizing the National Surgical Quality Improvement Program (NSQIP) Database.

#### 2:06 PM

#### Paper 396

Paper 397

Paper 398

#### Wound Complications After Primary Open Achilles Tendon Repair

Meghan E. Bishop, MD, Philadelphia, PA Carly D. Comer, BS, Philadelphia, PA Justin M. Kane, MD, Philadelphia, PA Steven M. Raikin, MD, Merion Station, PA

Clinically signif cant wound complications following primary Achilles tendon repair are not as prevalent as previously described.

#### 2:18 PM

# Classif cation and Relationship of Plantar Heel Spurs in Patients with Plantar Fasciitis

Jamal Ahmad, MD, Philadelphia, PA Ammar Karim, DO, Stratford, NJ Joseph N. Daniel, DO, Egg Harbor Township, NJ

The purpose of this study is to classify the morphology of plantar heel spurs and examine their clinical relationship to plantar fasciitis.

Discussion – 6 Minutes

#### 2:24 PM

#### Hyaluronate Injection For Plantar Fasciitis -a Randomized, Double-blind, Placebo Controlled Study

Tsukasa Kumai, MD, PhD, Kashihara, Japan Norihiro Samoto, MD, Nara City, Nara, Japan Hideo Noguchi, MD, Gyoda-Shi, Japan Kazuya Sugimoto, MD, Nara-Shi, Nara, Japan Yasuhito Tanaka, MD, Kashihara, Nara, Japan Yoshinori Takakura, MD, Nara, Japan

Hyaluronate injections signif cantly reduce pain and improve function in patients with plantar fasciitis, and can become the alternative treatment without any serious adverse effects.

#### 2:30 PM

#### Paper 399

# Outcomes of Iliac Crest Bone Marrow Aspirate Injection for the Treatment of Recalcitrant Plantar Fasciitis

Eric W. Tan, MD, Los Angeles, CA Guy Friedman, MD, Asqwelon, Israel Paul Talusan, MD, Ann Arbor, MI Eric Dein, Indianapolis, IN Talal Zahoor, MD, New Orleans, LA Lew C. Schon, MD, Indianapolis, IN

BMA injection in patients with failure of conservative treatment show statistically signif cant decrease in VAS pain score at each assessment with no adverse effects.

#### 2:42 PM

#### Peroneal Tendon Repair: A Retrospective Review of Patient Reported Outcomes

Brian D. Steginsky, DO, Columbus, OH Aimee Riley, DO, Hilliard, OH Douglas Edward Lucas, DO, Durango, CO Terrence Philbin, DO, Dublin, OH Gregory C. Berlet, MD, Westerville, OH

The purpose of this study was to identify patients who underwent primary repair of the peroneus brevis tendon and evaluate clinical outcomes.

Discussion – 6 Minutes

#### 2:48 PM

#### Postoperative Complication in Dislocation of Peroneal Tendon Between with/without Osteotomy

Ichiro Tonogai, MD, PhD, New York, NY Youichi Yasui, MD, Tokyo, Japan Christopher D. Murawski, Pittsburgh, PA Ethan J. Fraser, New York, NY Christopher J. Egan, PA-C, Dix Hills, NY John G. Kennedy, MD, New York, NY

The study suggests that osteotomy procedures for dislocation of peroneal tendon should be useful to prevent re-operation.

#### 2:54 PM

#### Paper 402

Paper 403

Paper 401

Paper 400

#### Randomized Comparison Of Three Different Types Of Ankle Support In Treatment Of Acute Lateral Ankle Ligament Injury

Robert Van De Kimmenade, MD, EB Utrecht, Netherlands Inger Sierevelt, MSc Karin Eggink, MD, Nijmegen, Netherlands Gino M. Kerkhoffs, MD, PhD, Amsterdam, Netherlands C N. Van Dijk, MD, Abcoude, Netherlands

Eric Raven SR, Apeldoorn, Netherlands Michel Van den Bekerom, Amsterdam, Netherlands

Randomized comparison of tape versus semi-rigid and versus lace-up ankle support in the treatment of acute lateral ankle ligament injury showed no difference in outcome after 6 months

#### 3:06 PM

#### **Outcomes Of Minimal Invasive Suture-tape Augmentation Without Brostrom Procedures For Chronic Ankle Instability** *Byung-Ki Cho, MD, Cheong-Ju, Republic of Korea Seung Myung Choi, Seoul, Republic of Korea Kyoung Jin Park, MD, Irvine, CA*

Minimally invasive suture-tape augmentation without modif ed Brostrom procedure seems to be one of the effective alternatives for young women with chronic ankle instability.

#### 3:12 PM

#### Comparison Between Two Brostrom Procedures For Chronic Ankle Instability: Suture Bridge Vs Suture Anchor Technique

Byung-Ki Cho, MD, Cheong-Ju, Republic of Korea Seung Myung Choi, Seoul, Republic of Korea Kyoung Jin Park, MD, Irvine, CA

The modif ed Brostrom procedures using double suture anchor technique and suture bridge technique showed similar functional outcomes but low cost-effectiveness in suture bridge group.

#### Discussion – 6 Minutes

#### 3:18 PM

#### Paper 405

Paper 404

Simultaneous Reconstruction of The Medial and Lateral Ligaments For Chronic Combined Ligament Injury of The Ankle

Toshito Yasuda, MD, Takatsuki City, Japan Hiroaki Shima, MD, Osaka, Japan Katsunori Mori, Takatsuki, Japan Masashi Neo, Takatsuki, Japan

Combined chronic injuries of the ankle MCL and LCL can be effectively managed through simultaneous surgical treatment of the two ligaments, allowing athletes to return to sports participation.

Discussion – 6 Minutes

#### INSTRUCTIONAL COURSE LECTURE

#### 3:00 PM — 4:00 PM



W209B

Expert Pearls and Funding Strategies for Basic and Translational Research

Moderator: Kristy L. Weber, MD, Philadelphia, PA Leesa M. Galatz, MD, New York, NY Francis Young-In Lee, MD, PhD, New York, NY William M. Mihalko, MD, PhD, Germantown, TN

Discuss the benchmarks, or standards, in technique and practice in the study of basic science and translational research.

#### **INSTRUCTIONAL COURSE LECTURE**

#### 4:00 PM — 6:00 PM

### 261 Innovative Techniques in Revision



**Total Hip Arthroplasty** *Moderator: Scott M. Sporer, MD, Wheaton, IL* 

Kevin B. Fricka, MD, Alexandria, VA

Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada Paul F. Lachiewicz, MD, Chapel Hill, NC

Room W314

Reviews new techniques for management of commonproblems encountered in revision hip surgery. Acetabular component removal and revision with enhanced surface jumbo cups, new recurrent dislocation options, easier ways to perform extended trochanteric osteotomy (ETO)and fabricate antibiotic cement spacer, and management of the painful metal-metal and ceramic-ceramic hip are covered in video vignettes and case presentations.

#### 262 Challenges and Controversies in Foot and Ankle Trauma

## 

Room

W310

Moderator: David B. Thordarson, MD, Los Angeles, CA Eric Giza, MD, Sacramento, CA

Thomas G. Harris, MD, Altadena, CA

Anand M. Vora, MD, Lake Forest, IL

Provides a practical, case-based lecture on the current state of the art in common foot and ankletrauma. It covers how to avoid common pitfalls aswell as emphasizes how to achieve good surgical and nonsurgical outcomes. Each talk highlights easy-to-miss injuries as well.

#### 263 Modern Blood Conservation Strategies for the Tribular Orthopaedic Surgeon

Moderator: Fred D. Cushner, MD, New York, NY Maxime Cannesson, Orange, CA Harted S. Khannia, MD, Cochempilla, MD

Room W205A

Harpal S. Khanuja, MD, Cockeysville, MD Ran Schwarzkopf, MD, Irvine, CA

Explores the challenges of preoperative anemiaevaluation, current modern practices for intraoperative f uid management and blood conservation, and postoperative transfusion triggers and hypovolemic treatment algorithms.

# 264

#### The Lost and Found Art of Percutaneous Pinning in the Hand and Wrist Moderator: O. Alton Barron, MD, New York, NY

Room W307C

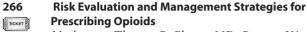
Louis W. Catalano III, MD, New York, NY Steven Z. Glickel, MD, New York, NY Robert J. Strauch, MD, New Rochelle, NY

Describes the biomechanics, indications, techniques, and outcomes of percutaneous pinning of fractures. Percutaneous pinning is somewhat of a lost art, and the lectures are aimed at reclaiming this art while clearly elucidating important principles through case presentations that demonstrate the pearls and pitfalls of the various techniques.

#### **†**265 Congenital Scoliosis: Diagnosis and Treatment

- Moderator: Frances A. Farley, MD, Ann Arbor, MI Laurel C. Blakemore, MD, Gainesville, FL John P. Dormans, MD, Houston, TX
- Michael G. Vitale, MD, MPH, Irvington, NY

**Room** W308C Covers diagnosis and treatment of congenitalscoliosis. The faculty uses cases to discuss surgery and controversies.



Room W300 Moderator: Thomas B. Fleeter, MD, Reston, VA Paul M. Arnstein, PhD, RN, Boston, MA David C. Ring, MD, Boston, MA David H. Sohn, JD, MD, Perrysburg, OH

> Course details the Food and Drug Administration's risk valuation and mitigation strategy opioid program, assists physicians in safe narcotic dosing, and outlines risks of inappropriate narcotics prescribing. This course was organized by the AAOS Medical Liability Committee.

#### 267 The Young Arthritic Shoulder: Scope, Arthroplasty, Interposition, Fusion, and Resurfacing

Room W304E Moderator: Joseph A. Abboud, MD, Philadelphia, PA George S. Athwal, MD, London, ON, Canada Anand M. Murthi, MD, Indianapolis, IN Robert Z. Tashjian, MD, Salt Lake City, UT

> Provides registrants with the most up-to-date treatment options for the young arthritic shoulder. The focus is on biologic options, arthroplasty, role of arthroscopy, as well as fusion.

# 268 New Frontiers in Shoulder Instability: From Cutting Image: Image of the state of

Room W204 Moderator: John M. Tokish, MD, Simpsonville, SC Robert A. Arciero, MD, Farmington, CT Giovanni Di Giacomo, MD, Roma, Italy Laurent Lafosse, MD, Annecy, France

> Addresses current controversies in treating anterior shoulder instability – balancing innovative techniques with the evidence for and against them in a case-based format.

269

Head and Injuries in Athletes: When to Worry



W307A

Moderator: William C. Warner Jr, MD, Germantown, TN Patrick J. Cahill, MD, Philadelphia, PA Kern Singh, MD, Chicago, IL Alexander Vaccaro, MD, PhD, Gladwyne, PA

Head and spine injuries in athletes can range fromminor to catastrophic, can occur in sports as varied as football and cheerleading, can occur in any age group, and can limit or prohibit return to sports. It is essential to differentiate among the many levels of severity of head and spine injuries to determine appropriate treatmentand safe return to play.

#### Hip Arthroscopy: Tales from the Crypt

Moderator: Dean K. Matsuda, MD, Los Angeles, CA Marc J. Philippon, MD, Vail, CO Marc Safran, MD, Redwood City, CA Thomas G. Sampson, MD, San Francisco, CA

Presents nightmarish errors, preventative and corrective measures, and lessons learned by a renowned group of experienced surgeons with integrated time to discuss audience experiences.

# 271

Room

W202

270

TICKET

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Room

W203

#### Return to Play after Anterior Cruciate Ligament Reconstruction: When and What Test to Do...Safe or Sorry?

Moderator: Mary L. Ireland, MD, Lexington, KY James J. Irrgang, PhD, Pittsburgh, PA Darren L. Johnson, MD, Lexington, KY Brian Noehren, PT, PhD, Lexington, KY

Gives basic science and offers an orthopaedic surgeon's perspective on return to play by showing specif c test, gait analysis, and timeline of doing these tests. A casebasedapproach based on observation of movement patternsand gait analysis is shown. Perspective on mechanism of injury, prevention programs, and commonalities of movement patterns also are presented. Traducción simultánea en español. Tradução simultânea em português.

#### 272 Elements of Bundling Hip Fracture Care

TICKET

Moderator: Simon Mears, MD, Little Rock, AR Stephen L. Kates, MD, Rochester, NY Michael Suk, MD, Danville, PA



Will address the basics of bundling in different systems of medicine. We discuss how to develop relationships between diverse groups to allow the team to come together and work on a care plan. This process of change management must start with physician leadership and involve commitment from hospital administration.

◆287 F

#### 7 Revision Total Knee Arthroplasty Essentials: A Case-based Approach



Room

W207

James A. Browne, MD, Charlottesville, VA Kevin L. Garvin, MD, Omaha, NE Arlen D. Hanssen, MD, Rochester, MN Curtis W. Hartman, MD, Omaha, NE Raymond H. Kim, MD, Denver, CO Steven J. MacDonald, MD, London, ON, Canada R. Michael Meneghini, MD, Fishers, IN Christopher L. Peters, MD, Salt Lake City, UT Bryan D. Springer, MD, Charlotte, NC Michael J. Taunton, MD, Rochester, MN

Moderator: Tad M. Mabry, MD, Rochester, MN

Addresses the essentials of revision total kneearthroplasty (TKA) with a focus on surgical indications and practical solutions to the most common revision challenges: instability, stiffness, bone loss, and infection.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

288 TICKET

#### **Techniques and Decision Making in Common Fractures:** A Case-based Small Group Session Moderator: Paul Tornetta III, MD, Boston, MA

Room W208

Joshua L. Gary, MD, Houston, TX Daniel S. Horwitz, MD, Danville, PA Clifford B. Jones, MD, FACS, Grand Rapids, MI Stephen Kottmeier, MD, Stony Brook, NY Samir Mehta, MD, Philadelphia, PA Theodore T. Manson, MD, Bel Air, MD J. Spence Reid, MD, Hummelstown, PA Judith Siegel, MD, Worcester, MA Heather A. Vallier, MD, Cleveland, OH Philip R. Wolinsky, MD, Sacramento, CA

This course features case-based teaching with discussion and questions and answers for various trauma cases.

#### **PAPER PRESENTATION**

4:00 PM - 6:00 PM Valencia Room D

#### Adult Reconstruction Hip III: Primary THR

Moderator(s): Michael A. Mont, MD, Baltimore, MD, Holly K. Brown, Jupiter, FL

#### 4:00 PM

#### Paper 406

A Multi-Center, Prospective, Randomized Study of Outpatient versus Inpatient Total Hip Arthroplasty Nitin Goyal, MD, Arlington, VA

Sarah Padgett, PA-C, Alexandria, VA Antonia Chen, MD, MBA, Philadelphia, PA Timothy Tan, MD, Philadelphia, PA Michael M. Kheir, BS, Philadelphia, PA Robert Hopper, PhD, Alexandria, VA William G. Hamilton, MD, Alexandria, VA William J. Hozack, MD, Philadelphia, PA

Although 26% of subjects randomized to outpatient THA required an overnight hospital stay, those discharged on the same day had higher satisfaction at 4-week follow-up compared to the inpatient group.

#### 4:06 PM

#### Paper 407 Same Day Total Hip Arthroplasty Performed at an Ambulatory Surgical Center: 90 day Complication Rate on 549 Patients

Gregg R. Klein, MD, Paramus, NI Harlan B. Levine, MD, Paramus, NJ Jason Posner, BA, South Orange, NJ Mark A. Hartzband, MD, Paramus, NJ

Ambulatory surgical center THAs (n=549) were found to be safe and reproducible.

#### 4:12 PM

#### THA in Patients 21 and Younger Using Highly Cross Linked **Polyethylene: Encouraging Mid-term Results**

Adam Sassoon, MD, Seattle, WA Frank C. Bohnenkamp, MD, Huntley, IL Geneva Baca, Saint Louis, MO Gail Pashos, St Charles, MO John C. Clohisy, MD, Saint Louis, MO

HCLPE demonstrated encouraging results as a THA bearing surface in an extremely young patent population with a f ve-year survivorship, free from revision, of 98%.

Discussion – 6 Minutes

#### 4.24 PM

#### **Topical Compared to Intravenous Tranexamic Acid in Total Hip Arthroplasty - A Prospective Randomized Trial**

Stijn Ghijselings, MD, Leuven, Belgium Brecht Jacobs, Hasselt, Belgium Ronald Driesen, MD, Genk, Belgium Kristoff Corten, MD, PhD, Genk, Belgium

The intra-articular use of 3g Tranexamic acid was equally effective in reducing postoperative bloodloss compared with 1.5g of TXA administered intravenously in direct anterior total hip arthroplasty.

#### 4:30 PM

#### Systemic Absorption of Intravenous and Topical Tranexamic **Acid in Primary Total Hip Arthroplasty**

Richard Nadeau, MD, London, ON, Canada James Howard, MD, London, ON, Canada Fiona Ralley, MBCHB, London, ON, Canada Lyndsay Somerville, PhD, London, ON, Canada Douglas Naudie, MD, FRCSC, London, ON, Canada

Compared to intravenous TEA, topical administration of TEA in primary THA results in 4-fold lower circulating levels of antif brinolytic one hour after administration.

#### 4:36 PM

#### **Oral and Intravenous Tranexamic Acid are Equivalent at Reducing Blood Loss Following Total Hip Arthroplasty**

Erdan Kayupov, MS, Troy, MI Yale Fillingham, MD, Chicago, IL Darren R. Plummer, MBA, MD, Columbus, OH Mario Moric, MS, Chicago, IL Tad L. Gerlinger, MD, San Antonio, TX Craig J. Della Valle, MD, Chicago, IL

A prospective, double blinded, randomized, placebo controlled trial showed equivalence between oral and IV tranexamic acid with blood loss after total knee arthroplasty.

Discussion – 6 Minutes

Paper 408

Paper 409

Paper 410

Paper 411

#### 4:48 PM

#### Paper 412

#### Comparing - Aminocaproic and Tranexamic Acid in Reducing Post-operative Transfusions in Total Hip Arthroplasty

Jessica Churchill, BS, Norfolk, VA Kathleen E. Puca, MD, Milwaukee, WI Matthew Carleton, West Allis, WI Melissa J. Dahlgren, Milwaukee, WI Susan Truchan, BSN, RN, Grafton, WI Elizabeth Vermeulen, MPH, Milwaukee, WI Michael J. Anderson, MD, Mequon, WI

Are All Cemented Stems The Same?

Intraoperative administration of EACA or TXA signif cantly decreases postoperative transfusion rates. EACA is comparable to TXA for reducing transfusion rates while at a lower cost per surgery.

#### 4:54 PM

#### Paper 413

Hussain Kazi, MB, FRCS (Ortho), Toronto, ON, Canada Sarah Whitehouse, PhD, Brisbane, Australia Andrew J. Timperley, MD, Exeter, United Kingdom

Revision rate is higher in cemented non-polished stem designs. Registry analysis comparing f xation philosophy is no longer appropriate and comparison should take place at 'brand' level.

#### 5:00 PM

Paper 414

#### Local Bisphosphonate Improves The Fixation Of Cemented Acetabular Cups And Reduces Formation Of Radiolucent Zones.

Jorg Schilcher Sr, PhD, MD, Sverige, Sweden Lars Palm SR, PhD, Linköping, Sweden Ingemar Ivarsson, Linköping, Sweden Per Aspenberg, MD, PhD, Linköping, Sweden

Discussion – 6 Minutes

#### 5:12 PM

#### Paper 415 **Direct Anterior THA Offers no Difference In Dislocations or Acetabular Abduction Compared to Posterior Approach**

Krishna R. Tripuraneni, MD, Albuquerque, NM Michael J. Archibeck, MD, Albuquerque, NM Joshua T. Carothers, MD, Los Ranchos De Albuquerque, NM

In this single-surgeon, prospective study comparing posterior and DA THA, no difference in hip stability or cup abduction resulted.

#### 5:18 PM

#### **Direct Anterior Approach Does Not Reduce Dislocation Risk**

Joseph Maratt, MD, Ann Arbor, MI Joel J. Gagnier, PhD, Ann Arbor, MI Paul Butler, MD, Grand Rapids, MI Brian R. Hallstrom, MD, Ann Arbor, MI Andrew G. Urguhart, MD, Ann Arbor, MI Karl C. Roberts, MD, Grand Rapids, MI

Short term outcome and complication data from a state joint replacement registry shows DAA and PA THA to have no compelling advantage over each other including no difference in the dislocation risk.

#### 5:24 PM

Paper 417

Paper 418

Paper 419

Paper 416

#### Impact of Anterior Versus Posterior Approach for Total Hip **Arthroplasty on Post-Acute Care Service Utilization**

John E. Tessier, MD, Saint Louis, MO Paul J. Duwelius, MD, Portland, OR Coles E. L'Hommedieu, MD, Saint Louis, MO James T. Gera JR, MBA, Saint Charles, MO Michael F. Burns, MD, Saint Louis, MO Gerald R. Rupp, MD, Longmont, CO

The results of this study indicate that surgical approach alone is not the primary driver of post-acute care service utilization and cost.

Discussion – 6 Minutes

#### 5:36 PM

#### The Direct Anterior Approach is a Risk Factor for Early Failure in **Cementless THA: A Multi-Center Study**

R M. Meneghini, MD, Fishers, IN Addison Elston, BS, Indianapolis, IN Antonia Chen, MD, MBA, Philadelphia, PA Michael M. Kheir, BS, Philadelphia, PA Thomas K. Fehring, MD, Charlotte, NC Bryan D. Springer, MD, Charlotte, NC

The DA approach for THA has been heavily marketed with claims of superiority over other approaches. Femoral exposure can be challenging with DAA. We assessed early femoral component failure in DAA.

#### 5:42 PM

#### Muscle Biomarkers Are Not an Objective Surrogate Measure of Surgical Invasiveness after Contemporary THA

Kirsten L. Poehling-Monaghan, MD, Rochester, MN Michael J. Taunton, MD, Rochester, MN Atul F. Kamath, MD, Philadelphia, PA Rafael J. Sierra, MD, Rochester, MN Robert T. Trousdale, MD, Rochester, MN Mark W. Pagnano, MD, Rochester, MN

Biomarkers of muscle damage were not correlated with pain or functional outcome after contemporary THA with either miniposterior or direct anterior approaches.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 5:48 PM

#### Early Proximal Periprosthetic Femoral Fractures in Total Hip Arthroplasty using a Direct Anterior Approach

Marcel A. Bas, MD, New York, NY Cameron Yau, MD, New York, NY Kenneth Jahng, MD, Loma Linda, CA Herbert J. Cooper, MD, New York, NY Jose A. Rodriguez, MD, New York, NY

Risk factors for early proximal femoral fractures in direct anterior approach total hip arthroplasty include age and femoral neck fracture. Compound higher risk also seen with older age and low BMI.

Discussion – 6 Minutes

#### **PAPER PRESENTATION**

#### 4:00 PM - 6:00 PM Room W414

#### Sports Medicine/Arthroscopy IV Knee 2 (ACL)

Moderator(s): Allston J. Stubbs, MD, Winston-Salem, NC, Christopher C. Kaeding, MD, Columbus, OH

#### 4.00 PM

#### Paper 421

Paper 420

#### A 5-year Prospective Randomised Study Of Anatomic Single Vs **Double Bundle ACL Reconstruction**

Ioannis Karikis, Uddevalla, Sweden Ioannis Karikis, Uddevalla, Sweden Neel Desai, Molndal, Sweden Ninni Sernert, RPT, Trollhattan, Sweden Lars Rostgard-Christensen, MD, Lidkoping, Sweden Juri Kartus, MD, Trollhättan, Sweden

A 5-year prospective randomized study showed that anatomic DB reconstruction was not superior to anatomic SB reconstruction in terms of subjective, objective and radiographic outcome variables.

#### 4:06 PM

Paper 422

#### **Investigating Subjective Patient and Surgeon Expectations** following Anterior Cruciate Ligament Reconstruction

Nicholas J. Lombardi, BS, Egg Harbor Township, NJ Kevin B. Freedman, MD, Horsham, PA John P. Salvo Jr, MD, Voorhees, NJ Michael G. Ciccotti, MD, Philadelphia, PA Steven B. Cohen, MD, Media, PA Bradford S. Tucker, MD, Egg Harbor Township, NJ Matthew D. Pepe, MD, Linwood, NJ Fotios P. Tjoumakaris, MD, Egg Harbor Township, NJ

This investigation is the f rst to compare patient's expectation to their surgeon's expectations. Our results suggest that surgeon's may need to convey more realistic expectations to their patients.

#### 4:12 PM

#### Anterior Cruciate Ligament Reconstruction in Professional **Athletes: Differences in Outcomes of Each Sport**

Harry Mai, BS, Manhattan Beach, CA Danielle Chun, BA, Chicago, IL Brandon Erickson, MD, Chicago, IL Rvan D. Freshman, BS, Chicago, IL Benjamin Kester, MD, New York, NY Shobhit Minhas, MD, Chicago, IL Nikhil N. Verma, MD, Chicago, IL Wellington K. Hsu, MD, Chicago, IL

The inherent physical nature and performance demands of basketball, football, hockey, and baseball signif cantly differ. The outcomes after ACL reconstruction may be driven by those differences.

Discussion – 6 Minutes

#### 4:24 PM

#### **Anterior Cruciate Ligament Reconstruction: Tourniquet** Pressures and Post-operative Pain, is there a Relation? Mostafa Abdelmaboud, MD, PhD, Cairo, Egypt

Mohammed Elrakaybi, Jeddah, Saudi Arabia Enjie I. Ali, MBBS, Jeddah, Saudi Arabia

Postoperative pain has several etiological factors. This randomized control trial evaluates the relation between tourniquet pressure during ACL reconstruction and postoperative need for analgesia.

#### 4:30 PM

#### Paper 425 A Biomechanical Comparison Of Allograft Tendons For Ligament Reconstruction

Jeremiah E. Palmer, MD, Indianapolis, IN Joseph P. Russell, BS, College Park, MD Jason A. Grieshober, MD, Indianapolis, IN Abigail Iacangelo, Olney, MD Benjamin A. Ellison, Charleston, SC Hyunchul Kim, MS, College Park, MD Adam H. Hsieh, PhD, College Park, MD R F. Henn III, MD, Ellicott City, MD

Tibialis anterior, tibialis posterior, and peroneus longus allografts exhibit similar mechanical characteristics when standardized by looped diameter and likely may be used interchangeably.

Paper 423

Paper 424

#### 4:36 PM

## Paper 426 **Biomechanical Study of Anterolateral Tenodeses in Combined**

**Anterior Cruciate Ligament and Anterolateral Injuries** Eivind Inderhaug, MD, MPH, Boenes, Norway Joanna M. Stephen, MSc, Thurso, United Kingdom Andrew Williams, MBBS, FRCS, London, United Kingdom Andrew A. Amis, London, United Kingdom

A biomechanical comparison of MacIntosh, Lemaire and ALL procedures supports using MacIntosh and Lemaire tenodeses when performing ACL reconstruction in combined ACL and anterolateral injured knees

Discussion – 6 Minutes

#### 4.48 PM

Paper 427

## **Extra-articular reconstruction in Anterior Cruciate Ligament** def cient knee revised 25 years later

Andrea Ferretti, MD, Rome, Italy Antonio Ponzo, MD, Roma, Italy Edoardo Monaco, MD, Rome, Italy Raffaele Iorio, MD, Rome, Italy Ludovico Caperna, MD, Rome, Italy Fabio Conteduca, MD, Roma, Italy

Adding a lateral tenodesis to an ACL IR with hamstrings seems to improve rotator knee stability and to reduce risk of recurrence, not increasing development of DOA

#### 4:54 PM

Paper 428

### Does ACL Innervation Matter for Joint Function and **Development of OA?**

James L. Cook, DVM, PhD, Columbia, MO Christopher Nagelli, Columbus, OH Keiichi Kuroki, DVM, PhD, Columbia, MO Chantelle Bozynski, DVM, MSc, Columbia, MO Timothy E. Hewett, PhD, Columbus, OH

This study investigates the effects of local sensory denervation of the ACL on knee function and health, and indicates ACL denervation may lead to joint dysfunction and osteoarthritis.

#### 5:00 PM

Paper 429

## Liposomal Bupivacaine for Pain Control for Anterior Cruciate **Ligament Reconstruction**

Ajay Premkumar, BS, McLean, VA Heather Samady, MD, Atlanta, GA Harris Slone, MD, Charleston, SC Regina Hash, OTC, Atlanta, GA Spero G. Karas, MD, Atlanta, GA John W. Xerogeanes, MD, Atlanta, GA

Prospective, double-blinded, randomized clinical trial demonstrated 0.25% bupivacaine HCl to have comparable pain control at a 200-fold lower cost than liposomal bupivacaine after ACL reconstruction.

Discussion – 6 Minutes

## 5:12 PM

## Anteromedial Portal Versus Transtibial Drilling Techniques For **Femoral Tunnel Placement In ACL Reconstruction**

Ayman Gabr, MBBCh, MRCS, London, United Kingdom Mohsin Khan, Essex, United Kingdom Fares S. Haddad, FRCS, London, United Kingdom

The aim of this study was to compare the functional and radiographic outcomes of arthroscopic ACL reconstructions using either the Anteromedial portal technique or Transtibial technique.

#### 5:18 PM

## **Passive Anterior Tibial Subluxation in ACL-Injured Knees Restores after Reconstruction Surgery**

Amir Ata Rahnemai Azar, MD, Pittsburgh, PA Carola F. Van Eck, MD, Pittsburgh, PA Volker Musahl, MD, Pittsburgh, PA James J. Irrgang, PhD, Pittsburgh, PA Freddie H. Fu, MD, Pittsburgh, PA

After ACL reconstruction, the medial and lateral compartments of the tibia reduce posteriorly. No signif cant difference exists between anterior tibial subluxation after reconstruction and controls.

#### 5:24 PM

Paper 432

Paper 433

Paper 430

Paper 431

**Anterior Cruciate Ligament Reconstruction by Patellar Tendon Graft: a Novel Solution to Reduce Anterior Knee Pain** 

Mostafa Abdelmaboud, MD, PhD, Cairo, Egypt Mohammed Elrakavbi, Ieddah, Saudi Arabia Enjie I. Ali, MBBS, Jeddah, Saudi Arabia

A randomized control trial conducted to evaluate the relation between using autologus cancellous graft covered by bone wax to f ll donor site defects and reduced incidence of anterior knee pain.

Discussion – 6 Minutes

### 5:36 PM

## **Randomized Clinical Evaluation of Anterior Cruciate Ligament Reconstruction Grafts**

COL Edward D. Arrington, MD, University Place, WA Jason A. Grassbaugh, MD, Tacoma, WA Joseph W. Galvin, DO, Dupont, WA Joseph H. Dannenbaum IV, MD, Spokane, WA Betsey K. Bean, DO, Dupont, WA Josef K. Eichinger, MD, Gig Harbor, WA

This prospective, randomized trial compared 6 different types of ACL reconstruction grafts, and demonstrated no signif cant differences in IKDC, KOOS, SF-36, or KT-2000 between patient groups.

#### 5:42 PM

# Risk Factors for Subsequent Surgery after ACL Reconstruction: a population-based study

Siddharth A. Mahure, MD, New York, NY Brian Capogna, MD, New York, NY Brent Mollon, MD, FRCSC, Markham, ON, Canada Andrew S. Rokito, MD, New York, NY

A database review of 39,980 cases of anterior cruciate ligament reconstruction was performed. We identif ed risk factors associated with patients undergoing subsequent surgical procedures.

#### 5:48 PM

#### Paper 435

Paper 434

Surgical Predictors of Clinical Outcome following Revision ACL Reconstruction

MARS Group, Saint Louis, MO Rick W. Wright, MD, Saint Louis, MO

This study provides evidence from a prospective cohort that surgical factors at the time of revision ACL reconstruction have the ability to signif cantly inf uence 2 year patient reported outcomes.

Discussion – 6 Minutes

## PAPER PRESENTATION

4:00 PM — 6:00 PM Room W304A

#### Trauma V: Hip/Femur

Moderator(s): James C. Krieg, MD, Philadelphia, PA, Bogadi R. Prashanth, MD, Karnataka, India

#### 4:00 PM

#### Paper 436

Minimally displaced intracapsular neck of femur fractures - twohole Dynamic Hip Screw or Cannulated Hip Screws?

Al-Mothenna Alloush, MD, Victoria Docks, United Kingdom Simon Woods, BA, MBBS, West Yorkshire, United Kingdom Reza Mayahi, MD, East Riding of Yorkshire, United Kingdom

This study revealed a signif cantly lower failure rate with CHS compared to two-hole DHS. Use of a derotation screw with DHS is associated with a lower rate of failure compared to DHS alone

#### 4:06 PM

### Paper 437

#### Risk of Nonunion and Osteonecrosis After Completed Displaced Femoral Neck Stress Fractures in Young Adults

Grant K. Cochran, MD, La Mesa, CA Gregory R. Staeheli, MD, San Diego, CA Kevin M. Kuhn, MD, San Diego, CA

This retrospective review of completed displaced femoral neck stress fractures demonstrates a high nonunion and osteonecrosis rate in young adults.

#### 4:12 PM

#### The Radiographic Union Score for Hip Def nes Nonunion and Predicts Revision Surgery in Hip Fractures

Tym Frank, MD, Vancouver, BC, Canada Georg Osterhoff, MD, Vancouver, BC, Canada Sheila Sprague, PhD, Hamilton, ON, Canada Mohit Bhandari, MD, FRCSC, Hamilton, ON, Canada Gerard Slobogean, MD, MPH, Vancouver, BC, Canada

The 6-month RUSH score is a radiographic measure that can be used to def ne femoral neck nonunion and help predict fractures that will require future non-union surgery.

Discussion – 6 Minutes

#### 4:24 PM

## Does The Angle of The Nail Matter? The Importance of Matching Neck-Shaft Angles in Intertrochanteric Fractures.

Joshua A. Parry, MD, Rochester, MN Bradley S. Schoch, MD, Rochester, MN William W. Cross III, MD, Rochester, MN Joseph R. Cass, MD, Rochester, MN

Treatment of unstable intertrochanteric hip fractures with cephalomedullary nails with a neck-shaft-angle that is less than the native neck-shaft-angle increases the likelihood of a varus reduction.

#### 4:30 PM

## Is Distal Locking Necessary In Stable Intertrochanteric Fractures? A Randomized, Prospective, Comparative Study.

Vincenzo Caiaffa, MD, Bari, Italy Giovanni Vicenti JR, MD, Altamura, Italy Antonella Abate, Bari, Italy Massimiliano Carrozzo Sr, MD, Avetrana, Italy Girolamo Picca, MD, Bari, Italy Claudio Mori, MD, Bari, Italy Valeria Freda, Bari, Italy Biagio Moretti, MD, Bari, Italy

The purpose of this study is to investigate the necessity of distal locking in the treatment of intertrochanteric fracture with an intramedullary hip nail.

#### 4:36 PM

## Is Nailing All Intertrochanteric Fractures Financially Responsible? A Cost of Care Analysis

Iain Elliott, MD, Salt Lake City, UT Lucas S. Marchand, MD, Salt Lake City, UT Zachary Working, MD, Salt Lake City, UT Erik Kubiak, MD, Salt Lake Cty, UT Thomas F. Higgins, MD, Salt Lake City, UT David Rothberg, MD, Salt Lake Cty, UT

To determine if the use of only CMN's in the treatment of all intertrochanteric hip fractures would reduce outcome variability and total costs.

#### Discussion – 6 Minutes

The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 438

Paper 439

Paper 440

#### 4:48 PM

#### Paper 442

# Failure of Femoral Nail for Atypical Femoral Fracture caused by Cortical Reaction

Kwang Woo Nam, MD, PhD, Jeju, Republic of Korea Sang-Rim Kim, MD, Jeju, Republic of Korea Sung-Wook Choi, Jeju, Republic of Korea Kyu-Bum Seo, MD, Jeju, Republic of Korea Hee J. Kim, MD, Seoul, Republic of Korea Mark S. Vrahas, MD, Boston, MA Seung B. Han, MD, Seoul, Republic of Korea Kee H. Rhyu, MD, Seoul, Republic of Korea Kang Sup Yoon, MD, Seoul, Republic of Korea

Atypical Femoral Fractures with cortical thickening had higher risk of malunion and nonunion rate compared with those without cortical thickening.

#### 4:54 PM

#### Paper 443

Low Dose CT Scanogram for Measurement of Femoral Version Kristi L. Hultman, MD, PhD, Royal Oak, MI Rahul Vaidya, MD, Ann Arbor, MI Ibraheem Malkawi, MBBS, Detroit, MI Jon B. Carlson, MD, Detroit, MI

*Jason B. Wynberg, MD, Detroit, MI* Low dose CT scanograms can reduce the ionizing radiation exposure to 10% of the current dose with no signif cant effect on

#### 5:00 PM

#### Paper 444 5

## Does Severe Comminution Affect Version After Intramedullary Nailing of Femoral Shaft Fractures?

David Galos, MD, New York, NY Richard S. Yoon, MD, New York, NY Neeraj M. Patel, MD, MPH, New York, NY John Koerner, MD, Hoboken, NJ Kenneth A. Egol, MD, New York, NY Frank A. Liporace, MD, Englewd Clfs, NJ

the accuracy of the rotational measurement.

Increasing degree of comminution had no signif cant impact on obtaining acceptable femoral version following intramedullary nailing.

Discussion – 6 Minutes

#### 5:12 PM

### Immediate Weight Bearing has Improved Outcomes after Intramedullary Fixation for Subtrochanteric Fractures

Brian Cunningham, MD, Phoenix, AZ Brian Cunningham, MD, Phoenix, AZ Justin Roberts, MD, Phoenix, AZ Brian Miller, MD, Scottsdale, AZ Anthony S. Rhorer, MD, Scottsdale, AZ Gilbert D. Ortega, BS, Tucson, AZ Hrayr Basmajian, MD, Anaheim Hills, CA Kelly Jackson, NP, Scottsdale, AZ

This is the f rst study to demonstrate improved outcomes with Immediate weight bearing as tolerated after intramedullary nail f xation of subtrochanteric femur fractures

## 5:18 PM

Paper 446

Paper 447

Paper 448

Paper 445

## Intramedullary Nails Outperform Fixed-Angle Plates in Distal Femur Fractures: An Analysis of the VOTOR Database

Wayne Hoskins, MBBS, PhD, Parkville, Australia Rohan Sheehy, MBBS, Ivanhoe, Australia Nick Parsons, PhD, Coventry, United Kingdom Andrew T. Bucknill, FRCS, Parkville, Australia Xavier L. Griff n, MBBS, MSc, Coventry, United Kingdom

This 7 year, 4 hospital analysis of a prospective database provides evidence in favor of intramedullary nail f xation for distal femur fractures

#### 5:24 PM

### The Impact of Time to Surgery for Polytraumatic Femur Fractures on In-hospital Morbidity and Mortality

James A. Blair, MD, El Paso, TX Nicholas A. Kusnezov, MD, El Paso, TX Tuesday Fisher, MD, El Paso, TX Julia O. Bader, PhD, El Paso, TX Philip J. Belmont Jr, MD, El Paso, TX

For polytraumatic femur fractures, time to surgery over 72 hours demonstrated signif cantly increased mortality, major systemic complication, ARDS, and mean ventilator and ICU stay durations.

Discussion – 6 Minutes

#### 5:36 PM

### Is it Safe to Operate on Therapeutically Anticoagulated Hip Fractures?

Paul Tornetta III, MD, Boston, MA David Saper, MD, Wilmette, IL Kyle Lybrand, MD, Waltham, MA Kasey Bramlett, PA-C, Burlington, MA Michael S. Kain, MD, Burlington, MA Peter L. Althausen, MD, Reno, NV Andrew J. Marcantonio, DO, Wellesley, MA

The purpose of this study was to compare the safety of surgical intervention in hip fracture patients with sub-therapeutic and therapeutic INR values.

#### 5:42 PM

## Tranexamic Acid (TXA) Reduces Blood Loss in Patients with Hip-Fractures; Results of a Randomized Controlled Trial.

Peter T. Tengberg, MD, Copenhagen K, Denmark Nicolai B. Foss, DMed, MD, Copenhagen, Denmark Henrik Palm, MD, Boston, MA Thomas Kallemose, MSc, Vanløse, Denmark Anders Troelsen, MD, PhD, Koege, Denmark

We have shown a nearly 600 ml reduction in Total Blood Loss with the use of intravenous Tranexamic Acid (TXA). Questions remain on the safety of this drug for this group of patients.

#### 5:48 PM

Paper 450

Paper 451

Paper 449

## Intraoperative Temperature in Hip Fractures: Effect on Complications and Outcome

Nicholas B. Frisch, MD, MBA, Minneapolis, MN Andrew M. Pepper, MD, Detroit, MI Touf c R. Jildeh, BS, Mason, MI Jonathan Shaw, B.S., Royal Oak, MI Edward Peterson, PhD, Detroit, MI Stuart T. Guthrie, MD, Detroit, MI Craig Silverton, DO, Detroit, MI

Intraoperative normothermia is a goal for hip fractures, but little supporting evidence exists. We evaluate the incidence of and outcomes associated with intraoperative hypothermia in hip fracture.

Discussion – 6 Minutes

## PAPER PRESENTATION

## 4:00 PM — 6:00 PM Room W315

### Spine III: Basic Science, Biomechanics, Biologics

Moderator(s): Franklin T. Wetzel, MD, Wilmington, DE, Robert V. Dawe, MD, Fairf eld, CT

#### 4:00 PM

### Superiority of Human Mesenchymal Stem Cells Derived from Facet Joint and Interspinous Ligament

Sittisak Honsawek, MD, PhD, Bangkok, Thailand Worawat Limthongkul, MD, Bangkok, Thailand Wicharn Yingsakmongkol, MD, Bangkok, Thailand

Human mesenchymal stem cells derived from facet joint and interspinous ligament could serve as potential sources of mesenchymal stem cells for tissue engineering and clinical applications.

## 4:06 PM

# ◆ Local Insulin Application has a Dose-Dependent Effect on Lumbar Fusion in a Rabbit Model

Michael Vives, MD, Mendham, NJ J. P. O'Connor, PhD, Newark, NJ Sangeeta Subramanian, BS, Newark, NJ Jessica Cottrell, PhD, South Orange, NJ Saad Chaudhary, MD, New York, NY Neel P. Shah, MD, Newark, NJ William Munoz III, MD, Summit, NJ Sheldon S. Lin, MD, Newark, NJ

This preliminary study demonstrates the potential role of local insulin as a bone graft enhancer using a validated rabbit model.

#### 4:12 PM

#### Reducing Rod Breakage and Pseudarthrosis in PSO: The Importance of Rod Number and Conf guration in 264 patients

Munish C. Gupta, MD, Sacramento, CA Jensen Henry, BA, New York, NY Virginie Lafage, PhD, New York, NY Vedat Deviren, MD, San Francisco, CA Robert A. Hart, MD, Portland, OR Richard A. Hostin, MD, Westlake Village, CA Gregory M. Mundis, MD, San Diego, CA Han Jo Kim, MD, New York, NY International Spine Study Group, Brighton, CO

Utilization of 3-4 rod constructs in satellite orientations reduced the risk of failures (rod breakage/revision for pseudarthrosis) in 264 patients after pedicle subtraction osteotomy.

Discussion – 6 Minutes

#### 4:24 PM

#### Molecular And Cellular Changes in Vertebral Bone Marrow Lesions

Stefan Dudli, PhD, San Francisco, CA David Sing, San Francisco, CA Serena S. Hu, MD, Redwood City, CA Shane Burch, MD, San Anselmo, CA Jeffrey C. Lotz, PhD, San Francisco, CA

Bone marrow and disc tissue samples from patients undergoing spine fusion were analyzed. Vertebral bone marrow lesions are associated with pro-inf ammatory activity and dysregulated myelopoeisis.

#### 4:30 PM

#### Would Resting a Lateral Interbody Cage Across the Ring Apophysis in the Lumbar Spine Mitigate Endplate Violation?

Joseph M. Zavatsky, MD, New Orleans, LA Bradford S. Waddell, MD, New Orleans, LA Brandon Cook, MD, New Orleans, LA David Briski, MD, Jefferson, LA

Lateral lumbar interbody fusion has increased in popularity because of its biomechanical and complication related advantages over the anterior and posterior interbody surgical approaches.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 452

Paper 453

Paper 454

#### 4:36 PM

#### Paper 456

## The Risk of Cancer with the Use of Recombinant Human Bone Morphogenetic Protein in Spine Fusion: a Cohort Study

Joseph R. Dettori, Steilacoom, WA Jens R. Chapman, MD, Seattle, WA John G. Devine, MD, Augusta, GA Robert A. McGuire Jr, MD, Jackson, MS Daniel Norvell, PT, Tacoma, WA Noel S. Weiss, MD, Seattle, WA

16 914 patients had spine fusion, of whom 4246 received rhBMP over an eight year period. The incidence rate of cancer was similar between the rhBMP and no rhBMP groups.

Discussion – 6 Minutes

#### 4:48 PM

Paper 457

Sagittal Correction Using Lateral Approach: Effect of Cage Angle & Technique on Segmental Lordosis

Rojeh Melikian, MD, Atlanta, GA S T. Yoon, MD, PhD, Atlanta, GA Jin Young Kim, MD, Atlanta, GA Kun Young Park, MD, Daejeon, Republic of Korea Caroline Yoon, Decatur, GA William C. Hutton, DSC, Atlanta, GA

ALL release &  $30^{\circ}$  cage placement through the lateral approach can achieve a  $10.5^{\circ}$  gain in segmental lordosis. This can be further increased to  $26^{\circ}$  if combined with posterior element resection.

#### 4:54 PM

#### Paper 458

# Effects Of Radiation On Spinal Dura Mater And Surrounding Tissue In Mice

Noriaki Yokogawa, MD, Kanazawa, Japan Hideki Murakami, MD, Kanazawa, Japan Satoru Demura, MD, Kanazawa, Japan Satoshi Kato, MD, Kanazawa, Japan Katsuhito Yoshioka, MD, Kanazawa, Japan Moriyuki Fujii, MD, Kanazawa, Japan Takashi Igarashi, MD, Kanazawa, Japan Noritaka Yonezawa, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Spinal epidural f brosis and thinning of the arachnoid barrier cell layer were observed in the late stages after high-dose irradiation to murine spine.

#### 5:00 PM

### Novel Virtual Modeling of Alignment Following ASD Surgery and Proximal Junctional Kyphosis

Renaud Lafage, New York, NY Robert S. Bess, MD, Castle Rock, CO Christopher Ames, MD, San Francisco, CA Steven D. Glassman, MD, Louisville, KY Han Jo Kim, MD, New York, NY Breton G. Line, BS, Denver, CO Frank J. Schwab, MD, New York, NY Virginie Lafage, PhD, New York, NY International Spine Study Group, Brighton, CO

A novel model, using pre-operative and postoperative alignment was developed and used to compare patient with and without PJK. Comparison reveals a signif cant difference in global alignment.

#### Discussion – 6 Minutes

## 5:12 PM

#### Evaluation of Vancomycin Powder on Bone Healing in a Rat Arthrodesis Model

Marco Mendoza, MD, Chicago, IL Abhishek Kannan, BS, Altamonte Springs, FL Kevin Sonn, MD, Chicago, IL Sharath Bellary, MD, West Orange, NJ Sean M. Mitchell, Chicago, IL Gurmit Singh, BS, North Chicago, IL Stuart R. Stock, PhD, Chicago, IL Erin L. Hsu, PhD, Chicago, IL Wellington K. Hsu, MD, Chicago, IL

This rat posterolateral arthrodesis model demonstrates that vancomycin does not inhibit new bone formation or fusion rates at an equivalent wt% dose or a dose ten-fold higher.

## 5:18 PM

◆ Very Low-dose BMP in a Nanocrystalline Calcium-Phosphate Putty Leads to High Lumbar Interbody Fusion Rate at 1 year Brian Kwon, MD, Boston, MA David H. Kim, MD, Wellesley, MA

Use of very low-dose BMP combined in a nanocrystalline calcium-phosphate putty leads to 98% lumbar interbody fusion rate at 1 year assessed by CT scans. This novel combination warrants further study.

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Paper 461

Paper 459

#### 5:24 PM

The Effect Of Severity Of Illness On Spine Surgery Costs Across New York State Hospitals

Ian Kaye, MD, New York, NY Lorraine Hutzler, BA, New York, NY Joseph A. Bosco III, MD, New York, NY

The greater cost and variability of spine surgery for patients with increased severity of illness illustrates the inherent unpredictability in cost forecasting and budgeting for these patients.

Discussion – 6 Minutes

#### 5:36 PM

Paper 463

Paper 462

"Smart" Coatings: A Novel Implant Coating to Deliver Antibiotics Through An Active Trigger Mechanism

Erik Dworsky, MD, Santa Monica, CA Nicholas Bernthal, MD, Venice, CA Alexandra Stavrakis, MD, Los Angeles, CA Amanda Loftin, Santa Monica, CA Sherif Richman, Los Angeles, CA Yan Hu, Los Angeles, CA Anthony A Scaduto, MD, Los Angeles, CA

Polyethylene glycol-polypropylene sulf de is an optimal coating vehicle to deliver antibiotics in the setting of spinal implants.

#### 5:42 PM

Paper 464

## Polishing Less a Factor in Cell Adhesion than Roughness of Titanium Plasma Spray Coatings on PEEK

Byung Jo Yoon, New York, NY Frank P. Cammisa Jr, MD, New York, NY Celeste Abjornson, PhD, New York, NY

The purpose of the study is to determine whether different polishing methods have a greater effect than roughness/ topography in mediating cell adhesion to the surface.

## 5:48 PM

Paper 465

#### Is Pre-Operative Fibrinogen Associated with Total Blood Loss in Adolescent Idiopathic Scoliosis (AIS) Correction? Matthew J. Geck, MD, Austin, TX

Devender Singh, PhD, Austin, TX Eeric Truumees, MD, Austin, TX

Bleeding is associated with higher morbidity and costs of care. We report the association between f brinogen, bleeding and transfusion requirements in Adolescent Idiopathic Scoliosis corrections.

Discussion – 6 Minutes

## INSTRUCTIONAL COURSE LECTURE

#### 4:30 PM — 5:30 PM



W209B

## 2 Writing an Abstract that Gets Accepted

Moderator: Guido Marra, MD, Chicago, IL Stefano A. Bini, MD, Piedmont, CA Joaquin Sanchez-Sotelo, MD, Rochester, MN

Understand the abstract submission and review process to increase the likelihood of acceptance. Learn how to write an abstract that is focused, concise, and clear so that your message is heard by reviewers.

#### **Symposium**

8:00 AM — 10:00 AM Valencia Room A



## Challenges and Controversies in Total Hip Arthroplasty in 2016 (P)

Moderator: Daniel J. Berry, MD, Rochester, MN

This symposium focuses on major current controversies and challenges in primary hip arthroplasty in 2016. For each topic, the moderator provides a brief evidencebasedcommentary on the main treatment options andleads a discussion with the whole panel to provide the audience with a broader perspective of the prevailing opinions about optimal management.

- I. Ceramic Heads for Everyone John J. Callaghan, MD, Iowa City, IA
- II. Use Direct Anterior Approach / Strict Adherence to Weight Loss Before THA William J. Hozack, MD, Philadelphia, PA
- III. Individualize When to Offer Operative Management *William A. Jiranek, MD, Richmond, VA*
- IV. Use Cemented Femoral Fixation in Elderly Patients David G. Lewallen, MD, Rochester, MN
- V. Use Cross-Linked PE Jay R. Lieberman, MD, Los Angeles, CA
- VI. Individualize use of Co-Cr vs Ceramic Heads Steven J. MacDonald, MD, London, ON, Canada
- VII. Use Uncemented Femoral Fixation in Elderly Patients William J. Maloney, MD, Redwood City, CA
- VIII. Use Dual Mobility Implant Douglas E. Padgett, MD, New York, NY
- IX. Use Posterior Approach Mark W. Pagnano, MD, Rochester, MN
- X. Use Large Diameter Fixed Head Harry E. Rubash, MD, Boston, MA
- XI. Use Ceramic-Ceramic Robert T. Trousdale, MD, Rochester, MN

## **Symposium**

8:00 AM — 10:00 AM Valencia Room B

# The Treatment of Periprosthetic Fractures in 2016: Can We Reach a Consensus? (Q) Orthopaedic Trauma Society

Moderator: Emil H. Schemitsch, MD, Toronto, ON, Canada

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Periprosthetic fractures are increasing in frequency and complexity as the number of patients with a joint replacement, and their activity levels post-surgery, steadily rise. The failure rate of operative intervention remains higher than that seen with other fractures andthere remains signif cant room for improvement in the care of these injuries. A primary goal of the symposium is to achieve consensus opinions on many current issues and controversies regarding the treatment of periprosthetic fractures.

- I. How to Deal with a Periprosthetic Fracture of the Proximal Femur and a Loose Femoral Stem George J. Haidukewych, MD, Orlando, FL
- II. Periprosthetic Fractures of the Upper Extremity: Current Concepts in Management *Michael D. McKee, MD, Toronto, ON, Canada*
- III. Fixation strategies for Periprosthetic Fractures of the Proximal Femur with a Stable Implant *Aaron Nauth, MD, Toronto, ON, Canada*
- IV. IM Nail Versus Locked Plate for Periprosthetic Distal Femur Fractures William M. Ricci, MD, St Louis, MO
- V. The Role of Revision TKA Andrew H. Schmidt, MD, Minneapolis, MN

## INSTRUCTIONAL COURSE LECTURE

#### 8:00 AM — 9:00 AM



## Shared Decision Making and Informed Consent: Understanding the Goals and the Responsibility of the Orthopaedic Surgeon

Room W209A Moderator: Paul Levin, MD, Bronx, NY Kevin J. Bozic, MD, MBA, Austin, TX Hassan R. Mir, MD, MBA, Nashville, TN

Complicated clinical, cultural, and social presentations frequently create medical uncertainty. Understanding the core biomedical principles of patient care and shared decision making can successfully assist the physician in resolving personal conficts in the care of these patients.

## **INSTRUCTIONAL COURSE LECTURE**

## 8:00 AM - 10:00 AM

301

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Room

W314

TICKET

C	Complex Revision Total Hip Arthroplasty:
ŀ	An Advanced Course
1	Moderator: Bassam A. Masri, MD, FRCSC, Vancouver,
ł	3C, Canada
(	Clive P. Duncan, MD, MSc, Vancouver, BC, Canada
ł	Richard W. McCalden, MD, London, ON, Canada
1	Douglas E. Padgett, MD, New York, NY
I	Wayne G. Paprosky, MD, Winf eld, IL
ι	Itilizing audience response and video, the
f	acultydemonstrates revision total hip arthroplasty

facultydemonstrates revision total hip arthroplasty techniques stressing planning and exposure, reconstruction of bone loss, and treating dislocations.



#### **Revision Total Knee Arthroplasty: Planning and** Performance (Video Technique)

Moderator: Peter F. Sharkey, MD, Media, PA Michael Dunbar, MD, Halifax, NS, Canada Ormonde M. Mahoney, MD, Athens, GA Emmanuel Thienpont, MD, Asse, Belgium

Addresses the issue of major bone def ciency during knee revision surgery. Options for handling this problem are discussed. Traducción simultánea en español. Tradução simultânea em português.

303
TICKET

Room

W308C

## **Osteotomy and Arthrodesis of the Forefoot and Hindfoot**

Moderator: Kenneth Hunt, MD, Aurora, CO Samuel B. Adams, MD, Durham, NC Scott Ellis, MD, New York, NY Andrew R. Hsu, MD, Huntersville, NC

This course reviews common surgical techniques forcorrection of hallux valgus and hindfoot arthrodesis.

304 **Differentiating Cervical Spine and Shoulder Pathology: Common Disorders and Key Points of Evaluation and** TICKET Treatment Room

Moderator: Clinton J. Devin, MD, Nashville, TN W307C Charles L. Cox III, MD, Nashville, TN Thomas R. Duquin, MD, Buffalo, NY Wellington K. Hsu, MD, Chicago, IL

> Provides information to differentiate cervical spine and shoulder pathology and reviews common disorders and key points of evaluation and treatment.

#### Ulnar Sided Wrist Pain: Where Do I Start?

Moderator: Sanjeev Kakar. MD. Rochester. MN TICKET Brian D. Adams, MD, Houston, TX William B. Geissler, MD, Jackson, MS A. Lee Osterman, MD, Villanova, PA

> Overview of pathophysiology and provides an evidencebased approach toward management of ulnar sided wrist pain. The panel reviews the treatment options available for conditions such as distal radioulnar joint arthritis and instability, triangular f brocartilage complex disruption, and ulnar impaction.

#### 306 **Hospital Alignment Strategies**

TICKET

Room

W310

305

Room

W204

Moderator: John Cherf, MD, MBA, Chicago, IL James M. Daniel JR, JD, MBA, Glen Allen, VA Debra O'Connor, DO, Downers Grove, IL

Rapid strategic change is being driven by dynamic shifts in f nancial incentives, the competitive marketplace, quality measurement, proposed health reform, lifestyle concerns, and a changing social compact between hospitals and physicians. Discussion of new models emerging to successfully align interests.

307 TICKET

Room

W205B

#### **Management of Glenoid Bone Loss in Primary and Revision Shoulder Arthroplasty**

Moderator: Thomas (Quin) Throckmorton, MD, Germantown, TN

George S. Athwal, MD, London, ON, Canada Joseph P. Iannotti, MD, PhD, Cleveland, OH John W. Sperling, MD, MBA, Rochester, MN

Focuses on management of glenoid bone loss in shoulder arthroplasty. The key points of glenoid pathoanatomy and their applications to preoperative planning are discussed. Glenoid bone grafting techniques, custom targeting guides, and their outcomes also are covered. The goal is to understand and apply the tools that are available to treat glenoid defects.



Room

W203

#### **Elbow Arthroplasty: Lessons Learned from the Past and Directions for the Future**

Moderator: Joaquin Sanchez-Sotelo, MD, Rochester, MN Theodore A. Blaine, MD, New Haven, CT Graham J. King, MD, London, ON, Canada Mark E. Morrey, MD, Rochester, MN

Reviews current standards on elbow arthroplastyincluding patient selection, exposure, implant selection, surgical technique, and postoperative management; and provides an evidence-based approach to current literature on elbow arthroplasty. Present and future improvements in implant design and surgical technique are discussed as well.

#### **\$**309 Modern Techniques in the Treatment of Patients with **Metastatic Spine Disease** TICKET

Moderator: Rex A. Marco, MD, Houston, TX Justin E. Bird, MD, Houston, TX Peter S. Rose, MD, Rochester, MN Joseph H. Schwab, MD, Boston, MA

Focuses on which patients with spinal metastaticdisease may benef t from surgery vs. radiation therapy. In addition, advanced spine surgical techniques are presented.



Room

W300

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Room

W209B

Room

W307A

## **Avoiding and Managing Complications in Cervical Spine Surgery**

Moderator: Joon Y. Lee, MD, Pittsburgh, PA Darrel S. Brodke, MD, Salt Lake City, UT Mark F. Kurd, MD, Bryn Mawr, PA Moe R. Lim, MD, Chapel Hill, NC

Management of common complications such asdysphasia and dysphonia and more complex onessuch as vertebral artery injuries, adjacent leveldisease, inadequate decompression, and fusion-related complications are discussed.

#### **CD16** Maintenance of Certif cation: Do's and Don'ts and **Case List Review: Preparation for Your Recertif cation** Exam

Moderator: Shepard R. Hurwitz, MD, Chapel Hill, NC David F. Martin, MD, Winston Salem, NC Ellen Moore, Rosemont, IL Terrance Peabody, MD, Chicago, IL

The American Board of Orthopaedic Surgery's Maintenance of Certif cation (MOC) process requires diplomates to pursue a series of educational activities throughout their career, in 10-year cycles, to maintain Board certif cation. Based on your preferences, theAcademy's Learning Portfolio helps you track CME credits you have earned through Academy programs.

**\***381 TICKET

Room

W207

## **Management of Infected Total Joint Arthroplasty in** 2016 - Where Do We Stand Now?

Moderator: Thomas K. Fehring, MD, Charlotte, NC Brian M. Curtin, MD, Charlotte, NC Craig J. Della Valle, MD, Chicago, IL Mark G. Freeman, MD, Chattanooga, TN Kevin L. Garvin, MD, Omaha, NE Thorsten Gehrke, MD, Hamburg, Germany Arlen D. Hanssen, MD, Rochester, MN William A. Jiranek, MD, Richmond, VA Javad Parvizi, MD, FRCS, Philadelphia, PA Bryan D. Springer, MD, Charlotte, NC Louis S. Stryker, MD, San Antonio, TX

As the number of total joints performed increasesexponentially, so too will the infection burden. This course helps all arthroplasty surgeons become well versed in the diagnosis and management of patients with a periprosthetic infection through a case-based format.

382

TICKET

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Room

W208

## **Adolescent Hip Pain: A Frequent Complaint**

Moderator: Ira Zaltz, MD, Royal Oak, MI Asheesh Bedi, MD, Ann Arbor, MI Pablo Castaneda, MD, Mexico, Mexico John J. Christoforetti, MD, Pittsburgh, PA Christopher Cook, MD, Rochester, NY Reinhold Ganz, MD, Guemligen, Switzerland Brian D. Giordano, MD. Pittsford, NY Michael Millis, MD, Boston, MA Eduardo N. Novais, MD, Aurora, CO Wudbhav N. Sankar, MD, Wynnewood, PA Klaus Siebenrock, MD, Bern, Switzerland Ernest L. Sink, MD, New York, NY

Moritz Tannast, MD, Bern, Switzerland

The f eld of hip preserving surgery has expandedtremendously as adolescents are concentrating on specif c activities with increased intensity. The approach to evaluating and managing patients in this age group has changed with the advent of newer technical approaches that are used to alter skeletal structure and to repair chondral tissue. This course explores the current evaluation and management strategies for adolescent patients with hip pain.

## **INSTRUCTIONAL COURSE LECTURE**

## 8:00 AM - 12:00 PM

TICKET

#### 390 TeamSTEPPS

Moderator: Harpal S. Khanuja, MD, Cockeysville, MD

Dwight W. Burney III, MD, Albuquerque, NM

Room Mary I. O'Connor, MD, New Haven, CT W303B William J. Robb III, MD, Winnetka, IL Kristy L. Weber, MD, Philadelphia, PA

> TeamSTEPPS is an evidence-based team building and communication program designed to enhance patientsafety and eff ciency in health care. Gives members of the healthcare team the tools to help lead highly effective medical teams. Team members increase team awareness and clarify team roles and responsibilities to produce a functional unit based on patient care; and learn to resolve conficts and improve information sharing to helpeliminate barriers to quality and safety.

## **PAPER PRESENTATION**

8:00 AM — 10:00 AM Valencia Room D

## Adult Reconstruction Knee V: Revision TKA/Basic Science

Moderator(s): David Backstein, MD, Toronto, ON, Canada, Simon Mears, MD, Little Rock, AR

#### 8:00 AM

#### Paper 466 **Effectiveness Of Anti-oxidant Polyethylene: What Early Retrievals Can Tell Us**

Barbara H. Currier, MChE, Hanover, NH John H. Currier, MS, Hanover, NH Michael B. Mayor, MD, Lebanon, NH Rayna Levine, BA, Hanover, NH Lindsay A. Holdcroft, BA, Hanover, NH Douglas Van Citters, PhD, Hanover, NH

Antioxidant polyethylene tibial retrievals show superior oxidation resistance to conventional gamma-inert inserts. Material toughness varies with the irradiation dose used to produce the material.

## 8:06 AM

#### **Oxidation And Property Changes Of A Remelted Highly Cross**linked UHMWPE In Retrieved Tibial Bearings

Steven D. Reinitz, PhD, Hanover, NH Barbara H. Currier, MChE, Hanover, NH Rayna Levine, BA, Hanover, NH Michael B. Mayor, MD, Lebanon, NH Douglas Van Citters, PhD, Hanover, NH

Remelted tibial components exhibit increased oxidation with in vivo time and decreased cross-link density with increased oxidation. A subsurface white zone was found in one bearing.

## 8:12 AM

## **Bearing Surface Corrosion and Damage Mechanisms in Retrieved Total Knee Arthroplasty Femoral Components**

Christina M. Arnholt, Philadelphia, PA Daniel MacDonald, Philadelphia, PA Sevi Kocagoz, BS, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA Harold E. Cates Jr, MD, Knoxville, TN Gregg R. Klein, MD, Paramus, NJ Clare M. Rimnac, PhD, Cleveland, OH Steven M. Kurtz, PhD, Philadelphia, PA

The purpose of this study was to investigate the prevalence and morphology of damage (3rd body scratches and ICIC) at the bearing surface in retrieved TKA femoral components.

Discussion – 6 Minutes

#### 8:24 AM

## Comparison Of Tibial Insert Polyethylene Damage In Rotating **Hinge And Constrained Revision Tka: Retrieval Analysis**

Paper 469

Paper 470

Paper 471

Paper 472

Kamal Bali, MD, Hamilton, ON, Canada Douglas Naudie, MD, FRCSC, London, ON, Canada Richard W. McCalden, MD, London, ON, Canada Iames Howard, MD, London, ON, Canada Steven J. MacDonald, MD, London, ON, Canada Matthew G. Teeter, PhD, London, ON, Canada

Retrieval analysis comparing 19 tibial inserts each from rotating hinge (RH) and highly constrained (HC) implants showed greater post damage in HC group while greater backside damage in RH group.

#### 8:30 AM

#### **Results of Contemporary Rotating Hinge Total Knee Arthroplasties**

Umberto Cottino, Pecetto Torinese, Italy Matthew P. Abdel, MD, Rochester, MN David G. Lewallen, MD, Rochester, MN Arlen D. Hanssen, MD, Rochester, MN

Contemporary rotating hinge TKAs demonstrate survivorship of 94% at 10 years, in association with concerted efforts at achieving improved metaphyseal f xation, especially in major defects

### 8.36 AM

Paper 467

Paper 468

## The Survival of Constrained and Hinged Prostheses in Primary and Revision TKR - Analysis of 3237 Cases

Benjamin Parkinson, MBBS, FRACS, Edge Hill, Australia Victoria N. Gibbs, BA (Oxon), London, United Kingdom Nick A. Smith, MBBS, West Midlands, United Kingdom Peter L. Lewis, MB, Adelaide, Australia Michelle Lorimer, Adelaide, Australia

The survival rates of varus/valgus constrained and hinge knee prostheses are similar when matched by age or diagnosis.

Discussion – 6 Minutes

#### 8:48 AM

#### **Contemporary Failure Mechanisms after TKA: Arthrof brosis & Chronic Infection Continue the Charge**

Matthew P. Abdel, MD, Rochester, MN Ajdin Kobic, B.S., Rochester, MN Arlen D. Hanssen, MD, Rochester, MN

When analyzing contemporary TKA, the reoperation rate was 4% and the revision rate was 2%. Arthrof brosis & chronic infection are the most common reasons for reoperation and revision, respectively.

Thursday

#### 8:54 AM

Paper 473

# Catastrophic Varus Collapse of the Tibia in Obese Total Knee Patients

Thomas K. Fehring, MD, Charlotte, NC Keith Fehring, MD, Rochester, MN Bryan D. Springer, MD, Charlotte, NC

Obesity coupled with a small proximal tibia can lead to varus tibial collapse; weight optimization or a large tibial stem should be used if the cancellous threshold of 300,000 pascals is exceeded.

#### 9:00 AM

#### Paper 474

#### Perioperative Complications and Length of Stay after Aseptic Revision Total Hip and Knee Arthroplasty

Emmanouil Liodakis, MD, Hannover, Germany Stephane Bergeron, MD, kirkland, QC, Canada David Zukor, MD, Montreal, QC, Canada Olga Huk, MD, Westmount, QC, Canada Laura M. Epure, Montreal, QC, Canada John Antoniou, MD, FRCSC, Montreal, QC, Canada

Multivariable analysis showed that anemia is an important modif able independent predictor for both major complications and prolonged hospital stay after Revision Hip and Knee Arthroplasties.

Discussion – 6 Minutes

#### 9:12 AM

### Paper 475

Malnutrition Predicts Periprosthetic Joint Infection in Revision Total Joint Arthroplasty

Daniel D. Bohl, MD, MPH, Chicago, IL Mary Shen, BS, MS, Chapel Hill, NC Erdan Kayupov, Troy, MI Gregory L. Cvetanovich, MD, Chicago, IL Craig J. Della Valle, MD, Chicago, IL

Patients undergoing revision TJA for a septic indication were over 3 times more likely to be malnourished compared with patients undergoing revision for an aseptic indication.

#### 9:18 AM

#### Paper 476

### Inf uence of Fixation Type on Stability and Bone Mineral Density around Tibial Component in Total Knee Replacement

Nils O. Nivbrant, MBBS, East Perth, Australia Riaz Khan, FRCS, Cottesloe, Australia Daniel P. Fick, MBBS, FRACS, Nedlands, Australia Samantha Haebich, Scarborough, Australia Ewan Smith, MBBS, Perth, Australia

This randomised clinical study compares how cemented or uncemented tibial f xation impacts on stability, bone remodeling and clinical outcomes in 84 posterior stabilised Total Knee Replacements (TKRs)

#### 9:24 AM

#### Paper 477

Paper 478

Paper 479

Paper 480

# Racial Differences in Total Knee Arthroplasty Revision Incidence and Burden in a National Private Payer Database

Martin W. Roche, MD, Fort Lauderdale, FL Tsun Yee Law, MD, Kaohsiung, Taiwan Kevin Wang, MD, Fort Lauderdale, FL Samuel Rosas, MD, Fort Lauderdale, FL

This study investigates the risk of total knee arthroplasty complications stratif ed by race.

Discussion – 6 Minutes

#### 9:36 AM

# Quantifying and Predicting Surgeon Work Effort for Primary and Revision Total Knee Arthroplasty

Kevin Bunn, MD, Myrtle Beach, SC Mark J. Isaacson, DO, Ankeny, IA Philip C. Noble, PhD, Houston, TX Stephen J. Incavo, MD, Houston, TX

Surgeon operative work effort is at least 50% greater for revision than primary TKA.

## 9:42 AM

# Diagnostics Of Painful Total Knee Arthroplasty- Is There A Role For Spect/ct?

Michael T. Hirschmann, MD, Bruderholz, Switzerland Felix Amsler, MSc, Bruderholz, Switzerland Helmut Rasch, MD, Bruderholz, Switzerland

Prospective study investigating the clinical value of SPECT/CT for diagnostics of 100 painful knees after total knee arthroplasty.

#### 9:48 AM

#### Outpatient Total Joint Replacement: Is It Safe? Evaluation of Complications and Readmission Rates

Jesse E. Otero, MD, Iowa City, IA Andrew J. Pugely, MD, Coralville, IA Nicholas Bedard, MD, Iowa City, IA Yubo Gao, PhD, Iowa City, IA Christopher T. Martin, MD, Coralville, IA Nicolas O. Noiseux, MD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

With the selection bias utilized at the hospitals submitting TJA data to NSQIP, 30-day complication and readmission rates were at least comparable for outpatient surgery as for admitted patients.

Discussion – 6 Minutes

## **PAPER PRESENTATION**

8:00 AM — 10:00 AM W304A

### Hand & Wrist III

Moderator(s): Joshua M. Abzug, MD, Timonium, MD, Jeffrey A. Greenberg, MD, Indianapolis, IN

#### 8:00 AM

#### Paper 481

#### Ulnar Shortening Osteotomy: Is it Necessary to Create Ulnar **Neutral Variance?**

Joel V. Ferreira, MA, MD, Altoona, PA Loukia K. Papatheodorou, MD, Larissa, Greece Mark E. Baratz, MD, Bethel Park, PA Robert W. Weiser, PA-C, Pittsburgh, PA Dean G. Sotereanos, MD, Pittsburgh, PA

Step-cut ulnar shortening osteotomy of only 2-3 mm is an effective technique for ulnar impaction syndrome; diminishing DRUJ articular incongruity and subsequent development of DRUJ arthritis.

#### 8:06 AM

#### Paper 482

Paper 483

Surgical Treatment for Lateral Epicondylitis: A Meta-analysis of **Open, Arthroscopic, and Percutaneous Techniques** 

Andrew J. Riff, MD, Chicago, IL Bryan M. Saltzman, MD, Chicago, IL Gregory L. Cvetanovich, MD, Chicago, IL Jonathan M. Frank, MD, Chicago, IL Robert W. Wysocki Jr, MD, Chicago, IL

A meta-analysis of recent literature on open, arthroscopic, and percutaneous surgery for lateral epicondylitis reveals that open debridement is most likely to achieve a pain-free long-term outcome.

#### 8:12 AM

## **Result of Revision Ligament Reconstruction Tendon** Interposition for the Thumb Carpometacarpal Joint

Anita Sadhu, MD, Saint Louis, MO Andre K. Guthrie, BS, Saint Louis, MO Lindley B. Wall, MD, Saint Louis, MO

In a case-controlled study, revision LRTI yielded worse clinical outcomes compared to a matched primary LRTI cohort and did not reveal signif cant perceived improvement from the prerevision state.

#### Discussion – 6 Minutes

#### 8:24 AM

## Do Pre-Operative Antibiotics Reduce Bacterial Culture Growth from Hand Abscesses?

Arianna Trionfo, MD, Philadelphia, PA Joseph J. Thoder, MD, Philadelphia, PA Richard J. Tosti, MD, Philadelphia, PA

A retrospective review of the effect of preoperative antibiotics on acute hand abscesses.

### 8:30 AM

#### The Role of First Metacarpal Osteotomy in the Management of **Basilar Thumb Arthritis**

Megan Meislin, MD, Chicago, IL Maureen A. O'Shaughnessy, MD, Rochester, MN Marco Rizzo, MD, Rochester, MN

Retrospective review of metacarpal osteotomy as a reliable surgical technique for basilar thumb arthritis in early and late stages, outlining functional outcomes based on preoperative indication.

#### 8:36 AM

#### **Time Between Steroid Injections For Trigger Finger Predicts the Increased Need For Surgical Release**

Charles Ekstein, MD, Brooklyn, NY Kate W. Nellans, MD, Great Neck, NY Sara Merwin, MPH, New Hyde Park, NY Lewis B. Lane, MD, Sands Point, NY Sara Merwin, MPH, New Hyde Park, NY

Retrospective chart review of 95 patients with 2 or more injections for a single trigger f nger showed a trend towards increased risk of surgery for those who had an early recurrence of triggering.

Discussion – 6 Minutes

#### 8:48 AM

#### Paper 487 A 40 year Experience Evaluating Factors Contributing to Aseptic **Distal Loosening in Total Wrist Arthroplasty**

Eric R. Wagner, MD, Rochester, MN Kapil Mehrotra, MD, Rochester, MN Marco Rizzo, MD, Rochester, MN

Distal loosening remains a relatively common long-term complication of total wrist arthroplasty, with certain historical implant designs increasing the risk of this complication.

## 8:54 AM

### Predicting Failure and Complications in TWA; review of a 40-year experience

Eric R. Wagner, MD, Rochester, MN Kapil Mehrotra, MD, Rochester, MN Marco Rizzo, MD, Rochester, MN

This series demonstrates a 74% 10-year and 63% 20-year implant survival after total wrist arthroplasty, with worse outcomes associated with the Meuli, Universal, and Biax implants.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

#### Paper 484

Paper 485

Paper 486

#### 9:00 AM

#### Paper 489

## Proximal Interphalangeal Joint Arthroplasty for Inf ammatory Arthritis; an implant comparison analysis

Eric R. Wagner, MD, Rochester, MN Matthew Houdek, MD, Rochester, MN Robert Van Demark, MD, Rochester, MN Steven L. Moran, MD, Rochester, MN Marco Rizzo, MD, Rochester, MN

Overall, utilizing any of the 3 common total joint arthroplasty implants (pyrocarbon, SRA, or silicone) to treat PIP arthritis showed similar implant survival, complication rates, and function.

#### Discussion – 6 Minutes

#### 9:12 AM

Paper 490

**Outcomes of a Cementless Thumb Basal Joint Hemiarthroplasty** for Treatment of Trapeziometacarpal Osteoarthritis

Patrick G. Marinello, MD, Shaker Heights, OH Mark C. Shreve, MD, New York, NY Peter J. Evans, MD, PhD, Cleveland, OH

We found poor implant survivorship and an unacceptably high rate of reoperation with the BioPro thumb basal joint hemiarthroplasty device.

#### 9:18 AM

## Paper 491

**Reconstruction Of Annular Pulleys Of The Hand Flexor Tendon** Sheath Using Flexor Digitorum Superf cialis Tendon.

Mohamed A. Quolquela SR, MD, Tanta, Egypt

The use of superf cialis tendon remnants to reconstruct annular pulleys especially A2 and A4 was proven to be easy and eff cient.

#### 9:24 AM

#### Paper 492 When are Pyrocarbon Implants Indicated in Metacarpophalangeal Arthroplasty? a longitudinal analysis of 253 cases

Eric R. Wagner, MD, Rochester, MN Matthew Houdek, MD, Rochester, MN Robert Van Demark, MD, Rochester, MN Steven L. Moran, MD, Rochester, MN Marco Rizzo, MD, Rochester, MN

MCP arthroplasty using a pyrocarbon reasonable implant survival and low complications, with worse outcomes in smokers, prior instability, and those requiring methotrexate.

Discussion – 6 Minutes

#### 9:36 AM

#### Paper 493 Arthroscopic Resection of Basal Joint Arthritis: Comparing **Isolated Carpometacarpal to Pantrapezial Disease**

Tyson K. Cobb, MD, Davenport, IA Anna L. Walden, BS, DC, Davenport, IA Ying Cao, MS, MSc, Silver Spring, MD

Minimum 4-year follow-up comparing outcomes of arthroscopic resection arthroplasty for isolated carpometacarpal to pantrapezial disease are not signif cantly different.

Paper 494

#### 9:42 AM

#### Is Health Literacy Associated with Treatment Outcome and **Satisfaction in Patients with Mallet Finger Injury?**

Young Hak Roh, Incheon, Republic of Korea Jong Ryoon Baek, Incheon, Republic of Korea Jung Ho Noh, MD, PhD, Chuncheon-Si, Republic of Korea Do Hyun Moon, Incheon, Republic of Korea Beom Koo Lee, Incheon, Republic of Korea

A limited health literacy was associated with poor compliance in splint care for a mallet f nger injury and also led to poorer treatment outcomes in terms of extensor lag and treatment satisfaction.

#### 9:48 AM

#### Paper 495 A Disease-Specif c Questionnaire for Basal Joint Arthritis

Peter Noback, BA, Alpine, NJ Joseph Lombardi, MD, New York, NY Derly O. Cuellar III, MD, University City, MO Melvin P. Rosenwasser, MD, New York, NY

A study focusing on the creation and validation of a questionnaire to specif cally compare treatments for basal-joint arthritis.

#### Discussion – 6 Minutes

## **PAPER PRESENTATION**

8:00 AM — 10:00 AM Room W404A

## Spine IV: Diagnostic/Imaging

Moderator(s): William F. Donaldson III, MD, Pittsburg, PA, Jason C. Datta, MD, Tempe, AZ

#### 8:00 AM

### Paper 496

## **Discrepancies in Planned Sagittal Alignment and Age-Adjusted** Ideals: Implications of Over- or Under-Correction

Jensen Henry, BA, New York, NY Matthew A. Spiegel, BA, Woodmere, NY Jonathan H. Oren, MD, New York, NY Isaac Gammal, BA, Brooklyn, , NY Cyrus Jalai, BA, New York, NY Themistocles Protopsaltis, MD, New York, NY Thomas J. Errico, MD, New York, NY Virginie Lafage, PhD, New York, NY International Spine Study Group, Brighton, CO

In this prospective study of surgical planning for adult spinal deformity, favorable post-operative alignment occurred when the planned alignment incorporated age-adjusted ideals.

#### 8:06 AM

Paper 497

### Utility of MRIs in Patients with Thoracolumbar Fractures

Elizabeth P. Norheim, MD, Downey, CA Steven D. Glassman, MD, Louisville, KY Erin Adams, BS, Louisville, KY Allison M. Hunter, MD, Birmingham, AL Brain G. Harbrecht, MD, Louisville, KY John R. Dimar II, MD, Louisville, KY Leah Y. Carreon, MD, Louisville, KY

The addition of MRI to CT in the initial evaluation of thoracolumbar spine injuries changed treatment in 32% of caserater pairs.

#### 8:12 AM

## Paper 498 Chain of Relaxation: How Sagittal Correction Affects Spinopelvic, Lower Limb, and Global Alignment

Jonathan H. Oren, MD, New York, NY Shaleen Vira, MD, New York, NY Barthelemy Liabaud, MD, New York, NY Bassel Diebo, MD, New York City, NY Matthew A. Spiegel, BA, Woodmere, NY Renaud Lafage, New York, NY Thomas J. Errico, MD, New York, NY Frank J. Schwab, MD, New York, NY Virginie Lafage, PhD, New York, NY

Most global correction occurs when spinopelvic mismatch changes from severe to moderate. Age-adjusted alignment targets are reached when spinopelvic mismatch is corrected to its ageadjusted target.

## 8:24 AM

## **Discrimination of Malignant and Benign Vertebral Fractures**

Tomoyuki Takigawa, MD, PhD, Okayama, Japan Masato Tanaka, MD, Okayama, Japan Yoshihisa Sugimoto, MD, Okayama, Japan Shinya Arataki, MD, PhD, Okavama, Japan Keiichiro Nishida, MD, Okayama City, Japan Toshifumi Ozaki, MD, Okayama, Japan

114 vertebral fractures were investigated to clarify benign and malignant MRI features. Combining MRI features is able to make accurate diagnosis (97.3%).

#### 8:30 AM

## A Cohort Study of Adult Spinal Deformity and Its Relation with **Hip-Knee ROM**

Mutsuya Shimizu, MD, Asahikawa, Japan Tetsuya Kobayashi, Asahikawa, Japan Shizuo Jimbo, MD, PhD, Asahikawa, Hokkaido, Japan Issei Senoo, MD, Asahikawa, Japan Hiroshi Ito, MD, Asahikawa, Japan

Hip ROM showed signif cant correlation with LL, PT and SVA among 80 community-based volunteers, and reduced hip ER by 1SD was equivalent to increased PT of 6.0° and SVA of 3.0cm.

#### 8:36 AM

Paper 501

Paper 502

Paper 499

Paper 500

## Contrast-Enhanced µCT Characterization of Cartilage Endplate **Morphology and Extracellular Matrix Composition**

Abigail Davidson, BS, Royal Oak, MI Michael D. Newton, BS, Royal Oak, MI Tristan Maerz, PhD, Royal Oak, MI Michael P. Planalp, MD, Royal Oak, MI Daniel K. Park, MD, Bloomf eld Hills, MI Kevin C. Baker, PhD, Royal Oak, MI

Application of contrast-enhanced uCT to characterize pathologic changes in morphology and extracellular matrix composition of cartilage endplates in a rodent model of degenerative disc disease.

#### Discussion – 6 Minutes

#### 8:48 AM

#### Age-adjusted Alignment Goals Have the Potential to Reduce PJK

Frank J. Schwab, MD, New York, NY Renaud Lafage, New York, NY Steven D. Glassman, MD, Louisville, KY Robert S. Bess, MD, Castle Rock, CO Robert A. Hart, MD, Portland, OR Douglas C. Burton, MD, Kansas City, KS Han Jo Kim, MD, New York, NY Virginie Lafage, PhD, New York, NY International Spine Study Group, Brighton, CO

PJK rate increased with age across independently of the correction. Comparisons on the offset versus the age-adjusted alignments demonstrate an over-correction of PI-LL and SVA on PJK patients.

#### Discussion – 6 Minutes

#### 8:54 AM

## Paper 503

## A Comparison of Ocular Radiation Exposure Utilizing Three Types of Leaded Glasses

Bradford S. Waddell, MD, New York, NY William H. Waddell, Shreveport, LA Joseph M. Zavatsky, MD, New Orleans, LA

We show leaded glasses offer signif cant reductions in radiation exposure surgeon's lens in spine surgery. Leaded glasses without lead sides and sport wraparound glasses offered the most protection.

#### 9:00 AM

Paper 504

#### Chance Fractures In The Pediatric Population Are Often Misdiagnosed And Mistreated

Lindsay M. Andras, MD, Los Angeles, CA Kira F. Skaggs Haleh Badkoobehi, MD, Los Angeles, CA Paul D. Choi, MD, Los Angeles, CA David L. Skaggs, MD, Los Angeles, CA

The majority of pediatric Chance fractures were initially misdiagnosed (71%; 5/7) or mistreated (14%; 1/7). Average time to correct diagnosis of a Chance fracture was 3 months.

Discussion – 6 Minutes

#### 9:12 AM

Paper 505

## Def ning the Role of Lower Limbs in Compensating for Sagittal Malalignment

Renaud Lafage, New York, NY Barthelemy Liabaud, MD, New York, NY Bassel Diebo, MD, New York City, NY Jonathan H. Oren, MD, New York, NY Shaleen Vira, MD, New York, NY Themistocles S. Protopsaltis, MD, New York, NY Thomas J. Errico, MD, New York, NY Frank J. Schwab, MD, New York, NY Virginie Lafage, PhD, New York, NY

Evaluation of full body xray revealed the antero-posterior translation of the pelvis to maintain T9 in line with the ankles. Lower limb compensatory mechanisms permit an increase in PT recruitment.

#### 9:18 AM

## Unlocking TPA's Clinical and Sagittal Signif cance by Analyzing Its Relation to Pelvic Tilt

Paper 506

Paper 507

Paper 508

Barthelemy Liabaud, New York, NY Renaud Lafage, New York, NY Jonathan H. Oren, MD, New York, NY Shaleen Vira, MD, Silver Spring, MD Bassel Diebo, MD, New York City, NY Themistocles S. Protopsaltis, MD, Closter, NJ Thomas J. Errico, MD, New York, NY Frank J. Schwab, MD, New York, NY Virginie Lafage, PhD, New York, NY

In order to account for compensatory mechanisms and convey both clinical and radiographic data of signif cance, the T1 Pelvic Angle (TPA) should be reported in conjunction with Pelvic Tilt (PT).

#### 9:24 AM

# High-resolution Magnetization Transfer Correlates with Cervical Stenosis in Patients with Cervical Myelopathy

Linda Suleiman, MD, Chicago, IL Kenneth A. Weber II, DC, Chicago, IL Todd B. Parrish, PhD, Chicago, IL Jason W. Savage, MD, Chicago, IL Wellington K. Hsu, MD, Chicago, IL Alpesh A. Patel, MD, River Forest, IL

Cervical spondylotic myelopathy patients demonstrated decreased MTR indicating myelin degradation compared to our healthy subjects and MTR was negatively correlated with the severity of CSM.

Discussion – 6 Minutes

#### 9:36 AM

# Reliability of Intraoperative Prone Lateral Radiographs in Predicting Postoperative Standing Sagittal Alignment

Wesley Bronson, MD, New York, NY Themistocles S. Protopsaltis, MD, New York, NY Barthelemy Liabaud, MD, New York, NY Gregory M. Mundis, MD, San Diego, CA Jeffrey Gum, MD, Louisville, KY Douglas C. Burton, MD, Kansas City, KS Frank J. Schwab, MD, New York, NY Virginie Lafage, PhD, New York, NY International Spine Study Group, Brighton, CO

A review of radiographs of 20 patients with adult spinal deformity analyzed by 7 observers showed excellent reliability in the intraoperative prediction of postoperative PI, LL, PI-LL, LPA and T9PA

#### 9:42 AM

## Epidemiological Study of Adult Spinal Deformity: Toward Standard Values For Aging Spine

Tetsuya Kobayashi, Asahikawa, Japan Mutsuya Shimizu, MD, Asahikawa, Japan Shizuo Jimbo, MD, PhD, Asahikawa, Hokkaido, Japan Issei Senoo, MD, Asahikawa, Japan Hiroshi Ito, MD, Asahikawa, Japan

A mean 11.6-year follow-up of 289 community-based female volunteers showed disproportionate changes in SSA parameters. Standard for PI-LL and PT modif er might be different among elderly patients.

## 9:48 AM

Paper 510

Paper 509

### Clinical Characteristics Of Cervical Myelopathy Complicated With Diabetic Neuropathy

Takanori Saito, MD, Moriguchi, Japan Shinichiro Taniguchi, MD, Suita-Shi, Japan

we assessed clinical characteristics and the prognosis of cervical myelopathy with diabetic neuropathy, and differential diagnosis and postoperative evaluation by electrophysiological method.

Discussion – 6 Minutes

#### PAPER PRESENTATION

8:00 AM — 10:00 AM W315

#### Tumor II: Margins/Recurrence/Prognosis

Moderator(s): Matthew R. DiCaprio, MD, Albany, NY, Jeffrey S. Kneisl, MD, Charlotte, NC

#### 8:00 AM

## Paper 511

Paper 512

The Variability in Surgical Margin Reporting in Limb Salvage Surgery for Sarcoma

Kevin Hoang, Iowa City, IA Yubo Gao, PhD, Iowa City, IA Benjamin J. Miller, MD, Iowa City, IA

A simple literature search showed several different margin classif cation systems used in sarcoma without an obvious trend toward one preferred system.

#### 8:06 AM

#### Patterns of Local Recurrence and Metastatic Progression Following Treatment of Bone Sarcomas

Cara A. Cipriano, MD, Saint Louis, MO Anthony M. Griff n, MSc, Toronto, ON, Canada Peter Ferguson, MD, Thornhill, ON, Canada Peter Ferguson, MD, Thornhill, ON, Canada Jay Wunder, MD, Toronto, ON, Canada

Following treatment of bone sarcomas, histologic grade inf uenced the timing but not incidence of local recurrence, and both the timing and incidence of distant metastasis.

## 8:12 AM

#### Paper 513

Paper 514

Paper 515

# Multi-institutional Study of a New Limb Salvage Surgery Using Aciridine Orange in Patients with Bone Sarcomas

Takao Matsubara, MD, Tsu City, Mie, Japan Katsuyuki Kusuzaki, MD, Kyoto, Japan Kyoji Okada, MD, Akita, Japan Takashi Tsuchiya, MD, PhD, Yamagata, Japan Takahiro Goto, MD, PhD, Tokyo, Japan Ryu Tsunoda, MD, PhD, Tokyo, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan Akihiko Matsumine, MD, PhD, Tsu City, Mie, Japan Akihiro Sudo, MD, Tsu City, Mie, Japan

Acridine Orange Therapy supported by photodynamic therapy, to 30 bone sarcomas as multi-institutional study, improved limb function by preserving normal tissues without local recurrence.

Discussion – 6 Minutes

#### 8:24 AM

#### Eff cacy of Fluorescence-Guided Surgery on Primary Human Osteosarcoma

Shinji Miwa, MD, Ishikawa, Japan Fuminari Uehara, MD, San Diego, CA Hiroaki Kimura, MD, PhD, Nagoya, Japan Katsuhiro Hayashi, MD, Kanazawa, Japan Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan Robert M. Hoffman, PhD, San Diego, CA Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Eff cacy of f uorescence-guided surgery was assessed in orthotopic mouse model of human osteosarcoma. This study showed that FGS signif cantly reduced the recurrence of the tumor.

## 8:30 AM

# Prognostic Signif cance of Positron Emission Tomography in Patients with Sarcoma

Tadahiko Kubo, MD, PhD, Hiroshima, Japan Jun Fujimori, MD, Hiroshima, Japan Taisuke Furuta, Hiroshima, Japan Mitsuo Ochi, MD, PhD, Hiroshima, Japan

18F-Fluorodeoxyglucose positron emission tomography/ computed tomography at diagnosis must be a very useful predictive tool for patients with soft tissue sarcoma and bone sarcoma.

Thursday

#### 8:36 AM

## Bone Scans Have Little Utility In Evaluation Of Welldifferentiated Cartilaginous Lesions Of The Humerus

Andre Samuel, New Haven, CT Izuchukwu K. Ibe, MD, New Haven, CT Gary E. Friedlaender, MD, New Haven, CT Dieter Lindskog, MD, New Haven, CT

Only 8% of enchondroma patients receiving bone scans had negative scans, allowing differentiation from malignant lesions. In addition, f ndings did not correlate with features seen on x-ray or MRI.

Discussion – 6 Minutes

#### 8:48 AM

## Paper 517

Paper 516

## Long-term Survival After Metastasectomy in Patients With Bone Metastases From Renal Cell Carcinoma

Takashi Higuchi, Kanazawa, Japan Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan Katsuhiro Hayashi, MD, Kanazawa, Japan Akihiko Takeuchi, MD, Kanazawa, Japan Shinji Miwa, MD, Ishikawa, Japan Hiroyuki Inatani, MD, Nagoya, Japan Yu Aoki, Kanazawa, Japan Kensaku Abe, MD, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

This study evaluated the long-term outcome of surgery for bone or soft tissue metastases from RCC and suggests that surgical resection is a favorable option for improving provnosis.

#### 8:54 AM

### Paper 518

Paper 519

Commercial Activity Monitor for Assessing Free-Living Pediatric Osseous Malignancy Limb Salvage

Kenneth R. Gundle, MD, Seattle, WA

In lower extremity pediatric bone cancer patients, a low-cost commercial activity monitor demonstrated validity. Measuring free-living activity may enhance patient education and treatment assessment.

#### 9:00 AM

## To Fix or Not? In-hospital Cost and Complication Analysis of Impending and Pathologic Fracture Treatment

Nicole K. Behnke, MD, Mountain Brk, AL Dustin K. Baker, BS, Birmingham, AL Thomas Niemeier, MD, Birmingham, AL Reaves M. Crabtree Jr, BA, Birmingham, AL Brent A. Ponce, MD, Birmingham, AL

Prophylactic f xation of impending pathologic fracture reduces postoperative complications and mortality relative to treatment after fracture, and differences in length of stay or cost were not seen.

Discussion – 6 Minutes

## 9:12 AM

## Resection of Bone Sarcoma using 3D Printed Guides: Improving Accuracy by Accounting for Soft Tissue

Carlos G. Helguero, MSc, Miller Place, NY Fazel Khan, MD, Stony Brook, NY David E. Komatsu, PhD, Stony Brook, NY Imin Kao, PhD, Stony Brook, NY

Exploring resection of bone Sarcomas using 3-D printed cutting guides. Improving accuracy with jigs designed to account for soft tissue coverage. Quantifying soft tissue effect during jigs positioning

## 9:18 AM

Paper 521

Paper 522

Paper 523

Paper 520

Augmented-Reality Assistance in Bone Tumor Surgery Hwan-Seong Cho, MD, Seongnam-Si, Republic of Korea Yeong Kyoon Park, Seongnam-Si, Republic of Korea Ilkyu Han, Seoul, Republic of Korea Han-Soo Kim, Seoul, Republic of Korea

We evaluated the accuracy of AR-based navigation assistance in resection of the bone tumor through a simulation of bone tumor in the pig femora.

#### 9:24 AM

## Inf uence of Fixation Method and External Beam Irradiation on the Pathway and Eff cacy of Fracture Healing

Yongren Wu, PhD, Charleston, SC Evan L. Hanna, MD, Charleston, SC Robert E. Holmes, MD, Charleston, SC William R. Barf eld, PhD, Charleston, SC Joseph Stains, PhD, Indianapolis, IN Vincent D. Pellegrini, MD, Charleston, SC

Radiographic analysis in a bilateral rat femur fracture model suggests that primary membranous ossif cation and related fracture healing is more resistant to radiation than endochondral ossif cation.

Discussion – 6 Minutes

#### 9:36 AM

## Erk Mediates Aggressive Growth And Bone Destruction In Osteolytic Metastatic Breast Cancers To Bone

Francis Y. Lee, MD, PhD, New York, NY Jungho Back, PhD, New York, NY Hyunwoo P. Kang, BS, MA, New York, NY Saqib Nizami, Staten Island, NY Danielle Stamer, Pleasant Valley, NY Jocelyn T. Compton, MD, Iowa City, IA Do Yu Soung, New York, NY Lee Song, PhD, New York, NY

We identif ed ERK as an important mediator of osteolytic metastatic breast cancer-induced bone destruction and cancer growth using human pathology specimens and in vivo mouse model. Thursday

#### 9:42 AM

#### Denosumab as Adjuvant Treatment for Giant Cell Tumor of Bone - Risks and Benef ts for the Oncologic Surgeon

Daniel A. Mueller, MD, Zürich, Switzerland Giovanni Beltrami, MD, Firenze, Italy Guido Scoccianti, Firenze, Italy Rodolfo Capanna, MD, Firenze, Italy

Denosumab facilitates the surgical treatment of giant cell tumor of bone by "downstaging" the lesion, but adapted curettage technique is necessary in order to obtain local control.

#### 9:48 AM

Paper 525

Paper 524

### The Eff cacy Of Radical Resection For Bone And Soft Tissue Metastatic Lesions Of Renal Cell Carcinoma

Takashi Higuchi, Kanazawa, Japan Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan Katsuhiro Hayashi, MD, Kanazawa, Japan Akihiko Takeuchi, MD, Kanazawa, Japan Shinji Miwa, MD, Ishikawa, Japan Hiroyuki Inatani, MD, Nagoya, Japan Yu Aoki, Kanazawa, Japan Kensaku Abe, MD, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We evaluated a long term survival after the surgery of bone and soft tissue metastatic lesion in renal cell carcinoma and radical resection is a fevorable option for improving prognosis.

#### Discussion – 6 Minutes

## **INSTRUCTIONAL COURSE LECTURE**

## 9:30 AM — 10:30 AM

#### Room W209A



 Video Production for Orthopaedic Surgeons: Getting the Award, Making the Difference

Moderator: James M. Bennett, MD, Houston, TX Shariff K. Bishai, DO, Saint Clair Shores, MI Rachel M. Frank, MD, Chicago, IL

Video is one of orthopaedic education's most widely used instructional tools. This workshop teaches you how to critically evaluate the orthopaedic technique videos you watch, and how tocreate award-winning orthopaedic videos of your own.

#### Symposium

10:30 AM — 12:30 PM Valencia Room A



Combined Multi-Ligament, Meniscus, and Cartilage Injuries of the Knee (R)

Co-Moderators: Bruce A. Levy, MD, Rochester, MN Gregory C. Fanelli, MD, Danville, PA

Uses a case-based approach to highlight currentevidence-based treatment principles for multiligament knee reconstruction, meniscal repair and transplantation, cartilage preservation, and osteotomies about the knee.

- I. FCL/PLC Reconstruction in the MLIK Joel L. Boyd, MD, Minneapolis, MN
- II. MCL/PMC Reconstruction in the MLIK Lars Engebretsen, MD, Oslo, Norway
- III. PCL Reconstruction in the MLIK Gregory C. Fanelli, MD, Danville, PA
- IV. Meniscus & Meniscus Root Repair in the MLIK Robert F. LaPrade, MD, PhD, Vail, CO
- V. Cartilage Preservation (Cell-Based) in the MLIK Peter B. MacDonald, MD, Winnipeg, MB, Canada
- VI. Osteotomies (HTO/DFO) in the MLIK Robert G. Marx, MD, New York, NY
- VII. Timing of Surgery in the MLIK Mark D. Miller, MD, Charlottesville, VA
- VIII. Cartilage Preservation (OATS/OCA) in the MLIK James P. Stannard, MD, Columbia, MO
- IX. Meniscus Transplant in the MLIK Michael J. Stuart, MD, Rochester, MN
- X. Initial Assessment of the Severely Injured Knee Daniel Whelan, MD, Toronto, ON, Canada

#### **Symposium**

10:30 AM - 12:30 PM Valencia Room B



Controversies in Geriatric Care in Orthopaedics (S) Moderator: Julie A. Switzer, MD, Saint Paul, MN

Focuses on the f nancial aspects of health reform and the implications for orthopaedic care in the elderly; on the establishment of quality measures for the provision of hip fracture care in the elderly and whether we can work as a committed whole to engineer and execute this; and on an innovative program designed to provide orthopaedic care to the

Incorporation of Fracture Liaison Services and I. Geriatric Focus Kyle J. Jeray, MD, Greenville, SC

frail elderly outside of the usual off ce setting.

II. Financial Aspects of Health Reform and Implications for Orthopaedic Care in the Elderly Stephen L. Kates, MD, Rochester, NY

## **INSTRUCTIONAL COURSE LECTURE**

## 10:30 AM - 11:30 AM



**Brushing Up on Your Test-Taking Skills** 

Moderator: Joseph A. Bosco III, MD, New York, NY

Provides tips on getting organized, planning ahead, panic strategy, staying calm, and how to apply what you have learned when taking the test.

Room W209B

## **INSTRUCTIONAL COURSE LECTURE**

### 10:30 AM - 12:30 PM

Let's Do a Direct Anterior Hip Replacement 321 (Without a Special Table) TICKET

Moderator: William J. Hozack, MD, Philadelphia, PA Kristoff Corten, MD, PhD, Genk, Belgium Michael Leunig, PhD, Zurich, Switzerland Jose A. Rodriguez, MD, New York, NY

surgical techniques for primary and revision total hip

arthroplasty using a direct anterior approach without

a special table. Tips for novices on how to shorten the learning curve are provided. Traducción simultánea en

related to the direct anterior approach as well as

español. Tradução simultânea em português.

Room W202 This is a video-based course focusing on local anatomy



Room

W314

## The Urban Legends of Total Knee Arthroplasty

Moderator: Bryan D. Springer, MD, Charlotte, NC James A. Browne, MD, Charlottesville, VA Raymond H. Kim, MD, Denver, CO J. Bohannon Mason, MD, Charlotte, NC

Focuses on evidence-based medicine as it relates to common myths and legends that continue to be practiced in total knee arthroplasty. Each speaker deals with related urban legends in the preoperative, intraoperative, and postoperative time period in an effort to provide evidence-based practice-changing guidelines for theaudience.



W300

#### Infection in Arthroplasty: The Basic Science of Bacterial Biof Ims in its Pathogenesis, Diagnosis, **Treatment and Prevention**

Moderator: Javad Parvizi, MD, FRCS, Philadelphia, PA Fares S. Haddad, FRCS, London, United Kingdom Edward M. Schwarz, PhD, Rochester, NY Mark S. Smeltzer, PhD, Little Rock, AR

Course faculty discuss the surest state of affairs with regard to orthopaedic infections and the challenge that biof lm formation presents to the orthopaedic community.



W205A

## Arthritis of the Ankle Joint: Ref ning and Expanding **Options in Management**

Moderator: Steven L. Haddad, MD, Glenview, IL J. Chris Coetzee, MD, Edina, MN Mark E. Easley, MD, Durham, NC Paul T. Fortin, MD, Royal Oak, MI

The new version of this course will provide the attendee with the entire toolkit in managing ankle arthritis. Both joint preserving and joint sacrif cing methods will be explored in depth, with signif cant use of video tips and tricks to achieve the desired patient outcome for all procedures will make the attendee a veteran in future patient consultation and decision-making.

PRP, BMP, and Stem Cells: What Surgeons Need to Know TICKET



W203

325

Moderator: Jeffrey C. Wang, MD, Sherman Oaks, CA Wellington K. Hsu, MD, Chicago, IL Thomas E. Mroz, MD, Cleveland, OH Frank Petrigliano, MD, Santa Monica, CA

Discusses the most important biologics in orthopaedic surgery, including growth factors, cell therapy, and pharmacologics to promote bone and soft tissue healing.



W205B

#### Venturing into the Overlap Between Pediatric **Orthopaedics and Hand Surgery**

Moderator: Joshua M. Abzug, MD, Timonium, MD Andrea S. Bauer, MD, Boston, MA Michael S. Bednar, MD, Maywood, IL Christine A. Ho, MD, Dallas, TX

The management of pediatric upper limb fractures.congenital syndromes, and other conditions arepresented in a case-based manner. Detailed discussion regarding pearls and pitfalls of treatment, avoiding the potential complications, as well as managing them, can aid the orthopaedic surgeon in practice.



Room

W307A

## **Pediatric Sports Medicine Operative Challenges and** Solutions

Moderator: Theodore J. Ganley, MD, Philadelphia, PA Michael T. Busch, MD, Atlanta, GA Benton E. Heyworth, MD, Boston, MA

Kevin G. Shea, MD, Boise, ID

With a case-based interactive format with expert faculty, this course covers hot topics in pediatric sports medicine from the shoulder to the foot.

#### ♦328 Management of Adolescent Idiopathic Scoliosis: State of the Art and Best Practices for 2016 TICKET

Moderator: Daniel W. Green, MD, New York, NY Laurel C. Blakemore, MD, Gainesville, FL Lori A. Karol, MD, Dallas, TX Roger F. Widmann, MD. New York, NY



Offers a concise review of the management andtreatment of adolescent idiopathic scoliosis (AIS). Expert faculty discuss best practices for bracing, and surgical techniques for AIS in 2016. Surgical discussions highlight patient safety, including neuro-monitoring, pedicle screwplacement, de-rotation maneuvers, and management of complications. Cases of AIS are reviewed to emphasize patient safety and function as well as pitfalls and pearls of management.



Room

Thursday

## All Things Clavicle: From Acromioclavicular to **Sternoclavicular and All Points in Between**

Moderator: Gordon I. Groh, MD, Asheville, NC Carl I. Basamania, MD, Edmonds, WA Laurence D. Higgins, MD, Boston, MA Mark A. Mighell, MD, Tampa, FL

Addresses managment and clinical outcomes of W304E clavicular injuries, including midshaft and distal clavicle fractures, as well as acromioclavicular and sternoclavicular jointdislocations. Anatomical and biomechanics related to treatment are reviewed.

## 330 TICKET

## Shoulder Arthroplasty: How To Do Them All

Moderator: Thomas (Ouin) Throckmorton, MD, Germantown, TN Leesa M. Galatz, MD, New York, NY

Room W204

Charles L. Getz, MD, Newton Square, PA John W. Sperling, MD, MBA, Rochester, MN

Focuses on the key step-by-step technical aspects of performing multiple types of shoulder arthroplasty. This includes standard total shoulder arthroplasty as well as techniques to address glenoid def ciency, improve component position, and treat proximal humeral bone loss.

#### 331 **Sports Tumors – How to Manage Orthopaedic**



Room

W310

**Conditions in the Setting of Common Benign Tumors** Moderator: Wakenda K. Tyler, MD, MPH, Rochester, NY Joseph Benevenia, MD, Newark, NJ Lee R. Leddy, MD, Charleston, SC Adam S. Levin, MD, Indianapolis, IN

Designed to help appreciate the appropriate recognition and workup of incidental masses noted on workup of common musculoskeletal complaints, as well as develop practical solutions for safe and effective care for these conditions.

#### 311 **Advanced Surgical Techniques in Femoroacetabular Impingement: An In-Depth Approach** TICKET



Moderator: Jeffrey Nepple, MD, Saint Louis, MO John C. Clohisy, MD, Saint Louis, MO Christopher M. Larson, MD, Edina, MN

AOSSM Focuses on detailed review of preoperative imaging with direct correlation to f ndings at the time of surgery. Room Utilizing a video-based discussion of the surgical W304E treatment, participants are exposed to a variety of surgical techniques in FAI with detailed discussion of surgical preference and surgical pearls.

383 **Adult Spinal Deformity: Surgical Planning and** Complications TICKET

Moderator: Robert A. Hart, MD, Portland, OR Christopher Ames, MD, San Francisco, CA Robert S. Bess, MD, Castle Rock, CO Darrel S. Brodke, MD, Salt Lake City, UT Room Thomas J. Errico, MD, New York, NY W207 Khaled M. Kebaish, MD, Indianapolis, IN Michael P. Kelly, MD, Saint Louis, MO Rex A. Marco, MD, Houston, TX Gregory M. Mundis, MD, San Diego, CA Themistocles S. Protopsaltis, MD, New York, NY Rajiv K. Sethi, MD, Seattle, WA

> Cases focus on various scenarios of adult spinaldeformity (untreated idiopathic scoliosis, degenerative lumbar scoliosis, f at back syndrome, the older adult deformity patient) as well as complications of treatment (interoperative spinal cord signal changes, proximal junctional failure, and non-union with rod fracture).

# ◆384

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Room

W208

Complex Primary Total Hip Arthroplasty: A Case-based Approach

Moderator: Daniel J. Berry, MD, Rochester, MN John J. Callaghan, MD, Iowa City, IA Craig J. Della Valle, MD, Chicago, IL C. Anderson Engh Jr., MD, Arlington, VA Kevin L. Garvin, MD, Omaha, NE George J. Haidukewych, MD, Orlando, FL William A. Jiranek, MD, Richmond, VA David G. Lewallen, MD, Rochester, MN Daniel A. Oakes, MD, Pasadena, CA Wayne G. Paprosky, MD, Winf eld, IL Christopher L. Peters, MD, Salt Lake City, UT

This case-based course highlights techniques anddiscusses clinical tips and tricks to manage complex primary hip arthroplasty challenges. Techniques to manage challenging cases, including developmental dysplasia of the hip, posttraumatic hip problems, bone deformity and def ciency, and young patients, are discussed.

## **FLASH FIVE**

8:00 AM — 9:00 AM Room W311A

### FF2 Flash Five: What's Coming Down the Pike

Moderator: Paul Tornetta III, MD, Boston, MA John C. Clohisy, MD, Saint Louis, MO Thomas A. Einhorn, MD, New York, NY Tad L. Gerlinger, MD, Chicago, IL Joshua J. Jacobs, MD, Chicago, IL John L. Marsh, MD, Iowa City, IA William M. Ricci, MD, Saint Louis, MO Thomas A. Russell, MD, Eads, TN Vincent J. Sammarco, MD, Cincinnati, OH Alexander Vaccaro, MD, PhD, Gladwyne, PA Ken Yamaguchi, MD, Saint Louis, MO

A burst of knowledge given in f ve minutes on topics benef ting orthopaedists. Hear from leading experts providing insight on critical points and what lies ahead.

## PAPER PRESENTATION

10:30 AM — 12:30 PM Valencia Room D

Shoulder & Elbow IV: Miscellaneous Issues: Trauma; Risk; Reduction, Other Concerns

Moderator(s): Vani J. Sabesan, MD, Kalamazoo, MI, Francis G. Alberta, MD, Glen Rock, NJ

#### 10:30 AM

The Majority of Shoulder MRIs Ordered by Non-Orthopaedic Providers do not Meet National Guidelines

Paper 526

Paper 527

Paper 528

Kyle Borque, MD, Chicago, IL Olumuyiwa Idowu, BA, Chicago, IL Hristo I. Piponov, Evanston, IL Jason L. Koh, MD, Winnetka, IL Lewis L. Shi, MD, Chicago, IL

Inappropriate utilization of shoulder MRIs is an area of potential cost cutting for both Orthopaedic and primary care providers.

#### 10:36 AM

## Immobilization in External Rotation After Primary Anterior Shoulder Dislocation Reduces the Risk of Recurrence

Stephane Pelet, MD, PhD, Québec, QC, Canada Jean-Christophe Murray, MD, Boischatel, QC, Canada Alexandre Leclerc, MD, FRCSC, Québec, QC, Canada

This study suggests that immobilization in external rotation reduces the risk of recurrence after a primary anterior shoulder dislocation in patients aged between 20 and 40 years

### 10:42 AM

### Positional Change in Displacement of Midshaft Clavicle Fractures: An Aid to Preoperative Evaluation

Awais Malik, Indianapolis, IN Ehsan Jazini, MD, Indianapolis, IN Ehsan Jazini, MD, Indianapolis, IN Xuyang Song, MD, Indianapolis, IN Gerard Slobogean, MD, MPH, Vancouver, BC, Canada Joshua M. Abzug, MD, Monkton, MD

We found a signif cant positional increase in the displacement of midshaft clavicle fractures that highlights the importance of obtaining upright radiographs when considering surgical indications.

Discussion – 6 Minutes



#### 10:54 AM

## Epidemiology Of Pectoralis Major Tendon Ruptures In The Active Duty Population

Alaina M. Brelin, MD, Bethesda, MD George C. Balazs, MD, Elkridge, MD Michael Donohue, MD, BS, Bethesda, MD John-Paul H. Rue, MD, Annapolis, MD Jonathan F. Dickens, MD, Bethesda, MD Jeffrey R. Giuliani, MD, Bethesda, MD

Pectoralis major tendon ruptures have an incidence of 60 per 100,000 person-years in military personnel, and the results of surgical treatment are excellent.

## 11:00 AM

Paper 530

Paper 529

## Operative Repair of Proximal Humerus Fractures in Septuagenarians and Octogenarians: How Old is Too Old?

Abraham M. Goch, New York, NY Anthony V. Christiano, New York, NY Sanjit R. Konda, MD, Rye, NY Philipp Leucht, MD, New York City, NY Kenneth A. Egol, MD, New York, NY

Operative fracture repair using locked plating of the proximal humerus in septuagenarians and octogenarians can provide for excellent long term outcomes in appropriately selected patients.

#### 11:06 AM

Paper 531

#### Sternoclavicular Joint Allograft Reconstruction Using the Sternal Docking Technique

Yaser M. Baghdadi, MD, Rochester, MN Joaquin Sanchez-Sotelo, MD, Rochester, MN

Reconstruction of the sternoclavicular joint with a semitendinous allograft in a sternal docking fashion restores stability in most patients requiring surgery for instability or osteoarthritis

Discussion – 6 Minutes

#### 11:18 AM

## Paper 532

Complication Rates In The Reconstruction Of Acute Acromioclavicular Joint Dislocations

Brian Lee, MD, Philadelphia, PA Charles L. Getz, MD, Newton Square, PA Usman Ali M. Syed, BS, Philadelphia, PA Joseph A. Abboud, MD, Philadelphia, PA Christopher Dodson, MD, Philadelphia, PA Matthew L. Ramsey, MD, Philadelphia, PA Gerald R. Williams Jr, MD, Philadelphia, PA Mark D. Lazarus, MD, Philadelphia, PA

A retrospective study examining the complication rates of acute AC joint dislocations with and without the use of tendon graft.

#### 11:24 AM

#### Hardware Complications and Patient Reported Outcomes (PROs) After Plate Fixation of Midshaft Clavicle Fractures

Micah Naimark, MD, San Francisco, CA Faustine L. Dufka, BA, San Francisco, CA Richard J. Han, MD, San Francisco, CA David Sing, San Francisco, CA Paul Toogood, MD, Seattle, WA ChunBong B. Ma, MD, San Francisco, CA Alan Zhang, MD, San Francisco, CA Brian T. Feeley, MD, San Francisco, CA

Precontoured plate f xation of midshaft clavicle fractures results in excellent PROs and union rates, but hardware removal rates remain high in national database and institutional cohorts.

#### 11:30 AM

#### Minimally Invasive Plate Osteosynthesis Using 3D Printing for Shaft Fractures Of Clavicles

Kyoung Jin Park, MD, Cheongju, Republic of Korea Yong-Min Kim, MD, Cheongju, Republic of Korea Byung-Ki Cho, MD, Cheong-Ju, Republic of Korea Chae-Ouk Lim, MD, Cheongju, Republic of Korea HyeonJun Eun, MD, Cheongju, Republic of Korea

Minimally invasive plate osteosynthesis using 3D printing for displaced shaft fractures of clavicles showed excellent result include less scar, relatively rapid bony union without complication.

Discussion – 6 Minutes

#### 11:42 AM

## Preoperative Risk Stratif cation Improves the Safety of Shoulder Surgery in the Beach Chair Position

Mohit Gilotra, MD, Indianapolis, IN Nabil M. Elkassabany, MD, Philadelphia, PA Andrew F. Kuntz, MD, Philadelphia, PA G Russell. Huffman, MD, Springf eld, PA David L. Glaser, MD, Villanova, PA

Preoperative risk stratif cation, stage positioning, and normotensive anesthesia lead to decreased risk of an ischemic event during shoulder surgery in the beach chair position.

### 11:48 AM

#### The Timing of Elective Shoulder Surgery after Intra-articular Injection Affects Postoperative Infection Risk

Brian C. Werner, MD, Charlottesville, VA Jourdan M. Cancienne, MD, Charlottesville, VA Justin W. Griff n, MD, Charlottesville, VA Matthew T. Burrus, MD, Charlottesvile, VA F Winston Gwathmey, MD, Charlottesville, VA Stephen F. Brockmeier, MD, Charlottesville, VA

Intra-articular injection within 3 months before elective shoulder surgery increases postoperative infection risk

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

#### Paper 533

Paper 534

Paper 535

Paper 540

Paper 541

Paper 542

## **Thursday, March 3**

#### 11:54 AM

## Perioperative Antibiotic Prophylaxis in Shoulder Arthroscopy: A Single Center Study including over 6700 Patients.

Leo Pauzenberger, MD, Vienna, Austria Annemarie Grieb, Vienna, Austria Michael Hexel, MD, Vienna, Austria Brenda Laky, PhD, MSc, Vienna, Austria Bernhard Kriegleder, MD, Vienna, Austria Werner Anderl, MD, Vienna, Austria Philip R. Heuberer, MD, Vienna, Austria

Perioperative antibiotic prophylaxis is highly recommended in reconstructive shoulder arthroscopy, whereas the routine use of antibiotics in non-reconstructive procedures seems not to be warranted.

Discussion – 6 Minutes

#### 12:06 PM

Paper 538

Paper 537

#### Surgical Skin Antisepsis for the Eradication of **Propionibacterium Acnes in Shoulder Surgery**

Lakshmanan Sivasundaram, BS, Granada Hills, CA Nathanael D. Heckmann, MD, Los Angeles, CA William Pannell, MD, Los Angeles, CA Ram Alluri, MD, Los Angeles, CA Diego C. Villacis, MD, Santa Monica, CA Reza Omid, MD, Irvine, CA C Thomas Vangsness Jr, MD, Los Angeles, CA George F. Hatch III, MD, Los Angeles, CA

Despite a variety of sterilization methods, Propionibacterium acnes persists on the skin. This is problematic, as P. acnes is a common organism responsible for delayed shoulder infection.

#### 12:12 PM

#### Paper 539 Propionibacterium Cultured at Revision Shoulder Arthroplasty: It's Not Always P. acnes

Ian J. Whitney, MD, Boerne, TX Jason Hsu, MD, Seattle, WA Roger E. Bumgarner, PhD, BS, MS, Seattle, WA Frederick A. Matsen III, MD, Seattle, WA

Propionibacterium species other than P. acnes can be recovered from failed shoulder arthroplasties having surgical revision if more advanced diagnostic techniques are carried out.

#### 12:18 PM

#### **Electrical Stimulation Combined with Antibiotics Treats Periprosthetic Joint Infection**

Scott Nodzo, MD, New York, NY Menachem Tobias, Buffalo, NY Nicole Luke-Marshall, PhD, Buffalo, NY Lisa Hufnagel, MS, Buffalo, NY Richard Ahn, MD, Williamsville, NY Anthony Campagnari, PhD, Buffalo, NY Mark T. Ehrensberger, PhD, Getzville, NY

Cathodic voltage controlled electrical stimulation with prolonged vancomycin therapy effectively treated a periprosthetic joint infection in a rodent animal model.

Discussion – 6 Minutes

## PAPER PRESENTATION

10:30 AM - 12:30 PM W414

#### **Trauma VI: Upper Extremity Trauma**

Moderator(s): Edward Perez, MD, Memphis, TN, Robert H. Blotter, MD, Marquette, MI

#### 10:30 AM

## **Regional Anesthesia Only for Clavicle Fracture ORIF is Safe and** Effective

Devon J. Ryan, BA, New York, NY Kenneth A. Egol, MD, New York, NY

This study demonstrates that regional only anesthesia using a combined brachial and superf cial cervical plexus block is a viable alternative to general anesthesia for clavicle fracture ORIF.

#### 10:36 AM

### **Plate Fixation Compared with Nonoperative Treatment of Displaced Midshaft Clavicular Fractures**

Andreas Qvist, MD, Aarhus, Denmark Michael T. Vaesel, MD, Stoholm, Denmark Carsten Jensen, MD, Randers, Denmark Steen L. Jensen, Ph.D., Farsoe, Denmark

ORIF of displaced midshaft clavicle fractures with precontoured plates and screws results in higher union rate and quicker return to work. There is no difference in functional outcome after one year.

#### 10:42 AM

## **Clavicle Fractures Are Associated With Shoulder Arthritis In A** Large Osteological Collection

Douglas S. Weinberg, MD, Cleveland, OH Heather A. Vallier, MD, Cleveland, OH Gregory Gaumer, BS, Cleveland Heights, OH Daniel R. Cooperman, MD, Trumbull, CT Raymond W. Liu, MD, Cleveland, OH

Clavicle fractures were associated with the development of degenerative joint disease of the ipsilateral glenohumeral joint in a large osteological collection

#### Discussion – 6 Minutes

#### 10.54 AM

#### Paper 544

Paper 543

## **Randomized Trial on Proximal Humerus Fractures: Locking Plate** or Intramedullary Nailing

Mauro E. Gracitelli, MD, Lapa, Brazil Eduardo A. Malavolta, MD, São Paulo, Brazil Jorge H. Assunção, São Paulo, Brazil Arnaldo Ferreira, MD, Sao Paulo, Brazil Paulo R. Reis, MD, Sao Paulo, Brazil Jorge D. Silva, Sao Paulo, Brazil Kodi E. Kojima, MD, Sao Paulo, Brazil

Proximal humerus fractures, classif ed as 2 and 3 parts of Neer, showed similar Constant and DASH scores between the groups, but complications were higher in the Nail Group.

#### 11:00 AM

## Paper 545

## Utilization and Cost of Reverse Shoulder Arthroplasty versus Hemiarthroplasty for Proximal Humerus Fractures

Abiram Bala, BA, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Thorsten M. Seyler, MD, PhD, Durham, NC Richard C. Mather III, MD, Durham, NC Michael P. Bolognesi, MD, Durham, NC Grant E. Garrigues, MD, Chapel Hill, NC

Reverse Total Shoulder Arthroplasty outperforms Hemiarthroplasty for acute proximal humerus fractures in cost savings over 1 year.

#### 11:06 AM

## Paper 546 **Total Shoulder Arthroplasty for Proximal Humerus Fracture is** Associated with Increased Hospital Charges

Arthur Manoli III, MD, New York, NY Sanjit R. Konda, MD, Rye, NY Christina Capriccioso, BS, Ann Arbor, MI Kenneth A. Egol, MD, New York, NY

Compared to hemiarthroplasty and ORIF, patients receiving total shoulder arthroplasty are more likely to have a high cost hospital stay but less likely to have a prolonged length of stay.

Discussion – 6 Minutes

## 11:18 AM

## A Quantitative Analysis of Extensile Approaches to the Humerus

Paper 547

Paper 548

Paper 549

Kevin D. Phelps, MD, Charlotte, NC Luke Harmer, MD, MPH, Rochester, MN Colin V. Crickard, MD, VA Beach, VA Nady Hamid, MD, Charlotte, NC Katie Sample, BA, Charlotte, NC Erica Andrews, BS, Charlotte, NC Rachel Seymour, PhD, Charlotte, NC Joseph R. Hsu, MD, Charlotte, NC

This cadaveric study describes a fully extensile humeral approach, compares it with other extensile approaches, and illustrates a method for managing the deltoid and brachialis during extension.

#### 11:24 AM

## **Small-Fragment Plate Fixation of Humeral Shaft Fractures**

Giuliana Rotunno, BS, Indianapolis, IN Marcus F. Sciadini, MD, Indianapolis, IN Christina Sebastian, B.S., Wilmington, NC Robert V. O'Toole, MD, Indianapolis, IN Andrew Egleseder, M.D., Indianapolis, IN

Open reduction and internal f xation of diaphyseal humeral shaft fractures may be performed using 3.5 mm small fragment plates without increased risk of plate fracture or nonunion.

## 11:30 AM

## Immediate Sarmiento Bracing for the treatment of humeral shaft fractures

Benjamin F. Sandberg, MD, Minneapolis, MN Kyle C. Bohm, MD, Minneapolis, MN Sandy Vang, BA, St Paul, MN Julie A. Switzer, MD, Saint Paul, MN Brian W. Hill, MD, Saint Louis, MO Joshua Olson, Saint Paul, MN Paul M. Lafferty, MD, Saint Paul, MN

The immediate application of a functional brace for humeral shaft fractures results in equivalent initial and f nal alignment

Discussion – 6 Minutes

#### 11:42 AM

## Paper 550 A Prospective Randomized Trial of Non-Operative Versus **Operative Management of Olecranon Fractures in the Elderly**

Andrew D. Duckworth, MSc, MB, ChB, Edinburgh, United Kingdom

Nicholas D. Clement, MRCS Ed, Edinburgh, United Kingdom Jane McEachan, FRCS (Ortho), MB, Perthshire, United Kingdom Timothy O. White, MD, FRCS, Edinburgh, United Kingdom Charles Court-Brown, Lothianbridge, United Kingdom Margaret M. McQueen, MD, Edinburgh, United Kingdom

Primary non-operative management of isolated displaced olecranon fractures in elderly lower demand patients provides a comparable outcome to operative management with a lower rate of complications.

#### 11:48 AM

#### Paper 551

Functional Outcomes of Distal Humerus Fractures Managed Non-Operatively in Elderly Patients

William Desloges, MD, Ottawa, ON, Canada Ken Faber, MD, FRCSC, London, ON, Canada Graham J. King, MD, London, ON, Canada George S. Athwal, MD, London, ON, Canada

Satisfactory outcomes were observed following the non-operative management of selected distal humerus fractures in lower demand, medically unwell, and/or older patients.

#### 11:54 AM

Paper 552

Posttraumatic Elbow Arthrof brosis Incidence and Risk Factors: A Retrospective Review

Lucas S. Marchand, MD, Salt Lake City, UT Zachary Working, MD, Salt Lake City, UT John Barton Williams, MD, Salt Lake City, UT Iain Elliott, MD, Salt Lake City, UT Thomas F. Higgins, MD, Salt Lake City, UT David Rothberg, MD, Salt Lake Cty, UT Erik Kubiak, MD, Salt Lake Cty, UT

Through retrospective review the risk factors and incidence of post-traumatic elbow arthrof brosis were identif ed in a series of trauma patients.

Discussion – 6 Minutes

#### 12:06 PM

Paper 553

Acute Internal Fixation Is Safe And Effective For Both Bone Forearm Fractures Associated With Compartment Syndrome

Hannah H. Lee, MD, PhD, Pittsburgh, PA Kevin Kang, MD, Pittsburgh, PA Peter A. Siska, MD, Pittsburgh, PA Ivan S. Tarkin, MD, Pittsburgh, PA

Acute internal f xation is safe and effective for both bone forearm fractures associated with compartment syndrome.

#### 12:12 PM

Paper 554

#### Outcomes of Surgical Treatment for High-Energy Open Forearm Fractures

Elizabeth Polfer, MD, Silver Spring, MD Benjamin W. Hoyt, BS, Rockville, MD George C. Balazs, MD, Elkridge, MD Derek F. Ipsen, DO, Clarksville, MD George P. Nanos, MD, Rockville, MD Scott M. Tintle, MD, Oakton, VA

A cohort of 66 patients with high-energy open forearm fractures had a primary union rate of 83.8% and a f nal union rate of 93.9%.

#### 12:18 PM

## Open Distal Radius Fracture Trends, Treatment, and Complications: A Large National Study.

William Pannell, MD, Los Angeles, CA Lakshmanan Sivasundaram, BS, Granada Hills, CA Ram Alluri, MD, Los Angeles, CA Nathanael D. Heckmann, MD, Los Angeles, CA Joseph M. Hahn, MD, Los Angeles, CA Reza Omid, MD, Los Angeles, CA George F. Hatch III, MD, Los Angeles, CA Alidad Ghiassi, MD, Pacif c Plsdsades, CA

Open distal radius fractures are not uncommon injuries and most patients can be treated with open reduction internal f xation. Non-primary closure is the strongest risk factor for complication.

Discussion – 6 Minutes

#### PAPER PRESENTATION

10:30 AM — 12:30 PM W304A

#### Spine V: Nonoperative/Functional Restoration/Injections

Moderator(s): John C. France, MD, Morgantown, WV, Robert, L. Tatsumi, MD Tualatin, OR

#### 10:30 AM

Paper 556

Paper 557

#### The Role of Physical Therapy and Rehabilitation after Lumbar Fusion for Degenerative Disease: A Systematic Review

Jeremy L. Brady, DPT, Medford, OR Sylvia Deily, DC, Austin, TX Marcella Madera, MD, Austin, TX Trent L. McGinty, DPT, Austin, TX Devender Singh, PhD, Austin, TX George W. Tipton Jr, MD, Austin, TX Eeric Truumees, MD, Austin, TX

Rehabilitation is usually recommended post lumbar fusion. However, a number of questions remain as to the benef ts, appropriate timing, and the proper modalities.

#### 10:36 AM

#### Do Preoperative Epidural Injections Increase Postoperative Infection after Single Level Lumbar Decompression?

Jourdan M. Cancienne, MD, Charlottesville, VA Scott S. Yang, MD, Charlottesville, VA Brian C. Werner, MD, Charlottesville, VA Hamid Hassanzadeh, MD, Charlottesville, VA Adam L. Shimer, MD, Charlottesville, VA Francis H. Shen, MD, Charlottesville, VA Anuj Singla, MD, Charlottesville, VA

LESI prior to single-level lumbar decompression is associated with increased risk of postoperative infection.

#### 10:42 AM

### Effect of Depression and Anxiety on Patient Reported Outcomes following Cervical Epidural Steroid Injection

David Stonko, BS, MS, Nashville, TN Silky Chotai, Nashville, TN Harrison F. Kay, BS, Nashville, TN John Sielatvcki, MD. Nashville, TN Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

Concomitant psychological symptoms lead to worse absolute scores but similar 12-month change scores for patient reported pain, disability and quality of life outcomes.

#### Discussion – 6 Minutes

#### 10:54 AM

#### Paper 559

Paper 558

A Novel Dynamic Spinal Brace In The Management Of Scoliosis **Due To Cerebral Palsy** 

Yu Moriguchi, MD, PhD, Suita, Osaka, Japan Thamina Khair, BA, New York, NY Ichiro Kajiura, MD, PhD, Osaka, Japan

A dynamic spinal brace, designed for neuromuscular scoliosis, corrected spinal curvature and improved patients' ADL with minimal dropouts in a two-year follow-up.

#### 11:00 AM

Paper 560

#### **Does Spinopelvic Alignment Affect The Union Status in Thoracolumbar Osteoporotic Vertebral Compression Fracture**

Akira Iwata, MD, Hakodate, Japan Masahiro Kanayama, MD, Hakodate, Japan Fumihiro Oha, MD, Hakodate, Japan Tomoyuki Hashimoto, MD, Hakodate, Japan Norimasa Iwasaki, Sapporo, Japan

Radiographic evaluation of thoracolumbar osteoporotic vertebral compression fracture showed that the distance between SVA and center of fractured vertebra was a signif cant risk factor for nonunion.

#### 11:06 AM

Paper 561

#### Are Non-particulate steroids Less Effective Than Particulate **Steroids for Cervical & Lumbar Radiculopathy?**

Nanjundappa S. Harshavardhana, MD, Minneapolis, MN Amir A. Mehbod, MD, Wayzata, MN Ensor E. Transfeldt, MD, Minneapolis, MN

Non-particulates are as effective as particulate steroids when used in transforaminal epidural injections for cervical and lumbar radiculopathy in a meta-analysis of four RCTs involving 274 patients.

Discussion – 6 Minutes

#### 11:18 AM

#### Is Drain Tip Culture After Spinal Surgery Necessary?

Kazuvoshi Kobayashi, MD, PhD, Nagoya, Japan Shiro Imagama, MD, PhD, Nagoya, Japan Zenya Ito, PhD, Nagoya, Japan Kei Ando, MD, Nagoya, Japan Naoki Ishiguro, MD, Nagoya, Japan

In case of which methicillin-resistant bacteria are detected on the drain tip, the PPV was 60%, and signif cantly higher than that in cases with non-methicillin resistant bacteria.

#### 11:24 AM

#### **Preoperative Spinal Epidural Steroid Injections in patients** undergoing spinal surgery

Ana M. Cervan, Marbella (malaga), Spain Miguel Rodríguez-Solera SR, MD, Marbella (málaga), Spain Miguel Hirschfeld, Málaga, Spain Angela Sanchez SR, Talavera De La Reina (toledo), Spain Enrique Guerado, MD, Marbella, Spain

We study the relation between pre-operative spinal epidural steroid injection and he frequency of perioperative complications in spine surgery

#### 11:30 AM

## Topical Injection and Infusion for pain management of lumbar spine surgery

Chi-Huan Li, MD, Taichung City, Taiwan

Topical injections and infusion with special regimens for postoperative pain management in spine surgery is easy, useful and good cost-effective.

Discussion – 6 Minutes

## 11:42 AM

## Paper 565 **Patient Reported Outcomes after Lumbar Epidural Steroid**

Injection in Depressed versus Non-depressed patients Joseph B. Wick, BA, Nashville, TN Silky Chotai, Nashville, TN Harrison F. Kay, BS, Nashville, TN Ahilan Sivaganesan, MD, Nashville, TN Scott L. Parker, MD, Nashville, TN David Stonko, BS, MS, Nashville, TN Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

Depressive symptoms lead to worse absolute scores for pain and quality of life outcomes following epidural spinal injection. Change score was similar between depressed and non-depressed patients.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 562

Paper 563

#### 11:48 AM

#### Paper 566

**Do Epidural Injections Prior to Lumbar Fusions Effect Postoperative Infection And Intraoperative Durotomy Rates?** 

Jourdan M. Cancienne, MD, Charlottesville, VA Brian C. Werner, MD, Charlottesville, VA Scott S. Yang, MD, Charlottesville, VA Hamid Hassanzadeh, MD, Charlottesville, VA Adam L. Shimer, MD, Charlottesville, VA Francis H. Shen, MD, Charlottesville, VA Anuj Singla, MD, Charlottesville, VA

LESI within 3 months of posterior lumbar spinal fusion is associated with increased risk of postoperative infection and intraoperative durotomy.

#### 11:54 AM

Paper 567 Effects of Mechanical Stimulation of C5 for Referred Shoulder Pain: A Randomized Double-Blinded Clinical Trial

George Hardas, Sutherland, NS, Australia

The major effect of applying a MAI to the C5 facet joints in referred shoulder pain is improved shoulder strength for internal rotation in this randomized double-blinded clinical trial.

Discussion – 6 Minutes

#### 12:06 PM

Paper 568

The Rate And Risk Of Curve Progression Following Skeletal Maturity - Does The Story End With Curve Magnitude?

Firoz Miyanji, MD, Vancouver, BC, Canada Chris Reilly, MD, Vancouver, BC, Canada Suken A. Shah, MD, Wilmington, DE David H. Clements III, MD, Camden, NJ Amer Samdani, MD, Philadelphia, PA Sameer Desai, BS, Surrey, BC, Canada Harry L. Shuff ebarger, MD, Miami, FL Randal R. Betz, MD, Ocean City, NJ Peter O. Newton, MD, San Diego, CA

Skeletally mature patients with AIS  $\geq$  30° may continue to progress at a mean rate of 1.7°/yr with a signif cant decline in SRS-22 Pain and Self-Image outcome scores over time.

#### 12:12 PM

Paper 569

#### Pca Use For Inpatient Posterior Lumbar Spine Fusion: Opioidrelated Complications And Costs

Clinton J. Devin, MD, Nashville, TN Matthew McGirt, Charlotte, NC Edmund Lau, MS, Menlo Park, CA Scott Lovald, Menlo Park, CA Kevin Ong, PhD, Philadelphia, PA

PCA use after inpatient posterior lumbar fusion was associated with an increase in multiple costly opioid related adverse events in Medicare patients.

#### 12:18 PM

#### Paper 570

Paper 571

Paper 572

## Adductor Canal Versus Femoral Nerve Block for Post-operative pain and Quadriceps Strength after TKA: A Meta Analysis

Nasir Hussain, BS, MSc, Mount Pleasant, MI Thomas Ferreri, BSc, MD (Cand), Goodrich, MI Parker Prusick, BS, Traverse Citv, MI Laura Banf eld, MSLS, Hamilton, ON, Canada Bradley Long, MSLS, Mount Pleasant, MI Vincent Prusick, MD, Traverse City, MI Mohit Bhandari, MD, FRCSC, Hamilton, ON, Canada

This meta-analysis suggests that there is no signif cant difference in postoperative pain between ACB and FNB; however, ACB was found to increase postoperative quadriceps strength earlier after TKA.

Discussion – 6 Minutes

#### PAPER PRESENTATION

## 10:30 AM - 12:30 PM W315

## **Adult Reconstruction Hip IV: Complications**

Moderator(s): Glenn D. Wera, MD, Cleveland, OH, David C. Ayers, MD, Worcester, MA

## 10:30 AM

## Are Hip Aspirations using Saline Lavage Reliable in the **Diagnosis of Hip Prosthetic Joint Infection?**

Michael A. Charters, MD, Beachwood, OH Daniel R. Mesko, DO, Shaker Heights, OH Marcelo B. Siqueira, MD, Beachwood, OH Shane E. Brennan, BS, Kalamazoo, MI Alison K. Klika, MS, Cleveland, OH Wael K. Barsoum, MD, Cleveland, OH Carlos A. Higuera Rueda, MD, Bay Village, OH

The purpose was to compare hip arthroplasty aspirations with/ without saline lavage to assess its impact on diagnostic accuracy for prosthetic joint infection using MSIS criteria as the gold standard.

#### 10:36 AM

#### Should Preoperative Antibiotics be Tailored According to **Patient's Comorbidities?**

Timothy Tan, MD, Philadelphia, PA Miguel M. Gomez, MD, Bogota, Colombia Alisina Shahi, MD, Philadelphia, PA Camilo Restrepo, MD, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA

The present study reveals that comorbidities do not signif cantly alter the organism prof le of high-risk comorbidities or inf uence the rate of PJI between two different antibiotics.

#### 10:42 AM

#### **Diagnosing Infection in Patients Undergoing Conversion of Prior** Internal Fixation to Total Hip Arthroplasty

Daniel J. Gittings, MD, Philadelphia, PA Paul M. Courtney, MD, Philadelphia, PA Blair S. Ashley, MD, Philadelphia, PA Patrick I. Hesketh, BS. Philadelphia, MA Derek J. Donegan, MD, Media, PA Neil P. Sheth, MD, Philadelphia, PA

The purpose of this study is to identify risk factors for infection in patients undergoing conversion of prior internal f xation to total hip arthroplasty.

#### Discussion – 6 Minutes

#### 10:54 AM

#### Paper 574

Paper 573

## Risk Factors for Staphylococcus Aureus Nasal Colonization in **Joint Replacement Patients**

Adam C. Fields, BA, New York, NY Amanda Walsh, MD, New York, NY James Dieterich, BA, New York, NY Christine C. Carbonaro, PA, New York, NY Dena L. McDonough, PA-C, New York, NY Maureen Walsh, PA-C, New York, NY Darwin D. Chen, MD, New York, NY Michael J. Bronson, MD, New York, NY Calin S. Moucha, MD, New York, NY

S.aureus nasal colonization is associated with postoperative infection. Patients with diabetes, renal insuff ciency, and immunosuppression were at increased risk to be colonized with S.aureus.

#### 11:00 AM

## The Effects of Chlorhexidine Gluconate on Surgical Site Infections following Total Hip Arthroplasty Bhaveen H. Kapadia, MD, Indianapolis, IN

Samik Banerjee, MD, Albany, NY Kimona Issa, MD, Little Falls, NJ Michael A. Mont, MD, Indianapolis, IN

Patients who used pre-admission chlorhexidine gluconateimpregnated cloths had less surgical site infections compared to patients who underwent standard in-hospital peri-operative preparation only.

#### 11:06 AM

## Paper 576 Incidence, Risk Factors, and Sources of Sepsis Following Total Joint Arthroplasty

Daniel D. Bohl, MD, MPH, Chicago, IL Erdan Kayupov, MS, Troy, MI Craig J. Della Valle, MD, Chicago, IL

The rate of sepsis following total joint arthroplasty is about 1 in 300, and the most common sources are UTI (31%), surgical site infection (27%), and pneumonia (15%).

#### 11:18 AM

#### A Multi-Center Randomized Clinical Trial of Articulating and **Static Spacers for Periprosthetic Hip Infection**

Paper 577

Paper 578

Paper 579

Paper 580

Erdan Kayupov, MS, Troy, MI Peter N. Chalmers, MD, Chicago, IL Mario Moric, MS, Chicago, IL Timothy Tan, MD, Los Angeles, CA Gregory K. Deirmengian, MD, Media, PA Javad Parvizi, MD, FRCS, Gladwyne, PA Matthew Austin, MD, Philadelphia, PA Craig J. Della Valle, MD, Chicago, IL

This randomized clinical trial demonstrates that articulating spacers are associated with shorter hospital stays for both stages in the treatment of an infected total hip arthroplasty.

#### 11:24 AM

#### Smoking Increases the Risk of Surgical Site Infection Following **Total Hip Arthroplastv**

Matthew R. Boylan, Brooklyn, NY Steven Daniels, MD, Brooklyn, NY Bhaveen H. Kapadia, MD, Indianapolis, IN Carl B. Paulino, MD, Brooklyn, NY Michael A. Mont, MD, Indianapolis, IN

For current cigarette smokers, there is an increased risk of SSI following total hip arthroplasty.

#### 11:30 AM

## Hospital Specific Hip Arthroplasty Surgical Site Infection Rates Do Not Correlate with Other Procedure SSI rates

Ravi Vaswani, BS, New York, NY Raj Karia, MPH, New York, NY Lorraine Hutzler, BA, New York, NY Joseph A. Bosco III, MD, New York, NY

The purpose of our study is to determine if hospital specif c THA SSI rates correlate to other procedure specif c SSI rates at the same institution.

Discussion – 6 Minutes

#### 11:42 AM

### A Critical Analysis Of Radiographic Factors In Patients Who **Develop Dislocation After Elective Primary THA**

Marion Opperer, Salzburg, Austria Francisco Nally, MD, Capital Federal, Argentina Alvaro Blanes, MD, New York, NY Yuo-Yu Lee, MS, Astoria, NY Alejandro Gonzalez Della Valle, MD, New York, NY

The majority of patients dislocating after elective THA had radiographically sound reconstructions similar to those observed in stable THAs.

#### Discussion – 6 Minutes

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#### 11:48 AM

#### Paper 581

Paper 582

Paper 583

The Effect Of Flexural Rigidity, Taper Angle, And Contact Length On Fretting And Corrosion At The Head-neck Junction

Ying-Ying J. Kao, MD, San Francisco, CA Chelsea Koch, BS, New York, NY Timothy M. Wright, PhD, New York, NY Douglas E. Padgett, MD, New York, NY

More rigid trunnions experience less fretting, which suggests that fretting is predominantly a mechanically driven process.

#### 11:54 AM

# Aspirin is as Effective as and Safer Than Warfarin for Patients at Elevated Risk of VTE Undergoing TJA

Ronald Huang, MD, Philadelphia, PA Javad Parvizi, MD, FRCS, Gladwyne, PA William J. Hozack, MD, Philadelphia, PA Matthew Austin, MD, Philadelphia, PA

Our study demonstrates that ASA is more effective and safer than warfarin for VTE prophylaxis following total joint arthroplasty, even in patients at higher risk of VTE.

Discussion – 6 Minutes

#### 12:06 PM

### Are Readmissions Following Total Hip Arthroplasty Preventable?

Douglas S. Weinberg, MD, Cleveland, OH Matthew J. Kraay, MD, Cleveland, OH Steven Fitzgerald, MD, Cleveland Hts, OH Vasu Sidagam, MD, Cleveland, OH Glenn D. Wera, MD, Cleveland, OH

At our institution, readmissions occurred for operative and non-operative reasons, although only a small percentage of readmissions to our health care system were considered potentially preventable.

#### 12:12 PM

Paper 584

BMI Affects Post-Operative Complications, and 30-Day Readmission Rate, in Total Joint Arthroplasty

Yaron S. Brin, MD, Kfar-Saba, Israel Laura M. Epure, Montreal, QC, Canada Stephane Bergeron, MD, kirkland, QC, Canada Olga Huk, MD, Westmount, QC, Canada John Antoniou, MD, FRCSC, Montreal, QC, Canada David Zukor, MD, Montreal, QC, Canada

Obese TJA patients are at higher risk for longer surgeries, and their transfusion rate is higher. Obese THA patients have increased rates of wound infections and longer hospital stay.

### 12:18 PM

## Ankylosing Spondylitis Increases Peri- and Post-operative Complications After Total Hip Arthroplasty

Daniel J. Blizzard, MD, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Michael A. Gallizzi, MD, Durham, NC Charles Sheets, PT, Durham, NC Mitchell R. Klement, MD, Durham, NC Thorsten M. Seyler, MD, PhD, Winston-Salem, NC Michael P. Bolognesi, MD, Durham, NC Christopher R. Brown, MD, Raleigh, NC

Ankylosing spondylitis increases peri- and post-operative complications following primary total hip arthroplasty including dislocation, component breakage, infection, and revision surgery.

Discussion – 6 Minutes

## **INSTRUCTIONAL COURSE LECTURE**

#### 11:00 AM — 12:00 PM



Room

W209A

**Imagine Them Naked: Public Speaking and Teaching** *Moderator: Rena Romano, Tampa, FL* 

If just the thought of public speaking makes you nervous, then picture audience members naked! This course provides helpful tips to help manage, and even prevent, anxiety when addressing the public or peers.

## THE WAY I SEE IT...



Paper 585

1:30 PM — 2:30 PM Room W311A

#### The Way I See It...Team Physicians: Challenges of Sports Medicine

Moderator: Frederick M. Azar, MD, Memphis, TN James R. Andrews, MD, Gulf Breeze, FL Brian J. Cole, MD, MBA, Chicago, IL Anthony Miniaci, MD,FRCSC, Garf eld Heights, OH

Learn the "whys" of what the experts do as team physicians in sports medicine. Benef t from the inside story - what each presenter wants you to know about a top-of-the-mind issue. Experts share their experience and views, just the way they see it.

#### **Symposium**

1:30 PM — 3:30 PM Chapin Theater



#### Great Debates in Total Knee Arthroplasty (T)

Moderator: Jay R. Lieberman, MD, Los Angeles, CA

Review the latest controversial issues associated with knee arthroplasty. After each series of lectures, the moderator queries the panel to highlight areas of consensus and controversy. Cases are reviewed to allow the audience todetermine how they will treat their patients.

- I. Tourniquet Use: Keep Your Wound Dry Negative Robert L. Barrack, MD, Saint Louis, MO
- II. Patellar Resurfacing: Leave the Patella Alone -Aff rmative *Michael E. Berend, MD, Indianapolis, IN*
- III. Antibiotics in the Cement: A Good Idea Aff rmative Daniel J. Berry, MD, Rochester, MN
- IV. Unicondylar Total Knee: You Should Be Doing More -Aff rmative Craig J. Della Valle, MD, Chicago, IL
- V. Unicondylar Total Knee: You Should Be Doing More -Negative David A. Halsey, MD, South Burlington, VT
- VI. Patellar Resurfacing: Leave the Patella Alone Negative William A. Jiranek, MD, Richmond, VA
- VII. Patellofemoral Arthroplasty: No More Anterior Knee Pain - Aff rmative Jess H. Lonner, MD, Philadelphia, PA
- VIII. Kinematic Alignment: The Only Way To Go Negative William J. Maloney, MD, Redwood City, CA
- IX. Tourniquet Use: Keep Your Wound Dry Aff rmative R. Michael Meneghini, MD, Fishers, IN
- X. Kinematic Alignment: The Only Way To Go -Aff rmative Mark W. Pagnano, MD, Rochester, MN
- X. Antibiotics in the Cement: A Good IdIea Negative *Javad Parvizi*, MD, FRCS, Philadelphia, PA
- XII. Patellofemoral Arthroplasty: No More Anterior Knee Pain - Negative Thomas P. Vail, MD, San Francisco, CA

#### Symposium

1:30 PM — 3:30 PM Valencia Room A



#### Computer Modeling and 3-D Printing in Upper Extremity Surgery (U)

Moderator: Lisa L. Lattanza, MD, San Francisco, CA

Discusses the applications of computer modeling and threedimensional printing to upper extremity surgery. Case examples using patient-specif c guides to address complex osteotomies in both adult and pediatric patients are discussed.

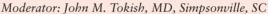
- I. Case example: Pediatric Forearm Malunion Andrea S. Bauer, MD, Boston, MA
- II. Case example: Intra-Articular Distal Radius Malunion Jesse B. Jupiter, MD, Boston, MA
- III. "The Evolution of Computer-Assisted Surgery" Henry R. McCarroll, MD, San Francisco, CA

#### Symposium

1:30 PM — 3:30 PM Valencia Room B



Controversies in Approaches to Anterior Shoulder Instability (V)



Discusses advantages and disadvantages and techniques of different surgical approaches for shoulder instability to obtain stabilization of the shoulder. The course combines the current evidence in the literature with case presentations to advance clinical care options. A Casebased, Pan-Specialty Perspective from AANA, AOSSM, SOMOS, and ASES.

- I. Augmentation to the Arthroscopic Bankart: Tips to Make This Your Most Successful Instability Operation Jeffrey S. Abrams, MD, Princeton, NJ
- II. The Failed Bankart: Revision Surgery- Now What? Robert A. Arciero, MD, Farmington, CT
- III. Open Bankart; How to Employ the One Approach that Ends all Debate *Richard J. Hawkins, MD, Greenville, SC*
- IV. Augmentation: Bony Options to Restore Anatomy Matthew T. Provencher, MD, Boston, MA

## **INSTRUCTIONAL COURSE LECTURE**

### 1:30 PM - 2:30 PM



Principles of Teaching Across Differences in Culture and Language Moderator: Guido Marra, MD, Chicago, IL

Stefano A. Bini, MD, Piedmont, CA Xavier A. Duralde, MD, Atlanta, GA

Designed to help attendees implement three general principles for teaching those whose f rst languages is not English and/or have cultural norms and operating procedures that are signif cantly different from those in the United States.

## **INSTRUCTIONAL COURSE LECTURE**

### 1:30 PM - 3:30 PM



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Room

W314

Room

W202

## The Pre-Arthritic Hip in the Young, Active Patient: How Do You Approach It? Scope vs. Open, Acetabulum, or Femur

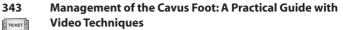
Moderator: Marc Safran, MD, Redwood City, CA J. W. Thomas Byrd, MD, Nashville, TN John C. Clohisy, MD, Saint Louis, MO Young Jo Kim, MD, PhD, Boston, MA

This course reviews the different treatment options for femoroacetabular impingement and hip dysplasia. Discussion includes arthroscopic treatment, as well as open acetabular based and open femoral osteotomy based approaches.

#### 342 How to Perform a Primary Total Knee Arthroplasty: **Video Vignettes** TICKET

Moderator: Gwo-Chin Lee, MD, Philadelphia, PA Henry D. Clarke, MD, Phoenix, AZ William J. Long, MD, New York, NY Ryan Nunley, MD, Saint Louis, MO

> Techniques required to perform a successful total knee arthroplasty are detailed using video vignettes, including preoperative planning, prosthesis selection, surgical exposures, ligamentous balancing, f xation, and patellarresurfacing. Traducción simultánea en español. Tradução simultânea em português.



Moderator: Mark S. Myerson, MD, Indianapolis, IN J. Chris Coetzee, MD, Edina, MN Steven L. Haddad, MD, Glenview, IL William C. McGarvey, MD, Katy, TX

The cavus foot has a varied presentation. This course explains how to examine the foot for a f exible deformity and thereby avoid arthrodesis. An algorithm for treatment of forefoot, midfoot, and hindfoot deformity on the cavus foot is presented. Each deformity is outlined with a case-based approach using video techniques to emphasize reconstruction.

#### Antibiotic Stewardship in Orthopaedic Surgery: 344 **Principles and Practice** TICKET

Room W205A

Room

W308C

Moderator: Joseph A. Bosco III, MD, New York, NY Brett R. Levine, MD, Elmhurst, IL Michael Phillips, MD, New York, NY James D. Slover, MD, New York, NY

The emergence of resistance, geographical diversity of infecting pathogens, and changing patient population requires customization of our prophylactic regimen to reduce infectious complications. A multidisciplinary approach to ASP leads to improved patient outcomes and cost-effective medical care.

#### Why I Cannot Fix this Distal Radius **Fracture with Volar Plate?** TICKET



345

Moderator: Nileshkumar Chaudhari, MD, Birmingham, AL Abhinav B. Chhabra, MD, Keswick, VA Robert J. Medoff, MD, Kailua, HI Joseph M. Sherrill, MD, Birmingham, AL

Room W310

Each faculty member presents a didactic lecture onspecif ed fracture patterns, including informationregarding fracture pattern, preoperative planning, selection of surgical approach, technique pearls, f xation options, complications, and diff culties associated with the f xation method of complex distal radius fracture.

#### **Update in Pediatric Musculoskeletal Infections:** When It Is, When It Isn't, and What to Do



W204

346

Moderator: Ken J. Noonan, MD, Madison, WI Alexandre Arkader, MD, Los Angeles, CA James H. Conway, MD, FAAP, Madison, WI

William C. Warner Jr, MD, Germantown, TN Lectures, cases, and audience participation provide attendees with a contemporary understanding of pediatric infections and their management, an appreciation for disorders that mimic infection, and

strategies to avoid surgical site infections.

Thursday

## 347 Payment Reform: Update on a Moving Target

Moderator: Alexandra E. Page, MD, La Jolla, CA Thomas C. Barber, MD, Oakland, CA Brian R. McCardel, MD, Lansing, MI George F. Muschler, MD, Cleveland, OH

> Payment reform requires recognizing and respondingto changes. SGR repeal and enactment of MACRA willimpact care reimbursement for the next decade. Thefundamentals of MACRA are covered as well as ortho-specif c planning for the two payment tracks (MIPS or alternative payment models).

# 348 Adult Lumbar Scoliosis: State-of-the-Art Treatment Incerner (Operative and Nonoperative)

Moderator: Eric O. Klineberg, MD, Sacramento, CA Munish C. Gupta, MD, Sacramento, CA Serena S. Hu, MD, Redwood City, CA Themistocles S. Protopsaltis, MD, New York, NY Rajiv K. Sethi, MD, Seattle, WA

> Utilizing lecture and case discussion, this course focuses on the def nition of adult lumbar scoliosis and includes discussion on the radiographic, clinical, and surgical indications for correction.



W307A

## **\***349 Current Concepts in Cervical Spine Trauma

Moderator: Richard J. Bransford, MD, Seattle, WA Carlo Bellabarba, MD, Seattle, WA Robert W. Molinari, MD, Pittsford, NY Timothy A. Moore, MD, Shaker Heights, OH

Reviews current concepts in the evaluation and treatment of cervical spine trauma to include upper and subaxial cervical fractures and spinal cord injuries.

350 TICKET

W304F

TICKET

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## Tips and Tricks for Problem Fractures

Moderator: Daniel S. Horwitz, MD, Danville, PA Erik Kubiak, MD, Salt Lake City, UT Frank A. Liporace, MD, Englewood Cliffs, NJ Bruce Ziran, MD, FACS, Atlanta, GA

Focus is on common fractures which present technical challenges to the practicing orthopaedic surgeon. It presents operative techniques, tips, and tricks to be applied to aid and simplify the surgical procedure and improve clinical outcomes.

### 351 Talus and Calcaneus Fractures: Current Treatment

Moderator: Mark Adams, MD, Newark, NJ Stephen K. Benirschke, MD, Seattle, WA Reza Firoozabadi, MD, Seattle, WA John W. Munz, MD, Houston, TX

Room Reviews current concepts on management of complexfractures of the talus and calcaneus.



Room

W205B

1

Room

W207

### Bone and Soft Tissue Tumors for the General Orthopaedic Surgeon: How to Diagnose, Manage, and Avoid Errors

Moderator: Carol D. Morris, MD, MS, Indianapolis, IN Jonathan A. Forsberg, MD, Silver Spring, MD Valerae O. Lewis, MD, Houston, TX

Reviews the most common bone and soft tissue tumors that present to the general orthopaedic surgeon or nontumor orthopaedic subspecialist. Both adult and pediatric clinical scenarios are covered. We outline a strategy for working-up and triaging suspicious lesions including when to refer to a musculoskeletal oncologist. We alsoreview the management of the asymptomatic incidentally discovered tumor in relation to the underlying relevant conditions. Common avoidable pitfalls and management errors are reviewed with a strong emphasis on case examples.

## ◆ 385 Complex Shoulder Arthroplasty: Case Discussions and Management

Moderator: Thomas (Quin) Throckmorton, MD, Germantown, TN Theodore A. Blaine, MD, New Haven, CT Edward V. Craig, MD, New York, NY Lynn A. Crosby, MD, Augusta, GA

Lynn A. Crosby, MD, Augusta, GA Thomas B. Edwards, MD, Houston, TX Evan L. Flatow, MD, New York, NY Leesa M. Galatz, MD, New York, NY Joseph P. Iannotti, MD, PhD, Cleveland, OH Mark A. Mighell, MD, Tampa, FL Matthew L. Ramsey, MD, Philadelphia, PA John W. Sperling, MD, MBA, Rochester, MN Philipp N. Streubel, MD, Omaha, NE

Understand and apply strategies for managing glenoid and humeral bone def ciency in shoulder arthroplasty, options and techniques available to treat infected shoulder arthroplasty, and causes for instability after shoulder arthroplasty. Learn to treat them according to each etiology.

# ◆386

Room

W208

## Concussion Management in Athletes: A Multidisciplinary Approach

Moderator: Carl D. Allred, MD, CO Springs, CO Brett C. Anderson, MD, CO Springs, CO Laura Baugh, MD, USAF Academy, CO Darren E. Campbell, MD, CO Springs, CO Christopher D'Lauro, PhD, Monument, CO Jonathan Jackson, MD, CO Springs, CO Anthony J. Jarecke, OD, MBA, USAF, CO Ky Kobayashi, MD, CO Springs, CO Gerald McGinty, USAF Academy, CO Renee Pazdan, MD, CO Springs, CO Alicia Souvignier, DPT, Fort Carson, CO Brian R. Johnson, DO, USAF Academy, CO

Emphasis is placed on differentiating patterns of clinical presentation such as primary visual or vestibular dysfunction. Principles for developing an active, patient specif c treatment plan are discussed. Cases allow for teaching points covering return-to-play guidelines and protocols. A multi-disciplinary team of medical professionals serve as table facilitators.

## **INSTRUCTIONAL COURSE LECTURE**

## 1:30 PM — 5:30 PM

### 391 TeamSTEPPS

 Moderator: Harpal S. Khanuja, MD, Cockeysville, MD Dwight W. Burney III, MD, Albuquerque, NM Mary I. O'Connor, MD, New Haven, CT William J. Robb III, MD, Winnetka, IL Kristy L. Weber, MD, Philadelphia, PA

> TeamSTEPPS is an evidence-based team building andcommunication program designed to enhance patientsafety and eff ciency in health care. Gives members of the healthcare team the tools to help lead highly effective medical teams. Team members increase team awareness and clarify team roles and responsibilities to produce a functional unit based on patient care; and learn to resolve conf icts and improve information sharing to helpeliminate barriers to quality and safety.

## PAPER PRESENTATION

1:30 PM — 3:30 PM Valencia Room D

#### **Adult Reconstruction Hip V: Outcomes**

Moderator(s): Paul A. Manner, MD, Seattle, WA, Peter F. Sharkey, MD, Media, PA

### 1:30 PM

Intravenous Tranexamic Acid Improves Early Ambulation and Postoperative Outcomes After Total Hip Arthroplasty

Paper 586

Paper 587

Paper 588

Ayal Segal, MD, Great Neck, NY Maryanne Cronin, PharmD, Glen Cove, NY Sanjeev J. Suratwala, MD, FACS, Great Neck, NY Paul Enker, MD, Lake Success, NY Eugene S. Krauss, MD, Old Westbury, NY

Intravenous tranexamic acid improves early ambulation, reduces anemia, and minimizes postoperative transfusions without signif cant side effects after anterior and posterior total hip replacement.

#### 1:36 PM

#### Home Discharge Following Primary THA/TKA is Associated with Fewer Complications

Gwo-Chin Lee, MD, Philadelphia, PA Kevin Ong, PhD, Philadelphia, PA Doruk Baykal, PhD, Philadelphia, PA Edmund Lau, MS, Menlo Park, CA Arthur L. Malkani, MD, Louisville, KY

Discharge to home following primary THA/TKA is associated with lower risks of postoperative complications and readmissions. Optimization of home discharge should be an institutional priority.

#### 1:42 PM

# Does Radiographic Severity of Osteoarthritis Predict Outcomes in Young Hip Arthroplasty Patients?

Jeffrey B. Stambough, MD, Saint Louis, MO Ao Xiong, MD, Shenzhen, China John J. Callaghan, MD, Iowa City, IA John C. Clohisy, MD, Saint Louis, MO

Our f ndings suggest THA in the setting of preoperative joint space width less than 1.5-2mm will reliably provide greater improvements in pain, function and activity level outcomes in young patients.

Discussion – 6 Minutes

#### 1:54 PM

#### Lumbar Back Surgery Prior to Total Hip Replacement is Associated with Worse Patient-reported Outcomes

Ted O. Eneqvist, MD, Gothenburg, Sweden Szilard Nemes, Goteborg, Sweden Helena Brisby, MD, Gothenburg, Sweden Goran Garellick, MD, PHD, Goteborg, Sweden Peter Fritzell, Jönköping, Sweden Ola Rolfson, MD, PhD, Gothenburg, Sweden

Combining data from a spine surgery and a hip arthroplasty register, this study demonstrates that lumbar back surgery prior to total hip replacement is associated with worse patient-reported outcomes

#### 2:00 PM

## Perioperative Outcomes of Primary Total Hip Arthroplasy after **Prior Lumbar Spinal Fusion**

Jeffrey Barry, MD, San Francisco, CA David Sing, San Francisco, CA Thomas P. Vail, MD, San Francisco, CA Erik N. Hansen, MD, San Francisco, CA

Prior lumbar spinal fusion is associated with worse perioperative outcomes after primary total hip arthroplasty including increased complication and reoperation rates.

#### 2:06 PM

#### Paper 591

Paper 590

### The Timed Up-and-go Predicts Length of Stay Following Total **Hip Arthroplastv**

Stephen Petis, MD, London, ON, Canada James Howard, MD, London, ON, Canada Brent Lanting, MD, London, ON, Canada Lyndsay Somerville, PhD, London, ON, Canada Edward Vasarhelyi, MD, MSc, London, ON, Canada

The TUG test was predictive of hospital length of stay following THA. It is a simple functional test that can be used to assist with discharge planning preoperatively.

Discussion – 6 Minutes

## 2:18 PM

Paper 592

## **Patient and Perioperative Variables Affecting 30-Day Readmission Following Hip and Knee Arthroplasty**

Steven B. Daines, MD, Boise, ID Kathryn Oi, BA, New York, NY Yuo-Yu Lee, MS, Astoria, NY Amethia Joseph, BA, New York, NY Geoffrey H. Westrich, MD, New York, NY

30-day readmissions at our specialty hospital after THR and TKR were associated with short lengths of stay, disposition to inpatient nursing facilities, depression and increased procedure time.

#### 2:24 PM

Paper 589

#### Pain and Function Prof les in Patients Undergoing THR: Are **Readmissions Associated With Poorer Functional Gain?** David C. Ayers, MD, Worcester, MA

Patricia Franklin, MD, MBA, Worcester, MA

This data support the importance of hip-specif c PRO measures to assess THR outcome in quality of care programs and CMS public reporting programs.

#### 2:30 PM

#### **Readmissions and Complications for Dialysis Patients Undergoing a Primary Total Hip Arthroplasty**

Karthikevan E. Ponnusamy, MD, Indianapolis, IN Louis C. Okafor, MD, Indianapolis, IN Clayton Alexander, MD, Indianapolis, IN Mostafa H. El Dafrawy, MD, Indianapolis, IN Zan Naseer, Forest Hill, MD Robert S. Sterling, MD, Owings Mills, MD Richard L. Skolasky Jr, ScD, Indianapolis, IN Harpal S. Khanuja, MD, Indianapolis, IN

Patients on dialysis undergoing primary THA have much greater readmissions, complications, and mortality out to 2 years, but dialysis status is not associated with 2-year revisions/infections.

#### Discussion – 6 Minutes

#### 2:42 PM

## **Outcomes Following Total Hip Arthroplasty in Sickle Cell** Hemoglobinopathy: Targets for Improvement

Daniel S. Mangiapani, MD, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Abiram Bala, BA, Durham, NC Cynthia L. Green, Durham, NC Thorsten M. Seyler, MD, PhD, Winston-Salem, NC Samuel S. Wellman, MD, Durham, NC Michael P. Bolognesi, MD, Durham, NC

A Medicare database review of 803 sickle cell patients provides outcomes from, to our knowledge, the largest reported cohort undergoing primary THA and identif es potential targets for improvement.

#### 2:48 PM

### The Effect of Prior Bariatric Surgery on THA/TKA Outcomes

Gwo-Chin Lee, MD, Philadelphia, PA Kevin Ong, PhD, Philadelphia, PA Doruk Baykal, PhD, Philadelphia, PA Edmund Lau, MS, Menlo Park, CA Arthur L. Malkani, MD, Louisville, KY

The impact of bariatric surgery prior to elective THA/TKA remains unclear. Patients are at increased risk for infections and revisions following THA and TKA respectively.

Thursday

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 594

Paper 595

Paper 596

#### 2:54 PM

## Chronic Kidney Disease Linearly Predicts Outcomes After Elective Total Joint Arthroplasty

Timothy Tan, MD, Philadelphia, PA Michael M. Kheir, BS, Philadelphia, PA Edward J. Filippone, MD, Philadelphia, PA Dean D. Tan, BS, Pleasanton, CA Antonia Chen, MD, MBA, Philadelphia, PA

Severe chronic kidney disease is associated with an increased risk of transfusion, length of stay, and in hospital complications after total joint arthroplasty.

#### Discussion – 6 Minutes

#### 3:06 PM

Paper 598

Paper 597

## Does Previous Hip Arthroscopy Impact The Clinical Outcomes Of Total Hip Arthroplasty?

Jacob Haynes, MD, Saint Louis, MO Ao Xiong, MD, Shenzhen, China Tonya W. An, BS, Saint Louis, MO Geneva Baca, Saint Louis, MO Ryan Nunley, MD, Saint Louis, MO John C. Clohisy, MD, Saint Louis, MO

At midterm follow up, prior ipsilateral arthroscopic hip surgery did not adversely affect the clinical outcome of primary total hip arthroplasty.

#### 3:12 PM

Paper 599

## Long-term Outcome of Total Hip Arthroplasty in Patients with Cerebral Palsy: A Matched Cohort Study

Matthew Houdek, MD, Rochester, MN Chad Watts, MD, Rochester, MN Cody Wyles, BS, Rochester, MN Todd A. Milbrandt, MD, Rochester, MN Michael J. Taunton, MD, Rochester, MN

THA provides patients with CP signif cant pain relief and functional improvement. Patients with CP should expect similar outcome to those with a primary diagnosis of OA

## 3:18 PM

Paper 600

### Are Patient-Reported Outcomes Different After Anterior Versus Posterior Approach to Total Hip Arthroplasty?

Michael S. Cremins, PA-C, PhD, Hartford, CT John Grady-Benson, MD, Farmington, CT Smitha S. Vellanky, MSc, Hartford, CT Steven F. Schutzer, MD, Hartford, CT Gina Panek, BS, Hartford, CT

Surgeons that exclusively perform either the anterior or the posterior total hip arthroplasty approach can achieve excellent and equivalent six month postoperative patient-reported outcomes.

Discussion – 6 Minutes

## PAPER PRESENTATION

1:30 PM — 3:30 PM W414

#### Sports Medicine/Arthroscopy V: Hip

Moderator(s): Dean K. Matsuda, MD, Los Angeles, CA, Srino Bharam, MD, New York, NY

#### 1:30 PM

Predictors of Clinical Outcomes After Hip Arthroscopy: A Prospective Analysis of 1038 Patients Parth Lodhia, MD, Westmont, IL Timothy J. Martin, MA, Westmont, IL Chengcheng Gui, BSE, Westmont, IL Sivashankar Chandrasekaran, Denham Court, Australia Carlos Suarez, MD, Mexico City, Mexico Benjamin G. Domb, MD, Oak Brook, IL

Paper 601

Paper 602

Paper 603

This is a prospective analysis of 1038 hip arthroscopies, where we studied the factors that predicted clinical outcomes.

#### 1:36 PM

#### Predictors of Outcome in Hip Arthroscopy for Acetabular Retroversion

Kirsten L. Poehling-Monaghan, MD, Rochester, MN Aaron J. Krych, MD, Rochester, MN Rafael J. Sierra, MD, Rochester, MN Bruce A. Levy, MD, Rochester, MN

Careful restoration of labral function is necessary to avoid complications in hip arthroscopy performed in patients with acetabular retroversion.

#### 1:42 PM

# Is Open Rim Trimming or Anteverting Periacetabular Osteotomy better for Treatment of Acetabular Retroversion?

Corinne A. Zurmuehle, MD, Bern, Switzerland Helen Anwander, Bern, Switzerland Simon D Steppacher, MD, Bern, Switzerland Christoph E. Albers, MD, Bern, Switzerland Markus S. Hanke, MD, Bern, Switzerland Klaus Siebenrock, MD, Bern, Switzerland Moritz Tannast, Bern, Switzerland

Mid-term results of patients with acetabular retroversion treated for femoroacetabular impingement showed an increased surviorship with anteverting periacetabular osteotomy than open rim trimming.

Discussion – 6 Minutes

### 1:54 PM

## Pelvic Incidence Plays a Role in Pelvic Mobility & Acetabular Version in Patients with Femoroacetabular Impingement

James Ross, MD, Fort Lauderdale, FL Jeffrey Nepple, MD, Saint Louis, MO Eric Tannenbaum, MD, Ann Arbor, MI Christopher M. Larson, MD, Edina, MN Asheesh Bedi, MD, Ann Arbor, MI

Pelvic incidence, an important measure of sagittal balance, was found to have a correlation with pelvic mobility and the radiographic appearance of the acetabulum.

### 2:00 PM

#### Paper 605

Paper 604

Is There An Association Between Hip Motion And Severity Of Acetabular Dysplasia? Analysis Of The ANCHOR PAO Cohort

Peter D. Fabricant, MD, MPH, Boston, MA Mark Seeley, MD, Philadelphia, PA John C. Clohisy, MD, Saint Louis, MO Ira Zaltz, MD, Huntington Woods, MI Wudbhav N. Sankar, MD, Philadelphia, PA ANCHOR Group, Saint Louis, MO

Contrary to previous understanding, increased acetabular dysplasia severity doesn't predict increased hip ROM.Rather, femoral-sided deformity seems to drive observed differences in rotational hip ROM.

### 2:06 PM

#### Paper 606

Paper 607

# Effectiveness of Endoscopic Shelf Acetabuloplasty for Athletes with Hip Dysplasia.

Soshi Uchida, MD, PhD, Kitakyushu, Japan Toshiharu Mori, MD, PhD, Kitakyushu, Japan Hitoshi Suzuki, M.D., PhD, Kitakyushu, Japan Hajime Utsunomiya, MD, Kitakyushu, Japan Akihisa Hatakeyama, MD, Kashiwazaki, Japan Akinori Sakai, MD, PhD, Kitakyushu, Japan

We investigated the effectiveness of endoscopic shelf acetabuloplasty for the athletes with dysplasia. This technique could provide favorable clinical outcome for athletes with dysplasia.

Discussion – 6 Minutes

## 2:18 PM

### Postoperative Alpha Angle Not Associated with Outcomes 5 years following Hip Arthroscopy for FAI

Karen K. Briggs, MPH, Vail, CO Marc J. Philippon, MD, Vail, CO Eduardo Augusto M. Soares, MD, Belo Horizonte, Brazil Sanjeev Bhatia, MD, Vail, CO

This study examined the effect of the postop AA on patient outcome at 5 years s/p arthroscopy for FAI. There were no signif cant difference between any outcome score based on a correction of 55°.

## 2:24 PM

## Analysis of the Current Indications for Microfracture of Chondral Lesions in the Hip

Paper 608

Paper 609

Paper 610

Paper 611

Darrin Trask, MD, Madison, WI Matthew W. Squire, MD, MS, Madison, WI James S. Keene, MD, Madison, WI

Results of microfracture in large lesions (<sup>3</sup>400 mm2) and older (<sup>3</sup> 50 years) patients were very good (Two-year MHHS 86 and 85 points) and the same as those with smaller lesions and in younger patients.

#### 2:30 PM

#### The Effect of Platelet-Rich Plasma Administration in Hip Arthroscopy: A Review of Clinical Outcomes

Misty Suri, MD, New Orleans, LA Alexander H. Tejani, MD, Brooklyn, NY Alexander H. Tejani, MD, Brooklyn, NY Daniel Tensmeyer, MD, Metairie, LA Scott Montgomery, MD, New Orleans, LA Stephanie Pawlak, BA, River Ridge, LA Deryk G. Jones, MD

Administration of PRP during hip arthroscopy may cause a placebo effect of believing that the PRP improves outcome while in actuality may not have a benef cial effect on healing and physical outcome.

Discussion – 6 Minutes

#### 2:42 PM

## Clinical Outcomes Of Initial 3-Month Trial Of Conservative Treatment For Femoroacetabular Impingement

Pil Whan Yoon, MD, Seoul, Republic of Korea Taesoo Ahn, MD, Seoul, Republic of Korea Soong Joon Lee, MD, Seoul, Republic of Korea Jung Taek Kim, MD, Seoul, Republic of Korea Hyun Ah Kim, Seoul, Republic of Korea Jae Suk Chang, MD, PhD, Seoul, Republic of Korea Hee J. Kim, MD, Seoul, Republic of Korea Kang Sup Yoon, MD, Seoul, Republic of Korea

An initial trial of suff cient period conservative treatment for FAI patients should be considered before surgical intervention.

#### 2:48 PM

## Treatment Of Cartilage Defects In Impingement Surgery Reduces The Risk Of Total Hip Arthroplasty At 10 Year Follow Up

Pascal C. Haefeli, MD, Bern, Switzerland Simon D Steppacher, MD, Bern, Switzerland Moritz Tannast, Bern, Switzerland Klaus Siebenrock, MD, Bern, Switzerland Lorenz Buchler, MD, Biel, Switzerland

Treatment of Cartilage Defects during Surgical Hip Dislocation for the Treatment of Femoroacetabular Impingement Signif cantly lowers the Risk for Total Hip Arthroplasty at 10-year Follow-up

#### 2:54 PM

#### Acetabular Labral Tears Show Signif cant Function Improvement but Continued Pain with Year of Conservative Therapy

Shivam Upadhyaya, BS, Boston, MA Kyle Alpaugh, MD, Northborough, MA Noah J. Ouinlan, BA, Burlington, VT Scott D. Martin, MD. Boston, MA

Non-operative therapy of acetabular labral tears is a continued area of study with regards to functional outcome. We present a cohort who underwent conservative therapy and their short-term outcomes.

Discussion – 6 Minutes

#### 3.06 PM

Paper 613

Paper 612

#### **Clinical Outcomes of Hip Arthroscopy in Patients Over 60**

Brian Capogna, MD, New York, NY John Begly, MD, New York, NY Michael Ryan, MD, New York, NY Kristofer E. Chenard, MD, New York, NY Rajkishen Narayanan, MS, New York, NY Thomas Youm, MD, New York, NY

Utility of hip arthroscopy in the elderly population is unclear. We present clinical outcomes of a large series of patients undergoing hip arthroscopy greater than 60 years of age.

#### 3:12 PM

Paper 614

#### Hip-Spine Syndrome: The Relationship between Cam-Type **Deformity and Osteoarthritis of the Spine**

Jeremy Gebhart, MD, Cleveland, OH Douglas S. Weinberg, MD, Cleveland, OH William Z. Morris, MD, Cleveland, OH Keegan Conry, BS, Cleveland, OH Lee Sasala, BA, Cleveland, OH Raymond W. Liu, MD, Cleveland, OH

Increasing alpha angle and decreasing anterior femoral neck offset are signif cant predictors of lumbar spine OA; femoral osteoplasty may slow the development of OA and decrease back pain.

#### 3:18 PM

#### Paper 615 The Economic Impact of Acetabular Labral Tears - A Cost-**Effectiveness Analysis**

Parth Lodhia, MD, Westmont, IL Chengcheng Gui, BS, Westmont, IL Sivashankar Chandrasekaran, Denham Court, Australia Carlos E. Suarez, MD, Mexico City, Mexico Douglas R. Dirschl, MD, Chicago, IL Benjamin G. Domb, MD, Oak Brook, IL

This is study on the cost-effectiveness of hip arthroscopy when compared to physical rehabilitation alone. This utilizes data from several published sources.

Discussion – 6 Minutes

**PAPER PRESENTATION** 

1:30 PM — 3:30 PM Room W304A

#### Spine VI: Thoracolumbar Trauma/Deformity II

Moderator(s): Kern Signh, MD, Chicago, IL, Michael J. Lee, MD, Chicago, IL

#### 1:30 PM

#### **Malnutrition Predicts Infectious and Wound Complications Following Posterior Lumbar Spinal Fusion**

Paper 616

Paper 617

Paper 618

Daniel D. Bohl, MD, MPH, MPH, Chicago, IL Junyoung Ahn, BS, Chicago, IL Daniel J. Johnson, BS, Towson, MD Dustin H. Massel, BS, Northbrook, IL Bryce A. Basques, MD, Chicago, IL Kern Singh, MD, Chicago, IL

Among 4,310 patients, the prevalence of malnutrition was 4.8%, and malnutrition was associated with wound dehiscence, surgical site infection, urinary tract infection, and readmission.

#### 1:36 PM

#### **Determining Drivers of Cost for Elective Laminectomy and Fusion for Lumbar Degenerative Disease**

Silky Chotai, Nashville, TN Harrison F. Kay, BS, Nashville, TN Ahilan Sivaganesan, MD, Nashville, TN Scott L. Parker, MD, Nashville, TN Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

There was considerable variation in total direct cost for laminectomy and fusion; 23% of this variation in the cost can be explained by readmission, length of hospital stay, and length of surgery.

#### 1:42 PM

#### Determining the Drivers of Cost for Elective Microdiscectomy for **Single-Level Lumbar Disc Herniation**

Clinton J. Devin, MD, Nashville, TN Silky Chotai, Nashville, TN Ahilan Sivaganesan, MD, Nashville, TN Scott L. Parker, MD, Nashville, TN Harrison F. Kay, BS, Nashville, TN Matthew McGirt, Charlotte, NC

There was moderate variation in total direct cost after lumbar microdiscectomy. 3.4% of this variation can be explained by readmission within 90-days.

#### Discussion – 6 Minutes

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 1:54 PM

#### Medicare's Hospital Acquired Conditions Policy: A Problem of Non-Payment After Spine Deformity Surgery

Andrew J. Pugely, MD, Iowa City, IA Christopher T. Martin, MD, Coralville, IA Zachary Ries, MD, Iowa City, IA Yubo Gao, PhD, Iowa Citv, IA Christopher Anthony, MD, Iowa City, IA

The NIS database was used to analyze 144,235 cases of adult spinal deformity surgery for the presence of Hospital Acquired Conditions (HACs), as defined by CMS.

#### 2:00 PM

#### Paper 620

Paper 619

**Development of a Preoperative ASD Frailty Index that Correlates** to Common Quality and Value Metrics

Amit Jain, MD, Indianapolis, IN Daniel Sciubba, MD, Indianapolis, IN Khaled Kebaish, MD, Indianapolis, IN Brian J. Neuman, MD, Indianapolis, IN Robert S. Bess, MD, Castle Rock, CO Christopher Ames, MD, San Francisco, CA International Spine Study Group, Brighton, CO

We found that in operatively treated ASD patients, high frailty index predicted greater complications, higher length of stay and worse self-reported outcomes before and after spinal surgery.

#### 2:06 PM

Paper 621

### Early Lumbar Nerve Palsy after Three Column Osteotomy for **Fixed Sagittal Plane Deformities in Adults**

Tarush Rustagi, MD, Syracuse, NY Richard Tallarico, MD, Manlius, NY William F. Lavelle, MD, East Syracuse, NY

Nerve palsies after three column corrective osteotomy occurred in 23% cases and most tend to recover. Signif cant correction of scoliosis at the osteotomy level (>50%) may be a reason for nerve palsy.

Discussion – 6 Minutes

#### 2:18 PM

#### Paper 622

#### 2-year Follow-up in Spine Clinical Research: An Adequate **Benchmark?**

Firoz Miyanji, MD, Vancouver, BC, Canada Sameer Desai, BS, Surrey, BC, Canada Amer Samdani, MD, Philadelphia, PA Suken A. Shah, MD, Wilmington, DE Jahangir Asghar, MD, Coral Gables, FL Burt Yaszay, MD, San Diego, CA Harry L. Shuff ebarger, MD, Miami, FL Randal R. Betz, MD, Ocean City, NJ Peter O. Newton, MD, San Diego, CA

A non-negligible rate of new complications requiring intervention may become apparent >2-5 years post-op, emphasizing the importance of longitudinal follow-up beyond 2 years following AIS surgery.

#### 2:24 PM

#### Pelvic incidence: An anatomic investigation of 880 cadaveric specimens

Paper 623

Paper 624

Paper 626

Douglas S. Weinberg, MD, Cleveland, OH William Z. Morris, MD, Cleveland Hts, OH Jeremy Gebhart, MD, Cleveland, OH Raymond W. Liu, MD, Cleveland, OH

Important demographic differences in pelvic incidence exist in a large osteological collection

#### 2:30 PM

#### **Does Obesity Predict Worse Patient-Reported Outcomes** Following Lumbar Spine Surgery?

John Sielatycki, MD, Nashville, TN Silky Chotai, Nashville, TN Harrison F. Kay, BS, Nashville, TN Joseph B. Wick, BA, Nashville, TN David Stonko, BS, MS, Nashville, TN Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

Obesity (BMI greater than 35) is associated with worse baseline and 12-month PROs, however no differences in PRO change scores were observed across BMI groups.

#### Discussion – 6 Minutes

#### 2:42 PM

#### Paper 625 **Outcomes after Decompression without Fusion in Stenosis with Clinically Signif cant Pre-op Back Pain**

Charles H. Crawford III, MD, Prospect, KY Steven D. Glassman, MD, Louisville, KY Praveen V. Mummaneni, San Francisco, CA John Knightly, FACS, MD, Morristown, NJ Anthony Asher, Charlotte, NC

A high level of pre-op back pain should not be a contraindication to decompression only surgery in patients who otherwise are candidates for surgical decompression of symptomatic lumbar stenosis.

#### 2:48 PM

#### Increasing Rate of Surgical Management of Adult Spinal **Deformity in Patients Over Sixty**

David Sing, San Francisco, CA Ryan Khanna, Chicago, IL Jeremy D. Shaw, MD, MS, San Francisco, CA Lionel Metz, MD, San Francisco, CA Shane Burch, MD, San Anselmo, CA Sigurd H. Berven, MD, San Francisco, CA

Multilevel surgical management of adult spinal deformity in patients >60 increased from 2004 to 2011 at a rate exceeding the growing age >60 demographic during the same period.

#### 2:54 PM

#### When Does Compensation for Lumbar Stenosis Become a Clinical Sagittal Plane Deformity?

Aaron Buckland, MD, New York, NY Shaleen Vira, MD, Silver Spring, MD Jonathan H. Oren, MD, New York, NY Renaud Lafage, New York, NY Bassel Diebo, MD, New York City, NY Themistocles S. Protopsaltis, MD, Closter, NJ Frank J. Schwab, MD, New York, NY Virginie Lafage, PhD, New York, NY John A. Bendo, MD, New York, NY

Lumbar stenosis and adult spinal deformity patients adopt different compensatory mechanisms with mild-moderate deformity, but similar compensatory mechanism with moderatesevere deformity.

Discussion – 6 Minutes

#### 3:06 PM

Paper 628

Paper 629

Paper 627

#### An Anatomic Investigation Between Facet Angle, Pelvic Incidence, And Osteoarthritis Of The Lumbar Spine

Douglas S. Weinberg, MD, Cleveland, OH Raymond W. Liu, MD, Cleveland, OH Katherine K. Xie, BS, Cleveland, OH William Z. Morris, MD, Cleveland Hts, OH Jeremy Gebhart, MD, Cleveland, OH Zachary Gordon, MD, Cleveland, OH

Important differences in pelvic incidence and facet angle are associated with lumbar spine osteoarthritis in a large cadaveric collection

#### 3:12 PM

# Does Greater Body Mass Index Increase the Risk for Recurrent Herniation Following Lumbar Discectomy?

Daniel D. Bohl, MD, MPH, MPH, Chicago, IL Junyoung Ahn, BS, Chicago, IL Ehsan Tabaraee, MD, Walnut Creek, CA Robert A. Sershon, MD, Chicago, IL Bryce A. Basques, MD, Chicago, IL Kern Singh, MD, Chicago, IL

The two-year risk for recurrent herniation following discectomy was 1.8% for normal weight patients, 12.5% for overweight patients, 9.1% for obese patients, and 25.0% for morbidly obese patients.

#### 3:18 PM

#### Center Variability in Surgical Technique and Outcomes in Adult Spinal Deformity

Thomas Cheriyan, New York, NY Munish C. Gupta, MD, Sacramento, CA Renaud Lafage, New York, NY Justin S. Smith, MD, Charlottesville, VA Robert S. Bess, MD, Castle Rock, CO Robert A. Hart, MD, Portland, OR Richard A. Hostin, MD, Plano, TX Virginie Lafage, PhD, New York, NY International Spine Study Group, Brighton, CO

Despite various surgical techniques employed, 2-year radiographic and patient-reported outcomes were similar among centers. Differences in reoperation rates and neurological def cits were noted.

Discussion – 6 Minutes

#### PAPER PRESENTATION

#### 1:30 PM — 3:30 PM W315

#### Pediatrics III: Foot/Neuromuscular/Infection

Moderator(s): Kristan Pierz, MD, Hartford, CT, William M. Mirenda, MD, Danville, PA

#### 1:30 PM

Neuromotor Sub-Classif cation of GMFCS -5 Predicts Complications and HRQoL in Cerebral Palsy after Spine Fusion

Amit Jain, MD, Indianapolis, IN Paul D. Sponseller, MD, Indianapolis, IN Patrick J. Cahill, MD, Philadelphia, PA Burt Yaszay, MD, San Diego, CA Amer Samdani, MD, Philadelphia, PA Randal R. Betz, MD, Lawrenceville, NJ Suken A. Shah, MD, Wilmington, DE Peter O. Newton, MD, San Diego, CA Michelle Marks, NMD, Tucson, AZ

GMFCS5 is a heterogeneous category that can be subdivided based on preoperative neuromotor impairments; sub-classif cation predicts postoperative complications.

#### 1:36 PM

#### Development of a Risk Severity Score for Nonidiopathic **Pediatric Spine Surgical Site Infection**

Jeanne M. Franzone, MD, New York, NY Hiroko Matsumoto, MA, New York, NY Michael J. Troy, BS, Boston, MA Kody K. Barrett, BA, Los Angeles, CA Brendan Striano, Nutley, NI Michael P. Glotzbecker, MD, Waban, MA John M. Flynn, MD, Wallingford, PA David L. Skaggs, MD, Los Angeles, CA Michael G. Vitale, MD, MPH, Irvington, New York

A surgical site infection (SSI) risk severity score (RSS) based on preoperatively known characteristics for patients with nonidiopathic spinal deformity undergoing spinal fusion has been developed.

#### 1:42 PM

#### Paper 633

Paper 632

#### Minimizing Complications in Scoliosis Surgery in Children with **Cerebral Palsy**

Michael W. Shrader, MD, Madison, MS Miranda Falk, PA-C, Chandler, AZ Lee S. Segal, MD, Madison, WI William Wood, MD, Phoenix, AZ Carla Boan, M.Sc., Phoenix, AZ Gregory R. White, MD, Phoenix, AZ

The use of two attending surgeons for posterior spinal fusion in children with cerebral palsy lowers blood loss, operative time, length of stay, and complication rates.

Discussion – 6 Minutes

#### 1:54 PM

#### Paper 634 **Results Of Early Hip Reconstructive Surgery In Severely Involved Children With Cerebral Palsy**

Betsey K. Bean, DO, Dupont, WA Glen O. Baird, MD, Spokane, WA Bryan J. Tompkins, MD, Spokane, WA William E. Bronson, MD, Spokane Valley, WA Mark McMulkin, PhD, Spokane, WA Bryan Tompkins, M.D., Spokane, WA Paul M. Caskey, MD, Spokane, WA

This study reports the outcomes of hip reconstructive surgery performed for hip instability in severely involved children with cerebral palsy based on age and procedure performed.

#### 2:00 PM

#### Paper 635

#### Hip Dysplasia in Patients with Cerebral Palsy Treated with **Bernese Periacetabular Osteotomy**

Mark L. Miller, MD, Saint Louis, MO Perry L. Schoenecker, MD, Kirkwood, MO John C. Clohisy, MD, Saint Louis, MO

This study examines our experience with Bernese periacetabular osteotomy, in combination with adjunctive treatments, for the treatment of hip dysplasia in patients with Cerebral palsy.

#### 2:06 PM

#### Open vs. Arthroscopic Anterior Release for Internal Shoulder **Contracture in Obstetric Brachial Plexus Palsy**

Mostafa H. Elsherbini, MD, Giza, Egypt Mostafa A. Ibrahim, Cairo, Egypt Amr M. Mohamed Aly, MD, Cairo, Egypt Shady Samir, MD, Cairo, Egypt Nabil Ghali, Cairo, Egypt

Arthroscopic release for internal shoulder contracture offers selective release in contrast to open release decreasing the potential of anterior dislocation and/or external rotation contractures.

Discussion – 6 Minutes

#### 2:18 PM

#### **Reorientational Proximal Femoral Osteotomies for Arthrogrypotic Hip Contractures in Children** Harold J. Van Bosse, MD, Wynnewood, PA

Roger E. Saldana, MD, Miami, FL

Arthrogrypotic children often have potential for ambulation if their limb positioning can be optimized. The reorientational hip osteotomy is a straightforward solution to treat the hip contractures.

#### 2:24 PM

#### **Diagnosis and Treatment of Pediatric Septic Hips: Is there** consensus?

Joshua M. Abzug, MD, Timonium, MD William L. Hennrikus Jr, MD, Hershev, PA Joshua E. Hyman, MD, New York, NY Mary E. Hurley, MD, Fontana, CA Kerwyn Jones, MD, Akron, OH Brian K. Brighton, MD, Charlotte, NC Charles T. Mehlman, DO, MPH, Cincinnati, OH

There is wide variability regarding the diagnosis and treatment of pediatric septic hips and therefore standardized guidelines may lead to improved quality and safety as well as cost savings/value.

#### 2:30 PM

#### Validation and Modif cation of a Severity of Illness Score for **Children with Acute Hematogenous Osteomyelitis**

Alexander G. Athey, BS, Dallas, TX Megan Mignemi, MD, Dallas, TX William T. Gheen, BA, Dallas, TX Eduardo A. Lindsay, MD, Dallas, TX Chan-Hee Jo, PhD, Dallas, TX Lawson A. Copley, MD, Dallas, TX

This study validates and improves upon a previously published severity of illness scoring system in a large, prospective cohort of children with acute hematogenous osteomyelitis.

Discussion – 6 Minutes

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 637

Paper 638

Paper 639

#### 2:42 PM

#### Vitamin D Status in Children and Adolescents in a Middle Latitude United States Climate

Janet Walker, MD, Lexington, KY Neeley Buhr, MS, Lexington, KY Donna Jean Oeff nger, PhD, Lexington, KY Todd A. Milbrandt, MD, Rochester, MN Ryan D. Muchow, MD, Lexington, KY Vishwas R. Talwalkar, MD, Lexington, KY Henry J. Iwinski, MD, Lexington, KY Scott A. Riley, MD, Lexington, KY

72% vitamin D insuff ciency is greater than that reported nationally. Those at risk are non-white, obese, on Medicaid, who drink <2 glasses of milk per day and spend <20 minutes outdoors per day.

#### 2:48 PM

Paper 641

Paper 640

Evidence of an Association between ADHD Medication and **Diminished Bone Health in Children and Adolescents** 

Jeffrey T. Howard, PhD, San Antonio, TX Kristina S. Walick, MD, CO Springs, CO Jessica C. Rivera, MD, Fort Sam Houston, TX

NHANES population data were analyzed, demonstrating an association between ADHD medication use and decreased bone mineral density in pediatric patients.

#### 2:54 PM

Paper 642

Functional Outcomes of Pediatric Patients Diagnosed with **Complex Regional Pain Syndrome at a Single Institution** 

June V. Chanyasulkit, MD, Boston, MA Matthew Levitsky, BA, Boston, MA Philip Rosenstock, BS, Boston, MA Diana Milojevic, MD, Boston, MA Stuart V. Braun, MD, Cohasset, MA Purushottam A. Gholve, MD, Boston, MA

These validated quality-of-life measures suggest pediatric CRPS patients may have a milder disease course with decreased disability, perhaps due to effective interventions and earlier diagnosis.

Discussion – 6 Minutes

#### 3:06 PM

#### Paper 643 Oral sucrose for Pain Relief during Clubfoot Casting: A Double-**Blinded Randomized Controlled Trial**

Todd A. Milbrandt, MD, Rochester, MN Richard Kryscio, Lexington, KY Ryan D. Muchow, MD, Lexington, KY Janet Walker, MD, Lexington, KY Vishwas R. Talwalkar, MD, Lexington, KY Henry J. Iwinski, MD, Lexington, KY

Sucrose solution and milk during Ponseti casting and manipulation were effective in decreasing the pain response in children undergoing manipulation and casting for clubfeet.

#### 3:12 PM

#### Ponseti-treated Idiopathic Clubfeet -is Brace Compliance In The First 90 Days Predictive Of Outcome?

Paper 644

Paper 645

**PAPER 921** 

B Stephens Richards III, MD, Dallas, TX Shawne Faulks, Lewisville, TX Kevin Felton, Dallas, TX Chan-Hee Io, PhD, Dallas, TX

Following nonoperative clubfoot correction, objective monitoring of brace wear during the f rst 90 days does identify those most at risk for relapse and the ultimate need for surgery.

#### 3:18 PM

#### Macrodactyly of the Foot

Grant D. Hogue, MD, Richardson, TX Victoria Prete, BS, Somerville, MA James R. Kasser, MD, Boston, MA Collin J. May, MD, Newton, MA

This study reviews the clinical and radiographic outcomes of twenty six patients who underwent one or more operative procedures for macrodactyly of the foot at our single tertiary-care institution.

Discussion – 6 Minutes

#### 3:24 PM

#### Update on 50-Year Outcomes of Tibialis Anterior Tendon **Transfer for Relapsed Idiopathic Clubfoot**

Joshua Holt, MD, Iowa City, IA David Eirin Oji, MD, Dublin, CA H John Yack, PT, Iowa City, IA Jose A. Morcuende, MD, Iowa City, IA

Tibialis Anterior Tendon Transfer for Relapsing Idiopathic Clubfoot Treated with the Ponseti Method is Effective at Preventing Additional Relapse of Deformity Without Affecting Long-Term Foot Function

Discussion – 6 Minutes

#### **INSTRUCTIONAL COURSE LECTURE**

#### 3:00 PM - 4:00 PM



Room

W209B

#### **Dealing with the Underperforming Orthopaedic Resident**

Moderator: R. Dale Blasier, MD, Little Rock, AR S. Elizabeth Ames, MD, Burlington, VT April D. Armstrong, MD, Hershey, PA John L. Marsh, MD, Iowa City, IA

Helps you design a plan as part of the educational process to foster success and target areas to deal with underperformance on a case-by-case basis. One size does not f t all!

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### **SHOWDOWN**

4:00 PM - 5:00 PM Valencia Room B



Hip Showdown: Labral Def ciency and Capsular Def ciency -What is My Approach?

Moderator: Marc J. Philippon, MD, Vail, CO

YOU decide who wins when four surgeons demonstrate their personal points of view in an unrehearsed debate. Join us and declare the winners via the Audience Response System.

#### **DEBATE I:**

My Approach to Labral Def ciency: When to Reconstruct... When Not to Reconstruct

Robert E. Boykin, MD, Asheville, NC vs. S. Clifton Willimon, MD, Atlanta, GA

#### **DEBATE II:**

My Approach to Capsular Def ciency: When to Reconstruct... When Not to Reconstruct

Marc Safran, MD, Redwood City, CA vs.

Allston J. Stubbs IV, MD, Winston-Salem, NC

#### **Symposium**

4:00 PM - 6:00 PM Valencia Room A



Challenges in Pediatric Trauma: What We All Need to Know (W) Moderator: Jeffrey R. Sawyer, MD, Germantown, TN

Provides the latest information on the safest and most effective techniques in treatment of challenging upper and lower extremity fractures in children.

- I. Remodeling of Fractures in Children: Which Fractures Remodel and Which Don't (Case presentation) James H. Beaty, MD, Memphis, TN
- II. Techniques for Optimal Management of Displaced Forearm Fractures in the Off ce. Martin J. Herman, MD, Philadelphia, PA
- III. Compartment Syndrome in Children: Who is at Risk? Pooya Hosseinzadeh, MD, Miami, FL
- IV. Management of Open Fractures: Should Children be Managed the Same as Adults? Todd A. Milbrandt, MD, Rochester, MN
- V. Displaced Supracondylar Humerus Fractures: Can They Wait Till the Next Day? What are the Safest Surgical Techniques? Ken J. Noonan, MD, Madison, WI

#### **Symposium**

4:00 PM - 6:00 PM **Chapin Theater** 

The Employed Orthopaedic Surgeon: Promises and Pitfalls (X) Moderator: Alexandra E. Page, MD, La Jolla, CA

AAOS Fellows increasingly choose employment. Bothsurgeon and hospital systems drive this trend. Pros and cons of different employment models are explored, including practical issues of employment, and how employment may change in the future.

- I. Employment in a Single Hospital Setting: Pros & Cons Melbourne D. Boynton, MD, Rutland, VT
- II. Employment Contracts for Orthopaedic Surgeons David D. Haynes Jr, Esq, New Orleans, LA
- III. Hospital Employment: What's Ahead? Nicholas J. Janiga, Castle Rock, CO
- IV. Physicians and Hospitals: What's Driving the Trend? Michael Suk, MD, Danville, PA
- V. Employment in a Fully Integrated System: Pros & Cons Ronald W. Wyatt, MD, Walnut Creek, CA

#### **INSTRUCTIONAL COURSE LECTURE**

#### 4:00 PM - 6:00 PM

#### ♦361 TICKET

### Prevention, Diagnosis, and Treatment of



**Periprosthetic Joint Infection: An Analysis** Moderator: Bryan D. Springer, MD, Charlotte, NC

Matthew P. Abdel, MD, Rochester, MN

Craig J. Della Valle, MD, Chicago, IL

Fares S. Haddad, FRCS, London, United Kingdom

Focuses on the challenges and controversies ofprevention, diagnosis, and treatment. Rather than a standard didactic session, the panel explores illustrative case examples and analysis that are common to the practicing orthopaedic surgeon.

#### 362 The Continuum of Constraint in Knee Arthroplasty



Moderator: Adolph V. Lombardi, MD, New Albany, OH Keith R. Berend, MD, New Albany, OH Jeffrey H. DeClaire, MD, Rochester, MI Christopher L. Peters, MD, Salt Lake City, UT

Implant designs for primary knee arthroplasty haveexpanded to include broader options for constraint in an effort to better address varying deformities and improve outcomes and satisfaction in patients with endstage degenerative joint disease. Traducción simultánea en español. Tradução simultânea em português.

W314



#### Nuts and Bolts of Foot and Ankle Injuries in the Athlete

Moderator: I. Chris Coetzee, MD, Edina, MN Robert B. Anderson, MD, Charlotte, NC Steven L. Haddad, MD, Glenview, IL James R. Holmes, MD, Ann Arbor, MI

Room W308C

#### Provides an overview of how injury management hasevolved over time to improve outcome and also allow the athlete a safe and early return to activity. Faculty discusses new innovations in treatment options for specif c injuries and also concentrates on postoperative care and rehabilitation techniques to facilitate return tosport. Specif c attention is given not only to the serious athlete, but also the weekend warrior and dancers.

364 TICKET

Room

W307C

Magnetic Resonance Imaging of the Knee and Shoulder

Moderator: Lynne S. Steinbach, MD, San Francisco, CA Christine B. Chung, MA, San Diego, CA ChunBong B. Ma, MD, San Francisco, CA

Provides an overview of magnetic resonance imagingdiagnostic criteria for injury and conditions of the knee and shoulder. Discussion includes pitfalls, confounders, and potential applications for novel technologies.

TICKET ----Room

W310

365

**Complications of Common Hand Surgery Procedures** Moderator: Peter J. Stern, MD, Cincinnati, OH

Ryan P. Calfee, MD, Saint Louis, MO Sanjeev Kakar, MD, Rochester, MN

Fraser J. Leversedge, MD, Durham, NC

Covers complications following surgery for basal joint arthritis, carpal and cubital tunnel decompression, small bone f xation, volar plating for distal radius fracture, and includes a panel discussion.

366 TICKET W205A Off ce Pediatric Orthopaedics for the General **Orthopaedic Surgeon: Staying Current, Avoiding Mistakes** Moderator: Bernard D. Horn, MD, Philadelphia, PA Martin J. Herman, MD, Philadelphia, PA Richard W. Kruse, DO, Wilmington, DE Todd A. Milbrandt, MD, Rochester, MN

Geared toward the generalist, introduces currentconcepts for managing common pediatric orthopaedicproblems that are seen in the off ce. The faculty discusses preferred treatment strategies, avoiding mistakes, and managing complications.

## 367 TICKET

Room

W205B

#### How to Manage the Failed Rotator Cuff Repair in the Younger Patient (< 50)

Moderator: Joseph A. Abboud, MD, Philadelphia, PA Bassem T. Elhassan, MD, Rochester, MN Anand M. Murthi, MD, Indianapolis, IN Robert Z. Tashjian, MD, Salt Lake City, UT

Target audience is surgeons who are trying to moreeffectively manage patients with failed rotator cuff repairs who need operative treatment. The focus is on evidence-based methods, specif cally non-arthroplasty options.

Shoulder Instability: Technical Skills

Moderator: Hussein A. Elkousv. MD. Houston, TX Pascal Boileau, MD, Nice, France James P. Bradley, MD, Pittsburgh, PA Laurence D. Higgins, MD, Boston, MA

Provides technical guidance for arthroscopic and open management of anterior, posterior, and multidirectional instability as well as revision surgery and management of bone loss.

## Adult Lumbar Disc Herniation: Treatment,

#### Complications, Outcomes, and Evidence-Based Data for Patient and Health Professional Counseling

Room W300

368

TICKET

Room

W204

369

TICKET

Moderator: Eric O. Klineberg, MD, Sacramento, CA Michael P. Kelly, MD, Saint Louis, MO Han Jo Kim, MD, New York, NY Peter G. Passias, MD, Westbury, NY

Provides evidence-based treatment options for adult patients with lumbar disc herniation to aid surgeons in counseling patients and healthcare professionals.

# Athletic Hip Injuries: Presentation, Evaluation, TICKET

### and Return to Plav Moderator: Thomas S. Lynch, MD, New York, NY



Room

371

Room

W203

Room

W207

TICKET

370

Asheesh Bedi, MD, Ann Arbor, MI Shane J. Nho, MD, Chicago, IL Marc Safran, MD, Redwood City, CA

Will introduce the audience to common core and W307A hippathology that is prevalent in the athletic population as well as the treatment necessary to allow our athletes to return to play safely and quickly.

#### The Management of Meniscal Pathology: From Partial Meniscectomy to Transplantation

Moderator: Eric J. Strauss, MD, New York, NY Philip A. Davidson, MD, Park Citv, UT Laith M. Jazrawi, MD, New York, NY Michael J. Salata, MD, Cleveland, OH Provides a focused consolidation of expert lectures on current diagnoses and management of meniscus pathology and treatment.

#### 387 Multiple Ligament Knee Injuries – What Would You Do?

Moderator: Mark D. Miller, MD, Charlottesville, VA TICKET Annunziato Amendola, MD, Iowa City, IA Robert A. Arciero, MD, Farmington, CT Gregory C. Fanelli, MD, Danville, PA

F. Winston Gwathmey, MD, Charlottesville, VA Christopher D. Harner, MD. Houston, TX Darren L. Johnson, MD, Lexington, KY Robert F. LaPrade, MD, PhD, Vail, CO Bruce A. Levy, MD, Rochester, MN Eric C. McCarty, MD, Boulder, CO Claude T. Moorman, MD, Durham, NC Using a series of acutal knee multiple ligament injury (MLI) cases, we discuss treatment options for a variety of conditions to include open injuries, four ligament tears, obese MLI, and delayed presentation. An alphabetical faculty f nancial disclosure list can be found starting on page 334

388
TICKET
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Room

W208

#### Pediatric Orthopaedic Trauma: Principles of Management

Moderator: Shital N. Parikh, MD, Cincinnati, OH James H. Beaty, MD, Memphis, TN Alvin H. Crawford, MD, Cincinnati, OH John M. Flynn, MD, Philadelphia, PA William L. Hennrikus, MD, Hershey, PA Andrew Howard, MD, Toronto, ON, Canada Christopher A. Iobst, MD, Winter Park, FL Charles T. Mehlman, DO, MPH, Cincinnati, OH Scott J. Mubarak, MD, San Diego, CA Ken J. Noonan, MD, Madison, WI Andrew T. Pennock, MD, San Diego, CA Susan A. Scherl, MD, Omaha, NE David L. Skaggs, MD, Los Angeles, CA

Discusses the fundamentals of pediatric orthopaedic trauma management in general and for specif c injuries, providing guidelines for management.

### PAPER PRESENTATION

#### 4:00 PM — 6:00 PM Valencia Room D

#### Shoulder & Elbow V: Shoulder Arthoplasy

Moderator(s): John G. Costouros, MD, Redwood City, CA, Donald P. Endrizzi, MD, Falmouth, ME

#### 4:00 PM

#### Resilience Correlates to Outcomes after Total Shoulder Arthroplasty

John M. Tokish, MD, Simpsonville, SC Michael J. Kissenberth, MD, Simpsonville, SC Stefan J. Tolan, MD, Greenville, SC Keith T. Lonergan, MD, Simpsonville, SC Richard J. Hawkins, MD, Greenville, SC Tariq I. Salim, BS, Greer, SC Jennifer M. Mercuri, MS, Greenville, SC Ellen Shanley, PhD, PT, Greer, SC

Resilience was found to be a major predictor of postoperative outcomes after total shoulder arthroplasty in our study examining the correlation between resilience and traditional outcomes scores.

#### 4:06 PM

#### Paper 647

Paper 646

#### Differences in Expectations and Outcomes of Total Shoulder Arthroplasty by Gender: A Prospective Evaluation

Andrew Jawa, MD, Cambridge, MA Umer Dasti, MD, Fair Lawn, NJ Suzanne L. Miller, MD, Chestnut Hill, MA Amy L. Brown, MD, Milton, MA Kathryn S. Grannatt, MD, Dover, MA

Total shoulder arthroplasty results in excellent improvement in functional outcomes for both men and women without a signif cant difference between genders.

#### 4:12 PM

#### Rotator Cuff Dysfunction after Anatomic Total Shoulder Arthroplasty: Who is at Risk?

Stephen T. Ikard Jr, MD, Tuscaloosa, AL Kevin W. Farmer, MD, Gainesville, FL Aimee Struk, MEd, MBA, Gainesville, FL Thomas W. Wright, MD, Gainesville, FL

Patients with post-TSA cuff dysfunction demonstrate worse function, more glenoid radiolucencies, and implants that are placed more proud than their healthy-cuff counterparts.

Discussion – 6 Minutes

#### 4:24 PM

#### Increased Implant Conformity Results in Early Radiolucency after Anatomic Total Shoulder Arthroplasty

Vahid Entezari, MD, Beachwood, OH Michael H. Amini, MD, University Heights, OH Jason Ho, MD, Cleveland, OH Roy Xiao, BA, Cleveland Heights, OH Eric T. Ricchetti, MD, Shaker Heights, OH Joseph P. Iannotti, MD, PhD, Cleveland, OH

Patients with higher glenohumeral implant conformity and history of diabetes showed increased rate of glenoid radiolucency at 6 to 24 months following anatomic total shoulder arthroplasty

#### 4:30 PM

#### Paper 650

Paper 651

Paper 648

Paper 649

#### Short Term Outcomes after Biologic Resurfacing Shoulder Arthroplasty for the Young and/or Active Patient

Benjamin W. Sears, MD, Denver, CO Tara Hawkes, BS, Denver, CO Armodios M. Hatzidakis, MD, Denver, CO

This is an evaluation of outcomes following a standardized method of biologic resurfacing shoulder replacement with humeral head prosthetic resurfacing in-conjunction with glenoid resurfacing.

#### 4:36 PM

#### Immediate Versus Delayed Passive Range Of Motion Following Total Shoulder Arthroplasty

Patrick J. Denard, MD, Medford, OR Alexandre Laedermann, MD, Meyrin, Switzerland

Immediate passive range of motion leads to earlier ROM following TSA but may lower the healing rate of a lesser tuberosity osteotomy.

Discussion – 6 Minutes

#### 4:48 PM

#### Pre-operative MRI for Shoulder Osteoarthritis Does Not Change Surgeon Decision-making Compared to CT Scan

David Burnikel, MD, Boston, MA Andrew Jawa, MD, Cambridge, MA

Pre-operative evaluation with an MRI vs. CT scan does not affect surgical decision making with respect to selection of a reverse or standard shoulder arthroplasty

#### 4:54 PM

#### Paper 653

Paper 652

#### CT Analysis Of Pathologic Correction In Total Shoulder Arthroplasty Using A Standard Or Augmented Glenoid Component

Eric T. Ricchetti, MD, Cleveland, OH Bong-Jae Jun, PhD, Cleveland, OH Thomas E. Patterson, PhD, Cleveland, OH Joseph P. Iannotti, MD, PhD, Cleveland, OH

CT analysis shows that a posteriorly augmented glenoid component can better correct retroversion and maintain a lateralized joint line in a B2 glenoid, which can lead to better humeral head centering.

#### 5:00 PM

Paper 654

# Glenoid Inclination: Is it Replicated in Total Shoulder Arthroplasty?

Haifeng Ren, MD, Burlington, ON, Canada Robin R. Richards, MD, Toronto, ON, Canada

We showed that radiologically, normal glenoid inclination was not replicated following TSA in reality and that the glenoid components were most commonly tilted superiorly.

Discussion – 6 Minutes

#### 5:12 PM

#### Paper 655

The Utility of Obtaining Routine Hematologic Laboratory Values Following Shoulder Arthroplasty Rachel M. Frank, MD, Chicago, IL Simon Lee, MD, Ann Arbor, MI

Saleh Aiyash, MA, Chicago, IL Noam Kupfer, MA, Chicago, IL Nikhil N. Verma, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL Gregory P. Nicholson, MD, Chicago, IL Anthony A. Romeo, MD, Chicago, IL

Routine postoperative laboratory analyses do not change the acute postoperative management following shoulder arthroplasty, and are likely of no utility in the vast majority of patients.

#### 5:18 PM

# Postoperative Chemistry Labs Are Unnecessary for the Majority of Primary Shoulder Arthroplasty Patients

Paper 656

Paper 657

Paper 658

Alexis Williams, BA, Villanova, PA Eric H. Tischler, BA, Philadelphia, PA Daniel Sholder, BS, Philadelphia, PA Charles L. Getz, MD, Newton Square, PA Gerald R. Williams Jr, MD, Philadelphia, PA Surena Namdari, MD, MSc, Philadelphia, PA

The objective of this study was to determine patient-specif c risk factors and the clinical intervention rates for abnormal postoperative Chem-7 panels in patients undergoing shoulder arthroplasty.

#### 5:24 PM

#### Is Previous Non-arthroplasty Surgery a Risk Factor for Periprosthetic Infection in Primary Shoulder Arthroplasty

Jean-David Werthel, Paris, France Taku Hatta, MD, Sendai, Miyagi, Japan Bradley S. Schoch, MD, Rochester, MN Robert H. Cof eld, MD, Rochester, MN John W. Sperling, MD, MBA, Rochester, MN Bassem T. Elhassan, MD, Rochester, MN

The risk of infection after primary SA in patients who underwent previous non-arthroplasty related surgery is signif cantly higher than in those who did not

#### Discussion – 6 Minutes

#### 5:36 PM

### Insurance Status Affects Postoperative Morbidity and Complication Rate after Shoulder Arthroplasty

Xinning Li, MD, Lexington, MA Antonio Cusano, BS, Avon, CT Paul H. Yi, MD, San Francisco, CA David Sing, San Francisco, CA Joel J. Gagnier, PhD, Ann Arbor, MI Josef K. Eichinger, MD, Tacoma, WA Andrew Jawa, MD, Cambridge, MA Asheesh Bedi, MD, Ann Arbor, MI

Private insurance payer status is associated with a lower risk of medical complications and lower comorbidity index when compared to the Medicaid and Medicare payer status.

#### 5:42 PM

#### Single Stage Revision is Effective for Failed Shoulder Arthroplasty With Positive Cultures for Propionibacterium

Jason Hsu, MD, Seattle, WA Jacob Gorbaty, BA, Tacoma, WA Ian J. Whitney, MD, Boerne, TX Frederick A. Matsen III. MD. Seattle, WA

Clinical outcomes after single-stage revision shoulder arthroplasty associated with positive Propionibacterium cultures are similar to outcomes in revision procedures without infection.

#### 5:48 PM

#### Paper 660

Paper 659

Hospital Cost of Two-Stage Reimplantation for the Treatment of **Deep Infection After Shoulder Arthroplasty** 

Yaser Baghdadi, MD, Indianapolis, IN Hilal Maradit-Kremers, MD, MSc, Rochester, MN Taylor Dennison, MD, Rochester, MN John W. Sperling, MD, MBA, Rochester, MN Robert H. Cof eld, MD, Rochester, MN Joaquin Sanchez-Sotelo, MD, Rochester, MN

The hospital cost of two-stage reimplantation for the treatment of an infected shoulder arthroplasty is about two times higher than the cost of a primary shoulder arthroplasty.

Discussion – 6 Minutes

#### PAPER PRESENTATION

4:00 PM — 6:00 PM W414

#### **Adult Reconstruction Knee VI: Primary TKA**

Moderator(s): Harlan B. Levine, MD, Tenaf v, NJ, Alfred J. Tria Jr., MD, Princeton, NJ

#### 4:00 PM

#### Paper 661

Periarticular Liposomal Bupivacaine Offers No Beneft Over **Bupivacaine In Total Knee Arthroplasty** 

Pouya Alijanipour, MD, Philadelphia, PA Timothy Tan, MD, Philadelphia, PA Christopher Matthews, MD, Gainesville, FL Jessica R. Viola, BS, Philadelphia, PA James J. Purtill, MD, Philadelphia, PA Richard H. Rothman, MD, Philadelphia, PA Javad Parvizi, MD, FRCS, Philadelphia, PA Matthew Austin, MD, Philadelphia, PA Matthew Austin, MD, Philadelphia, PA

Liposomal bupivacaine, in this prospective, randomized clinical trial, did not demonstrate superior eff cacy to standard bupivacaine for the outcomes measured, especially given the cost differential.

#### 4:06 PM

#### Paper 662 Femoral Nerve Block is Not Superior to Periarticular Injection for

Paper 663

Paper 664

**Primary Total Knee Analgesia** Thomas R. Turgeon, MD, Winnipeg, MB, Canada Sanjay Aragola, Winnipeg, MB, Canada Eric R. Bohm, MD, Winnipeg, MB, Canada Benjamin G. Arenson, BS. Winnibeg, MB, Canada Amirali Esmail, Winnipeg, MB, Canada David Hedden, MD, Winnipeg, MB, Canada Colin D. Burnell, FRCSC, MD, Winnipeg, MB, Canada Marshall S. Tenenbein, MD, Winnipeg, MB, Canada Eric Jacobsohn, MD, Winnipeg, MB, Canada

This double-blinded randomized-control trial of 72 subjects found no benef t of continuous femoral nerve block over periarticular injection for analgesia following primary total knee arthroplasty.

#### 4:12 PM

#### Intra-Operative Synovitis Predicts Worse 2 Year Outcomes after **Total Knee Arthroplasty for Osteoarthritis**

Shivi Duggal, BS, MBA, Hartsdale, NY Kelly McHugh, BA, New York, NY Xian Wu, MPH, New York, NY Geoffrey H. Westrich, MD, New York, NY Thomas P. Sculco, MD, New York, NY John A. Carrino, MD, New York, NY Edward F. DiCarlo, MD, New York, NY Charles N. Cornell, MD, Greenwich, CT Lisa A. Mandl, MD, MPH, New York, NY

Synovial inf ammation at the time of surgery predicts worse WOMAC pain and function 2 years post-TKA in patients with osteoarthritis.

Discussion – 6 Minutes

#### 4:24 PM

#### **Participation in Non-Recommended Sports After Total Knee Did** Not Affect Long-Term Durability

Matthew P. Abdel, MD, Rochester, MN Mitchel R. Obey, B.S., Rochester, MN Sebastian Parratte, MD, Marseille, France Diane L. Dahm, MD, Rochester, MN Michael J. Stuart, MD, Rochester, MN Daniel J. Berry, MD, Rochester, MN Mark W. Pagnano, MD, Rochester, MN

Patients participating in non-recommended sports after TKA did not have a higher risk of mechanical failure at 14 years when compared to those involved in low to moderate activities.

#### 4:30 PM

#### Paper 665

#### In Vivo Mobile Fluoroscopic Analyses: Traditional and More **Challenging Activities for Subjects Having a TKA**

Trevor F. Grieco, BS, Knoxville, TN Adrija Sharma, PhD, Knoxville, TN William Hamel, PhD, Knoxville, TN Ian M. Zeller, MS, Knoxville, TN Harold E. Cates Jr, MD, Knoxville, TN Richard D. Komistek, PhD, Knoxville, TN

Mobile f uoroscopy was used to investigate kinematics of 275 patients with various TKAs during a deep knee bend, a chair-rise, walking up/down steps, normal walking, and/or walking up/ down ramps.

#### 4:36 PM

### Paper 666

#### When is it Safe for Patients to Drive after Right Total Knee **Arthroplasty?**

Victoria A. Younger, BS, Egg Harbor Township, NJ

Patients can re-evaluate their driving ability between 2 and 4 weeks after TKA.

Discussion – 6 Minutes

#### 4:48 PM

Paper 667

Lingering Risk: Bariatric Surgery Prior to Total Knee Arthroplasty Brian T. Nickel, MD, Durham, NC Mitchell R. Klement, MD, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Cynthia L. Green, Durham, NC Abiram Bala, BA, Durham, NC

Michael P. Bolognesi, MD, Durham, NC Thorsten M. Seyler, MD, PhD, Winston-Salem, NC

Bariatric surgery prior to TKA does not decrease surgical complications; in fact, it may increase complications.

#### 4:54 PM

Paper 668

#### **Rapid Discharge After Total Knee Arthroplasty Is Safe In The Medicare Population**

Gregory G. Klingenstein, MD, Mount Laurel, NJ Scott D. Schoifet, MD, Voorhees, NJ Jeremy Reid, MD, Moorestown, NJ Robert E. Post, MD, MS, Voorhees, NJ Rajesh K. Jain, MD, MPH, Moorestown, NJ Manny D. Porat, MD, Voorhees, NJ

Medicare patients can be discharged safely the day after total knee arthroplasty with no increased risk of 30-day readmission in a community medical center.

#### 5:00 PM

#### Predictors for Delayed Discharge after Total Joint Arthroplasty

Michael B. Gottschalk, MD, New York, NY Ajay Premkumar, BS, McLean, VA Aaron Gebrelul, BA, Atlanta, GA Bryan Sirmon, MD, Decatur, GA William Carpenter, MD, Atlanta, GA James R. Roberson, MD, Atlanta, GA Greg Erens, MD, Decatur, GA Thomas L. Bradbury, MD, Atlanta, GA

As the f nancial landscape of US healthcare is evolving, decreasing hospital length of stay without compromising care after TIA could have a signif cant f nancial impact.

#### Discussion – 6 Minutes

#### 5:12 PM

#### Contemporary UKA versus HTO in 239 Patients Under 55: UKA Provided Higher Activity and Durability at 5-7 Years

Aaron J. Krych, MD, Rochester, MN Patrick Reardon, BS, Rochester, MN Ioshua I. Christensen, MD, Rochester, MN Paul Sousa, MBA, MD, Rochester, MN Michael J. Stuart, MD, Rochester, MN Mark W. Pagnano, MD, Rochester, MN

When comparing PTO and UKA for treatment of medial compartment arthritis, patients treated with UKA more quickly reached and sustained a higher level of function compared to PTO.

#### 5:18 PM

#### Paper 671 **Mobile Unicompartmental Knee Arthroplasty: A Prospective** Independent Study. Ten To 15 Years Follow-up.

Lukas Lisowski, MD, Amsterdam, Netherlands Lukas Lisowski, MD, Amsterdam, Netherlands Michel Van den Bekerom, Amsterdam, Netherlands Linda Meijer, MSc, Dordrecht, Netherlands Andrzej Lisowski, MD, Heerlen, Netherlands

The 15-year cumulative survival rate of f rst 138 mobile unicompartmental knee replacements is 90.6%. Presence of radiolucency has no inf uence on functional outcome, survival and pain complaints.

#### 5:24 PM

#### Arthroscopy after Total Knee Arthroplasty is Associated with **Increased Infection and Revision Rates**

Luke Luetkemeyer, MD, Charlottesville, VA Brian C. Werner, MD, Charlottesville, VA Samuel E. Carstensen, MD, Charlottesville, VA James A. Browne, MD, Charlottesville, VA

Arthroscopy for non-infectious indications following TKA is associated with signif cantly increased rates of both subsequent infection and revision TKA.

Discussion – 6 Minutes

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### Paper 669

Paper 670

#### 5:36 PM

#### Cause-Specif c Mortality Trends Following Total Hip and Knee Arthroplasty

Clement J. Michet III, BA, Rochester, MN Hilal Maradit-Kremers, MD, MSc, Rochester, MN Cathy D. Schleck, Rochester, MN Dirk Larson, Rochester, MN Daniel J. Berry, MD, Rochester, MN David G. Lewallen, MD, Rochester, MN

Following THA and TKA, the risk of death is elevated for mental and musculoskeletal conditions.

#### 5:42 PM

Paper 674

Paper 673

A Randomized Controlled Trial Of Different Preoperative Erythropoietin Protocols In Total Knee Joint Replacement Nikolaos K. Paschos, MD, Davis, CA

Dimitrios Giotis, Ioannina, Greece Anastasios D. Georgoulis, MD, Ioannina, Greece

In this RCT, 3 protocols of preoperative erythropoietin use were compared. A single dose protocol reduced the need of transfusions with no associated increase in cost or thromboembolic events.

#### 5:48 PM

Paper 675

Clinical and Functional Outcome of Primary Condylar Constraint compared to Posterior Stabilised Knee Arthroplasty

Ken Lee Puah, MD, Singapore, Singapore Hwei Chi Chong, Singapore, Singapore Siang Shen Leon Foo, MD, Singapore, Singapore Ngai-Nung Lo, MD, Singapore, Singapore Seng-Jin Yeo, FRCS, Singapore, Singapore

The use of primary constrained condylar knee arthroplasty does not affect clinical and functional outcomes at 2 years when compared to posterior stabilised knees

Discussion – 6 Minutes

#### **PAPER PRESENTATION**

4:00 PM — 6:00 PM Room 304A

#### **Trauma VII: Post Traumatic Reconstruction**

Moderator(s): Wade T. Gordon, MD, Bethesda, MD, Ivan S. Tarkin, MD, Pittsburg, PA

#### 4:00 PM

Can Screening Swabs Help Predict Risk of Post-operative Infection Following Open Fracture Treatment? Cassandra Cardarelli, MD, Bethesda, MD Matthew Vasquez, MD, Bethesda, MD Jacob Glaser, MD, Indianapolis, IN Michelle Romeo, BS, Indianapolis, IN Kerry Campbell, Indianapolis, IN Michael McCusker Jr, MA, MD, Indianapolis, IN Marcus F. Sciadini, MD, Indianapolis, IN Robert V. O'Toole, MD, Indianapolis, IN Manjari Joshi, Indianapolis, IN

Paper 676

Paper 677

Paper 678

Positive nasal swabs for methicillin-resistant staph aureus (MRSA) are associated with increased risk of post-operative infection after open fracture.

#### 4:06 PM

#### Debridement of Open Tibia Fractures More Than 48 Hours After Injury: Does time to Surgery Matter?

Nathanael D. Heckmann, MD, Los Angeles, CA Kyle Mombell, BA, Los Angeles, CA Geoffrey Marecek, MD, Los Angeles, CA Jason A. Davis, MD, Houston, TX

A delay of more than 48 hours to surgical debridement of open tibia fractures does not result in an increased reoperation rate.

#### 4:12 PM

#### An Analysis of 214 Open Tibial Fractures Over 3 Years: Adherence to National Guidelines vs Clinical Outcomes

Huai Ming Phen, Ilford, United Kingdom Neil T. Morton, London, United Kingdom Jamila Kassam, MSc, PT, London, United Kingdom Katie Sai Tien Chu, London, United Kingdom Peter Bates, FRCS (Ortho), MBBS, Kent, United Kingdom

Collaboration between orthopaedic and plastic surgeons is a stronger predictor of post-operative complications following open tibia fractures than adherence to rigid timings of surgical intervention.

Discussion – 6 Minutes

#### 4:24 PM

#### Can We Predict Non Union Of Long Bone Fractures?

Emmanuele Santolini, MD, Genova, Italy Robert M. West, MSc, Leeds, United Kingdom Peter Giannoudis, MD, FRCS, Leeds, United Kingdom

This case-control study explored the development and effectiveness of a clinical decision rule to assist surgeons to consider early re-operation in patients at risk to develop nonunion.

#### 4:30 PM

### Paper 680

**Proportion of Causative Factors of Fracture Nonunion** *Takahiro Niikura*, MD, PhD, Kobe, Japan *Sang Y. Lee, MD, Kobe, Japan Takashi Iwakura, MD, PhD, Kobe, Japan Ryosuke Kuroda, MD, Kobe, Japan Masahiro Kurosaka, MD, Kobe, Japan* 

137 nonunion cases were reviewed. 24% had mechanical, 20% had biological, and 56% had both factors. 2% had patient-dependent, 45% had patient-independent, and 53% had both factors.

#### 4:36 PM

Paper 681

Paper 679

#### Time Trade-Off as a Measure of Health-Related Quality of Life: Long Bone Nonunions Have a Devastating Impact

Patrick C. Schottel, MD, Burlington, VT Daniel P O'Connor, PhD, Houston, TX Mark R. Brinker, MD, Houston, TX

A long bone nonunion is a debilitating injury. We found that patients were willing to trade 32% of their remaining lifespan for perfect health rather than continuing in their current state of health.

Discussion – 6 Minutes

#### 4:48 PM

Paper 682

### Multi-Disciplinary Malnutrition Screening Program in Orthopaedic Trauma Patients

Michael C. Willey, MD, Iowa City, IA Nathan Nicholson, MD, Iowa City, IA Matthew D. Karam, MD, Iowa City, IA John L. Marsh, MD, Iowa City, IA

A prospective screening program for malnutrition in patients with acute fractures indicated for operative f xation highlights the effectiveness and expense of the screening.

#### 4:54 PM

### Paper 683

#### The Power of a Swab: Do Nasal Cultures Predict Complications or Outcomes Following Repair of Fracture Nonunion?

David P. Taormina, MD, New York, NY Sanjit R. Konda, MD, Rye, NY Frank A. Liporace, MD, Englewd Clfs, NJ Kenneth A. Egol, MD, New York, NY

Pre-operative nasal swabbing for staphylococcus aureus is a simple and non-invasive diagnostic tool with signif cant prognostic implications in patients undergoing fracture nonunion surgery

#### 5:00 PM

### Paper 684

Paper 685

Paper 686

Nonsteroidal Anti-inf ammatory Drugs Versus Acetaminophen In Fracture Healing. A Randomized Controlled Trial

Nikolaos K. Paschos, MD, Davis, CA Dimitrios Giotis, Ioannina, Greece Khaled Abuhemoud, Ioannina, Greece Anastasios D. Georgoulis, MD, Ioannina, Greece

In this RCT, NSAIDs were proven to have comparable outcome with acetaminophen regarding fracture healing. However, increased dose and treatment duration with NSAIDs resulted in higher non-union rate.

Discussion – 6 Minutes

#### 5:12 PM

#### Tibia Screw Conf guration and Fibular Osteotomy Decrease Healing Time In Exchange Nailing

Bryan Abadie, BS, Winston-Salem, NC Daniel Leas, MD, Huntersville, NC Lisa K. Cannada, MD, Saint Louis, MO Michael P. Morwood, MD, Durham, NC Daniel R. Schlatterer, DO, Atlanta, GA Anna N. Miller, MD, Winston-Salem, NC

This retrospective study analyzed patients with tibia fractures that underwent exchange nailing and found that a dynamic screw conf guration and f bular osteotomy promoted faster healing time.

#### 5:18 PM

### Percutaneous Transplantation of Bone Marrow Granulocytes Precursors Cells for infected Tibial Nonunion

Philippe Hernigou, PhD, Creteil, France Charles-henri f ouzat-lachaniette, MD, Créteil Cedex

The outcomes indicate the feasibility and safety of cell therapy in patients with infected nonunion, with less recurrent infections as compared with standard iliac graft.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 5:24 PM

#### Engineering the Masquelet Technique

Magdalena Tarchala, MD, Ottawa, ON, Canada Jake Barralet, PhD, Montreal, QC, Canada Edward J. Harvey, MD, MSc, Westmount, QC, Canada

Our study of the Masquelet Technique elicited the role of induced membrane primarily as a barrier. When replaced with a synthetic PTFE membrane similar osteo-integrative properties were observed.

Discussion – 6 Minutes

#### 5:36 PM

#### Predictors of Amputation in High-Energy Forefoot and Midfoot Injuries

Zachary Working, MD, Salt Lake City, UT Iain Elliott, MD, Salt Lake City, UT Lucas S. Marchand, MD, Salt Lake City, UT Lance Jacobson, MD, Salt Lake City, UT Ami Stuart, Park City, UT David Rothberg, MD, Salt Lake Cty, UT Thomas F. Higgins, MD, Salt Lake City, UT Erik Kubiak, MD, Salt Lake Cty, UT

All high-energy forefoot & midfoot injuries (level 1 trauma hospital) in the last decade were reviewed for predictors of amputation & development of a hazard model for improved patient counseling.

#### 5:42 PM

Paper 689

**Trauma-related Upper Extremity Amputations: An Epidemiologic Study Using the National Trauma Data Bank** *Elizabeth Inkellis, MD, San Francisco, CA Eric Low, MS, San Francisco, CA* 

Saam Morshed, MD, Berkeley, CA

This study uses the 2009-2012 National Trauma Data Bank to investigate the epidemiology of upper extremity amputations and to assess predictors of complications and re-amputation.

#### 5:48 PM

Paper 690

# Post-traumatic Lower Limb Osteomyelitis: What Outcomes Should Be Expected?

Paul L. Rodham, MBBS, Houghton Le Spring, United Kingdom Michalis Panteli, MD, Leeds, United Kingdom Peter Giannoudis, MD, FRCS, Leeds, United Kingdom

Post-traumatic osteomyelitis of the lower limb continues to be a debilitating complication of fracture f xation that leads to signif cant morbidity.

Discussion – 6 Minutes

### INSTRUCTIONAL COURSE LECTURE

#### 4:30 PM — 5:30 PM



Paper 687

Paper 688

3 The Art of Teaching Orthopaedic Surgery

Moderator: Kenneth A. Egol, MD, New York, NY Joseph M. Sewards, MD, Dresher, PA Brian C. Toolan, MD, Flossmoor, IL

Room W209A

Provides the learner with an assessment of barriers to the implementation of modern teaching strategies in orthopaedic residencies and discusses the historical and current models fortraining in the U.S. Presenters discuss metrics for evaluation and present methods to improve resident assessment.

#### CD24 Cross Cultural Patient Communication

Moderator: Hassan R. Mir, MBA, MD, Nashville, TN

Successful cross cultural patient communication is important. This course reviews words that should not be used and those words that work best, as well as offers ways to improve your non-verbal body language.

Room W209B

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#### **Orthopaedic Review Course**

7:30 AM — 4:45 PM Hyatt Regency Orlando, Regency Ballroom R

# 490 Orthopaedic Review Course: Update for Your Practice and Preparation for Your Test

Chair: Jeffrey R. Sawyer, MD, Germantown, TN Albert J. Aboulaf a, MD, Indianapolis, IN, Jeffrey S. Abrams, MD, Princeton, NJ, Todd J. Albert, MD, New York, NY, Matthew Austin, MD, Philadelphia, PA, Jens R. Chapman, MD, Seattle, WA, Leesa M. Galatz, MD, New York, NY, Steven L. Haddad, MD, Glenview, IL, Joseph M. Lane, MD, New York, NY, Amy L. McIntosh, MD, Dallas, TX, Todd A. Milbrandt, MD, Rochester, MN, Mark D. Miller, MD, Charlottesville, VA, David L. Skaggs, MD, Los Angeles, CA, Robert J. Strauch, MD, New Rochelle, NY, William C. Warner Jr, MD, Germantown, TN, Donald A. Wiss, MD, Los Angeles, CA

A review of current knowledge on diagnosis andmanagement of clinical problems from a nationallyaccepted orthopaedic practice perspective. Major sections of the course are pediatrics, upper and lower extremities, tumors and metabolic bone disease, and spine. Each section includes discussion of fractures, complications, infections, and trauma.

#### **SHOWDOWN**

8:00 AM – 9:00 AM Valencia Room B



Shoulder and Elbow Showdown: Management o. 4-part Humeral Fractures

Moderator: William N. Levine, MD, New York, NY

YOU decide who wins when four surgeons demonstrate their personal points of view in an unrehearsed debate. Join us and declare the winners via the Audience Response System.

#### **DEBATERS:**

ORIF Christopher S. Ahmad, MD, New York, NY

Non-operative Management Evan L. Flatow, MD, New York, NY

Reverse TSA Anthony A. Romeo, MD, Chicago, IL

HHR John W. Sperling, MD, MBA, Rochester, MN

#### Symposium

8:00 AM — 10:00 AM Valencia Room A



An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### Bundled and Emerging Payment Models in Orthopaedics (Z)

Moderator: Kevin J. Bozic, MD, MBA, Austin, TX

The information that will be discussed in this course will focus on the evolution from FFS to Value-Based Payment Models in Orthopaedic Surgery. We will discuss the keys to success and avoiding pitfalls with BPCI. How to stay out of trouble with gainsharing will also be a topic. We will also focus on moving beyond bundled payments and the role of Orthopaedics in population health management.

- I. Overview David Teuscher, MD, Beaumont, TX
- II. The Evolution to from FFS to Value-based Payment Models in Orthopaedic Surgery *Kevin J. Bozic, MD, MBA, Austin, TX*
- III. Keys to Success and Avoiding Pitfalls with BPCI Mark I. Froimson, MD, Hunting Valley, OH
- IV. How to Stay Out of Trouble with Gainsharing
- V. Beyond Bundled Payments: The Role of Orthopaedics in Population Health *Michael Suk, MD, Danville, PA*

#### **Symposium**

8:00 AM — 10:00 AM Chapin Theater

#### Preoperative Optimization of Total Joint Arthroplasty Surgical Risk (Y)

Moderator: Richard Iorio, MD, New Rochelle, NY

Identif es "modif able" risk factors signif cantly contributing to poor clinical outcome following TJA. Although some of these modif able risk factors may be longstanding and recalcitrant to change, patients may express renewed interest in addressing them if they stand in the way of obtaining TJA, a procedure they hope will result in quality of life improvement. We suggesta perioperative orthopaedic surgical home (POSH) model to help with this process. Faculty discusses the advantages of preoperative optimization of TJA patients.

- I. Diabetes Control and Nutrition Michael Bolognesi, MD, NC
- II. Staphylococcus Aureus Colonization Kevin L. Garvin, MD, Omaha, NE
- III. Neurocognitive, Psychological and Dependency Problems William A. Jiranek, MD, Richmond, VA
- IV. Physical Deconditioning and Fall Risk William B. Macaulay, MD, New York, NY
- V. Morbid Obesity William M. Mihalko, MD, PhD, Germantown, TN
- VI. Venous Thromboembolic Disease Jacob M. Drew, MD, Charleston, SC
- VII. Cardiovascular Disease and Stroke Prevention James D. Slover, MD, New York, NY
- VIII. Tobacco Cessation Bryan D. Springer, MD, Charlotte, NC

#### 8:00 AM — 9:00 AM



Room

W209B

#### **Getting Your Work Published and Achieving the Highest Impact**

Moderator: Fares S. Haddad, FRCS, London, United Kingdom

Charles Clark, MD, Iowa City, IA Seth S. Leopold, MD, Seattle, WA Gareth Scott, FRCS, Brentwood, United Kingdom

Offers a good understanding of the peer review process and its importance in scientif c journals, provides key information on bestpractices and how to optimize papers for publication, and gives insight into how to review papers including a section on identifying research fraud.

#### **INSTRUCTIONAL COURSE LECTURE**

#### 8:00 AM — 10:00 AM

- 401 Periprosthetic Fractures Around the Hip and Knee: **Contemporary Techniques of Internal Fixation and** TICKET Revision Room
- Moderator: Frank A. Liporace, MD, Englewood Cliffs, NJ W204 Erik Kubiak, MD, Salt Lake City, UT Brett R. Levine, MD, Elmhurst, IL Samir Mehta, MD, Philadelphia, PA

Contemporary indications and techniques of internal f xation and revision for periprosthetic fractures around total hip and total knee arthroplasty are presented.

402 TICKET Room

W202

#### **Techniques in Revision Total Knee Replacement**

Moderator: Arlen D. Hanssen, MD, Rochester, MN Matthew P. Abdel, MD, Rochester, MN David Backstein, MD, Toronto, ON, Canada James I. Huddleston III, MD, Redwood City, CA

Lectures utilize video segments to describe surgical exposures, implant removal, prosthesis constraint, extensor mechanism reconstruction, bone defects, antibiotic spacers, and other surgical tips and techniques.

# 403 TICKET

Room W308C

#### **Management of Common Complications of Foot and Ankle Surgery**

Moderator: Mark E. Easley, MD, Durham, NC Mark S. Myerson, MD, Indianapolis, IN Selene G. Parekh, MBA, MD, Carv, NC Steven M. Raikin, MD, Philadelphia, PA

Covers common errors in decision making and surgical reconstruction of the foot and ankle. Techniques for revision surgery, reconstruction, and salvage of these deformities are presented in a case-based approach with an emphasis on video techniques.

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404
TICKET
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Room

#### **Adopting New Techniques and Technologies:** Learning Curve in Orthopaedics

Moderator: Paul E. Beaule, MD, Ottawa, ON, Canada Wade T. Gofton, BSCH, MD, Ottawa, ON, Canada W205A Mohit Bhandari, MD, PhD, Hamilton, ON, Canada Richard De Steiger, MD, Richmond, Australia

> It has been suggested that within 10 years of graduation, a surgeon needs to acquire a complete set of new skills. This course reviews what an appropriate learning curve is to incorporate a particular technique into practice, as well as how to optimize it using evidence-based medicine.

#### 405 Infections of the Upper Extremity -

#### **New Developments and Challenges** TICKET

Room W300

Moderator: Peter J. Jebson, MD, Grand Rapids, MI Douglas R. Osman, MD, Rochester, MN Apurva Shah, MD, MBA, Philadelphia, PA Robert W. Wysocki, MD, Chicago, IL

We review the role of the infectious disease consultant with an emphasis on serological testing, diagnostic workup, and microbiological analysis. Through illustrative case examples, we discuss the key clinical features and treatment of necrotizing fasciitis, mucormycosis, and infections caused by mycobacteria and Vibrio species.

#### 406 **Problems and Procedures in Pediatric Trauma**



Moderator: Steven L. Frick, MD, Orlando, FL Matthew A. Halanski, MD, Madison, WI Christopher A. Iobst, MD, Winter Park, FL Susan A. Scherl, MD, Omaha, NE

Room W308A

Case presentations of pediatric trauma and complications guide audience response and discussion. Technical methodology is provided as a tool for treatment of challenging trauma.

408

#### Navigating the Research in Rotator Cuff Disease: An Evidence-Based Approach to Improved Patient TICKET Outcomes



Moderator: ChunBong B. Ma, MD, San Francisco, CA Brian T. Feeley, MD, San Francisco, CA Jay D. Keener, MD, Saint Louis, MO John E. Kuhn, MD, Nashville, TN

Presents a summary of all the best evidence research over the past f ve years on the management of rotator cuff disease. Participants learn about the clinical outcomes, operative and nonoperative management, and basic science studies regarding rotator cuff diseases.



Room

W310

#### **Realignment Planning in Adult Spinal Deformity:** The Newest Tools, Formulas, and Techniques to Get it Right

Moderator: Robert S. Bess, MD, Castle Rock, CO Christopher Ames, MD, San Francisco, CA Michael P. Kelly, MD, Saint Louis, MO Themistocles S. Protopsaltis, MD, New York, NY

Covers the treatment of adult spinal deformity andfocuses on clinical data and new tools to help improve surgical planning, outcomes, and avoid complications.



W304F

411

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Room

W203

TICKET

#### **Surgical Management of Patellar Instability**

Moderator: Shital N. Parikh, MD, Cincinnati, OH David Dejour, MD, Lyon, France John P. Fulkerson, MD, Farmington, CT Robert A. Teitge, MD, Dearborn, MI

Focuses on a step-wise approach to the surgicaltreatment of patellar stabilization addressing each contributing factor.

#### **New Paradigms in the Throwing Shoulder**

Moderator: John D. Kelly, MD, Newtown Square, PA W. Benjamin Kibler, MD, Lexington, KY Craig D. Morgan, MD, Wilmington, DE Brian J. Sennett, MD, Philadelphia, PA

Delves into the latest scientif c research regarding the causation and mechanisms involved in injury to the throwing shoulder. The role of the scapula, GIRD, retroversion, and kinetic chain are addressed. The most contemporary and eff cient means of resolving labral, cuff, and capsular lesions are developed with particularattention paid to the rotator interval capsule.

412 TICKET ----Room

W307A

## **Open Fractures – Principles of Management**

Moderator: Michael I. Patzakis, MD, San Marino, CA L. Scott Levin, MD, Philadelphia, PA Randall E. Marcus, MD, Cleveland, OH Charalampos Zalavras, MD, Los Angeles, CA

Offers a comprehensive approach to the managementof open fractures emphasizing principles and evidencebased practices. Areas covered include antibiotic therapy and prevention of infection. Debridement and wound management options are presented. Fracture stabilization guidelines and techniques are discussed. Promotion of fracture healing options are reviewed.

#### 413 **Extreme Nailing: Tips and Tricks from the Experts**



Moderator: George J. Haidukewych, MD, Orlando, FL Daniel S. Horwitz, MD, Danville, PA Joshua Langford, MD, Orlando, FL

Focuses on fractures commonly encountered by thepracticing surgeon that can be challenging to nail. Subtrochanteric, distal femur, proximal tibia, and distal tibia are covered in a "how I do it?" video presentation followed by a "key points" slide presentation and discussion. Videos are intense.

#### **4**81 **Managing Complex Problems in Lumbar Spinal** Stenosis TICKET

W207

Moderator: Christopher G. Furey, MD, Cleveland, OH Paul A. Anderson, MD, Madison, WI John P. Birkedal, MD, Winston-Salem, NC Gregory D. Carlson, MD, Santa Ana, CA Room Kingslev R. Chin, MD, Fort Lauderdale, FL John A. Davis Jr., MD, New Orleans, LA

Sanford E. Emery, MD, MBA, Morgantown, WV Russel C. Huang, MD, New York, NY Timothy A. Moore, MD, Shaker Heights, OH Sheeraz Qureshi, MD, New York, NY Joseph D. Smucker, MD, Carmel, IN Jung U. Yoo, MD, Portland, OR

Reviews of treatment strategies for complex cases of spinal stenosis, including recurrent stenosis, degenerative scoliosis, thoracolumbar stenosis, and the elderly, compromised patient. The course appeals to those who treat patients whose conditions are not always "gardenvariety."

4	82	
ALC: NO.	TICKET	

Room

W208

#### How to Avoid Complications in Reverse Shoulder Arthroplasty

Moderator: David M. Dines, MD, Uniondale, NY George S. Athwal, MD, London, ON, Canada Pascal Boileau, MD, Nice, France Wayne Z. Burkhead Ir, MD, Dallas, TX Edward V. Craig, MD, New York, NY Joshua S. Dines, MD, New York, NY Thomas B. Edwards, MD, Houston, TX Mark A. Frankle, MD, Temple Terrace, FL Joseph P. Iannotti, MD, PhD, Cleveland, OH Tom R. Norris, MD, San Francisco, CA Thomas (Quin) Throckmorton, MD, Germantown, TN

As indications for the use of reverse total shoulder arthroplasty have increased, the use of this technology has become more widespread among practioners. Will present current concepts in the diagnosis, treatment, and prevention of complications in a case presentation format; directed to both less and more experienced surgeons.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

Friday

#### PAPER PRESENTATION

8:00 AM — 10:00 AM Valencia Room D

#### Adult Reconstruction Hip VI: Pain/ Fractures/ Miscellaneoous

Moderator(s): Paul E. Beaule, MD, Ottawa, ON, Canada, Richard W. McCalden, MD, Lodon, ON, Canada

#### 8:00 AM

Paper 691

#### Eff cacy of Preoperative Lumbar Plexus Block in Pain Management and Opioid Consumption after Total Hip Arthroplasty

Cristina Suarez, MD, Bogotá, Colombia Rafael E. Perez, MD, Bogota Dc, Colombia Antonio Bonilla, MD, Bogota DC, Colombia Omar A. Amado, MD, Bogtoa, Colombia Mauricio Maf a SR, Bogota, Colombia Javier E. Cubillos, Bogota, Colombia Ginna M. Moreno, MD, Bogotá, Cundinamarca, Colombia

Performance of a preoperative single lumbar plexus block would reduce postoperative pain and opioid consumption during the f rst 48 postoperative hours.

#### 8:06 AM

### Paper 692

#### Long-acting Opioid Use Independently Predicts Perioperative Complication in Total Joint Arthroplasty

David Sing, San Francisco, CA Jeffrey Barry, MD, San Francisco, CA Thomas P. Vail, MD, San Francisco, CA Erik N. Hansen, MD, San Francisco, CA

Opioid use prior to primary total joint arthroplasty signif cantly increases in-hospital opioid use and perioperative complications. Alternative pain options may benef t opioid-tolerant patients.

#### 8:12 AM

#### Paper 693

Persistent Opioid Use as an Early Indication of Total Hip Arthroplasty Failure

Robert S. Namba, MD, Corona Del Mar, CA Maria C. Inacio, PhD, Adelaide, Australia Nicole Pratt, PhD, Adelaide, Australia Stephen Graves, MD, Adelaide, Australia Elizabeth E. Roughead, PhD, Adelaide, Australia Craig T. Cheetham, MD, Pasadena, CA Liz Paxton, MA, Rcho Santa Fe, CA

Persistent opioid use after THA was evaluated. Use of 100 mg OME, or more, after the initial 90 day postoperative period was associated with an increased risk of revision.

Discussion – 6 Minutes

#### 8:24 AM

#### Pre-operative Reduction of Opioid Use Prior to Total Joint Arthroplasty

Paper 694

Paper 695

Paper 696

Paper 697

Long-Co Nguyen, BA, BS, San Francisco, CA David Sing, San Francisco, CA Kevin J. Bozic, MD, MBA, Austin, TX

Opioid users who tapered their dose prior to total joint replacement surgery achieved signif cantly improved patientreported outcomes compared to those who did not taper.

#### 8:30 AM

#### The Effect of Total Hip Replacement on the Non-operated Lower Extremity Joints

Kristi Collins, PA-C, Lewisburg, PA Thomas R. Bowen, MD, Danville, PA Edgardo Parrilla, BS, Danville, PA Patricia Franklin, MD, MBA, Worcester, MA Celeste Lemay, RN, MPH, Worcester, MA Elie S. Ghanem, MD, Danville, PA

Patients who undergo THA achieve pain improvement in their non-operated hip or knees in addition to the pain relief they obtain from their operated hip.

#### 8:36 AM

#### The Incidence and Location of Pain in Young, Active Patients Following Hip Arthroplasty

Denis Nam, MD, St Louis, MO Denis Nam, MD, St Louis, MO Ryan Nunley, MD, Saint Louis, MO Timothy J. Sauber, MD, Wexford, PA Staci Johnson, M.Ed, Saint Louis, MO Peter J. Brooks, MD, Gates Mills, OH Robert L. Barrack, MD, Saint Louis, MO

A signif cant proportion (40%) of young, active patients experience persistent pain following total hip and surface replacement arthroplasty, despite the presence of well-f xed components.

#### Discussion – 6 Minutes

#### 8:48 AM

#### Medicare Payments for THA Create a Financial Incentive Favoring Low-risk Patients

R Carter Clement, MD, MBA, Chapel Hill, NC Adrianne Soo, BS, Chapel Hill, NC Michael M. Kheir, BS, Philadelphia, PA Peter Derman, MD, MBA, New York, NY David N. Flynn, MD, MBA, Philadelphia, PA L S. Levin, MD, FACS, Philadelphia, PA Lee A. Fleisher, MD, Philadelphia, PA

Medicare reimbursement is higher for THA patients with elevated ASA Scores but is not enough to compensate for their higher costs, thus potentially creating incentives against these high-risk patients

#### 8:54 AM

#### Paper 698 Should All Patients Be Included in Alternative Payment Models For Primary THA and TKA?

Joshua C. Rozell, MD, Philadelphia, PA Paul M. Courtney, MD, Philadelphia, PA Jonathan R. Dattilo, MD, Philadelphia, PA Chia H. Wu, MD, MBA, Philadelphia, PA Gwo-Chin Lee, MD, Philadelphia, PA

CKD and COPD are independent risk factors for increased length of stay and readmissions following primary total joint arthroplasty. The CCI showed strong correlation with LOS and readmissions.

#### 9:00 AM

#### Paper 699

#### How will the Financial Incentive to Provide THA For High-risk **Patients Change with Bundled Payments?**

R Carter Clement, MD, MBA, Chapel Hill, NC Michael M. Kheir, BS, Philadelphia, PA Adrianne Soo, BS, Chapel Hill, NC Peter Derman, MD, MBA, New York, NY David N. Flynn, MD, MBA, Philadelphia, PA L S. Levin, MD, FACS, Philadelphia, PA Lee A. Fleisher, MD, Philadelphia, PA

Major complications after THA (which are predicted by ASA score) are well compensated by Medicare but not by bundled payments without risk adjustment, which may incentivize against high-risk patients

Discussion – 6 Minutes

#### 9:12 AM

#### Paper 700

Paper 701

#### Young Patients with Hematological Malignancy or Lymphoma Have High Risk For Total Joint Arthroplasty

Tuukka T. Niinimaki, MD, PhD, Oulu, Finland Arja Harila-Saari, M.D., Ph.D., Stockholm, Sweden Pasi Ohtonen, MSc, Oulu, Finland Riitta Niinimäki, MD, Oulu, Finland

Lympho-hematological malignancies may cause osteonecrosis. In population-based study, patients less than 35 years of age treated for cancer had a 45-fold risk of total joint arthroplasty.

#### 9:18 AM

#### Adipose-derived MSCs Are Phenotypically Superior for **Regeneration in Osteonecrosis**

Cody Wyles, BS, Rochester, MN Matthew Houdek, MD, Rochester, MN Atta Behfar, MD, PhD, Rochester, MN Rafael J. Sierra, MD, Rochester, MN

aMSCs outperform bmMSCs in growth rate and bone differentiation potential in the setting of osteonecrosis, suggesting they may be a more potent regenerative therapeutic strategy in this population.

#### 9:24 AM

#### Societal Cost Savings of Total Hip Arthroplasty: A Markov Analysis

Andrew Lovy, MD, MS, New York, NY Aakash Keswani, BA, New York, NY Calin S. Moucha, MD, Livingston, NJ Steven McAnany, MD, New York, NY

Total hip arthroplasty compared to nonsurgical treatment for severe hip OA results in a \$176,248 societal cost savings over 20 years in a hypothetical employed 50 year old patient.

Discussion – 6 Minutes

#### 9:36 AM

#### Paper 703

Paper 702

Hemiarthroplasty For Displaced Femoral Neck Fractures In The **Elderly Has A Very Low Conversion Rate** 

Matthew Grosso, MD, New York, NY Jonathan Danoff, MD, Englewood, NJ Taylor Murtaugh, BS, New York, NY David Trofa, MD, New York, NY William B. Macaulay, MD, New York, NY

The cemented unipolar hemiarthroplasty performed for a femoral neck fracture in the elderly has a lower conversion rate to total hip arthroplasty compared to the younger patient population.

#### 9:42 AM

#### **Total Hip Arthroplasty for Femoral Neck Fracture Versus Osteoarthritis: A Propensity-Matched Cohort Study**

William W. Schairer, MD, New York, NY Alexander S. McLawhorn, MD, MBA, New York, NY Joseph M. Lane, MD, New York, NY Douglas E. Padgett, MD, New York, NY

This study evaluated the short-term outcomes for total hip arthroplasty for femoral neck fracture and osteoarthritis, using a propensity-score matched cohort

### 9:48 AM

#### **Outcomes after Total Hip Arthroplasty for Posttraumatic** Arthritis

Abiram Bala, BA, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Thorsten M. Seyler, MD, PhD, Durham, NC Richard C. Mather III, MD, Durham, NC Samuel S. Wellman, MD, Durham, NC Michael P. Bolognesi, MD, Durham, NC

Patients who receive total hip arthroplasty(THA) for posttraumatic arthritis are sicker and at higher risk for postoperative complications compared to those who receive THA for primary osteoarthritis.

Discussion – 6 Minutes

#### Paper 705

#### 9:56 AM

#### **PAPER 923**

#### Enzymatic Biof Im Prevention and Dispersal Using a Marine Endonuclease.

Andrea P. Nicolas, MD, Newcastle Upon Tyne, United Kingdom Martin March, MD, Newcastle Upon Tyne, United Kingdom Nithyalakshmy Rajarajan, PhD, Newcastle Upon Tyne, United Kingdom

Nicholas S. Jakubovics, PhD, Newcastle Upon Tyne, United Kingdom

James G. Burgess, Professor, Newcastle Upon Tyne, United Kingdom

Mike Reed, MD, Northumberland, UK

Prosthetic joint infection (PII) is commonly associated with biof lm formation. Prevention and disruption of established biof lms may allow more effective treatment. NucB is a novel endonuclease which degrades extracellular DNA, a structural biof lm component. The aim was to demonstrate the prevention of formation and dispersal of biof lms of clinical isolates of Staphylococcus aureus and S. epidermidis, and to quantify enzyme activity against biof lms attached to surgically relevant metals (titanium and cobalt chrome).

Discussion – 6 Minutes

#### **PAPER PRESENTATION**

8:00 AM — 10:00 AM W414

#### Sports Medicine/Arthroscopy VI: Shoulder/Elbow 2

Moderator(s): Stephen R. Soffer, MD, Wyomissing, PA, Robert A. Gallo, MD, Hershey, PA

#### 8:00 AM

#### Paper 706 **Recurrent Anterior Shoulder Instability with Combined Bone**

Loss: Results with the Modif ed Latarjet Procedure

Justin Yang, MD, Farmington, CT Augustus D. Mazzocca, MD, MS, Farmington, CT Mark Cote, PT, Farmington, CT Cory Edgar, MD, PhD, West Hartford, CT Robert A. Arciero, MD, Farmington, CT

The modif ed Latarjet procedure provides satisfactory outcomes for patients with combined bone loss and pathology known to have high recurrence rates with traditional arthroscopic stabilization.

#### 8:06 AM

#### Paper 707

#### **Recurrent instability after arthroscopic Bankart Reconstruction: Metaanalysis of Surgical Technical Factors**

Aman Dhawan, MD, Hummelstown, PA Shane Rothermel, BS, Lehighton, PA Landon Brown, MD, Hershey, PA

We present our systematic review and metaanalysis of surgical technical factors that increase the risk of recurrent glenohumeral instability after arthroscopic bankart reconstruction

#### 8:12 AM

#### Treatment Of Type Ii Slap Lesion Combined With Bankart Lesion Jeung Woo Kim, MD, Iksan-Si, Republic of Korea

Hong Je Kang, MD, Ik-San, Republic of Korea it is considered that SLAP debridement could be a treatment option in patients of type II SLAP lesion combined with Bankart lesion.

Discussion – 6 Minutes

#### 8:24 AM

#### Paper 709 Impact of Sagittal Rotation on Axial Glenoid Width **Measurement in the Setting of Glenoid Bone Loss**

Rachel M. Frank, MD, Chicago, IL Petar Golijanin, BS, Boston, MA Bryan G. Vopat, MD, Providence, RI Vidhya N. Chauhan, Glasgow, United Kingdom Daniel Gross, MD, New York, NY Anthony A. Romeo, MD, Chicago, IL CDR (ret) Matthew T. Provencher, MD, Boston, MA

Three-dimensional CT reconstructions conducted in the axis of the glenoid more accurately def ne and quantify glenoid bone loss in patients with shoulder instability compared to standard 2D CT scans.

#### 8:30 AM

#### **Remplissage Outcomes and Sports Affected: Average Five-Year Follow Up**

Grant Garcia, MD, New York, NY Hao-Hua Wu, BA, Philadelphia, PA Joseph Liu, MD, New York, NY G R. Huffman, MD, Springf eld, PA John D. Kelly IV, MD, Philadelphia, PA

The long-term failure rate was 15% with an insignif cant loss of external rotation. Overall 94% of patients returned to sports at an average return of 7.2 months.

#### 8:36 AM

#### Analysis of Anchor Placement for Bankart Repair: Transsubscapularis versus Inferior Rotator Interval Portal

Ehsan Jazini, MD, Indianapolis, IN Brian Shiu, MD, Indianapolis, IN R Frank Henn III, MD, Ellicott City, MD Syed A. Hasan, MD, Indianapolis, IN Ehsan Jazini, MD, Indianapolis, IN

Suture anchor placement through the trans-subscapularis portal translates into decreased glenoid perforation at the 5:30 position as compared to the anterior inferior interval portal.

Discussion – 6 Minutes

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 708

Paper 710

#### 8:48 AM

#### Paper 712

#### Platelet-Rich Plasma in Arthroscopic Rotator Cuff Repair - A Systematic Review of Overlapping Meta-Analyses

Bryan M. Saltzman, MD, Chicago, IL Akshay Jain, Oak Brook, IL Kirk A. Campbell, MD, New York, NY Randhir Mascarenhas, MD, Winnipeg, MB, Canada Brian J. Cole, MD, MBA, Chicago, IL Anthony A. Romeo, MD, Chicago, IL Nikhil N. Verma, MD, Chicago, IL

The current highest level of evidence suggests PRP use at the time of arthroscopic rotator cuff repair surgery does not universally improve re-tear rates or affect clinical outcome scores.

#### 8:54 AM

Paper 713

#### Interposition Porcine Dermal Matrix Xenografts: An Alternative To Traditional Treatment Of Massive Cuff Tears

Julie A. Neumann, MD, Durham, NC Kathleen D. Reay, MD, Durham, NC Miltiadis H. Zgonis, MD, Philadelphia, PA Stephanie W. Mayer, MD, Aurora, CO Blake Boggess, DO, Durham, NC Alison P. Toth, MD, Durham, NC

As interposition grafts, porcine dermal matrix xenografts hold great promise in repair of massive cuff tears showing signif cant improvement in pain, range of motion, strength and subjective function.

#### 9:00 AM

#### Paper 714 A prospective trial of Interscalene Nerve Block versus Suprascapular Nerve Block in outpatient rotator cuff repair

Michael F. Shepard, MD, Orange, CA Russell S. Petrie, MD, Newport Beach, CA Akil P. Simon, MD, Irvine, CA Dennis Cummings, MD, Irvine, CA Robert C. Grumet, MD, Orange, CA

This prospective, randomized study was performed to compare the eff cacy of a suprascapular nerve block versus an interscalene nerve block in 104, outpatient rotator cuff surgeries.

Discussion – 6 Minutes

#### 9:12 AM

#### Paper 715

#### **Conservative Treatment For Ulnar Neuritis Around The Elbow In Adolescent Baseball Players**

Masahiro Maruyama, MD, Yamagata City, Japan Hiroshi Satake, MD, PhD, Yamagata, Japan Nariyuki Mura, Yamagata, Japan Mikio Harada, Sendai, Japan Tomohiro Uno, MD, Yamagata, Japan Masatoshi Takahara, MD, PhD, Sendai, Japan Michiaki Takagi, MD, PhD, Yamagata, Japan

Hand numbness on the ulnar side, ulnar nerve subluxation, and UCL injury are indications of poor outcomes following conservative treatment for ulnar neuritis.

#### 9:18 AM

#### A National and Statewide Analysis of Elbow Arthroscopy

Evan O'Donnell, MD, New York, NY Mark A. Vitale, MD, MPH, Greenwich, CT Christopher S. Ahmad, MD, New York, NY

This study is f rst to identify national and statewide trends in elbow arthroscopy, the growth in utilization, broadening indications, and concurrent ulnar nerve transposition over recent years.

#### 9:24 AM

#### Cost-Effectiveness of Revision Arthroscopic Repair vs Latarjet in **Recurrent Instability Following Initial Repair**

Eric C. Makhni, MD, MBA, New York, NY Nayan Lamba, Ashburn, VA Michael Steinhaus, MD, New York, NY Eric F. Swart, MD, New York, NY Christopher S. Ahmad, MD, New York, NY Anthony A. Romeo, MD, Chicago, IL Nikhil N. Verma, MD, Chicago, IL

Latarjet procedure for failed instability repair presents as a dominant cost-effective treatment option when compared to revision arthroscopic instability repair.

Discussion – 6 Minutes

#### 9:36 AM

#### Paper 718 **Direct Cost Analysis of Outpatient Arthroscopic Rotator Cuff** Repair

Steven J. Narvy, MD, Los Angeles, CA Avtar Ahluwalia, MBA, Los Angeles, CA C Thomas Vangsness Jr, MD, Los Angeles, CA

The purpose of this study was to calculate the direct cost of arthroscopic rotator cuff repair. Using Time-Driven Activity Based Costing, we determined the cost to be \$5904.21 for the cycle of care.

#### 9:42 AM

#### **Systematic Review of Rotator Cuff Retear Rates after** Arthroscopic Single Row, Double Row, and Suture Bridge Repair

Jonathan S. Chae, MD, Royal Oak, MI Jordan Reilly, BS, MS, Novi, MI Joel E. Hein, MD, Green Bay, WI Tristan Maerz, PhD, Royal Oak, MI Kyle Anderson, MD, Southf eld, MI

In a systematic review of 2048 total repairs, double-row and suture bridge rotator cuff repair techniques had a lower incidence of retears in most tear size categories at 1 year of imaging follow up.

Paper 716

Paper 717

Paper 719

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 9:48 AM

#### Paper 720 Partial Thickness Rotator Cuff Tears Involving the Rotator Cable Leads to Abnormal Glenohumeral Kinematics

Gregory J. Pinkowsky, MD, Manhattan Beach, CA Neal S. ElAttrache, MD, Los Angeles, CA Alexander B. Peterson, BA, Marina Dl Rev, CA Masaki Akeda, MD, Redondo Beach, CA Michelle H. McGarry, MD, Long Beach, CA Thay Q. Lee, PhD, Long Beach, CA

Partial thickness articular sided rotator cuff tears involving the rotator cable leads to increased anterior, inferior, and total glenohumeral translation in our cadaveric biomechanical model.

Discussion – 6 Minutes

#### **PAPER PRESENTATION**

#### 8:00 AM - 10:00 AM W304A

#### Spine VII: Miscellaneous

Moderator(s): Michael Al Gleiber, MD, West Palm Beach, FL, Daryll C. Dykes, MD, JD, Minneapolis, MD

#### 8:00 AM

#### Paper 721

#### Timing Of Diagnosis Of Metastatic Disease To The Spine As A Predictor For Post-surgical Survival

Ehsan Saadat, MD, Brookline, MA Dana A. Leonard, BA, Boston, MA Ahmer K. Ghori, MD, Cambridge, MA Nathan Scott, Dorchester, MA Christopher M. Bono, MD, Concord, MA Andrew P. White, MD, Boston, MA Marco Ferrone, MD, FRCSC, Boston, MA Mitchel B. Harris, MD, Boston, MA

In operative cases, the length of time between initial cancer diagnosis and presentation of metastatic epidural spinal cord compression is an independent predictor of 1-year post-surgical survival.

#### 8:06 AM

#### Paper 722

Patient-Specif c Factors Predicting Dissatisfaction after Elective **Surgery for Degenerative Spine Diseases** 

Joseph B. Wick, BA, Nashville, TN Silky Chotai, Nashville, TN Harrison F. Kay, BS, Nashville, TN John Sielatycki, MD, Nashville, TN Ahilan Sivaganesan, MD, Nashville, TN Scott L. Parker, MD, Nashville, TN Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

Patient satisfaction with outcome may accurately represent effectiveness of spine surgery, but uninsured payer status and lower baseline pain and disability must be accounted for as confounders.

#### 8:12 AM

#### Ratio of Disability to Deformity Burden in 264 Adult Spinal **Deformity Patients with 2-year Follow-up**

Paper 723

Paper 724

Paper 725

Justin K. Scheer, BS, Chicago, IL Jeffrey Gum, MD, Crestwood, KY Michael P. Kelly, MD, Saint Louis, MO Frank I. Schwab, MD, New York, NY Richard A. Hostin, MD, Plano, TX Virginie Lafage, PhD, New York, NY Justin S. Smith, MD, Charlottesville, VA Christopher Ames, MD, San Francisco, CA International Spine Study Group, Brighton, CO

The relationship between ODI and SVA varies widely between individuals and the ratio of the two were examined to help

elucidate other drivers of disability in ASD patients.

#### Discussion – 6 Minutes

#### 8:24 AM

#### Impact of Delay to Surgery Greater than 6 Months on Deformity in Adolescent Idiopathic Scoliosis Patients

Brandon A. Ramo, MD, Dallas, TX Dong-Phuong Tran, MS, Dallas, TX Sumeet Garg, MD, Aurora, CO Mark A. Erickson, MD, Aurora, CO Karl E. Rathjen, MD, Dallas, TX Anil Reddy, BS, El Paso, TX Cameron R. Niswander, BA, Aurora, CO Kaitlvn Brown, B.S., Dallas, TX Chan-Hee Jo, PhD, Dallas, TX

Delay to surgery greater than 6 months in Risser 0 and premenarchal AIS patients leads to signif cant curve progression which may increase surgical fusion levels.

#### 8:30 AM

#### Post Operative Radiological Changes And Developing Proximal **Junctional Kyphosis**

Faisal M. Konbaz, MBBS, Indianapolis, IN Alim Ramji, BS, Indianapolis, IN Amit Jain, MD, Indianapolis, IN Brian J. Neuman, MD, Indianapolis, IN

Post operative changes in the lumbar lordosis and the proximal junctional angle are risk factor for deveolping proximal juctional kyphosis

#### 8:36 AM

#### Paper 726

#### **Preoperative Irradiation Increases Perioperative Complications Of Total En Bloc Spondylectomy**

Noriaki Yokogawa, MD, Kanazawa, Japan Hideki Murakami, MD, Kanazawa, Japan Satoru Demura, MD, Kanazawa, Japan Satoshi Kato, MD, Kanazawa, Japan Katsuhito Yoshioka, MD, Kanazawa, Japan Moriyuki Fujii, MD, Kanazawa, Japan Takashi Igarashi, MD, Kanazawa, Japan Noritaka Yonezawa, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Total en bloc spondylectomy in a previously irradiated f eld carries increased risk of perioperative complications.

#### Discussion – 6 Minutes

#### 8:48 AM

Paper 727

**Selective Thoracic Fusion of a Left Decompensated Main Thoracic Curve: Proceed with Caution?** 

Burt Yaszay, MD, San Diego, CA Tracey Bastrom, MA, San Diego, CA Carrie Bartley, MA, San Diego, CA Suken A. Shah, MD, Wilmington, DE Baron Lonner, MD, New York, NY Jahangir Asghar, MD, Coral Gables, FL Firoz Miyanji, MD, Vancouver, BC, Canada Patrick J. Cahill, MD, Philadelphia, PA Peter O. Newton, MD, San Diego, CA

STF for right main thoracic curves decompensated to the left resulted in a high rate of postop decompensation (41%). Patients balanced postop had greater thoracic curve correction and higher SLCC.

#### 8:54 AM

#### Paper 728

#### Does Intrawound Vancomycin Decrease the Risk of Surgical Site Infection after Spine Surgery? - A Multicenter Study

Clinton J. Devin, MD, Nashville, TN Alexander Vaccaro, MD, PhD, Philadelphia, PA Matthew McGirt, Charlotte, NC Silky Chotai, Nashville, TN Jim A. Youssef, MD, Durango, CO Douglas G. Orndorff, MD, Durango, CO Paul M. Arnold, MD, FACS, Kansas City, KS Anthony Frempong-Boadu, MD, New York, NY Isador H. Lieberman, MD, MBA, Plano, TX

Intrawound application of vancomycin after elective spine surgery was associated with reduced risk of SSI and return to OR associated with SSI, even after controlling for confounding variables.

#### 9:00 AM

#### Relationship between Size of Disc and Postoperative Functional **Outcomes after Lumbar Discectomy**

Derick C. En'Wezoh, BS, Kennewick, WA Dana A. Leonard, BA, Boston, MA Jav M. Zampini, MD, Philadelphia, PA Mitchel B. Harris, MD, Boston, MA Christopher M. Bono, MD, Boston, MA

The "6 mm Rule" as is could not be externally validated in the current patient cohort. However, size of the DH does seem to inf uence outcomes in some ways.

Discussion – 6 Minutes

#### 9:12 AM

### **Magnetically-Controlled Growing Rods for Early Onset Scoliosis:** A study of 23 cases with 2 years follow-up

Pooria Hosseini, MD, MSc, Moreno Valley, CA Jeff Pawelek, La Jolla, CA Gregory M. Mundis, MD, San Diego, CA Burt Yaszay, MD, San Diego, CA John A. Ferguson, FRACS, Auckland, New Zealand Ilkka J. Helenius, MD, Turku, Finland Kenneth M. Cheung, MD, Sandy Bay, Hong Kong Behrooz A. Akbarnia, MD, San Diego, CA

MCGR is safe and effective method in primary cases. Conversion cases had slight decline in their thoracic height after 2 years, however these declines were not statistically signif cant.

#### 9:18 AM

#### Paper 731 5-Year Reoperation Risk and Causes for Revision after Idiopathic **Scoliosis Surgerv**

Syed I. Ahmed, MD, San Diego, CA Tracey Bastrom, MA, San Diego, CA Burt Yaszay, MD, San Diego, CA Peter O. Newton, MD, San Diego, CA Harms Study Group, San Diego, CA

For 1435 idiopathic scoliosis surgical patients, the actuarial cumulative 5 year survivorship (no revision) rate was 93.9%.

#### 9:24 AM

#### Spinal Dural Arteriovenous Fistula: A Case Series and Review of **Imaging Findings**

Shandy Fox, MD, Saskatoon, SK, Canada Luke Hnenny, MD, FRCSC, Regina, SK, Canada Michael Kelly, MD, PhD, Saskatoon, SK, Canada

Spinal arteriovenous f stulae are rare lesions often mistaken as stenosis with progressive myelopathy. Surgical ligation can halt progression and improve function. Diagnosis is key to patient success.

Discussion – 6 Minutes

Paper 729

Paper 730

#### 9:36 AM

#### Results of Database Studies in Spine Surgery Can Be Signif cantly Affected by Missing Data

Bryce A. Basques, MD, Chicago, IL Andre Samuel, New Haven, CT Matthew L. Webb, BA, New Haven, CT Adam Lukasiewicz, MSc, New Haven, CT Daniel D. Bohl, MD, MPH, Chicago, IL Junyoung Ahn, BS, Chicago, IL Kern Singh, MD, Chicago, IL Jonathan N. Grauer, MD, New Haven, CT

This study reports the rates of missing data for spine surgery patients from a commonly used national database and found that study results can vary greatly based on the treatment of missing data.

#### 9:42 AM

#### Paper 734

Paper 733

Risk Factors And Predictive Potential Of Haemostatic Biomarkers For Venous Thromboembolism After Spine Surgery

Katsuhito Yoshioka, MD, Kanazawa, Japan Hideki Murakami, MD, Kanazawa, Japan Satoru Demura, MD, Kanazawa, Japan Satoshi Kato, MD, Kanazawa, Japan Moriyuki Fujii, MD, Kanazawa, Japan Takashi Igarashi, MD, Kanazawa, Japan Noritaka Yonezawa, Kanazawa, Japan Naoki Takahashi, MD, Kanazawa-Shi, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

This is the f rst prospective comparative study to demonstrate the incidence and identify the risk factors of venous thromboembolism after spine surgery.

#### 9:48 AM

### Rod Fracture and Lengthening Intervals in Traditional Growing Rods: Is There a Relationship?

Pooria Hosseini, MD, MSc, San Diego, CA Jeff Pawelek, La Jolla, CA Stacie Nguyen, MPH, La Jolla, CA George H. Thompson, MD, Cleveland, OH Suken A. Shah, MD, Wilmington, DE John M. Flynn, MD, Philadelphia, PA John P. Dormans, MD, Houston, TX Behrooz A. Akbarnia, MD, San Diego, CA Growing Spine Study Group, Milwaukee, WI

The current clinical study did not support the f nite element analysis f ndings showing shorter lengthening intervals result in lower incidence of rod fracture in traditional growing rods.

Discussion – 6 Minutes

#### Paper 735

#### PAPER PRESENTATION

8:00 AM — 10:00 AM Room W315

#### Foot & Ankle III: All About Ankle Fractures

Moderator(s): Thomas G. Harris, Altadena, CA, John A. DiPreta, MD, Albany, NY

#### 8:00 AM

Assessment Of Stability Of Supination External Rotation Ankle Fractures In The 21st Century: A Review Of Evidence.

Sohail Yousaf, MRCS, Surrey, United Kingdom Shahnawaz Haleem, MBBS, Dartford, United Kingdom Mohamed Zbaeda, London, United Kingdom Henry Willmott, Dorset, United Kingdom

Clinicians often rely on talar shift to evaluate stability after ankle fractures, however SER fractures may present with a deep deltoid injury that is not apparent on the initial radiographs.

#### 8:06 AM

# Radiographic Assessment of Fibular Length Variance: The Case for the 'Fibula - Minus'

Vinod K. Panchbhavi, MD, FACS, Galveston, TX Barkha N. Gurbani, MD, Galveston, TX

The distal tip of the f bula is most commonly not at the level of talus lateral process as commonly described.

#### 8:12 AM

Paper 738

Paper 739

Paper 737

Paper 736

# Intra-articular Findings Identif ed by Arthroscopy in the Setting of Acute Ankle Fractures

Thomas Sherman, MD, Washington, Dist. of Columbia Eric Cotter, BS, Washington, Dist. of Columbia John W. Lally, BS, Washington, Dist. of Columbia Francis X. McGuigan, MD, Washington, Dist. of Columbia

Abnormal intra-articular f ndings are present in the majority of acute ankle fractures but cannot be accurately predicted by radiographic criteria or patient age.

Discussion – 6 Minutes

#### 8:24 AM

# Open Treatment of Ankle Fracture as an Inpatient Increases the Risk of A Complication

Frank Avilucea, MD, Salt Lake City, UT Sarah Greenberg, BA, Nashville, TN Paul S. Whiting, MD, Nashville, TN Basem Attum, MD, Prospect, KY Amir A. Jahangir, MD, Nashville, TN Hassan R. Mir, MD, MBA, Nashville, TN William T. Obremskey, MD, MPH, Nashville, TN Manish K. Sethi, MD, Nashville, TN

Undergoing open treatment of an ankle fracture as an inpatient has two-fold increased odds of developing a complication within 30-days.

#### 8:30 AM

#### Paper 740

#### Costs Associated with Geriatric Ankle Fractures: Operative versus Nonoperative Management

Rishin Kadakia, MD, Atlanta, GA Briggs Ahearn, MD, Atlanta, GA Raymond Y. Hsu, MD, Providence, RI Shay A. Tenenbaum, MD, Herzliya, Israel Yoojin Lee, Providence, RI COL (ret) Roman A. Hayda, MD, Providence, RI Vincent Mor, PhD, Providence, RI Jason T. Bariteau, MD, Atlanta, GA

The annual inpatient costs of geriatric ankle fractures is approximately 185 million dollars with nearly 17% of these costs attributable to hospital readmissions within 90 days of discharge.

#### 8:36 AM

Paper 741

#### Mortality Risk Associated with a Nursing Home Disposition following a Geriatric Ankle Fracture

Rishin Kadakia, MD, Atlanta, GA Raymond Y. Hsu, MD, Providence, RI Shay A. Tenenbaum, MD, Dallas, TX Yoojin Lee, Providence, RI COL (ret) Roman A. Hayda, MD, Providence, RI Vincent Mor, Providence, RI Jason T. Bariteau, MD, Atlanta, GA

Although nursing home admission following a geriatric ankle fracture is associated with increased complications, this disposition is not associated with increased mortality rates.

Discussion – 6 Minutes

#### 8:48 AM

#### Paper 742 Minimally Invasive Cannulated Intramedullary Screw Fixation of **Distal Fibular Fractures**

Nabil A. Ebraheim, MD, Toledo, OH Erik White, MD, Toledo, OH Xiaochen Liu, Sylvania, OH Joshua R. Delaney, MS, Toledo, OH Maged Hanna, Chicago, IL Jiayong Liu, Toledo, OH

Using a minimally invasive cannulated intramedullary screw can serve as a treatment for distal f bular fractures with resulting high union rates, low complication rates, and a satisfactory outcome.

#### 8:54 AM

#### Predictors of Adverse Events for Ankle Fractures: An Analysis of 6.800 Patients

Sarah Greenberg, BA, Nashville, TN Catherine Bulka, MPH, Nashville, TN Basem Attum, MD, Prospect, KY Amir A. Jahangir, MD, Nashville, TN Hassan R. Mir, MD, MBA, FACS, Nashville, TN Ronald W. Baker, MD, Brentwood, TN William T. Obremskey, MD, MPH, Nashville, TN Manish K. Sethi, MD, Nashville, TN

Our data demonstrates that even though there is an overall low rate of adverse events for ankle fractures, bimalleolar fractures are about 5 times more likely to develop any complication.

#### 9:00 AM

#### **Does Physical Therapy Predict Outcomes after Ankle Fractures** and Ankle Fracture-Dislocations?

Chad Ferguson, MD, Charlotte, NC Luke Harmer, MD, MPH, Rochester, MN Rachel Seymour, PhD, Charlotte, NC John K. Ellington, MD, Charlotte, NC CAPT (ret) Michael J. Bosse, MD, Charlotte, NC

After ankle fractures and ankle fracture-dislocations, patients receiving supervised physical therapy produced a similar outcome to those under routine physician directed rehabilitation.

Discussion – 6 Minutes

#### 9:12 AM

#### Paper 745 **3D Quantif cation of Posterior Malleolar Fragment-Reduction Predicts Clinical Outcome in a Prospective Trial** Diederik T. Meijer, Amsterdam, Netherlands Robert-Jan O. De Muinck Keizer, MD, Amsterdam, Netherlands Bonheur Van Der Gronde, Amsterdam, Netherlands Teun Teunis, MD, Amsterdam, Netherlands

Sjoerd Stufkens, MD, PhD, Amsterdam, Netherlands Job N. Doornberg, MS, Amsterdam, Netherlands Tim Schepers, MD, PhD, Amsterdam, Netherlands Gino M. Kerkhoffs, MD, PhD, Amsterdam, Netherlands J.C. Goslings, MD, PhD, Amsterdam, Netherlands

Contemporary measurements of postoperative joint congruity predict patient-reported outcome in posterior malleolar fractures.

Paper 743

Paper 744

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

### 9:18 AM

#### Open Ankle Fractures: What Predicts Infection?

Paul Tornetta III, MD, Boston, MA Margaret Cooke, MD, Boston, MA Heather A. Vallier, MD, Cleveland, OH Daniel S. Horwitz, MD, Danville, PA Harish Kempegowda, MD, Danville, PA Saam Morshed, MD, San Francisco, CA Tigist Belaye, MA, San Francisco, CA David C. Teague, MD, OK City, OK Max Coale, BA, Indianapolis, IN

The purpose of this study was to identify the patient, injury, and treatment factors associated with infection of open ankle fractures in a large data set generated from individual chart reviews.

#### 9:24 AM

#### Paper 747

Paper 746

Tibiof bular Screw Fixation For Syndesmotic Injury: To Retain Or Remove Before Weight Bearing?

Kwang Soon Song, MD, Daegu, Republic of Korea Si Wook Lee SR, Daegu, Republic of Korea

Removal of the syndesmotic screws would be safe after diastasis healing.

Discussion – 6 Minutes

#### 9:36 AM

#### Paper 748

Paper 749

Is Calcaneal Fracture Treatment Worth the Cost? A Cost Effectiveness Model of Four Treatment Methods

R Carter Clement, MD, MBA, Chapel Hill, NC Pamela Lang, MD, Santa Monica, CA Robert A. Overman, MPH, Chapel Hill, NC Robert F. Ostrum, MD, Chapel Hill, NC Joshua N. Tennant, MD, Chapel Hill, NC

Cost effectiveness analysis comparing four management strategies for a displaced intraarticular calcaneus fracture in a 40-year-old laborer favors primary subtalar arthrodesis.

#### 9:42 AM

#### The Evaluation of Traditional Fixation vs Suture-Mini Plate Reduction of the Ankle Syndesmosis.

Edward Jung, MD, Berkley, MI Andrew G. Georgiadis, MD, Philadelphia, PA Jonathan Ben-ze'Ev, Huntington Woods, MI Wayne T. North, MD, Berkley, MI David A. Katcherian, MD, Plymouth, MI

This study aims to compare the clinical outcomes of patients treated with the method of suture-mini plate f xation of the distal tibia f bular joint with traditional methods of syndesmotic f xation.

#### 9:48 AM

#### Strength of Syndesmosis Fixation: Two TightRope Versus One Tightrope with Plate-and-Screw Construct

Paper 750

Justin Tsai, MD, New York, NY Bhaveen H. Kapadia, MD, Indianapolis, IN Westley Hayes, MS, Brooklyn, NY Marlon McLeod, BS, Jamaica, NY Robert Pivec, MD, Brooklyn, NY Julio J. Jauregui, Indianapolis, IN Jaime A. Uribe, MD, Albertson, NY

The similar load to failure of the two TightRope and the one TightRope and plate-and-screw plate implies similar stiffness between the two constructs.

Discussion – 6 Minutes

#### **INSTRUCTIONAL COURSE LECTURE**

#### 9:30 AM — 10:30 AM Room W209B

# CD26

#### Social Media and Orthopaedics: Opportunities and Challenges

Moderator: Naven Duggal, MD, Manlius, NY Ira H. Kirschenbaum, Bronx, NY J. Martin Leland III, MD, Cleveland, OH Lance M. Silverman, MD, Edina, MN

Social media is an emerging modality that can be viewed as a chance to update our approach to interacting with patients, data, and each other in important new ways. However, careful attention regarding patient privacy, liability, and HIPPA violations is required by the orthopaedist interested in utilizing this technology. With mindful use of social media, we are able to leverage our positions as trusted community leaders to create and nurture a much larger community.

### Symposium

10:30 AM — 12:30 PM Chapin Theater

#### Outcomes Metrics Symposium for Total Joint Arthroplasty (AA)

Moderator: Adam Rana, MD, Falmouth, ME

The Patient Protection and Affordable Care Act hascreated several new Medicare programs. This symposium reports the learned experience of those who have been involved in developing and implementing quality metric strategies at the hospital level through the national level.

- I. Where Do We Stand Regarding Risk Adjustment for Patient Specif c Comorbidites when Evaluating PROMs: The FORCE-TJR Experience David C. Ayers, MD, Worcester, MA
- II. What Quality Metrics is My Hospital Being Evaluated on and What Penalties are They Subject To? *Kevin J. Bozic, MD, MBA, Austin, TX*
- III. Now That My Group Has a System for Collecting PROMs, Who Audits it and Will I Ever Recover My Initial Investment Dollars? Mark I. Froimson, MD, Hunting Valley, OH
- IV. Building the AJRR and Incorporating PROMs: The Past, Present and Future David G. Lewallen, MD, Rochester, MN
- V. The PROM Runway; Getting It To Fly Adolph J. Yates, MD, Pittsburgh, PA

#### <mark>Symposium</mark> 10:30 AM — 12:30 PM Valencia Room B

### Shoulder Arthroplasty: What to Do When Things Go Bad – Managing Complications (BB)



Moderator: Scott P. Steinmann, MD, Rochester, MN

Addresses the main complications that can be seenin the postoperative period. Work-up of the painful arthroplasty, dislocation and instability of the anatomic or reverse implant, and diagnosis and treatment of infection are addressed. Additionally, glenoid sided failure, scapular, and periprosthetic fractures are discussed. Finally neurologic issues related to the surgicalprocedure are addressed.

- I. Is Notching a Complication of Reverse Arthroplasty *George S. Athwal, MD, London, ON, Canada*
- II. Glenoid Failure in Reverse Shoulder Arthroplasty *Pascal Boileau*, *MD*, *Nice*, *France*
- III. Scapular Spine Fractures Lynn A. Crosby, MD, Augusta, GA

- IV. Painful Reverse Shoulder Arthroplasty Mark A. Frankle, MD, Temple Terrace, FL
- V. Periprosthetic Fractures in Shoulder Arthroplasty Frank Gohlke, MD, Wuerzburg, Germany
- VI. Nerve Injury After Shoulder Arthroplasty Laurent Lafosse, MD, Annecy, France
- VII. The Unstable Anatomic Shoulder Arthroplasty Joaquin Sanchez-Sotelo, MD, Rochester, MN
- VIII. Work-up of the Infected Arthroplasty John W. Sperling, MD, MBA, Rochester, MN

### Symposium

10:30 AM — 12:30 PM Valencia Room A



#### **Residency Core Competencies (CC)**

Moderator: James R. Ficke, MD, Baltimore, MD

This special educational event has been developedespecially for residents. Core competencies required for completion of an orthopaedic residency program will be presented. This highly interactive session is webcast live to Resident programs and the remote audience is encouraged to submit questions via Twitter,@AAOSPearls.

- I. Patient Communication / Giving Feedback David A. Halsey, MD, South Burlington, VT
- II. Interpersonal Skills and Communication Harpal S. Khanuja, MD, Cockeysville, MD
- III. Patient Safety William J. Robb III, MD, Winnetka, IL
- IV. Fatigue Management COL Daniel W. White, MD, Casper, WY

### INSTRUCTIONAL COURSE LECTURE

#### 10:30 AM — 12:30 PM

#### 421 ABCs of Planning a Knee Arthroplasty

Room

Brian S. Parsley, MD, Bellaire, TX Rafael J. Sierra, MD, Rochester, MN

**W304E** Intended for general orthopaedists. It reviews basics steps necessary to minimize complications and optimize outcomes as well as a comprehensive review of medical/ surgical knee arthroplasty planning and tools available to surgeons.

Moderator: Carlos J. Lavernia, MD, Coral Gables, FL

#### The Synovial Joint: Structure, Function, Injury and TICKET **Repair, Osteoarthritis**

Moderator: Joseph A. Buckwalter, MD, Jowa City, IA Alan J. Grodzinsky, PhD, Cambridge, MA

Offers a concise review of current understanding of the biology and biomechanics of articular cartilage and provides a basis for current understanding of osteoarthritis and cartilage repair. A basis for understanding current clinical approaches to providing biologic resurfacing of articular cartilage and restoration of synovial joint function also is covered.

#### 423 **Surgical Treatment of Charcot Foot**

Moderator: Michael S. Pinzur, MD, Maywood, IL TICKET Carroll P. Jones, MD, Charlotte, NC Jeremy J. McCormick, MD, Saint Louis, MO

> There is an evidence-based appreciation that thedeformity associated with Charcot Foot leads to poor clinical outcomes. This case-based course discusses the evidence-supported rationale for use of the new superconstruct internal f xation and static circular external f xation devices.

#### An Orthopaedist's Introduction to the AMA Guides to Permanent Physical Impairment by Examples Using the 4th, 5th, and 6th Editions

Moderator: J. Mark Melhorn, MD, Wichita, KS

The need for accurate impairment and disabilityevaluations continues to increase. This course is designed to select the most common musculoskeletal diagnoses and review how to evaluate and rate using the 4th, 5th, and 6th editions of the American Medical Association Guides.

#### 425 **Contemporary Perspectives on Complex Fracture-Dislocations of the Wrist** TICKET

Moderator: Jesse B. Jupiter, MD, Boston, MA Diego L. Fernandez, MD, Berne, Switzerland Fiesky A. Nunez, MD, VA, Venezuela, Republic of Bolivarian

Alexander Yong Shik Shin, MD, Rochester, MN

Room W307A

ASSH

Perilunate and fracture-dislocations about the wrist are a compendium of combined soft tissue and bony injuries which are challenging to recognize and effectively treat. The outcomes are often the result of a careful assessment and surgical management. This course is based around a series of case examples which highlight the variety of injury patterns, methods of clinical and radiological assessment, decision making regarding surgical management, and evidence-based presentation of outcomes and complications.

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TICKET
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Room

W310

426

#### Practical Guide to Avoiding and Managing **Complications in Pediatric Spinal Deformity Surgery** Moderator: Patrick J. Cahill, MD, Philadelphia, PA Baron Lonner, MD, New York, NY

Suken A. Shah, MD, Wilmington, DE Burt Yaszav, MD, San Diego, CA

Addresses the complications of pediatric spinal deformity surgery and their management. The format covers the major categories of complications - neurologic injury, infection, loss of f xation and pseudarthrosis, and medical complications.

427 TICKET

Room

W300

#### Nontechnical Surgical Skills: What Are They; Why Do They Matter?

Moderator: Dwight W. Burney III, MD, Albuquerque, NM Andrew W. Grose, MD, Sleepy Hollow, NY Mary I. O'Connor, MD, New Haven, CT John S. Webster, MD, MBA, La Mesa, CA Andrew M. Wong, MD, Tallahassee, FL

Nontechnical skills (communication, teamwork, leadership, situational awareness, decision making) are increasingly recognized as important in surgical outcomes. This course reviews current knowledge of the role of nontechnical skills in the successful care of the patient requiring orthopaedic surgery.

#### 428 **Diagnosis and Treatment of the Biceps-Labral Complex:** The State of the Art 2016 TICKET

Room W204 Moderator: Anthony A. Romeo, MD, Chicago, IL James R. Andrews, MD, Gulf Breeze, FL Stephen F. Brockmeier, MD, Charlottesville, VA Nikhil N. Verma, MD, Chicago, IL

The anatomy of the biceps-labral complex is wellunderstood, but the function and appropriate indications for treatment remain controversial. Recommendations are discussed and cases presented.

#### Is it the Back or the Hip? Differentiating Lumbar Spine from Hip Pathologies: Key Points of Evaluation and Treatment

Room W314

429

TICKET

Moderator: Afshin Razi, MD, New York, NY Aaron Buckland, FRACS, New York, NY Ryan G. Miyamoto, MD, Arlington, VA Rakesh Patel, MD, Ann Arbor, MI James D. Slover, MD, New York, NY

Focuses on the causes and overlapping clinical presentation of lumbar spine and hip pathology. Key diagnostic methods, clinical signs, and exam f ndings used to differentiate them, as well as common treatment options, are discussed.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

422

ORS

Room

W205A

Room W308C



Room W308A

## ◆430 Joint Preservation Techniques for the Knee in 2016: The Utility of Biologics, Osteotomies, and Cartilage Restoration Procedures

Room W202 Moderator: Brian J. Cole, MD, MBA, Chicago, IL Rachel M. Frank, MD, Chicago, IL Andreas H. Gomoll, MD, Chestnut Hill, MA Eric J. Strauss, MD, New York, NY

> Provides a comprehensive overview of joint preservation techniques for the knee, including biologic and reconstructive approaches, with an emphasis on evidence-based treatment guidelines for young, highdemand patients.



#### Current Plating Techniques and Def nitive Treatment Options for Fractures of the Tibial Plafond and Treatment of the Late and Failed Pilon

Moderator: Gilbert R. Ortega, MD, MPH, Scottsdale, AZ Animesh Agarwal, MD, San Antonio, TX Samir Mehta, MD, Philadelphia, PA

Discusses staged treatment of tibial pilon fractures with an emphasis on modern plating techniques including standard and alternative operative approaches. It includes discussion on open treatment in combination with def nitive external f xation and salvage of the latepresentation and treatment failures.



Room W307C

#### How Can I Get This Bone To Heal?

Moderator: Charalampos Zalavras, MD, Los Angeles, CA Randall E. Marcus, MD, Cleveland, OH John K. Sontich, MD, Cleveland, OH

Provides a comprehensive overview of (a) earlyinterventions aiming to prevent nonunions and (b) evaluation and management of established nonunions. This enables participants to optimize care of fracture patients and improve outcomes.



Room

W207

#### Complications after Total Hip Arthroplasty: Current Strategies for Prevention and Treatment

Moderator: Craig J. Della Valle, MD, Chicago, IL John J. Callaghan, MD, Iowa City, IA Gregory K. Deirmengian, MD, Broomall, PA Christopher Estes, DO, Portland, OR Fares S. Haddad, FRCS, London, United Kingdom David J. Jacofsky, MD, Peoria, AZ Steven J. MacDonald, MD, London, ON, Canada R. Michael Meneghini, MD, Fishers, IN Christopher L. Peters, MD, Salt Lake City, UT Gregory G. Polkowski II, MD, Nashville, TN Scott M. Sporer, MD, Wheaton, IL

Learn to avoid and optimize the management of complications associated with total hip arthroplasty including dislocation and leg length discrepancy, infection, symptomatic deep vein thrombosis, and periprosthetic fractures.

# 484 Personalized Approach to the Painful Aseptic



Room

W208

David Backstein, MD, Toronto, ON, Canada Michael E. Berend, MD, Indianapolis, IN Mathias Bostrom, MD, New York, NY Douglas A. Dennis, MD, Denver, CO Stuart B. Goodman, MD, Redwood City, CA William L. Griff n, MD, Charlotte, NC William A. Jiranek, MD, Richmond, VA William B. Macaulay, MD, New York, NY William M. Mihalko, MD, PhD, Germantown, TN Mark W. Pagnano, MD, Rochester, MN Wayne G. Paprosky, MD, Winf eld, IL Javad Parvizi, MD, FRCS, Philadelphia, PA

Moderator: Khaled J. Saleh, MD, MSc, Springf eld, IL

By better understanding the classif cation, diagnosis, and treatment options for aseptic pain, orthopaedic surgeons may benef t their total knee arthroplasty patients through a greater understanding of this potentially debilitating complication.

#### PAPER PRESENTATION

#### 10:30 AM — 12:30 PM Valencia Room D

#### Adult Reconstruction Knee VII: Miscellanous

Moderator(s): David A. Fisher, MD, Indianapolis, IN, Daniel J. Del Gaizo, MD, Chapel Hill, NC

#### 10:30 AM

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### Tranexamic Acid and Epsilon-Aminocaproic Acid to Reduce Blood Loss Following Total Knee Arthroplasty

Clifford K. Boese, MD, Council Bluffs, IA Leslie Centeno, BA, Council Bluffs, IA Marcia Weis, Council Bluffs, IA Ryan Walters, MS, Omaha, NE Rebecca Baker, RN, Council Bluffs, IA Mark J. Harris, Council Bluffs, IA Brian Cooley, MS, RN, Council Bluffs, IA Theresa J. Gallo, PA-C, Council Bluffs, IA

This is a prospective, double-blind, randomized controlled trial comparing the antif brinolytic effects of tranexamic acid and epsilon-aminocaproic acid in total knee arthroplasty.

#### 10:36 AM

Paper 752 Combined Intra-articular and Intravenous Tranexamic Acid Signif cantly reduce Blood Loss in Knee Arthroplasty

Christian Skovgaard Nielsen, MD, Boston, MA Oeivind Jans, MD, PhD, Copehagen Ø, Denmark Nicolai B. Foss, DMed, MD, Copenhagen, Denmark Thue Oersnes, MD, Copenhagen, Denmark Anders Troelsen, MD, PhD, Koege, Denmark Henrik Husted, MD, Charlottenlund, Denmark

In this randomized clinical trial signif cantly reduced blood loss of 37 % was found at 24 h and 2nd day with combined systemic and topical tranexamic acid versus systemic alone in knee replacement.

#### 10:42 AM

#### Paper 753

Comparative Results with 3 Strategies to Use Tranexamic Acid for Blood Loss Reduction After Total Knee Arthroplasty

Sung Yup Lee, Seoul, Republic of Korea Nimesh P. Jain, MBBS, MS, Mumbai, India Suri Chong, Seong-Nam City, Republic of Korea Sang Wook Lee, Seongnam, Republic of Korea Seon Woo Lee, MD, Seongnamsi, Republic of Korea Young Gon Na, MD, Seongnam-Si, Republic of Korea Gaurav Sharma, MBBS, MS (Ortho), New Delhi, India Tae Kyun Kim, MD, Seongnam-si, Republic of Korea

It shows that the use of IA TNA administration reduces blood loss better than IV use only or similar to combined IV/IA TNA administrations.

Discussion – 6 Minutes

#### 10:54 AM

#### Paper 754

#### IV vs. Topical Tranexamic Acid in TKA: In a Randomized Clinical **Trial of 600 Patients Both Effective**

Matthew P. Abdel, MD, Rochester, MN Michael J. Taunton, MD, Rochester, MN Rafael J. Sierra, MD, Rochester, MN Robert T. Trousdale, MD, Rochester, MN Mark W. Pagnano, MD, Rochester, MN Edwin P. Su, MD, New York, NY Steven B. Haas, MD, New York, NY Mark P. Figgie, MD, New York, NY David Mayman, New York, NY

In this large randomized clinical trial of contemporary TKA, topical use of TA resulted in slightly higher blood loss but similar drain output and transfusion rates (<2%) compared to IV TA.

#### 11:00 AM

#### Calculating the Cost and Risk of Comorbidities in Total Joint **Arthroplasty in the United States**

Joshua Hustedt, MD, Phoenix, AZ Daniel D. Bohl, MD, MPH, Chicago, IL James Fraser, MD, Phoenix, AZ Nina J. Lara, MD, Phoenix, AZ Alexander C. McLaren, MD, Phoenix, AZ Mark J. Spangehl, MD, Scottsdale, AZ

This study characterizes the relationship between cost and risk of postoperative complications for common preoperative comorbidities in patients undergoing total joint arthroplasty.

### 11:06 AM

Paper 756

Paper 757

Paper 758

Paper 755

How will the Financial Impact of Major Medical Complications after TKA Change with Bundled Payments?

R Carter Clement, MD, MBA, Chapel Hill, NC Michael M. Kheir, BS, Philadelphia, PA Adrianne Soo, BS, Chapel Hill, NC Peter Derman, MD, MBA, New York, NY David N. Flynn, MD, MBA, Philadelphia, PA L S. Levin, MD, FACS, Philadelphia, PA Lee A. Fleisher, MD, Philadelphia, PA

Major medical complications after TKA are well compensated by Medicare but not by bundled payments without risk adjustment, which may incentivize providers against patients they believe are high-risk

Discussion – 6 Minutes

#### 11:18 AM

#### High Rates of Antibiotic Resistance in Early Periprosthetic Joint Infection

Saiprasad Ravi, Auckland, New Zealand Mark Zhu, Auckland, New Zealand Christopher Luey, MBCHB, Auckland, New Zealand Simon Young, MD, FRACS, Auckland, New Zealand

This retrospective audit of 4009 arthroplasties found that 58% of organisms causing early prosthetic joint infections are methicillinresistant, empiric antibiotic treatment should account for this.

#### 11:24 AM

#### Knee Arthroscopy vs Physiotherapy Alone for Meniscal Damage **Complicated by Osteoarthritis**

Ronald A. Navarro, MD, Rolling Hills, CA Annette L. Adams, PhD, Pasadena, CA John Fleming, MD, Torrance, CA Ivan A. Garcia, MD, Baldwin Park, CA Janet Lee, MS, Pasadena, CA Mary Helen Black, MS, PhD, Pasadena, CA

For patients with meniscal damage complicated by OA, treatment with Knee Arthroscopy does not decrease risk for eventual knee replacement compared to PT-alone (did not "buy time").

#### 11:30 AM

#### **Comparative Effectiveness Of Viscosupplement And Corticosteroid Injections For Knee Osteoarthritis**

Jonathan R. Staples, MD, Saint Louis, MO James A. Keeney, MD, Columbia, MO

Annualized viscosupplement cost was 5 times greater than successful corticosteroid injection (CSI). Disease progression following CSI was not observed, supporting preferential CSI use for knee OA.

#### Discussion – 6 Minutes

#### 11:42 AM

#### Paper 760

Paper 759

Impact of Training Level on Post-operative Complications in Total Knee Arthroplasties: US versus Canada. Mohammed A. Al-Sobeai, MD, Montreal, OC, Canada

Laura M. Epure, Montreal, OC, Canada Stephane Bergeron, MD, Kirkland, QC, Canada Olga Huk, MD, Westmount, OC, Canada David Zukor, MD, Montreal, QC, Canada John Antoniou, MD, FRCSC, Montreal, QC, Canada

Data from ACS-NSQIP were reviewed for Primary TKA to identify the effect of resident level on postoperative complications and we compared two different Health care systems, US versus Canada.

#### 11:48 AM

Paper 761 **Clinical And Radiologic Evaluation Of Medial Epicondylar** 

**Osteotomy For Severe Varus Tka** Jaeang Sim, MD, Incheon, Republic of Korea Beom Koo Lee Sr, MD, Incheon City, Republic of Korea

From 2004 to 2012, 63 severe varus TKAs with medial epicondylar osteotomy were retrospectively evaluated. Results are satisfactory and stability with bony and f brotic unions is not different.

#### 11:54 AM

Paper 762

The Accuracy Of Patient Specif c Jigs During Total Knee Arthroplasty Do We Resect What The Jigs Plans For Us To Resect?

Yadin D. Levy, MD, Sydney, Australia Vincent V. An, BS, Strathf eld, Australia Christopher J. Shean, Canberra, Australia Peter M. Walker, FRCS, Concord, Australia Warwick Bruce, FRACS, MD, Miller's Point, Australia

Evaluation of TKA patient specif c instruments accuracy was conducted by comparing the preoperative surgical plan and the actual intraoperative resection size and only a fair correlation was fond

Discussion – 6 Minutes

#### 12:06 PM

#### Leg Length Discrepancy After High Tibial Osteotomy: **Comparative Study Of Closing Versus Opening Wedge** Osteotomy

Joong Il Kim, Seol, Republic of Korea Bo Hyun Kim, MD, Seoul, Republic of Korea Ki Woung Lee, MD, Seoul, Republic of Korea O-Sung Lee, MD, Seoul, Republic of Korea Yongseuk Lee, MD, Seongnam, Republic of Korea Hyuk Soo Han, MD, Seoul, Republic of Korea Sahnghoon Lee, MD, PhD, Seoul, Republic of Korea Chong Bum Chang, MD, PhD, Seoul, Republic of Korea Myung C. Lee, MD, Seoul, Republic of Korea

After unilateral high tibial osteotomy(HTO), leg length discrepancy was negligible with lateral closing wedge HTO and increased with medial opening wedge HTO.

#### 12:12 PM

#### High Tibia Medial Open Wedge Osteotomy: Survival, Radiostereometric, and Functional outcome Followed Up

Cheng-Yi Wu, Chia-Yi City, Taiwan Wei Hsing Chib, Chia-Yi City, Taiwan I-Ming Jou, Tainan, Taiwan Chang Hao Lin, Chia-Yi City, Taiwan

Our study have shown that we can achieve satisfactory and good results by performing OWHTO with using autograft combined with synthetic materials and conventional AO buttress nonlocking plate.

#### 12:18 PM

### Mid-Long Term Clinical Outcomes of Opening Wedge High Tibial **Osteotomy for Spontaneous Osteonecrosis of the Knee**

Kazuhiko Saeki, MD, PhD, Fukuoka, Japan Takahiko Kiyama, MD, Fukuoka, Japan Akira Maeyama, MD, Fukuoka, Japan Satoshi Kamada, MD, Fukuoka, Japan Masatoshi Naito, MD, Fukuoka, Japan

We performed opening wedge high tibial osteotomy with autologous osteochondral graft transplantation for spontaneous osteonecrosis of the knee with varus deformity.

Discussion – 6 Minutes

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

Paper 763

Paper 764

12:24

#### **PAPER 919**

#### **Recombinant Human Bone Morphogentic Protein-2 Leads to** Bony Healing in a Novel, Ulnar Nonunion Model

Jason H. Ghodasra, MD, Los Angeles, CA Brian M. Weatherford, MD, Glenview, IL Michael Nickoli, MD, Chicago, IL Erika Daley, MD, Royal Oak, MI Erin L. Hsu, PhD, Chicago, IL Wellington K. Hsu, MD, Chicago, IL

#### **PAPER PRESENTATION**

#### 10:30 AM - 12:30 PM Room W414

#### Sports Medicine/Arthroscopy VII: Knee 3

Moderator(s): Christopher T. Donaldson, MD, Johnstown, PA, David Yucha, MD, Berwyn, PA

#### 10:30 AM

#### Surgical Outcomes of Medial versus Lateral Sided Injuries in the **Dislocated Knee**

Alexander H. King, BS, Rochester, MN Aaron J. Krych, MD, Rochester, MN Matthew Prince, DO, Rochester, MI Michael J. Stuart, MD, Rochester, MN Bruce A. Levy, MD, Rochester, MN

Patients undergoing multiligament knee reconstruction with KDIII-M knee dislocations are not as likely to achieve positive results as patients with KDIII-L dislocations.

#### 10:36 AM

#### **Biomechanical Comparison of Five Posterior Cruciate Ligament Reconstruction Techniques**

Clayton W. Nuelle, MD, Columbia, MO James L. Cook, DVM, PhD, Columbia, MO Ferris Pfeiffer, PhD, Boonville, MO Jeffrey Milles, MD, Columbia, MO Patrick A. Smith, MD, Columbia, MO Mauricio Kfuri JR, MD, PhD, Columbia, MO James P. Stannard, MD, Columbia, MO

We tested f ve PCL reconstruction techniques, both all arthroscopic and open, single bundle and double bundle, to evaluate which techniques most closely resemble the native ligament/knee biomechanics.

#### 10:42 AM

#### **Robotic Assessment of Anterolateral Ligament: Reconstruction** of the Anterolateral and Anterior Cruciate Ligament

Paper 768

Paper 769

Paper 770

Paper 771

Marco Nitri, MD, Vail, CO Matthew Rasmussen, BS, Vail, CO Brady T. Williams, BS, Vail, CO Samuel Moulton, BA, Eugene, OR Raphael Serra Cruz, MD, Vail, CO Grant Dornan, MSc, Vail, CO Mary T. Goldsmith, MSc, Vail, CO Robert F. LaPrade, MD, PhD, Vail, CO

In the setting of combined ACL and ALL def ciency, concurrent anatomical reconstruction of the ALL and ACL restores the rotatory stability of the knee compared to solely reconstructing the ACL.

Discussion – 6 Minutes

#### 10:54 AM

#### Does The Use Of A Hinged Knee Brace Inf uence Recovery After A MCL Injury: A Randomised Controlled Trial.

L A Kashif Khan, Edinburgh, United Kingdom John F. Keating, Scotland, United Kingdom

This prospective randomised trial showed that the use of a hinged knee brace does not inf uence recovery after a medial collateral injury.

#### 11.00 AM

#### Flexion Gap In Isolated PCL Injury Might Affect The Result Of **Conservative Treatment**

Yasukazu Yonetani, MD, PhD, Osaka, Japan Kousuke Sakata, Hirakata, Japan Yoshinari Tanaka, MD, Sakai, Japan Masayuki Hamada, MD, Osaka, Japan Shuji Horibe, MD, Osaka, Japan

Flexion laxity affects outcome of conservative treatment, it could be a factor of indication of surgical treatment for isolated PCL injury in addition to posterior laxity.

#### 11:06 AM

#### **Total Knee Arthroplasty Following Multi-ligament Knee Surgery:** A Matched Cohort Study

Steven I. Pancio II, MD, Rochester, MN Paul Sousa, MBA, MD, Rochester, MN Aaron J. Krych, MD, Rochester, MN Bruce A. Levy, MD, Rochester, MN Diane L. Dahm, MD, Rochester, MN Michael J. Stuart, MD, Rochester, MN

Patients with a history of multi-ligament surgery have outcomes similar to those without in terms of implant survival. Such patients are at risk of reoperation if increased constraint is needed.

Discussion – 6 Minutes

#### Paper 767

#### 11:18 AM

### Paper 772

#### **Changes In Gait Pattern In Adolescents With Recurrent Patellar** Instability

Carlo Camathias, MD, Basel, Switzerland Rahel Meier, Arlesheim, Switzerland Elias Ammann, Basel, Switzerland Erich Rutz. MD. Basle, Switzerland Patrick Vavken, MD, Basel, Switzerland

Adolescents with patellar dislocations decrease the knee f exion during loading response and mid stance phase. Decreased hip f exion and increased plantar f exion indicate a possible compensation.

#### 11:24 AM

#### Paper 773

#### **Repair of Knee Extensor Mechanism Injury with Suture Anchors**

Joel Huleatt, MD, Atlanta, GA Aaron Gebrelul, BA, Atlanta, GA Ajay Premkumar, BS, McLean, VA John W. Xerogeanes, MD, Atlanta, GA

This retrospective case series of patients treated with a suture anchor technique for quadriceps tendon and patellar tendon repair reports on functional outcomes, range of motion, and failure rate.

#### 11:30 AM

Paper 774

#### **Patellar Sleeve Fractures: Nonoperative Management of Minimally-Displaced Fractures Provides Excellent Outcome**

Paul Sousa, MBA, MD, Rochester, MN Matthew Prince, DO, Rochester, MI Alexander H. King, BS, Rochester, MN Michael J. Stuart, MD, Rochester, MN Diane L. Dahm, MD, Rochester, MN

Minimally displaced patellar sleeve fractures can be successfully managed non-operatively with excellent outcome scores and low risk of patellar tendon ossif cation.

#### Discussion – 6 Minutes

#### 11:42 AM

Paper 775

## **Biomechanical Consequences Of Excessive Patellar Distalization**

Justin Yang, MD, Farmington, CT John P. Fulkerson, MD, Farmington, CT Elifho Obopilwe, Torrington, CT Andreas Voss, MD, Hartford, CT Jessica M. Divenere, BS, Farmington, CT Augustus D. Mazzocca, MD, MS, Farmington, CT Robert A. Arciero, MD, Farmington, CT Cory Edgar, MD, PhD, West Hartford, CT

Patellar baja, as a result of excessive patellar distalization, can cause increased patellofemoral contact pressures during early f exion.

### 11:48 AM

#### The Bereiter Trochleoplasty: Results and outcomes of a 12 years series

Andrew Metcalf, FRCS (Ortho), PhD, Coventry, United Kingdom Damian A. Clark, FRCS (Ortho), MBBS, Bristol, United Kingdom

Mark A. Kemp, FRCS (Ortho), Bristol, United Kingdom Jonathan D. Eldridge, FRCS, FRCS (Ortho), Bristol, United Kingdom

The Bereiter trochleoplasty is an effective treatment for recurrent patella instability in patients with severe trochlea dysplasia with good ongoing function and low rates of recurrent instability.

#### 11:54 AM

Paper 777 **Patellar Redislocation: Surgical Vs Conservative Approach** 

Paper 776

#### Daniele Mazza, Fiumicino, Italy Raffaele Iorio, MD, Rome, Italy Cosma Calderaro, Rome, Italy Carolina Civitenga, MD, Rome, Italy Andrea Redler, MD, Rome, Italy Priscilla Di Sette, Rome, Italy

Angelo De Carli, MD, Rome, Italy Fabio Conteduca, MD, Roma, Italy Andrea Ferretti, MD, Rome, Italy

Elmslie-Trillat is an effective procedure in the treatment of patellar instability and degenerative changes in the Knee seems to normally occur in patellar instability.

Discussion – 6 Minutes

#### 12:06 PM

#### Paper 778 Allograft/Autograft ACL Reconstruction Equal Outcomes in All Ages, No Anterior Knee Pain: Average 7 Year Follow Up

Stephanie C. Petterson, MPT, PhD, Stamford, CT Allison M. Green, PhD, Stamford, CT Kevin D. Plancher, MD, MS, New York, NY Kevin D. Plancher, MD, MS, Cos Cob, CT

Allograft/Autograft ACLR with a modif ed harvest/closure technique yields equal outcomes with low recurrence rate and return to high level sports without resultant anterior knee pain.

#### 12:12 PM

#### Paper 779 **Quality and Variability of Physical Therapy Protocols for ACL** Reconstruction

Eric C. Makhni, MD, MBA, New York, NY Erica K. Crump, MD, San Diego, CA Michael Steinhaus, MD, New York, NY Nikhil N. Verma, MD, Chicago, IL Christopher S. Ahmad, MD, New York, NY Brian J. Cole, MD, MBA, Chicago, IL Bernard R. Bach Jr, MD, River Forest, IL

Many ACL rehabilitation protocols are not supported by evidence-based practices, and show substantial variability in composition and time range.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

#### 12:18 PM

#### Paper 780

#### **Restricted Hip Rotation is an Independent Risk Factor for ACL** Injury

Curtis D. VandenBerg, MD, Ann Arbor, MI Eileen A. Crawford, MD, Magnolia, DE Elizabeth R. Sibilsky Enselman, MEd, ATC, Ann Arbor, MI Christopher B. Robbins, Ann Arbor, MI Edward M. Woitvs, MD, Ann Arbor, MI Asheesh Bedi, MD, Ann Arbor, MI

Prospectively comparing male and female ACL-injured athletes to matched controls revealed a correlation with ACL injury and restricted hip rotation, and an increased incidence of cam-type morphology.

Discussion – 6 Minutes

#### PAPER PRESENTATION

10:30 AM - 12:30 PM Room W304A

Foot & Ankle IV: Locations: Ankle, Hindfoot, & Forefoot

Moderator(s): Paul J. Juliano, MD, Hershey, PA, David B. Thordarson, MD, Los Angeles, CA

#### 10:30 AM

Paper 781

#### **Prospective Evaluation of Structural Allograft Transplantation** for Osteochondral Lesions of the Talar Shoulder

Samuel B. Adams Ir. MD. Durham, NC Adam P. Schiff, MD, Maywood, IL Christopher E. Gross, MD, Durham, NC James A. Nunley II, MD, Durham, NC Mark E. Easley, MD, Durham, NC

Signif cant improvement in pain and function can be achieved with structural allograft transplantation for large osteochondral lesions of the talus.

#### 10:36 AM

#### Paper 782

**Osteochondral Autograft Transfer combined with Cancellous** Allografts for the treatment of the large cystic OLTs

Zhu Yuan, MD, Shanghai, China Xu Xiangyang, MD, Shanghai, China

The use of osteochondral autograft transfer combined with cancellous allografts is a reasonable and effective option for the treatment of large talar osteochondral lesions.

#### 10:42 AM

#### **Outcomes of Osteochondral Allograft Transfer for** Osteochondral Lesions of the Talus in a Military Population

Iohn Dunn, MD, El Paso, TX Nicholas A. Kusnezov, MD, El Paso, TX Brian R. Waterman, MD, El Paso, TX Iustin D. Orr. MD. El Paso, TX

Despite modest improvements in short term outcome scores. large osteochondral lesions requiring structural allograft transfer remain diff cult to treat, particularly in high demand patients.

Discussion – 6 Minutes

#### 10:54 AM

Paper 784

Paper 786

Ankle Arthrodesis: A Retrospective Review Comparing Single **Column, Locked Anterior Plating to Crossed Lag Screws** 

Mark A. Prissel, DPM, Westerville, OH Gary A. Simpson, DO, CO Springs, CO Sean A. Sutphen, DO, Columbus, OH Christopher Hyer, DPM, Westerville, OH Gregory C. Berlet, MD, Westerville, OH

A retrospective evaluation of radiographic and clinical fusion rates and time to bony fusion for patients who underwent ankle arthrodesis using a locked plate construct versus crossed lag screws.

#### 11:00 AM

#### Paper 785 A New Classif cation Of Ankle Arthrodesis Using An External Fixator

Hidenori Matsubara, MD, Kanazawa, Japan Takao Aikawa, Kanazawa-Shi, Japan Yasuhisa Yoshida, Kanazawa, Japan Shogo Shimbashi, Kanazawa-Shi, Ishikawa, Japan Shuhei Ugaji, PhD, Kanzawa City, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We f rstly classif ed ankle arthrodesis using an external f xator into four types. Each type had different indications. An external f xator for ankle arthrodesis is very useful for complicated cases.

#### 11:06 AM

#### New Ankle Arthrodesis through a Modif ed Scranton Method

Hidenori Matsubara, MD, Kanazawa, Japan Takao Aikawa, Kanazawa-Shi, Japan Yasuhisa Yoshida, Kanazawa, Japan Shogo Shimbashi, Kanazawa-Shi, Ishikawa, Japan Shuhei Ugaji, PhD, Kanzawa City, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We report ankle arthrodesis through a modif ed Scranton method. We modif ed the original method by using locking plate for humerus without f bula osteotomy and using one thick cannulated screw.

Discussion – 6 Minutes

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

#### 11:18 AM

#### Paper 787

#### Lateral Column Lengthening Versus Subtalar Arthroereisis In The Treatment Of The Adult Flat Foot

Remesh Kunnasegaran, Singapore, Singapore Lee Bing Howe, MBBS, Singapore, Singapore Gowreeson Thevendran, MD, Singapore, Singapore

Retrospective review of radiological and functional outcomes following lateral column lengthening and subtalar arthroereisis in pes planus reconstruction

#### 11:24 AM

#### Paper 788

#### Instability of the medial Column post triple Arthrodesis for Stage III Posterior Tibial Tendon Dysfunction

Wei Ting Lee, FRCS (Ortho), MBBS, Singapore, Singapore Adriana Avila Salgado, MD, Huixquilucan, Mexico Qinglin Han, Indianapolis, IN Mark S. Myerson, MD, Indianapolis, IN

Triple arthrodesis for the treatment of Stage III PTTD leads to long term instability of medial column which is most apparent in the sagittal plane of the naviculocuneiform joint.

#### 11:30 AM

#### Paper 789

#### The Prevalence, Risk Factors and Natural History of Unexplained Pain After Hallux Valgus Corrective Surgery

Yongqiang Jerry Chen, MBBS, Singapore, Singapore Fu Hong Benjamin Ang, MBBS, Singapore, Singapore Lei Jiang, MBBS, Singapore, Singapore Hwei Chi Chong, Singapore, Singapore Andy Yew, PhD, Singapore, Singapore Eng Meng Nicholas Yeo, MD, Singapore, Singapore Oon Thien Kevin Koo, MD, Singapore, Singapore Inderjeet S. Rikhraj, MD, Singapore, Singapore

Although the prevalence of unexplained pain after hallux valgus corrective surgery is 31%, most of these patients do experience resolution of pain by two years follow up.

Discussion – 6 Minutes

#### 11:42 AM

#### Paper 790

# First Metatarsophalangeal Joint Arthrodesis: A comparison of operative techniques.

Douglas Edward Lucas, DO, Durango, CO Loretta Chou, MD, Redwood City, CA Kenneth Hunt, MD, Redwood City, CA

First MTP arthrodesis is a commonly performed procedure for severe hallux pathology. This study seeks to explore the effectiveness of third generation dorsal plates with two surgical techniques.

### 11:48 AM

#### Intermediated-term Results Of Metatarsal Dorsif exion Osteotomy As Salvage Procedure for Advanced Hallux Rigidus

Byung-Ki Cho, MD, Cheong-Ju, Republic of Korea Seung Myung Choi, Seoul, Republic of Korea Kyoung Jin Park, MD, Irvine, CA

Distal metatarsal dorsif exion osteotomy using bio-compression screw seems to be one of effective joint salvage procedures for advanced hallux rigidus.

#### 11:54 AM

#### Paper 792

Paper 793

Paper 791

# ◆ First Metatarsophalangeal Hemi Arthroplasty with a new Synthetic Cartilage Implant: Surgical and Recovery time

Mark Glazebrook, MD, Halifax, NS, Canada Timothy R. Daniels, MD, FRCSC, Toronto, ON, Canada Dishan Singh, ChB, Stanmore, Middlesex, United Kingdom Alastair S E. Younger, MD, Vancouver, BC, Canada Anthony Sakellariou, FRCS, Camberley, Surrey, United Kingdom Matthew C. Solan, FRCS, Godalming Surrey, United Kingdom Guy Wansbrough, FRCS (Ortho), MBBS, Torquay, United Kingdom

Elizabeth Pedersen, MD, Edmonton, AB, Canada Ian Le, MD, Calgary, AB, Canada

Cartiva, a novel synthetic implant for MTP hemi arthroplasty that was shown to be eff cacious and safe compared to arthrodesis and took less surgical time demonstrating a faster recovey for patients.

#### Discussion – 6 Minutes

#### 12:06 PM

#### Prospective Randomized Multi-Centered Trial comparing a Synthetic Implant to 1st MTP fusion in Hallux Rigidus

Judith F. Baumhauer, MD, MPH, Rochester, NY Chris M. Blundell, FRCS (Ortho), MD, Sheff eld, United Kingdom

Dishan Singh, ChB, ChB, Stanmore, Middlesex, United Kingdom Mark Glazebrook, MD, Halifax, NS, Canada

Timothy R. Daniels, MD, FRCSC, Toronto, ON, Canada

There was equivalent improvement in pain and function between the MT implant and 1st MTP fusion. The MT implant preserves 1st MTP motion and <10% of implants were revised to fusion at 2 years.

#### Abnormal Metatarsal Parabola is Associated with Progressive 2nd Metatarsophalangeal Joint Plantar Plate Injury

Adam Fleischer, DPM, MPH, North Chicago, IL Erin E. Klein, DPM, MS, Grayslake, IL Maheen Ahmad, MS, MPH, Lake Bluff, IL Fernanda Catena, MD, Chicago, IL Mitchell B. Sheinkop, MD, Chicago, IL Lowell S. Weil, DPM, Lake Forest, IL Lowell S. Weil, DPM, Des Plaines, IL

This study explores the relationship between a long second metatarsal and the increased risk for developing 2nd MTP joint plantar plate pathology.

#### 12:18 PM

#### Paper 795

Paper 794

Results Of The Dorsal Approach Plantar Plate Repair With A Weil Metatarsal Osteotomy: A 2 Year Follow Up Study

Erin E. Klein, DPM, MS, Grayslake, IL Lowell S. Weil, DPM, Lake Forest, IL Adam Fleischer, DPM, MPH, North Chicago, IL Mitchell B. Sheinkop, MD, Chicago, IL Brian Gradisek, DPM, Chicago, IL

This study presents data of a cohort of patients who underwent a dorsal approach plantar plate repair with a Weil metatarsal osteotomy two years after the index procedure.

Discussion – 6 Minutes

#### 12:24 PM PAPER 922

#### Simple Neurectomy Versus Intramuscular Imlantation for Interdigital Neuroma: A Comparative Study

Chamnanni Rungprai, MD, Iowa City, IA John E. Femino, MD, Iowa City, IA Ong-Art Phruetthiphat, MD, Iowa City, IA Annunziato Amendola, MD, Iowa City, IA Phinit Phisitkul, MD, Iowa City, IA

Intramuscular implantataion of the proximal stump can be an effective method alternative to simple neurectomy for treatment of interdigital neuroma.

Discussion – 6 Minutes

#### PAPER PRESENTATION

10:30 AM — 12:30 PM Room W315

#### **Pediatrics IV: Pediatric Sport/General**

Moderator(s): Robert K. Fraser, MD, Durban, South Africa, Paul M. Saluan, MD, Hinckley, OH, Jay C. Albright, MD, Aurora, CO

#### 10:30 AM

Early Results Of Single Plug OATS For Osteochondritis Dissecans Of The Capitellum

Paper 796

Paper 797

Paper 798

Eitan M. Ingall, Boston, MA Eliza B. Lewine, Boston, MA Donald S. Bae, MD, Boston, MA

Single-plug OATS is safe and effective in improving pain and elbow function in adolescents with unstable OCD, with high return to sports rates and little donor-site morbidity.

#### 10:36 AM

#### The Mid-term Effects of Tendon Transfers and Open Reduction on Glenohumeral Deformity in Brachial Plexus Birth Palsy

Carley Vuillermin, Boston, MA Eliza B. Lewine, Boston, MA Donald S. Bae, MD, Boston, MA Peter M. Waters, MD, Boston, MA

Open reduction with tendon transfers for mild-moderate glenohumeral deformity in BPBP results in improved humeral head position, glenoid version, and glenohumeral classif cation at mid-term follow-up.

#### 10:42 AM

#### Mobilization Of A Congenital Radio-ulnar Synostosis With A Free Vascularized Fascio-fat Graft

Fuminori Kanaya, MD, Okinawa-Ken, Japan Masaki Kinjo, MD, Nishihara Okinawa, Japan, Japan Yasunori Toume, MD, PhD, Okinawa, Japan Yasunori Tome, MD, PhD, Okinawa, Japan Fuminari Uehara, MD, San Diego, CA

We performed mobilization of a radio-ulnar synostosis with a free vascularized fascio-fat graft on 26 forearms. No re-ankylosis was observed and the mean range of forearm rotation was 81.6 degrees.

Discussion – 6 Minutes

# Friday

Paper 803

Paper 804

Paper 805

Paper 806

# Friday, March 4

# 10:54 AM

# Paper 799

# Can Bmp2 Lead To Ossif cation Of The Unossif ed Femoral Neck And Lower Recurrence Of Coxa Vara In Severe CFD?

Davida Packer, MD, West Palm Beach, FL Dror Paley, MD, West Palm Beach, FL Craig A. Robbins, MD, West Palm Beach, FL Matthew J. Harris, MD, MBA, Jupiter, FL John Robb, PA-C, Stuart, FL

The use of f xed-angle implants with off-label use of BMP2 in the SUPERhip procedure, leads to the most predictable anatomic correction of severe deformities of severe CFD and lowest rates of failure

# 11:00 AM

Paper 800

# **Internal Fixation Improves Outcomes for Unicameral Bone Cysts** of Proximal Femur in Children

Benjamin Wilke, MD, Rochester, MN Chad Watts, MD, Rochester, MN Annalise N. Larson, MD, Rochester, MN Todd A. Milbrandt, MD, Rochester, MN

Unicameral bone cysts (UBCs) of the proximal femur are a challenging problem. We evaluate our institutional outcomes of UBCs treated with and without internal f xation

# 11:06 AM

Paper 801

# Improving Bone Healing In Neurof bromatosis: A Study In Mice

Benjamin Alman, MD, Durham, NC Saber Ghadakzadeh, MSc, Toronto, ON, Canada Heather C. Whetstone, MSc, Toronto, ON, Canada gurpreet baht, PhD, Toronto, ON, Canada

Inhibition of beta-catenin genetically or pharmacologically improves bone healing in mice with a mutation in NF1, suggesting a novel treatment for conditions such as pseudarthrosis of the tibia

# 11:18 AM

# Paper 802 All-Epiphyseal ACL Reconstruction: A 3D Modeling Study to **Characterize a Safe and Reproducible Surgical Approach**

Daniel Marchwiany, BS, Algonquin, IL Steven C. Chudik, MD, Westmont, IL Michael J. Ryan, BS, North Riverside, IL

3D MRI modeling demonstrates the potential for safely performing all epiphyseal ACL reconstruction in skeletally immature knees without insult to the physes, cartilage, and adjacent structures.

Discussion – 6 Minutes

# 11:24 AM

# Percutaneous Transphyseal Screw Epiphysiodesis: Eff cacy and Complications

Emily Dodwell, MD, New York, NY Elise Bixby, BA, New York, NY Matthew R. Garner, MD, Seattle, WA Roger F. Widmann, MD, New York, NY

Contrary to previous reports, PETS did not result in signif cant angular deformity, insuff cient growth inhibition or other serious complications, while demonstrating an overall eff cacy of 108%.

# 11:30 AM

# **Outcomes of Physeal Sparing ACL Reconstruction with IT Band** in Skeletally Immature Children

Mininder S. Kocher, MD, MPH, Boston, MA Benton E. Heyworth, MD, Boston, MA Frances Tepolt, Hershey, PA Lyle J. Micheli, MD, Boston, MA

Physeal sparing, combined intra- and extra-articular ACLR with ITB graft in prepubescent children provides excellent functional outcomes, minimal risk of growth disturbance, and low revision rate.

# 11:42 AM

# Medial Patello-femoral Ligament (MPFL) Origin And The **Relation To The Distal Femoral Physis**

Alexandra C. Styhl, Boise, ID John C. Jacobs JR, BS, Salt Lake Citv. UT John D. Polousky, MD, Centennial, CO Theodore J. Ganley, MD, Philadelphia, PA Matthew Milewski, MD, Avon, CT Allen F. Anderson, MD, Nashville, TN Kevin G. Shea, MD, Boise, ID

This anatomic/cadaveric study clarif es the relationship between the MPFL and femoral physis, providing recommendations for anatomic graft placement in skeletally immature patients

# Discussion – 6 Minutes

# 11:48 AM

# Safe Drilling Paths in the Distal Femoral Epiphysis for Pediatric **Medial Patellofemoral Reconstruction**

Cynthia Nguyen, MD, Cleveland, OH Allison Gilmore, MD, Cleveland, OH Lutul D. Farrow, MD, Garf eld Heights, OH Raymond W. Liu, MD, Cleveland, OH

To minimize iatrogenic trauma during pediatric MPFL reconstruction, it is safest to angle the distal femoral tunnel distal and anterior approximately 15-20 degrees in each plane from the MPFL origin.

# 11:54 AM

# Evaluating Length: The Use of Low Dose Biplanar Radiography (EOS) and Tantalum Bead Implantation

Emily Dodwell, MD, New York, NY Matthew R. Garner, MD, Seattle, WA Matthew A. Dow, MD, Charleston, SC Elise Bixby, BA, New York, NY Douglas N. Mintz, MD, Katonah, NY Roger F. Widmann, MD, New York, NY

EOS is comparable to CT scanogram in the assessment of total bone length and inter-bead distance, with excellent reliability for all measurements.

# 12:06 PM

# Paper 808

Paper 807

# The Association Between Tibia-Femur length Ratio And Osteoarthritis

Douglas S. Weinberg, MD, Cleveland, OH Raymond W. Liu, MD, Cleveland, OH

Increased tibia length respective to femur length predicted hip and knee arthritis in a large osteological collection

Discussion – 6 Minutes

# 12:12 PM

# Paper 809

Paper 810

# Reliability of a Modif ed Complication Complication Classif cation System in Pediatric Orthopaedic Patients

Emily Dodwell, MD, New York, NY Rubini Pathy, MD, New York, NY Daniel W. Green, MD, New York, NY David M. Scher, MD, New York, NY John S. Blanco, MD, New York, NY Aaron Daluiski, MD, New York, NY Shevaun M. Doyle, MD, New York, NY Ernest L. Sink, MD, New York, NY

We evaluated the inter- and intra-rater reliability of an adapted classif cation system for assessing complications following pediatric orthopaedic surgery.

# 12:18 PM

# Characteristics of Medical Professional Liability Claims in Pediatric Orthopaedics

Jessica D. Burns, MD, Pheonix, AZ Mohan V. Belthur, MD, Scottsdale, AZ Steven Irby, MS, Phoenix, AZ Carla Boan, M.Sc., Phoenix, AZ Divya Parikh, MPH, Rockville, MD Michael W. Shrader, MD, Phoenix, AZ

Malpractice claims in pediatric orthopaedics most commonly result from joint procedures and closed fracture reductions, with more paid claims and a with higher payment than adult orthopaedics.

Discussion – 6 Minutes

# INSTRUCTIONAL COURSE LECTURE

# 11:00 AM — 12:00 PM



**Building Your Practice** Moderator: Bill Champion, Omaha, NE Tony Edwards, Omaha, NE

Room W209B Lays out best practices in measurement, strategy, and execution to drive more of the right patient volume to your practice. It also provides some of the latest research in social media, advertising, interactive, and traditional marketing strategies specif cally for orthopaedic providers.

# Symposium

1:30 PM — 3:30 PM Chapin Theater

# **Annual Meeting Highlights (DD)**

Moderator: William M. Mihalko, MD, PhD, Germantown, TN Moderator: Alexander Vaccaro, MD, PhD, Gladwyne, PA

The Annual Meeting Highlights Symposium features highlights from the best papers and posters presented at the 2016 Annual Meeting as chosen by the AAOS Program Committee.

- I. Adult Reconstruction Hip Highlights David C. Ayers, MD, Worcester, MA
- II. Adult Reconstruction Knee Highlights Michael A. Kelly, MD, Hackensack, New Jersey
- III. Foot and Ankle Highlights Jamal Ahmad, MD, Philadelphia, PA
- IV. Hand and Wrist Highlights Charles F. Leinberry, MD, Newton, PA
- V. Practice Management Highlights Thomas A. Malvitz, Grand Rapids, MI
- VI. Pediatrics Highlights Steven L. Frick, Orlando, FL
- VII. Shoulder and Elbow Highlights Keith Kenter, MD, Kalamazoo, MI
- VIII. Spine Highlights Norman B. Chutkan, MD, Phoenix, AZ
- IX. Sports Medicine/Arthroscopy Highlights Dean K. Matsuda, MD, Los Angeles, CA
- X. Trauma Highlights Ivan S. Tarkin, MD, Pittsburg, PA
- XI. Tumor/Metabolic Disease Highlights Jeffrey S. Kneisl, Charlotte, NC

# **Symposium**

1:30 PM - 3:30 PM Valencia Room A



# Upper Extremity Trauma: How to Def ne and Expand Your **Comfort Zone (EE)**

Moderator: David C. Ring, MD, Boston, MA

Experts in upper extremity trauma discuss the key pitfalls and the technical challenges that comprise expertise for fractures at specif c regions in short didactic vignettes and case-based discussions. Surgeons can aff rm whatthey are good at and the training and experience that would help them expand their expertise.

- I. Proximal Humerus Fracture Neal C. Chen, MD, Boston, MA
- II. **Clavicle Fracture** Niloofar Dehghan, MD, Mississauga, ON, Canada
- III. **Olecranon Fracture** Douglas P. Hanel, MD, Seattle, WA
- IV. Distal Radius Fracture Jorge L. Orbay, MD, Miami, FL
- Distal Humerus Fracture V. Scott P. Steinmann, MD, Rochester, MN
- VI. Radial Head Fracture Thomas F. Varecka, MD, Minneapolis, MN

# **INSTRUCTIONAL COURSE LECTURE**

# 1:30 PM - 3:30 PM

441	The Treatment and Management of Acetabular Bone
TICKET	Loss in Revision Total Hip Arthroplasty
Room W202	Moderator: Neil P. Sheth, MD, Philadelphia, PA Matthew Austin, MD, Philadelphia, PA William G. Hamilton, MD, Alexandria, VA Wayne G. Paprosky, MD, Winf eld, IL

Upon completion of this course, participants have an algorithmic approach on how to evaluate acetabular bone loss and determine how to surgically treat this entity. Clinical cases help reinforce concepts presented in this instructional course lecture.

#### **4442 Managing Problems and Complications During and After Primary Total Knee Arthroplasty** TICKET

Moderator: Jay R. Lieberman, MD, Los Angeles, CA () AAHKS Michael P. Bolognesi, MD, Durham, NC

Steven J. MacDonald, MD, London, ON, Canada Room William J. Maloney, MD, Redwood City, CA W304E

> Reviews diagnosis and management of intraoperativeproblems (instability, patella maltracking, and stiffness) and complications (wound drainage, infection, instability, and pain) commonly associated with total knee arthroplasty.



# **Update on Biomaterials**

Moderator: Paul A. Anderson, MD, Madison, WI Nicholas J. Giori, MD, Palo Alto, CA A. Seth Greenwald, DPhil Oxon, Cleveland Heights, OH W205A Carlos J. Lavernia, MD, Coral Gables, FL

> Focuses on modern changes in designs andmanufacturing of common metals and plastics and their mechanical performance. Essential engineering principles that should be considered when using medical devices and how new designs may affect them are reviewed.



Room

W307A

# **Getting It Right the Second Time: Pearls and**

**Principles for Revision Surgery in the Foot and Ankle** Moderator: Mark J. Berkowitz, MD, Cleveland, OH Paul T. Fortin, MD, Royal Oak, MI Jeffrey E. Johnson, MD, Saint Louis, MO Lew C. Schon, MD, Indianapolis, IN

Presents strategies and techniques for the evaluation and treatment of the failed foot and ankle surgery including the failed bunion, nonunion/malunion of hindfoot and ankle fusion, the unsuccessful f atfoot surgery, and the failed ankle fracture.

# 445 TICKET

# **Osteochondritis Dissecans in the Adolescent Athlete**

Moderator: Jeremy S. Frank, MD, Parkland, FL Eric W. Edmonds, MD, San Diego, CA Charles A. Goldfarb, MD, Saint Louis, MO Samuel C. Willimon, MD, Atlanta, GA

Juvenile osteochondritis dissecans of the knee, elbow, and ankle in the adolescent athlete is an emerging topic in young adult sports medicine. Expert faculty members review various etiologies and treatment strategies as well as explore potential complications and controversies.



Room

W308C

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Room

W310

# **Cost Effectiveness Research In Orthopaedics:** What You Need to Know

Moderator: Kevin J. Bozic, MD, MBA, Austin, TX Eric C. Makhni, MD, MBA, New York, NY Richard C. Mather, MD, Durham, NC Eric F. Swart, MD, New York, NY

Cost-effectiveness research is becoming increasingly prevalent in orthopedic research, yet many orthopedic surgeons are unfamiliar with the underlying principles and concepts regarding this discipline. The goal of this ICL is to teach the participant how to read and interpret cost-effectiveness studies, as well as how to perform these types of analyses. Finally, clinical and policymaking implications of cost-effectiveness research will be reviewed.

#### **4**47 **Total Shoulder Arthroplasty: Should I Be Using** a Stemless Prosthesis? When, Why, and How TICKET

Moderator: Joseph A. Abboud, MD, Philadelphia, PA Mark D. Lazarus, MD, Philadelphia, PA Ofer Levy, MD, Henley-On-Thames, United Kingdom Anand M. Murthi, MD, Indianapolis, IN

The total shoulder market in recent years has exploded with new humeral stem designs from standard stems, platform stems, mini, micro, and stemless. Will help practitioners navigate through this process and learn how to technically optimize the stem they choose.

# 448 TICKET \_ Room W314

TICKET

Room

W203

# Elbow Arthroscopy: Indications, Techniques, **Outcomes, and Complications**

Moderator: Felix H. Savoie III, MD, New Orleans, LA John E. Conway, MD, Fort Worth, TX Michael J. O'Brien, MD, New Orleans, LA Matthew Ramsey, MD, Philadelphia, PA

Outlines techniques for performing arthroscopic procedures at the elbow, with a specif c focus onindications, tips and pearls, and outcomes and alternative treatment strategies. Potential complications are studied with an emphasis on how to avoid them.

#### **449 Treating the Aging Spine**

TICKET	Moderator: Theodore J. Choma, MD, Columbia, MO
	Darrel S. Brodke, MD, Salt Lake City, UT
Room W308A	Robert A. McGuire Jr, MD, Jackson, MS
W308A	Glenn R. Rechtine II. MD. Asheville, NC

Targets orthopaedists who treat spinal conditions in the elderly - from osteoporosis and fractures to degenerative deformities.

#### 450 **Acetabular Fractures: A Problem-Oriented Approach**

Moderator: Berton R. Moed, MD, Saint Louis, MO Philip J. Kregor, MD, Nashville, TN Mark C. Reilly, MD, Newark, NJ OfA Michael D. Stover, MD, Chicago, IL

Room Using a case-based approach, the participant comesaway W307C with an improved understanding of the operative management of acetabular fractures occurring in combination with complicating factors.

#### 485 **Challenges in the Management of Fractures in** Adolescents: A Case-based Approach TICKET

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R. Dale Blasier, MD, Little Rock, AR Jaime R. Denning, MD, Montgomery, OH

Moderator: Susan A. Scherl, MD, Omaha, NE

Craig P. Eberson, MD, Providence, RI

Room W207

> Room W208

Howard R. Epps, MD, Houston, TX William L. Hennrikus, MD, Hershev, PA Martin J. Herman, MD, Philadelphia, PA Christine A. Ho, MD, Dallas, TX Bernard D. Horn, MD, Philadelphia, PA Anthony I. Riccio, MD, Dallas, TX Brian Scannell, MD, Charlotte, NC

Case-based presentations on adolescent fracture patterns, including information regarding technique pearls, complications associated with treatment of the fracture in adolescents, and management of those complications, are discussed.

#### 486 **ACL Revision Reconstruction Technical Issues:** A Case-based Approach TICKET

A case based Approach
Moderator: Michael J. Stuart, MD, Rochester, MN
Joel L. Boyd, MD, Minneapolis, MN
Thomas M. DeBerardino, MD, Farmington, CT
Gregory C. Fanelli, MD, Danville, PA
Aaron J. Krych, MD, Rochester, MN
Robert F. LaPrade, MD, PhD, Vail, CO
Bruce A. Levy, MD, Rochester, MN
Peter B. MacDonald, MD, Winnipeg, MB, Canada
Robert G. Marx, MD, New York, NY
Daniel Whelan, MD, Toronto, ON, Canada
Rick W. Wright, MD, Saint Louis, MO

Provides practical information and technical tips for surgeons who perform revision anterior cruciate ligament(ACL) reconstruction. The case presentations highlight decision-making skills and solutions to common, challenging problems.

# THE WAY I SEE IT...



1:30 PM - 3:30 PM Valencia Room B

# The Way I See It...Orthopaedists Changing the Game

Moderator: Brian J. Cole, MD, MBA, Chicago, IL Co-Moderator: Marc Safran, MD, Redwood City, CA L. Scott Levin, MD, FACS, Philadelphia, PA Andrew D. Pearle, MD, Rye, MD

Learn the "whys" of what the experts do in cutting edge orthopaedic procedures. Benef t from the inside story - what each presenter wants you to know about a top-of-the-mind issue. Experts share their experience and views, just the way they see it.

# Friday

Paper 816

Paper 817

# Friday, March 4

# PAPER PRESENTATION

1:30 PM — 3:30 PM Valencia Room D

# Adult Reconstruction Hip VII: Revision THR

Moderator(s): Kevin B. Fricka, MD, Alexandria, VA, Scott M. Sporer, MD, Wheaton, IL

# 1:30 PM

Paper 811

Paper 812

Paper 813

# Stability Of Cup-Cage Construct For Treatment Of Pelvic **Dissociation Measured By Radiostereometric Analysis**

Lucian B. Solomon, MD, Hyde Park, Australia John M. Abrahams, Toorak, Australia Stuart A. Callary, BS, Adelaide, Australia Donald Howie, MD, PhD, Adelaide, Australia

Early migration measured using RSA and clinical outcomes support that cup-cage constructs perform well at early to mid term follow-up in cases with pelvic dissociation and severe acetabular defects.

# 1:36 PM

# **Porous Tantalum Uncemented Revision Acetabular Shells:** Minimum 10 Year Follow-up Study.

Sujith Konan, London, United Kingdom Clive P. Duncan, MD, MSc, Vancouver, BC, Canada Bassam A. Masri, MD, FRCSC, Vancouver, BC, Canada Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada

Cementless acetabular revision with the tantalum acetabular shell demonstrated excellent clinical and quality of life outcomes at minimum 10-year follow-up.

# 1:42 PM

# **Current Indications for Revision Hip Arthroplasty: A Ten-year Retrospective Review**

Jacob Haynes, MD, Saint Louis, MO Jeffrey B. Stambough, MD, Saint Louis, MO Adam Sassoon, MD, Seattle, WA Staci Johnson, M.Ed, Saint Louis, MO John C. Clohisy, MD, Saint Louis, MO Ryan Nunley, MD, Saint Louis, MO

Over 80% of our 870 revision THA cases were referrals. Aseptic loosening, osteolysis and instability were the most common indications for revision while metallosis saw a 400% increase in incidence.

Discussion – 6 Minutes

# 1:54 PM

# Paper 814 Bilateral Hip Arthroplasty is No Riskier than Unilateral Hip **Arthroplasty: A Matched Cohort Study**

Susan M. Odum, PhD, Charlotte, NC Bryce A. Van Doren, MA, MPH, Charlotte, NC Louis S. Stryker, MD, San Antonio, TX Walter B. Beaver, MD, Charlotte, NC John L. Masonis, MD, Charlotte, NC

In an exact matched cohort of 4,980 unilateral and bilateral THA patients, the odds of major in-hospital complications were identical and the odds of minor complications and mortality were similar.

# 2:00 PM

# Paper 815 **Simultaneous Or Staged Bilateral Hip Replacement? Complications In 12110 Patients Using National Data**

Tom Partridge, MBBS, United Kingdom Simon Jameson, Stockton-on-Tees, United Kingdom Nemandra A. Sandiford, MRCS, Kent, United Kingdom Michael C. Wyatt, FRACS, PhD, Exeter, United Kingdom John A. Charity, MD, Exeter, United Kingdom Mike R. Reed, MBBS MD, Northumberland, United Kingdom

Rates of complications were compared in 12110 patients undergoing either simultaneous or staged bilateral hip replacement. Findings highlight the slightly greater risks of a simultaneous procedure.

# 2:06 PM

# Venous Thromboembolism Following THA: Is There A Difference in Risk For Primary Compared to Revision Surgery?

Matthew R. Boylan, Brooklyn, NY Bhaveen H. Kapadia, MD, Indianapolis, IN Paul W. Perdue Jr, MD, Brooklyn, NY Aditya V. Maheshwari, MD, Brooklyn, NY Michael A. Mont, MD, Indianapolis, IN

Using a 10-year sample of a large statewide database, this study found that the risk of VTE was similar for primary and revision THAs.

### Discussion – 6 Minutes

# 2:18 PM

# Early Outcomes of Revision Surgery for Taper Corrosion of Dual **Taper THA with Pseudotumours in 187 patients**

Dimitris Dimitriou, MD, Cambridge, MA Tsung-Yuan Tsai, PhD, Boston, MA William A. Leone, MD, Lighthouse Point, FL Guoan Li, PhD, Boston, MA Harry E. Rubash, MD, Boston, MA Andrew A. Freiberg, MD, Boston, MA Young-Min Kwon, MD, PhD, Boston, MA

A high rate of early complications (20%) and re-revisions (6%) was observed after revision of pseudotumour associated with taper corrosion in dual taper THA.

# 2:24 PM

# Paper 818 **Outcome of Debridement and Implant Retention in Prosthetic Hip Joint Infection - A Case Control Study**

George A. Grammatopoulos, MRCS, United Kingdom Benjamin J. Kendrick, MBBS, FRCS (Ortho), Oxford, United Kingdom

Nick Athanasou, MRCP, FRCPath, Oxford, United Kingdom Bridget Atkins, Oxford, United Kingdom Hemant G. Pandit, FRCS, Oxford, United Kingdom Peter McLardy-Smith, FRCS, Oxford, United Kingdom Roger Gundle, Oxford, United Kingdom David W. Murray, MD, Oxford, United Kingdom Adrian Taylor, MBBS, Oxford, United Kingdom

Debridement and implant retention (DAIR) for 1° THA infection has functional outcome superior to 2-stage revision and similar to 1° THA. DAIRs' complication rate is similar to that of 2-stage revision

# 2:30 PM

# Paper 819

Paper 820

Paper 821

# Long-term Mortality following Revision Total Hip Arthroplasty (THA)

Hilal Maradit-Kremers, MD, MSc, Rochester, MN Matthew P. Abdel, MD, Rochester, MN Jeanine E. Ransom, Rochester, MN Daniel J. Berry, MD, Rochester, MN David G. Lewallen, MD, Rochester, MN

Long-term survival following revision THA differs according to surgical indications.

Discussion – 6 Minutes

# 2:42 PM

# Factors Inf uencing The Outcome Of Revision Total Hip **Arthoplasty For Periprosthetic Fractures**

Sujith Konan, London, United Kingdom

Clive P. Duncan, MD, MSc, Vancouver, BC, Canada Bassam A. Masri, MD, FRCSC, Vancouver, BC, Canada Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada

Several patient comorbidities and implant related factors inf uence PROMS after revision THA for B2/B3 PPF. Surgeons should be aware of this and counsel patients appropriately.

# 2:48 PM

# A 20 year systematic review of treatment outcomes in Vancouver B2 & B3 periprosthetic femur fractures

Jose A. Romero, MD, Dallas, TX Michael H. Huo, MD, Dallas, TX Matthew Swann, MD, BA, Dallas, TX Timothy Brown, MD, Dallas, TX

A systematic review over 20 years analyzing treatment outcomes for Vancouver B2 & B3 periprosthetic femur fractures using various revision techniques and the principals behind them.

### 2:54 PM

# **Proximal Femoral Replacement for Massive Bone Loss in Revision Hip Arthroplasty: Indications and Survivorship**

Jacob Haynes, MD, Saint Louis, MO Jeffrey B. Stambough, MD, Saint Louis, MO Ryan Nunley, MD, Saint Louis, MO

Proximal femoral replacement is a salvage option for extensive femoral bone loss in revision THA: however it is associated with an elevated rate of complications and subsequent revision surgery.

Discussion – 6 Minutes

### 3:06 PM

# Cup-Cages in the Treatment of Massive Acetabular Defects

Peter K. Sculco, MD, Rochester, MN Matthew P. Abdel, MD, Rochester, MN Arlen D. Hanssen, MD, Rochester, MN David G. Lewallen, MD, Rochester, MN

Both the cup-cage and half cup-cage reconstruction techniques demonstrate excellent survivorship at mid-term follow-up in the treatment of massive acetabular defects and pelvic discontinuity.

### 3:12 PM

# **Revision Outcomes of Failed Metal-on-Metal THA: Experience of** a Tertiary Multi-Disciplinary MoM Referral Center

Dimitris Dimitriou, MD, Cambridge, MA Tsung-Yuan Tsai, PhD, Boston, MA Guoan Li, PhD, Boston, MA Harry E. Rubash, MD, Boston, MA Andrew A. Freiberg, MD, Boston, MA Young-Min Kwon, MD, PhD, Boston, MA

Revision complication rate (14%) at a specialized MoM referral center was relatively low, suggesting the importance of multidisciplinary and systematic evaluation in optimizing MoM revision outcome.

### 3:18 PM

# Which Adverse Events are Associated with Revision Versus **Primary Total Joint Arthroplasty?**

Daniel D. Bohl, MD, MPH, Chicago, IL Andre Samuel, New Haven, CT Adam Lukasiewicz, MSc, New Haven, CT Matthew L. Webb, BA, New Haven, CT Bryce A. Basques, MD, Chicago, IL Craig J. Della Valle, MD, Chicago, IL Brett R. Levine, MD. Elmhurst, IL Jonathan N. Grauer, MD, New Haven, CT

Patients undergoing revision procedures have higher rates of periprosthetic joint infection and sepsis but not most other complications following total joint arthroplasty.

Discussion – 6 Minutes

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 822

# Paper 823

# Paper 824

Paper 825

# Friday

Paper 830

Paper 831

Paper 832

# Friday, March 4

# PAPER PRESENTATION

1:30 PM — 3:30 PM Room W414

# Shoulder & Elbow VII: The Elbow

Moderator(s): Robert B. Litchf eld, MD, London, ON, Canada, Wesley P. Phipatanakul, MD, Loma Linda, CA

# 1:30 PM

Paper 826

**Elbow Motion During Daily Activity** John Haverstock, MD, London, ON, Canada G Daniel G. Langohr, MSc, London, ON, Canada Graham J. King, MD, London, ON, Canada George S. Athwal, MD, London, ON, Canada James A. Johnson, PhD, London, ON, Canada

Healthy elbows are tasked with a large number of cycles through a broad range of f exion angles. This data provides a basis for assessing ergonomics and calibrating wear simulators.

# 1:36 PM

# Paper 827

Paper 828

# The Posterior Drawer Test for Evaluating Posterolateral Rotatory Instability of the Elbow

David H. Wei, MD, Greenwich, CT Max Zhukovsky, BS, Boston, MA Brett Hayden, MD, Boston, MA Charles Cassidy, MD, Boston, MA Hervey L. Kimball, MD, Boston, MA

Clinical evaluation of posterolateral rotatory instability (PLRI) can be challenging. Using the posterior drawer test we develop a grading system for PLRI and correlate it to the pivot-shift test.

# 1:42 PM

# **The Annular Ligament-Revisited**

Vijit L. Chouhan, Medical Student, Kansas City, KS James W. Barnes, MD, Kansas City, MO Nkemakolam Egekeze, MD, Kansas City, MO Caroline Rinaldi, MD, Kansas City, MO Akin Cil, MD, Kansas City, MO

Annular ligament not only consists of annular ligament proper, but there is also superior, inferior and anterior oblique ligaments that signif cantly enlarges the footprint of it.

# Discussion – 6 Minutes

# 1:54 PM

# Paper 829 Primary Repair of Traumatic Distal Bicep Ruptures: Effect of 1 vs. 2-Incision Technique

Brian R. Waterman, MD, El Paso, TX Lorenzo Navarro, PA, El Paso, TX Jennifer Misenhimer, BA, El Paso, TX Julia O. Bader, PhD, El Paso, TX

There were no statistically signif cant differences in the rate of complications and/or re-rupture after single or two-incision distal biceps repair in a military population.

# 2:00 PM

# Lacertus Fibrosis versus Achilles Allograft reconstruction for **Chronic Distal Biceps Tears: A Biomechanical Study**

Miguel Ramirez, MD, Indianapolis, IN Shannon R. Carpenter, MD, Royal Oak, MI Anand M. Murthi, MD, Indianapolis, IN

Biomechanically, the lacertus f brosis may be a reasonable alternative for chronic distal biceps reconstruction in which primary repair is not possible.

# 2:06 PM

# Anatomy Of The Origin Of The Supinator Muscle And Its Role In **Lateral Elbow Pain**

Jairo F. Gomez Ramirez, MD, Bogota, Colombia Luis F. Calixto, MD, Bogota, Colombia

The supinator is implicated in persistent pain of the elbow lateral epicondylitis and its Origen is in direct relationship with the extensor carpi radialis brevis

# Discussion – 6 Minutes

# 2:18 PM

# **MRI Findings Reveal Common Extensor Tendon Tears Are More Frequent Than Thought in Golf and Racquet Athletes**

Yonatan G. Keschner, Woodmere, NY Kevin D. Plancher, MD, MS, Cos Cob, CT Kevin D. Plancher, MD, MS, New York, NY Stephanie C. Petterson, MPT, PhD, Stamford, CT

Partial common extensor tears on MRI are signif cantly higher in golf and racquet sport athletes than in other athletes due to sport specif c demands on the extensor muscles.

# 2:24 PM

# Paper 833 Can the use of Platlet Rich Plasma (PRP) in chronic elbow tendinitis avoid surgery?

Nimesh Patel, MRCS, MBBS, London, United Kingdom Edward C. Matthews, MBCHB, Devon, United Kingdom Darren Munn, Torquay, United Kingdom Rangaraju Ramesh, FRCS (Ortho), Paignton, Devon, United Kingdom

The use of PRP to treat chronic elbow tendonitis gives a signif cant improvement in symptoms, avoiding the need for surgery. PRP preparation technique is stipulated to provide the benef cial results.

# 2:30 PM

# Paper 834 Open Release vs. Radiofrequency Microtenotomy (RFMT) in the Treatment of Lateral Epicondylitis.

Katharine Hamlin, MBCHB, Aberdeen, United Kingdom Scott L. Barker, Aberdeen, United Kingdom Sean M. McKenna, FRCS (Ortho), Belfast, United Kingdom Kapil Kumar, FRCS MCh, Scotland, United Kingdom

In our prospective randomised trial we found radiofrequency microtenotomy and open release are both effective treatments for lateral epicondylitis but there was no signif cant difference between them.

Discussion – 6 Minutes

# 2:42 PM

Paper 835

**Total Elbow Arthroplasty in the United States: Evaluation of** Cost, Patient Demographics and Complication Rates.

Hanbing Zhou, MD, Worcester, MA Nathan Orvets, MD, Boston, MA Gabriel Merlin, MD, Boston, MA Joshua Shaw, MD, MPH, Worcester, MA Ioshua S. Dines, MD, New York, NY Mark D. Price, MD, Wellesley, MA Josef K. Eichinger, MD, Tacoma, WA Xinning Li, MD, Lexington, MA

Total elbow arthroplasty is a relatively uncommon surgery in comparison to other forms of arthroplasty but is associated with low in-patient complication rate.

# 2:48 PM

### Paper 836

# **Outcomes Following Hemiarthroplasty Of The Elbow: Minimum** 2-vear Follow-up.

Jean-David Werthel, Paris, France Bradley S. Schoch, MD, Rochester, MN Julie E. Adams, MD, Hixson, TN Scott P. Steinmann, MD, Rochester, MN

Elbow HA is an option for young/active patients with end stage elbow arthritis or unreconstructable distal humerus fractures in whom alternative procedures have failed.

# 2:54 PM

Paper 837

**Trends in Total Elbow Arthroplasty for Distal Humerus Fractures** in the United States, 2002 to 2011

David C. Landy, MD, Chicago, IL Jimmy Jiang, MD, Chicago, IL Hristo I. Piponov, MD, Evanston, IL Lewis L. Shi, MD, Chicago, IL Jason L. Koh, MD, Winnetka, IL

Total elbow arthroplasty for distal humerus fractures has remained fairly constant over the last decade. The majority of cases are performed in elderly females with an added cost of 20,000\$ per case.

### Discussion – 6 Minutes

3:06 PM

# Effect Of Increased Radial Head Implant Length On Ulnohumeral Joint Reaction Forces Using An Extra-articular Method

Paper 838

Paper 839

Paper 840

Robert Mason, MD, Rochester, NY Michael Caldwell, BS, Rochester, NY Daniel J. Vasconcellos, Rochester, NY Joseph Schaffer, MD, Rochester, NY Walid S. Osman, MD, Cairo, Egypt Mark Olles, PhD, Rochester, NY John Elfar, MD, Rochester, NY

Cadaveric specimens were analyzed to determine the impact on ulnohumeral joint reaction force, measured using an extraarticular method, after radial head arthroplasty with various implant lengths.

# 3:12 PM

# **Timing of Surgery for Pediatric Supracondylar Humerus** Fractures

Daniel S. Sutton, MD, Washington, Dist. of Columbia Lawrence C. Enweze, BS, Washington, Dist. of Columbia Gezzer Ortega, MD, Wheaton, MD

Robert H. Wilson, MD, Washington, Dist. of Columbia

Early percutaneous pinning (<12 hours) for supracondylar fractures was associated with increased rates of unplanned reoperation.

# 3:18 PM

# **Extent Of Motor And Sensory Recovery In Patients With Cubital Tunnel Syndrome**

Takao Omura, MD, PhD, Hamamatsu, Japan Yukihiro Matsuyama, MD,PhD, Hamamatsu, Japan

We show that the sensory and motor recovery in patients with cubital tunnels syndrome depends on the severity of disease and that patients regain more sensory recovery than motor.

Discussion – 6 Minutes

Paper 844

Paper 845

Paper 846

Paper 847

# Friday, March 4

# PAPER PRESENTATION

1:30 PM — 3:30 PM W304A

Sports Medicine/Arthroscopy VIII: Foot/Ankle, Miscellaneous

Moderator(s): Anil S. Ranawat, MD, New York, NY, Edward R. McDevitt, MD, Annapolis, MD

# 1:30 PM

# Paper 841

The NFL Orthopedic Surgery Outcomes Database (NO-SOD): The Impact on Career of Common Orthopedic Procedures

Harry Mai, BS, Manhattan Beach, CA Andrew P. Alvarez, BS, Chicago, IL Ryan D. Freshman, BS, Chicago, IL Danielle Chun, BA, Chicago, IL Shobhit Minhas, MD, New York, NY Alpesh A. Patel, MD, River Forest, IL Jason W. Savage, MD, Chicago, IL Wellington K. Hsu, MD, Chicago, IL

A comparison of the career impact and outcomes of NFL athletes after common orthopedic procedures.

# 1:36 PM

# Paper 842

### Poor Static Balance Is The Risk Factor For Non-contact Anterior **Cruciate Ligament Injury**

Takeshi Oshima, MD, Kanazawa-City, Japan Junsuke Nakase, MD, Kanazawa, Japan Yosuke Shima, PhD, MD, Kanazawa City, Japan Katsuhiko Kitaoka, MD, Kanazawa, Japan Hitoaki Numata, MD, Ishikawa, Japan Yasushi Takata, MD, Ishikawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Twenty-f ve of 287 high school female athletes experienced a non-contact ACL injury in a 3-year observation period. The static balance was poor in injured players compared with uninjured players.

# 1:42 PM

# Paper 843 Surgical Treatment for Chronic Exertional Compartment Syndrome (CECS) in Pediatric Patients

Jennifer Beck, MD, Los Angeles, CA Frances Tepolt, Hershey, PA Patricia Miller, MS, Boston, MA Lyle J. Micheli, MD, Boston, MA Mininder S. Kocher, MD, MPH, Boston, MA

Pediatric patients with CECS present as adolescent females with bilateral symptoms. Surgical fasciotomy results in 79.5% return to sport, 11.2% wound complications and 18.8% reoperation rate.

Discussion – 6 Minutes

# 1:54 PM

# Outcomes after Orthopaedic Surgery in the National Basketball Association

Shobhit Minhas, MD, New York, NY Benjamin Kester, Medical Student, Chicago, IL Kevin E. Larkin, BA, Ogden, UT Harry Mai, BS, Manhattan Beach, CA Wellington K. Hsu, MD, Chicago, IL

NBA players undergoing Achilles tendon rupture repair or arthroscopic knee surgery had signif cantly worse performance postoperatively compared to other orthopaedic procedures.

# 2:00 PM

# **Inadequate Helmet Fit Increases Concussion Severity in American High School Football Players**

Dustin A. Greenhill, MD, Philadelphia, PA Paul Navo, MPH, Philadelphia, PA Dawn Comstock, PhD, Aurora, CO Joseph S Torg, MD, Saint Davids, PA Huaging Zhao, PhD, Philadelphia, PA Barry P. Boden, MD, Rockville, MD

Improperly f tted helmets and air bladders increase the risk, severity, and/or duration of concussion. It does not appear that the 2011 NFHS rule change adequately corrected this dilemma.

# 2:06 PM

# Single Team Seventeen Year Experience with Concussions in the National Football League

Johnathan Bernard, MD, MPH, Ashburn, VA Scott A. Rodeo, MD, New York, NY Ronnie P. Barnes, East Rutherford, NJ Russell F. Warren, MD, New York, NY

Our series represents a seventeen year period of managing concussions in the NFL. Understanding the epidemiology of concussions and management can help identify those at risk and reduce concussions.

Discussion – 6 Minutes

# 2:18 PM

# Intraarticular Steroid Injection During Ankle Arthroscopy Leads to Increased Rates of Postoperative Infection

Brian C. Werner, MD, Charlottesville, VA Jourdan M. Cancienne, MD, Charlottesville, VA Matthew T. Burrus, MD, Charlottesvle, VA Joseph S. Park, MD, Charlottesville, VA Minton T. Cooper, MD, Charlottesville, VA

The use of intraarticular corticosteroid injection at the time of ankle arthroscopy is associated with signif cantly increased rates of postoperative infection.

# 2:24 PM

### Paper 848

# Intrinsic Risk Factor Of Ankle Sprains In Adolescent Soccer Players

Tomoyuki Oda, MD, Nagoya, Japan Hideki Hiraiwa, MD, PhD, Nagoya, Japan Takashi Hamada, Nagoya City, Japan Satoshi Yamashita, MD, Nagoya City, Aichi, Japan Kentaro Miyamoto, MD, Nagoya, Japan Yasuzumi Kishimoto, MD, Nagoya City, Japan Saho Tsuchiya, Nagoya, Japan Tadahiro Sakai, MD, PhD, Nagoya, Japan

Dorsif exion range of motion (less than 20°) at the ankle and older (high school) players is strongly associated with risk of ankle sprains in male adolescent soccer players.

# 2:30 PM

### Paper 849

# Ankle Injury Prevention Programs for Soccer Athletes: A Level 1 Systematic Review and Meta-Analysis

Nathan L. Grimm, MD, Durham, NC John C. Jacobs JR, BS, Salt Lake City, UT Annunziato Amendola, MD, Iowa City, IA Jaewhan Kim, PhD, Salt Lake City, UT Kevin G. Shea, MD, Boise, ID

This meta-analysis of studies of ankle injury prevention programs found a statistically signif cant reduction in risk ankle injury with the use of injury prevention programs for soccer athletes.

### Discussion – 6 Minutes

# 2:42 PM

# **Comparison of Osteochondral Autografts and Allografts for Treatment of Talar Osteochondral Lesions** *Jamal Ahmad*, MD, *Philadelphia*, PA

Kennis Jones, BA, Philadelphia, PA

This is a prospective comparison of outcomes from using either osteochondral autograft or allograft to manage either recurrent or large osteochondral lesions of the talar dome.

### 2:48 PM

### Paper 851

Paper 850

# Effect of Suprascapular Nerve Block Combined with Interscalene Brachial Plexus Block in Arthroscopic Cuff Repair

Jung-Taek Hwang, MD, PhD, Chuncheon-si, GA, Republic of Korea

Do-Young Kim, MD, PhD, Chuncheon-si, Republic of Korea Sang-soo Lee, MD, Chuncheon-si, Republic of Korea

Ultrasound –guided ISB with arthroscopy-guided SSNB showed a lower VAS at postoperative 3-48 hour and a higher SAT at postoperative 6-36 hours than ISB alone with an attenuated rebound pain.

# 2:54 PM

# Outcomes Following Structural Grafting of Distal Femoral Osteochondral Lesions In Patients 40 Years And Older

Paper 852

Paper 853

Paper 854

Paper 855

Ryan Degen, FRCSC, MD, London, ON, Canada Nathan W. Coleman, MD, Seattle, WA Danielle Tetreault, BA, New York, NY Gregory T. Mahony, BA, New York, NY Riley J. Williams, MD, New York, NY

Cartilage restoration procedures using structural grafts for distal femoral lesions are successful in patients older than 40 years of age, with improved pain and functional outcome scores.

Discussion – 6 Minutes

### 3:06 PM

# Comparing Prp With High Molecular Weight Hyaluronic Acid Injections For End Career Athletes.

Rocco Papalia, MD, PhD, Rome, Italy Francesco Franceschi, MD, Rome, Italy Andrea Tecame, Rome, Italy Edoardo Franceschetti, MD, Roma, Italy Sebastiano Vasta, MD, Rome, Italy Biagio Zampogna, MD, Rome, Italy Lorenzo Alirio Diaz Balzani, Roma, Italy Sebastiano Vasta, MD, Rome, Italy Nicola Maffulli, MD, FRCS(Orth), London, United Kingdom Vincenzo Denaro, MD, Rome, Italy

# 3:12 PM

# Surgical versus Non-surgical Outcomes after Primary Repair of Proximal Hamstring Ruptures

Jonathan Slaughter, MD, Philadelphia, PA Evan R. Bannister, Philadelphia, PA Keith D. Baldwin, MD, Philadelphia, PA John D. Kelly IV, MD, Newtown Square, PA Samir Mehta, MD, Philadelphia, PA

No signif cant difference seen between surgical repair and nonsurgical management in regards to strength difference, but the surgical group showed an increased trend in improved function seen on LEFS.

### 3:18 PM

# Reliability, Validity and Injury Predictive Value of the Functional Movement Screen: a MetaAnalysis

Nicholas Bonazza, MD, Hershey, PA Dallas Smuin, BS, Hummelstown, PA Cayce A. Onks, D.O., Palmyra, PA Matthew Silvis, MD, Hershey, PA Aman Dhawan, MD, Hummelstown, PA

A systematic review and meta-analysis of the reliability, validity and injury predictive value of the Functional Movement Screen, a screening test used for orthopaedic injury prevention.

Discussion – 6 Minutes

# Friday

Paper 858

Paper 859

Paper 860

# Friday, March 4

### 3:24 PAPER 920

# Assessment of a Novel Antibiotic Coating in Decreasing Periprosthetic Infection Using an in vivo Mouse Model

Alexandra Stavrakis, MD, Los Angeles, CA Suwei Zhu, PhD, Los Angeles, CA Amanda Loftin, Santa Monica, CA Lloyd Miller, MD, PhD, Baltimore, MD Tatiana Segura, PhD, Los Angeles, CA Nicholas Bernthal, MD, Venice, CA

### Discussion – 6 Minutes

# PAPER PRESENTATION

1:30 PM — 3:30 PM Room W315

# **Practice Management III: Risk Management**

Moderator(s): Brian J. Galinat, MD, Wilmington, DE

# 1:30 PM

Paper 856

# Does Admission to Medicine or Orthopaedics Impact a Geriatric Hip Patient's Hospital Length of Stay?

Sarah Greenberg, BA, Nashville, TN Jacob P. Vanhouten, MS, Nashville, TN Robert H. Boyce, MD, Mount Juliet, TN Craig Melbourne, BS, Nashville, TN Amir A. Jahangir, MD, Nashville, TN Hassan R. Mir, MD, MBA, Nashville, TN William T. Obremskey, MD, MPH, Nashville, TN Manish K. Sethi, MD, Nashville, TN

This is the f rst study to demonstrate that admission to medicine compared to orthopaedics for geriatric hip fractures increases a patient's expected LOS after controlling for confounding factors.

# 1:36 PM

# Paper 857

### Preoperative Anaemia as a Prognostic Indicator of Mortality in Lower Limb Arthroplasty

Jonathan Miles, FRCS (Ortho), MBBS, London, United Kingdom Heledd Havard, London, United Kingdom

James Donaldson, FRCS (Ortho), MBBS, London, United King-dom

Richard Carrington, MD, Herts, United Kingdom John Skinner, FRCS, London, United Kingdom Alexander Sell, MBBS, Stanmore, United Kingdom Vijayaraghavan Ramesh, MBBS, Middlesex, United Kingdom Paul Gunning, MBBS, London, United Kingdom

Preoperative anaemia signif cantly increases 1 year mortality yet is a modif able risk factor - optimisation of patients prior to elective arthroplasty surgery reduces morbidity and mortality.

### 1:42 PM

# Pre-operative Labs: Wasted Dollars Or Predictors Of Postoperative Cardiac Events In Orthopaedic Trauma Patients?

Vasanth Sathiyakumar, Nashville, TN Amir A. Jahangir, MD, Nashville, TN Hassan R. Mir, MD, MBA, Nashville, TN William T. Obremskey, MD, MPH, Nashville, TN Manish K. Sethi, MD, Nashville, TN

This study is the f rst of its kind to demonstrate the utility of preoperative labs in orthopaedic trauma and hip fracture patients in predicting cardiac and septic adverse events.

# Discussion – 6 Minutes

# 1:54 PM

# Comparing Primary Total Knee Arthroplasty Post-Discharge Care Duration, Costs, and Outcomes

Karthikeyan E. Ponnusamy, MD, Indianapolis, IN Anne Kuwabara, BA, Indianapolis, IN Zan Naseer, Forest Hill, MD Clayton Alexander, MD, Indianapolis, IN Mostafa H. El Dafrawy, MD, Indianapolis, IN Louis C. Okafor, MD, Indianapolis, IN Robert S. Sterling, MD, Owings Mills, MD Harpal S. Khanuja, MD, Indianapolis, IN Richard L. Skolasky Jr, ScD, Indianapolis, IN

After primary elective total knee arthroplasty, post-discharge care involving an extended-care facility can account for 20% of costs and increase readmission and mortality rates.

# 2:00 PM

# Can We Predict Discharge Status After Total Joint Arthroplasty? A Simple Calculator to Predict Home Discharge

Andrew J. Pugely, MD, Iowa City, IA Nicholas Bedard, MD, Iowa City, IA Christopher T. Martin, MD, Coralville, IA Yubo Gao, PhD, Iowa City, IA Christopher Anthony, MD, Iowa City, IA Nicolas O. Noiseux, MD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

Using a multicenter national cohort of 107,300 TKA and THA patients, predictive models of patient discharge location were constructed into a simple calculator tool.

# 2:06 PM

### Paper 861

Kidney Injury After Antibiotic Cement Spacer Implantation for Prosthetic Joint Infection

Eric L. Smith, MD, Boston, MA Madhumathi Rao, MD, PhD, Boston, MA Susan Hadley, MD, Boston, MA Andrew N. Luu, MD, Torrance, CA Mary E. Pevear, Boston, MA Michael Baratz, MD, Brookline, MA Anshul Bhalla, MBBS, MD, Boston, MA

The purpose of this multidisciplinary, retrospective study was to quantify the extent of kidney involvement during a two-stage approach for prosthetic joint infection using antibiotic cement spacers.

Discussion – 6 Minutes

### 2:18 PM

Where are the Women in Orthopaedic Surgery? Examining Reasons for the Persistent Gender Gap

Rachel S. Rohde, MD, Southf eld, MI Jennifer M. Wolf, MD, Farmington, CT Julie E. Adams, MD, Hixson, TN

The largest known survey of women orthopaedic surgeons is presented, exploring their motivations for choosing orthopaedics and the persistent paucity of women entering the f eld

### 2:24 PM

Paper 863

Paper 862

Recommendation Strength and Methodological Reporting in Health Economic Studies in Orthopaedic Surgery

Eric C. Makhni, MD, MBA, New York, NY Michael Steinhaus, MD, New York, NY Eric F. Swart, MD, New York, NY Kevin J. Bozic, MD, MBA, Austin, TX

A considerable portion of orthopaedic cost-effectiveness studies provide weak recommendations and methodological practices vary substantially.

# 2:30 PM

Paper 864

# Statistical Signif cance in Trauma Research: Too Unstable To Trust?

Paul Tornetta III, MD, Boston, MA Mohit Bhandari, MD, FRCSC, Hamilton, ON, Canada Robert L. Parisien, MD, Boston, MA Jesse Dashe, MD, Boston, MA Patrick Cronin, MD, Roxbury Crossing, MA

We sought to examine how easily the statistical signif cance of comparison trials in fracture care would change if the number of events in one group were incrementally changed.

Discussion – 6 Minutes

### 2:42 PM

# Physician-owned Hospitals: Are the ACA Restrictions Warranted in 2015?

Atul F. Kamath, MD, Philadelphia, PA Daniel K. Lundgren, Wynnewood, PA Joshua A. Lopez, Scotch Plains, NJ Paul M. Courtney, MD, Philadelphia, PA

Physician-owned hospitals had better patient satisfaction and lower complications, with higher total costs. This must be weighed in legislative decisions that might impact access to quality care.

### 2:48 PM

# SSI Risk Is Higher In Spinal Instrumented Surgery Compared To Arthroplasty

Koji Yamada, MD, PhD, Kanagawa-Ken, Japan Hiroshi Okazaki, MD, Topkyo, Japan Tatsuro Karita, Tokyo, Japan Fumiaki Tokimura, MD, Tokyo, Japan Takuya Matsumoto, MD, PhD, Kunitachi-Shi, Japan Kiyofumi Yamakawa, MD, PhD, Tokyo, Japan Koji Nakajima, MD, Tokyo, Japan Yasuhito Tajiri, MD, Tokyo, Japan Hideki Nakamoto, MD, Yokohama City, Kanagawa Prefecture, Japan

SSI risk of spinal instrumented surgery was 4.2 fold higher compared to joint arthroplasty. Additional efforts may be necessary for SSI prevention in this particular procedure.

### 2:54 PM

Paper 867

Paper 868

Paper 865

Paper 866

# Review of 5.5 Years' Experience Using Email-based Telemedicine to Deliver Orthopaedic Care to Remote Communities

Adam G. Cota, MD, New York, NY Magdalena Tarchala, MD, Ottawa, ON, Canada Caroline Parent-Harvey, Westmount, Canada Victor Engel, Montreal, Canada Edward J. Harvey, MD, MSc, Westmount, QC, Canada

Using an email-based teleorthopaedic service to manage acutely injured patients in remote communities allowed 79% of patients to be treated locally, with travel related cost savings of \$4,176,958 USD.

Discussion – 6 Minutes

# 3:06 PM

### Analyses Of 22,833 Orthopaedic Surgeons' Scores From 2 Major Physician-rating Websites

Mohammed Hussain, BS, Chicago, IL Waqas M. Hussain, MD, Bettendorf, IA Haroon Hussain, MD, Cincinnati, OH Hristo I. Piponov, Evanston, IL Douglas R. Dirschl, MD, Chicago, IL Lewis L. Shi, MD, Chicago, IL

The internet is being used to rate and select orthopedic surgeons. A database of surgeons was systematically searched on two large rating sites. Interpersonal skills correlate with overall score.

# 3:12 PM

# Paper 869

# Health Literacy in Patients Seeking Orthopaedic Care

Andrew Rosenbaum, MD, Albany, NY Richard Uhl, MD, Albany, NY Michael T. Mulligan, MD, Albany, NY Daniel Pauze, MD, Albany, NY Denis R. Pauze, MD, Albany, NY Nancy R. Robak, RN, MPH, Albany, NY

The prevalence of inadequate musculoskeletal health literacy is concerning, as 69% of our patients may lack the skills essential to making informed decisions about their care.

# 3:18 PM

Paper 870

# Fitness tracking devices: Applications in Orthopaedics

Dalibel M. Bravo, MD, New York, NY Stephanie Swensen, MD, New York, NY Claudette M. Lajam, MD, New York, NY

A comprehensive review of f tness tracking devices and applications in orthopaedic surgery.

# Discussion – 6 Minutes

# **PAPER PRESENTATION**

1:30 PM - 3:30 PM

Valencia Room B

# **Game Changers**

Moderator(s): Brian J. Cole, MD, MBA, Chicago, IL Marc Safran, MD, Redwood City, CA

# 1:30 PM

# **PAPER 490**

**Outcomes of a Cementless Thumb Basal Joint Hemiarthroplasty** for Treatment of Trapeziometacarpal Osteoarthritis Patrick G. Marinello, MD, Shaker Heights, OH Mark C. Shreve, MD. New York, NY

Peter J. Evans, MD, PhD, FRCSC, Cleveland, OH We found poor implant survivorship and an unacceptably

high rate of reoperation with the BioPro thumb basal joint hemiarthroplasty device.

# 1:36 PM

# **PAPER 181** Incorporating Hip Fracture Hemiarthroplasty into a Bundled Payment System for TJA is Not Economically Viable

Elisabeth M. Graboski, BS, Danville, PA James E. Murphy, MD, Shavertown, PA David J. Kolessar, MD, Shavertown, PA Thomas R. Bowen, MD, Danville, PA Carmen D. Crofoot, MD, Danville, PA Elie S. Ghanem, MD, Danville, PA

The cost of treating a hip fracture using a hemiarthroplasty is nearly double that of performing an elective total joint arthroplasty in a patient with osteoarthritis.

# 1:42 PM

# Medicare's Hospital Acquired Conditions Policy: A Problem of **Non-Payment After Total Joint**

Andrew J. Pugely, MD, Iowa City, IA Nicholas Bedard, MD, Iowa City, IA Christopher T. Martin, MD, Coralville, IA Kyle Duchman, MD, Iowa City, IA Robert W. Westermann, MD, Iowa City, IA Yubo Gao, PhD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

The NIS database was used to analyze 2.6 million cases of Total Joint Arthroplasty (TJA) for the presence of Hospital Acquired Conditions (HACs), as def ned by CMS.

Discussion – 6 Minutes

### 2:00 PM

# **Pre-operative Labs: Wasted Dollars Or Predictors Of Postoperative Cardiac Events In Orthopaedic Trauma Patients?**

Vasanth Sathiyakumar, Nashville, TN Amir A. Jahangir, MD, Nashville, TN Hassan R. Mir, MD, MBA, Nashville, TN William T. Obremskey, MD, MPH, Nashville, TN Manish K. Sethi, MD, Nashville, TN

This study is the f rst of its kind to demonstrate the utility of preoperative labs in orthopaedic trauma and hip fracture patients in predicting cardiac and septic adverse events.

# 2:06 PM PAPER 323

# The Natural History of Primary Anterior Glenohumeral Joint **Dislocation in Adolescent Patients**

Nick Beattie, BA, MBCHB, Edinburgh, United Kingdom Simon B. Roberts, MBCHB, MSc, Edinburgh, United Kingdom Christopher M. Robinson, MD, Edinburgh, United Kingdom

Natural history of primary anterior shoulder dislocation in adolescents. Prospective data of 133 patients. These patients have a high rate of repeat dislocation, which occurs within two years.

# 2:12 PM

# Interposition Porcine Dermal Matrix Xenografts: An Alternative **To Traditional Treatment Of Massive Cuff Tears**

Julie A. Neumann, MD, Durham, NC Kathleen D. Reay, MD, Durham, NC Miltiadis H. Zgonis, MD, Philadelphia, PA Stephanie W. Mayer, MD, Aurora, CO Blake Boggess, DO, Durham, NC Alison P. Toth, MD, Durham, NC

As interposition grafts, porcine dermal matrix xenografts hold great promise in repair of massive cuff tears showing signif cant improvement in pain, range of motion, strength and subjective function.

Discussion – 6 Minutes

**PAPER 334** 

**PAPER 858** 

**Symposium** 4:00 PM - 6:00 PM Valencia Room B

**O**RS

# The Regulatory Process: How Do I Get My Invention into Patients (FF)

Moderator: Barbara D. Boyan, PhD, Richmond, VA

Invention is only the f rst step in generating a product that can be used to treat patients. This symposium provides surgeons with an overall understanding of product development, focusing on the role of federal regulatory agencies and how to best navigate the regulatory process.

I. What is an Invention? When Should You Disclose It to Industry

Cheryl R. Blanchard, PhD, Fort Wayne, IN

- Determining Safety and Effectiveness II. Stuart B. Goodman, MD, Redwood City, CA
- III. Developing Combination Products (and you thought simple devices are a challenge) Farshid Guilak, PhD, Durham, NC
- IV. The Role of Standards in Product Development Warren O. Haggard, PhD, Bartlett, TN
- V. Interacting with the Food and Drug Administration Mark Melkerson, MS, Silver Spring, MD
- VI. Collaborating with Basic and Applied Scientists Brian Snyder, MD, PhD, Boston, MA
- VII. Financing Your Invention while Practicing Orthopaedics Peter F. Ullrich, MD, Neenah, WI

# **INSTRUCTIONAL COURSE LECTURE**

# 4:00 PM — 6:00 PM

461	Total Hip Arthroplasty – How Do I Get Out of
TICKET	This Problem?
	Moderator: Steven J. MacDonald, MD, London,
	Canada

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Daniel J. Berry, MD, Rochester, MN
Room
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Kevin L. Garvin, MD, Omaha, NE W203

Jay R. Lieberman, MD, Los Angeles, CA

Designed to provide the surgeon with strategiesto manage the most common challenges facedintraoperatively and early postoperatively after total hip arthroplasty (THA). We provide recommendations from leading surgeons on how to deal with these common challenges and consensus opinion by the panel on the best way to solve problems.



Room

W310

# Foot and Ankle Fusions: You Can't Always Replace Us

Moderator: Christopher P. Chiodo, MD, Boston, MA J. Chris Coetzee, MD, Edina, MN Christopher W. DiGiovanni, MD, Boston, MA Jeremy T. Smith, MD, Newton, MA

Covers foot and ankle fusions. Indications, surgical techniques, current controversies, as well as pearls and pitfalls.

Flexible Intramedullary Rodding of Pediatric Upper

TICKET

Room

W205A

OH

463

# and Lower Extremity Fractures: Techniques, Pearls, and Pitfalls Moderator: David A. Podeszwa, MD, Dallas, TX

Christine A. Ho, MD, Dallas, TX Anthony I. Riccio, MD, Dallas, TX Robert L. Wimberly, MD, Dallas, TX

Provides a didactic review and interactive case-based discussion of the indications, techniques, and potential complications of intramedullary (IM) rodding of pediatric and adolescent forearm, femur, and tibia fractures. It is appropriate for both the non-pediatric and pediatric orthopaedic surgeon.

#### ♦464 **Biologic Treatments and Enhancements for**



Room

Treatment of Rotator Cuff Tears - Past, Present, and Future

Moderator: Ofer Levy, MD, Henley-On-Thames, United Kingdom

Alessandro Castagna, MD, Rozzano, Italy W307A CDR (ret) Matthew T. Provencher, MD, Boston, MA Scott A. Rodeo, MD, New York, NY

> Course faculty discuss the biologic challenges intreatment of rotator cuff tears, the history of biologic treatments and enhancements, and assess current and future developments in a critical evidence-based way.

#### **465 Complication Management in Minimally Invasive Spine Surgery** TICKET

Room W205B

Moderator: Sheeraz Qureshi, MD, New York, NY Saad Chaudhary, MD, New York, NY Jeffrey S. Roh, MD, Sammamish, WA Kern Singh, MD, Chicago, IL

Addresses rarely discussed complications involved with minimally invasive spine surgery both in the initial and later phases of adoption; and involves a detailed interactive discussion on perioperative and intraoperative pearls to safely and successfully perform minimally invasive procedures. In addition, salvage techniques are discussed, addressing complication avoidance, management, and results.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

ON,



Room

W308C

# **Issues of Alignment and Tibial Slope: When to Address** and How?

Moderator: Volker Musahl, MD, Pittsburgh, PA David Dejour, MD, Lyon, France Alan Getgood, MD, FRCS (Ortho), London, ON, Canada Anil S. Ranawat, MD, New York, NY

A review of knee malalignment with a special focus on coronal plane and sagittal plane alignment. Indications for proximal tibia osteotomies and distal femur osteotomies and advantages and disadvantages of closing wedge and opening wedge osteotomies are presented.



OA

Room

W314

# **Management of Pelvic Fractures**

Moderator: Michael D. Stover, MD, Chicago, IL Kelly A. Lefaivre, MD, Vancouver, British Columbia, Canada Keith A. Mayo, MD, Gig Harbor, WA Stephen H. Sims, MD, Charlotte, NC

Current standards of pelvic ring injury evaluation, acute management, decision making, surgical techniques, and complication avoidance are presented in depth.



OT

Room

W204

# Lower Extremity Fracture Reduction: Tips, Tricks, and Techniques so that You Leave the OR Satisf ed

Moderator: Michael T. Archdeacon, MD, Cincinnati, OH Christina L. Boulton, MD, Indianapolis, IN Hassan R. Mir, MD, MBA, Nashville, TN George V. Russell Jr, MD, Jackson, MS

Provides the community fracture surgeon with reduction tools, tips, and tricks to facilitate lower extremity fracture reductions and subsequently improve patient outcomes.



Room

W207

# How to Do a Complex Total Knee Arthroplasty: **Case-based Presentation**

Moderator: Arthur L. Malkani, MD, Louisville, KY Co-Moderator: Javad Parvizi, MD, FRCS, Philadelphia, PA Matthew P. Abdel, MD, Rochester, MN Wael K. Barsoum, MD, Cleveland, OH Brian M. Curtin, MD, Charlotte, NC Kirby Hitt, MD, Temple, TX Courtland G. Lewis, MD, Farmington, CT Michael A. Mont, MD, Indianapolis, IN Douglas E. Padgett, MD, New York, NY Mark W. Pagnano, MD, Rochester, MN Jeffrey Stimac, MD, Crestwood, KY Leo A. Whiteside, MD, Saint Louis, MO

This is a case-based course focusing primarily oncomplex or more challenging primary total kneearthroplasty (TKA). Case presentations and groupdiscussion center on preop planning, surgical execution, implant options, and avoidance of complications. Cases include severe varus and valgus deformity, posttraumatic arthritis and deformity, failed uniarthroplasty, obesity, and patients with co-morbid conditions.





Room

W208

Moderator: Brian J. Cole, MD, MBA, Chicago, IL Co-Moderator: Andreas H. Gomoll, MD, Chestnut Hill, MA Iack M. Bert, MD, Woodbury, MN William Bugbee, MD, San Diego, CA Robert T. Burks, MD, Salt Lake City, UT

Brian Chilelli, MD, Chicago, IL Andrew D. Goodwillie, MD, Great Neck, NY Christian Lattermann, MD, Lexington, KY Bert Mandelbaum, MD, Santa Monica, CA Frank R. Noyes, MD, Cincinnati, OH Nicholas A. Sgaglione, MD, Great Neck, NY Geoffrey Van Thiel, MD, MBA, Rockford, IL Adam B. Yanke, MD, Chicago, IL

Focusing on evidence-based decision making as it relates to the care and treatment of patients with articular cartilage defects. Facilitators emphasize an open dialogue related to concomitant management of comorbidities such as meniscal def ciency and malignment.

# **PAPER PRESENTATION**

# 4:00 PM — 6:00 PM Valencia Room D

Shoulder & Elbow VI: The Rotator Cuff II: Basic Science Aspects

Moderator(s): Ranja Gupta, MD, Orange, CA, Brian R. Wolf, MD, Iowa City, IA

# 4:00 PM

**Revision Rotator Cuff Repair with Mesenchymal Stem Cells Decreases Subsequent Revision Risk** 

Philippe Hernigou, PhD, Creteil, France Charles-henri f ouzat-lachaniette, MD, Créteil Cedex, France

This study showed that signif cant improvement in healing outcomes could be achieved by the use of BMC containing MSC as an adjunct therapy in revision rotator cuff repair.

# 4:06 PM

# Vascular Patterns in the Repaired Rotator Cuff Depending on **Suture Methods**

Atsushi Urita, MD, PhD, Sapporo, Japan Tadanao Funakoshi, MD, Sapporo, Hokkaido, Japan Norimasa Iwasaki, Sapporo, Japan

This prospective randomized study suggested that the blood f ow from bone tunnels on the footprint would provide an abundant blood supply in the distal area of repaired rotator cuff after ARCR.

Paper 871

Paper 872

# 4:12 PM

# Paper 873 Perivascular Stem Cells Diminish Muscle Atrophy Following Massive Rotator Cuff Tears in a Small Animal Model

Claire Eliasberg, BA, Los Angeles, CA Tomasz J. Kowalski, MD, PhD, Los Angeles, CA Cameron A. Garagozlo, Melbourne, FL Kyle Natsuhara, MD, Sacramento, CA Owen McBride, ATC, BS, Los Angeles, CA Adam Khan, BS, Los Angeles, CA David R. McAllister, MD, Los Angeles, CA Brian T. Feeley, MD, San Francisco, CA Frank Petrigliano, MD, Santa Monica, CA

Our f ndings demonstrate signif cantly less muscle atrophy in the groups with perivascular stem cell injections compared to respective controls following massive rotator cuff tears in a mouse model.

Discussion – 6 Minutes

# 4:24 PM

# Anchored versus Anchorless Rotator Cuff Repair: A **Biomechanical Analysis**

Kelly G. Kilcoyne, MD, El Paso, TX Stanley Guillaume, BS, Indianapolis, IN Evan R. Langdale, MS, Indianapolis, IN Catherine Hannan, BS, Indianapolis, IN Stephen Belkoff, PhD, Indianapolis, IN Umasuthan Srikumaran, MD, MBA, Clarksville, MD

This controlled laboratory study demonstrates that anchored rotator cuff repairs have signif cantly increased load to failure than anchorless, transosseous repairs.

# 4:30 PM

# Paper 875 Stiffness Changes in the Supraspinatus Muscle after Double-row and Knotless Transosseous Equivalent Cuff Repair

Taku Hatta, MD, Rochester, MN Hugo Giambini, PhD, Rochester, MN Alexander W. Hooke, MA, Rochester, MN Chunfeng Zhao, MD, Rochester, MN John W. Sperling, MD, MBA, Rochester, MN Scott P. Steinmann, MD, Rochester, MN Nobuyuki Yamamoto, MD, Sendai, Japan Eiji Itoi, MD, Sendai, Japan Kai-Nan An, PhD, Rochester, MN

# Knotless transosseous equivalent technique for the medium-large size tear provides a more uniform stiffness distribution in repaired supraspinatus muscles compared to the double-row technique.

# 4:36 PM

# Tape Versus Suture for Arthroscopic Rotator Cuff Repair - A **Biomechanical and Clinical Study**

Paper 876

Paper 877

Paper 878

Ruiwen Liu, MD, Kogarah, NS, Australia Patrick H. Lam, PhD, Sydney, NS, Australia Henry Shepherd, Kogarah (Sydney), Australia George A. Murrell, MD, Kogarah, NS, Australia

Tape was better biomechanically but suture better clinically.

Discussion – 6 Minutes

### 4:48 PM

# Parp1 Knock Out Leads To Regeneration And Decreased Fatty Inf Itration After Rotator Cuff Tear In A Mouse Model

Michael Kuenzler, MD, Long Beach, CA Katja M. Nuss, DVM, Zurich, Switzerland Agnieszka Karol, DVM, MSc, Zurich, Switzerland Michael Schaer, MD, New York, NY Michael Hottiger, DVM, PhD, Long Beach, CA Brigitte von Rechenberg, MD, Zurich, Switzerland Matthias Zumstein, MD, Bern, Switzerland

PARP1 Knock-out mice have less early inf ammation and late adipogenesis in their rotator cuff. After severe atrophy 6 weeks post-tenotomy, the muscles of the knock out mice regenerate to normal size.

# 4:54 PM

# **Muscle Degeneration Associated with Rotator Cuff Tendon** Release and / or Denervation in Sheep

Karl Wieser, MD, Zurich, Switzerland Dominik C. Meyer, MD, Zurich, Switzerland Martin Flück, Zurich, Switzerland Brigitte von Rechenberg, MD, Zurich, Switzerland Mario Benn, Zurich, Switzerland Christian Gerber, MD, Zurich, Switzerland

Muscle denervation leads to lengthening of muscle f bers, with a reduced cross sectional area and a slow-to-fast type transformation, leading to an overall signif cantly stronger muscle atrophy.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

Paper 874

# 5:00 PM

# Paper 879

# Effect of Hvaluronic Acid on Tendon-to-Bone Healing in Rotator **Cuff Repair Model**

Hirokazu Honda, MD, Fukuoka, Japan Masafumi Gotoh, MD, PhD, Kurume, Japan Tomonoshin Kanazawa, MD, PhD, Kurume, Fukuoka, Japan Hiroki Ohzono, Kurume City, Japan Hideaki Shibata, MD, Kurume, Japan Hisao Shimokobe, Kurume-City Fukuoka, Japan Hidehiro Nakamura, MD, Kurume Fukuoka, Japan Ryo Tanesue, MD, Kurume, Japan Naoto Shiba, MD PhD, Fukuoka, Japan

Marrow-derived stromal cells activated by hyaluronic acid may play a crucial role in acceleration of tendon-bone healing after cuff repair in rabbits, enhancing the biomechanical strength at the site.

Discussion – 6 Minutes

# 5:12 PM

# Paper 880

Effect of Polydeoxyribonucleotide on Rotator Cuff Healing and **Fatty Degeneration in Rat Model** 

Jung-Taek Hwang, MD, PhD, Chuncheon-si, GA, Republic of Korea

Do-Young Kim, MD, PhD, Chuncheon-si, Republic of Korea Sang-soo Lee, MD, Chuncheon-si, Republic of Korea

The use of PDRN and PN might have possibility to improve tendon healing and decrease fatty inf ltration after cuff repair

# 5:18 PM

# Paper 881

# **Reduction of Lipid Accumulation and Fibrosis after Rotator Cuff** Repair

Jeffrey Wilde, MD, Dexter, MI Jonathan P. Gumucio, BS, Ann Arbor, MI Jeremy Grekin III, MS, Ann Arbor, MI Max Davis, Ann Arbor, MI Stuart M. Roche, BS, Ann Arbor, MI Asheesh Bedi, MD, Ann Arbor, MI Christopher L. Mendias, PhD, ATC, Ann Arbor, MI

Inhibition of p38 MAPK was found to have a signif cant decrease in f brosis and intramuscular lipid accumulation that is usually seen in the degenerative cascade of rotator cuff tears.

# 5:24 PM

# **Paper 882** Effect Of Hypercholesterolemia On Fatty Inf Itration And Healing In A Chronic Rotator Cuff Tear Model Of Rabbit

Joo Han Oh, Seoul, Republic of Korea Seok Won Chung, MD, Seoul, Republic of Korea HAEBONG PARK, Seoul, Republic of Korea Jieun Kwon, Seoul, Republic of Korea Tae-Yon Rhie, MD, PhD, Seoul, Republic of Korea

Hypercholesterolemia resulted in a deleterious effect on fatty inf ltration and rotator cuff healing, and lowering hypercholesterolemia seemed to halt or reverse these harmful effects.

Discussion – 6 Minutes

# 5:36 PM

# Identif cation Of A Familial Predisposition For And A Genetic Variant Associated With Rotator Cuff Repair Healing

Robert Z. Tashjian, MD, Salt Lake City, UT Erin Granger, MPH, Salt Lake City, UT Yue Zhang, Sandy, UT Craig C. Teerlink, PhD, Salt Lake City, UT Lisa Cannon-Albright, Salt Lake City, UT

Failure of rotator cuff repair healing is associated with a family history of rotator cuff tearing and the presence of a genetic variant in the estrogen-related receptor beta (ESRRB) gene.

# 5:42 PM

# **Characteristics Of The Gene Expression Of The Torn Rotator Cuff Tendon Tissue In Patients With Diabetes**

Seok Won Chung, MD, Seoul, Republic of Korea Jong Pil Yoon, MD, Seoungnam-Si, Republic of Korea

Our results demonstrated the over-expression of MMP-9 and IL-6 protein in diabetic torn cuff tendon tissues compared with controls.

### 5:48 PM

# Paper 885 Fatty Replacement of Human Rotator Cuff Muscle Following **Chronic Tendon Tear**

Michael Gibbons, La Jolla, CA Anshuman Singh, MD, San Diego, CA Timothy Cheng, MD, San Diego, CA Oke A. Anakwenze, MD, New York, NY Simon Schenk, PhD, La Jolla, CA Samuel R. Ward, PhD, La Jolla, CA

Biopsies from massive rotator cuff tears demonstrate active degenerative and regenerative processes, high levels of f brosis, vascularity and apoptosis, and novel "fatty replacement" of muscle tissue.

Discussion – 6 Minutes

# **PAPER PRESENTATION**

4:00 PM - 6:00 PM Room W414

# **Adult Reconstruction Knee VIII: Miscellanous**

Moderator(s): Jason A. Grassbaugh, MD, Tacoma, WA, Sumon Nandi, MD, Lima, OH

# 4:00 PM

# Simultaneous Bilateral Total Knee Arthroplasty In Elderly **Greater Than 70 Yeras Old**

Raju Vaishya, MD, MBBS, New Delhi, India Vipul Vijay, MBBS, MS, New Delhi, India

With predictable benef ts of surgery, SBTKA seems a safe and viable procedure for carefully selected elderly patients, provided the risks are well accepted by doctors, patients and family members.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

Paper 884

# 4:06 PM

### Paper 887

# Outcomes of Unicompartmental Knee Arthroplasty in Patients with Genu Recurvatum

Lei Jiang, MBBS, Singapore, Singapore Yongqiang Jerry Chen, MBBS, Singapore, Singapore Hwei Chi Chong, Singapore, Singapore Seng-Jin Yeo, FRCS, Singapore, Singapore Ngai-Nung Lo, MD, Singapore, Singapore

Pre-operative genu recurvatum results in poorer outcomes after unicompartmental knee arthroplasty and these patients benef t from better improvement in function after total knee arthroplasty instead.

# 4:12 PM

Paper 888

# Alpha-Defensin is an Accurate Test for PJI

Erdan Kayupov, Troy, MI Greg Kazarian, BA, Media, PA Darren R. Plummer, MBA, MD, Columbus, OH Carl A. Deirmengian, MD, Newtown Square, PA Craig J. Della Valle, MD, Chicago, IL

Alpha-Defensin is an accurate test for PJI and especially valuable at identifying cases of culture-negative PJI.

Discussion – 6 Minutes

### 4:24 PM

Paper 889

Long-term Results Of Total Knee Arthroplasty For Valgus Knees: Soft-tissue Release Technique And Implant Selection

Ashok Rajgopal, MD, FRCS (Ortho), Gurgaon, India

Adequate lateral soft-tissue release is the key to successful TKAs in valgus knees. The choice of implant depends on the severity of the valgus deformity

# 4:30 PM

### Paper 890

Paper 891

# Medial Overhang of Tibia Component is associated with higher risk of inferior KOOS pain score after Knee Replacement

Christian Skovgaard Nielsen, MD, Boston, MA Audrey Nebergall, Boston, MA James I. Huddleston III, MD, Redwood City, CA Christopher J. Barr, BS, Boston, MA Henrik Malchau, MD, Cambridge, MA Anders Troelsen, MD, PhD, Koege, Denmark

In this multicenter, prospective study, a signif cant association was shown between medial overhang of the tibial component and unacceptable 1 year KOOS pain.

# 4:36 PM

# Right TKR Patients Treated With Enhanced Pain and Rehabilitation Protocols Can Drive at 2 Weeks

David F. Dalury, MD, Indianapolis, IN Danielle M. Chapman, Towson, MD

Right TKR patients treated with enhanced pain and rehabilitation protocols can return to their driving capabilities earlier than previously expected.

### Discussion – 6 Minutes

# 4:48 PM

# Factors Associated with Prolonged Opioid Use After Total Knee Arthroplasty

Robert S. Namba, MD, Corona Del Mar, CA Anshuman Singh, MD, San Diego, CA Maria C. Inacio, PhD, Adelaide, Australia Liz Paxton, MA, Rcho Santa Fe, CA

Risk factors for prolonged opioid use after TKA were evaluated. Preoperative opioid use, patient ethnicity, and co-morbidites were evaluated.

### 4:54 PM

# Safe Continuation Of Aspirin Mono-therapy During Tka With Multimodal Blood Management.

Emmanuel Thienpont, MD, Asse, Belgium Pierre-Emmanuel Schwab, Bruxelles, Belgium

Aspirin stop before surgery can lead to withdrawal syndrom with thromboembolic complications. With today's multimodal blood management stopping aspirin mono-therapy before TKA is no longer necessary.

### 5:00 PM

### Paper 894

Paper 895

Paper 893

Paper 892

Prevalence of Venous Thromboembolic Events is Low in Asians After Total Knee Arthroplasty Without Chemoprophylaxis

Hamid Rahmatullah Bin Abd Razak, MBBS, Singapore, Singapore

Noorul Faeyza, Singapore, Singapore Hwei Chi Chong, Singapore, Singapore Andrew Tan, MD, Singapore, Singapore

With risk stratif cation and stringent protocols on mechanical prophylaxis with early ambulation, routine chemoprophylaxis may not be necessary in Asian patients undergoing total knee arthroplasty.

Discussion – 6 Minutes

# 5:12 PM

# The Cost-Effectiveness of TKA at High Volume Hospitals

Jayme C. Burket, PhD, New York, NY Hassan Ghomrawi, PhD, New York, NY Alexander Dresner, Business Administrator, New York City, NY Ting-Jung Pan, MPH, New York, NY Douglas E. Padgett, MD, New York, NY Stephen Lyman, PhD, New York, NY

High volume hospitals provide better value per healthcare dollar spent for primary elective unilateral TKA relative to lower volume hospitals.

Paper 900

Paper 918

Paper 901

# Friday, March 4

# 5:18 PM

### Paper 896

# Periprosthetic Joint Infection: Organism Prof le May Be changing

Garrett C. Davis, MD, Bala Cynwyd, PA Carl A. Deirmengian, MD, Wynnewood, PA Simmi Gulati, Indianapolis, IN James W. Stave, PhD, Claymont, DE Javad Parvizi, MD, FRCS, Philadelphia, PA

Prosthetic joint infection (PJI) in the US can be caused by a wide array of organisms, many not previously recognized. Coagulase negative Staphylococcus may be the most common infecting organism.

### 5:24 PM

# Paper 897

# Quantifying the Length of the Electronic Medical Record Implementation Period

Daniel J. Scott, MD, Durham, NC Eva Labro, PhD, Chapel Hill, NC Colin T. Penrose, BA, BS, Durham, NC Michael P. Bolognesi, MD, Durham, NC Samuel S. Wellman, MD, Durham, NC Richard C. Mather III, MD, Durham, NC

The implementation period for electronic medical records for returning to previous labor costs appears to be 6 months.

Discussion – 6 Minutes

### 5:36 PM

### Paper 898

Paper 899

Combined Method Of Intraarticular And Intravenous Tranexamic Acid In Total Knee Arthroplasty

Eduardo Hevia, Madrid, Spain Miguel Ortega, Madrid, Spain Agustin Garabito Cocina, Madrid, Spain Enrique Gomez-Barrena, MD, Madrid, Spain

Decrease in blood loss and mean hospital length of stay after TKA using a mutimodal blood loss prevention protocol including combined method of intra-articular and IV tranexamic acid and no drains.

# 5:42 PM

# Surgeon Accuracy In Identifying Anatomic Landmarks For Femoral Component Positioning In TKA

Fadi Saied, DO, Bakersf eld, CA Rikin Patel, Houston, TX Sabir Ismaily, Houston, TX Melvyn A. Harrington, MD, Houston, TX Glenn C. Landon, MD, Houston, TX Brian S. Parsley, MD, Bellaire, TX Philip C. Noble, PhD, Houston, TX

The purpose of this study is to evaluate surgeon accuracy in identifying anatomic landmarks for the purpose of femoral component positioning in total knee arthroplasty (TKA).

# 5:48 PM

# Clinical Results and Survivorship of Unique TKA System at 15 Years Follow-up

Richard W. McCalden, MD, London, ON, Canada Steven J. MacDonald, MD, London, ON, Canada Douglas Naudie, MD, FRCSC, London, ON, Canada Robert B. Bourne, MD, FACSC, London, ON, Canada

This unique TKA system, with "built-in" femoral external rotation, continues to demonstrate excellent long-term survivorship and improvement in health-related outcomes at 15 years.

Discussion – 6 Minutes

# 5:54 PM

# ◆ Is Ketorolac The Next Intra-Articular Knee Injection For Osteoarthritis?

Jaime L. Bellamy, DO, San Antonio, TX Brandon Goff, DO, Fair Oaks Ranch, TX Siraj A. Sayeed, MD, San Antonio, TX

Osteoarthritis of the knee can be a disabling disease. Ketorolac is a safe non-operative option for knee intra-articular injection that gives similar pain relief to corticosteroid.

Discussion – 6 Minutes

# PAPER PRESENTATION

4:00 PM — 6:00 PM Room W304A

# Adult Reconstruction Hip VIII: Primary THR II

Moderator(s): George F. Chimento, MD. Metairie, LA, Andrew M. Star, MD, Willow Grove, PA

# 4:00 PM

# Formal Physical Therapy After Primary Total Hip Arthroplasty May Not Be Necessary

Brian T. Urbani, MS, Philadelphia, PA James J. Purtill, MD, Philadelphia, PA William J. Hozack, MD, Philadelphia, PA Richard H. Rothman, MD, Philadelphia, PA Javad Parvizi, MD, FRCS, Philadelphia, PA Matthew Austin, MD, Philadelphia, PA

The purpose of this prospective, randomized study was to determine the effect of formal outpatient physical therapy on the functional outcome of total hip arthroplasty.

# 4:06 PM

# Simultaneous Bilateral Versus Staged Bilateral Total Hip Arthroplasty: A Matched Survival Study

Matthew Houdek, MD, Rochester, MN Chad Watts, MD, Rochester, MN Cody Wyles, BS, Rochester, MN Rafael I. Sierra, MD, Rochester, MN Robert T. Trousdale, MD, Rochester, MN Michael J. Taunton, MD, Rochester, MN

In this matched cohort analysis, simultaneous bilateral THA was not associated with an increased risk of revision, reoperation, infection or postoperative complications

# 4:12 PM

### Paper 903

Paper 902

# 5 Year Clinical Performance of Highly Cross-Linked Polyethylene and Vitamin E Diffused Polyethylene using RSA

Audrey Nebergall, Boston, MA Meridith E. Greene, Boston, MA Mogens B. Laursen, MD, PhD, Aalborg, Denmark Orhun K. Muratoglu, PhD, Boston, MA Anders Troelsen, MD, PhD, Koege, Denmark Henrik Malchau, MD, Gothenburg, Sweden

Both the HXLPE and VEPE showed low femoral head penetration at 5 years. All PROMs improved signif cantly and remained favorable at 5 years suggesting excellent clinical performance.

### Discussion – 6 Minutes

# 4:24 PM

# Paper 904

Paper 905

Screening Protocol And Incidence Of Adverse Reaction To Metal Debris: A Systematic Review And Meta-analysis

Aleksi Reito, MD, PhD, Tampere, Finland Olli Lainiala, MB, Tampere, Finland Antti Eskelinen, MD, PhD, Tampere, Finland

The intensity of the screening protocol affects to the incidence of ARMD, but there seems to be implant concept related variations.

# 4:30 PM

# The Effect of Bilateral Hip Replacement on Metal Ion Levels in Patients with Metal-on-Metal Implants

Daniel Hussev, BA, Boston, MA Rami Madanat, MD, Helsinki, Finland Gabrielle Donahue, BA, Boston, MA Ola Rolfson, MD, PhD, Gothenburg, Sweden Orhun K. Muratoglu, PhD, Boston, MA Henrik Malchau, MD, Cambridge, MA

When assessing blood metal ions in patients with MoM implants, a chromium ion level  $\geq 10$  ppb may be an indicator of hip failure based on functional outcomes.

### 4:36 PM

# Bilateral Total Hip Arthroplasty: One-stage Versus Two-stage Procedure

Paper 906

Paper 907

Paper 908

Paper 909

Afshin Taheriazam, Tehran, Islamic Republic of Iran Farshad Safdari, Tehran, Islamic Republic of Iran

One-stage bilateral THA can be served as a safe procedure in patients requiring bilateral hip arthroplasty without increased rate of complications.

### Discussion – 6 Minutes

### 4:48 PM

# **Readmission and Complication Rates for Patients Requiring a Blood Transfusion After Primary Total Hip Arthroplasty**

Clayton Alexander, MD, Indianapolis, IN Mostafa H. El Dafrawy, MD, Indianapolis, IN Zan Naseer, Forest Hill, MD Louis C. Okafor, MD, Indianapolis, IN Karthikeyan E. Ponnusamy, MD, Indianapolis, IN Robert S. Sterling, MD, Owings Mills, MD Richard L. Skolasky Jr, ScD, Indianapolis, IN Harpal S. Khanuja, Cockeysville, MD

Transfused primary THA patients had an independently higher risk for surgical complications within 30 days; for 60-day readmissions; and for 60-day periprosthetic joint infections.

### 4:54 PM

# Subsequent Total Joint Arthroplasty After Primary Total Knee Or Hip Arthroplasty: A 40 Year Population-based Study

Thomas L. Sanders, MD, Rochester, MN Hilal Maradit-Kremers, MD, MSc, Rochester, MN Cathy D. Schleck, Rochester, MN Dirk Larson, Rochester, MN Daniel J. Berry, MD, Rochester, MN

This study reports on the rate of additional contralateral or ipsilateral joint arthroplasty after primary THA or TKA.

### 5:00 PM

# **Predictors for Readmission Following Primary Total Joint Arthroplasty in Lower Extremity**

Ong-Art Phruetthiphat, MD, Iowa City, IA Jesse E. Otero, MD, Iowa City, IA Phinit Phisitkul, MD, Iowa City, IA Annunziato Amendola, MD, Iowa City, IA Sebastiano Vasta, MD, Rome, Italy Biagio Zampogna, MD, Rome, Italy Yubo Gao, PhD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

Patient co-morbidities and pre-operative functional capacity signif cantly affect 30-day readmission rate following total joint arthroplasty in lower extremity.

Discussion – 6 Minutes

# 5:12 PM

# Paper 910 What Are Normal Metal Ion Levels After Total Hip Arthroplasty? A Serologic Analysis of Five Bearing Surfaces

Brian Barlow, MD, New York, NY John Boles, BS, New York, NY Geoffrey H. Westrich, MD, New York, NY

The normal serum Co and Cr ion levels in well-functioning THA are not signif cantly different across contemporary bearing surfaces. Serum Ti ion levels were undetectable.

# 5:18 PM

# Paper 911

# **Risk Reduction Efforts Do Not Decrease 30-Day THA Readmissions for Disadvantaged CMS Patients**

James A. Keeney, MD, Columbia, MO Denis Nam, MD, MSc, Saint Louis, MO Staci Johnson, M.Ed, Saint Louis, MO Ryan Nunley, MD, Saint Louis, MO John C. Clohisy, MD, Saint Louis, MO Robert L. Barrack, MD, Saint Louis, MO

CMS benef ciaries from minority and low socioeconomic groups had high 30-day THA readmission rates that did not respond to risk reduction initiatives that were effective in reducing TKA reaadmisisons.

# 5:24 PM



**Discharge Trends in Medicare Patients Undergoing Primary THA** and TKA

Gwo-Chin Lee, MD, Philadelphia, PA Kevin Ong, PhD, Philadelphia, PA Doruk Baykal, PhD, Philadelphia, PA Edmund Lau, MS, Menlo Park, CA Arthur L. Malkani, MD, Louisville, KY

There has been an increasing trend to home discharge in Medicare patients undergoing primary THA, but not primary TKA patient without an increase in readmissions following surgery.

Discussion – 6 Minutes

# 5:36 PM

Paper 913

# **Contralateral THA After Index THA for Avascular Necrosis** Stratif ed By Demographics and Comorbidities

Kimona Issa, MD, Little Falls, NJ Aiman Rifai, DO, Wayne, NJ Todd Pierce, MD, Indianapolis, IN Vincent K. McInerney, MD, Morristown, NJ Julio J. Jauregui, Indianapolis, IN Randa K. Elmallah, Indianapolis, IN Jeffrey J. Cherian, DO, Indianapolis, IN Michael A. Mont, MD, Indianapolis, IN

Our purpose was to evaluate the incidence of contralateral THA in patients who had undergone THA due to AVN and evaluate different patient demographic, comorbidities, or radiographic f ndings.

# 5:42 PM

# Do Precautions prevent Dislocation after Total Hip Arthroplasty? **A Systematic Review and Meta-Analysis**

Walter A. van der Weegen, PhD, Geldrop, Netherlands Anke Kornuijt, PT, Geldrop, Netherlands Dirk Das, MD, Geldrop, Netherlands

A more liberal lifestyle restrictions and precautions protocol will not lead to worse dislocation rates after THA, but will lead to earlier and better resumption of activities

# 5:48 PM

# **Robotic Assisted Total Hip Arthroplasty; Is it the future yet?**

James R. Lachman, MD, Flourtown, PA Christopher L. Haydel, MD, Philadelphia, PA Easwaran Balasubramanian, MD, Gwynedd Valley, PA

100 conventional THAs and 100 robotic-assisted THAs were compared. Outcomes including LOS, OR time, EBL, cup position (version/inclination), dislocation, readmission, and early revision.

### Discussion – 6 Minutes

Paper 914

Paper 915

Orthopaedic Video Theater presents videos and multimedia programs created by your orthopaedic surgeon colleagues. These peer-reviewed programs bring you the very latest in surgical technique, leading-edge devices, and new technologies. Enjoy unlimited viewing at your convenience, Tuesday through Saturday; included free with your registration.

# Tuesday - Wednesday

Award Programs	Stations 1-10
Adult Reconstruction Hip	Stations 11-14
Adult Reconstruction Knee	Stations 15-22
• Foot and Ankle	Stations 23-26
• Trauma	Stations 27-33
• Tumors	Station 34
• Pediatrics	Stations 35-39
• Spine	Station 40

# Thursday – Saturday

•	Award Programs	Stations	1-10
•	Sports Medicine and Arthroscopy	Stations	11-31
•	Hand and Wrist	Stations	32-34
•	Shoulder and Elbow	Stations	35-40
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In addition, 8 self-service stations are available for you to view any Orthopaedic Video Theater title online.

# **AWARD WINNING MOVIES**

# Tuesday, March 1 – Saturday, March 5 Academy Hall C

# **STATION 1**

# Minimally Invasive Direct Anterior Approach for Revision of the Acetabular Component

Cesare Faldini, MD, Bagheria, Italy Francesco Traina, MD, Bologna, Italy Daniele Fabbri, MD, Bologna, Italy Domenico Fenga, MD, Messina, Italy Raffaele Borghi, MD, Bologna, Italy Fabrizio Perna, MD, Palermo, Italy Eugenio Leo, MD, Messina, Italy Carlotta Calamelli, MD, Imola, Italy Mohammadreza Chebrassan, MD, Bologna, Italy

The aim of this video is to describe surgical tricks and pitfalls for performing acetabular cup revisions through a modif ed minimally invasive anterior approach.

Product Number V16001, 20 mins.

# **STATION 2**

# Three-Step Technique for Revision Total Knee Arthroplasty (TKA): Tips and Tricks Federica Rosso, MD, Torino, Italy Davide E. Bonasia, MD, Torino, Italy Umberto Cottino, MD, Pecetto Torinese, Italy Federico Dettoni, MD, Torino, Italy Matteo Bruzzone, MD, Torino, Italy Roberto Rossi, MD, Torino, Italy

The Three-Steps Technique introduced by Kelly Vince is a guideline for the surgeons approaching a revision total knee arthroplasty (TKA). In this video the three steps will be described, in association with some tips and tricks to solve the problems the surgeon has to face during a revision TKA.

Product Number V16002, 15 mins.

# **STATION 3**

# Surgical Treatment of Flexible Flatfoot in Children: Subtalar Arthroereisis and Combined Surgical Procedures

Cesare Faldini, MD, Bagheria, Italy Francesco Traina, MD, Bologna, Italy Matteo Nanni, MD, Bagheria, Italy Daniele Fabbri, MD, Bologna, Italy Raffaele Borghi, MD, Bologna, Italy Fabrizio Perna, MD, Palermo, Italy Ilaria Sanzarello, MD, Messina, Italy Federico Pilla, MD, Bologna, Italy Sandro Giannini, MD, Bologna, Italy

This video presents the surgical technique for subtalar arthroereisis using a bioabsorbable implant in the treatment of f exible f atfoot during growing age, and combined surgical procedures.

Product Number V16003, 23 mins.

# **STATION 4**

# Transscaphoid Perilunate Fracture Dislocation: Overview and Surgical Technique

Laura Sims, MD, Saskatoon, Saskatchewan, Canada Jason Shin, MD, Saskatoon, Saskatchewan, Canada George S. Athwal, MD, London, Ontario, Canada David Sauder, MD, Saskatoon, Saskatchewan, Canada

This video provides a comprehensive overview of transscaphoid perilunate dislocations, with a focus on surgical technique.

Product Number V16004, 10 mins.

# Congenital Muscular Torticollis: Minimally Invasive Bipolar Tenotomy

Cesare Faldini, MD, Bagheria, Italy Federico Pilla, MD, Bologna, Italy Fabrizio Perna, MD, Palermo, Italy Domenico Fenga, MD, Messina, Italy Daniele Fabbri, MD, Bologna, Italy Raffaele Borghi, MD, Bologna, Italy Matteo Nanni, MD, Bagheria, Italy Francesco Traina, MD, Bologna, Italy

The aim of this video is to show a case of CMT successfully managed by bipolar tenotomy of SCM and its postoperative management.

Product Number V16005, 12 mins.

# **STATION 6**

# On-Track/Off-Track Shoulder Instability

Giovanni Di Giacomo, MD, Rome, Italy Paolo Scarso, MD, Sinagra, Italy Nicola De Gasperis, MD, Rome, Italy

The Hill-Sachs lesion can be called "off-track" or "on-track". We have developed a treatment paradigm with specif c surgical criteria for all patients with anterior shoulder instability.

Product Number V16006, 17 mins.

# **STATION 7**

# Distal Biceps Tendon Repair with Button and Interference Screw Fixation

Fraser J. Taylor, FRACS, MBCHB, Burleigh Heads, Australia Randipsingh R. Bindra, MD, Bundall, Australia

We present the operative technique for repair of rupture of distal biceps tendon insertion. Patient demographics, indications and pearls and pitfalls of the operative technique are presented.

Product Number V16007, 13 mins.

# **STATION 8**

# How to Reduce Unbalanced Severe Isthmic Spondylolisthesis

Cesare Faldini, MD, Bagheria, Italy Angelo Toscano, MD, Mori, Italy Raffaele Borghi, MD, Bologna, Italy Daniele Fabbri, MD, Bologna, Italy Fabrizio Perna, MD, Palermo, Italy Alberto Di Martino, MD, PhD, Rome, Italy Camilla Pungetti, MD, Bologna, Italy Mohammadreza Chehrassan, MD, Bologna, Italy Francesco Traina, MD, Bologna, Italy

The aim of this video is to show the surgical technique of reduction of L5 high grade isthmic spondylolisthesis (HGIS) in a 36 years old female who suffered from chronic low back pain associated with intractable L5 bilateral radiculopathy. This video may help the young surgeons learn how to approach HGIS and manage it appropriately.

**STATION 9** 

# Arthroscopic-Assisted Outside-In Repair of Triangular Fibrocartilage Complex Tears Rachel M. Frank, MD, Chicago, IL

John J. Fernandez, MD, Winnetka, IL Mark S. Cohen, MD, Glencoe, IL Robert W. Wysocki Jr, MD, Chicago, IL

Appropriate surgical management of peripheral TFCC tears utilizing an arthroscopic-assisted outside-in surgical technique allows for excellent clinical outcomes with low complication rates.

Product Number V16009, 13 mins.

# **STATION 10**

Posteromedial Tibial Plateau Fixation in the Prone Position: Applications of the Lobenhoffer Approach Stephen Kottmeier, MD, Stony Brook, New York Elliot Row, MD, Stony Brook, New York J. Tracy Watson, MD, Saint Louis, Missouri Clifford B. Jones, MD, Phonix, Arizona

A critical assessment of radiographic and clinical outcomes, when managing complex articular fragments of the proximal tibia, demonstrates several aspects worthy of re-evaluation and potential modif cation. These include: 1) Ref ned understanding of fracture pathoanatomy and classif cation; 2) Surgical access (operative exposure) and timing; 3) Preferential f xation constructs; and 4) Implant design modif cation. The following presentation highlights the attributes and limitations of contemporary classif cation schemes and the role posterior access in the prone position may offer in select scenarios. The following are discussed: 1) Axial classif cation schemes; 2) Posteromedial (Iobenhoffer) surgical exposure - technique; 3) Indications and case examples of retrocondylar access and f xation; and 4) The author's clinical experience and outcomes.

Product Number V16010, 22 mins.

# **ADULT RECONSTRUCTION HIP**

Tuesday, March 1 – Wednesday, March 2 Academy Hall C

# **STATION 11**

NPWT over Closed Incisions Decreases Wound Complications following High-Risk TJA Marcel A. Bas, MD, New York, NY H. John Cooper, MD, New York, NY

Negative pressure wound therapy applied over a close incision decreases wound complications following high-risk THA and TKA.

Product Number V16011, 13 mins.

Product Number V16008, 20 mins.

# Multimodal Pain Management with Periarticular Inf ltration of Liposomal Bupivacaine in Total Hip Arthroplasty

Michael A. Mont, MD, Baltimore, MD John W. Barrington, MD, Plano, TX Jeffrey J. Cherian, DO, Philadelphia, PA

Multimodal protocols are important for pain management. The addition of liposomal bupivacaine may further improve outcomes after THA.

Product Number V16012, 17 mins.

# **STATION 13**

# The Superior Approach for Total Hip Arthroplasty:

**Technique and 13 Years Experience** J.S. Reid, MD, Newton, MA William Murphy, Winchester, MA Kevin S. Borchard, MD, Boston, MA Anil O. Thomas, MD, Woodstock, GA Daniel Le, MD, Houston, TX Richard D. Reitman, MD, Plano, TX Stephen B. Murphy, MD, Boston, MA

Thirteen year experience with the superior hip approach for THA demonstrates reliable results and economic data showing more than \$5000 less total expenditure per episode than the control cohort.

Product Number V16013, 8 mins.

# **STATION 14**

# Surgical Technique: Hip Resurfacing Postero-Lateral Approach

Antonio Moroni, MD, Rimini, Italy Giovanni Micera, MD, Bologna, Italy Maria Teresa Miscione, MD, Milano, Italy Riccardo Orsini, MD, Bologna, Italy

This is a surgical technique demonstrating hip resurfacing using a postero-lateral approach.

Product Number V16014, 21 mins.

# ADULT RECONSTRUCTION KNEE

Tuesday, March 1 – Wednesday, March 2 7:00 AM – 6:00 PM Academy Hall C

# **STATION 15**

# Good To Great! Use of Navigation System in Revision of HTO to TKA

Han-Jun Lee, MD, Seoul, Republic of Korea Jae Sung Lee, MD, PhD, Seoul, Republic of Korea Hyeok Bin Kwon, MD, Seoul, Republic of Korea Jung-Won Lim, MD, Seoul, Republic of Korea Dai-Ung Ham, MD, Seoul, Republic of Korea Seong Hwan Kim, MD, Daehak-Ro, Republic of Korea Sung-Min Rhee, MD, Seoul, Republic of Korea

The navigation assisted revision of open wedge HTO to TKA provides considerable preoperative information, minimal bone cuts, and accurate limb alignment with proper soft tissue balancing.

Product Number V16015, 11 mins.

# **STATION 16**

# Revision Total Knee Arthroplasty: Exposure and Component Removal

Alberto Carli, MD, New York, NY Mark P. Figgie, MD, Riverside, CT Lucian C. Warth, MD, New York, NY Douglas E. Padgett, MD, New York, NY

This video illustrates a systematic approach to exposure and implant removal in revision total-knee arthoplasty. Tips and tricks for removing cementless and cemented components, various polyethylene inserts and stemmed components are also demonstrated.

Product Number V16016, 20 mins.

# **STATION 17**

# Implant Removal in Revision Total Knee Arthroplasty (TKA): Tips and Tricks

Federica Rosso, MD, Torino, Italy Davide E. Bonasia, MD, Torino, Italy Umberto Cottino, MD, Pecetto Torino, Italy Federico Dettoni, MD, Torino, Italy Matteo Bruzzone, MD, Torino, Italy Roberto Rossi, MD, Torino, Italy

During implant removal in total knee arthroplasty (TKA) care should be taken not to remove unwanted bone. In this video we will focus on the steps of the implant removal, and onto some tips and tricks for complex removal will be described.

Product Number V16017, 12 mins.

# Everything You Always Wanted to Know About TKR in Ankylosed Knee\* (\*But were Afraid to Ask)

Antkylosed Knee("But were Anrald to Ask)Matteo Bruzzone, MD, Torino, ItalyRoberto Rossi, MD, Torino, ItalyFederica Rosso, MD, Torino, ItalyFederico Dettoni, MD, Torino, ItalyDavide E. Bonasia, MD, Torino, ItalyUmberto Cottino, MD, Pecetto Torinese, ItalyAntongiulio Marmotti, MD, Torino, ItalyDavide Blonna, MD, Torino, Italy

In this video we present a complex case of an ankylosed knee in a hemophilic patient, analyzing in a stepped way all the main problems we had to deal with during surgery: exposure, extensor mechanism shortening, def nition of anatomic landmarks and joint line, soft tissues balancing and implant choice.

Product Number V16018, 19 mins.

# **STATION 19**

# Multimodal Pain Management with Periarticular Inf Itration of Liposomal Bupivacaine in Total Knee Arthroplasty

Michael A. Mont, MD, Baltimore, MD John W. Barrington, MD, Plano, TX Jeffrey J. Cherian, DO, Philadelphia, PA

Multimodal protocols are important for pain management. The addition of liposomal bupivacaine may further improve outcomes after TKA.

Product Number V16019, 22 mins.

# **STATION 20**

# Lateral Epicondylar Sliding Osteotomy in Total Knee Arthroplasty for Rigid Valgus Deformity

Fabio Conteduca, MD, Rome, Italy Cosma Calderaro, MD, Rome, Italy Daniele Mazza, MD, Fiumicino, Italy Gabriele Bolle, MD, Fiumicino, Italy Andrea Redler, MD, Rome, Italy Raffaele Iorio, MD, Rome, Italy Andrea Ferretti, MD, Rome, Italy

This is a lateral femoral sliding osteotomy technique for ligamentous balancing is a reliable and effective surgical procedure in restoring stable alignment in patients with a rigid valgus knee deformity.

Product Number V16020, 10 mins.

# **STATION 21**

Restoration of Posterior Condylar Offset in TKA: The Effect of Posterior-Referencing Jig Design Matthew S. Hepinstall, MD, New York, NY Ryan Coyle, MD, New York, NY Marcel A. Bas, MD, New York, NY

External rotation of femoral implants in posterior-referencing TKA has variable effects posterior condylar offset, depending on the condyle(s) referenced.

Product Number V16021, 13 mins.

**STATION 22** 

# Knee Preservation with Osteotomy: Surgical Techniques *Rachel M. Frank, MD, Chicago, IL*

Nikhil N. Verma, MD, Chicago, IL Bernard R. Bach Jr, MD, River Forest, IL Charles A. Bush-Joseph, MD, Chicago, IL Adam B. Yanke, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL

Joint preservation with high tibial osteotomy (varus knee malalignment) and distal femoral osteotomy (valgus knee malalignment) allows for excellent clinical outcomes with low complication rates.

Product Number V16022, 14 mins.

# FOOT AND ANKLE

Tuesday, March 1 – Wednesday, March 2 Academy Hall C

# **STATION 23**

# Talof bular Bony Impingement in the Ankle Woo Chun Lee, MD, Seoul, Republic of Korea

Jae Young Kim, MD, Seoul, Republic of Korea Ji-Beom Kim, MD, Seoul, Republic of Korea Young Yi, MD, Seoul, Republic of Korea Jiyong Ahn, MD, Seoul, Republic of Korea

Talof bular bony impingement is a distinct disease entity which causes pain and limits motion. It is diff cult to detect on plain radiograph, similar to the spur on the anterior border of the medial malleolus and anterior portion of the medial talar facet. This video helps viewers understand the diagnosis of talof bular impingement and surgical procedure and outcome of talof bular bony impingement excision in the ankle.

Product Number V16026, 10 mins.

# **STATION 24**

Balloon Assisted Reduction, Pin Fixation, and Tricalcium Phosphate Augmentation for Calcanear Fracture Donato Vittore, MD, Foggia, Italy Giovanni Vicenti Jr, MD, Altamura, Italy Gianni Caizzi, MD, Bari, Italy Antonella Abate, MD, Bari, Italy Massimiliano Carrozzo Sr, MD, Avetrana, Italy Girolamo Picca, MD, Bari, Italy Marco Dilonardo, MD, Foggia, Italy Biagio Moretti, MD, Bari, Italy

Sanders III and IV calcanear fracture treatment with balloon assisted reduction, pin f xation and tricalcium phosphate augmentation. A minimally invasive and rapid effective technique.

Product Number V16027, 7 mins.

# Technique of Endoscopically Assisted Percutaneous

Achilles Tendon Repair Chamnanni Rungprai, MD, Iowa City, IA Phinit Phisitkul, MD, Coralville, IA

Endoscopically assited percutenous Achilles tendon repair is a safe and effect to treatment of acute closed rupture of Achilles tendon.

Product Number V16028, 12 mins.

# **STATION 26**

# Tibiotalocalcaneal Reconstructions with Fibular Strut Grafts

Wendy Pierce, MD, Birmingham, AL Caleb Jones, BS, Birmingham, AL Ashish Shah, MD, Birmingham, AL

TTC fusion is a challenging surgery in cases such as: failed total ankle replacement, infection, paresis and degenerative arthritis. A f bula strut graft can be an excellent method of intramedullary f xation in failed cases.

Product Number V16029, 6 mins.

# HAND AND WRIST

# Thursday, March 3 – Saturday, March 5 Academy Hall C

# **STATION 32**

# Bridge Plating for Distal Radius Fractures and Fracture Dislocations of the Wrist

Miguel A. Pirela-Cruz, MD, El Paso, TX Nicholas A. Kusnezov, MD, El Paso, TX John Dunn, MD, El Paso, TX Michael Ting, BS, El Paso, TX

This video demonstrates bridge plating of the wrist for radiocarpal dislocations and severely comminuted or osteoporotic fractures of the distal radius, along with presenting two cases were this technique proved valuable.

Product Number V16030, 16 mins.

# **STATION 32**

# Ultrasound Guided Carpal Tunnel Release: A New Ultra Minimally Invasive Technique

Jose M. Rojo-Manaute, MD, PhD, Madrid, Spain Alberto Capa Grasa, MD, PhD, Madrid, Spain Francisco Chana Rodriguez, MD, PhD, Madrid, Spain Ruben Perez Mañanes, MD, PhD, Madrid, Spain Guillermo Rodriguez Maruri, MD, Bilbao, Spain Javier Vaquero Martin, MD, PhD, Madrid, Spain

The ultrasound guided 1 mm ultrasound guided carpal tunnel release is a safe and effective technique capable of diminishing damage to non-etiologic structures, producing less postoperative morbidity and earlier functional return.

Product Number V16031, 12 mins.

# STATION 33

# Scaphoid Staple Fixation: An Alternative to Traditional Screw Fixation

Miguel A. Pirela-Cruz, MD, El Paso, TX Nicholas A. Kusnezov, MD, El Paso, TX John Dunn, MD, El Paso, TX Michael Ting, BS, El Paso, TX

We have presented an alternative method for internal f xation of the scaphoid than the traditional central axis compression screw for mid-waist fractures of the scaphoid using a palmar approach.

Product Number V16032, 6 mins.

# **STATION 33**

# Ultrasound-Guided Carpal Tunnel Release

Manuel Villanueva, MD, PhD, Madrid, Spain Alvaro Iborra, DPM, Madrid, Spain Homid Fahandezh-Saddi, MD, Alcorcon, Spain

Ultrasound-guided carpal tunnel release is a safe, helpful and successful surgical technique. It is performed with local anesthesia, without ischemia and in an outpatient regimen.

Product Number V16033, 17 mins.

# **STATION 34**

# Zone 2 Flexor Tendon Injuries: Primary Repair and Secondary Reconstruction

Christopher Klifto, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY David Fralinger, MD, New York, NY Anthony Sapienza, MD, New York, NY

Zone 2 f exor tendon injuries are common injuries following laceration. In this video we present a step-by-step guide for two cases, a primary repair, and a secondary reconstruction.

Product Number V16034, 15 mins.

# **STATION 34**

# Dynamic Ultrasound with Anatomic Correlation of the Wrist and Hand

Jeffrey Orr, MD, Brooklyn, NY Giacomo Cappelleti, MD, Brooklyn, NY Orry Erez, MD, Brooklyn, NY Elan Golan, MD, Brooklyn, NY David M. Edelstein, MD, Brooklyn, NY

Dynamic ultrasound is an important diagnostic tool for orthopedists to evaluate pathology.

Product Number V16025, 11 mins.

# PEDIATRICS

# Tuesday, March 1 – Wednesday, March 2 Academy Hall C

# **STATION 35**

The Power of Plaster

Kathryn S. Doughty, MD, Los Angeles, CA

Serial casting is widely accepted as the gold standard treatment for clubfeet. The indications for serial casting can be stretched to include older children with untreated clubfeet, recurrent clubfeet after posteromedial releases, idiopathic toe walking, and even f exible cavovarus deformities.

Product Number V16035, 13 mins.

# **STATION 35**

# Procedure Guide to a Safe and Effective Casting in Developmental Hip Dysplasia

Luca Labianca, MD, Rome, Italy Carlo Iorio, MD, Rome, Italy Cosma Calderaro, MD, Rome, Italy Daniele Mazza, MD, Fiumicino, Italy Antonello Montanaro, MD, Rome, Italy Francesco Turturro, MD, Rome, Italy Andrea Ferretti, MD, Rome, Italy

Closed reduction and cast remains the preferred treatment in hip developmental dysplasia. The competence to correctly apply the plaster is crucial in inf uencing the success rate.

Product Number V16040, 18 mins.

# **STATION 36**

# Proximal Femur Derotation Osteotomy with Pediatric Proximal Femur Nailing

Muharrem Inan, MD, Istanbul, Turkey Ilker Abdullah Sarikaya, MD, Istanbul, Turkey Ozan Ali Erdal, MD, Istanbul, Turkey

Thirteen children (18 extremties) with cerebral palsy underwent consecutive proximal femoral derotation osteotomy by using a pediatric proximal femur nail. The patients were operated between 2012 and 2015. The average age at surgery was 10,7±3,7 years. In those patients with internal rotation gait improvement was achieved. Radiologically all patients had complete consolidation. There was no infection or loss of f xation. There was only one delayed union.

Product Number V16036, 9 mins.

# **STATION 37**

# Single Portal Hip Arthroscopy for Septic Arthritis in the Pediatric Patient

Peter McQueen, MD, Chicago, IL Rohit Garg, MD, Chicago, IL David Savin, MD, Chicago, IL Brian E. Schwartz, MD, Chicago, IL Prasad V. Gourineni, MD, Oak Brook, IL

This video will demonstrate single portal arthroscopic lavage as an effective and simple minimally invasive option for treatment of the pediatric septic hip.

Product Number V16037, 7 mins.

# **STATION 38**

Extra-Articular Drilling of Osteochondritis Dissecans Lesions of the Medial Femoral Condyle Steven C. Chudik, MD, Westmont, IL

Cody S. Lee, BA, BS, Downers Grove, IL Christopher Larsen, BS, Forest Park, IL Michael J. Ryan, BS, North Riverside, IL

Using 3-D models created from MRI images of skeletally immature patients, we were able to def ne windows of safety for extra-articular drilling of OCD lesions of the medial femoral condyle.

Product Number V16038, 8 mins.

# **STATION 39**

# Novel Technique for Shelf Acetabuloplasty

Laurent B. Willemot, MD, Gent, Belgium Tine Mullie, MD, Gent, Belgium Francis Bonte, MD, Ghent, Belgium Sophie Lauwagie, MD, Gent, Belgium Frank S. Plasschaert, MD, PhD, Ghent, Belgium

This new modif cation provides intrinsic bony stability to the shelf construct allowing for rapid healing and remodeling. Our case series review demonstrates lasting femoral head coverage without proximal migration of the shelf graft.

Product Number V16039, 8 mins.

# SHOULDER AND ELBOW

Thursday, March 3 – Saturday, March 5 Academy Hall C

# **STATION 35**

Endoscopic Cubital Tunnel Release Tyson K. Cobb, MD, Bettendorf, IA Anna L. Walden, BS, DC, Davenport, IA

This video presents endoscopic cubital tunnel release surgical technique along with a review of the current literature, indications, contraindications, tips, tricks, and pearls to safely transition.

Product Number V16041, 16 mins.

# Stemless Reverse Total Shoulder Arthroplasty Surgical Technique and 10 Years Results

Ofer Levy, MD, Henley-On-Thames, United Kingdom

Stemless triple-f nned Reverse Total Shoulder Arthroplasty -Surgical Technique and 10 Years Results. Tips and tricks to make rTSA surgery simpler with better outcome using innovative design of stemless bone preserving implant.

Product Number V16042, 21 mins.

# **STATION 36**

# Use of Codman's Paradox to Perform Safe & Simple Manipulation Under Anaesthetic for Frozen Shoulder Release

Ofer Levy, MD, Henley-On-Thames, United Kingdom George Arealis, MD, Athens, Greece Ioannis Polzyois SR, ChB, London, United Kingdom Oren Tsvieli, MD, Reading, United Kingdom Giorgio Ippolito, MD, Latina, Italy Riten Pradhan, MD, Surrey, United Kingdom Ehud Atoun, MD, Kochav Michael, Israel

Description of the technique using Codman's Paradox to perform a safe and simple manipulation under anaesthetic for frozen shoulder release, understanding the biomechanics and reporting the results.

Product Number V16043, 12 mins.

# **STATION 36**

# Shoulder Arthroplasty in the Presence of Posterior Glenoid Bone Loss

Daniel S. Robertson, MD, San Antonio, TX Scott Stephens, MD, Houston, TX Kevin C. Paisley, DO, Anchorage, Alaska Michael A. Wirth, MD, San Antonio, TX Anil K. Dutta, MD, San Antonio, TX

Glenoid bone loss in the setting of shoulder arthroplasty continues to be a treatment dilemma. Presented is a surgical technique utilizing a posterior augmented glenoid and a review of literature.

Product Number V16044, 11 mins.

# **STATION 37**

# Reverse Shoulder Arthroplasty Using Transdeltoid Approach Technical Note And Results

Gonzalo Samitier Solis, MD, PhD, Madrid, Spain Ashish Gupta, MD, Brisbane, Australia Kalojan Petkin, MD, Buchs, Switzerland Laurent Lafosse, MD, Annency, France

The purpose of this work is to show a detailed videodemonstration of Reverse Shoulder Arthroplasty at our Institution using the transdeltoid, also called, anterolateral approach, as an alternative to the classic deltopectoral. As an adjunct, the video is accompanied with rationale for the use of RTSA and advantages/ disvantages for this uncommon approach are detailed. >2 years follow up results as well as our specif c staged rehabilitation program is summarized at the end.

# **STATION 37**

# Management of Glenoid Bone Loss in Shoulder Arthroplasty

Michael S. Guss, MD, New York, NY William Ryan, BS, New York, NY Daniel J. Kaplan, BA, Great Neck, NY Brent Mollon, MD, FRCSC, Orillia, Canada Kirk A. Campbell, MD, Chicago, IL Young W. Kwon, MD, PhD, New York, NY Joseph D. Zuckerman, MD, New York, NY

This video demonstrates two step-by-step approaches to glenoid augmentation and will leave viewers with a comprehensive understanding of the management of glenoid bone loss in shoulder arthroplasty.

Product Number V16046, 14 mins.

# **STATION 38**

# Ulnar Collateral Ligament Reconstruction - Modif ed Jobe Approach using Docking Technique

Sergio A. Glait, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY Maxwell Weinberg, MD, New York, NY Michael J. Alaia, MD, New York, NY Guillem Gonzalez-Lomas, MD, Jersey City, NJ Laith M. Jazrawi, MD, New York, NY

The docking technique for UCL reconstruction is rapidly gaining popularity due to its numerous advantages. This video takes the viewer from case presentation through surgery, to follow-up.

Product Number V16047, 11 mins.

# **STATION 38**

# Modif ed Boneless Latarjet Procedure for Recurrent Anterior Shoulder Dislocation

Antonio Vadala, MD, Rome, Italy Pierluigi Serlorenzi, MD, Rome, Italy Daniele Mazza, MD, Fiumicino, Italy Cosma Calderaro, MD, Rome, Italy Lorenzo Proietti, MD, Rome, Italy Domenico Lupariello, MD, Roma, Italy Andrea Redler, MD, Rome, Italy Andrea Ferretti, MD, Rome, Italy

In this video we show a modif cation of the Latarjet procedure in which we perform a Bankart repair of the damaged anterior capsule along with a transposition of the only conjoined tendon.

Product Number V16048, 7 mins.

# Product Number V16045, 15 mins.

# Open Shoulder Stabilization Using Humeral and Distal Tibial Allografts

Jason Capo, MD, New York, NY Michael Ryan, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY David Fralinger, MD, New York, NY Andrew S. Rokito, MD, Scarsdale, NY

Shoulder instability can be secondary to bony defects of the joint. Distal tibial allograft allows restoration of articular, osteochondral surface that mimics normal, cup-like anatomy of glenoid.

Product Number V16049, 9 mins.

# **STATION 39**

# Glenohumeral Joint Preservation with Allograft: Surgical Technique

Rachel M. Frank, MD, Chicago, IL Petar Golijanin, BS, Boston, MA Bryan G. Vopat, MD, Providence, RI Anthony A. Romeo, MD, Chicago, IL CDR (ret) Matthew T. Provencher, MD, Boston, MA

Glenohumeral joint preservation with allograft reconstruction of both the glenoid and humeral head, when indicated, allows for excellent clinical outcomes with low complication rates.

Product Number V16050, 13 mins.

# **STATION 40**

Sternoclavicular Joint Reconstruction: Surgical Technique Rachel M. Frank, MD, Chicago, IL Petar Golijanin, BS, Boston, MA Anthony A. Romeo, MD, Chicago, IL CDR (ret) Matthew T. Provencher, MD, Boston, MA

In patients with symptomatic sternoclavicular joint instability, sternoclavicular joint reconstruction with allograft allows for excellent clinical outcomes with low complication rates.

Product Number V16051, 11 mins.

# SPINE

Tuesday, March 1 – Wednesday, March 2 Academy Hall C

# **STATION 40**

# Pedicle Subtraction Osteotomy (PSO) Instructional Video John C. France, MD, Morgantown, West VA Jonathan Karnes, MD, Morgantown, West VA

This video presents a case example, cadaver surgery, sawbones model, and diagrams to illustrate the technique and potential results of pedicle subtraction osteotomy (PSO).

Product Number V16052, 12 mins.

# **STATION 40**

# French-Door (Double-Door) Laminoplasty Daniel J. Kaplan, BA, Great Neck, NY

Christine Choi, BS, MS, Rowland Heights, CA Themistocles S. Protopsaltis, MD, Closter, NJ

This video demonstrates a french-door laminoplasty for the treatment of multilevel cervical stenosis, where an opening in the midline is created, along with symmetrical hinges on both laminae.

Product Number V16053, 9 mins.

# SPORTS MEDICINE AND ARTHROSCOPY

# Thursday, March 3 – Saturday, March 5 Academy Hall C

# **STATION 11**

A Simple Technique for Capsular Repair Following Hip Arthroscopy

Christopher L. Camp, MD, Rochester, MN Patrick Reardon, BS, Rochester, MN Bruce A. Levy, MD, Byron, MN Aaron J. Krych, MD, Rocherster, MN

In summary, this video technique demonstrates a reliable, eff cient, and effective method for arthroscopic closure of the interportal capsulotomy following hip arthroscopy. It can be utilized for simple closure or plication with direct passage of suture without having to use a shuttle.

Product Number V16054, 3 mins.

# **STATION 11**

# Illiopsoas Tendon Release following Total Hip Arthroplasty: Surgical Technique

Dominic S. Carreira, MD, Fort Lauderdale, FL Devin Collins, BA, Melbourne, FL Oliver Fowler, BS, MS, Old Tappan, NJ

This video presents the indications, technique and case report for an iliopsoas tendon release following total hip arthroplasty demonstrating the eff cacy of release as a treatment for impingement.

Product Number V16058, 9 mins.

# **STATION 12**

# Arthroscopic Autogenous Bone Graft for Avascular Necrosis (AVN) of Femoral Head

Myung-Sik Park, MD, Jeonju, Republic of Korea Sun Jung Yoon, MD, PhD, Jeonju, Republic of Korea Seongyup Jeong, MD, Jeonju, Republic of Korea Seung Min Choi Jr, MD, Jeollabuk-Do Jeonju-Si, Republic of Korea

Dong-Gun Shim, Jeonju, Republic of Korea

In the present report, we describe the technique of arthroscopic autogenous bone-grafting for the treatment of AVN. An arthroscopic autogenous bone grafting of AVN results in shorter hospital stay, early joint motion at early postoperative period, thereby effectively treating in a minimally invasive.

Product Number V16064, 8 mins.

# Rectus Femoris Repair with Anterior-Inferior Iliac Spine Debridement

Guillem Gonzalez-Lomas, MD, Jersey City, NJ Daniel J. Kaplan, BA, Great Neck, NY Natalie Danna, MD, East Brunswick, NJ David Fralinger, MD, New York, NY Michael J. Alaia, MD, New York, NY Roy Davidovitch, MD, New York, NY Laith M. Jazrawi, MD, Brooklyn, NY

Proximal avulsion or rupture of the rectus femoris is an uncommon injury with limited published data. We present a repair of a patient with an 8-month injury.

Product Number V16090, 7 mins.

# **STATION 13**

# Hip Arthroscopy: Comparison of the Extracapsular Capsulotomy Technique to the Interportal Technique

Russell P. Swann, MD, Salt Lake Cty, UT Krista Ellis, MSc, Park City, UT Jennifer Marland, PT, Murray, UT Hugh S. West Jr, MD, Salt Lake City, UT

We provide a technical video for another way to access the central compartment of the hip arthroscopically. We believe this to be an easier learning curve and reproducible while minimizing traction times, and iatrogenic injuries. We did not show a difference in clinical outcomes between the two techniques but that unrepaired IPC is a risk for instability post operatively.

Product Number V16070, 14 mins.

# **STATION 13**

# Hip Capsule Reconstruction

Jorge Chahla JR, MD, Caba, Argentina Chase Dean, Vail, CO Eduardo Augusto M. Soares, MD, Belo Horizonte, Brazil William R. Mook, MD, Avon, CO Karen K. Briggs, MPH, Vail, CO Marc J. Philippon, MD, Vail, CO

This video details our technique of hip capsule reconstruction using dermal allograft.

Product Number V16088, 7 mins.

# **STATION 14**

# Arthroscopic Removal of a Bullet from the Central and Peripheral Compartments of the Hip Joint

Sandeep Mannava, MD, PhD, Winston-Salem, NC Elizabeth A. Howse, MD, New Hyde Park, NY Jason P. Rogers, MD, Winston-Salem, NC Austin V. Stone, MD, Winston-Salem, NC Daniel Botros, BA, Winston-Salem, NC Allston J. Stubbs IV, MD, Winston-Salem, NC

Arthroscopic removal of bullet missiles from the hip affords the benef t of minimally invasive surgery and treatment of additional pathology.

# **STATION 14**

# Internal Snapping Hip from Anatomy to Endoscopic Release

William H. Marquez, MD, Medellin, Colombia Juan Gomez-Hoyos, MD, Dallas, TX Francisco Javier Monsalve, MD, Medellin, Colombia Lorena Bejarano-Pineda, MD, Medellin, Colombia Alvaro Vanegas, MD, Medellin, Colombia

An arthroscopic release of the iliopsoas tendon at the level of the labrum is a highly effective intervention for treating symptomatic internal snapping hip.

Product Number V16062, 10 mins.

# **STATION 15**

# Endoscopy-Assisted Peri-Acetabular Osteotomy

Dean K. Matsuda, MD, Los Angeles, CA Javad Parvizi, MD, FRCS, Philadelphia, PA Hal D. Martin, DO, Dallas, TX

The rationale, setup, key surgical steps, and early outcomes from endoscopy-assisted peri-acetabular osteotomy are presented. Cadaveric and live patient video is included.

Product Number V16056, 7 mins.

# **STATION 15**

Arthroscopic "Trap-Less" Trapdoor Procedure for Pre-Collapse Osteonecrosis of the Femoral Head Dean K. Matsuda, MD, Los Angeles, CA

This video shows pre-collapse ONFH treated with outpatient arthroscopic surgery and percutaneous core decompression plus injection of calcium sulfate/phosphate regenerative graft cement and locally harvested bone graft.

Product Number V16094, 10 mins.

# **STATION 16**

# Arthroscopic Decompression of Baker's Cyst: Surgical Technique

Amite Pankaj, MBBS, MS, DNS, MRCS Edin, New Delhi, India Deepak Chahar, New Delhi, India

Arthroscopic Decompression of Baker's cyst is a simple, reproducible and safe procedure with minimal rate of complications.

Product Number V16055, 8 mins.

# **STATION 16**

Popliteal Cyst Excision

Guillem Gonzalez-Lomas, MD, Jersey City, NJ Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY David Fralinger, MD, New York, NY Michael J. Alaia, MD, New York, NY Eric J. Strauss, MD, New York, NY Laith M. Jazrawi, MD, Brooklyn, NY

This video presents an overview of evaluation, management, and demonstration of an excision technique for popliteal cysts.

Product Number V16077, 5 mins.

Product Number V16057, 12 mins.

# Patellofemoral Joint Reconstruction

Jorge Chahla JR, MD, Buenos Aires, Argentina Chase Dean, Vail, CO Raphael Serra Cruz, MD, Vail, CO Tyler Cram, Vail, CO Robert F. LaPrade, MD, PhD, Vail, CO

This video details our surgical technique of patellar instability with MPFL reconstruction, open trochleoplasty in patients with severe trochlear dysplasia, and Tibial Tuberosity Osteotomy in patients with an increased TT-TG or patella alta. The content includes the indications, patient positioning, surgical technique, outcomes and postoperative management.

Product Number V16094, 10 mins.

# **STATION 17**

# Arthroscopic Treatment of Impingement After Total Ankle Arthroplasty

Julie A. Neumann, MD, Durham, NC Christopher E. Gross, MD, Durham, NC James K. DeOrio, MD, Durham, NC

Arthroscopic treatment of gutter impingement following Total Ankle Replacement can be an effective and potentially advantageous alternative to open treatment of impingement after ankle arthroplasty.

Product Number V16061, 7 mins.

# **STATION 17**

Neuromuscular Training for Anterior Cruciate Ligament Reconstructed Knees - A Protocol Proposal Julio C. Gali, MD, Sorocaba, Brazil Felipe Faria, MD, Sorocaba, Brazil Julio Gali Filho, MD, Aracoiaba Da Serra, Brazil Phelipe A. Cintra Da Silva, MD, Sorocaba, Brazil

Neuromuscular def cits may persist after ACL surgical reconstruction and standard rehabilitation. Our proposed rehabilitation protocol is based on core stability and limb asymmetries and neuromuscular def cits correction.

Product Number V16023, 15 mins.

# **STATION 18**

# Chronic Quadriceps Tendon Reconstruction

Michael J. Alaia, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY Maxwell Weinberg, MD, New York, NY Guillem Gonzalez-Lomas, MD, Jersey City, NJ Eric J. Strauss, MD, New York, NY Robert J. Meislin, MD, New York, NY Laith M. Jazrawi, MD, Brooklyn, NY

We present a unique patient case and surgical technique video highlighting concepts of surgical management in patients undergoing quadriceps tendon reconstruction after failed primary repair.

Product Number V16082, 10 mins.

# **STATION 18**

# Chronic Patellar Tendon Reconstruction

Michael J. Alaia, MD, New York, NY Jason Capo, MD, New York, NY Brian Capogna, MD, New York, NY Brian Capogna, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY David Fralinger, MD, New York, NY Eric J. Strauss, MD, New York, NY Laith M. Jazrawi, MD, New York, NY

Chronic Patellar tendon rupture repair or reconstructions have added challenges compared with acute ruptures. This video presents a chronic reconstruction, and a chronic reconstruction after failure.

Product Number V16089, 17 mins.

# **STATION 19**

# Medial Patellofemoral Ligament Reconstruction - Getting it Right

Matthew T. Burrus, MD, Charlottesvle, VA Abdurrahman Kandil, MD, Charlottesville, VA Nabil Abazaid, BS, MS, Charlottesville, VA Luis D. Goity, BA, Charlottesville, VA David R. Diduch, MD, Charlottesville, VA

Medial patellofemoral ligament (MPFL) reconstruction is an effective method of treating patellar instability but is associated with technical mistakes. This video provides a straightforward but comprehensive demonstration of how to avoid these errors.

Product Number V16068, 14 mins.

# **STATION 19**

# Treatment Algorithm for Complex Patello-Femoral Problems

David A. Shneider, MD, East Lansing, MI Michael G. Saper, DO, ATC, Gulf Breeze, FL

A treatment algorithm for complex patellar problems has been developed to provide accurate evaluation and assessment, development of a treatment plan, intra-operative monitoring of progress including indications for patellar arthroplasty for these complex problems.

Product Number V16091, 22 mins.

# **STATION 20**

# Inside-Out Meniscal Repair - Surgical Technique

Jorge Chahla Jr, MD, Buenos Aires, Argentina Chase Dean, Vail, CO Raphael Serra Cruz, MD, Vail, CO Tyler Cram, Vail, CO Robert F. LaPrade, MD, PhD, Vail, CO

This video details our technique of inside-out meniscal repair. The content includes the indications and contraindications of inside-out meniscal repair, patient positioning, the surgical technique including the posteromedial and posterolateral surgical approaches, outcomes and postoperative management.

# Product Number V16072, 6 mins.

Arthroscopic Meniscus Surgery: What's the Vector Victor? Justin D. Saliman, MD, Los Angeles, CA

Proper portal establishment and maintenance are crucial to best arthroscopic practices, however determination of optimal vectors and techniques for maintaining those vectors can be complicated. This instructional video uses animation and arthroscopic footage to demonstrate the key pearls of arthroscopic portal vector establishment and maintenance as they apply to partial meniscectomy, meniscus repair and meniscus transplant.

Product Number V16083, 15 mins.

# **STATION 21**

# Chronic Patellar Instability with Large Chondral Defect

Guillem Gonzalez-Lomas, MD, Jersey City, NJ Daniel J. Kaplan, BA, Great Neck, NY Sergio A. Glait, MD, New York, NY William Ryan, BS, New York, NY David Fralinger, MD, New York, NY Robert J. Meislin, MD, New York, NY Eric J. Strauss, MD, New York, NY Laith M. Jazrawi, MD, Brooklyn, NY

Patellofemoral instability is multifactorial, and may involve patellar chondral defects. We f nd best outcomes are achieved with a combination AMZ, and MPFL reconstruction, possibly with ACI.

Product Number V16079, 10 mins.

# **STATION 21**

# Repair of a Patellar Chondral Lesion in the Setting of an Increased TT-TG

Jason Capo, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY David Fralinger, MD, New York, NY Thomas Youm, MD, Hoboken, NJ

Patellofemoral pain is multifactorial. Bony, soft tissue and chondral procedures have been described. Identifying the correct combination, and skill in each, is crucial for success.

Product Number V16084, 7 mins.

# **STATION 22**

# Therapeutic Modalities in the Management of Sports Injuries

Catherine A. Logan, MD, MBA, PT, Dedham, MA Daniel Haber, MD, Boston, MA Ashley J. Tisosky, MD, Boston, MA Adam E. Roy, BA, Somerville, MA CDR (ret) Matthew T. Provencher, MD, Boston, MA

There are a multitude of therapeutic modalities that can be utilized to improve pain and function in both the post-injury and post-surgical patient. A surgeon's understanding of the proper indications and current evidence of therapeutic modalities is essential to ensure successful rehabilitation.

# Product Number V16069, 13 mins.

# **STATION 22**

The Anterolateral Capsule of the Knee

Marcio B. Albers, MD, Pittsburgh, PA Humza Shaikh, BA, Pittsburgh, PA Amir Ata Rahnemai Azar, MD, Pittsburgh, PA Sebastian Irarrazaval, MD, Santiago, Chile Volker Musahl, MD, Pittsburgh, PA Freddie H. Fu, MD, Pittsburgh, PA

This video will scientif cally analyze the current concepts on the anatomy, histology, biomechanics and clinical relevance of the anterolateral capsule of the knee in ACL-R.

Product Number V16086, 9 mins.

# **STATION 23**

# Fresh Osteochondral Allograft - Surgical Technique

Jorge Chahla JR, MD, Buenos Aires, Argentina Chase Dean, Vail, CO Raphael Serra Cruz, MD, Vail, CO Tyler Cram, Vail, CO Robert F. LaPrade, MD, PhD, Vail, CO

This video details our technique of osteochondral allograft transplantation for the treatment of articular cartilage defects of the knee. The content includes the indications and contraindications of osteoarticular allograft transplantation, patient positioning, surgical technique, outcomes and postoperative management.

Product Number V16073, 4 mins.

# **STATION 23**

# Anatomic Double Bundle Antero-Lateral Ligament Reconstruction Using an Ilio-Tibial Tract Strip Andrea Ferretti, MD, Rome, Italy

Edoardo Monaco, MD, Rome, Italy Cosma Calderaro, MD, Rome, Italy Daniele Mazza, MD, Fiumicino, Italy Mattia Fabbri, MD, Rome, Italy Angelo De Carli, MD, Rome, Italy

Anatomic reconstruction of the anterolateral ligament is an effective procedure for controlling Pivot Shift phenomenon in ACL def cient knee.

Product Number V16078, 8 mins.

# **STATION 24**

# All-Epiphyseal Physeal-Sparing Anterior Cruciate Ligament Reconstructive Surgery

Daniel Marchwiany, BS, Algonquin, IL Steven C. Chudik, MD, Westmont, IL Cody Lee, BS, Downers Grove, IL

The technique described in this video provides an approach for safely performing ACL reconstruction in skeletally immature knees without injury to the physes, articular cartilage, or adjacent tendons and ligaments.

Product Number V16059, 8 mins.

# ACL Reconstruction with Quadriceps Tendon Autograft -A Reliable Technique Utilizing the Bone Plug

Paul L. Burroughs III, MD, Raleigh, NC David T. Jones, MD, Raleigh, NC James D. Crowther, MD, Raleigh, NC Frederick E. Benedict, MD, Raleigh, NC Robert G. Jones, MD, Raleigh, NC

ACL Reconstruction using the Quadriceps Tendon with the attached bone plug is a simple technique once the method is learned and the appropriate instruments are available. The procedure should be included in the "amramentarium" of any Orthopaedic Surgeon Performing ACL reconstruction.

Product Number V16066, 14 mins.

# **STATION 25**

# Surgical Treatment of Acute Antero-Lateral Ligament Injuries in Anterior Cruciate Ligament Def cient Knee

Andrea Ferretti, MD, Rome, Italy Edoardo Monaco, MD, Rome, Italy Cosma Calderaro, MD, Rome, Italy Daniele Mazza, MD, Fiumicino, Italy Mattia Fabbri, MD, Rome, Italy Fabio Conteduca, MD, Rome, Italy Angelo De Carli, MD, Rome, Italy

Recognition and repair of their injury, which often occur along with ACL tears, could be considered, in selected cases.

Product Number V16076, 8 mins.

# **STATION 25**

# Extra-Articular Augmentation for the Failed ACL:ALL Reconstruction

Sergio A. Glait, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY Amy Kaplan, BS, New York, NJ Michael J. Alaia, MD, New York, NY Eric J. Strauss, MD, New York, NY Laith M. Jazrawi, MD, Brooklyn, NY

Augmentation using an ALL autograft can provide rotational stability that is often lacking in patients with ACL injury. This video presents a demonstration of an ACL revision with ALL reconstruction.

Product Number V16080, 8 mins.

# **STATION 26**

# Lateral Collateral Ligament Reconstruction Using Docking Technique

Sergio A. Glait, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY David Fralinger, MD, New York, NY Guillem Gonzalez-Lomas, MD, Jersey City, NJ Eric J. Strauss, MD, New York, NY Laith M. Jazrawi, MD, Brooklyn, NY

The LCL docking technique is rapidly gaining popularity. This video discusses the technique, its advantages, and takes the viewer through a case from presentation through follow-up.

Product Number V16081, 13 mins.

# **STATION 26**

Anatomic Posterolateral Corner Reconstruction

Robert F. LaPrade, MD, PhD, Vail, CO Samuel Moulton, BA, Eugene, OR

This video presents a a detailed description of the anatomic PLC reconstruction surgical technique including clinical presentation, indications and outcomes.

Product Number V16093, 13 mins.

# **STATION 27**

# Suture Repair of Distal Triceps Rupture with an Anatomic Transosseous Cruciate Construct

David Kovacevic, MD, Brooklyn, NY Dylan Lowe, MD, New York, NY Christopher S. Ahmad, MD, New York, NY

An anatomic transosseous cruciate suture repair construct provides strength at initial f xation, optimizes footprint restoration, and is a cost-conscious solution to suture anchor repair techniques.

Product Number V16065, 13 mins.

# **STATION 27**

# Pectoralis Major Tendon Repair: Brief Review and Surgical Technique

Jason Capo, MD, New York, NY Brent Mollon, MD, FRCSC, Orillia, Canada Sergio A. Glait, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY Andrew S. Rokito, MD, Scarsdale, NY

This video provides surgeons with a step by step approach to pectoralis major tendon repair using a cortical button technique, as well as an overview of evaluation and management.

Product Number V16075, 8 mins.

# Arthroscopically Assisted Acromioclavicular/

Coracoclavicular Joint Reconstruction of the Shoulder Jason Capo, MD, New York, NY John Begly, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY Amy Kaplan, BS, New York, NJ Laith M. Jazrawi, MD, Brooklyn, NY Robert J. Meislin, MD, New York, NY

Arthroscopy has revolutionized orthopaedics. We present a case of a class 5 AC/CC joint tear with arthroscopically-assisted repair.

Product Number V16085, 11 mins.

# **STATION 28**

# Anterior Shoulder Stabilization with Latarjet: Surgical Technique

Rachel M. Frank, MD, Chicago, IL Mandeep Virk, MD, Brookf eld, IL Saleh Aiyash, MA, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL Nikhil N. Verma, MD, Chicago, IL Anthony A. Romeo, MD, Chicago, IL

Anterior shoulder stabilization with the congruent arc Latarjet technique allows for excellent clinical outcomes with low complication rates and low recurrence rates.

Product Number V16092, 14 mins.

# **STATION 29**

# The Anatomic Coracoclavicular Reconstruction (ACCR) Technique

John M. Apostolakos, BS, Farmington, CT Michael O'Sullivan, MD, Farmington, CT Monica Shoji, BA, Farmington, CT Jessica M. Divenere, BS, Farmington, CT Mark Cote, PT, Farmington, CT Augustus D. Mazzocca, MD, MS, Farmington, CT

This video describes the anatomic coracoclavicular reconstruction (ACCR) technique. It includes operative video with technical tips and pitfalls as well as a demonstration of post-operative rehabilitation exercises.

Product Number V16071, 15 mins.

# **STATION 29**

# Modif ed All-Arthroscopic Coracoclavicular Ligament Reconstruction using a Hamstring Allograft Xinning Li, MD, Lexington, MA Antonio Cusano, BS, Avon, CT

Modif ed all-arthroscopic coracoclavicular ligament reconstruction using a hamstring allograft.

Product Number V16087, 13 mins.

# STATION 30

# Arthroscopic Remplissage for Engaging Hill-Sachs Lesions in Patients with Anterior Shoulder Instability

Christopher L. Camp, MD, Rochester, MN Diane L. Dahm, MD, Rochester, MN Patrick Reardon, BS, Rochester, MN Aaron J. Krych, MD, Rochester, MN

This video demonstrates arthroscopic Remplissage for engaging Hill-Sachs lesions in patients with anterior shoulder instability. This technique can be used to augment other stabilization techniques.

Product Number V16060, 3 mins.

# **STATION 30**

# Bony Bankart Bridge Repair Combined with Remplissage for Complex Shoulder Instability

David Kovacevic, MD, Brooklyn, NY Dylan Lowe, MD, New York, NY Christopher S. Ahmad, MD, New York, NY

Double-row bony Bankart bridge repair with remplissage restores bony anatomy for acute, traumatic complex shoulder instability with an engaging Hill-Sachs lesion in the highly active patient.

Product Number V16067, 13 mins.

# **STATION 31**

# Arthroscopic Rotator Cuff Repair Using Absorbable Biologic Augment

Anthony P. Trenga, Charlottesville, VA Russell E. Holzgrefe, BS, Charlottesville, VA Justin W. Griff n, MD, Charlottesville, VA Stephen F. Brockmeier, MD, Charlottesville, VA

A video presenting early results of a multi-center prospective study and the surgical technique for arthroscopic rotator cuff repair using an absorbable biologic augment made of poly 4-hydroxybutyrate (P4HB) in massive rotator cuff tears.

Product Number V16063, 14 mins.

# **STATION 31**

# Rotator Cuff Repair Using Collagen Based Bioinductive Implant

Jason Capo, MD, New York, NY John Begly, MD, New York, NY Daniel J. Kaplan, BA, Great Neck, NY William Ryan, BS, New York, NY David Fralinger, MD, New York, NY Eric J. Strauss, MD, New York, NY Robert J. Meislin, MD, New York, NY

Bioimplanttion for rotator cuff repairs is an exciting new area. This video shows the procedural technique, and the implant looks on second-look arthroscopy at 3 month follow-up.

Product Number V16074, 8 mins.

# TRAUMA

Tuesday, March 1 – wednesday, March 2 Academy Hall C

# **STATION 27**

# **Biomechanics of Fractures**

Victor H. Frankel, MD, Kirkland, Washington Daniel J. Kaplan, BA, Great Neck, NY Kenneth A. Egol, MD, New York, NY Kenneth A. Egol, MD, New York, NY

This video provides viewers with perspective on the early days of biomechanical study, as well as an easy-to-understand tutorial on acute fracture mechanics and the role of energy in injury.

Product Number V16024, 9 mins.

# **STATION 28**

**Open Reduction Internal Fixation for Unstable Ankle Fractures - A Case Report and Surgical Technique** *Arvind G. Von Keudell, MD, Boston, MA Michael I. Weaver, MD, Boston, MA* 

External f xation for temporizing unstable ankle fractures are demonstrated in this video.

Product Number V16096, 15 mins.

# **STATION 29**

# 3D Mirror Imaging Models and Precontoured Plates for Acetabular Fractures: Do it Yourself

Francisco Chana Rodríguez, MD, PhD, Madrid, Spain Jose Manuel Rojo-Manaute, MD, PhD, Madrid, Spain Javier Vaquero-Martín, MD, PhD, Madrid, Spain Pablo Gil-Martínez, MD, Madrid, Spain José María Martínez Gómiz, MD, Madrid, Spain Rubén Pérez-Mañanes, Madrid, Spain

The use of preoperative planning, by printing 3D mirror imaging models of the opposite hemipelvis and pre contouring plates over the mold, lead to effectively achieve a predef ned surgical objective and to reduce the inherent risks.

Product Number V16097, 20 mins.

# **STATION 30**

# Intramedullary Nailing for Femoral Shaft Fracture with Excessive Antero-Lateral Bowing

Kyuhyun Yang, Prof, Seoul, Republic of Korea Young-Chang Park, MD, Seoul, Republic of Korea Kang Dong-Hyun Jr, MD, Seoul, Republic of Korea Hyun-Soo Moon, MD, Seoul, Republic of Korea Xuanlin Zheng, MD, Seoul, Republic of Korea

IM nailing is a treatment of choice for atypical femoral fracture (AFF). But, AFF is often associated with antero-lateral femoral bowing usually around the apex of curvature. Insertion of a femoral nail is diff cult due to the mismatch between femur and nail. In our novel technique, for the initial part, technique is similar to the conventional one. However, at the most curved portion, turn targeting guide downward toward the f oor(external rotation of nail). Nail is inserted along the antero-lateral curvature of femur. If the nail was inserted external rotationally, own curvature of femoral nail was correct to patient's anterolateral bowing. This technique's advantages are these; decreased medial gap opening, leg length discrepancy, possibility of iatrogenic fracture.

Product Number V16098, 7 mins.

# STATION 31

Lateral Apporach to Cementless Total Hip Arthroplasty for Femoral Neck Fractures in Patients 70 Years of Age and Older

Myung-Sik Park, MD, Jeonju, Republic of Korea Sun Jung Yoon, MD, PhD, Jeonju, Republic of Korea Seongyup Jeong, Jeonju, Republic of Korea Seung Min Choi Jr, MD, Jeollabuk-Do Jeonju-Si, Republic of Korea

Seung-Ho Kim, Jeno-Ju, Republic of Korea

This study demonstrates that cementless total hip arthroplasty with anterolateral approach for elderly patients can be performed safely without any dislocation and allows the majority of patients to return to independent living and has a low complication rate compared with other approaches without increasing mortality.

Product Number V16099, 6 mins.

# **STATION 32**

Spring Plate as an Adjunct in Posterior Acetabular Wall Fractures; Surgical Technique and Results Ashok Gavaskar, MS, Chennai, India

Naveen Tummala, MS, Chennai, India

The video shows f xation of a comminuted posterior wall fracture with a spring plate in combination with lag screw and buttress plate, which has been shown to provide superior strength of f xation.

Product Number V16100, 13 mins.

# Optimizing Skin Incision Size and Location for a Sliding Hip Screw Fixation

Rodrigo Wulf, MD, Santiago, Chile Cristian Nelson Barrientos Mendoza, MD, Santiago, Chile Alvaor Martinez Herold, MD, Santiago, Chile Ignacio A. Campos, MD, Santiago de Chile, Chile Sebastian Leon, MD, Santiago Chile

A novel method for optimizing skin incision size and location in a sliding hip screw f xation procedure is shown and described. Anatomic as radiological references are shown step by step Real time procedure is shown.

Product Number V160101, 11 mins.

# TUMORS

Tuesday, March 1 – Wednesday, March 2 Academy Hall C

# **STATION 34**

Multiple Exostoses of the Ribs: Video-Assisted Thoracoscopy Excision Luca Labianca, MD, Rome, Italy Daniele Mazza, MD, Fiumicino, Italy Cosma Calderaro, MD, Rome, Italy Carlo Iorio, MD, Rome, Italy Antonello Montanaro, MD, Rome, Italy Francesco Turturro, MD, Rome, Italy Mattia Fabbri, MD, Rome, Italy Andrea Ferretti, MD, Rome, Italy

Video-assisted thoracoscopic surgery is a minimally invasive surgical technique recently used to assist the surgeon to successfully treat symptomatic costal exostoses, that reduces thoracotomy morbidity.

Product Number V16102, 9 mins.

Orthopaedic Video Theater

The scientif c exhibit presenter or co-authors are at their scientif c exhibit daily from 11:30 AM – 12:30 PM to discuss their research and answer any questions.

# **ADULT RECONSTRUCTION HIP**

## Scientif c Exhibit SE01

## Revisiting Cemented Femoral Stem Use in Primary Total Hip Arthroplasty

John A. Scanelli III, MD, Washington, DC Ryan D. Scully, MD, Washington, DC Matthew J. Wilson, FRCS (Ortho), MBBS, Devon, United Kingdom Joseph T. Moskal, MD, Roanoke, VA

Cemented total hip arthroplasty has an excellent long term track record in several national registries with benef cial cost-savings and a low risk of complications in patients over 75 years of age.

## Scientif c Exhibit SE02

## Trunnion Corrosion in Total Hip Arthroplasty

Kenneth Urish, MD, PhD, Sewickley, PA Nadim Hallab, Oak Park, IL Nicholas J. Giori, MD, Stanford, CA Carlos J. Lavernia, MD, South Miami, FL Anton Y. Plakseychuk, MD, Pittsburgh, PA Brian R. Hamlin, MD, Allison Park, PA William M. Mihalko, MD, PhD, Germantown, TN Paul A. Anderson, MD, Madison, WI

The basic science, design issues, evaluation and treatment of trunnion corrosion in THA will be discussed.

## Scientif c Exhibit SE03

Advanced Arthroplasty Techniques for Acetabular Component Placement in Dysplastic Hips Amy Wasterlain, MD, New York, NY Nicole Wake, MS, New York, NY Maxwell Weinberg, MD, New York, NY Jonathan Vigdorchik, MD, Saint Louis, MO

Imaging and 3D-printed life-sized pelvis models ref ecting actual patient cases are used to demonstrate specif c surgical strategies for acetabular component positioning in dysplastic hips.

## Scientif c Exhibit SE04

Periacetabular Osteotomy for Symptomatic Acetabular Dysplasia: Contemporary Concepts, Techniques, and Outcomes Benjamin R. Coobs, MD, Roanoke, VA John C. Clohisy, MD, Saint Louis, MO

This exhibit is an updated review of contemporary concepts, techniques and outcomes of periacetabular osteotomy surgery for managing symptomatic acetabular dysplasia in the skeletally mature patient.

## Scientif c Exhibit SE05

Pelvic Discontinuities Associated with Total Hip Arthroplasties: Evaluation, Treatment, and Results Matthew P. Abdel, MD, Rochester, MN Michael J. Taunton, MD, Rochester, MN Rafael J. Sierra, MD, Rochester, MN Robert T. Trousdale, MD, Rochester, MN

David G. Lewallen, MD, Rochester, MN Daniel J. Berry, MD, Rochester, MN

Pelvic discontinuity (PD) poses a reconstructive problem because one must simultaneously obtain long-term acetabular component stability and create an environment conducive to healing of the PD.

## Scientif c Exhibit SE06

Intraarticular Antibiotic Infusion Is Effective in One-Stage Revision for Infected Total Hip Arthroplasty Leo A. Whiteside, MD, Saint Louis, MO Marcel Roy, PhD, Saint Louis, MO

The results of these two study groups suggest that the failure rate of revision THA with resistant organisms is lower with intraarticular delivery than with other currently available methods.

# Scientif c Exhibit SE07

Understanding Why Dual-Taper Hips Fail Anna Di Laura, MSc, Ruislip, United Kingdom Harry Hothi, BEng, MSc, PhD, Stanmore, United Kingdom Danielle De Villiers, PhD, Stanmore, United Kingdom Kevin Ilo, MBBS, BS, London, United Kingdom Young-Min Kwon, MD, PhD, Boston, MA Paul J. Bills, PhD, MSc, Huddersf eld, United Kingdom Gordon W. Blunn, MD, Middlesex, United Kingdom John Skinner, FRCS, London, United Kingdom Alister Hart, FRCS, London, United Kingdom

Our multi-disciplinary team of surgeons and engineers will present the mechanisms of failure of 100 retrieved dual taper hip arthroplasties, identifying surgical, implant and patient risk factors.

## Scientif c Exhibit SE08

The Anterolateral Approach: The "Other" Anterior Approach to the Hip

Roberto Civinini, MD, Firenze, Italy Christian Carulli, MD, Firenze, Italy Fabrizio Matassi, MD, Firenze, Italy Marco Villano, MD, Firenze, Italy Massimo Innocenti, MD, Firenze, Italy

The antero-lateral approach utilizes an intermuscular interval "anterior" to gluteus medius and it shares the advantages of direct anterior approach of not violating the abductors.

Accuracy of Component Positioning in 1,980 Total Hip

Arthroplasties: A Comparative Analysis by Mode of Guidance Benjamin G. Domb, MD, Oakbrook, IL John M. Redmond, MD, Ponte Vedra, FL Steven S. Louis, MD, Hinsdale, IL Kris J. Alden, MD, PhD, Elmhurst, IL Robert J. Daley, MD, Hinsdale, IL Justin M. Lareau, Hinsdale, IL Alexandra E. Petrakos, Westmont, IL Chengcheng Gui, BS, Westmont, IL Carlos E. Suarez, MD, Mexico City, Mexico

This purpose of this multi-surgeon study was to assess acetabular component placement, leg length discrepancy and global offset discrepancy in total hip arthoplasty, and compare six modes of guidance.

## Scientif c Exhibit SE10

Total Hip Arthroplasty in Obese Patients - Outcomes Using Administrative BMI Data - The Go/No-Go Decision, Part II Menachem M. Meller, MD, Merion, PA Norman A. Johanson, MD, Philadelphia, PA Mark H. Gonzalez, MD, Chicago, IL Edmund Lau, MS, Menlo Park, CA Min-Sun Son, PhD, Philadelphia, PA Nader Toossi, MD, Philadelphia, PA

As we transition from volume to value episodic care in TJA optimizing care and managing risk will be of paramount importance. We present the patient specif c outcomes with regards to obesity and THA.

# ADULT RECONSTRUCTION KNEE

Scientif c Exhibit SE11

Novel Total Knee Implant Designs Do Not Improve Clinical Outcomes in Young Patients Jangwon Park, MD, Seoul, Republic of Korea Young-Hoo Kim, MD, Seoul, Republic of Korea Jun-Shik Kim, MD, Seoul, Republic of Korea

Novel total knee implant designs (high-f ex, mobile-bearing, gender-specif c and oxidized zirconium knees) do not improve clinical outcomes in 368 young patients (51.1 years) at 11.1 years follow-up.

## Scientif c Exhibit SE12

Risk Stratif cation, Length of Stay, and Readmission Rates after TKA: An Optimization Function Vincent D. Pellegrini, MD, Charleston, SC Dawn Robertson, MS, Charleston, SC Jacob M. Drew, MD, Charleston, SC Harry A. Demos, MD, Charleston, SC

Severity of illness strongly affects both length of stay (LOS) and readmission after TKA. Since readmission penalties are substantial, future strategies will view LOS as an optimization function.

## Scientif c Exhibit SE13

Findings from a Specialized Knee Clinic for Painful Knee Arthroplasty - What Have We Learned?

Michael T. Hirschmann, MD, Bruderholz, Switzerland Helmut Rasch, MD, Bruderholz, Switzerland Niccolò Rotigliano, DMed, Bruderholz, Switzerland Anna Hirschmann, MD, Therwil, Switzerland Johann Henckel, MD, London, United Kingdom Alister Hart, FRCS, London, United Kingdom Beat Hintermann, MD, Liestal, Switzerland

Typical causes of pain, instability and stiffness after knee arthroplasty identif ed by a standardized diagnostic algorithm including novel imaging (CT, MRI, 3D-SPECT/CT) are interactively presented.

## Scientif c Exhibit SE14

The Detection of Small Periprosthetic Bone Defects Around the Oxidized Zirconium Femoral Component Yukihide Minoda, MD, Osaka, Japan Mitsuhiko Ikebuchi, MD, Abeno-ku Osaka, Japan Shigekazu Mizokawa, MD, PhD, Osaka, Japan Yoichi Ohta, Osaka, Japan Kazumasa Yamamura, MD, Osaka City Osaka, Japan Kazutaka Sugimoto, MD, Tokyo, Japan Shingo Baba, Kyoto, Japan Akira Kasai, BS, Kyoto-City, Japan Hiroaki Nakamura, MD, Osaka, Japan

For the early detection of small bone defects around the oxidized zirconium femoral component, MRI is advantageous over plain radiography, tomography, and CT in terms of sensitivity and specif city.

## Scientif c Exhibit SE15

Geometric Constraint of Total Knee Arthroplasty Designs: Addressing Patient Needs Edward Morra, MSME, Cleveland, OH A S. Greenwald, DPhil Oxon, Cleveland Heights, OH

This study computationally def nes tibial-femoral geometric constraint for contemporary TKA designs to assist implant selection for presenting soft tissue pathology, helping to assure a good outcome.

## Scientif c Exhibit SE16

LIMA: Lifetime Initiative for the Management of Arthritis (LIMA): Understanding Arthritis as a Disease State Richard Iorio, MD, New Rochelle, NY Alessandra Szulc, MA, New York, NY Philip Band, PhD, New York, NY Thomas A. Einhorn, MD, New York, NY Joseph A. Bosco III, MD, Irvington, NY Laith M. Jazrawi, MD, New York, NY James D. Slover, MD, New York, NY Raj Karia, MPH, New York, NY Joseph D. Zuckerman, MD, New York, NY

The Lifetime Initiative for the Management of Arthritis (LIMA) is designed to provide a pragmatic population health management tool which brings value based care to OA patients.

Distal Femoral Periprosthetic Total Knee Arthroplasty Fractures: Management Options and Treatment Approach

Aaron J. Johnson, MD, Glen Burnie, MD Theodore T. Manson, MD, Bel Air, MD Farshad Adib, MD, Baltimore, MD Vincent Ng, MD, Ellicott City, MD

We have provided a comprehensive algorithm to approach periprosthetic TKA fractures that is appropriate for any generalist or subspeciality-trained surgeon.

## Scientif c Exhibit SE18

Gastrocnemius Rotational Flap as a Solution for Extensor Mechanism Def ciency in Revision Total Knee Arthroplasty Benjamin M. Frye, MD, Morgantown, WV Matthew J. Dietz, MD, Morgantown, WV Elie S. Ghanem, MD, Danville, PA Thomas R. Bowen, MD, Danville, PA Edgardo Parrilla, BS, Danville, PA

A medial gastrocnemius rotational f ap can be used as an alternative to allograft or mesh reconstruction for extensor mechanism def ciency in cases of prior infection or soft tissue def ciency.

## Scientif c Exhibit SE19

Mobile Bearing Unicompartmental Knee Arthroplasty: How Closely Does it Replicate Native Knee Biomechanics? Lennart Scheys, PhD, Pellenberg, Belgium Joshua Slane, PhD, Pellenberg, Belgium Philipp Otto Georg Dworschak SR, MD, Marburg, Germany Susanne Fuchs-Winkelmann, MD, Marburg, Germany Geert Peersman, MD, Schilde, Belgium Thomas J. Heyse, MD, Marburg, Germany

Results agree closely with those previously observed for f xedbearing UKA: optimal balancing is diff cult and under-stuff ng results in kinematics that are the closest to the native knee.

## Scientif c Exhibit SE20

#### The Painful Total Knee Arthroplasty: Diagnosis and Treatment

Umberto Cottino, Pecetto Torinese, Italy Federica Rosso, MD, Turin, Italy Matteo Bruzzone, MD, Torino, Italy Federico Dettoni, MD, Torino, Italy Davide E. Bonasia, MD, Torino, Italy Davide Blonna, MD, Rochester, MN Antongiulio Marmotti, MD, Torino, Italy Roberto Rossi, MD, Torino, Italy

We propose a step-by-step approach to the failed total knee arthroplasty based on a literature review. Diagnosis and treatment have been analyzed.

## Scientif c Exhibit SE21

#### Non-Arthroplasty Options in the Young Patient with Knee Osteoarthritis Louis C. Okafor, MD, Baltimore, MD

Alex Johnson, MD, Baltimore, MD Nigel Hsu, MD, Baltimore, MD Savyasachi C. Thakkar, MD, Baltimore, MD Bashir A. Zikria, MD, MSc, Baltimore, MD Yalda J. Siddiqui, BS, Murrieta, CA

Non-arthroplasty options in the young patient with knee osteoarthritis delays arthroplasty surgery and/or improves quality of life for patients – allowing them to get back to activities they enjoy.

## **BASIC RESEARCH**

### Scientif c Exhibit SE22

Cellular Therapies for Musculoskeletal Tissue Regeneration J T. Watson, MD, Saint Louis, MO Lynne C. Jones, PhD, Baltimore, MD Stuart B. Goodman, MD, Redwood City, CA

This scientif c exhibit will provide guidance for the practicing orthopaedic surgeon when deciding to use cellular therapies for tissue regeneration, based upon laboratory and clinical studies.

#### Scientif c Exhibit SE23

Fixation of Soft Tissue to Bone: Techniques, Implants, and Fundamentals

Rachel M. Frank, MD, Chicago, IL Adam B. Yanke, MD, Chicago, IL Peter N. Chalmers, MD, Chicago, IL Eli T. Sayegh, BS, New York, NY Akshay Jain, Oak Brook, IL Nikhil N. Verma, MD, Chicago, IL Anthony A. Romeo, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL Bernard R. Bach Jr, MD, River Forest, IL

This exhibit provides a comprehensive framework based on the best-available evidence to help surgeons understand and apply the fundamental principles of soft tissue f xation to bone.

# FOOT AND ANKLE

#### Scientif c Exhibit SE24

The Role of Diagnostic Injections About the Foot and Ankle Johnathan Bernard, MD, MPH, Ashburn, VA Eric W. Tan, MD, Los Angeles, CA Alex Johnson, MD, Baltimore, MD Eric Dein, Baltimore, MD Malick Bachabi, MD, Baltimore, MD Lew C. Schon, MD, Baltimore, MD

Physical exam coupled with diagnostic injections accurately and eff ciently identify pathology about the foot and ankle. The role of foot and ankle injections needs better def nition.

# Multi-Modal Analysis of Failed Total Ankle Arthroplasty

Implants Retrieved at Multiple Centers Zachary Vaupel, MD, Royal Oak, MI Erin A. Baker, MS, Royal Oak, MI John G. Anderson, MD, Grand Rapids, MI Donald R. Bohay, MD, Grand Rapids, MI J C. Coetzee, MD, Edina, MN Mark S. Myerson, MD, Baltimore, MD Gearin Green, MD, Royal Oak, MI Meagan Salisbury, BS, Royal Oak, MI Michelle A. Padley, BS, CRC, Grand Rapids, MI Kevin C. Baker, PhD, Royal Oak, MI Paul T. Fortin, MD, Royal Oak, MI

A multi-center study of 112 total ankle arthroplasty systems retrieved from four sites throughout the U.S. reveals trends in component damage, local tissue effects, and radiographic changes.

## Scientif c Exhibit SE26

Management of Acute Ruptures of the Achilles Tendon - Healing the Achilles' Heel

Eric Tan, MD, Los Angeles, CA Nigel Hsu, MD, Baltimore, MD Johnathan Bernard, MD, MPH, New York, NY David M. Macias, MD, Boise, ID Paul Talusan, MD, Ann Arbor, MI Jacob Wisbeck, MD, Severna Park, MD Gregory P. Guyton, MD, Baltimore, MD Stuart D. Miller, MD, Owings Mills, MD Lew C. Schon, MD, Baltimore, MD

The optimal treatment of acute ruptures of the Achilles tendon remains controversial. We reviewed the literature on all management options, including orthobiologics, and postoperative rehabilitation.

# HAND AND WRIST

## Scientif c Exhibit SE27

Distal Radius Fractures: Tips to Prevent Complications and Management if They Occur Christopher Klifto, MD, New York, NY Michael S. Guss, MD, New York, NY Anthony Sapienza, MD, New York, NY Syngil S. Yang, MD, New York, NY John T. Capo, MD, New York, NY Nader Paksima, DO, New York, NY Kevin Klifto, Moorestown, NJ

A literature review of non-operative and operative complications of distal radius fractures, techniques that can minimize complications, and how to treat the complications once they occur.

# PEDIATRIC

### Scientif c Exhibit SE28

Pediatric Orthopaedic Society of North America: Challenges of Pediatric Orthopedic Implant Design and Approval Matthew A. Halanski, MD, Madison, WI Michael W. Shrader, MD, Madison, MI Michael G. Vitale, MD, MPH, Irvington, NY Brian Snyder, MD, PhD, Boston, MA

FDA approval of pediatric orthopedic implants can be a challenging process. This exhibit highlights these challenges, describes the regulatory process and provides recent success stories.

## **Scientif c Exhibit SE29**

Approach to Diagnosis and Treatment of Shoulder and Elbow Pain in the Skeletally Immature Athlete

Ryan Mlynarek, MD, BS, Ann Arbor, MI Alexander Weber, MD, Ann Arbor, MI Jeffrey Nepple, MD, Saint Louis, MO Joshua S. Dines, MD, New York, NY Xinning Li, MD, Lexington, MA Christopher S. Ahmad, MD, New York, NY Asheesh Bedi, MD, Ann Arbor, MI

The purpose of this exhibit is to present the current diagnosis strategies and treatment options for pediatric and adolescent throwing athletes presenting with upper extremity pain.

### Scientif c Exhibit SE30

Algorithm of Decision Making and Surgical Approach in Treatment of Relapsed Congenital Clubfoot after Walking Age *Cesare Faldini*, MD, Bagheria, Italy

Francesco Traina, MD, Bagheria, Italy Francesco Traina, MD, Bologna, Italy Matteo Nanni, MD, Bagheria, Italy Ilaria Sanzarello, MD, Messina, Italy Daniele Fabbri, MD, Bologna, Italy Raffaele Borghi, MD, Bologna, Italy Fabrizio Perna, Bologna, Italy Domenico Fenga, MD, Messina, Italy Sandro Giannini, MD, Bologna, Italy

Aim of this scientif c exhibit is to present an algorithm of decision making and surgical approach in the treatment of relapsed congenital clubfoot.

# **PRACTICE MANAGEMENT**

#### Scientif c Exhibit SE31

3D Printing: The Latest Innovations and Applications in Orthopaedic Surgery Stephen Yu, MD, New York City, NY Hamadi Murphy, New York, NY Austin Ramme, MD, PhD, New York, NY Richard Iorio, MD, New Rochelle, NY Peter S. Walker, PhD, New York, NY Jonathan Vigdorchik, MD, New York, NY

Orthopaedics is beginning to tap into the potential of 3D printing, offering virtually limitless surgical, clinical and educational applications. We aim to present current and future innovation.

Osteoporosis and the Orthopaedic Surgeon's Role Arthur Manoli III, MD, New York, NY Roy Davidovitch, MD, New York, NY Nirmal C. Tejwani, MD, New York, NY Frank A. Liporace, MD, Englewd Clfs, NJ Sanjit R. Konda, MD, Rye, New York Kenneth A. Egol, MD, New York, NY

Orthopaedic surgeons are in a unique position to contribute to the diagnosis and management of osteoporosis.

# Scientif c Exhibit SE33

Medical Liability in Cyperspace: Legal and Ethical Impediments to Practicing Telemedicine in 2016 Thomas B. Fleeter, MD, Reston, VA Robert R. Slater Jr, MD, Folsom, CA John P. Lyden, MD, New York, NY Kevin B. Shrock, MD, Fort Lauderdale, FL Michael M. Albrecht, MD, Austin, TX David J. Gandy, MD, Jackson, MS

The AAOS Medical liability committee addresses legal issues in cybermedicine including reimbursement, conf icting state and federal laws, liability, consent crossing state lines and teleprescribing.

# Scientif c Exhibit SE34

Occupational Hazards of Orthopaedic Surgery: What's Known, What's Not, and How to Protect Ourselves Rachel S. Rohde, MD, Southf eld, MI Claudette M. Lajam, MD, Larchmont, NY Julie E. Adams, MD, Hixson, TN Jennifer M. Wolf, MD, Farmington, CT

The occupational risks to the practicing orthopaedic surgeon are reviewed. Specif c strategies to prevent or minimize exposure and to manage occurrences are suggested.

## Scientif c Exhibit SE35

## Real-Time Video Auditing: A Novel Technology to Improve Orthopaedic Operating Room Eff ciency Yonah Heller, MD, New Hyde Park, NY Adam S. Levin, MD, Baltimore, MD Sara Merwin, MPH, New Hyde Park, NY Martin Lesser, PhD, Manhasset, NY Ezra Kassin, MD, New Hyde Park, NY Frank Overdyk, MD, MS, New Hyde Park, NY

Nicholas A. Sgaglione, MD, Great Neck, NY

Remote Real Time Video Auditing was used to measure OR processes for orthopaedic procedures, which was nested in a larger initiative to improve overall OR eff ciency.

## Scientif c Exhibit SE36

Teaching Orthopaedic Residents Strategies to Address Bioethical Challenges in Research and Clinical Care Paul Levin, MD, Bronx, NY

The AAOS committee on bioethics has developed an on-line case-based series of ethics module to teach the basic principles of bioethics and their application to the daily challenges of patient care.

## Scientif c Exhibit SE37

Wearable Technology as a Means for Enhancing Postoperative Care and Outcome Monitoring in Orthopaedic Surgery Jay Reidler, MD, MPH, Baltimore, MD Alex Johnson, MD, Baltimore, MD Richard L. Skolasky Jr, ScD, Baltimore, MD Babar Shaf q, MD, Clarksville, MD Lee H. Riley III, MD, Baltimore, MD Greg M. Osgood, MD, Baltimore, MD

Wearable technologies are rapidly improving and demonstrate great potential to enhance post-operative care through activity tracking, rehabilitation guidance, and real-time outcome monitoring.

# **SHOULDER AND ELBOW**

## Scientif c Exhibit SE38

Management of Glenohumeral Osteoarthritis in the Young Patient

Gregory L. Cvetanovich, MD, Chicago, IL Brandon Erickson, MD, Chicago, IL Rachel M. Frank, MD, Chicago, IL Nikhil N. Verma, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL Bernard R. Bach Jr, MD, River Forest, IL Gregory P. Nicholson, MD, Chicago, IL Anthony A. Romeo, MD, Chicago, IL

Management of glenohumeral osteoarthritis in the young active patient presents challenges given the high failure rates of arthroplasty, and we review non-arthroplasty treatment options and outcomes.

## Scientif c Exhibit SE39

Massive Rotator Cuff Tears in Young Patients: What is the State of the Art?

William Mosenthal, MD, Chicago, IL Kyle Borque, MD, Chicago, IL Cory M. Stewart, MD, Chicago, IL Eugene Ek, MD, PhD, Melbourne, Australia Jason L. Koh, MD, Winnetka, IL Lewis L. Shi, MD, Chicago, IL

An overview of the indications, techniques, and outcomes of various massive rotator cuff tears treatments, highlighting current literature focusing on young, active patients.

## Scientif c Exhibit SE40

Presentation, Diagnosis, and Treatment of Postoperative Shoulder Infection

Harpreet Bawa, MD, Chicago, IL Srikanth Divi, MD, Chicago, IL Jason L. Koh, MD, Winnetka, IL John W. Sperling, MD, MBA, Rochester, MN Lewis L. Shi, MD, Chicago, IL

Postoperative shoulder infection can adversely affect patient function and surgical outcome. This exhibit will discuss the presentation, diagnosis, and management of postoperative shoulder infections.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

Intrinsic Causes for Rotator Cuff Disease Usman Ali M. Syed, BS, Philadelphia, PA Daniel E. Davis, MD, Philadelphia, PA Charles L. Getz, MD, Newton Square, PA Andrzej Fertala, PhD, Philadelphia, PA Joseph A. Abboud, MD, Bryn Mawr, PA

The goal is to show the intrinsic causes for rotator cuff disease to aid surgeons in eventually developing therapeutic treatments which can alter the environment of the rotator cuff.

## Scientif c Exhibit SE42

#### Biomechanical and Clinical Comparison of Suture Techniques in Arthroscopic Rotator Cuff Repair

Meghan E. Bishop, MD, Philadelphia, PA Robert MacLeod, MD, Tinton Falls, NJ Fotios P. Tjoumakaris, MD, Egg Harbor Township, NJ Sommer Hammoud, MD, Doylestown, PA Steven B. Cohen, MD, Media, PA Christopher Dodson, MD, Philadelphia, PA Michael G. Ciccotti, MD, Philadelphia, PA Kevin B. Freedman, MD, Horsham, PA

A review of biomechanical and clinical outcomes of various suture conf gurations currently being utilized in practice for arthroscopic rotator cuff repair.

## Scientif c Exhibit SE43

Proximal Biceps Management: Open and Arthroscopic Tenodesis Neal Shah, BS, Naperville, IL David Savin, MD, Chicago, IL Cyrus M. Press, MD, Fairfax Station, VA Benjamin Goldberg, MD, Chicago, IL

Proximal biceps or superior labral pathology can be successfully managed all arthroscopically or with a combined arthroscopic tenotomy and intragroove or subpectoral tenodesis.

# Scientif c Exhibit SE44

# Muscle Changes Following Rotator Cuff Pathology - Implications for Treatment

Robert Stewart, MD, Chicago, IL Kyle Borque, MD, Chicago, IL Eugene Ek, MD, PhD, Melbourne, Australia Jason L. Koh, MD, Winnetka, IL Lewis L. Shi, MD, Chicago, IL

Atrophy and fatty inf ltration of rotator cuff musculature following tendon tears is well described. This exhibit seeks to educate providers about the pathogenesis and clinical value of this process.

## Scientif c Exhibit SE45

The Osteoporotic Proximal Humerus Fractures: Predicting Fixation Failure and Techniques for Augmentation Daniel E. Davis, MD, Wilmington, DE Joseph A. Abboud, MD, Bryn Mawr, PA Luke S. Austin, MD, Egg Harbor Township, NJ Charles L. Getz, MD, Newton Square, PA Anand M. Murthi, MD, Baltimore, MD Surena Namdari, MD, MSc, Philadelphia, PA

The Osteoporotic Proximal Humerus Fractures: predicting f xation failure and techniques for augmentation.

## **Scientif c Exhibit SE46**

Does it Work and Is It Worth It? Utilization of Grafts in the Treatment of Complex Rotator Cuff Repair Jia-Wei Kevin Ko, MD, Seattle, WA Alexander W. Aleem, MD, Saint Louis, MO Daniel C. Acevedo, MD, Calabasas, CA Ryan P. Donegan, MD, Lexington, KY Mark D. Lazarus, MD, Philadelphia, PA Joseph A. Abboud, MD, Bryn Mawr, PA Surena Namdari, MD, MSc, Philadelphia, PA

Grafts can be used in the treatment of challenging rotator cuff tears for either augmentation or reconstruction.

## Scientif c Exhibit SE47

Management of Adhesive Capsulitis: Epidemiology, Diagnosis, Imaging, Treatment, and Outcomes Xinning Li, MD, Boston, MA Emily Curry, BA, Boston, MA Kiera Kingston, B.S., Boston, MA Antonio Cusano, B.S., Avon, CT Josef K. Eichinger, MD, Tacoma, WA Joshua S. Dines, MD, New York, NY Asheesh Bedi, MD, Ann Arbor, MI Elizabeth G. Matzkin, MD, Newton, MA

This scientif c exhibit provides an epidemiological analysis, diagnosis, imaging, and review of both medical and surgical management of patients with adhesive capsulitis.

## Scientif c Exhibit SE48

Management of Adult Elbow Fracture-Dislocations John Jennings, MD, Philadelphia, PA Christopher L. Haydel, MD, Philadelphia, PA Saqib Rehman, MD, Philadelphia, PA

While surgical treatment of complex elbow dislocations is historically challenging, a systematic approach will guide treatment in order to restore stability, optimize function, and avoid stiffness.

# Evidence-Based Approach to Rotator Cuff Rehabilitation after Repair

Kenneth S. Chakour, MD, Chicago, IL Jason Somogyi, MD, Chicago, IL Joseph B. Cohen, MD, Chicago, IL Steven Jackson, PhD, PT, Chicago, IL Jason L. Koh, MD, Winnetka, IL Jon J. Warner, MD, Boston, MA Lewis L. Shi, MD, Chicago, IL

Rotator cuff tears frequently impair the quality of life of those injured. This exhibit reviews the current research on clinical outcome of RTC surgery as it relates to rehabilitation protocols.

## Scientif c Exhibit SE50

# New York Orthopaedic Hospital - 150 years of Progress in Orthopaedic Surgery

James Lin, MD, MS, New York, NY Anca Meret, MS, New York, NY Jonathan B. Ticker, MD, Merrick, NY Louis U. Bigliani, MD, New York, NY William N. Levine, MD, New York, NY

This exhibit celebrates 150 years of advances in orthopedic surgery at the New York Orthopaedic Hospital with emphasis on leaders, landmark scientif c breakthroughs, and rarely seen media.

## SPINE

## Scientif c Exhibit SE51

Total Disc Arthroplasty: The Current and Future Use of an Evolving Technology in Spine Surgery Saqib Hasan, MD, New York, NY Karan S. Patel, New York, NY Wesley Bronson, MD, Scarsdale, NY William Ryan, BS, New York, NY Themistocles S. Protopsaltis, MD, Closter, NJ Jeffrey A. Goldstein, MD, New York, NY Thomas J. Errico, MD, New York, NY

We present an interactive review of the evolution and outcomes of total disc arthroplasty in an effort to elucidate its current role in motion-preserving spine surgery.

## Scientif c Exhibit SE52

#### Inclusion of Asymptomatic Spondylotic Levels Decreased Revision Rates for Adjacent Segment Disease Following ACDF

Caleb J. Behrend, MD, Roanoke, VA Alan S. Hilibrand, MD, Philadelphia, PA Jonathan J. Carmouche, MD, Roanoke, VA Conor O'Neill, Roanoke, VA Zakk Walterscheid, BS, Roanoke, VA Paul W. Millhouse, MD, Philadelphia, PA Alexander Vaccaro, MD, PhD, Gladwyne, PA Todd J. Albert, MD, New York, NY

A multimedia presentation examining the incidence of adjacent segment disease following ACDF with an emphasis on the role of including asymptomatic adjacent degenerative levels.

## Scientif c Exhibit SE53

Minimally Invasive Spine Surgery for Thoracolumbar Trauma: Indications, Techniques, and Evidence in 2016 Brian Shiu, MD, Baltimore, MD Mark Shasti, MD, Timonium, MD Ehsan Jazini, MD, Baltimore, MD Xuyang Song, MD, Baltimore, MD Eugene Y. Koh, MD, PhD, Baltimore, MD Daniel E. Gelb, MD, Baltimore, MD Kelley E. Banagan, MD, Baltimore, MD Steven C. Ludwig, MD, Baltimore, MD

This exhibit provides a comprehensive literature review on the outcomes of minimally invasive spine surgery for thoracolumbar trauma as well as our experience over the past decade.

#### Scientif c Exhibit SE54

Novel Autograft Site in Anterior Cervical Discectomy/Fusion: A Multifaceted Description and Analysis Conor O'Neill, Roanoke, VA Zakk Walterscheid, BS, Roanoke, VA

Caleb J. Behrend, MD, Roanoke, VA Jonathan J. Carmouche, MD, Roanoke, VA

A multidisciplinary evaluation of a new technique for autologous grafting in ACDF evaluated through plain radiographic, CT, biomechanical, retrospective and prospective clinical perspectives.

# SPORTS MEDICINE/ARTHROSCOPY

## Scientif c Exhibit SE55

# AAOS Research Development Committee: Biologic Treatments of Orthopaedic Injuries

Robert F. LaPrade, MD, PhD, Vail, CO Constance R. Chu, MD, Redwood City, CA Constance R. Chu, MD, Redwood City, CA Jason L. Koh, MD, Winnetka, IL Jason L. Dragoo, MD, Redwood City, CA Erin L. Ransford, Rosemont, IL

This exhibit will examine the current state of the art and identify knowledge gaps in emerging biologic treatments for articular cartilage, muscle, tendon, and bone injuries.

#### Scientif c Exhibit SE56

MRI Physics: What Every Orthopaedic Surgeon Should Know Stephanie Swensen, MD, New York, NY Michael S. Day, MD, New York, NY Maxwell Weinberg, MD, New York, NY Michael J. Alaia, MD, New York, NY Gregory Chang, MD, New York, NY Michael Recht, MD, New York, NY Eric J. Strauss, MD, New York, NY Laith M. Jazrawi, MD, New York, NY

This exhibit complements traditional orthopaedic functional understanding of musculoskeletal imaging by enhancing understanding of magentic resonance imaging fundamentals.

#### Treatment of Focal Chondral Defects of the Knee: A Review of Current Concepts and Therapies

Benedict U. Nwachukwu, MD, MBA, New York, NY Samuel Rosas, MD, Fort Lauderdale, FL William W. Schairer, MD, New York, NY Kelms Amoo-Achampong, BA, Somerset, NJ Brian Rebolledo, MD, New York, NY Answorth A. Allen, MD, New York, NY Frank McCormick, MD, Pompano Beach, FL

Advances in tissue engineering and cell delivery have introduced new therapies to address knee cartilage injury. As part of this exhibit we review current concepts and therapies.

## Scientif c Exhibit SE58

### Osteotomies About the Knee in the Young Active Patient Alex Johnson, MD, Baltimore, MD Malick Bachabi, MD, Baltimore, MD Eric Dein, Baltimore, MD Sophia A. Strike, MD, Baltimore, MD Johnathan Bernard, MD, MPH, Ashburn, VA Bashir A. Zikria, MD, MSc, Baltimore, MD

Osteotomies are a safe and effective way to surgically address pathology about the knee in young active patients.

## Scientif c Exhibit SE59

# Meniscus Replacement, Transplantation, and Regeneration: State of the Art in 2015

Seth Sherman, MD, Columbia, MO Trevor R. Gulbrandsen, BS, Columbia, MO Farrah A. Monibi, DVM, Columbia, MO Clayton W. Nuelle, MD, Columbia, MO James L. Cook, DVM, PhD, Columbia, MO James P. Stannard, MD, Columbia, MO

Surgical innovation and evolving techniques have led to expanding indications for the use of MR and MAT in patients with symptomatic meniscal def ciency.

## Scientif c Exhibit SE60

Biologic Scaffolds for Management of Articular Cartilage Lesions: Emerging Indications, Techniques, and Outcomes Kristofer Jones, MD, Los Angeles, CA Dean Wang, MD, Santa Monica, CA Brian Rebolledo, MD, New York, NY Aaron J. Krych, MD, Rochester, MN Danyal Nawabi, MD, FRCS (Orth), New York, NY David R. McAllister, MD, Los Angeles, CA Riley J. Williams, MD, New York, NY

In this exhibit, we will review emerging applications for biologic scaffolds for the treatment of cartilage defects.

# Scientif c Exhibit SE61

Principles in Diagnostic Arthroscopy Brandon Erickson, MD, Chicago, IL Gregory L. Cvetanovich, MD, Chicago, IL Rachel M. Frank, MD, Chicago, IL CDR (ret) Matthew T. Provencher, MD, Boston, MA Robert A. Sershon, MD, Chicago, IL Annie Tilton, Chicago, IL Nikhil N. Verma, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL Bernard R. Bach Jr, MD, River Forest, IL

With the proper knowledge base of relevant anatomy as well as proper arthroscopic techniques, the orthopaedic surgeon can be very effective in treating a multitude of conditions minimally invasively.

## Scientif c Exhibit SE62

An Evidence-Based Algorithm of Surgical Treatment Strategies for Osteochondral Lesions of the Talus Christopher D. Murawski, Pittsburgh, PA Youichi Yasui, MD, Tokyo, Japan Arianna Gianakos, New York, NY MaCalus Hogan, MD, Gibsonia, PA

The purpose of this scientif c exhibit is to provide a comprehensive summary of the surgical treatment strategies available for OLT, as well as to outline an evidence-based treatment algorithm.

### Scientif c Exhibit SE63

### Evaluation and Treatment of Common Sport-Specif c Orthopaedic Injuries: Guide for the Team Physician

Alexander Weber, MD, Ann Arbor, MI Rachel M. Frank, MD, Chicago, IL Nikhil N. Verma, MD, Chicago, IL Anthony A. Romeo, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL Joshua S. Dines, MD, New York, NY Bryan T. Kelly, MD, New York, NY Asheesh Bedi, MD, Ann Arbor, MI

John G. Kennedy, MD, New York, NY

The purpose of this exhibit is to provide the team physician with a detailed approach to the evaluation and management of common on-f eld orthopaedic injuries and guidelines for return to play.

## Scientif c Exhibit SE64

Women's Health Issues Advisory Board: Sex-Based Considerations in Caring for Common Sports Injuries Laura M. Bruse Gehrig, MD, Henderson, NV Margaret M. Baker, MD, Port Angeles, WA Cordelia W. Carter, MD, Westport, CT Mary L. Ireland, MD, Lexington, KY Christina M. Hylden, MD, Fort Sam Houston, TX Anthony E. Johnson, MD, Fort Sam Houston, TX Elizabeth G. Matzkin, MD, Boston, MA Erin L. Ransford, Rosemont, IL

This exhibit will explore the epidemiology of sex-based differences and discrepant incidence rates in common sports injuries. Racial differences will also be included if reported.

Superior Labral Anterior-Posterior Tears 2016 Update: Ignore, Debride, Repair, or Tenodese? Brandon Erickson, MD, Chicago, IL Peter N. Chalmers, MD, Chicago, IL Gregory L. Cvetanovich, MD, Chicago, IL Rachel M. Frank, MD, Chicago, IL Bryan M. Saltzman, MD, Chicago, IL Bernard R. Bach Jr, MD, River Forest, IL Brian J. Cole, MD, MBA, Chicago, IL Anthony A. Romeo, MD, Chicago, IL Nikhil N. Verma, MD, Chicago, IL

Management of SLAP tears is challenging and outcomes can be unpredictable. Our exhibit providea a comprehensive framework for making treatment decisions for these patients to optimize outcomes.

# Scientif c Exhibit SE66

Atypical Hip Joint Impingement: Preoperative, Imaging, Therapeutic, and Surgical Considerations Sandeep Mannava, MD, PhD, Winston Salem, NC Robert E. Boykin, MD, Asheville, NC Austin V. Stone, MD, Winston-Salem, NC Trevor R. Gaskill, MD, Portsmouth, VA Michelle Bruner, MS ATC, Asheville, NC Elizabeth A. Howse, MD, New Hyde Park, NY Alejandro Marquez-Lara, MD, Winston-Salem, NC Allston J. Stubbs IV, MD, Winston Salem, NC

A modern multidisciplinary hip arthroscopy program has been implemented with a particular emphasis on the indications and peri-operative management of atypical hip impingement.

# Scientif c Exhibit SE67

An Evidence-Based Approach for Diagnosing Pathology of the Long Head of the Biceps Samuel Rosas, MD, Fort Lauderdale, FL Benedict U. Nwachukwu, MD, MBA, New York, NY Michael K. Krill, ATC, MS, Columbus, OH Shawna L. Watson, BA, Shalimar, FL Kelms Amoo-Achampong, BA, Somerset, NJ Frank McCormick, MD, Pompano Beach, FL

The purpose of this exhibit is to present clinicians with an overview of biceps pathology spectrum and an evidence-based clinical algorithm and decision analysis for its evaluation and diagnosis.

# Scientif c Exhibit SE68

Extraarticular Reconstruction in ACL Def cient Knee Revisited: Anatomy, Biomechanics, and Clinical Implications Andrea Ferretti, MD, Rome, Italy Edoardo Monaco, MD, Rome, Italy Fabio Conteduca, MD, Roma, Italy Angelo De Carli, MD, Rome, Italy Mattia Fabbri, Rome, Italy Antonio Ponzo, MD, Roma, Italy Priscilla Di Sette, Rome, Italy

The role of extraarticular reconstruction in ACL def cient knee is revisited from different point of view: anatomy, biomechanics and clinical implications.

# Scientif c Exhibit SE69

Advances in Hip Arthroscopy: From Bench to Bedside Benjamin Kuhns, Chicago, IL Rachel M. Frank, MD, Chicago, IL Alexander Weber, MD, Ann Arbor, MI Brandon Erickson, MD, Chicago, IL Gregory L. Cvetanovich, MD, Chicago, IL David M. Levy, MD, Chicago, IL John Clohisy, MD, St. Louis, MO Christopher Larson, MD, Edina, MN Charles A. Bush-Joseph, MD, Chicago, IL Asheesh Bedi, MD, Ann Arbor, MI Shane J. Nho, MD, Chicago, IL

This exhibit provides a comprehensive framework to assess recent advances in hip arthroscopy with a focus on indications, techniques, and disease specif c management.

## Scientif c Exhibit SE70

Proximal Hamstring Injury: Diagnosis and Treatment Charles P. Hannon, MD, New York, NY Benjamin Kuhns, Chicago, IL Timothy J. Luchetti, MD, Chicago, IL David M. Levy, MD, Chicago, IL Charles A. Bush-Joseph, MD, Chicago, IL Shane J. Nho, MD, Chicago, IL

This exhibit will provide an overview of our current understanding of the diagnosis and management of proximal hamstring injuries.

# Scientif c Exhibit SE71

Anatomic Layers of the Hip David M. Levy, MD, Chicago, IL Gregory L. Cvetanovich, MD, Chicago, IL Benjamin Kuhns, Chicago, IL Rachel M. Frank, MD, Chicago, IL Brandon Erickson, MD, Chicago, IL Bryan T. Kelly, MD, New York, NY Michael J. Salata, MD, Cleveland, OH Richard C. Mather III, MD, Durham, NC Shane J. Nho, MD, Chicago, IL

This scientif c exhibit presents a discussion of the complex interaction between multiple anatomic layers of the hip.

# Scientif c Exhibit SE72

The Role of Anterolateral Capsule on Stability of the Knee: A Multidisciplinary Approach Amir Ata Rahnemai Azar, MD, Pittsburgh, PA Daniel Guenther, MD, Pittsburgh, PA Sebastian Irarrazaval, Pittsburgh, PA Fabio V. Arilla, MD, Estancia Velha, Brazil Kevin M. Bell, MS, Pittsburgh, PA James J. Irrgang, PhD, Pittsburgh, PA Richard E. Debski, PhD, Pittsburgh, PA Freddie H. Fu, MD, Pittsburgh, PA Volker Musahl, MD, Pittsburgh, PA

The role of anterolateral capsule on stability of the knee: A multidisciplinary approach.

# 260 Educational Programs

# Scientif c Exhibit SE73

The Weak Link in ACL Reconstruction: A Guide to Graft Fixation Device Selection Maxwell Weinberg, MD, New York, NY Christopher Looze, MD, New York, NY Steven Shamah, Brooklyn, NY Michael J. Alaia, MD, New York, NY Guillem Gonzalez-Lomas, MD, Jersey City, NJ Eric J. Strauss, MD, New York, NY Laith M. Jazrawi, MD, Brooklyn, NY

The current concepts in ACL graft f xation will be reviewed including the biology of graft healing, as well as the various femoral and tibial devices available for graft f xation.

# TRAUMA

## Scientif c Exhibit SE74

# Biomaterials and Biomechanics for Orthopaedic Trauma Surgeons

Philipp Leucht, MD, New York City, NY Abraham M. Goch, New York, NY Oran D. Kennedy, PhD, New York, NY Kenneth A. Egol, MD, New York, NY

This exhibit serves to review and summurize emerging concepts in orthopaedic biomechanics and biomaterials.

## Scientif c Exhibit SE75

# Proximal Humerus Fractures: A Spectrum of Fixation and Reconstructive Techniques

Bryan M. Saltzman, MD, Chicago, IL Brandon Erickson, MD, Chicago, IL Joshua Harris, MD, Bellaire, TX Anil Gupta, MD, MBA, Ottawa Hills, OH Mark A. Mighell, MD, Tampa, FL Anthony A. Romeo, MD, Chicago, IL

This evidence-based review will provide the orthopedic surgeon with a f rm understanding of the indications, techniques, and outcomes of common surgical options for proximal humerus fractures.

## Scientif c Exhibit SE76

#### The Evolution of Patella Fracture Fixation

Stephen J. Warner, MD, New York, NY Ashley Levack, MD, New York, NY Lionel E. Lazaro, MD, New York, NY Matthew R. Garner, MD, New York, NY Elizabeth Gausden, MD, New York, NY Andre D. Shaffer, MD, New York, NY David L. Helfet, MD, New York, NY Dean G. Lorich, MD, New York, NY

This exhibit will provide a comprehensive overview of the different methods for patella fracture f xation and the most recent literature on how these techniques affect patient outcomes.

# Scientif c Exhibit SE77

Intramedullary Nailing of Subtrochanteric Femur Fractures: What to Do, What Not to Do, and How to be Eff cient Richard S. Yoon, MD, New York, NY Mark Gage, MD, New York, NY Abhishek Ganta, MD, New York, NY Derek J. Donegan, MD, Philadelphia, PA Nirmal C. Tejwani, MD, New York, NY Toni M. McLaurin, MD, New York, NY Joshua Langford, MD, Orlando, FL George J. Haidukewych, MD, Orlando, FL Frank A. Liporace, MD, Englewd Clfs, NJ

This exhibit will focus on the tips, tricks and pitfalls to avoid in the treatment of subtrochanteric femur fractures with IMN.

# Scientif c Exhibit SE78

Management of Osseous Defects in Orthopaedic Trauma Mark Gage, MD, New York, NY Richard S. Yoon, MD, New York, NY Ryan Roach, MD, New York, NY Kenneth A. Egol, MD, New York, NY Nirmal C. Tejwani, MD, New York, NY Sanjit R. Konda, MD, Rye, NY Frank A. Liporace, MD, Englewd Clfs, NJ Toni M. McLaurin, MD, New York, NY

This exhibit will discuss emerging techniques, update on the latest outcomes studies and propose a treatment algorithm that includes advantages, disadvantages and ways to avoid complications.

## Scientif c Exhibit SE79

Limb Lengthening and Reconstruction Society Presents an Illustrated History of Limb Lengthening *Stuart A. Green, MD, Los Alamitos, CA* 

The Limb Lengthening and Reconstruction Society present a profusely illustrated scientif c exhibit reviewing the interesting history of limb lengthening.

## Scientif c Exhibit SE80

Negative Pressure Wound Therapy: Clinical Indications and Techniques for a Variety of Wound Types William R. Smith, MD, Philadelphia, PA Christopher L. Haydel, MD, Aston, PA

Negative pressure wound therapy: Techniques to maximize wound healing environments while minimizing drainage and bacterial loads for primarily closed wounds at risk or those requiring delayed closure.

## Scientif c Exhibit SE81

Update on Fracture Nonunion: State of the Art 2016 Anthony V. Christiano, New York, NY Abraham M. Goch, New York, NY Philipp Leucht, MD, New York City, NY Sanjit R. Konda, MD, Rye, NY Kenneth A. Egol, MD, New York, NY

The purpose of this scientif c exhibit is to investigate the def nition of nonunion, optimal treatment options, and patient outcomes after nonunion surgery.

Reduction of the Ankle Syndesmosis: Indications, Techniques, Assessments, and Outcomes Stephen J. Warner, MD, New York, NY Matthew R. Garner, MD, New York, NY Ashley Levack, MD, New York, NY Andre D. Shaffer, MD, New York, NY Elizabeth Gausden, MD, New York, NY David L. Helfet, MD, New York, NY Dean G. Lorich, MD, New York, NY

This review discusses syndesmotic injuries that occur with ankle fractures and the current concepts for effectively diagnosing and treating these injuries.

## Scientif c Exhibit SE83

Scapular Fractures: From Bankart to Body Michael S. Day, MD, New York, NY William Ryan, BS, New York, NY Maxwell Weinberg, MD, New York, NY Michael J. Alaia, MD, New York, NY Eric J. Strauss, MD, New York, NY Kenneth A. Egol, MD, New York, NY

Laith M. Jazrawi, MD, New York, NY

Although no consensus exists on indications for surgical management, it is critical for surgeons to be familiar with scapular fractures in order to provide the most appropriate management.

# Scientif c Exhibit SE84

Extremity War Injuries Project Team: Maintaining Force Readiness During an Era of Military Transition MAJ Daniel J. Stinner, MD, San Antonio, TX Andrew H. Schmidt, MD, Minneapolis, MN Jeffrey N. Davila, MD, Washington, DC James R. Ficke, MD, Baltimore, MD Erin L. Ransford, Rosemont, IL

The 2016 EWI exhibit will address readiness of the f ghting force, the evolution of the delivery of combat casualty care, and highlight advancements in extremity trauma research.

## Scientif c Exhibit SE85

Interprosthetic, Peri-implant, and Periprosthetic Fractures in the Hip and Knee: Principles of Fixation Richard S. Yoon, MD, New York, NY Mark Gage, MD, New York, NY Cory A. Collinge, MD, Fort Worth, TX George J. Haidukewych, MD, Orlando, FL Frank A. Liporace, MD, Englewd Clfs, NJ

We aim to present the principles of f xation and strategies to treat complex interprosthetic, peri-implant and periprosthetic fractures.

# **TUMOR SCIENTIFIC EXHIBITS**

## Scientif c Exhibit SE86

Evaluation and Management of Pediatric Bone Lesions Alan T. Blank, MD, MS, New York, NY Alan T. Blank, MD, MS, New York, NY Yale Fillingham, MD, Chicago, IL Daniel M. Lerman, MD, Park City, UT Norman Y. Otsuka, MD, Bronx, NY Timothy Rapp, MD, New York, NY

This exhibit will provide an evidence-based review demonstrating an appropriate workup and treatment algorithm for pediatric boney lesions based on history, physical and radiographic f ndings.

## Scientif c Exhibit SE87

Practical Guidelines for Treatment of Long Bone Metastases Based on a Systematic Literature Review Costantino Errani, MD, Bologna, Italy Maria S. Spinelli, MD, Rome, Italy Andrea Piccioli, Rome, Italy Giulio Maccauro, Rome, Italy Tommaso Frisoni, MD, Bologna, Italy Luca Cevolani, MD, Bologna, Italy Nikolin Ali, MD, Bologna, Italy Roberto Casadei, MD, Bologna, Italy Davide Donati, MD, Bologna, Italy

Aim of this study was to draw practice guidelines for treatment of long bone metastases based on a systematic review of the literature.

# TUMOR

## Scientif c Exhibit SE88

Unicameral Bone Cyst: Indications, Techniques, and Outcomes Yale Fillingham, MD, Chicago, IL Michael D. Hellman, MD, Chicago, IL Brandon Erickson, MD, Chicago, IL Alan T. Blank, MD, MS, New York, NY Steven Gitelis, MD, Chicago, IL Matthew Colman, MD, Chicago, IL

This exhibit will provide an evidence-based review of the indications, techniques, and outcomes of treatment for Unicameral Bone Cysts.

The poster presenter or co-authors are at their poster daily from 11:30 AM – 12:30 PM to discuss their research and answer any questions.

## **ADULT RECONSTRUCTION HIP**

### Poster No. P001

Minimally Invasive Periacetabular Osteotomy Using a Modif ed Smith-Petersen Approach: Technique & Early Outcomes Osman H. Khan, MD, London, United Kingdom Padmanabhan Subramanian, MBBS, London, United Kingdom David Agolley, BS, FRACS, Coolangatta, Australia Ajay Malviya, MD, Newcastle Upon Tyne, United Kingdom Johan Witt, MD, London, United Kingdom

Periacetabular osteotomy is an effective way of treating symptomatic hip dysplasia. We describe a new, safe, minimally invasive technique using a modif cation of the Smith Peterson approach

## Poster No. P002

#### Long-Term Outcomes Following the Bernese Periacetabular Osteotomy

Joel E. Wells, MD, MPH, Newton, MA Michael B. Millis, MD, West Newton, MA Young Jo Kim, MD, PhD, Boston, MA Evgeny Bulat, MA, Brighton, MA Patricia Miller, MS, Boston, MA Travis H. Matheney, MD, Boston, MA

The goal of this study was to determine the long-term survivorship of the Bernese periacetabular osteotomy, analyze quality of life and activity-related outcomes, and determine predictors of failure.

#### Poster No. P003

# Femoral Derotation Osteotomies in Adults for Version Abnormalities

Robert L. Buly, MD, New York, NY Elaine Caldwell-Krumins, BS, RN, New York, NY Branden R. Sosa, New York, NY S R. Rozbruch, MD, New York, NY

A subtrochanteric derotation osteotomy of the femur is a safe and effective procedure to treat either femoral retroversion or excessive anteversion. Excellent or good results were obtained in 93%.

#### Poster No. P004

Average 10-Year Clinical Outcomes of the Bernese PAO for the Treatment of Classic Acetabular Dysplasia Stephen T. Duncan, MD, Lexington, KY Kayla Thomason, BS, Saint Louis, MO Geneva Baca, St. Louis, MO Gail Pashos, St Charles, MO Perry L. Schoenecker, MD, Saint Louis, MO John C. Clohisy, MD, Saint Louis, MO

The average ten year results of the PAO for symptomatic acetabular dysplasia demonstrate excellent radiographic deformity correction improved hip function, and low conversion to THA.

## Poster No. P005

#### Prognosis Prediction Scoring System for Eccentric Rotational Acetabular Osteotomy Takafumi Amano, MD, Nagoya, Japan Yukiharu Hasegawa, MD, Nagoya City, Japan Taisuke Seki, MD, PhD, Nagoya, Japan Yasuhiko Takegami, MD, Aichi, Japan

We determined the factors that affect postoperative outcomes in order to develop a scoring system for predicting the prognoses of ERAO patients.

### Poster No. P006

Predictors for Failure 10 Years After Surgical Hip Dislocation for Femoroacetabular Impingement - An MRI Study Markus S. Hanke, MD, Bern, Switzerland Simon D Steppacher, MD, Bern, Switzerland Helen Anwander, Bern, Switzerland Stefan Werlen, MD, Bern, Switzerland Klaus Siebenrock, MD, Bern, Switzerland Moritz Tannast, Bern, Switzerland

We present six MRI-based features not visible on conventional radiographs that are predictive for an impaired result 10-years after surgical hip dislocation for FAI.

#### Poster No. P007

Novel Serum and Synovial Fluid Biomarker of Periprosthetic Osteolysis Lester Zambrana, BA, New York, NY Jonathan Jo, MD, Bridgeport, CT Samir Trehan, MD, New York, NY Ed Purdue, PhD, New York City, NY Athanasios Karamitros, MD, Athens, Greece

*Joseph M. Lane, MD, New York, NY* CHIT1 monitoring may facilitate early diagnosis of total hip replacement periprosthetic osteolysis.

## Poster No. P008

Effects of Pelvic Tilt and Stem Anteversion on Hip Range of Motion to Impingement Thomas McCarthy, BS, MBA, Mahwah, NJ Vincent Alipit, Mahwah, NY Jim Nevelos, PhD, Mahwah, NJ Michael A. Mont, MD, Baltimore, MD

The purpose of this study was to determine the effect of alterations to: (1) neutral pelvic tilt angle; and (2) a femoral stem-neck anteversion angle on hip range-of-motion (ROM) to impingement.

### Poster No. P009

Increasing Version Decreases Fixation Strength of Cemented Acetabular Liners in a Biomechanical Model Kwame A. Ennin, MD, MS, Ferndale, MI Michael Kurdziel, MS, Royal Oak, MI Kevin C. Baker, PhD, Royal Oak, MI James J. Verner, MD, Beverly Hills, MI

Maximum f xation strength signif cantly decreased when liners were cemented at greater than 20° of anteversion. Surgical technique may be inf uenced when cementing new liners into retained shells.

Soft-Tissue Impingement with Dual Mobility Liners as a Proposed Mechanism of Intraprosthetic Dislocation Audrey Nebergall, Boston, MA Andrew A. Freiberg, MD, Boston, MA Meridith E. Greene, Boston, MA Henrik Malchau, MD, Cambridge, MA Orhun K. Muratoglu, PhD, Boston, MA Shannon L. Rowell, Boston, MA

Thomas Zumbrunn, Boston, MA Kartik Varadarajan, MS, PhD, Boston, MA

Impingement of the mobile liner on the surrounding soft-tissue may be an important mechanism for IPD in dual mobility systems.

#### Poster No. P011

# Changes in Femoral Head Centroid Mimic Cam Deformity in Patients with Advanced Hip Osteoarthritis James Beckmann, MD, Menlo Park, CA

Marc Safran, MD, Redwood City, CA Geoffrey D. Abrams, MD Nicholas J. Giori, MD, Palo Alto, CA

Advanced hip osteoarthritis shifts the femoral head centroid inferiorly, laterally, and posteriorly due to bony erosion and osteophyte deposition, which mimics a cam deformity.

## Poster No. P012

# Quantitative Assessment of Femoroacetabular Impingement Using Motion Caputure and MRI

Stefan Landgraeber, MD, Essen, Germany Dominik Raab, PhD, Duisburg, Germany Robert M. Cichon, MSc, Duisburg, Germany Andrea Lazik, Essen, Germany Jens M. Theysohn, MD, Essen, Germany Andres Kecskemethy, Duisburg, Germany Marcus Jager, MD, PhD, Essen, Germany Wojciech Kowalczyk, Duisburg, Germany

Simulation based on motion capture and MRI is a feasible method for diagnosis and evaluation of femoroacetabular impingement.

## Poster No. P013

# Factors Associated with Trunnionosis in One of the Most Widely Used Metal-on-Metal Hip Replacements in the US

Harry Hothi, BEng, MSc, Stanmore, United Kingdom Robert K. Whittaker, BS, Stanmore, United Kingdom Reshid Berber, MBBS, BSc, St Albans, United Kingdom Jayantilal M. Meswania, PhD, Stanmore, Middx, United Kingdom

Antti Eskelinen, MD, PhD, Tampere, Finland Olli Lainiala, MB, Tampere, Finland Gordon W. Blunn, MD, Middlesex, United Kingdom John Skinner, FRCS, London, United Kingdom Alister Hart, FRCS, London, United Kingdom

This study used a large number of retrieved hips of a single design and size to demonstrate that stem design and time to revision are key variables inf uencing trunnionosis.

#### Poster No. P014

### Monitoring Carbon Dioxide Levels in Modern Total Joint Hoods: Are They Safe? Michael J. Lim, MD, La Jolla, CA Suhani Patel, MSc, Cambridgeshire, United Kingdom Steven Copp, MD, La Jolla, CA Adam Rosen, DO, La Jolla, CA Gordon K. Prisk, PhD, La Jolla, CA John West, MD, PhD, La Jolla, CA

Current modern total joint hoods are widely used, however have not been evaluated independently for safely. Carbon dioxide levels were monitor during simulated physical activity.

## Poster No. P015

Trunnionosis in Retrieved Bipolar Hemiarthroplasty Implants Compared to Total Hip Arthroplasty?

Christopher Del Balso, MD, London, ON, Canada Matthew G. Teeter, PhD, London, ON, Canada Sok Chuen Tan, MD, London, ON, Canada Brent Lanting, MD, London, ON, Canada James Howard, MD, London, ON, Canada

Femoral heads retrieved from BH exhibit decreased fretting damage compared to those retrieved from MoP THA.

## Poster No. P016

Tribocorrosion: Ceramic versus Cobalt Chromium Metal Heads in Total Hip Arthroplasty

Sok Chuen Tan, MD, Singapore, Singapore Cheng Kiang Adrian Lau, MD, Singapore, Singapore Christopher Del Balso, MD, London, ON, Canada James Howard, MD, London, ON, Canada Brent Lanting, MD, London, ON, Canada Matthew G. Teeter, PhD, London, ON, Canada

Ceramic head trunnions showed signif cantly less fretting and corrosion as compared to cobalt-chromium trunnions in this matched cohort study. Taper design also constitutes a signif cant factor.

#### Poster No. P017

Does Periacetabular Osteotomy have Depth-Related Effects on the Articular Cartilage of the Hip Joint? Andreas M. Hingsammer, MD, Zürich, Switzerland Patricia Miller, MS, Boston, MA Michael B. Millis, MD, Boston, MA Young Jo Kim, MD, PhD, Boston, MA

This study suggests that PAO modulates the GAG content of the articular cartilage with a greater effect on the superf cial zone compared to the deeper acetabular cartilage zone.

# **ADULT RECONSTRUCTION HIP**

#### Poster No. P018

Pelvic Tilt in the Standing, Supine, and Flexed Seated Positions Stephen J. McMahon, FRACS(orth), Brighton, Australia Jim Pierrepont, BS, MS, Cremorne, NS, Australia Jonathan Bare, Windsor, Australia Leonard R. Walter, Sydney, Australia Brad P. Miles, PhD, Crows Nest, Australia Michael Solomon, MD, Sydney, Australia Ed Marel, FRACS, MBBS, Bathurst, Australia Andrew J. Shimmin, MD, Windsor, Australia

Changes in pelvic tilt have a substantial effect on the functional orientation of the acetabulum. This study quantif es the changes in sagittal pelvic tilt between three functional postures.

#### Poster No. P019

#### Mutations in Sporadic DDH Patients Uncovered in Genes Linked to Affected Human and Canine Pedigrees

George Feldman, PhD, Philadelphia, PA Daniel Kendoff, MD, Hamburg, Germany Christian Lausmann, MD, Hamburg, Germany Javad Parvizi, MD, FRCS, Philadelphia, PA

The study found that DNA mutations on the Fibrillin2 gene has been strongly linked to canine hip dysplasia and has the potential to be used as a screening test for early detection of DDH.

#### Poster No. P020

#### Antimicrobial Effects and Biof lm Inhibition of Iodine-Supported Titanium Implants

Daisuke Inoue, MD, Kanazawa, Japan Tamon Kabata, MD, Kanazawa, Japan Toru Maeda, MD, PhD, Kanazawa, Japan Yoshitomo Kajino, MD, Kanazawa, Ishikawa, Japan Takashi Yamamoto, MD, Kanazawa City, Japan Tomoharu Takagi, MD, Kanazawa, Japan Takaaki Ohmori, MD, Ishikawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Iodine-supported implants have good antibacterial effects in vivo and inhibit biof lm formation and growth. Iodine-supported implants have potential as innovative antibacterial implants.

## Poster No. P021

#### Placental-Derived Cell Therapy Improves Functional Regeneration of Hip Abductor Muscles After Hip Arthroplasty Tobias Winkler, MD, Berlin, Germany Georg Duda, Dr Ing, Berlin, Germany Philipp Von Roth, MD, Berlin, Germany Alison N. Agres, MSc, Berlin, Germany Bernd Preininger, MD, Berlin, Germany Esther Lukasiewicz-Hagai, Haifa, Israel Petra Reinke, Berlin, Germany Hans-Dieter Volk, Berlin, Germany Carsten Perka, MD, Berlin, Germany

Traumatized gluteus medius muscles of patients undergoing THA treated with allogenic placental-derived stromal cells showed improved contraction forces and higher volume compared to placebo.

### Poster No. P022

Decreased Osteogenic Activity of Stem Cells in Patients with Corticosteroid Induced Osteonecrosis Matthew Houdek, MD, Rochester, MN Cody Wyles, BS, Rochester, MN Rafael J. Sierra, MD, Rochester, MN

MSCs isolated from control patients possessed a greater proclivity to differentiate into bone than those from patients with AVN

### Poster No. P023

Normal Morphology Precludes the Development of Hip Osteoarthritis - Analysis of a Longitudinal Population Cohort Geraint E. Thomas, MA, MBBS, Oxford, United Kingdom Antony Palmer, MA, BMBCh, Oxford, United Kingdom John A. Broomf eld, Oxford, United Kingdom Tamer T. Malak, MB, Oxford, United Kingdom David W. Murray, MD, Oxford, United Kingdom Andrew J. Carr, FRCS, Headington Oxford, United Kingdom Nigel Arden, MD, Oxford, United Kingdom Sion Glyn-Jones, MA MBBS, Oxford, United Kingdom

20 year analysis of a 1000 patent population cohort reveals hip morphology as the single greatest predictor of OA development. In particular normal morphology essentially precludes end stage OA.

#### Poster No. P024

Systemic Tranexamic Acid Does Not Affect Cortical Implant Osseointegration in a Large Animal Model Yadin D. Levy, MD, Sydney, Australia Gianmarco V. Regazzola, MD, Kensington, Australia Nicky Bertollo, PhD, Dublin, Ireland Peter M. Walker, FRCS, Concord, Australia Warwick Bruce, FRACS, MD, Miller's Point, Australia William R. Walsh, PhD, Randwick, Australia

Administration of tranexamic acid did not inf uence cementless implant osseointegration with respect to mechanical strength, bone ongrowth and histology in a large animal model as compared to control

## Poster No. P025

# Trunnionosis: Does Head Diameter Affect Fretting and Corrosion in Total Hip Arthroplasty?

Christopher Del Balso, MD, London, ON, Canada Matthew G. Teeter, PhD, London, ON, Canada Sok Chuen Tan, MD, London, ON, Canada James Howard, MD, London, ON, Canada Brent Lanting, MD, London, ON, Canada

Increased femoral head diameter in THA may produce greater fretting damage owing to and increased head-neck moment arm.

## • Teriparatide Prevents Collapse in Non-Traumatic

Osteonecrosis of the Femoral Head Ryuta Arai, MD, PhD, Sapporo, Japan Daisuke Takahashi, MD, Sapporo, Japan Masahiro Inoue, MD, Eniwa, Japan Tohru Irie, MD, PhD, Sapporo, Japan Takuya Konno, MD, Sapporo, Japan Tomohiro Onodera, MD, PhD, Sapporo, Japan Eiji Kondo, MD, Sapporo, Japan Norimasa Iwasaki, Sapporo, Japan

A retrospective analysis showed that teriparatide treatment reduced the progression of collapse in osteonecrosis of the femoral head, as compared with alendronate treatment.

## Poster No. P027

#### Patient Reported Outcome Measure Prevalence in Arthroplasty Research: A Review of Major Orthopaedic Journals

James Fraser, MD, Phoenix, AZ Joshua Bingham, MD, Mesa, AZ Joshua Hustedt, MD, Phoenix, AZ

More than f fteen different patient reported outcome measures have been published in the major arthroplasty literature in the past year. However, only seven measures were published more than 10 times.

## Poster No. P028

Total Hip Arthroplasty with the Cementless Zweymüller-Alloclassic System: A Concise Follow Up of a Previous Report Ana Cruz-Pardos, Madrid, Spain Eduardo Garcia-Rey, MD, Madrid, Spain Eduardo Garcia-Cimbrelo, MD, Madrid, Spain

Total Hip Arthroplasty with Use of the Cementless Zweymüller-Alloclassic System: A Concise Follow-Up, at 24-27 years, Of a Previous Report.

# Poster No. P029

#### Distal Extension of the Direct Anterior Approach to the Hip - A Cadaveric Feasibility Study Stijn Ghijselings, MD, Leuven, Belgium Kristoff Corten, MD, PhD, Herselt, Belgium

The motor nerve to the vastus lateralis has a consistent branching pattern into 2 bundles. Knowledge of these bundles makes distal femoral extension of the direct anterior approach safe and feasible.

## Poster No. P030

Comparison of Results Between Bernese Periacetabular Osteotomy and Modif ed Rectus Femoris Sparing Technique Saran Tantavisut, Bangkok, Thailand John L. Marsh, MD, Iowa City, IA Ryan M. Ilgenfritz, MD, Orlando, FL Brian O. Westerlind, BA, Iowa City, IA Todd O. McKinley, MD, Indianapolis, IN

The modif ed Burnese periacetabular osteotomy with rectus femoris sparing technique showed signif cantly less blood loss, better clinical results, and fewer complications.

#### Poster No. P031

## KLIC-Score for Predicting Failure in Prosthetic Joint Infections Treated with Debridement and Implant Retention

Eduard Tornero, MD, Barcelona, Spain Laura Morata, Barcelona, Spain Silvia A. Acosta Sr, Bacelona, Spain Sebastian Garcia Ramiro, PhD, Barcelona, Spain Alex Soriano, Barcelona, Spain

Early prosthetic joint infections: When can be treated with debridement and implant retention? New preoperative KLIC-Score predicting succes or failure.

#### Poster No. P032

Metal-on-Metal: Making Sense of Blood Cobalt and Chromium Ion Concentrations

Harlan C. Amstutz, MD, Los Angeles, CA Michel J. Le Duff, Los Angeles, CA

Metal-on-metal bearings require a precise implantation of the acetabular component to maximize functional coverage of the femoral head.

#### Poster No. P033

Standing and Sitting Lumbosacral Alignment in Patients Undergoing Hip Arthoplasty - What is Normal? Brian Barlow, MD, New York, NY Christina I. Esposito, PhD, New York, NY Theodore Miller, MD, New York, NY Han Jo Kim, MD, New York, NY Timothy M. Wright, PhD, New York, NY Douglas E. Padgett, MD, New York, NY Seth A. Jerabek, MD, Lake Nebagamon, WI David J. Mayman, MD, New York, NY

An imaging study of lumbosacral alignment in standing and sitting positions in patients undergoing THA. Some patients sit with forward-tilting pelvises and may benef t from increased cup anteversion.

#### Poster No. P034

Total Hip Arthroplasty Outcomes Directly Associated with Spine Disability

William C. Schroer, MD, Saint Louis, MO Erica M. Diesfeld, St Charles, MO Angela LeMarr, RN, Saint Louis, MO Diane Morton, MS, Saint Louis, MO Mary E. Reedy, RN, Saint Louis, MO

A majority of THA patients have history of lumbar spine problems. The Oswestry Disability Index, the primary outcome measure of spinal disorders, correlated strongly with poor THA outcomes.

# **ADULT RECONSTRUCTION HIP**

#### Poster No. P035

Complications in Total Hip Arthroplasty Patients with Parkinson's Disease: A Medicare Database Review Travis J. Dekker, MD, Durham, NC Thorsten M. Seyler, MD, PhD, Durham, NC Timmothy R. Randell, MD, Lawtell, LA Cynthia L. Green, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Abiram Bala, BA, Durham, NC Michael P. Bolognesi, MD, Durham, NC

Parkinson's disease (PD) patients undergoing primary THA are medically complex patients at higher risk of post-operative complications and warrant preoperative medical optimization and counseling.

### Poster No. P036

#### Periacetabular Osteotomy for Hip Dysplasia in Adolescents Tetsuya Sakamoto, MD, Fukuoka, Japan Masatoshi Naito, MD, Fukuoka, Japan Kouichi Kinoshita, MD, Fukuoka, Japan

We retrospectively reviewed 33 hips of adolescent patients extracted from 474 hips with acetabular dysplasia that underwent CPO. Satisfactory results were obtained clinically and radiographically.

#### Poster No. P037

# In-Hospital Mortality in Patients with Periprosthetic Joint Infection

Alisina Shahi, MD, Philadelphia, PA Timothy Tan, MD, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA Mitchell Maltenfort, PhD, Philadelphia, PA Javad Parvizi, MD, FRCS, Philadelphia, PA

PJI is associated with a two-fold increase in mortality for each inpatient admission and have mortality rates comparable to kidney transplantation and carotid surgery.

#### Poster No. P038

# Culture Negative Periprosthetic Joint Infection: An Update on What to Expect

Timothy Tan, MD, Philadelphia, PA Chilung Chen, MD, Chiayi Hsien, Taiwan Dean D. Tan, BS, Pleasanton, CA Javad Parvizi, MD, FRCS, Philadelphia, PA

Culture negative PJI is a relatively frequent f nding and demonstrates an unacceptable rate of treatment failure.

#### Poster No. P039

Missing Data Signif cantly Affects Results from Total Joint Arthroplasty Database Studies Bryce A. Basques, MD, Chicago, IL Jennifer M. Fischer, New Haven, CT Andre Samuel, New Haven, CT Matthew L. Webb, BA, New Haven, CT Adam Lukasiewicz, MSc, New Haven, CT Daniel D. Bohl, MD, MPH, Chicago, IL Jonathan N. Grauer, MD, New Haven, CT

This study reports the rates of missing data for total joint arthroplasty patients from a national database (NSQIP) and found that study results can vary greatly based on how missing data is treated.

#### Poster No. P040

Alarmingly High Rate of Implant Fractures in One Modular Femoral Stem Design: A Comparison of Two Implants Ritesh Shah, MD, Glenview, IL Jeffrey M. Goldstein, MD, Deerf eld, IL Alexander C. Gordon, MD, Prospect Heights, IL Matthew L. Jimenez, MD, Morton Grove, IL Wayne M. Goldstein, MD, Morton Grove, IL Wayne M. Goldstein, MD, Morton Grove, IL

This study compares the rate of implant failure of two stem-sleeve modular femoral stems.

## Poster No. P041

Is Down Syndrome Associated with Short-Term Complications Following Total Hip Arthroplasty? Matthew R. Boylan, Brooklyn, NY Bhaveen H. Kapadia, MD, Baltimore, MD Kimona Issa, MD, Wayne, NJ Dean C. Perfetti, BA, Brooklyn, NY Vidushan Nadarajah, Brooklyn, NY Aditya V. Maheshwari, MD, Brooklyn, NY Michael A. Mont, MD, Baltimore, MD

Orthopaedic surgeons should be aware of the increased risks of total hip arthroplasty in patients with Down syndrome and should discuss these risks with patients and their families prior to surgery.

#### Poster No. P042

The Results of Second 2-Stage Reimplantations for Periprosthetic Hip Infection

Keith Fehring, MD, Rochester, MN Matthew P. Abdel, MD, Rochester, MN Tad M. Mabry, MD, Rochester, MN Arlen D. Hanssen, MD, Rochester, MN

Expectations following a second two-stage reimplantation for periprosthetic hip infection should be tempered as the failure rate of this procedure is high with considerable patient morbidity.

Safe International Normalized Ratio to Avoid Risk of Excessive Bleeding in Total Joint Arthroplasty Fatih Kucukdurmaz, MD, Istanbul, Turkey Camilo Restrepo, MD, Philadelphia, PA Javad Parvizi, MD, FRCS, Philadelphia, PA

We were able to def ne an INR cut-off value that is associated to increased risk of excessive bleeding, and the need for estimated unit of transfusion.

# Poster No. P044

Introduction of New Acetabular Designs Does Not Inf uence Risk of Early Failure in Hip Arthroplasty

Mathias Björk, MS, Gothenburg, Sweden Johan N. Karrholm, MD, Molndal, Sweden Szilard Nemes, Goteborg, Sweden Maziar Mohaddes, MD, Molndal, Sweden

Analyzing 52,903 hip replacements from the Swedish Hip Arthroplasty Register we were not able to f nd an increased risk for revision when new acetabular implants are introduced in Swedish Hospitals.

# Poster No. P045

### Doubling of Acute Kidney Injury Associated with a Change in Prophylactic Antibiotic Regime

James Donaldson, FRCS (Ortho), MBBS, London, United Kingdom

Heledd Havard, London, United Kingdom

Teicoplanin and gentamicin use as prophylactic antibiotics in arthroplasty signif cantly reduces the rate of infection but resulted in a doubling of acute kidney injury cases in a cohort of 7690 cases

## Poster No. P046

# Should Joint Registries Publish Surgeon-Level Results? Validation of the UK National Joint Registry

Stefanos Koutsouris, London, United Kingdom Shiraz Sabah, MD, Middlesex, United Kingdom Johann Henckel, MD, London, United Kingdom Robert K. Whittaker, BS, Stanmore, United Kingdom Harry Hothi, BEng, MSc, Stanmore, United Kingdom Gordon W. Blunn, MD, Middlesex, United Kingdom John Skinner, FRCS, London, United Kingdom Rita Rajani, Leicestershire, United Kingdom Alister Hart, FRCS, London, United Kingdom

Registry-Retrieval Linkage was an effective validation tool. As the effect of missing or erroneous data may be amplifed for low volume surgeons, we do not support surgeon-level outcome publication.

## Poster No. P047

Using the Circle Theorem to Estimate Acetabular Version from a Single Antero-Posterior Hip Radiograph Vincent M. Moretti, MD, Philadelphia, PA Samuel J. Chmell, MD, Riverside, IL

The circle theorem provides easy and accurate estimates of acetabular version after total hip arthroplasty using simple instruments (compass and protractor) and readily available plain radiographs.

## Poster No. P048

Resource Utilization and Medicare Reimbursement for Conversion and Primary Total Hip Arthroplasty John C. Bonano, San Francisco, CA Matthew K. Callahan, MSBA, San Francisco, CA Thomas P. Vail, MD, San Francisco, CA Alfred C. Kuo, MD, San Francisco, CA

Conversion of nonarthroplasty hip surgery to total hip arthroplasty (THA)is associated with higher resource utilization than primary THA, but Medicare reimbursements do not account for this.

## Poster No. P049

Effect of Smoking on Postoperative Complications after Total Hip Arthroplasty: A Propensity Score Matched Analysis Shawn Sahota, MD, Chicago, IL Shawn Sahota, MD, Chicago, IL Francis Lovecchio, BA, Chicago, IL Matthew D. Beal, MD, Elmhurst, IL David W. Manning, MD, Chicago, IL

Using a propensity adjusted analysis, Smoking is a modif able factor leading to increased surgical complication, surgical site infection, sepsis, and readmission within 30 days following arthroplasty.

## Poster No. P050

#### Anatomic Hip Center Decreases 20-Year Acetabular Component Loosening in Cemented Crowe-II THAs *Chad Watts, MD, Rochester, MN*

Matthew P. Abdel, MD, Rochester, MN Arlen D. Hanssen, MD, Rochester, MN Mark W. Pagnano, MD, Rochester, MN

An anatomic hip center leads to lower acetabular component loosening and revision rates following cemented THA for Crowe II dysplasia at a mean of 26 year followup.

## Poster No. P051

Intraoperative Synovial C-reactive Protein is as Useful as Frozen Section to Detect Periprosthetic Hip Infection Martin Buttaro, MD, Buenos Aires, Argentina Gabriel Martorell, MD, Capital Federal, Argentina Mauricio Quinteros, MD, Córdoba, Argentina Fernando M. Comba, Buenos Aires, Argentina Gerardo Zanotti, MD, Buenos Aires, Argentina, Argentina Francisco Piccaluga, MD, Buenos Aires, Argentina

We found quantitative synovial CRP had similar diagnostic value as intraoperative frozen section, with comparable sensitivity, specif city, and predictive values in revision total hip arthroplasty.

## Poster No. P052

Human Immunodef ciency Virus and Total Joint Arthroplasty: The Risk for Infection is Low Mohammad Ali Ena Yatollahi, Philadelphia, PA Dermot Murphy, BA, Limerick, Ireland Mitchell Maltenfort, PhD, Philadelphia, PA Javad Parvizi, MD, FRCS, Philadelphia, PA

The rates of PJI after TJA in HIV-only patients are not as high as those in patients with both HIV and hemophilia

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

# **ADULT RECONSTRUCTION HIP**

#### Poster No. P053

How Should We Follow Up Asymptomatic Metal-on-Metal Hip Resurfacing Patients? A Prospective Longitudinal Study Gulraj Matharu, BSc, Birmingham, United Kingdom Adrian Low, MBBS, PhD, Parramatta, Australia Simon Ostlere, MD, Oxford, United Kingdom David W. Murray, MD, Oxford, United Kingdom Hemant G. Pandit, FRCS, Oxford, United Kingdom

Asymptomatic metal-on-metal hip resurfacing patients with normal blood metal ions (<2 µg/l) and normal ultrasounds have no risk of developing new pseudotumours within 5 years of initial assessment.

### Poster No. P054

#### Temporal Trends in Metal Ion Levels in Patients with Metal-on-Metal Hip Replacements

Aleksi Reito, MD, PhD, Tampere, Finland Olli Lainiala, MB, Tampere, Finland Antti Eskelinen, MD, PhD, Tampere, Finland

Notably different temporal trends are seen in the population level with different metal-on-metal hip replacements. Our f ndings warrants implant spesif c risk stratif cation.

#### Poster No. P055

Risk Factors for Surgical Site Infections following Primary Total Knee or Hip Arthroplasty for Osteoarthritis Aditya S. Mazmudar, BA, Fairfax, VA Francis Lovecchio, BA, Chicago, IL Matthew D. Beal, MD, Chicago, IL David W. Manning, MD, Elmhurst, IL

This study analyzed primary total hip and knee arthroplasty in ACS-NSQIP 2006-13 to identify factors that inf uence rates of surgical site infections for future risk stratif cation strategies.

#### Poster No. P056

# Risk Factors for Recurrence of Periprosthetic Joint Infections of the Hip and Knee

Georgios Triantafyllopoulos, MD, Astoria, NY Lazaros A. Poultsides, MD, New York, NY Stavros G. Memtsoudis, MD, PhD, New York, NY Wei Zhang, PhD, Washington, Dist. of Columbia YAN MA, PhD, Washington, Dist. of Columbia Thomas P. Sculco, MD, New York, NY

We determined recurrence rates for periprosthetic joint infections and risk factors for recurrence and persistence of infection in patients previously treated with two-stage exchange arthroplasty.

## Poster No. P057

Prior Lumbar Spinal Arthrodesis Increases Prosthetic-Related Complication Risk in Primary Total Hip Arthroplasty David Sing, San Francisco, CA Jeffrey Barry, MD, San Francisco, CA Alexander Theologis, MD, San Francisco, CA Joseph Patterson, MD, San Francisco, CA Bobby Tay, MD, San Francisco, CA Thomas P. Vail, MD, San Francisco, CA Erik N. Hansen, MD, San Francisco, CA

Patients undergoing primary total hip arthroplasty with history of lumbar fusion have increased incidence of dislocation, loosening, and revision surgery.

#### Poster No. P058

Minimum 13-Year Multicenter Study of THR with Highly Cross-Linked Polyethylene and Standard Diameter Femoral Heads Charles R. Bragdon, PhD, Boston, MA Christopher J. Barr, BS, Boston, MA Christian Skovgaard Nielsen, MD, Voerloese, Denmark Daniel J. Berry, MD, Rochester, MN Craig J. Della Valle, MD, Chicago, IL Kevin L. Garvin, MD, Omaha, NE Per-Erik Johansson, MD, PhD, Gothenburg, Sweden John C. Clohisy, MD, Saint Louis, MO Henrik Malchau, MD, PhD, Cambridge, MA

The mid to long-term wear performance of this form of HXLPE is excellent with no signs of osteolysis at follow-up as long as 16 years.

#### Poster No. P059

The Impact of Failed New Technology and Surgeon Error on the Revision Burden in Total Hip Arthroplasty Justin M. Dunn, MD, Del Mar, CA Samuel Early, San Diego, CA Sravya T. Challa, BA, BS, La Jolla, CA Pamela A. Pulido, RN, BSN, La Jolla, CA Julie C. McCauley, MPH, La Jolla, CA Kace A. Ezzet, MD, La Jolla, CA

Roughly 25% of revision THA's were due to introduction of new technologies that subsequently failed, poor surgical technique or learning curve errors. All such cases are potentially avoidable.

#### Poster No. P060

## Eff cacy of Venous Thromboembolism Prophylaxis in Total Joint Arthroplasty Based on Risk Stratif cation

Timothy Tan, MD, Philadelphia, PA Mitchell Maltenfort, PhD, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA Alisina Shahi, MD, Philadelphia, PA Carlos A. Higuera Rueda, MD, Bay Village, OH Marcelo B. Siqueira, MD, Beachwood, OH Erik N. Hansen, MD, San Francisco, CA Javad Parvizi, MD, FRCS, Philadelphia, PA David Sing, San Francisco, CA

Aspirin administered to the higher risk patients for venous thromboembolism seems to be as effective as potent anticoagulation and more effective than warfarin.

Perioperative Surgical Home Pathway for Total Hip Arthroplasty Patients Produces Improved Outcomes George F. Chimento, MD, New Orleans, LA Neil L. Duplantier, MD, New Orleans, LA Gonzalo Sumarriva, BS, Knoxville, TN

Mark S. Meyer, MD, Destrehan, LA Leslie Thomas, MD, New Orleans, LA Diedra Dias, MSHCM, Jefferson, LA Armin Schubert, MD, New Orleans, LA

A Perioperative Surgical Home is a multidisciplinary rapid recovery pathway which decreased length of stay allowing THA patients to be discharged home, without increased complications or readmissions.

## Poster No. P062

# Chronic Kidney Disease Increases the Risk for Venous

Thromboembolism and Periprosthetic Infection Following THA Bhaveen H. Kapadia, MD, Baltimore, MD Matthew R. Boylan, Brooklyn, NY Paul W. Perdue Jr, MD, New York, NY Aditya V. Maheshwari, MD, Brooklyn, NY Michael A. Mont, MD, Baltimore, MD

Patients with Chronic Kidney Disease were at an increased risk for postoperative venous thromboembolism and periprosthetic joint infection following primary total hip arthroplasty.

## Poster No. P063

Hip Dislocation Prevention in Obese Patients: Dual Mobility Liner versus Preoperative Bariatric Surgery Philippe Hernigou, PhD, Creteil, France Charles-Henri Flouzat Lachaniette, MD, Créteil Cedex

Pre-operative BMI decrease does not prevent dislocation. Dual mobility or constrained liners in these patients is an efffective technique to prevent post operative hip dislocation

#### Poster No. P064

Total Joint Replacement Registries: Implementation Strategies for a Multi-State, Integrated Health System Cecily Froemke, MS, Portland, OR Paul J. Duwelius, MD, Portland, OR Kevin Fleming, MBA, Maple Valley, WA

Paul Tittel, Renton, WA Kirsten Juul-Music, Renton, WA

This site specif c examination focuses on the data management strategy necessary to connect PRO data from the physician private practice setting to the hospital-based total joint registry.

## Poster No. P065

#### The Direct Anterior Approach in Total Hip Arthroplasty: A Systematic Review and Meta-analysis of Current Literature Rishi Das, MBBS, London, United Kingdom Geert Meermans, MD, Berchem, Belgium Sujith Konan, London, United Kingdom Fares S. Haddad, FRCS, London, United Kingdom

This systematic review and meta-analysis aims to evaluate the current evidence regarding direct anterior approach in total hip arthoplasty.

#### Poster No. P066

Risk-Adjusted Outcomes of Total Hip Arthroplasty in Academic Versus Community Hospitals James Henderson, BS, Cleveland, OH Jayson D. Zadzilka, MS, Cleveland, OH Alison K. Klika, MS, Cleveland, OH Suparna Navale, MPH, MS, Cleveland, OH Wael K. Barsoum, MD, Cleveland, OH

Carlos A. Higuera Rueda, MD, Bay Village, OH

New York and CA State Inpatient Database were used to compare risk-adjusted outcomes of total hip arthroplasty between academic and community hospitals.

#### Poster No. P067

Residual Symptoms and Function in Young, Active Hip Arthroplasty Patients: Comparable to Controls? Denis Nam, MD, MSc, St Louis, MO Ryan Nunley, MD, Saint Louis, MO Michael E. Berend, MD, Indianapolis, IN Staci Johnson, M.Ed, Saint Louis, MO Keith R. Berend, MD, New Albany, OH Adolph V. Lombardi Jr, MD, New Albany, OH Robert L. Barrack, MD, Saint Louis, MO

An independent, third party survey demonstrated a substantial percentage of young, active hip arthroplasty patients report residual symptoms, but to a similar degree as controls without prior surgery.

#### Poster No. P068

#### Diagnostic Utility of Joint Fluid Metal Ion Measurement in Metal-on-Metal Hip Replacements

Aleksi Reito, MD, PhD, Tampere, Finland Jyrki Parkkinen, MD, PhD, Tampere, Finland Timo J. Puolakka, MD, PhD, Tampere, Finland Jorma Pajamäki, MD, PhD, Tampere, Finland Antti Eskelinen, MD, PhD, Tampere, Finland

Based on this study it seems to be clear that routine measurement of joint f uid metal ion levels in patients with MoM hips are neither useful nor advisable.

#### Poster No. P069

# Doubling of Acute Kidney Injury Associated with a Change in Prophylactic Antibiotic Regime

Paul Gunning, MBBS, London, United Kingdom James Donaldson, FRCS (Ortho), MBBS, London, United Kingdom

Heledd Havard, London, United Kingdom Vijayaraghavan Ramesh, MBBS, Middlesex, United Kingdom Alexander Sell, MBBS, Stanmore, United Kingdom John Skinner, FRCS, London, United Kingdom Richard Carrington, MD, Herts, United Kingdom Jonathan Miles, FRCS (Ortho), MBBS, London, United Kingdom

Teicoplanin and gentamicin use as prophylactic antibiotics in arthroplasty signif cantly reduces the rate of infection but resulted in a doubling of acute kidney injury cases in a cohort of 7690 cases

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

# **ADULT RECONSTRUCTION HIP**

#### Poster No. P070

Navigation Versus Outrigger to Determine Leg Length Change in Total Hip Arthroplasty: A Randomized Controlled Trial Jesse I. Wolfstadt, MD, Toronto, ON, Canada Brandon Girardi, MD, Toronto, ON, Canada Simcha G. Fichman, MD, Toronto, ON, Canada David Backstein, MD, Toronto, ON, Canada Oleg Saf r, MD, Toronto, ON, Canada Paul R. Kuzyk, MD, FRCSC, Toronto, ON, Canada

This randomized, controlled trial compared the accuracy of a computer-navigation tool with an outrigger device for measuring changes in leg length during total hip arthroplasty.

#### Poster No. P071

#### Applying Statistical Process Control Surveillance to Monitor Infections After Total Joint Arthroplasty

John Grady-Benson, MD, Farmington, CT Smitha S. Vellanky, MSc, Hartford, CT Michael S. Cremins, PA-C, PhD, Hartford, CT

The novel application of a Statistical Process Control method for detecting statistically signif cant changes in infection rates allows for more precise infection analyses and prevention strategies.

#### Poster No. P072

#### Comparison Between Primary THA and Secondary THA After Internal Fixation for Femur Neck Fracture

Kyung Soon Park, MD, Jeonnam, Republic of Korea Jong-Keun Seon, MD, Hwasungun, Republic of Korea Young-Min Lee, Gwang Ju, Republic of Korea Taek R. Yoon, MD, PhD, Jeonnam, Republic of Korea

Comparing Primary THA with secondary THA in femur neck fractures, there are no differences in clinidal outcomes and radiological results.

#### Poster No. P073

# Is Ultrasound as Useful as MARS MRI in the Longitudinal

Surveillance of Metal-on-Metal Hip Patients? Dimitris Dimitriou, MD, Cambridge, MA Neil T. Dion, MD, Boston, MA Valentin Antoci Jr, MD, Cambridge, MA Tsung-Yuan Tsai, PhD, Boston, MA Guoan Li, PhD, Boston, MA Harry E. Rubash, MD, Boston, MA Andrew A. Freiberg, MD, Boston, MA Young-Min Kwon, MD, PhD, Boston, MA

In longitudinal surveillance of MoM patients, ultrasound maintained its high diagnostic characteristics, suggesting that U/S is a valid diagnostic modality and cost-effective alternative to MARS MRI.

### Poster No. P074

Abnormally High Dislocation Rates of Total Hip Replacement Following Contemporary Low Back Surgery Sean Slaven, MD, Bethesda, MD Christopher T. Martin, MD, Coralville, IA Nicholas Bedard, MD, Iowa City, IA Andrew J. Pugely, MD, Coralville, IA Steve S. Liu, MD, Iowa City, IA Sergio A. Mendoza-Lattes, MD, Durham, NC John J. Callaghan, MD, Iowa City, IA

An alarmingly high hip replacement dislocation prevalence (15%, 7 to 10 times the prevalence in author's general THR population) was documented following contemporary low back surgery.

#### Poster No. P075

Dual Mobility Articulations for Patients at High Risk for Dislocation Darren R. Plummer, MBA, MD, Columbus, OH Ionathan Christy, MD, Savannah, GA

Scott M. Sporer, MD, Winf eld, IL Wayne G. Paprosky, MD, Winf eld, IL Craig J. Della Valle, MD, Chicago, IL

Dual mobility articulations are an excellent option in high risk patients associated with a low rate of failure and no repeat revisions for instability.

#### Poster No. P076

Risk Factors for Wound Complications following Direct Anterior Approach Hip Arthroplasty

Kenneth Jahng, MD, Loma Linda, CA Marcel A. Bas, MD, New York, NY Jose A. Rodriguez, MD, New York, NY Jose A. Rodriguez, MD, New York, NY Herbert J. Cooper, MD, New York, NY

We experienced an 11.5% wound complication rate leading to a 1.9% reoperation rate in 651 consecutive DAA hip arthroplasties. Risk factors included obesity, diabetes, and previous hip surgery.

#### Poster No. P077

Short Stem Cementless Components in Total Hip Replacement: Excellent Fixation, Thigh Pain a Concern! Richard Amendola, Post Grad, Iowa City, IA Devon D. Goetz, MD, West Des Moines, IA Steve S. Liu, MD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

The patient reported thigh pain rate in a single surgeon experience using a short tapered stem was 8 times the rate of the same surgeon's experience with a standard length tapered stem.

MRI Predicts Adverse Local Tissue Reaction Histologic Severity in Modular Neck Total Hip Arthroplasty

Brian Barlow, MD, New York, NY John Boles, BS, New York, NY Kara Fields, MS, New York, NY Alissa J. Burge, MD, New York, NY Hollis Potter, MD, New York, NY Geoffrey H. Westrich, MD, New York, NY

MRI is predictive of adverse local tissue reaction (ALTR) histologic severity in a recalled modular neck femoral stem. Serum cobalt and chromium ion levels did not correlate with histologic severity.

## Poster No. P079

Five-Year RSA Evaluation of Vitamin E Diffused Highly Cross-Linked Polyethylene Wear and Stability of Femoral Stems *Audrey Nebergall, Boston, MA* 

Ola Rolfson, MD, PhD, Gothenburg, Sweden Anders Troelsen, MD, PhD, Koege, Denmark Harry E. Rubash, MD, Cambridge, MA Orhun K. Muratoglu, PhD, Boston, MA Henrik Malchau, MD, Gothenburg, Sweden Meridith E. Greene, Boston, MA

RSA showed low wear of the Vitamin E diffused polyethylene at 5 years and no signif cant migration of the stems. All PROMs improved signif cantly and the 5 year scores indicate an excellent outcome.

## Poster No. P080

#### Prospective, Longitudinal Evaluation of Gender Differences After Total Hip Arthroplasty

Jeffrey J. Cherian, DO, Philadelphia, PA Alexander Jinnah, MD, Winston Salem, NC Kristin Robinson, MS, Mahwah, NJ Mary I. O'Connor, MD, New Haven, CT Steven F. Harwin, MD, New York, NY Michael A. Mont, MD, Baltimore, MD

The purpose of this study was to compare temporal trends between men and women following THA in terms of: activity level; pain, hip function, and range of motion; and physical and mental outcomes.

#### Poster No. P081

#### Comparative Analysis of Simultaneous and Staged Bilateral Total Hip Arthroplasty

Kyung Soon Park, MD, Jeonnam, Republic of Korea Jong-Keun Seon, MD, Hwasungun, Republic of Korea Young-Min Lee, Gwang Ju, Republic of Korea Taek R. Yoon, MD, PhD, Jeonnam, Republic of Korea

Bilateral simultaneous THA is safe and good options for the patients in terms of safety, complications and cost-effectiveness.

#### Poster No. P082

Five-Year Results of a Type 2B Short Femoral Stem Prosthesis Karhao Teoh, MD, Wales, United Kingdom Paul Y. Lee, FRCS (Ortho), MSc, Cardiff, United Kingdom David Woodnutt, MD, Wales, Uk, United Kingdom

This new short stem prosthesis has shown promising survival results in the short term similar to other short stem prosthesis. We describe the largest series in the literature of this prosthesis.

#### Poster No. P083

Highly Cross-Linked Polyethylene for Hip Resurfacing: Results at 10 Years in Patients Under Age 50 James W. Pritchett, MD, Seattle, WA

Hip resurfacing using highly cross-linked polyethylene (PE) acetabular component is a reliable procedure at mid-term followup. PE wear is below .1 mm/yr. Kaplan-Meier survivorship in 144 pts was 96%.

### Poster No. P084

Femoral Head Offset is Associated with Increased Metal Ion Levels in Metal on Polyethylene Total Hip Arthroplasty John R. Martin, MD, Rochester, MN Christopher L. Camp, MD, Rochester, MN Cody Wyles, BS, Rochester, MN Michael J. Taunton, MD, Rochester, MN David G. Lewallen, MD, Rochester, MN Robert T. Trousdale, MD, Rochester, MN

Increased femoral head offset leads to increased metal ion levels in asymptomatic patients with metal on polyethylene total hip arthroplasty.

#### Poster No. P085

Comparison of Complications Following Revisions of Metal on Metal versus Metal on Polyethylene Hip Arthroplasty Shoji Nishio, MD, Hyogo, Japan Thomas P. Vail, MD, San Francisco, CA David Sing, San Francisco, CA Erik N. Hansen, MD, San Francisco, CA Shigeo Fukunishi, MD, Nishinomiya, Japan Shinichi Yoshiya, MD, Nishinomiya, Hyogo, Japan

Comparison of Complication Rates Following Revisions of Metalon-Metal versus Metal-on-Polyethylene Hip Arthroplasty

## Poster No. P086

#### Effect of Acetabular Component Positioning on Total Hip Arthroplasty Revisions for Instability Benjamin R. Coobs, MD, Saint Louis, MO Anita Sadhu, MD, Saint Louis, MO

Denis Nam, MD, Saint Louis, MO Denis Nam, MD, MSc, Saint Louis, MO Ryan Nunley, MD, Saint Louis, MO Robert L. Barrack, MD, Saint Louis, MO

Based on the f ndings of this study, it is apparent that factors other than component position play a role in a substantial percentage of THAs revised for instability.

# **ADULT RECONSTRUCTION HIP**

#### Poster No. P087

Cluster Hole Versus Solid Cup in Total Hip Arthroplasty: A Randomized Controlled Trial William Blakeney, MD, Perta, Australia

Riaz Khan, FRCS, Cottesloe, Australia

There was no difference in presence or volume of osteolytic lesions, in 100 patients randomized to either a solid-backed or a cluster-hole acetabular component, at f ve-year follow-up of primary THA.

#### Poster No. P088

# Hip Resurfacing Arthroplasty Outcomes Compared to Total Hip Arthroplasty in the Medicare Population

Lindsay T. Kleeman, MD, Durham, NC Thorsten M. Seyler, MD, PhD, Winston-Salem, NC Colin T. Penrose, BA, BS, Durham, NC Abiram Bala, BA, Durham, NC Cynthia L. Green, Durham, NC Samuel S. Wellman, MD, Durham, NC Michael P. Bolognesi, MD, Durham, NC

Hip resurfacing arthroplasty is associated with higher rates of post-operative complications and revision compared to metal-onmetal and metal-on-polyethylene total hip arthroplasty.

### Poster No. P089

#### Tranexamic Acid in Total Hip Arthroplasty: Do Drug Formulation and Dosage Determine Eff cacy and Safety?

Yale Fillingham, MD, Chicago, IL Jonathan C. Riboh, MD, Durham, NC Brandon Erickson, MD, Chicago, IL Gregory L. Cvetanovich, MD, Chicago, IL Craig J. Della Valle, MD, Chicago, IL

TXA formulation and dosage have a direct effect on measured blood loss, but no difference in the risk of transfusion or thromboembolic events.

#### Poster No. P090

# Dual Mobility Hip Cup Migration and Liner Mobility at One Year

Elise Laende, MSc, Halifax, NS, Canada Michael Dunbar, MD, Halifax, NS, Canada Christopher G. Richardson, MD, Halifax, NS, Canada

Mobile bearing acetabular components demonstrate favorable f xation patterns but have a wide range of liner mobility during supine frog leg poses assessed using radiostereometric analysis.

## Poster No. P091

#### 3D-MRI versus 3D-CT in the Evaluation of Osseous Anatomy in Femoroacetabular Impingement and Hip Dysplasia

Jonathan Vigdorchik, MD, New York, NY Nima Eftekhary, MD, New York, NY Avner Yemin, MD, New York, NY Roy Davidovitch, MD, New York, NY Michael C. Bloom, New York, NY Soterios Gyftopoulos, MD, Long Is City, NY

Study of the utility of 3D-MRI in lieu of 3D-CT in the evaluation of osseous anatomy and pre-operative planning for femoroacetabular impingement and hip dysplasia

#### Poster No. P092

A Minimum 10-Year Result of Periacetabular Osteotomy via a Smith Petersen Approach

Kouichi Kinoshita, MD, Fukuoka, Japan Masatoshi Naito, MD, Fukuoka, Japan Takahiko Kiyama, MD, Fukuoka, Japan Satoshi Kamada, MD, Fukuoka, Japan Norihito Watanabe, MD, Fukuoka-Ken, Japan So Minokawa, MD, Fukuoka-Ken, Japan Tomohiko Minamikawa, MD, Fukuoka-Ken, Japan Hajime Seo, MD, Fukuoka, Japan Shunsuke Ahiko, MD, Fukuoka-Ken, Japan

We investigated the result of PAO via a modif ed Smith-Petersen approach at a minimum 10-years' follow-up. Ten-year survival rate was 97 % with conversion THA as the end point.

#### Poster No. P093

#### Relationship of Acetabular Cup Position to Dislocation Rate and Patient-Reported Outcomes in THA

Deepak Ramanathan, MBBS, Cleveland, OH Kyle Walker, BS, MD, Cleveland, OH Joseph F. Styron, MD, PhD, Westlake, OH Alison K. Klika, MS, Cleveland, OH Wael K. Barsoum, MD, Cleveland, OH Carlos A. Higuera Rueda, MD, Bay Village, OH

Outcomes after total hip arthroplasty were associated with cup positioning relative to the native acetabular rim, rather than the broadly def ned safe zone for inclination and anteversion.

#### Poster No. P094

#### Pain Management and its Relationship with Patient Satisfaction in Total Joint Replacement Surgery

Edward Jung, MD, Berkley, MI Wayne T. North, MD, Berkley, MI Kelechi Okoroha, MD, Northville, MI Karan Srivastava, MD, Detroit, MI Jason J. Davis, MD, Commerce Township, MI

This study aims to evaluate the relationship between patient perception of pain and their overall satisfaction reported in the HCAHPS survey after joint replacement surgery.

Anterior vs. Posterior Approach for THA: Analysis of LOS,

Discharge Destination, Readmission, and Revision Aakash Keswani, BA, New York, NY Adam C. Fields, BA, New York, NY Kristen Meier, MD, New York, NY Andrew Lovy, MD, MS, New York, NY Steven Koehler, MD, New York, NY Michael J. Bronson, MD, New York, NY Calin S. Moucha, MD, New York, NY

The purpose of this study was to analyze and compare rate of extended length of stay (LOS), non-home discharge destination, readmission, and revision between anterior and posterior THA patients.

## Poster No. P096

# Use of Cementless Tapered Femoral Stems for Total Hip

Arthroplasty in Octogenarians Stephanie Riley, Fisherville, KY James R. Spears, BS, Louisville, KY Jeffrey J. Cherian, DO, Philadelphia, PA Langan S. Smith, BS, Louisville, KY Michael A. Mont, MD, Baltimore, MD Arthur L. Malkani, MD, Louisville, KY

Despite compromised bone in the octogenarian, the use of cementless, tapered, femoral stems yielded excellent results with 1.3% loosening, 1.3% dislocation but higher transfusion incidence (42%).

#### Poster No. P097

Line to Line Reaming of Porous Cups Improves Position and Reduces Variability in Acetabular Component Placement Valentin Antoci Jr, MD, Cambridge, MA Sebastian Heaven, MD, Hamilton, ON, Canada Hany S. Bedair, MD, Boston, MA

Line to line reaming of highly porous cups reduces variability in cup placement and improves component position

#### Poster No. P098

#### Variation in Use of Blood Transfusion in Primary Total Hip and Knee Arthroplasty

Mariano Menendez, Boston, MA Na Lu, MPH, Boston, MA Krista Huybrechts, MS, PhD, Boston, MA David C. Ring, MD, West Hartford, CT Brian Bateman, MD, MSc, Concord, MA

We observed wide interhospital variation in the use of blood transfusion among patients undergoing elective TJA that was largely unexplained by patient- and hospital-level characteristics.

#### Poster No. P099

Outcome Post-Debridement and Implant Retention in Hip Prosthetic Joint Infection: 17-Year Experience George A. Grammatopoulos, MRCS, Oxford, United Kingdom Benjamin J. Kendrick, MBBS, FRCS (Ortho) Bridget Atkins, Oxford, United Kingdom Nick Athanasou, MRCP, FRCPath, Oxford, United Kingdom Ivor Byren, Oxford, United Kingdom Martin McNally, Oxford, United Kingdom Peter McLardy-Smith, FRCS, Oxford, United Kingdom Roger Gundle, Aylesbury, United Kingdom Adrian Taylor, MBBS, FRCS, Oxfordshire, United Kingdom

Debridement and implant retention of hip prosthetic joint infection, has 80% 10-year implant survival and good function but 22% required re-debridement. Exchange of modular components improved outcome

#### Poster No. P100

Radiographic Identif cation of Arthroscopically Relevant Acetabular Structures W Andrew Lee, BA, Minneapolis, MN Adriana J. Saroki, Birmingham, MI Sverre B. Loken, MD, Oslo, Norway Christiano Trindade, MD, Vail, CO Tyler Cram, Vail, CO Robert F. LaPrade, MD, PhD, Vail, CO

Marc J. Philippon, MD, Vail, CO

Surgical landmarks had reliable locations on radiographs, were reproducible in both AP and false prof le views and could increase the threshold for CT imaging and lower radiation exposure to patients.

### Poster No. P101

#### Topical versus Intravenous Tranexamic Acid in Hip and Knee Arthroplasty: Eff cacy and Safety

Ying-Ying J. Kao, MD, San Francisco, CA Brooke L. Prashker, MBA, New York, NY Geoffrey H. Westrich, MD, New York, NY

Tranexamic acid in either intravenous or topical form was effective in decreasing the amount of blood transfusions as well as the number of units of blood transfused in hip and knee arthroplasty.

#### Poster No. P102

A Prospective, Randomized, Radiostereometric Analysis of Patients Undergoing Cementless THR David C. Ayers, MD, Worcester, MA Patricia Franklin, MD, MBA, Worcester, MA Henrik Malchau, MD, Cambridge, MA Charles R. Bragdon, PhD, Boston, MA

At 5 year follow-up, femoral head penetration was one order of magnitude less in the highly cross-linked polyethylene liners in comparison to the conventional liners. Further follow-up is necessary.

# **ADULT RECONSTRUCTION HIP**

### Poster No. P103

Adult Reconstructive Surgery - A High Risk Profession for Work-Related Injuries

Saad Al-Qahtani, MD, Montreal, QC, Canada Mohammad M. Alzahrani, MD, Montreal, QC, Canada Michael Tanzer, MD, Hampstead, QC, Canada

The prevalence of work-related injuries in adult reconstructive surgeons was found to be signif cantly high (66%), leading to them requiring time off work due to these disorders.

## Poster No. P104

New Onset Perioperative Atrial Fibrillation during Orthopaedic Surgery Procedures & Incidence of Ischemic Stroke Sariah Khormaee, MD, PhD, New York, NY Huong Do, MA, New York, NY Yevgeniy Mayr, BA, BS, Brooklyn, NY

New onset perioperative atrial f brillation occurring during orthopedic procedures carries an association with future risk of stroke.

## Poster No. P105

Outcomes of Revision Surgery for Recalled Modular Neck Femoral Implants: A Two-Year Follow Up Christopher P. Walsh, MD, Oak Park, MI Joseph M. Nessler, BA, Phoenix, AZ Gerald B. Nelson, OPA-C, Waite Park, MN Joseph P. Nessler, MD, Saint Cloud, MN David C. Markel, MD, Novi, MI

The direct lateral approach is associated with severe postoperative abductor deficiency in revision surgery for modular neck femoral implants. The postero-lateral approach is recommended.

## ADULT RECONSTRUCTION KNEE

#### Poster No. P106

Hip and Knee Arthroplasty in a Safety Net Hospital: Not So Safe? Harry E. Jergesen, MD, San Anselmo, CA Paul H. Yi, MD, San Francisco, CA

Arthroplasties performed in a safety net hospital have more complications and reoperations compared with those performed at a nearby academic center, even when performed by the same surgeon.

### Poster No. P107

VEGF and MicroRNA-210 are Induced by Hypoxia and IL-1beta in Fibroblast-like Synoviocytes of Knee Osteoarthritis Sittisak Honsawek, MD, PhD, Bangkok, Thailand Aree Tanavalee, MD, Bangkok, Thailand

VEGF and microRNA-210 were expressed in f broblast-like synoviocytes under hypoxia or IL-1beta stimulation and could contribute to the pathogenesis of osteoarthritis.

## Poster No. P108

Inf ammation and the Discrepancy Between Radiography and Pain in Patients with Knee Osteoarthritis Duke W. Hasson, MD, Aurora, CO Andrew Kittelson, Aurora, CO Craig A. Hogan, MD, Aurora, CO Frank Somoza, Aurora, CO Michael R. Dayton, MD, Aurora, CO Jennifer Stevens-Lapsley, PhD, PT, Aurora, CO

The aim of this study was to investigate systemic markers of inf ammation as a possible explanation for discordance between radiographic severity and reports of knee pain.

## Poster No. P109

Patient's Perception Between Subvastus and Medial Parapatellar Approach After Knee Replacement is not Different

In Jun Koh, MD, PhD, Seoul, Republic of Korea Mansoo Kim, Seoul, Republic of Korea Sung Won Jang, MD, Seoul, Republic of Korea Yong In, Seoul, Republic of Korea

Patients who received the contemporary perioperative management do not perceive the difference between subvastus and medial parapatellar approach following same-day bilateral total knee arthroplasty.

#### Poster No. P110

# Mid-Term Results of Total Hip and Total Knee Arthroplasty in Patients with HIV

Brian Chalmers, MD, Rochester, MN Matthew P. Abdel, MD, Rochester, MN Robert T. Trousdale, MD, Rochester, MN Mark W. Pagnano, MD, Rochester, MN

In addition to a substantial risk of perioperative complications, patients with HIV who undergo THA or TKA also have a substantial risk of revision or reoperation at 5 and 10 years.

## Poster No. P111

Muscular Architecture of the Posterior Knee and the Basic Science Implications

Addison R. Wood, MS, Fort Worth, TX Morgan Smith, Fort Worth, TX Russell A. Wagner, MD, Fort Worth, TX Rustin E. Reeves, PhD

The role of the popliteus muscle in knee mechanics and balancing should not be underestimated and merits inclusion into computational knee models and joint simulations.

#### Poster No. P112

## Secondary Patellar Resurfacing In Total Knee Arthroplasty

Ainhoa Toro, Madrid, Spain Alfonso C. Prada, Madrid, Spain Rafael Navarro Sr, MD, Aranjuez (madrid), Spain Juan Pretell, MD, Miami, Florida

Secondary patellar resurfacing can be used in patients with anterior knee pain after a primary total knee arthroplasty but many patients continue with pain and are dissatisf ed with this procedure.

Impact of Age on Patient-Reported Outcome Measures in Total Knee Arthroplasty (TKA) Vinod Dasa, MD, Kenner, LA Ryan Roubion, Destrehan, LA

Luke A. Townsend, BS, New Orleans, LA Claudia Leonardi, Hammond, LA Grant Pollock, BS, Kenner, LA Devin Bourgeois, BS, Thibodaux, LA Rabun S. Fox, MD, New Orleans, LA

This study was a chart review that analyzed data from TKA patients to elucidate the effect of age on patient reported outcomes measures collected at various time intervals following the procedure.

## Poster No. P114

#### Do We Really Need Routine Inpatient Predischarge Radiographs After Simple Primary Total Knee Replacement?

Senthil N. Sambandam, MD, Cheyenne, WY Vishesh Khanna, MBBS, New Delhi, India

We questioned the practice of obtaining routine predischarge radiographs in patient undergoing TKA. Analysis revealed predischarge X-rays can be safely eliminated with signif cant cost benef t.

# Poster No. P115

# The Value of Using a Skin Knife in Orthopaedic Surgery - Myth or Necessity?

Oliver Schindler, FRCS, FRCS (Ortho), Bristol, United Kingdom

The use of separate skin and inside knives should be maintained due to the potential risk of transfer of organisms into deeper tissue layers.

## Poster No. P116

# Change in Body Mass Index after Primary Unilateral Total Knee Arthroplasty

Hay N. Box, MD, Dallas, TX Timothy Brown, MD, Dallas, TX Matthew W. Judd, BS, MS, Dallas, TX Philip O. Oladeji, BSN, RN, Dallas, TX Michael H. Huo, MD, Dallas, TX

Class I obesity, female gender, and age younger than 60 years at time of TKA were patient characteristics associated with a signif cant increase in BMI at two years after primary unilateral TKA.

## Poster No. P117

Wound Healing Problems Seen in Patients Treated with Enhanced Pain and Rehab Protocols Following TKR David F. Dalury, MD, Baltimore, MD Danielle M. Chapman, Towson, MD

More wound healing problems are seen in a group of consecutive patients treated with an enhanced pain and rehabilitation protocol.

### Poster No. P118

Waterless Rubbing Versus Traditional Scrubbing for Prevention of Orthopaedic Surgical Site Infections Kentaro Iwakiri, MD, Ikoma, Japan Akio Kobayashi, MD, Nara, Japan Yoichi Ohta, Osaka, Japan Masatoshi Hoshino, MD, PhD, Osaka, Japan Hiroaki Nakamura, MD, Osaka, Japan

Waterless hand rubbing with a liquid aqueous alcohol solution may be a safe, quick, and cost-effective alternative to traditional hand scrubbing in orthopedic surgery.

# Poster No. P119

◆ The Use of Intra-articular Antibiotic Loaded Calcium Sulfate Beads in Periprosthetic Joint Infection Alexander Harbin, MD, Albany, NY Jared T. Roberts, MD, Albany, NY Daniel Cepela, MD, Albany, NY Joseph Zimmerman, MD, Troy, NY Richard Uhl, MD, Albany, NY

Acute infection of total hip and knee prostheses continues to be a great concern; we have studied the use of intra-articular calcium sulfate beads for single stage irrigation and debridement.

## Poster No. P120

Do Total Knee Arthroplasty Patients have a Higher Activity Level Compared to Patients with Osteoarthritis? *Timothy L. Kahn, BA, Irvine, CA Ran Schwarzkopf, MD, Irvine, CA* 

Post-TKA patients achieve overall physical activity levels similar to other OA patients. This indicates that TKA alone does not improve physical activity levels beyond those of the average OA patient

## Poster No. P121

Incidence, Causes, and Risk Factors for Readmission Following Total Knee Arthroplasty in the Veteran Population

Patrick Horst, MD, San Francisco, CA Derek Ward, MD, Philadelphia, PA Lionel Metz, MD, San Francisco, CA Hubert T. Kim, MD, PhD, San Francisco, CA Alfred C. Kuo, MD, San Francisco, CA

The article discusses the incidence, causes, and risk factors for readmission following primary total knee arthroplasty in a Veterans population.

# ADULT RECONSTRUCTION KNEE

### Poster No. P122

Pre-operative Quadriceps Activation Def cits Are Related To Activation Def cits After Total Knee Arthroplasty Todd Miner, MD, Denver, CO Roger Paxton, PhD, Aurora, CO Raymond H. Kim, MD, Denver, CO Charlie C. Yang, MD, Denver, CO Tawnya Downing, Aurora, CO Jeri Forster, PhD, Clemmons, NC Douglas A. Dennis, MD, Denver, CO Jennifer Stevens-Lapsley, PhD, PT, Aurora, CO

Quadriceps activation def cits secondary to knee osteoarthritis may be indicative of activation-related declines in strength and function after total knee arthroplasty.

## Poster No. P123

Femoral Bowing is Main Determinant of the Proper Alignment to Restore Mechanical Axis in Total Knee Arthroplasty Romy Megahed, Bellaire, TX Sabir Ismaily, Houston, TX Philip C. Noble, PhD, Houston, TX Gregory W. Stocks, MD, Houston, TX

Accounting for femoral bowing in the calculation of the VCA allows the surgeon to better restore proper alignment when performing TKA.

## Poster No. P124

Chronic Kidney Disease Increases the Risk for Venous Thromboembolism and Periprosthetic Infection Following TKA Bhaveen H. Kapadia, MD, Baltimore, MD Matthew R. Boylan, Brooklyn, NY Paul W. Perdue Jr, MD, New York, NY Aditya V. Maheshwari, MD, Brooklyn, NY Michael A. Mont, MD, Baltimore, MD

Patients with Chronic Kidney Disease, particularly those with ESRD, were at an increased risk for postoperative venous thromboembolism and periprosthetic joint infection following a primary THA.

#### Poster No. P125

Cost Savings Associated with Reducing Post-Anesthesia Care Unit Discharge Delays After Total Joint Replacement Steven F. Schutzer, MD, Hartford, CT Christopher Weigert, BS, RN, Hartford, CT Michael S. Cremins, PA-C, PhD, Hartford, CT Maureen Geary, Hartford, CT John Grady-Benson, MD, Farmington, CT Smitha S. Vellanky, MSc, Hartford, CT

Time-Driven Activity-Based Costing, coupled with ISO 9001:2008 principles, readily identif es post-anesthesia care unit discharge delays and results in major cost savings.

## Poster No. P126

Utilization and Cost of Hyaluronic Acid Injections in Advanced Osteoarthritis of the Knee Jack W. Weick, BS, Chicago, IL Harpreet Bawa, MD, Chicago, IL Douglas R. Dirschl, MD, Chicago, IL

Despite the controversy of hyaluronic acid, utilization remained high and costs of injections accounted for a signif cant proportion of end-stage knee osteoarthritis-related payments from 2005-2012.

## Poster No. P127

Sequentially Irradiated and Annealed Highly Cross-Linked Polyethylene Inserts Thinner than 8mm in TKA Siraj A. Sayeed, MD, San Antonio, TX Julio J. Jauregui, Baltimore, MD Laryssa Korduba-Rodriguez, Mahwah, NJ Aaron Essner, MS, Mahwah, NJ Steven F. Harwin, MD, New York, NY Ronald E. Delanois, MD, Baltimore, MD Michael A. Mont, MD, Baltimore, MD

The aim of the present study was to evaluate if thin, sequentiallyirradiated, and annealed highly cross-linked UHMWPE tibial inserts would have improved wear properties

#### Poster No. P128

#### Descriptive Analysis of Operating Room Airborne Particles During Total Joint Arthroplasty John Grady-Benson, MD, Farmington, CT

Smitha S. Vellanky, MSc, Hartford, CT Michael S. Cremins, PA-C, PhD, Hartford, CT

This is the largest descriptive study of TJR operating room small airborne particle debris, demonstrating signif cant differences between surgeons, operating rooms, TKA vs. THA, and patient gender.

## Poster No. P129

◆ Evaluation of Topical Ultrasound for Bacterial Biof Im Removal Peter M. Bonutti, MD, Eff ngham, IL Justin Beyers, Eff ngham, IL Tonya Bierman, BS, Eff ngham, IL Michael A. Mont, MD, Baltimore, MD Jeffrey J. Cherian, DO, Philadelphia, PA

In this study we evaluate the effect of ultrasound on bacterial colony counts and specif cally the effect on biof lm formation.

#### Poster No. P130

Prospective, Randomized Evaluation of the Quality of Wound Closure with Barbed Versus Standard Suture after TJA Alexander P. Sah, MD, Fremont, CA

Barbed suture provided better watertight incision closure, is strong enough to withstand rapid mobilization, and is associated with fewer postoperative wound complications than standard sutures.

Factors Contributing to Failed Two-Stage Reimplantation Procedures of Infected TKA David H. So, MD, Philadelphia, PA Gerald Andah, B.S., Philadelphia, PA Andrew H. Milby, MD, Jenkintown, PA John M. Hardcastle, MD, Philadelphia, PA Gwo-Chin Lee, MD, Philadelphia, PA

The purpose of this study is to evaluate the factors contributing to failed two-stage reimplantation procedures for infected total knee arthroplasty.

# Poster No. P132

#### Liposomal Bupivacaine Suspension Can Reduce Lengths of Stay and Improve Discharge Status of Patients Undergoing TKA Jeffrey J. Cherian, DO, Philadelphia, PA John W. Barrington, MD, Plano, TX Michael A. Mont, MD, Baltimore, MD

The purpose of this study was to assess length of hospital stay and discharge status among patients undergoing TKA with or without the use of a liposomal bupivacaine suspension injection.

# Poster No. P133

The Risk of an Infection Associated with Intra-Articular Injections Prior to Total Knee Arthroplasty Nirav H. Amin, MD, New York, NY Didi Omiyi, MD, Eff ngham, IL Bozena Kuczynski, RPA-C, New York, NY Fred D. Cushner, MD, New York, NY Giles R. Scuderi, MD, New York, NY

There does not appear to be a correlation with the timing of intraarticular injections and an increased risk of a deep infection with steroid and/or viscosupplementation injections prior to a TKA.

## Poster No. P134

#### The Impact of Previous Ipsilateral Knee Surgery on Outcomes Following Primary Total Knee Arthroplasty

Marcus A. Rothermich, MD, Saint Louis, MO Robert H. Brophy, MD, St Louis, MO Denis Nam, MD, MSc, St Louis, MO Kevin K. Li, BS, Saint Louis, MO John C. Clohisy, MD, Saint Louis, MO Robert L. Barrack, MD, Saint Louis, MO Ryan Nunley, MD, Saint Louis, MO

A history of prior ipsilateral knee surgery does not negatively impact functional outcomes in patients undergoing primary total knee arthroplasty.

## Poster No. P135

#### Outcomes of Cementless Total Knee Arthroplasty

Steven F. Harwin, MD, New York, NY Jeffrey J. Cherian, DO, Philadelphia, PA Julio J. Jauregui, Baltimore, MD Randa K. Elmallah, Baltimore, MD Todd Pierce, MD, Baltimore, MD Michael A. Mont, MD, Baltimore, MD

Our study demonstrated excellent clinical and patient-reported outcomes of cementless total knee arthroplasty.

## Poster No. P136

Novel Alignment Measurement Technique for Total Knee Arthroplasty using Patient-Specif c Instrumentation Kazumasa Yamamura, MD, Osaka City Osaka, Japan Yukihide Minoda, MD, Osaka, Japan Suguru Nakamura, MD, Osaka, Japan Maki Itokazu, MD, Osaka, Japan Yoichi Ohta, Osaka, Japan Shigekazu Mizokawa, MD, PhD, Osaka, Japan Hiroaki Nakamura, MD, Osaka, Japan

To assess the accuracy of PSI, preoperative 3D plan and postoperative 3D CT data were superimposed using computer software. The accuracy of tibial rotation was lower than other prosthetic alignment.

## Poster No. P137

Early Corrective Collateral Ligament Release as a Cause of Flexion Instability during Total Knee Arthroplasty Sam Hakki, MD, Saint Petersburg, FL Mouhanad M. El-Othmani, MD, Springf eld, IL Khaled J. Saleh, MD, MSc, Springf eld, IL William M. Mihalko, MD, PhD, Germantown, TN

Reversal of coronal knee deformity takes place in 12% of our TKA. Early collateral ligament release in such cases needs to be avoided; otherwise postoperative f exion instability may be inevitable.

## Poster No. P138

# Establishing a Pragmatic Knee Preservation Registry to Follow Patients with Degenerative Joint Disease

Stephen Yu, M.D., New York City, NY Alessandra Szulc, MA, New York, NY Elisha Lee, New York, NY Xiang Zhou, PhD, New York, NY Raj Karia, MPH, New York, NY Eric J. Strauss, MD, New York, NY Laith M. Jazrawi, MD, New York, NY Richard Iorio, MD, New Rochelle, NY Philip Band, PhD, New York, NY

The Joint Preservation Registry is a prospective, pragmatic, observational study, designed to identify clinical and biochemical markers of osteoarthritis phenotype, status and progression.

#### Poster No. P139

Distal Femoral Morphology: Does Ethnicity, Gender, or Body Size Play a Role?

Brian E. Schwartz, MD, Des Plaines, IL Yi-Loong C. Woon, MD, Chicago, IL Ritesh Shah, MD, Glenview, IL Jeffrey M. Goldstein, MD, Morton Grove, IL

This study demonstrates that the angle between the transepicondylar axis and posterior condylar axis does not vary signif cantly based on ethnicity, gender, height, or BMI.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

# ADULT RECONSTRUCTION KNEE

### Poster No. P140

Successful Ambulation following Knee Arthrodesis: A Salvage Procedure for Persistent Prosthetic Joint Infection Amanda Schroeder, Cincinnati, OH Todd C. Kelley, MD, Cincinnati, OH Nancy Heink, Williamsburg, OH Richard A. Freiberg, MD, Cincinnati, OH

Our series demonstrates that knee arthrodesis is a reasonable salvage option for resistant infections following revision total knee arthroplasty, with a majority of patients returning to ambulation.

## Poster No. P141

# Is Knee Arthritis Inherited? A Familial Aggregation Study of 1,000 Patients

Luke Jones, MRCS, Oxford, UK, United Kingdom William Jackson, FRCS, Oxford, United Kingdom Nicholas Bottomley, Oxford, United Kingdom Jonathan Palmer, MBBS, Southampton, United Kingdom Antony Palmer, MA, BMBCh, Oxford, United Kingdom George A. Grammatopoulos, MRCS, Oxford, United Kingdom Andrew P. Monk, FRCS, PhD, Oxford, United Kingdom David J. Beard, MA, MSc, , Swansea, United Kingdom Andrew J. Price, FRCS, Oxford, United Kingdom

The genetics and inheritance of knee OA is poorly def ned. This is the largest familial aggregation study ever performed and shows that the earliest structural changes occur after 46 years of age

#### Poster No. P142

# Can Medial Collateral Ligament Pie-Crusting Lead to Predictable Opening in Total Knee Arthroplasty?

Thomas A. Herschmiller, MD, New York, NY Gregory Cunn, MD, Brooklyn, NY Taylor Murtaugh, BS, New York, NY Thomas R. Gardner, MCE, New York, NY Jeffrey A. Geller, MD, New York, NY

Pic-crusting of the MCL in TKA leads to a signif cant reliable decrease in medial tension over the f rst 15, with lessening effect up to 25 punctures while blade perforation warrants caution.

#### Poster No. P143

96.7% Five-Year Survivorship of Primary Total Knee Arthroplasty with Moderately Crosslinked Polyethylene Bearing Richard W. Parkinson, FRCS, Merseyside, United Kingdom Ivan Brenkel, FRCS, Dunfermline, United Kingdom Heiko Graichen, MD, Schwandorf, Germany Sam Himden, BA, Warsaw, IN Jeffrey A. Murphy, MS, Warsaw, IN

The 96.7% Kaplan-Meier 5-year survivorship demonstrates excellent longevity consistent with a recently published report (Kindsfater 2015, J Arthroplasty) on the same device and polyethylene bearing.

## Poster No. P144

# Causes and Outcomes of Aseptic Persistent Pain after Total Knee Arthroplasty

Seunghun Lee, Hwasun, Republic of Korea Eun K. Song, MD, Hwasun-Gun, Jeollanam-Do, Republic of Korea Jong-Keun Seon, MD, Hwasungun, Republic of Korea

Hona-An Lim, MD, Gwangju, Republic of Korea Young-Joo Shin, MD, Gwangju, Republic of Korea

A number of causes of aseptic persistent pain after TKA should be identif ed.

## Poster No. P145

Does the Use of Navigation by an Experienced Surgeon Improve the Outcomes of Primary Total Knee Arthroplasty *Kiran Kumar GN, MS, Goravale, India NIMESH P. JAIN, MBBS, MS, MUMBAI, India Sung Yup Lee, Seoul, Republic of Korea Yeongwi Kang, Seongnam-Si, Republic of Korea Sang Wook Lee, Seongnam, Republic of Korea Seon Woo Lee, MD, Seongnamsi, Republic of Korea Suri Chong, Seong-Nam City, Republic of Korea Tae Kyun Kim, MD, Seongnam-si, Republic of Korea* 

The use of navigation improves results in terms of blood management, adverse complications with better limb and prosthesis alignment with lesser proportion of outliers.

## Poster No. P146

# The Effect of Total Knee Replacement on the Non-Operated Lower Extremity Joints

Kristi Collins, PA-C, Lewisburg, PA David J. Kolessar, MD, Shavertown, PA James Gotoff, BA, Danville, PA Patricia Franklin, MD, MBA, MPH, Worcester, MA Celeste Lemay, RN, MPH, Worcester, MA Elie S. Ghanem, MD, Danville, PA

Patients who undergo TKA can be expected to achieve pain relief in their non-operated hip and knee joints.

## Poster No. P147

Greater Medial Compartment Forces during Total Knee Arthroplasty Associated with Improved Patient Satisfaction Cale Jacobs, PhD, Lexington, KY Christian P. Christensen, MD, Lexington, KY

Recreating greater forces in the medial compartment like that of the native knee may yield improved patient-reported outcomes and increased patient satisfaction.

## Poster No. P148

Early Functional Outcomes of Cruciate Retaining Total Knee Arthroplasty using Smart Tibial Insert Trial Technology Clark Judge, BA, New York, NY Taylor Murtaugh, BS, New York, NY Jeffrey A. Geller, MD, New York, NY

Smart tibial insert trial technology aids surgeons balance compartmental loads and femoral-tibial rotational congruency and lead to improved short-term physical and functional outcomes in CR-TKA.

Risk Factors of the DVT and PE after TKA - Multivariate Analysis in 1,100 Cases Evaluated by Venography Koh Shimizu, MD, Chiba, Japan Masatsune Yamagata, MD, PhD, Ichihara, Japan Takuro Moriya, Ichihara, Japan Koh Shimizu, MD, Chiba, Japan

Among the various risk factors of DVT, BMI and gender statistically correlated with the occurrence of DVT by multivariate analysis. An adequate prophylaxis method is a necessity for the obese female.

## Poster No. P150

Major Outcome Goals at a Total Joint Replacement Center of Excellence: Impact of Surgeon Compliance and Case Volume William Kim, M.D., Torrance, CA Timothy L. Kahn, BA, Irvine, CA John V. Tiberi, MD, Redondo Beach, CA Douglas E. Garland, MD, Long Beach, CA

Major cost-contributing outcomes were improved by adherence to JRC protocols in a single large hospital, both in high-volume and low-volume surgeons.

## Poster No. P151

Do We Have to Resurface the Patellar in Total Knee Arthroplasty for Rheumatoid Arthritis All the Time? *Choong H. Choi, MD, Seoul, Republic of Korea* 

Jin Kyu Lee, MD, Seoul, Republic of Korea Rae Hyeong Lee, Seoul, Republic of Korea Chang Hoon Lee, MD, Seoul, Republic of Korea

Equivalent results after TKA were obtained with or without patellar resurfacing in patients with rheumatoid arthritis.

## Poster No. P152

# Recurrent Hemarthrosis following Knee Arthroplasty Treated with Arterial Embolization

Zachary D. Weidner, MD, New York, NY William G. Hamilton, MD, Alexandria, VA John B. Smirniotopoulos, MD, MS, McLean, VA Sandeep Bagla, MD, Alexandria, VA

Selective geniculate arterial embolization is an effective and safe treatment modality for recurrent hemarthrosis after knee arthroplasty.

#### Poster No. P153

# Real Effect of Anterior Femoral Notch in Periprosthetic Fractures Around the Knee

Jose Carlos Minarro, MD, Cordoba, Spain Maite Urbano-Luque, PhD, Córdoba, Spain Manuel C. Escalante, MD, Cordoba, Spain Manuel Jesus Lopez - Pulido, Cordoba, Spain Rafael A. Quevedo Reinoso Sr, Cordoba, Spain Alberto D. Delgado-Martinez, Jaen, Spain

Anterior Femoral Notch after Total Knee Arthroplasty lesser than 3mm do not determine a higher risk of Periprosthetic fracture. When the notch is f lled by callus it may act as a protective factor

#### Poster No. P154

Knee Arthroscopy in the Setting of Degenerative Arthritis Jason P. Hochfelder, MD, Hawthorne, NY Jiho Han, New York, NY W N. Scott, MD, Key Largo, FL William J. Long, MD, New York, NY

Most patients with degenerative changes at the time of knee arthroscopy do not go on to arthroplasty at an average of six years.

## Poster No. P155

Does In Vivo Contact Kinematics of Bi-Cruciate Retaining Total Knee Arthroplasty Mimic Normal Knee during Gait? Young-Min Kwon, MD, PhD, Boston, MA

Tsung-Yuan Tsai, PhD, Boston, MA Dimitris Dimitriou, MD, Cambridge, MA Ali Hosseini, PhD, Boston, MA Jeffrey H. DeClaire, MD, Rochester, MI Andrew A. Freiberg, MD, Boston, MA Harry E. Rubash, MD, Boston, MA Guoan Li, PhD, Boston, MA

Bi-cruciate retaining TKA exhibited in-vivo femoral rollback, axial rotation, and lateral-pivoting pattern during gait, suggesting it has the potential to preserve more 'normal' kinematic features.

## Poster No. P156

#### UKA Achieves Greater Flexion with No Difference in Satisfaction at Two Years vs. TKA in Patients Younger than 55 *Graham S. Goh, Singapore, Singapore*

Hamid Rahmatullah Bin Abd Razak, MBBS, Singapore, Singapore

Hee-Nee Pang, MBBS, MRCS, Singapore, Singapore Darren Tay, MBBS, FRCS (Ortho), Singapore, Singapore Shi-lu Chia, MBBS, FRCS (Ortho), Singapore, Singapore Ngai-Nung Lo, MD, Singapore, Singapore Seng-Jin Yeo, FRCS, Singapore, Singapore

Advantages of UKA were not shown, other than greater f exion up to 2 years postop. However, this did not result in greater satisfaction and fulf lled expectations in younger higher-demand individuals

#### Poster No. P157

#### Accuracy of Distal Femoral Resection by Accelerometer-Based, Portable Navigation in Total Knee Arthroplasty

Tessyu Ikawa, MD, Osaka, Japan Yoshinori Kadoya, MD, Osaka, Japan Mitsunari Kim, MD, Sakai, Japan Susumu Takemura, Osaka, Japan Ryo Sugama, MD, Osaka, Japan Hirotake Yo, MD, Sakai, Japan Hirotsugu Ohashi, MD, Osaka, Japan

The portable navigation system provides the technically straightforward method for the detection of the femoral head and performing accurate bone cut in the distal femur.

# ADULT RECONSTRUCTION KNEE

#### Poster No. P158

Unicondylar Knee Arthroplasty Reduces Hospital Stay and 30-Day Readmission Compared to Total Knee Arthroplasty Justin Drager, MD, Montreal, QC, Canada Adam Hart, MD, Montreal, QC, Canada Jad Abou Khalil, MD, MSc, Montreal, QC, Canada Olga Huk, MD, Westmount, QC, Canada David Zukor, MD, Montreal, QC, Canada Stephane Bergeron, MD, Kirkland, QC, Canada John Antoniou, MD, FRCSC, Montreal, QC, Canada

Through analysis of 37 000 cases, this study demonstrates that undergoing a UKA shortens hospital stay and results in a 50% reduction of unplanned 30-day hospital readmissions compared to TKA.

## Poster No. P159

Can You Crosswalk Original Knee Society Scores to the New 2011 Knee Society Score? Susan M. Odum, PhD, Charlotte, NC Thomas K. Fehring, MD, Charlotte, NC

Clinicians and researchers can input their historical KSS with demographic data into these equations to crosswalk to the 2011 KSS objective and function scores if all key variables are available.

### Poster No. P160

Accelerometer-Based Navigation Improves the Accuracy of Mechanical Axis and Component Alignment in TKA Graham S. Goh, Singapore, Singapore Ming Han Liow, MD, MBBS, Singapore, Singapore Hee-Nee Pang, MBBS, MRCS, Singapore, Singapore Darren Tay, MBBS, FRCS (Ortho), Singapore, Singapore Shi-lu Chia, MBBS, FRCS (Ortho), Singapore, Singapore Ngai-Nung Lo, MD, Singapore, Singapore Seng-Jin Yeo, FRCS, Singapore, Singapore

Accelerometer-based navigation improves the accuracy of mechanical alignment in TKA, despite a slight increase in operative time.

#### Poster No. P161

#### Pre-Opioid Use: Is There an Association with Outcomes Following Total Knee Arthroplasty?

Nicholas Bedard, MD, Iowa City, IA Nicholas Bedard, MD, Iowa City, IA Andrew J. Pugely, MD, Coralville, IA Christopher T. Martin, MD, Coralville, IA Kyle Duchman, MD, Iowa City, IA Robert W. Westermann, MD, Iowa City, IA Yubo Gao, PhD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

Opioid users had prolonged opioid use following TKA with more comorbidities and higher rates of complications. Opioid users did decrease opioid use status-post TKA, but rates remained high.

#### Poster No. P162

Lateral Meniscus Transplantation: Evaluation of Kinematics, Stain, and Tibiofemoral Contact Pressures Donald Dolce, MD, Grapevine, TX Hugh L. Jones, Houston, TX Andrea Gale, MD, Houston, TX Michael Hogen, BA, Houston, TX Jason Alder, MD, Houston, TX Philip C. Noble, PhD, Houston, TX Patrick C. McCulloch, MD, Houston, TX

This study demonstrates increased posterior and superior meniscal constraint after transplantation, which is further increased at high f exion angles.

#### Poster No. P163

Morbidity and Mortality After Simultaneous Bilateral Total Knee Arthroplasty in a Fast-Track Set Up

Kirill Gromov, MD, PhD, Copenhagen, Denmark Anders Troelsen, MD, PhD, Koege, Denmark Thue Oersnes, MD, Copenhagen, Denmark Kristian S. Otte, MD, Hvidovre, Denmark Henrik Husted, MD, Charlottenlund, Denmark

In this retrospective single center study we found simultaneous bilateral TKA in a well-described fast-track setup to be safe with respect to early postoperative morbidity and mortality.

#### Poster No. P164

Warfarin Anticoagulation after Primary Total Joint Arthroplasty: Does the International Normalized Ratio Matter? Michael Rutter, MD, Danville, PA Nathaniel C. Wingert, MD, Danville, PA Michael P. Podobinski, PA-C, Marion Heights, PA Jove Graham, PhD, Danville, PA James Gotoff, BA, Danville, PA Elie S. Ghanem, MD, Danville, PA

The majority of patients discharged from the hospital after primary TJA will fail to achieve a sustained INR  $\geq$ 2. However, this does not predispose these patients to higher symptomatic VTE rates.

## Poster No. P165

Outcome of Total Knee Arthroplasty in Patients with Cerebral Palsy: A Matched Cohort Analysis Matthew Houdek, MD, Rochester, MN Chad Watts, MD, Rochester, MN Cody Wyles, BS, Rochester, MN Todd A. Milbrandt, MD, Rochester, MN Michael J. Taunton, MD, Rochester, MN

TKA provides patients with CP signif cant pain relief and functional improvement. Patients with CP should expect similar outcome to those with a primary diagnosis of OA

#### Accelerometer-Based Navigation is as Accurate as Optical CAS in Restoring the Joint Line and Mechanical Axis

Graham S. Goh, Singapore, Singapore Ming Han Liow, MD, MBBS, Singapore, Singapore Hee-Nee Pang, MBBS, MRCS, Singapore, Singapore Darren Tay, MBBS, FRCS (Ortho), Singapore, Singapore Shi-lu Chia, MBBS, FRCS (Ortho), Singapore, Singapore Ngai-Nung Lo, MD, Singapore, Singapore Seng-Jin Yeo, FRCS, Singapore, Singapore Mann-Hong Tan, Singapore, Singapore

Accelerometer-based navigation is as accurate as CAS in achieving a neutral mechanical axis and restoring the joint line after TKA, while reducing the duration of surgery.

## Poster No. P167

# How Accurate are Orthopaedic Surgeons in Diagnosing

Periprosthetic Joint Infection After Knee Replacement? In Jun Koh, MD, PhD, Seoul, Republic of Korea Yong In, Seoul, Republic of Korea Kwang J. Oh, MD, Seoul, Republic of Korea Byung June Chung, MD, Seoul, Republic of Korea Sae Kwang Kwon, MD, Bucheon-Si, Republic of Korea Javad Parvizi, MD, FRCS, Gladwyne, PA Tae Kyun Kim, MD, Seongnam-si, Republic of Korea

Only 65% of 303 periprosthetic joint infection from 17 centers in Korea satisf ed the new diagnostic criteria of MSIS, and in 35%, the diagnosis was made based on clinical judgment.

## Poster No. P168

#### Polyethylene Wear in Mobile Bearing Unicompartmental Knee Replacement: A Retrieval Study

Kun Tao, London, ON, Canada Matthew G. Teeter, PhD, London, ON, Canada James Howard, MD, London, ON, Canada Richard W. McCalden, MD, London, ON, Canada Douglas Naudie, MD, FRCSC, London, ON, Canada

Retrieved mobile bearing unicompartmental components were examined using damage scoring and micro-CT. Articular and backside penetration was equal, while damage was greater on the articular surface.

## Poster No. P169

#### The Correction of Flexion Contracture in TKA: The Surgeon Should Know How Much Degree They Get in Each Step

Han-Jun Lee, MD, Seoul, Republic of Korea Jae Sung Lee, M.D,PhD, Seoul, Republic of Korea Seong Hwan Kim, MD, Seoul, Republic of Korea Jung-Won Lim, MD, Seoul, Republic of Korea Dai-Ung Ham, Seoul, Republic of Korea Hyeok Bin Kwon, Seoul, Republic of Korea

Our f ndings indicated that appropriate soft tissue release could correct f exion contracture eff ciently. The medial release and additional bone cutting could correct majority of f exion contracture.

## Poster No. P170

Polyethylene Thickness Affects Rotation and Kinematics in Unicompartmental Knee Arthroplasty Lucian C. Warth, MD, Fisher, IN Mohammad Kia, New York, NY Carl W. Imhauser, PhD, New York, NY Timothy M. Wright, PhD, New York, NY Geoffrey H. Westrich, MD, New York, NY Michael B. Cross, MD, New York, NY David Mayman, New York, NY Andrew D. Pearle, MD, Rye, NY

In a computational knee model, understuff ng the polyethylene thickness of a medial UKA resulted in an abrupt change from external to internal rotation of the tibia in at approximately 30° f exion

## Poster No. P171

#### Cementless Total Knee Arthroplasty in Patients Older than 75 Years: A Comparative Study

Steven F. Harwin, MD, New York, NY Julio J. Jauregui, Baltimore, MD Jeffrey J. Cherian, DO, Philadelphia, PA Randa K. Elmallah, Baltimore, MD Todd Pierce, MD, Baltimore, MD Robert Borzio, MD, Brooklyn, NY Bhaveen H. Kapadia, MD, Baltimore, MD Michael A. Mont, MD, Baltimore, MD

Patients > 75 years have improvements in knee scores and rangeof-motion, with excellent aseptic survivorship, which are on par with their younger counterparts at a mean follow-up of 3 years.

## Poster No. P172

## Preoperative Intravenous Dexamethasone Reduced Pain after Total Knee Arthroplasty

Nattapol Tammachote, MD, Bangkok, Thailand Supakit Kanitnate, MD, Pathumtani, Thailand

Preoperative intravenous dexamethasone did not only reduce pain at rest and on motion up to 21 hours after operation but also decrease rate of nausea or vomiting.

## Poster No. P173

A Meta-Analysis Comparing Intra-Articular Versus Intravenous Tranexamic Acid in Total Knee Arthroplasty Yongqiang Jerry Chen, MBBS, Singapore, Singapore Ngai-Nung Lo, MD, Singapore, Singapore Seng-Jin Yeo, FRCS, Singapore, Singapore

Intra-articular tranexamic acid is an alternative to intravenous administration for patients undergoing total knee arthroplasty.

## Poster No. P174

The Fate of Revision TKA with Preoperative Abnormalities in Either Sedimentation Rate or C-Reactive Protein John M. Hardcastle, MD, Tuxedo Park, NY David H. So, MD, Detroit, MI Gwo-Chin Lee, MD, Philadelphia, PA

A single preoperative abnormal CRP or ESR in revision TKA is associated with a 5.6-fold increased risk of subsequent infection and 3.8-fold increased risk of re-revision for all causes.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

# ADULT RECONSTRUCTION KNEE

#### Poster No. P175

Quantif cation of Corrosion in Modular Interfaces of Knee Implants

Kirsten Seagers, BS, West Chester, PA Audrey Martin, BS, Lebanon, NH Eric Henderson, MD, Hanover, NH Douglas Van Citters, PhD, Hanover, NH

Maximum depth of corrosion in modular interfaces of knee implants is correlated with duration in vivo. This corrosive volumetric material loss is unlikely to result in a negative patient outcome.

## Poster No. P176

# Cemented versus Cementless Total Knee Arthroplasty in Morbidly Obese Patients

Deren T. Bagsby, MD, Indianapolis, IN Kimona Issa, MD, Little Falls, NJ Langan S. Smith, BS, Louisville, KY Steven F. Harwin, MD, New York, NY Michael A. Mont, MD, Baltimore, MD Arthur L. Malkani, MD, Louisville, KY

Morbidly obese (BMI>40) primary TKA patients have increased stress across bone-cement and implant-cement interfaces. This study shows cementless implants can reduce aseptic loosening revision rates.

#### Poster No. P177

#### Initial Experience with Next Day Discharge After Total Knee Arthroplasty

Alexander P. Sah, MD, Fremont, CA

In this initial experience, 72% of unselected TKA patients were able to be discharged the day after surgery with better knee motion and without increase in complications.

#### Poster No. P178

#### Vancomycin Administration for Reported Penicillin Allergy Increases Gram Negative Joint Infection

Timothy Tan, MD, Philadelphia, PA Bryan D. Springer, MD, Charlotte, NC John Ruder, MD, Charlotte, NC Michael Ruffolo, MD, Charlotte, NC Claudio Diaz, MD, Santiago, Chile Javad Parvizi, MD, FRCS, Philadelphia, PA Antonia Chen, MD, MBA, Philadelphia, PA

Administration of vancomycin monotherapy for total joint arthroplasty increases the rate of gram negative periprosthetic joint infection in patients with a reported penicillin allergy.

## Poster No. P179

# Does Prior Cartilage Restoration Impact Outcomes of Knee Arthroplasty?

Rachel M. Frank, MD, Chicago, IL Darren R. Plummer, MBA, Chicago, IL Peter N. Chalmers, MD, Chicago, IL Craig J. Della Valle, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL

While patients with a failed prior cartilage procedure derive benef t from knee arthroplasty, the magnitude of improvement and f nal scores are lower than matched controls.

#### Poster No. P180

#### Regional Intraosseous Delivery of Prophylactic Antibiotics Effective in a Mouse Model of Total Knee Arthroplasty Simon Young, MD, FRACS, Auckland, New Zealand Timothy Roberts, Auckland, New Zealand Brendan Coleman, MD, Wellington, New Zealand Siouxsie Wiles, PhD, Auckland, New Zealand

In this animal model of TKA, intraosseous regional delivery of prophylactic cefazolin and vancomycin was more effective than the same dose of antibiotic given systemically.

## Poster No. P181

# What is the Role of Dual Diagnosis in Primary Total Knee Arthroplasty?

Mitchell R. Klement, MD, Durham, NC Brian T. Nickel, MD, Durham, NC Colin T. Penrose, BA, BS, Durham, NC Daniel J. Blizzard, MD, Durham, NC Abiram Bala, BA, Durham, NC Michael P. Bolognesi, MD, Durham, NC Thorsten M. Seyler, MD, PhD, Winston-Salem, NC

"Dual diagnosis" triples the risk of periprosthetic infection and TKA revision after total knee arthroplasty and these patients should be carefully screened and counseled accordingly.

#### Poster No. P182

Unexplained Pain Following Total Knee Arthroplasty - Is Rotational Malalignment the Problem? Simon Young, MD, FRACS, Auckland, New Zealand Mark J. Spangehl, MD, Phoenix, AZ Henry D. Clarke, MD, Phoenix, AZ

In the largest study yet reported on component rotation in TKA, we found no difference in the incidence of tibial or femoral component malalignment in painful versus well functioning TKAs.

#### High-Intensity versus Low-Intensity Rehabilitation after Total Knee Arthroplasty: A Randomized Controlled Trial

Douglas A. Dennis, MD, Denver, CO Michael Bade, PhD, PT, Denver, CO Jared R. Foran, MD, Golden, CO Raymond H. Kim, MD, Denver, CO Todd Miner, MD, Denver, CO Michael R. Dayton, MD, Aurora, CO Tamara Struessel, PT, Aurora, CO Jennifer Stevens-Lapsley, PhD, PT, Aurora, CO

This randomized clinical trial examines the eff cacy of a highintensity progressive rehabilitation protocol compared to a lower intensity protocol in individuals after total knee arthroplasty.

## Poster No. P184

# Is Outpatient Arthroplasty as Safe as Fast-Track Inpatient

Arthroplasy? A Propensity Score Analysis Francis Lovecchio, BA, Chicago, IL Shawn Sahota, MD, Chicago, IL Hasham M. Alvi, MD, Chicago, IL Matthew D. Beal, MD, Elmhurst, IL David W. Manning, MD, Chicago, IL

Outpatients experience higher rates of post-discharge complications, thus outpatient THA/TKA requires quality improvements before being considered a routine alternative to fast track arthroplasty.

# Poster No. P185

#### Primary Constrained Total Knee Arthroplasty without Stem Extension in Severe Valgus Deformity Bertrand W. Parcells, MD, Maplewood, NJ Donald R. Polakoff, MD, Monroe Township, NJ

Retrospective review of 43 primary constrained TKA without stem extension with average 19° degrees preoperative valgus with 2-11 year follow-up. No aspetic loosening or recurrent deformity.

## Poster No. P186

# • Mid-Term Results of Minimally Invasive Cementless Oxford Phase 3 Unicompartmental Knee Replacement

Hemant G. Pandit, FRCS, Oxford, United Kingdom Stefano Campi, MD, Rome, Italy Cathy Jenkins, MA, Oxford, United Kingdoms Athanasios Pollalis, MD, Poole, United Kingdom Thomas Hamilton, MBChB, BSc (Hons), Oxford, United Kingdom

Omowumi Doyinsola Dada, Milton Keynes, United Kingdom Stephen J. Mellon, PhD, Oxford, United Kingdom Christopher A. Dodd, FRCS, Oxford, United Kingdom David W. Murray, MD, Oxford, United Kingdom

This prospective case series describes the outcome of the f rst consecutive 513 cementless Oxford phase 3 medial UKR for treating symptomatic end-stage anteromedial osteoarthritis.

### Poster No. P187

Patients Improve Less after Revision TKA for Flexion Instability vs. Failures Related to Infection or Osteolysis Chris Grayson, MD, Indianapolis, IN R M. Meneghini, MD, Fishers, IN

Outcomes following revision TKA for f exion instability relative to revisions for other failure etiologies are largely unknown. This study compared revision outcomes based on the cause of failure.

## Poster No. P188

# Positive Cultures during Reimplantation Increase the Risk of Subsequent Failure

Timothy Tan, MD, Philadelphia, PA Miguel M. Gomez, MD, Bogota, Colombia Jorge Manrique, MD, Bogota, Colombia Antonia Chen, MD, MBA, Philadelphia, PA Javad Parvizi, MD, FRCS, Philadelphia, PA

Positive intraoperative cultures during reimplantation, regardless of the number, were independently associated with two times the risk of subsequent infection and earlier treatment failure.

#### Poster No. P189

# Peroneal Nerve Decompression Following Total Knee Arthroplasty

Nicholas M. Brown, MD, Chicago, IL Brandon Erickson, MD, Chicago, IL Brandon Erickson, MD, Chicago, IL Michael D. Hellman, MD, Chicago, IL Bryan Haughom, MD, Chicago, IL Craig J. Della Valle, MD, Chicago, IL John J. Fernandez, MD, Winnetka, IL

Decompression of the peroneal nerve after TKA resulted in no complications, quick recovery of dysfunction symptoms, and equivalent improvement in motor symptoms as compared to a control group.

## Poster No. P190

Effectiveness of Liposomal versus Plain Bupivicaine in Total Knee Arthroplasty

Brian R. Hamlin, MD, Pittsburgh, PA Anton Y. Plakseychuk, MD, Pittsburgh, PA Kenneth Urish, MD, PhD, Pittsburgh, PA Anthony M. DiGioia III, MD, Pittsburgh, PA Timothy J. Levison, MS, Pittsburgh, PA

The periarticular injection of liposomal bupivicaine did not provide signif cant benef t over plain bupivicaine in the perioperative pain management of patients undergoing total knee arthroplasty.

# ADULT RECONSTRUCTION KNEE

#### Poster No. P191

The Effect of Age on Postoperative Outcomes following Total Knee Arthroplasty

Randa K. Elmallah, Baltimore, MD Julio J. Jauregui, Baltimore, MD Jeffrey J. Cherian, DO, Philadelphia, PA Todd Pierce, MD, Baltimore, MD Steven F. Harwin, MD, New York, NY Michael A. Mont, MD, Baltimore, MD

What are the effects of patient age on range of motion (ROM), pain and function, physical and mental status, and activity levels following total knee arthroplasty.

## Poster No. P192

# Eff cacy of Allogeneic Human Chondrocytes Expressing TGF-<sub>1</sub> in Patients with Knee Arthritis

Jeffrey J. Cherian, DO, Philadelphia, PA Randa K. Elmallah, Baltimore, MD Javad Parvizi, MD, FRCS, Philadelphia, PA Dale G. Bramlet, MD, Pinellas Park, FL David W. Romness, MD, Arlington, VA Michael A. Mont, MD, Baltimore, MD

The aim of this study was to evaluate the eff cacy and outcomes of injectable genetically engineered chondrocytes compared to placebo on patients with knee osteoarthritis.

#### Poster No. P193

A Joint Retrieval Registry Does Not Represent the United States Population for Primary Reason for Revision in TKA Ryan M. Chapman, MS, Hanover, NH Michael B. Mayor, MD, Hanover, NH Douglas Van Citters, PhD, Hanover, NH

A statistical analysis was completed comparing the primary reason for retrieval in total knee arthroplasty of the entire US population with a single joint retrieval registry over the same time period.

#### Poster No. P194

# Are Cementless Total Knee Arthroplasties a Feasible Option in Rheumatoid Arthritis Patients?

Steven F. Harwin, MD, New York, NY Randa K. Elmallah, Baltimore, MD Julio J. Jauregui, Baltimore, MD Jeffrey J. Cherian, DO, Philadelphia, PA Todd Pierce, MD, Baltimore, MD Michael A. Mont, MD, Baltimore, MD

Despite concerns regarding poor bone and soft tissue quality, RA patients who underwent cementless TKA had excellent aseptic survivorship and functional outcomes.

### Poster No. P195

Effect of Tourniquet Use in Primary Total Knee Arthroplasty Shaher Hasanain, Dubai, United Arab Emirates Samih Tarabichi, MD, Dubai, United Arab Emirates Usama H. Saleh, Dubai, United Arab Emirates Attaallh Alrefaee SR, MD, Dubai, United Arab Emirates

we conducted a prospective randomized controlled trial to clarify the difference between tourniquet vs non-tourniquet in simultaneous bilateral TKA in term of blood loss pain postoperative course

### Poster No. P196

Surgical and Functional Outcomes in Patients Undergoing TKA with PSI Compared to Off-the-Shelf Implants Ran Schwarzkopf, MD, Irvine, CA Merrick Brodsky, BA, BS, Long Beach, CA Giancarlo A. Garcia, Irvine, CA Andreas H. Gomoll, MD, Chestnut Hill, MA

PSI is associated with decreased estimated blood loss, decreased length of stay, decreased range of motion, and no discernible difference in surgical or tourniquet time.

## Poster No. P197

Histopathological Evaluation of the ACL in Patients Undergoing Primary Total Knee Arthroplasty Bhaveen H. Kapadia, MD, Baltimore, MD Samik Banerjee, MD, Albany, NY Randa K. Elmallah, Baltimore, MD Qais Naziri, MD, Brooklyn, NY Jeffrey J. Cherian, DO, Philadelphia, PA Todd Pierce, MD, Baltimore, MD Aditya V. Maheshwari, MD, Brooklyn, NY Peter M. Bonutti, MD, Eff ngham, IL Michael A. Mont, MD, Baltimore, MD

Our aim was to assess gross (macroscopic) and histopathological ACL changes in arthritic knees undergoing TKA.

#### Poster No. P198

Does Lupus Affect the Clinical and Patient-Reported Outcomes of Total Knee Arthroplasty at Mean Six-year Follow Up? Kimona Issa, MD, Wayne, NJ Steven F. Harwin, MD, New York, NY Vincent K. McInerney, MD, Paterson, NJ Todd Pierce, MD, Baltimore, MD Randa K. Elmallah, Baltimore, MD Julio J. Jauregui, Baltimore, MD Jeffrey J. Cherian, DO, Baltimore, MD Michael A. Mont, MD, Baltimore, MD

We evaluated the clinical, patient-reported, and radiographic outcomes of total knee arthroplasty in a cohort of patients who had SLE.

Routine Postoperative Lab Tests are Unnecessary After Partial Knee Arthroplasty Julie L. Shaner, MD, Philadelphia, PA Ammar Karim, DO, Stratford, NJ

David Casper, MD, Philadelphia, PA Christopher Ball, MS, Simi Valley, CA Eric M. Padegimas, MD, Philadelphia, PA Jess H. Lonner, MD, Wynnewood, PA Julie L. Shaner, MD, Philadelphia, PA

Routinely order postoperative labs are unnecessary after partial knee arthplasty; including unicompartmental, bicompartmental, and patellofemoral arthroplasty.

#### Poster No. P200

### Decreased Range of Motion Following Total Knee Arthroplasty is Predicted by the Tampa Scale of Kinesiophobia (TSK) Matthew L. Brown, MD, Winston Salem, NC Johannes F. Plate, MD, Winston Salem, NC Sarah Von Thaer, BS, Winston Salem, NC

Beth P. Smith, PhD, Winston-Salem, NC Thorsten M. Seyler, MD, PhD, Winston-Salem, NC Jason E. Lang, MD, Bermuda Run, NC

Knee ROM after TKA negatively correlated with Tampa Scale of Kinesiophobia scores and and was not inf uence by showing patients a photo of their knee in maximum f exion after surgery.

## Poster No. P201

## Comparing ¿-Aminocaproic and Tranexamic Acid in Reducing Postoperative Transfusions in Total Knee Arthroplasty

Jessica Churchill, BS, Norfolk, VA Kathleen E. Puca, MD, Milwaukee, WI Matthew Carleton, West Allis, WI Melissa J. Dahlgren, Milwaukee, WI Susan Truchan, BSN, RN, Grafton, WI Elizabeth Vermeulen, MPH, Milwaukee, WI Michael J. Anderson, MD, Mequon, WI

Administration of EACA or TXA signif cantly decreased postoperative transfusion rates. Utilization of EACA for unilateral TKA proved to be comparable to TXA in all studied aspects at a lower cost

## Poster No. P202

Causes for the Failure of Unicompartmental Knee Replacements Yusuf H. Mirza, MuDR, London, United Kingdom Sujith Konan, London, United Kingdom Fares S. Haddad, FRCS, London, United Kingdom

An analysis of risk factors for failure of a unicompartmental knee replacement

#### Poster No. P203

#### Six Years Minimum Follow Up of an Off oading Knee Brace for Unicompartmental Knee Osteoarthritis

Paul Y. Lee, FRCS (Ortho), MSc, Cardiff, United Kingdom Amit Chandratreya, FRCS, Cardiff, United Kingdom Emerald Storey, Welshpool, United Kingdom

Off oading knee braces can promote patients' return to work prior to surgery. Patients tolerating the use of brace for more than 3 yrs were unlikely to require surgery at 6 yrs minimum follow up.

### Poster No. P204

The Results of Second 2-stage Reimplantations for Periprosthetic Knee Infection

Keith Fehring, MD, Rochester, MN Matthew P. Abdel, MD, Rochester, MN Tad M. Mabry, MD, Rochester, MN Arlen D. Hanssen, MD, Rochester, MN

Expectations following a second two-stage exchange knee arthroplasty should be tempered as the failure rate of this procedure is high with considerable patient morbidity.

## Poster No. P205

Randomized Prospective Trial Comparing the Use of IV versus PO Acetaminophen with Total Joint Arthroplasty Joel R. Politi, MD, Columbus, OH Alexis Matrka, BS, Columbus, OH Richard L. Davis II, MD, Columbus, OH

The use of IV compared to PO Acetaminophen decreased initial pain following surgery but did not provide benef t following that, and had no difference on narcotic use postoperatively.

# FOOT AND ANKLE

## Poster No. P206

◆ Tranexamic Acid Reduces Postoperative Morbidity in Patients Undergoing Foot and Ankle Surgery Nicholas A. Abidi, MD, Capitola, CA

Ashish Govan, B.S., Bakersf eld, CA Clay Christensen, B.S., Capitola, CA Jess Gifford, B.S., Capitola, CA

Tranexamic Acid (TXA) Reduces Ecchymosis, Edema and Incisional Bleeding after Foot and Ankle Surgery, Preliminary Results

## Poster No. P207

Orthopaedic Foot and Ankle Surgeons' Approach to Elective Surgery in the Smoking Patient Population: A Survey Study Michael A. Hames, MD, Memphis, TN Erin M. Dean, MD, Hudson, OH Susan N. Ishikawa, MD, Cordova, TN Garnett A. Murphy, MD, Germantown, TN David R. Richardson, MD, Memphis, TN

Foot and ankle surgeons recognize smoking cessation improves outcomes and most give verbal counsel, though many do not use other options (i.e. supervised cessation programs) to achieve this goal

# FOOT AND ANKLE

### Poster No. P208

Short-Term Follow Up of a Novel, Minimally-Invasive Technique for Calcaneal Fractures William K. Whiteside, MD, Pawleys Island, SC Daniel E. Murawski, MD, Gulf Breeze, FL

We describe favorable 6 month outcomes using a novel two incision approach for treatment of displaced calcaneus fractures.

## Poster No. P209

#### Short-Term Outcomes and Inf uencing Factors After Ankle Fracture Surgery

Hyunsoo Jung, Seoul, Republic of Korea Seung Yeol Lee, MD, Seoul, Republic of Korea Soonsun Kwon, PhD, Seongnam-Si, Republic of Korea Ki Hyuk Sung, MD, Kyungki, Republic of Korea Ki Hyuk Sung, MD, Kyungki, Republic of Korea

The results support the hypothesis that Lauge-Hansen and AO classif cation system can be prognostic. Postoperative articular incongruity correlated with inferior early clinical outcomes.

## Poster No. P210

Increasing Stiffness of Syndesmosis Causes Abnormal Talar Displacement and Joint Contact in Cadaveric Model Chamnanni Rungprai, MD, Iowa City, IA Jessica Goetz, PhD, Iowa City, IA Phinit Phisitkul, MD, Coralville, IA

Over-tightening of the syndesmosis can cause syndesmotic overcompression in cadaveric model leading to talar displacement and alterion of tibiotalar joint contact.

#### Poster No. P211

#### The Reliability of Size Measurement in Osteochondral Talar Lesion: MRI versus CT

Ichiro Yoshimura, MD, Fukuoka, Japan Tomonobu Hagio, MD, Fukuoka, Japan Kazuki Kanazawa, MD, Fukuoka, Japan So Minokawa, MD, Fukuoka-Ken, Japan Masahiro Noda, Hukuoka, Japan Masatoshi Naito, MD, Fukuoka, Japan

It is important to accurately measure the size of an OLT before surgery to achieve good clinical outcomes. This study investigated the reliability of size measurement using MRI and CT.

## Poster No. P212

Weight Bearing Computed Tomography of Asymmetric Medial Ankle Osteoarthritis: The Axial Rotation of Talus Ji-Beom Kim, Seoul, Republic of Korea Woo Chun Lee, Seoul, Republic of Korea Young Yi, MD, Seoul, Republic of Korea Jae Young Kim, MD, Seoul, Republic of Korea Jae Young Kim, MD, Seoul, Republic of Korea

In WBCT, the ankles of asymmetric medial osteoarthritis showed more talus internal rotation in axial plane compared to the normal ankles.

## Poster No. P213

Total Ankle Replacement (TAR): Results at 5 to 10 Years Follow Up

Matteo Romagnoli, MD, Bologna, Italy Valentina Persiani, Bologna, Italy Andrea Ensini, MD, Bologna, Italy Alberto Leardini, PhD, Bologna, Italy Laura Ramponi, MD, Bologna, Italy Paola Capra, Lugo, Italy Sandro Giannini, MD, Bologna, Italy

Total Ankle Replacement can be considered a valuable option instead of ankle arthrodesis in order to obtain pain relief and preserve the range of motion of the joint.

#### Poster No. P214

Fixed Bearing Versus Mobile Bearing Total Ankle Replacement: A Comparative Study in 179 Patients

Chamnanni Rungprai, MD, Iowa City, IA Phinit Phisitkul, MD, Coralville, IA John E. Femino, MD, Iowa City, IA Annunziato Amendola, MD, Iowa City, IA

Fixed bearing versus mobile bearing total ankle replacement: A comparative study in 179 patients

#### Poster No. P215

Outcomes and Complications of Four Total Ankle Replacement: A Comparative Study

Chamnanni Rungprai, MD, Iowa City, IA Phinit Phisitkul, MD, Coralville, IA Taylor Den Hartog, BS, Iowa City, IA John E. Femino, MD, Iowa City, IA Annunziato Amendola, MD, Iowa City, IA

To compare outcomes and complications of commonly used of four type of total ankle replacement; STAR, SALTO, INBONE, and ZIMMER implants.

#### Poster No. P216

Comparison Outcomes of Total Ankle Replacement With and Without Achilles Tendon Lengthening Chamnanni Rungprai, MD, Iowa City, IA Phinit Phisitkul, MD, Coralville, IA John E. Femino, MD, Iowa City, IA Annunziato Amendola, MD, Iowa City, IA

Comparison Outcomes, complications, and ankle range of motion of Total Ankle Replacement with and without Achilles tendon lengthening.

### Poster No. P217

A Treatment Strategy for Salvage Arthrodesis of Infected Total Ankle Arthroplasty According to Size of Bone Defect Young Yi, MD, Seoul, Republic of Korea Youngha Woo, Iksan, Republic of Korea

In majority cases of infected total ankle arthroplasty, ipsilateral f bular structural bone graft may be a solution of overcoming large size bone defect after implant removal in salvage ankle fusion.

Early Recovery After Arthroscopic Repair of Anterior Talof bular Ligament

Kentaro Matsui, MD, Tokyo, Japan Masato Takao, MD, Itabashi, Japan Wataru Miyamoto, Tokyo, Japan Hirotaka Kawano, MD, PhD, Tokyo, Japan

We retrospectively compared the result of arthroscopic and open repair of the anterior talof bular ligament. Arthroscopic surgery showed faster recovery after surgery.

# Poster No. P219

#### Comparison Outcomes and Complications of Patients Who Underwent Haglund's Deformity Correction

Chamnanni Rungprai, MD, Iowa City, IA John E. Femino, MD, Iowa City, IA Annunziato Amendola, MD, Iowa City, IA Phinit Phisitkul, MD, Coralville, IA

Comparison outcomes and complications of patients underwent Haglund's deformity correction.

# Poster No. P220

Does High Velocity Rimming Increase the Risk for Non-Union in First Metatarsophalangeal Joint Arthrodesis? Assaf Kadar, MD, Givaatayim, Israel

Our study shows that high velocity joint preperation in f rst metatarsophalangeal joint arthrodesis is frequently complicated by non-unions (30%) and revision surgery (40%).

# Poster No. P221

# Driving and Emergency Braking May Be Impaired after Foot Arthrodesis: Conclusions after a Case Series Stefan Schwienbacher, Zürich, Switzerland Emin Aghayev, MD, Berne, Switzerland Maurice Jordan, Weil Im Schoenbuch, Germany Antongiulio Marmotti, MD, Torino, Italy

Emergency braking for an emergency stop is an important measure for safe driving. Signif cantly more patients exceeding the safe driving threshold were observed after a tibiotalar-joint arthrodesis.

# Poster No. P222

The Effect of Obesity on Forefoot Surgery Matthew G. Stewart, MD, Memphis, TN Clayton C. Bettin, MD, Holladay, UT David R. Richardson, MD, Memphis, TN Susan N. Ishikawa, MD, Cordova, TN Garnett A. Murphy, MD, Germantown, TN Matthew L. Ramsey, MD, Philadelphia, PA

Obesity was not shown to lead to more frequent complications after forefoot surgery. Diabetes was associated with signif cantly higher rates of infection after forefoot surgery, regardless of weight

# Poster No. P223

A Weil Way to Treat Morton's Neuroma Joaquim K. Barbosa, MBBS, FRCS (Ortho), Macclesf eld, United Kingdom Amer Shoaib, dr, Manchester, United Kingdom

Weil's Osteotomy is an effective way of treating Morton's neuroma as shown in this prospective study of 14 patients assessed clinically and AOFOS scores at 12 weeks post op

# Poster No. P224

### ◆ Novel Use for Osteoporosis Drug Alendronate in Skeletal Muscle Atrophy Treatment Rong-Sen Yang, MD, Taipei, Taiwan

Shing-Hwa Liu, PhD, Taipei, Taiwan

Osteoporosis drug alendronate promoted myotube formation and inhibited muscle atrophy in vitro and in vivo. Alendronate possesses a therapeutic potential in skeletal muscle atrophy or sarcopenia

# Poster No. P225

# The Basset Ligament is NOT Abnormal

James W. Bogener, MD, Kansas City, MO Adam Shaw, MD, Kansas City, MO Michael Lilyquist, MD, Kansas City, MO Brock Wentz, MD, Las Vegas, NV Kevin H. Latz, MD, Kansas City, MO

Ten fresh frozen cadaver ankles were examined looking at the anterior inferior tibiof bular ligament; all had 3 distinct bands, including what has previously been described as the Basset ligament

# HAND AND WRIST

### Poster No. P226

Outcome Assessment after Aptis Distal Radioulnar Joint (DRUJ) Implant Arthroplasty Amir Reza Kachooei, MD, Boston, MA

Samantha M. Chase, MD, Boston, MA Jesse B. Jupiter, MD, Boston, MA

Distal radioulnar joint prosthesis has shown satisfactory results with 100% survival rate in all reports. The constrained design gives enough stability to prevent painful subluxation.

# Poster No. P227

# Optimal Position for Fusion of the Proximal Interphalangeal Joint of the Border Digits

Daniel Seigerman, MD, Philadelphia, PA Michael Rivlin, MD, Philadelphia, PA Emilia Kaczynska, MS, OTR/L, Philadelphia, PA Mary Grace Maggiano, MS, OTR/L, Philadelphia, PA Pedro K. Beredjiklian, MD, Philadelphia, PA

When performing arthrodesis of the proximal interphalangeal joint, the optimal position for the index f nger is variable, while the optimal position of the small f nger is 30 degrees

# HAND AND WRIST

## Poster No. P228

Which Immobilization is Better for Distal Radius Fracture? A Prospective Randomized Study

Carlo Gamba, MD, Esplugues De Llobregat, Spain Felipe Mingo, MD, Barcelona, Spain Marta Cuenca-Llavall, Barcelona, Spain Xavier Lizano-Díez SR, MD, Barcelona, Spain Fernando Santana Perez SR, MD, Barcelona, Spain

There is no evidence supporting ideal immobilization for DRF. A prospective randomized study is conducted to compare above and below-the elbow cast in term of reduction loss. No differences are found

# Poster No. P229

### Novel Sigmoid Notch Radiographic View: Evaluating the Articular Surface of the DRUJ and Preventing Screw Breach

Jason S. Klein, MD, Miami, FL David Chen, MD, Miami, FL Jorge L. Orbay, MD, Miami, FL David C. Landy, MD, Chicago, IL Michael R. Mijares, MD, Pinecrest, FL Patrick W. Owens, MD, Miami, FL

Description of a novel radiographic view that evaluates the sigmoid notch articular surface in distal radius fractures and improves visualization of the DRUJ to avoid intra-articular screw placement.

### Poster No. P230

### Deformity and Disability in Rheumatoid Hand Progress Despite Disease Control: 10-Year Follow Up Shogo Toyama, Kyoto, Japan

Ryo Oda, MD, Kawaramachi-Hirokoji, Kiamigyo-ku, Kyoto, Japan

Daigo Taniguchi, MD, Kawaramachi-Hirokoji, Kamigyo-ku, Kyoto, Japan Satoru Nakamura, Kyoto, Japan Maki Asada, Kyoto, Japan Ryosuke Ikeda, Kyoto City, Japan Hiroyoshi Fujiwara, MD, Kyoto, Japan Daisaku Tokunaga, MD, Kyoto, Japan Toshikazu Kubo, MD, Kyoto, Japan

Advances in drug therapy for rheumatoid arthritis can improve disease control, but not hand function. In order to preserve hand function, surgical treatment still has certain signif cance.

### Poster No. P231

Adherence to AAOS and ARHQ Quality Guidelines is Not Required for Successful Treatment of Carpal Tunnel Syndrome Steven Zhang, BA, Stanford, CA Robin N. Kamal, MD, Palo Alto, CA

The American Academy of Orthopedic Surgeons has created guidelines to improve outcomes in treating carpal tunnel syndrome (CTS). This study measured adherence to guidelines in CTS surgery.

# Poster No. P232

**Do Distal Radius Fractures Shift After External Fixation?** *Regina Meis, MD, Boston, MA Andrew Jawa, MD, Cambridge, MA Paul Tornetta III, MD, Boston, MA* 

We sought to evaluate the f nal alignment of patients with unstable distal radius fractures treated with external f xation and determined if the initial reduction is held until f nal follow up.

# Poster No. P233

# VEGF-Mediated Angiogenesis and Vascularization of a 3D Printed Polymer Scaffold Eric R. Wagner, MD, Rochester, MN

Dalibel M. Bravo, MD, San Juan, Puerto Rico Sanjeev Kakar, MD, Rochester, MN Michael J. Yaszemski, MD, PhD, Rochester, MN

We developed a novel 3D printed scaffold that can be utilized as a framework for vascular ingrowth and regeneration of multiple types of tissue.

### Poster No. P234

### Biomechanical Evaluation of Four Internal Fixation Constructs for Scaphoid Fractures

Bryan Beutel, MD, New York, NY Eitan Melamed, MD, Baltimore, MD Richard M. Hinds, MD, New York, NY Michael B. Gottschalk, MD, Dallas, TX John T. Capo, MD, New York, NY

Using a synthetic bone axial loading model, we found that a single central screw of smaller diameter may be biomechanically superior to larger screws, dual screws, or plating of scaphoid fractures.

### Poster No. P235

The Effect of Decentralization in Digital Replantation: A Study of the National Inpatient Sample

Joshua Hustedt, MD, Phoenix, AZ Daniel D. Bohl, MD, MPH, Chicago, IL Alexander C. McLaren, MD, Phoenix, AZ Lloyd Champagne, MD, Phoenix, AZ

One possible reason for decreased success rates of digital replantation in the United States is the decentralization of digital replantation away from high volume centers.

### Poster No. P236

The Rate of Hardware-Related Complications with Radial Column Plates for Distal Radius Fractures Samuel Galle, MD, Irvine, CA Neil G. Harness, MD, Anaheim, CA Jacques H. Hacquebord, MD, Seattle, WA Brett M. Peterson, MD, Orange, CA

Radial column plating for distal radius fractures was evaluated in a prospective cohort of patients for hardware removal and complications.

Morphometry of the Peripheral Insertion of the Distal Radioulnar Ligament using Micro-Computed Tomography

Won Jeong Shin, MS, Cheonan-Si, Chungnam, Republic of Korea Jong-Pil Kim, MD, PhD, Cheonan, Republic of Korea Midum Jegal, MD, Cheonan, Republic of Korea

Morphometric analysis of the peripheral insertion of the distal radioulnar ligament provides useful information for understanding of distal radioulnar ligament-related pathology.

# Poster No. P238

# Baseline Characteristics of the Median Nerve on Ultrasound Examination

Tiffany Pan, MD, Pittsburgh, PA Richard White, BS, Wexford, PA Caiyan Zhang, MS, Pittsburgh, PA William C. Hagberg, MD, Wexford, PA Joseph E. Imbriglia, MD, Wexford, PA John R. Fowler, MD, Gibsonia, PA

This study aims to def ne the cross sectional area of the median nerve as measured by ultrasound in a large cohort of patients using a clinical diagnostic tool as the reference standard.

# Poster No. P239

### Vascularized Bone Grafting in Scaphoid Nonunion: A Review of Patient-Centered Outcomes

Ram Alluri, MD, Los Angeles, CA Christine Yin, BS, Los Angeles, CA Matthew L. Iorio, MD, Boston, MA Lakshmanan Sivasundaram, BS, Granada Hills, CA Alidad Ghiassi, MD, Pacif c Plsdsades, CA Ketan M. Patel, MD, Los Angeles, CA

Vascularized bone grafting for scaphoid nonunion results in signif cant improvement of functionality and pain, resulting in excellent return to preinjury activity levels and patient satisfaction.

# Poster No. P240

# The Arkansas Hand Trauma Telemedicine System: A Review of the First Year

Wesley S. Greer, MD, Little Rock, AR John W. Bracey, MD, Little Rock, AR Mark A. Tait, MD, Little Rock, AR Sophie B. Hollenberg, BS, Little Rock, AR John M. Stephenson, MD, Little Rock, AR Theresa O. Wyrick, MD, Little Rock, AR

The Arkansas Hand Trauma Telemedicine system provides video evaluation and treatment recommendations of hand injuries allowing for appropriate management and use of resources.

# PEDIATRICS

# Poster No. P241

Perioperative and Delayed Major Complications Following Surgical Correction of AIS in 3,530 Patients Carrie Bartley, MA, San Diego, CA Burt Yaszay, MD, San Diego, CA Tracey Bastrom, MA, San Diego, CA Suken A. Shah, MD, Wilmington, DE Baron Lonner, MD, New York, NY Jahangir Asghar, MD, Coral Gables, FL Firoz Miyanji, MD, Vancouver, BC, Canada Amer Samdani, MD, Philadelphia, PA Peter O. Newton, MD, San Diego, CA

Following surgical correction in 3530 AIS patients, 193 major complications were observed. There was a 2.6% peri-op complication rate and a 4.4% delayed complication rate for those with 2yr follow-up.

## Poster No. P242

MRI and Closed Bone Graft Epiphyseodesis Effect on Avascular Necrosis in Unstable Slipped Capital Femoreal Epiphysis Joshua K. Napora, MD, Cleveland, OH George H. Thompson, MD, Cleveland, OH Allison Gilmore, MD, Shaker Heights, OH Dominic Grimberg, BA, Cleveland Heights, OH Jochen P. Son-Hing, MD, Cleveland, OH Raymond W. Liu, MD, Cleveland, OH

The purpose of this study is to show that early MRI detection and closed bone graft epiphyseodesis may alter the course of avascular necrosis following unstable slipped capital femoral epiphysis.

# Poster No. P243

Obesity Results in Larger Curves and Worse Surgical Outcomes in Adolescent Idiopathic Scoliosis G. Y. Li, MD, Ann Arbor, MI Laura C. Binkowski, Naples, FL Alexandra M. Grzywna, BA, Boston, MA Christopher B. Robbins, Ann Arbor, MI Michelle S. Caird, MD, Ann Arbor, MI Frances A. Farley, MD, Ann Arbor, MI Michael P. Glotzbecker, MD, Waban, MA

Obesity may lead to a delay in diagnosis of scoliosis, resulting in a larger preoperative curve magnitude and PSF at a younger age. Obese patients are at higher risk of postoperative complications.

# PEDIATRICS

# Poster No. P244

Effect of Scoliosis Surgery on Pulmonary Functions in Adolescent Idiopathic Scoliosis Patients: A Meta-Analysis Andy C. Lee, BS, Charlottesville, VA Mark Feger, ATC, MEd, Charlottesville, VA Anuj Singla, MD, Charlottesville, VA Mark F. Abel, MD, Earlysville, VA

Effect of Scoliosis Surgery on Absolute Pulmonary Functions in Adolescent Idiopathic Scoliosis Patients: A Systematic Review and Meta-analysis

### Poster No. P245

### 3D-MRI Analyses of Femoral Head Sphericity in Patients with Developmental Dysplasia of the Hip Under Two Years Old

Yuta Tsukagoshi, MD, Tsukuba-City, Ibaraki, Japan Hiroshi Kamada, MD, PhD, Tsukuba, Japan Hajime Mishima, MD, PhD, Ibaraki, Japan Ryoko Abe, MD, Amimachi, Inashiki, Japan Shogo Nakagawa, Tsukuba City, Ibaraki Prefecture, Japan Yohei Tomaru, MD, Tsukuba-City, Ibaraki, Japan Yoshikazu Okamoto, MD, Tsukuba, Japan Makoto Kamegaya, MD, Chiba City, Japan Masashi Yamazaki, MD, PhD, Tsukuba, Japan

We assessed the sphericity of the femoral head cartilage in DDH under 2 years old by using 3D-MRI. The growth failure of dislocated femoral head is observed at the proximal posteromedial area.

### Poster No. P246

Correlation Between Hip Arthroscopy and Magnetic Resonance Imaging (MRI) in Children with Perthes Disease Vivek Tiwari, MBBS, MS, New Delhi, India Shah A. Khan, MD, New Delhi, India

In children with Perthes disease, hip arthroscopy as a diagnostic procedure can be helpful in cases of doubt regarding the pathology and in cases of persistence of pain

### Poster No. P247

Posters

### Reliability and Validity of the Duncan-Ely Test for Assessing Rectus Femoris Spasticity in Cerebral Palsy

Seung Yeol Lee, MD, Seoul, Republic of Korea Ki Hyuk Sung, MD, Kyungki, Republic of Korea Chin Y. Chung, MD, PhD, Seongnam, Republic of Korea Kyoung Min Lee, MD, Sungnam, Republic of Korea Soonsun Kwon, PhD, Seongnam-Si, Republic of Korea Tae Gyun Kim, Seongnam-Si, Gyeonggi-Do, Republic of Korea Sang Hyeong Lee, Goyang-Si, Republic of Korea In Hyeok Lee, Seongnam-Si, Gyeonggi-Do, Republic of Korea Moon Seok Park, MD, Sungnam, Republic of Korea

The Duncan-Ely test shows excellent reliability in fast knee-f exion velocity, and good sensitivity and specif city as a preoperative assessment of rectus femoris spasticity in patients with CP

### Poster No. P248

Surgical Treatment of Displaced Lateral Condyle Fractures of the Humerus via the Posterior Approach William K. Conaway, Hershey, PA William L. Hennrikus Jr, MD, Hershey, PA John Mahajan, MD, San Francisco, CA

Although the posterior approach to pediatric distal humeral fractures has been criticized due to potential blood supply damage, we report 15 cases with good functional and radiographic outcomes.

### Poster No. P249

Stress Fracture at the Ischio-Pubic Junction after Periacetabular Osteotomy in a Pediatric Population

Matthew Swann, MD, BA, Dallas, TX Jose A. Romero, MD, Dallas, TX Daniel J. Sucato, MD, MS, Dallas, TX David A. Podeszwa, MD, Dallas, TX

A single institution review of the incidence and clinical signif cance of stress fracture at the ischio-pubic junction (IPJ) after a Ganz type PAO in a pediatric population.

# Poster No. P250

Effect of Tunnel Angle and Reamer Size on Physeal Defect in Transphyseal Anterior Cruciate Ligament Reconstruction *Charles M. Chan, MD, Stanford, CA* 

Increase in horizontal obliquity of the femoral tunnel in anterior cruciate ligament reconstruction results in an exponentially larger physeal defect. The critical threshold of 7% is rarely reached.

### Poster No. P251

Pavlik Method Failure Rises Over Age Three Months and in Severe Hip Types in Developmental Hip Dysplasia Hakan Omeroglu, MD, Eskisehir, Turkey Nusret Kose, MD, Eskisehir, Turkey Anil Akceylan, MD, Eshisehir, Turkey

Failure rate of Pavlik method signif cantly increases in infants older than 3 months, in Graf type III and IV (dislocated) hips and in hips having an initial alpha angle less than 47 degrees in DDH.

### Poster No. P252

Vascular Examination Predicts Functional Outcomes in Supracondylar Humerus Fractures: A Prospective Study Justin J. Ernat, MD, Tripler AMC, HI

Anthony I. Riccio, MD, Dallas, TX Robert L. Wimberly, MD, Dallas, TX David A. Podeszwa, MD, Dallas, TX Christine A. Ho, MD, Dallas, TX

In children with operative supracondylar humerus fractures, an abnormal vascular examination at presentation is predictive of poorer outcomes in pain and upper extremity function.

Biplanar X-rays with Chest Volumetry Predict Preoperative Pulmonary Function in Adolescent Idiopathic Scoliosis

Houssam Bouloussa, MD, Paris, France Raphaël Pietton, MD, Paris Thomas-Xavier Haen, MD, Garches, France Wafa Skalli, PhD, Paris, France Raphaël Vialle, MD, PhD, Paris, France Claudio Vergari, PhD, Paris, France

Biplanar stereography can predict preoperative pulmonary function in adolescent idiopathic scoliosis: rib cage volume is the best predictive factor in this preliminary prospective cohort study.

# Poster No. P254

Patients' Perceptions of Breast Asymmetry Improve after Spinal Fusion for Adolescent Idiopathic Scoliosis Megan Mignemi, MD, Dallas, TX Kaitlyn Brown, B.S., Dallas, TX Amy L. McIntosh, MD, Dallas, TX

Breast asymmetry is a signif cant concern for many patients with AIS. Spinal fusion signif cantly improves patients' perceptions about their breasts.

# Poster No. P255

### Femoral Version and Tibial Torsion are Not Associated with Hip or Knee Arthritis in a Large Osteological Collection

Douglas S. Weinberg, MD, Cleveland, OH Paul Park, BA, Cleveland Heights, OH William Z. Morris, MD, Cleveland Hts, OH Raymond W. Liu, MD, Cleveland, OH

Neither tibial torsion nor femoral anteversion had a signif cant inf uence on the development of arthritis of the hip or knee.

# Poster No. P256

Simple Sagittal Pediatric Patellar Localization with Blumensaat-Epiphyseal Containment of the Knee (BECK) Angle

Jennifer Beck, MD, Los Angeles, CA Richard E. Bowen, MD, Los Angeles, CA Daniel Boguszewski, PhD, Los Angeles, CA William L. Oppenheim, MD, Marina Del Rey, CA

Pediatric patellar localization is simplified using the BECK Angle as opposed to alternative ratio methods. Over 50% of the patella is contained within the BECK Angle in 95% of patients aged 7-16yo.

### Poster No. P257

Superior Extension of UIV in Distraction-Based Surgery: A Surrogate for Clinically Signif cant PJK Tricia St. Hilaire, MPH, Valley Forge, PA Ron El-Hawary, MD, Halifax, NS, Canada Ozren Kubat, MD, Zagreb, Croatia John A. Hef in, MD, Salt Lake Cty, UT Nadim Joukhadar, BS, Halifax, NS, Canada Mohamad S. Yasin, MD, Halifax, NS, Canada Anna McClung, RN, Dallas, TX Tara Flynn, Valley Forge, PA David L. Skaggs, MD, Los Angeles, CA

Patients treated with distraction-based surgery have a 25% risk of clinically signif cant PJK. Pre-op PJA >100 is a signif cant risk for PJK.

# Poster No. P258

Adolescents Maintain Hip Strength and Function Five Years Following a Ganz Periacetabular Osteotomy Daniel J. Sucato, MD, MS, Dallas, TX Kirsten Tulchin-Francis, PhD, Dallas, TX

Adriana De La Rocha, PhD, Dallas, TX Wilshaw Stevens JR, BS, Dallas, TX David A. Podeszwa, MD, Dallas, TX

The Ganz PAO is effective in treating hip dysplasia in adolescents with maintenance of correction, functional outcomes, and hip abductor and f exor strength at a minimum 5 yrs post-op

## Poster No. P259

Curve Severity is Associated with Worsening Thoraco-Pelvic Coordination in Adolescent Idiopathic Scoliosis Ashish Patel, MD, Brooklyn, NY Robert Pivec, MD, Brooklyn, NY Dante M. Leven, DO, Brooklyn, NY Bhaveen H. Kapadia, MD, Baltimore, MD Arie G. Trouw, MD, Brooklyn, NY Colin S. Cooper, MD, Brooklyn, NY Patrick Narcisse, BS, Brooklyn, NY Shikha Sheth, BA, Brooklyn, NY Carl B. Paulino, MD, Brooklyn, NY

Our f ndings demonstrate an association between increasing curve severity and loss of normal physiologic motion in the axial plane.

### Poster No. P260

### Implant Complications After Magnetic-controlled Growing Rods for Early Onset Scoliosis

Edmund Choi, MD, La Jolla, CA Pooria Hosseini, MD, MSc, San Diego, CA Gregory M. Mundis, MD, San Diego, CA Jeff Pawelek, La Jolla, CA Behrooz A. Akbarnia, MD, San Diego, CA Ilkka J. Helenius, MD, Turku, Finland John A. Ferguson, FRACS, Auckland, New Zealand Kenneth M. Cheung, MD, Hong Kong, China Burt Yaszay, MD, San Diego, CA

Early results demonstrate that the magnetic-controlled growing rods have a lower infection rate but have similar implant related complications as compared to traditional growing rods.

# PRACTICE MANAGEMENT/REHABILITATION

### Poster No. P261

Academic Characteristics of Orthopaedic Surgery Residency Applicants from 2007 to 2014 John M. Depasse, MD, Providence, RI

Mark A. Palumbo, MD, East Greenwich, RI Craig P. Eberson, MD, Cumberland, RI Alan H. Daniels, MD, Providence, RI

We analyzed National Resident Matching Program data from 2007 to 2014 and found that board scores and the number of publications have signif cantly increased despite a consistent match rate.

### Poster No. P262

### End Tidal Carbon Dioxide (ETCO2) Predicts Pulmonary Embolism in Postoperative Orthopaedic Patients *Austin Ramme*, *MD*, *PhD*, *New York*, *NY*

Alana Sigmund, New York, NY Eduardo Iturrate, MD, New York, NY Lorraine Hutzler, BA, New York, NY Ezra E. Dweck, New York, NY David J. Steiger, MD, New York, NY Joseph A. Bosco III, MD, New York, NY

We evaluate End Tidal CO2 (ETCO2) measurement as a method to identify patients who are at high risk for pulmonary embolism (PE) that should undergo a CT pulmonary angiogram(CTA).

### Poster No. P263

### Integrating Musculoskeletal Education and Patient Care at Medical Student-Run Free Clinics

Thomas J. McQuillan III, BA, Palo Alto, CA Nathaniel D. Wilcox-Fogel, BA, MS, Woodside, CA Max B. Liu, BA, Hercules, CA Emily A. Kraus, MD, Omaha, NE Amy L. Ladd, MD, Redwood City, CA

Student-run free clinics represent an opportunity to improve musculoskeletal education at US medical schools, while delivering essential specialty care to underserved populations.

### Poster No. P264

#### Large Disparities in Industry Payments to Orthopaedic Surgeons Seen in Sunshine Act Data

Andre Samuel, New Haven, CT Matthew L. Webb, BA, New Haven, CT Adam Lukasiewicz, MSc, New Haven, CT Daniel D. Bohl, MD, MPH, Chicago, IL Bryce A. Basques, MD, Chicago, IL Glenn Russo, MD, New Haven, CT Vinay K. Rathi, BA, Reston, VA Jonathan N. Grauer, MD, New Haven, CT

While orthopaedic surgeons receive the highest total and average payments from industry of any medical specialty, the highest 10th percentile of recipient surgeons account for 95% of all payments.

### Poster No. P265

# Falls Among Hospitalized Orthopaedic Patients: A Prospective Case-Control Study Michael L. Parks, MD, New York, NY

Lisa A. Mandl, MD, MPH, New York, NY Ting-Jung Pan, MPH, New York, NY Meng Zhang, PhD, New York, NY Mayu Sasaki, MPH, New York, NY Tina L. Bailey, MS, New York, NY Eric J. Greenberg, PharmD, CGP, New York, NY Patricia Quinlan, PhD, New York, NY Steven Magid, MD, New York, NY

This study evaluated rates and predictors of falls among adult orthopedic in-patients at a musculoskeletal specialty hospital.

### Poster No. P266

Alignment of Venous Thromboembolism Prophylaxis Guidelines: Impact on Surgeon Prescribing for Knee Arthroplasty Sarav Shah, MD, New Hyde Park, NY James Mullen, MD, Brooklyn, NY Alexander Satin, MD, New Hyde Park, NY Sara Merwin, MPH, New Hyde Park, NY Martin Lesser, PhD, Manhasset, NY Mark Goldin, New Hyde Park, NY Nicholas A. Sgaglione, MD, Great Neck, NY

After alignment of Venous Thromboembolism prophylaxis guidelines, it appears that orthopaedic providers readily and rapidly incorporated aspirin into clinical practice.

### Poster No. P267

Psychiatric Conditions Impact 90-Day Hospital Readmission Rates Following Total Joint Replacement

Heather Gold, Ny City, NY James D. Slover, MD, New York, NY Lijin Joo, MA, New York, NY Joseph A. Bosco III, MD, New York, NY Richard Iorio, MD, New Rochelle, NY Cheongeun Oh, PhD, New York, NY

Depression and alcohol and drug abuse are associated with substantial statistically signif cant increased probabilities of readmission following TKA and THR.

### Poster No. P268

Does Resident Involvement Increase Complications in Orthopaedic Trauma? Phillip Mitchell, MD, Nashville, TN Sarah Greenberg, BA, Nashville, TN Catherine Bulka, MPH, Nashville, TN Frank Avilucea, MD, Salt Lake City, UT Hassan R. Mir, MD, MBA, Nashville, TN Amir A. Jahangir, MD, Nashville, TN William T. Obremskey, MD, MPH, Nashville, TN Manish K. Sethi, MD, Nashville, TN

Our data is the f rst to show that resident involvement does not negatively impact patient care in orthopaedic trauma.

What is it that Orthopaedics Residents Do All Day? Wenjing Zeng, MD, Rochester, NY Lindsey Caldwell, MD, Worcester, MA Kiran Nandigam, BS, Rochester, NY Gregg T. Nicandri, MD, Webster, NY

This study evaluated and quantif ed the time junior and senior orthopaedic surgery residents on the orthopaedic trauma service spent performing various tasks during their workday.

# Poster No. P270

A 20-Year Retrospective Review of the Infection and Quality Control of a Hospital-Based Allogenic Bone Bank Shau-Huai Fu, MD, Yunlin County, Taiwan Chih-Chien Hung, MD, Taipei City, Taiwan Chun-Liang Wang, MD, Taipei, Taiwan Ming Hung Chiang, MD, Taipei, Taiwan Tzu-Hao Tseng, Taipei City, Taiwan Jyh-You Liu, Taipei, Taiwan De-Kai Syu, Taipei City, Taiwan Rong-Sen Yang, MD, Taipei, Taiwan Chun-Han Hou, MD, PhD, Taipei, Taiwan

The positive after thawing cultures associated with higher infection rate afterwards, but the microorganism does not correlate with the pathogen found on the patients' wound.

# Poster No. P271

### Socioeconomic Status Independently Affects HCAHPS Scores

Brandon Shulman, MD, New York, NY Brooks Crowe, BA, New York, NY Lorraine Hutzler, BA, New York, NY Joseph A. Bosco III, MD, New York, NY

Although the HCAHPS survey attempts to correct for many factors that may affect scoring, socioeconomic factors are not considered in score weighting.

# Poster No. P272

# Is Aspirin Enough? Rate of Asymptomatic and Symptomatic DVT and PE After Total Joint Arthroplasty

Ritesh Shah, MD, Glenview, IL Jeffrey M. Goldstein, MD, Deerf eld, IL Wayne M. Goldstein, MD, Morton Grove, IL Brandon Pardi, MD, Chicago, IL Brian E. Schwartz, MD, Des Plaines, IL Jose A. Rodriguez, MD, Chicago, IL David Savin, MD, Chicago, IL

The goal of this study was to evaluate the eff cacy of four different anticoagulants at preventing deep venous thrombosis and pulmonary embolism after total joint arthroplasty.

### Poster No. P273

Adverse Events, Readmission Rates, and Unplanned Access to Care Following Outpatient Total Joint Arthroplasty Daniel P. Hoeffel, MD, Woodbury, MN Faith Myers, BS, MS, Woodbury, MN Brandon J. Kelly, Saint Paul, MN Peter J. Daly, MD, Woodbury, MN M. R. Giveans, PhD, Eden Prairie, MN Jay Scott, BA, Woodbury, MN

Rate of adverse events within 30 days of outpatient TJA was 2.8%. Hospital readmission rate was 1.2%. TJAs were performed in an ambulatory surgery center. Rate of unplanned access to care was 10.9%.

### Poster No. P274

Are Rates of Blood Utilization Decreasing Following Primary TKA? A Look at 2008-2014 Nicholas Bedard, MD, Iowa City, IA Andrew J. Pugely, MD, Coralville, IA Jacob Elkins, MD, PhD, Iowa City, IA Kyle Duchman, MD, Iowa City, IA Jesse E. Otero, MD, Iowa City, IA Yubo Gao, PhD, Iowa City, IA John J. Callaghan, MD, Iowa City, IA

With blood management strategies instituted over the last 7 years, a 57.5% reduction in transfusion following TKA was seen within a large multicenter database.

# Poster No. P275

# • Bisphosphonates Reduced the Risk of Total Knee Arthroplasty in Patients with Osteoarthritis

Shau-Huai Fu, MD, Yunlin County, Taiwan Chen-Yu Wang, Yunlin, Taiwan Chih-Chien Hung, MD, Taipei City, Taiwan Chuan-Ching Huang, Douliu City, Yunlin County, Taiwan Tzu-Hao Tseng Taipei City, Taiwan Ming Hung Chiang, MD, Taipei, Taiwan Chun-Liang Wang, MD, Taipei, Taiwan Rong-Sen Yang, MD, Taipei, Taiwan Fei-Yuan Hsiao, PhD, Taipei, Taiwan

This pioneering cohort study suggests that the use of bisphosphonate may reduce the risk of total knee arthroplasty and the consumption of pain medications in knee osteoarthritis patients.

# Poster No. P276

A Validation Study of Patient-Reported Outcome Measures for Patients with Upper Extremity Morbidity Susan M. Odum, PhD, Charlotte, NC Bryce A. Van Doren, MA, MPH, Charlotte, NC Nady Hamid, MD, Charlotte, NC Raymond G. Gaston, MD, Charlotte, NC

A psychometric evaluation of the DASH, ASES, EQ5D and VR6D indicate superiority of the VR6D as a health utility and a tradeoff between DASH and ASES as regional PROMS for upper extremity morbidity.

# PRACTICE MANAGEMENT/REHABILITATION

### Poster No. P277

Electronic Medical Record Implementation Results in Decreased Patient-Physician Interaction Daniel J. Scott, MBA, MD, Durham, NC Eva Labro, PhD, Chapel Hill, NC Colin T. Penrose, BA, BS, Durham, NC Michael P. Bolognesi, MD, Durham, NC Samuel S. Wellman, MD, Durham, NC

Richard C. Mather III, MD, Durham, NC

Electronic medical record implementation showed no change in total labor costs but increased documentation time 6 after implementation in an arthroplasty clinic.

### Poster No. P278

### Triple Prophylaxis for Prevention of Surgical Site Infections in Total Joint Arthroplasty Decreases Deep Infection

Eric L. Smith, MD, Boston, MA Kurt J. Hofmann, MD, Norwood, MA Qingwu Kong, MS, Boston, MA Brett Hayden, MD, Boston, MA Michael Baratz, MD, Brookline, MA Mary E. Pevear, Boston, MA Charles Cassidy, MD, Natick, MA

The purpose of this retrospective cohort study was to determine the success of a triple prophylaxis protocol in reducing rates on infection.

### Poster No. P279

### Nasal Decolonization of <i>S. aureus</i> Reduces Surgical Site Infections in TJA Patients: A Meta-Analysis Bryce A. Van Doren, MA, MPH, Charlotte, NC Susan M. Odum, PhD, Charlotte, NC Mason Haber, PhD, Charlotte, NC Michael Baratz, MD, Brookline, MA

Bryan D. Springer, MD, Charlotte, NC

A meta-analysis of 17 studies demonstrated that prophylactic nasal decolonization of S.aureus reduces the odds of surgical site infections in total joint arthroplasty patients by 40.5%.

### Poster No. P280

Clinical Outcomes and Cost Implications of Rapid Discharge Versus Traditional Pathways after Knee Replacement Craig M. McAllister, MD, Kirkland, WA Ira H. Kirschenbaum, Bronx, NY Jeff Stepanian, PA-C, Kirkland, WA Craig M. McAllister, MD, Kirkland, WA

This study compares clinical and patient reported outcomes of a traditional and outpatient pathways after knee replacement. Outpatient knee replacement is safe in properly selected patients.

# SHOULDER AND ELBOW

### Poster No. P281

Quantitative Localization of the Humeral Anterior Circumf ex Artery's Entry Point: A High-Def nition CT Scan Study Amelie Sergent, Montréal, QC, Canada Jeremie Menard, MSc, Montréal, QC, Canada Yvan Petit, PhD, Montreal, QC, Canada George Y. Laf amme, MD, Montreal, QC, Canada Dominique Rouleau, MD, Montreal, QC, Canada

This study wants to identify the exact localisation of entry point of humeral anterior circumf ex artery to help surgeons to preserve it during proximal humerus fracture f xation.

### Poster No. P282

The Daily Shoulder Motion of Healthy Subjects G Daniel G. Langohr, MSc, London, ON, Canada John Haverstock, MD, London, ON, Canada George S. Athwal, MD, London, ON, Canada James A. Johnson, PhD, London, ON, Canada

The most common elevation angle was <40° in forward elevation. Shoulder elevations greater than 100° occurred about 20 times per hour and tended to be slightly more frequent on the dominant side.

# Poster No. P283

Surface Glenoid Area in Latarjet-Patte and Congruent Arc in Virtual Model

Bruno B. Gobbato, MD, Jaragua Do Sul, SC, Brazil

The Latarjet procedure for shoulder instability, there are two different ways. The purpose of this study is to evaluate the percentage of increase in surface area of the glenoid in a virtual model.

### Poster No. P284

Ultrasound-Guided Double Needle Aspiration Versus Blind Corticosteroid Injection in Calcif c Tendinosis

Michael A. Malahias Jr, MD, Nea Ionia, Greece, Greece Vassilios Nikolaou, MD, PhD, Maroussi - Athens, Greece Maria Kaseta, MD, Athens, Greece Efstathios Chronopoulos, MD, Athens, Greece Emmanouel Fandridis, MD, Athens, Greece George Babis, MD, Athens, Greece

Double needle dissolution -and aspiration- with N/S represents better long-term results than blind corticosteroid injection in the treatment of chronic symptomatic calcif c tendinosis

osters

Lipid Accumulation is Related to Local and Load-Dependent

Expression of Androgen Receptor Martin Flück, Zurich, Switzerland Severin Ruoss, MSc, Zurich, Switzerland Céline Ferrié, Zurich, Switzerland Mario Benn, Zurich, Switzerland Brigitte von Rechenberg, MD, Zurich, Switzerland Mazda Farshad, MD, Zurich, Switzerland Karl Wieser, MD, Zollikerberg, Switzerland Dominik C. Meyer, MD, Zurich, Switzerland Christian Gerber, MD, Zurich, Switzerland

Using osteotomy of infraspinatus muscle in sheep, we show that the fat mobilizing effect of nandrolone relates to loaddependent expression of the androgen receptor but not adipocyte differentiation.

# Poster No. P286

Accuracy of Fluoroscopy Guided Subacromial Injection between Anterolateral and Posterolateral Approach Joon Yub Kim, MD, Gyeonggi-Do, Republic of Korea

We recommend to avoid the anterolateral approach during f uroroscopy – guided subacromial injections in muscular patients and old aged patients more than 70 years of age.

# Poster No. P287

Graft Size Affects Shoulder Stability after Superior Capsule Reconstruction for Irreparable Rotator Cuff Tear *Teruhisa Mihata*, MD, PhD, Takatsuki, Osaka, Japan

Michelle H. McGarry, MD, Long Beach, CA Timothy L. Kahn, BA, Irvine, CA Masashi Neo, Takatsuki, Japan Thay Q. Lee, PhD, Long Beach, CA

Superior capsule reconstruction using 8mm graft completely normalized superior translation while 4mm graft provided partial restoration although humeral head did not migrated superiorly.

### Poster No. P288

# Effect of Acromioplasty on Superior Capsule Reconstruction for Irreparable Rotator Cuff Tear

Teruhisa Mihata, MD, PhD, Takatsuki, Osaka, Japan Michelle H. McGarry, MD, Long Beach, CA Timothy L. Kahn, BA, Irvine, CA Masashi Neo, Takatsuki, Japan Thay Q. Lee, PhD, Long Beach, CA

Acromioplasy decreased contact area between graft and undersurface of the acromion after superior capsule reconstruction without shifting humeral head superiorly.

### Poster No. P289

# Arthroscopic Debridement of the Shoulder for the Treatment of Dialysis-Related Amyloidosis

Teruaki Izaki, MD, PhD, Fukuoka, Japan Yozo Shibata, MD, Chikushino, Japan Satoshi Miyake, MD, Fukuoka, Japan Makoto Sakurai, MD, Fukuoka, Japan Daisuke Kuroda, MD, PhD, Chikushino City, Japan Masatoshi Naito, MD, Fukuoka, Japan

A middle-term postoperative result of arthroscopic debridement of the shoulder for the treatments of dialysis-related amyloidosis and analysis of factors inducing poor outcomes are discussed.

### Poster No. P290

Posterior Capsular Tightness Does Not Account for Glenohumeral Internal Rotation Def cit in Baseball Players Hiroaki Inui, MD, Tatsuno City, Japan Hiroshi Tanaka, MS, Hyogo, Japan Katsuya Nobuhara, MD, Hyogo, Japan

Shoulder ranges of motion in 180 baseball players were examined and arthrography was performed for 15 players. The study indicated GIRD was not affected by posterior capsule tightness.

# Poster No. P291

Preoperative Planning with 3D Printed Models in Shoulder and Elbow Surgery Karl B. Scheidt, MD, Racine, WI John M. Itamura, MD, Los Angeles, CA

*Eric Limcaco*, *Porter Ranch*, *CA* Appreciation of bony deformity and def ciency in complex shoulder and elbow surgery can be diff cult. 3D printed life size

models can help with preoperative planning.

### Poster No. P292

Interactions between Reverse Shoulder Arthroplasty Implant Variables and their Effects on Muscle and Joint Load Josh W. Giles, PhD, London, United Kingdom G Daniel G. Langohr, MSc, London, ON, Canada James A. Johnson, PhD, London, ON, Canada George S. Athwal, MD, London, ON, Canada

This study elucidates the positive effects of humeral offset and negative of glenosphere offset & humeral thickness.

### Poster No. P293

Is There an Association Between the "Critical Shoulder Angle" and Clinical Outcome after Rotator Cuff Repair? Jacob Kirsch, MD, Ann Arbor, MI Amit Nathani, MD, Ann Arbor, MI Christopher B. Robbins, Ann Arbor, MI Joel J. Gagnier, PhD, Ann Arbor, MI Asheesh Bedi, MD, Ann Arbor, MI Bruce S. Miller, MD, MS, Ann Arbor, MI

A critical shoulder angle less than 38 degrees is associated with better ASES, WORC and VAS scores in patients following surgical repair of atraumatic full-thickness rotator cuff tears.

# SHOULDER AND ELBOW

### Poster No. P294

Comparison of 3D Scapular Glenohumeral Kinematics of Symptomatic and Asymptomatic Rotator Cuff Tears Takehiro Kijima, Chiba, Japan Keisuke Matsuki, MD, Funabashi, Japan Nobuyasu Ochiai, MD, PhD, Chiba City, Japan Tomonori Kenmoku, MD, Minami-Ku, Sagamihara, Japan Yu Sasaki, MD, Chiba, Japan Takeshi Yamaguchi, MD, Inohana, Chuo-Ku, Chiba, Japan Eiko Hashimoto, Chiba, Japan Yasuhito Sasaki, Chiba, Japan

There were signif cant differences in posterior tilt angles of the scapula. Less posterior tilt angles were related to development of the symptoms in RCTs because of provocation of impingement.

### Poster No. P295

### Assessment of the Tear Progression of Symptomatic Rotator Cuff Tear: A Prospective Study of 150 Shoulders

Nobuyuki Yamamoto, MD, Sendai, Japan Jun Kawakami, MD, Sendai, Miyagi, Japan Yuki Shiota, MD, Sendai, Japan Mitsuyoshi Mineta, Sendai, Japan Hirotaka Sano, MD, PhD, Sendai, Japan Eiji Itoi, MD, Sendai, Japan

Tear progression in 150 rotator cuff tears was investigated. The tear size progressed by 55% in 1.5 years. The risk factors were smoking, full-thickness tears, and the tear length of 1 - 2 cm.

### Poster No. P296

# Strain of the Tendon After Transosseous Equivalent Repair: A Cadaveric Study

Hideaki Nagamoto, MD, Sendai, Japan Nobuyuki Yamamoto, MD, Sendai, Japan Yuki Shiota, MD, Sendai, Japan Jun Kawakami, MD, Sendai, Miyagi, Japan Takayuki Muraki, PhD, Sendai, Japan Eiji Itoi, MD, Sendai, Japan

The strain of the tendon at the footprint after repair by transosseous equivalent technique decreased, although it increased at the medial row level compared to the intact rotator cuff tendon.

### Poster No. P297

### Inf uence of Electromagnetic Fields in Reparative Processes of Rotator Cuff: Preliminary Results

Francesco Franceschi, MD, Rome, Italy Luca La Verde, MD, Messina, Italy Edoardo Franceschetti, MD, Roma, Italy Alessio Palumbo, MD, Roma, Italy Michele Paciotti, MD, Avezzano, Italy Rocco Papalia, MD, PhD, Rome, Italy Domenico Fenga, MD, Messina, Italy Michele Attilio Rosa, MD, PhD, Messina, Italy Vincenzo Denaro, MD, Rome, Italy

Authors present a clinical trial with preoperatively application of PEMFs in patients with rotator cuff tear, resulting in a increased shoulder function, pain impairment and a better tendon quality

### Poster No. P298

Effects of Tear Size and Concomitant Shoulder Stiffness in Conservative Treatment for Rotator Cuff Tears (RCT) Takuya Sekiguchi, MD, Sendai, Japan Junichiro Hamada, MD, PhD, Koriyama, Japan Yoshihiro Hagiwara, MD, Sendai, Japan

We examined the patients with atraumatic RCT whether tear patterns and/or size and concomitant stiffness were correlated with clinical outcomes of conservative treatment.

## Poster No. P299

# Diagnostic Accuracy of Radial Slice MRI for Subscapularis Tendon Tears

Yuji Shibayama, Sapporo, Japan Toshiaki Hirose, Sapporo, Japan Takayuki Dohke, MD, Hokkaido Sapporo City, Japan Toshihiko Yamashita, MD, Sapporo, Japan Emi Mizushima, MD, Muroran, Japan Kenji Okamura, Sapporo, Japan

Diagnostic accuracy of partial-thickness SSC tear was 78%, that of full-thickness tear was 97% using radial MRI. We got better diagnostic rate than standard MRI, so radial MRI is useful for diagnosis.

### Poster No. P300

The Deep Layer of the Rotator Cuff Tendon Becomes Stiffer with Age: A Possible Cause of Cuff Tear

Nobuyuki Yamamoto, MD, Sendai, Japan Takashi Hayakawa, Fukushima, Japan Takayuki Muraki, PhD, Sendai, Japan Eiji Itoi, MD, Sendai, Japan

The rotator cuff tendons of 210 shoulders were examined with use of ultrasound elastography. The deep layer became stiffer with age. This decrease in the elasticity may be related to an onset of tear.

### Poster No. P301

Double-Layer, Double-Row Repair versus Suture Bridge Fixation for Rotator Cuff Tears

Hironori Kakoi, MD, Kagoshima, Japan Hiroyuki Tominaga, MD, PhD, Kagoshima, Japan Takao Setoguchi, MD, PhD, Kagoshima, Japan Takuya Yamamoto, MD, PhD, Kagoshima, Japan Ichiro Kawamura, MD, PhD, Kagoshima, Japan Setsuro Komiya, MD, Kagoshima, Japan

The clinical outcome and the re-tear rate of the Double-layer, Double-row method were equivalent to SB method.

# Quantitative Evaluation of Temporal Changes in Fatty Inf Itration after Rotator Cuff Repair by IDEAL Sequence MRI

Eiko Hashimoto, Chiba, Japan Nobuyasu Ochiai, MD, PhD, Chiba City, Japan Yu Sasaki, MD, Chiba, Japan Takeshi Yamaguchi, MD, Inohana, Chuo-Ku, Chiba,, Japan Takehiro Kijima, Chiba, Japan Yasuhito Sasaki, Chiban, Japan

IDEAL technique might be useful to evaluate fatty inf ltration of cuff muscle quantitatively. The fatty inf ltration and the muscle atrophy were irreversible even after successful arthroscopic repair.

### Poster No. P303

### Arthroscopic Repair of a Signif cant (>50%) Subscapularis Partial Tear Concomitant with a Supraspinatus Tear

Sung-Jae Kim, MD, Seoul, Republic of Korea Yun-Rak Choi, MD, PhD, Seoul, Republic of Korea Sung-Hwan Kim, MD, Seoul, Republic of Korea Min Jung, MD, Seoul, Republic of Korea Yong-Min Chun, MD, PhD, Seoul, Republic of Korea

After arthroscopic repair of subscapularis partial tear using the trans-tendon technique, some patients may have decreased external rotation.

### Poster No. P304

# The Changes of Fatty Degeneration and Shoulder Strengths in Nonsurgically Treated Rotator Cuff Tears Yoshihiro Nakamura, Otake, Japan Shin Yokoya, MD, Hiroshma, Japan Yohei Harada, MD, Hiroshima, Japan

Katsunori Shiraishi, Hiroshima, Japan Yoshihiko Nagata, MD, Ootake, Japan Yu Mochizuki, MD, Hiroshima, Japan Mitsuo Ochi, MD, PhD, Hiroshima, Japan

We evaluated relationship of fatty degeneration in rotator cuff muscle and shoulder strength, and these changes in nonsurgically treated rotator cuff tears.

# Poster No. P305

### The Safe Zone for Avoiding Iatrogenic Suprascapular Nerve Injury During Reverse Shoulder Arthroplasty

Satoshi Miyake, MD, Fukuoka, Japan Teruaki Izaki, MD, PhD, Fukuoka, Japan Yozo Shibata, MD, Chikushino, Japan Makoto Sakurai, MD, Fukuoka, Japan Daisuke Kuroda, MD, PhD, Chikushino City, Japan Masatoshi Naito, MD, Fukuoka, Japan

With three-dimensional computed tomography, a safe zone to avoid suprascapular nerve injury on the glenoid face of the intraoperative surgical f eld was obtained.

### Poster No. P306

Excellent Outcomes of Primary Reverse Total Shoulder Arthroplasty in Patients with Glenohumeral Instability Brian Chalmers, MD, Rochester, MN Eric R. Wagner, MD, Rochester, MN Matthew Houdek, MD, Rochester, MN John W. Sperling, MD, MBA, Rochester, MN Joaquin Sanchez-Sotelo, MD, Rochester, MN Robert H. Cof eld, MD, Rochester, MN

Reverse shoulder arthroplasty results in excellent clinical outcomes and a low complication rate without evidence of a substantial rate of postoperative instability.

### Poster No. P307

# Multi-Center Prospective Study of a Reverse Shoulder Prosthesis with a Lateralized Glenosphere

Samer S. Hasan, MD, PhD, Cincinnati, OH Jonathan C. Levy, MD, Ft Lauderdale, FL Zachary R. Leitze, MD, Saint George, UT Avinash G. Kumar, MD, Bradenton, FL Gary D. Harter, MD, Lewisburg, PA Ryan J. Krupp, MD, Louisville, KY

Reverse shoulder arthroplasty has revolutionized the treatment of patients with arthritis and can be performed with implants employing medialized or lateralized glenospheres.

### Poster No. P308

Effect of Prior Rotator Cuff Repair on Clinical Outcomes Following Reverse Shoulder Arthroplasty Taku Hatta, MD, Rochester, MN Jean-David Werthel, Paris, France Eric R. Wagner, MD, Rochester, MN Lukas Ernstbrunner, Salzburg, Austria John W. Sperling, MD, MBA, Rochester, MN Scott P. Steinmann, MD, Rochester, MN Eiji Itoi, MD, Sendai, Japan Robert H. Cof eld, MD, Rochester, MN

Reverse shoulder arthroplasty for patients with cuff tear arthropathy who underwent prior rotator cuff repair provides signif cant improvement of symptoms and shoulder function over 2-year follow-up.

### Poster No. P309

# • Reverse Total Shoulder Replacement in Patients with 'Weightbearing' Shoulders on Wheelchair or Walking Aids

Ofer Levy, MD, Henley-On-Thames, United Kingdom George Arealis, MD, Athens, Greece Oren Tsvieli, MD, Reading, United Kingdom Ruben Abraham, MD, FRCS, Reading, United Kingdom Oren Tsvieli, MD, Reading, United Kingdom Ehud Atoun, MD, Kochav Michael, Israel

rTSA can be used successfully & safely in patients with 'weightbearing' shoulders (wheelchair or crutches). Return to almost full & pain free movement, resume daily activities & high satisfaction

# SHOULDER AND ELBOW

### Poster No. P310

The Role of Glenoid Implant in Reverse Shoulder Prosthesis: A Clinical and Radiological Study

Alessandro Ciompi, MD, Roma, Italy Angelo De Carli, MD, Rome, Italy Riccardo Maria Lanzetti, Rome, Italy Edoardo Gaj, Rome, Italy Domenico Lupariello, Roma, Italy Antonio Vadala, MD, Rome, Italy Andrea Ferretti, MD, Rome, Italy

a range of medialization of the center of rotation and a deltoid length between had a signif cative better clinical out-come. Neutral position of the base-plate, could offer better ROM.

### Poster No. P311

### Patient Activity Levels After Reverse Total Shoulder Arthroplasty: What are Patients Doing?

Grant Garcia, MD, New York, NY Samuel A. Taylor, MD, New York, NY Gregory T. Mahony, BA, New York, NY Joshua S. Dines, MD, New York, NY David M. Dines, MD, Old Westbury, NY Russell F. Warren, MD, New York, NY Edward V. Craig, MD, New Canaan, CT Lawrence V. Gulotta, MD, Chappaqua, NY

RTSA Patients had an 85% rate of return to one or more sporting activities at an average of 5.3 months following surgery. This study offers valuable information to manage patient expectations.

# Poster No. P312

### The Rotator Cuff is an Antagonist Following Reverse TSA: A Biomechanical Study of Differing Implant Conf gurations Josh W. Giles, PhD, London, United Kingdom G Daniel G. Langohr, MSc, London, ON, Canada James A. Johnson, PhD, London, ON, Canada George S. Athwal, MD, London, ON, Canada

Cuff repair with RSA increases deltoid & joint loading and may negatively affect muscle fatigue and implant survival. Glenosphere offset exacerbates these effects while humeral offset mitigates them.

# Poster No. P313

# Hypophosphatasia: A Possible Misdiagnosis Cause of Femoral Diaphyseal Stress Fractures

Luca Labianca, MD, Rome, Italy Cosma Calderaro, Rome, Italy Francesco Turturro, MD, Rome, Italy Antonello Montanaro, MD, Rome, Italy Francesca Manfroni, Roma, Italy Andrea Ferretti, MD, Rome, Italy

Risk of fracture further increases in the presence of systemic conditions reducing quality of bone such as hypophosphatasia, that should be considered in Femur Diaphyseal Stress Fractures

## Poster No. P314

### Comparison of Outcomes of Reverse Total Shoulder Arthroplasty With or Without Subscapularis Repair

Jason Vourazeris, MD, Gainesville, FL Thomas W. Wright, MD, Gainesville, FL Kevin W. Farmer, MD, Gainesville, FL Joseph J. King III, MD, Gainesville, FL Aimee Struk, MEd, MBA, ATC, Gainesville, FL

## Subscap

# Poster No. P315

Pain Control after Total and Reverse Shoulder Arthroplasty: Interscalene Block vs. Liposomal Bupivacaine Jeffery D. Angel, MD, Batesville, AR Chris Steel, Batesville, AR Kevin Ong, PhD, Philadelphia, PA Heather Watson, PhD, Menlo Park, CA Scott T. Lovald, PhD, MBA, Menlo Park, CA

The current study found that shoulder arthroplasty patients treated with liposomal bupivacaine had signif cantly less pain at 1 day postop compared to patients treated with an interscalene block.

# Poster No. P316

### General or Regional Anesthesia for Total Shoulder Arthroplasty: A Comparison of Perioperative Outcomes

Siddharth A. Mahure, MD, New York, NY David Y. Ding, MD, New York, NY Brent Mollon, MD, FRCSC, Toronto, ON, Canada Joseph D. Zuckerman, MD, New York, NY Young W. Kwon, MD, PhD, New York, NY

Regional anesthesia is associated with less perioperative complications and mortality than general anesthesia after TSA

## Poster No. P317

Cardiovascular Complication Following Shoulder Arthroplasty: Incidence, Associated Factors, and Mortality Nigel Hsu, MD, Baltimore, MD Amit Jain, MD, Baltimore, MD Karthikeyan E. Ponnusamy, MD, Baltimore, MD Umasuthan Srikumaran, MD, MBA, Clarksville, MD Edward G. McFarland, MD, Lutherville, MD

The incidence and risk factors for cardiovascular complications after primary shoulder arthroplasty is studied through the Nationwide Inpatient Sample database.

# Poster No. P318

Value of Validated Complications in a Shoulder Arthroplasty Registry

Ronald A. Navarro, MD, Rolling Hills, CA Liz Paxton, MA, Rcho Santa Fe, CA Jessica Harris, MS, San Diego, CA Mark T. Dillon, MD, Sacramento, CA Anshuman Singh, MD, San Diego, CA Edward Yian, MD, Anaheim, CA

The reporting and acting on validated complications is critical to our aim for continuous improvement and is a differentiator of this registry.

# Surgical Treatment of Infected Shoulder Arthroplasty: A Systematic Review

Giulio Maria Marcheggiani Muccioli, MD, Bologna, Italy Gazi Huri, MD, Baltimore, MD Alberto Grassi, MD, Bologna, Italy Mahmut N. Doral, MD, Ankara, Turkey Stefano Zaffagnini, MD, Bologna, Italy Maurilio Marcacci, MD, Bologna, Italy

One-stage revision reported better outcomes when compared with other procedures in the treatment of infected shoulder arthroplasty.

# Poster No. P320

### Unexpected Positive Cultures in Primary Shoulder Arthroplasty Patients without Prior Arthroplasty

Katherine A. Burns, MD, Saint Louis, MO Lynn Robbins, PA-C, Bridgeton, MO Melissa L. Wilson, Los Angeles, CA Angela LeMarr, RN, Brighton, IL Amber Childress, RN, Saint Louis, MO Diane Morton, MS, Saint Louis, MO

Increasing number of prior surgeries and male gender associated with unexpected positive culture (UPC) in primary shoulder arthroplasty patients.

# Poster No. P321

# Radiographic Measurements of Shoulder Arthroplasty: Can We Assess Anatomic Restoration?

Javier E. Sanchez, BS Jonathan Watling, MD, New York, NY Prakash Gorroochurn, Phd, New York, NY Christopher S. Ahmad, MD, New York, NY William N. Levine, MD, New York, NY Charles M. Jobin, MD, New York, NY

Routine radiographic measurements of TSA are reliable over serial X-rays and between observers with different levels of training.

# Poster No. P322

Differential Effect of Insulin Dependence on Shoulder Arthroplasty Outcomes Charles Qin, BA, Chicago, IL Jason L. Koh, MD, Winnetka, IL

Insulin dependence is associated with increased medical and surgical morbidity following shoulder arthroplasty.

### Poster No. P323

Long-Term Outcomes of Cemented versus Cementless Humeral Stems in Shoulder Arthoplasty Jean-David Werthel, Paris, France Suenghwan Jo, MD, PhD, Rochester, MN Robert H. Cof eld, MD, Rochester, MN John W. Sperling, MD, MBA, Rochester, MN Bassem T. Elhassan, MD, Rochester, MN

The long-term risk of loosening of cementless humeral stems is signif cantly higher than cemented stems, especially when stems designed for cement f xation are used uncemented.

### Poster No. P324

Primary Shoulder Arthroplasty in Immunosuppressed Patients Following Solid Organ Transplantation Taku Hatta, MD, Rochester, MN Eric R. Wagner, MD, Rochester, MN Jean-David Werthel, Paris, France Lukas Ernstbrunner, MS, Salzburg, Austria John W. Sperling, MD, MBA, Rochester, MN Scott P. Steinmann, MD, Rochester, MN Eiji Itoi, MD, Sendai, Japan Robert H. Cof eld, MD, Rochester, MN

Shoulder arthroplasty in immunosuppressed patients with solid organ transplantation could be a successful procedure, excepting an increased mortality and risk of periprosthetic fractures.

## Poster No. P325

Shoulder Arthroplasty for Locked Anterior Dislocation of the Shoulder

Joseph Statz, MD, Rochester, MN Bradley S. Schoch, MD, Rochester, MN John W. Sperling, MD, MBA, Rochester, MN Joaquin Sanchez-Sotelo, MD, Rochester, MN Robert H. Cof eld, MD, Rochester, MN

Reverse shoulder arthroplasty should be considered whenever the glenoid allows for placement of a baseplate in the setting of a locked anterior shoulder dislocation.

# Poster No. P326

# Comparison of Asymmetric Reaming versus a Posteriorly Augmented Component

Jia-Wei Kevin Ko, MD, Seattle, WA Usman Ali M. Syed, BS, Philadelphia, PA Bryan J. Loeff er, MD, Charlotte, NC E S. Paxton, MD, Providence, RI Jonathan D. Barlow, MD, Philadelphia, PA Joseph A. Abboud, MD, Bryn Mawr, PA Gerald R. Williams Jr, MD, Philadelphia, PA Charles L. Getz, MD, Newton Square, PA

Radiographic outcomes of a series of patients with posterior glenoid wear who were treated with either asymmetric reaming of the glenoid or treated with a posteriorly augmented glenoid.

### Poster No. P327

# Does an Increase in Modularity Improve the Outcomes of Total Shoulder Replacement?

Bradley S. Schoch, MD, Rochester, MN Jean-David Werthel, Paris, France Cathy D. Schleck, Rochester, MN John W. Sperling, MD, MBA, Rochester, MN Robert H. Cof eld, MD, Rochester, MN

2nd generation TSA provides reliable improvement in pain and range of motion with outcomes similar to an older non-modular system and to a newer system with different humeral head offsets.

# SHOULDER AND ELBOW

### Poster No. P328

Periprosthetic Shoulder Infection: One-Stage Better Than Two-Stage?

Geoffrey P. Stone, MD, Houma, LA Rachel Clark, BA, Tampa, FL Kathleen C. O'Brien, BS, Tampa, FL Lisa Vaccaro, Tampa, FL Richard S. Tannenbaum, BS, Tampa, FL Benjamin J. Cottrell, BS, Tampa, FL Brent Stephens, MD, Decatur, GA Adam Lorenzetti, MD, Loma Linda, CA Mark A. Frankle, MD, Temple Terrace, FL

One-stage revision arthroplasty for periprosthetic shoulder infection results in lower reoperation rates for infection and similar clinical outcomes compared to two-stage revision in our series.

### Poster No. P329

# Shoulder Arthroplasty Restores Daily Shoulder Motion Levels Similar to the Contralateral Normal Side

G Daniel G. Langohr, MSc, London, ON, Canada John Haverstock, MD, London, ON, Canada James A. Johnson, PhD, London, ON, Canada George S. Athwal, MD, London, ON, Canada

Mean shoulder motion after arthroplasty is not signif cantly different than the contralateral normal side. The number of shoulder arthroplasty elevations greater than 60° approach 1.5 Mc per year.

### Poster No. P330

CT And MRI are Equally Reliable in the Assessment of Glenohumeral Arthritis and Glenoid Version Christopher M. Hopkins, MD, Memphis, TN Frederick M. Azar, MD, Memphis, TN Ryan P. Mulligan, MD, Memphis, TN Anthony M. Hollins, MD, Memphis, TN Anthony M. Hollins, MD, Memphis, TN Richard A. Smith, PhD, Memphis, TN Thomas W. Throckmorton, MD, Germantown, TN

We conclude both CT and MRI can be reliably used as preoperative planning tools for assessment of glenoid deformity in shoulder arthroplasty.

# Poster No. P331

### Biomechanical Effects of Rotator Interval Closure in Shoulder Arthroplasty

Charles A. Daly, MD, Atlanta, GA William C. Hutton, DSC, Atlanta, GA Claudius Jarrett, MD, Atlanta, GA

Shoulder arthroplasty performed on ten matched cadaveric shoulders randomized to interval closure demonstes superior subscapularis strength with interval closure and no signif cant motion def cits.

## Poster No. P332

### Modif cation of the Walch Classif cation: Def ning New Types of Glenoid Pathology in Advanced Osteoarthritis

Joseph P. Iannotti, MD, PhD, Cleveland, OH Bong-Jae Jun, PhD, Cleveland, OH Eric T. Ricchetti, MD, Cleveland, OH

CT imaging analysis was used to def ne new subtypes of glenoid pathology in the Walch classif cation based on patterns of joint line medialization, premorbid anatomy, and glenohumeral alignment.

# Poster No. P333

The V-Shaped Subscapularis Tenotomy for Anatomic Total Shoulder Arthroplasty

Thomas Christensen, MD, Reno, NV Austin Vo, MBBS, FRCS (Ortho), Kew, Australia Laurent Lafosse, MD, Annecy, France

The subscapularis V-shaped tenotomy provides excellent visualization for total shoulder arthroplasty, without differences in outcomes compared to a subscapularis sparing control group.

### Poster No. P334

# Shoulder Arthroplasty in Patients with Osteo-Chondrodysplasias Bradley S. Schoch, MD, Rochester, MN Jean-David Werthel, Paris, France John W. Sperling, MD, MBA, Rochester, MN Mark E. Morrey, MD, Rochester, MN

Shoulder arthroplasty for patients with osteochondrodysplasias remains challenging due to altered patient anatomy, but reliably improves pain and function with a low incidence of early reoperation.

### Poster No. P335

Ultrasonic Tenotomy for Recalcitrant Tennis Elbow -Sustainability and Sonographic Progression at Three Years Chu Sheng Seng, MBBS, MRCS, Singapore, Singapore YEE GEN LIM, MBBS, ChB, Singapore, Singapore Joyce S. Koh, MD, Singapore, Singapore Tet S. Howe, MD, Singapore, Singapore Brian P. Lee, MD, Singapore, Singapore P Chandra Mohan, MBBS, Singapore, Singapore Bernard F. Morrey, MD, Fayetteville, TX

Ultrasonic percutaneous tenotomy for recalcitrant tennis elbow shows good sustainability and sonographic progression at 3 years and is a promising option as an alternative to surgical intervention.

### Poster No. P336

The Prevention and Early Detection for Osteochondritis Dissecans of the Elbow in Niigata Challenge Since 2006 Tomoharu Mochizuki, MD, Niigata City, Japan Noriaki Yamamoto, MD, Niigata City, Japan

Osamu Tanifuji, MD, Niigata City, Japan Kazuaki Suzuki, MD, Niigata, Japan Hiroshi Yamagiwa, MD, Niigata, Japan Naoto Endo, MD, Niigata, Japan

The osteochondritis dissecans of the elbow in young baseball players can be prevented and early detected.

Treatments of Non-Septic Olecranon Bursitis among Observation, Aspiration, and Aspiration with Steroid Injection Joon Yub Kim, MD, Gyeonggi-Do, Republic of Korea

We do not recommend simple aspiration treatment for non-septic olecranon bursitis.

# Poster No. P338

Regional Ulnar Nerve Strain Following Simple Decompression and Anterior Transposition in Cubital Tunnel Syndrome Ian Foran, MD, San Diego, CA Kenneth Vaz, MD, San Diego, CA Eric R. Hentzen, MD, PhD, San Diego, CA Sameer B. Shah, PhD, La Jolla, CA

In patients with cubital tunnel syndrome, anterior transposition and simple decompression result in different regional ulnar nerve strain prof les that are dependent upon elbow and wrist position.

# Poster No. P339

Cyclic Stability of Proximal Humeral Fractures Fixed by Locked Plate Combined with Intramedullary Strut Chih-Kun Hsiao, Kaohsiung, Taiwan Yuan-Kun Tu, MD, PhD, Kaohsiung, Taiwan Yi-Jung Tsai, PhD, Tainan City, Taiwan

The results emphasize the importance of medial support for stability of the humeral head, especially in osteoporotic bone subjected to cyclic loading.

# Poster No. P340

# Biomechanical Evaluation of Scapular Body and Neck Fracture Fixation

Christiane G. Kruppa, Bochum, Germany Travis Burgers, PhD, Grand Rapids, MI Martin Hoffmann, MD, Bochum, Germany Bart Williams, PhD, Grand Rapids, MI Debra Sietsema, PhD, Grand Rapids, MI Clifford B. Jones, MD, FACS, Grand Rapids, MI

Scapular body fracture f xation with a lateral plate was stiffer than a lateral-posterior plate. Scapular neck fracture f xation with a lateral-posterior plate was stiffer than a lateral plate.

### Poster No. P576

Anterior-Posterior Continuity of the Graft and Tendon is Necessary for Superior Capsule Reconstruction Teruhisa Mihata, MD, PhD, Takatsuki, Osaka, Japan Michelle H. McGarry, MD, Long Beach, CA Timothy L. Kahn, BA, Irvine, CA Masashi Neo, Takatsuki, Japan Thay Q. Lee, PhD, Long Beach, CA

Superior capsule reconstruction with posterior side-to-side suture between graft and residual rotator cuff tendons normalized subacromial contact pressure and superior glenohumeral translation

# SPINE

# Poster No. P341

Predictors for Hospital Readmission Within Two Years Following Adult Spinal Deformity Surgery Peter G. Passias, MD, Westbury, NY Eric O. Klineberg, MD, Dvais, CA Cyrus Jalai, BA, New York, NY Nancy Worley, MS, New York, NY Alexandra Soroceanu, MD, Halifax, Canada Themistocles S. Protopsaltis, MD, Closter, NJ Virginie Lafage, PhD, New York, NY International Spine Study Group, Brighton, CO

Readmission predictors after ASD surgery included major peri-op, radiographic, implant, and infection complications. All patients improved in HRQL at 2-years but readmitted patients improved less.

# Poster No. P342

Does Cage Subsidence Affect Clinical Outcomes After Transforaminal Lumbar Interbody Fusion? Peter Formby, MD, Washington , Dist. of Columbia Scott Wagner, MD, Rockville, MD Daniel Kang, MD, Tacoma, WA Melvin D. Helgeson, MD, North Potomac, MD

Our f ndings suggest interbody cage subsidence has no effect on persistence or recurrence of preoperative symptoms after TLIF

### Poster No. P343

◆ Improving Response to Treatment for Patients with Degenerative Disc Disease by the Use of Molecular Markers Gaetano J. Scuderi, MD, Jupiter, FL Pasquale X. Montesano, MD, Stuart, FL Jason M. Cuellar, MD PhD, Los Angeles, CA

Patients who are "FAC+" are more likely to demonstrate improvement from intradiscal autologous A2M injection. This study bridges the gap between the presence of a biomarker and clinical outcomes.

### Poster No. P344

Unilateral versus Bilateral Instrumentation in Transforaminal Lumbar Interbody Fusion: A Meta-Analysis Thomas Cheriyan, New York, NY Virginie Lafage, PhD, New York, NY Sonali Narang, BA, Muttontown, NY Steven Samrock, BA, New York, NY Bradley Y. Harris, JD, New York, NY Jeffrey A. Goldstein, MD, New York, NY John A. Bendo, MD, New York, NY Frank J. Schwab, MD, New York, NY Thomas J. Errico, MD, New York, NY

This meta-analysis shows that bilateral instrumentation in TLIF might be superior to unilateral instrumentation in respect to fusion rates. There were no differences in patient reported outcomes.

# SPINE

# Poster No. P345

Variation in Care for Lumbar Stenosis Olivier Van Wulfften Palthe, MD, Cambridge, MA Christine Park, BS, Cambridge, MA Teun Teunis, MD, Amsterdam, Netherlands Joseph H. Schwab, MD, Boston, MA Christopher M. Bono, MD, Boston, MA Thomas D. Cha, MD, Boston, MA

Variation in treatment and costs in 8597 lumbar stenosis patients treated by 16 surgeons from 7 different institutes. What are predictors for higher costs and different treatments?

### Poster No. P346

### Spino-Pelvic Sagittal Imbalance Predisposes to Adjacent Segment Disease After Posterior Lumbar Interbody Fusion

Tomiya Matsumoto, MD, PhD, Sakai, Japan Shinya Okuda, Sakai, Japan Takafumi Maeno, MD, PhD, Sakai, Japan Tomoya Yamashita, Osaka, Japan Tsuyoshi Sugiura, Sakai, Japan Motoki Iwasaki, MD, MSc, Sakai, Osaka, Japan

Pre-operative lower LL and higher PI-LL might cause abnormal mechanical force adjacent to the fused segment and predispose to ASD after PLIF.

### Poster No. P347

### Hypertension Correlates Global Alignment and the Health-Related Quality of Life

Hideyuki Arima, MD, Fujinomiya, Shizuoka, Japan Daisuke Togawa, MD, Hamamatsu, Japan Tomohiko Hasegawa, MD, Shizuoka, Japan Yu Yamato, MD, PhD, Hamamatsu, Japan Sho Kobayashi, MD, Hamamatsu, Japan Tatsuya Yasuda, MD, Hamamatsu, Japan Tomohiro Banno, MD, Shizuoka, Japan Shin Oe, MD, Hamamatsu, Japan Yukihiro Matsuyama, MD,PhD, Hamamatsu, Japan

This study showed the relationship between lifestyle-related diseases and spinopelvic parameters. The results showed that hypertension was associated with global sagittal malalignment.

### Poster No. P348

# The Differences in Clinical Outcomes of Cervical Spine Surgery Procedures in Professional Athletes Harry Mai, BS, Manhattan Beach, CA

Robert Burgmeier, MD, Los Angeles, CA Jason W. Savage, MD, Chicago, IL Alpesh A. Patel, MD, River Forest, IL Andrew C. Hecht, MD, New York, NY Joseph C. Maroon, FACS, MD, Pittsburgh, PA Wellington K. Hsu, MD, Chicago, IL

A comparative study of outcomes of operative management techniques in professional athletes with cervical disc herniation.

### Poster No. P349

Outcomes and Revision Rates following Multilevel Anterior Cervical Discectomy and Fusion Roger K. Owens II, MD, Prospect, KY Kelly Bratcher, RN, Louisville, KY Katlyn E. McGraw SR, BA, Louisville, KY Leah Y. Carreon, MD, Louisville, KY

Patients undergoing three- to four-level ACDF demonstrate substantial improvement in outcomes at two years after surgery, but have a 35% revision rate mostly for non-union.

### Poster No. P350

A Cost-Utility Analysis of Open Versus Minimally Invasive Microdiscectomy: A Markov Model Steven McAnany, MD, New York, NY Diana Patterson, MD, New York, NY Kristen Meier, MD, New York, NY Samuel Overley, MD, New York, NY Holt Cutler, New York, NY Samuel K. Cho, MD, Englewood Cliffs, NJ Andrew C. Hecht, MD, New York, NY Sheeraz Qureshi, MD, New York, NY

At f ve years, there is no difference in the relative cost-effectiveness of open vs minimally invasive lumbar microdiscectomy and both are cost-effective at f ve years.

### Poster No. P351

Sacral-Alar-Iliac (SAI) Fixation in Children with Neuromuscular Scoliosis: Minimum Five-Year Follow Up Amit Jain, MD, Baltimore, MD Anne Kuwabara, BA, Baltimore, MD Khaled Kebaish, MD, Baltimore, MD Paul D. Sponseller, MD, Baltimore, MD

Sacral-Alar-Iliac screws are safe and effective pelvic anchors for use in children with neuromuscular scoliosis undergoing spinal fusion surgery with good results over a 5-year follow-up.

### Poster No. P352

Predicting Extended Length of Hospital Stay in an Adult Spinal Deformity Surgical Population Eric O. Klineberg, MD, Sacramento, CA Peter G. Passias, MD, Westbury, NY Cyrus Jalai, BA, New York, NY Nancy Worley, MS, New York, NY Robert A. Hart, MD, Portland, OR Daniel Sciubba, MD, Baltimore, MD Douglas C. Burton, MD, Kansas City, KS International Spine Study Group, Brighton, CO

ASD patient LOS is affected by baseline comorbidities and number of intra-operative, not peri-operative, complications. ExtLOS patients improved, albiet less than normalLOS cases, at 2-years post-op.

Development of New Onset Cervical Deformity in Non-Operative ASD Patients With Three-Year Follow Up Peter G. Passias, MD, Westbury, NY Cyrus Jalai, BA, New York, NY Nancy Worley, MS, New York, NY Renaud Lafage, New York, NY Virginie Lafage, PhD, New York, NY Christopher Ames, MD, San Francisco, CA Eric O. Klineberg, MD, Dvais, CA International Spine Study Group, Brighton, CO

New onset CD rate in non-op ASD patients was 44.8% over 3-years follow up, and baseline C2 slope severity was associated with this. CD patients had decreased SF-36 MCS compared to aligned patients.

# Poster No. P354

Impact of Obesity on Cost per Quality Adjusted Life Years Gained Following Lumbar Spine Surgery John Sielatycki, MD, Nashville, TN Silky Chotai, Nashville, TN Harrison F. Kay, BS, Nashville, TN Ahilan Sivaganesan, MD, Nashville, TN Scott L. Parker, MD, Nashville, TN Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

Lumbar surgery provided signif cant improvement in health state utility for obese patients. Severely obese patients(BMI≥40) experience less improvement than non-obese patients.

# Poster No. P355

2-week vs. 6-week Postoperative Restrictions Following Lumbar Discectomy: A Prospective Randomized Control Study Dana A. Leonard, BA, Boston, MA Andrew J. Schoenfeld, MD, Medf eld, MA Mitchel B. Harris, MD, Boston, MA Joseph H. Schwab, MD, Boston, MA Kirkham B. Wood, MD, Boston, MA Thomas D. Cha, MD, Boston, MA Christopher M. Bono, MD, Boston, MA

Continuing postoperative restrictions through 6 weeks after lumbar discectomy does not signif cantly decrease the rate of reherniations.

# Poster No. P356

Does Number of Reported Drug Allergies Affect Patient-Reported Outcomes Following Lumbar Spine Surgery? Harrison F. Kay, BS, Nashville, TN Silky Chotai, Nashville, TN Joseph B. Wick, BA, Nashville, TN David Stonko, BS, MS, Nashville, TN Anthony Asher, Charlotte, NC Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

Patients with >5 reported drug allergies have worse absolute outcomes but similar improvement one year after lumbar spine surgery. Reported drug allergies are associated with depression and anxiety.

### Poster No. P357

Can Occult Infection be Demonstrated in the Setting of Pain in Patients Who Have Undergone Spinal Surgery? Darren R. Lebl, MD, New York, NY Tucker C. Callanan, BS, New York, NY Frank P. Cammisa Jr, MD, New York, NY Celeste Abjornson, PhD, New York, NY Tucker C. Callanan, BS, New York, NY

Occult infections are more prevalent in patients requiring revision spinal surgery than previously identif ed.

# Poster No. P358

Spontaneous Derotation of Lumbar Curve after Selective Thoracic Fusion in Adolescent Idiopathic Scoliosis Satoru Demura, MD, Kanazawa, Japan Hideki Murakami, MD, Kanazawa, Japan Satoshi Kato, MD, Kanazawa, Japan Katsuhito Yoshioka, MD, Kanazawa, Japan Moriyuki Fujii, MD, Kanazawa, Japan Takashi Igarashi, MD, Kanazawa, Japan Noritaka Yonezawa, Kanazawa, Japan Naoki Takahashi, MD, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

A greater derotation of compensatory lumbar curve could be achieved with maximizing axial correction of the thoracic spine in AIS.

# Poster No. P359

The Epidemiology, Economic, and Mortality of Vertebral Osteomyelitis in the US: Database Study of 283,022 Cases Kimona Issa, MD, Little Falls, NJ Qais Naziri, MD, Brooklyn, NY Matthew R. Boylan, Brooklyn, NY Michael Faloon, MD, Wayne, NJ Sina Pourtaheri, MD, Cleveland, OH Kumar G. Sinha, MD, Miami, FL Ki S. Hwang, MD, New York, NY Carl B. Paulino, MD, Brooklyn, NY Arash Emami, MD, Wayne, NJ

The incidence of vertebral osteomyelitis has been increasing in the United States, and various factors were identif ed to affect the inpatient mortality rate, length-of-stay, and admission costs.

# Poster No. P360

### The Unpredictability of Primary Adult Spinal Deformity Patients Undergoing Sagittal Realignment

Jensen Henry, BA, New York, NY Frank J. Schwab, MD, New York, NY Michael P. Kelly, MD, Saint Louis, MO Jeffrey Gum, MD, Crestwood, KY Gregory M. Mundis, MD, San Diego, CA Gregory M. Mundis, MD, San Diego, CA Robert S. Bess, MD, Denver, CO Virginie Lafage, PhD, New York, NY International Spine Study Group, Brighton, CO

Primary adult spinal deformity patients, especially those undergoing long fusions to the upper thoracic spine, have more unpredictable post-operative sagittal alignments than revision patients.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

# SPINE

### Poster No. P361

CSM Surgery Complication Rates, Predictors of Their Development, and Effect on Outcomes at Two Years Michael C. Gerling, MD, Manhattan, NY Peter G. Passias, MD, Westbury, NY Shaleen Vira, MD, Silver Spring, MD Kristina Bianco, New York, NY Nancy Worley, MS, New York, NY Cyrus Jalai, BA, New York, NY Cheongeun Oh, PhD, New York, NY Alexander Vaccaro, MD, PhD, Philadelphia, PA

In the setting of CSM surgery, complications predictors, including prior cervical surgical history, and impact of surgery on patientreported outcomes, up to 2-years post-operative, are reported.

### Poster No. P362

Sagittal Spinal Alignment and Balance in Diffuse Idiopathic Skeletal Hyperostosis: A Population based Cohort Study Ryohei Kagotani, MD, Wakayama City, Japan Munehito Yoshida, MD, Wakayama, Japan Shigeyuki Muraki, PhD, MD, Tokyo, Japan Hiroyuki Oka, MD Hiroshi Hashizume, MD, Wakayama, Japan Hiroshi Yamada, MD, Wakayama, Japan Shunji Tsutsui, MD, PhD, Wakayama, Japan Toru Akune, MD, Tokyo, Japan Noriko Yoshimura, MD, Tokyo, Japan

We investigated sagittal spinal alignment and balance in a population-based cohort and found that thoracic hyperkyphosis is a primary contributor to PSI in DISH

### Poster No. P363

Clinically Signif cant Psychological Problems Detected in 32% of Adolescent Idiopathic Scoliosis Patients Stephanie Iantorno, BA, Los Angeles, CA Austin Sanders, BA, Los Angeles, CA Lindsay M. Andras, MD, Los Angeles, CA Anita H. Hamilton, PhD, Los Angeles, CA Paul D. Choi, MD, Los Angeles, CA David L. Skaggs, MD, Los Angeles, CA

About 1 in 3 patients with AIS experience clinically signif cant psychological problems. Two-thirds of parents did not recognize when their child was having psychologic problems.

## Poster No. P364

Posters

Cervical Vertebral Body Dimension Increase with Age and Male Sex: A CT Analysis Zakk Walterscheid, BS, Roanoke, VA Conor O'Neill, Roanoke, VA Jonathan J. Carmouche, MD, Roanoke, VA

CT scans of 60 patients, ages 20-78, were examined and height, width, and depths of vertebral bodies of C3-C7 were measured to determine average dimensions in age groups stratif ed by decade.

# Poster No. P365

Super Obesity (BMI > 50kg/m2) and Complications after Posterior Lumbar Spine Fusion Jourdan M. Cancienne, MD, Charlottesville, VA Brian C. Werner, MD, Charlottesville, VA Scott S. Yang, MD, Charlottesville, VA Anuj Singla, MD, Charlottesville, VA Adam L. Shimer, MD, Charlottesville, VA Francis H. Shen, MD, Charlottesville, VA Hamid Hassanzadeh, MD, Charlottesville, VA

Super obese patients had signif cantly higher rates of postoperative complications compared to even morbidly obese patients following PSF.

#### Poster No. P366

Predicting Medical Complications - Are the Forecasted Risks Realistic in Daily Practice? Maximilain Kasparek, MD, Vienna, Austria Anna C. Rienmüller, Zürich, Switzerland

Michael Weber, Vienna, Austria Irene Sigmund, MD, Vienna, Austria Philipp Funovics, MD, Vienna, Austria Petra Krepler, MD, Vienna, Austria Reinhard Windhager, MD, Vienna, Austria Josef G. Grohs, MD, Vienna, Austria

Predicting medical complications proves to be realistic and clinically helpful in daily routine. It assists in the preoperative decision making process and helps to not underestimate patient's risk

### Poster No. P367

Validation of the "Substantially" Touched Vertebra as the LIV in Thoracic Major Curves with AR Lumbar Modif ers Joshua S. Murphy, MD, Atlanta, GA

Vidyadhar V. Upasani, MD, San Diego, CA Burt Yaszay, MD, San Diego, CA Tracey Bastrom, MA, San Diego, CA Carrie Bartley, MA, San Diego, CA Amer Samdani, MD, Philadelphia, PA Lawrence G. Lenke, MD, Saint Louis, MO Peter O. Newton, MD, San Diego, CA

Choosing the substantially touched vertebra as the lowest instrumented vertebra in all thoracic major curves with an AR lumbar modif er signif cantly decreased the risk of distal addingon.

### Poster No. P368

Predictive Factors for a Distal Adjacent Disorder with L3 Lowest Instrumented Vertebrae in Lenke 5C Patients *Kei Ando, MD, Nagoya, Japan* 

In Lenke 5C AIS patients who underwent surgery fused to L3 vertebra as LIV, preoperative L3, L4 translation and L3/4 disc angle were very important parameter.

Spinal Metastases from Differentiated Thyroid Carcinoma: Long-Term Surgical Results and Treatment Strategy

Satoshi Kato, MD, Kanazawa, Japan Hideki Murakami, MD, Kanazawa, Japan Satoru Demura, MD, Kanazawa, Japan Katsuhito Yoshioka, MD, Kanazawa, Japan Noriaki Yokogawa, MD, Kanazawa, Japan Moriyuki Fujii, MD, Kanazawa, Japan Takashi Igarashi, MD, Kanazawa, Japan Noritaka Yonezawa, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Curative resection of isolated spinal metastases from differentiated thyroid carcinomas has the potential not only to maintain performance status, but also to prolong survival.

# Poster No. P370

### Chronic Conditions Associated with Reoperation After Adult Lumbar Fusion Surgery

Justin Paul, MD, New York, NY Baron Lonner, MD, New York, NY Thomas J. Errico, MD, New York, NY

Analysis of the New York State Inpatient Database identif ed several chronic conditions associated with a risk for reoperation for infection or revision fusion.

### Poster No. P371

### Risk Factors for Incidental Durotomy During Total En Bloc Spondylectomy

Noriaki Yokogawa, MD, Kanazawa, Japan Hideki Murakami, MD, Kanazawa, Japan Satoru Demura, MD, Kanazawa, Japan Satoshi Kato, MD, Kanazawa, Japan Katsuhito Yoshioka, MD, Kanazawa, Japan Moriyuki Fujii, MD, Kanazawa, Japan Takashi Igarashi, MD, Kanazawa, Japan Noritaka Yonezawa, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We examined the risk factors for incidental durotomy during TES. In a multivariate analysis, older age, preoperative radiotherapy, and revision surgery were signif cant independent risk factors.

# Poster No. P372

 ◆ Analysis of Actual Segmental Lordosis Obtained with Lordotic and Hyperlordotic Later cages- Analysis of 172 levels
 Neel Anand, MD, Los Angeles, CA
 Babak Khandehroo, MD, Los Angeles, CA
 Zeeshan Sardar, MD, Plano, TX
 Andrea Simmonds, MD, Vancouver, Canada
 Sheila Kahwaty, PA-C, Valencia, CA
 Eli M. Baron, MD, Los Angeles, CA

This retrospective analysis shows that the amount of segmental lordosis achieved via lateral interbody fusion depends on the lordosis angle and the position of the cage in the intervertebral space.

## Poster No. P373

Does C2 Dome Decompression with Preserving C2 Attached Muscles Affect ADL Disturbance and Cervical Alignment? *Futoshi Suetsuna*, MD, *Hachinohe City*, *Amori*, *Japan* 

C2 dome decompression and C3-6 (7) laminoplasty preserving C2 attached muscles did not newly affect alignment and ROM of cervical spine, neck pain and ADL disturbance compared to only laminoplasty.

# Poster No. P374

Predicting Cervical Curvature Required for Horizontal Gaze; Implication for Cervical and Thoracolumbar Surgeons Bassel Diebo, MD, New York City, NY Shaleen Vira, MD, Silver Spring, MD Jonathan H. Oren, MD, New York, NY Barthelemy Liabaud, MD, New York, NY Renaud Lafage, New York, NY Themistocles S. Protopsaltis, MD, Closter, NJ Thomas J. Errico, MD, New York, NY Frank J. Schwab, MD, New York, NY Virginie Lafage, PhD, New York, NY

A formula to predict cervical curvature required to maintain the horizontal gaze from underlying thoracolumbar alignment was derived and validated in 1905 patient visits.

# Poster No. P375

# Predictive Model for Cervical Alignment Following Surgical Correction of Adult Spinal Deformity Peter G. Passias, MD, Westbury, NY Cheongeun Oh, PhD, New York, NY Cyrus Jalai, BA, New York, NY Nancy Worley, MS, New York, NY

Renaud Lafage, New, York, New York Virginie Lafage, PhD, New York, NY Christopher Ames, MD, San Francisco, CA International Spine Study Group, Brighton, CO

A statistical model was produced to evaluate cervical alignment after ASD correction, and identif ed osteotomy use and baseline cervical malalignment as predictors of poor post-op cervical alignment.

### Poster No. P376

# Analysis of Optimal Screw Density for the Patient with Adolescent Idiopathic Scoliosis

Kensuke Shinohara, Okayama, Japan Yoshihisa Sugimoto, MD, Okayama, Japan Masato Tanaka, MD, Okayama, Japan Shinya Arataki, MD, PhD, Okayama, Japan Tomoyuki Takigawa, MD, PhD, Okayama, Japan Toshifumi Ozaki, MD, Okayama, Japan

Optimal screw density for correction of AIS is unknown. The purpose of this study is to analyze optimal screw density of AIS based on f exibility of spinal curve and investigate the cost of surgery.

# SPINE

# Poster No. P377

Does Transforaminal Lumbar Interbody Fusion Protect Against Early Pedicle Screw Loosening? David H. Kim, MD, Boston, MA Riya Joshi, MBBS, MPH, Boston, MA Gyu-Ho Lee, Boston, MA Kevin C. Baker, PhD, Royal Oak, MI Paul M. Arnold, MD, FACS, Kansas City, KS Daniel K. Park, MD, Bloomf eld Hills, MI Rick C. Sasso, MD, Carmel, IN Jeffrey S Fischgrund, MD, Southf eld, MI

Prospective CT-based data from a randomized clinical trial of 241 patients shows TLIF associated with 50% reduction in rate of early pedicle screw loosening versus posterolateral fusion alone.

# Poster No. P378

### Head-Sagittal Vertical Axis (hSVA) is Better Predictor of Adult Spinal Deformity Clinical Outcomes

Yong-Chan Kim, MD, Anyangsi, Republic of Korea Lawrence G. Lenke, MD, Saint Louis, MO Jeffrey Gum, MD, Louisville, KY Cheol-Jung Yang, Hwaseong-Si, Gyeonggi-Do, Republic of Korea Kathy Blanke, RN, Saint Louis, MO

The head-SVA is a better predictor of HRQOL outcomes in adult spinal deformity patients than the C7-SVA. The head-to-ankle SVA has strong correlations with ODI and SRS domain scores.

### Poster No. P379

A Prospective Analysis of the Supine and Sitting Straight Leg Raise Test and its Performance in Litigation Patients Olukemi Fajolu, MD, Fort Lauderdale, FL Fabio Pencle, MBBS, Fort Lauderdale, FL Samuel Rosas, MD, Fort Lauderdale, FL Elijah Hothem, MD, Columbus, OH Kingsley R. Chin, MD, Lake Worth, FL

This study assesses the equivalence of the sitting and supine straight leg raise in patients with litigation cases compared to a control group.

### Poster No. P380

Cost-Utility Associated with Occurrence of Complications within 90-days after Degenerative Lumbar Spine Surgery Harrison F. Kay, BS, Nashville, TN Silky Chotai, Nashville, TN Ahilan Sivaganesan, MD, Nashville, TN Scott L. Parker, MD, Nashville, TN Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

Lumbar spine surgery provided a signif cant gain in health state utility regardless of complications. Cost-utility was higher in patients with complication compared to those without, \$57471 to \$41791.

# Poster No. P381

Does Age Inf uence the Eff cacy of Demineralized Bone Matrix Enriched with Bone Marrow Aspirate in Lumbar Fusion? Remi Ajiboye, MD, MPH, Santa Monica, CA Mark A. Eckardt, BA, Los Angeles, CA Jason T. Hamamoto, BS, Los Angeles, CA Adam Khan, BS, Los Angeles, CA Jeffrey C. Wang, MD, Sherman Oaks, CA

Demineralized bone matrix and allograft enriched with concentrated bone marrow aspirate is associated with decreased fusion success in elderly patients undergoing posterolateral lumbar fusion.

# Poster No. P382

◆ Fusion Rates in Transforaminal Lumbar Interbody Fusion: Bone Morphogenetic Protein or Mesenchymal Stem Cells? Samuel Overley, MD, New York, NY Steven McAnany, MD, New York, NY Muhammad A. Anwar, MBBS, New Orleans, LA Andrew Lovy, MD, MS, New York, NY Javier Guzman Tejero, MD, New York, NY Sheeraz Qureshi, MD, New York, NY

No difference in fusion rates, patient-reported outcomes, complications, or re-operations were observed between BMP and Mesenchymal stem cell-containing adjuncts in MI-TLIF

# Poster No. P383

Substantial Clinical Benef t Threshold for SRS-22R Domains after Surgery of Adult Spinal Deformity

Charles H. Crawford III, MD, Prospect, KY Steven D. Glassman, MD, Louisville, KY Keith H. Bridwell, MD, Saint Louis, MO Leah Y. Carreon, MD, Louisville, KY

In an adult spinal deformity population undergoing surgical treatment show Substantial Clinical Benef t values of 1.60 for Appearance, 0.87 for Activity, 0.69 for Subscore, and 0.94 for Total score.

### Poster No. P384

◆ Does Poor Post-op SVA Really Correlate With Poor Functional Outcomes Of CMIS Correction of Adult Spinal Deformity? Neel Anand, MD, Los Angeles, CA Babak Khandehroo, MD, Los Angeles, CA Andrea Simmonds, MD, Vancouver, Canada Zeeshan Sardar, MD, Los Angeles, CA Sheila Kahwaty, PA-C, Valencia, CA Eli M. Baron, MD, Los Angeles, CA

The clinical outcomes of CMIS correction of adult spinal deformity may not be really poor for patients who could not acquire suff cient SVA value (SVA<50mm) postoperatively.

# Is the SRS Membership Accurately Reporting M&M Data?: A

Comparison of the SRS and NSQIP Databases Christopher T. Martin, MD, Coralville, IA Andrew J. Pugely, MD, Coralville, IA Yubo Gao, PhD, Iowa City, IA Branko Skovrlj, MD, New York City, NY Nathan J. Lee, BS, New York, NY Samuel K. Cho, MD, New York, NY Sergio A. Mendoza-Lattes, MD, Durham, NC

We compared the incidence of complications between similar cohorts from the SRS and NSQIP databases and found few differences.

### Poster No. P386

# Adult Spinal Deformity: National Trends in the Treatment and Perioperative Outcomes from 2003-2010 Peter G. Passias, MD, Westbury, NY Cyrus Jalai, BA, New York, NY

Nancy Worley, MS, New York, NY Shaleen Vira, MD, Silver Spring, MD Bryan J. Marascalchi, MD, New York, NY Virginie Lafage, PhD, New York, NY Thomas J. Errico, MD, New York, NY

ASD surgeries increased in frequency and complexity from 2003-2010, and were observed in greater frequency for patients >65. Patient morbidity increased while mortality was unchanged.

## Poster No. P387

### The American College of Surgeons Risk Model Poorly Predicts Outcomes after Anterior Lumbar Surgery Adam Lukasiewicz, MSc, New Haven, CT Andre Samuel, New Haven, CT Matthew L. Webb, BA, New Haven, CT

Daniel D. Bohl, MD, MPH, Chicago, IL Bryce A. Basques, MD, Chicago, IL Jonathan N. Grauer, MD

The American College of Surgeons Universal Surgical Risk Calculator performs no better than chance in predicting complications of anterior interbody lumbar fusion.

## Poster No. P388

### Vancomycin Failures in High Risk Surgical Patients

Michael Van Hal, MD, Pittsburgh, PA Dann Laudermilch, MD, Pittsburgh, PA Chinedu Nwasike, MD, Pittsburgh, PA James Kang, MD, Boston, MA Joon Y. Lee, MD, Pittsburgh, PA

Retrospective cohort at a tertiary care teaching hospital. 496 charts with diabetic or revision spine surgical patients using local vancomycin powder as prophylaxis versus a comparative cohort.

### Poster No. P389

Lumbar Discography's Impact On Return To Work Status Following Lumbar Fusion In A Workers' Compensation Setting Joshua T. Anderson, BS, Cleveland Heights, OH Jay M. Levin, BA, Newport Coast, CA Mhamad Faour, MD, Cleveland, OH Nicholas U. Ahn, MD, Shaker Heights, OH

A retrospective cohort study that f nds lumbar discography to be a negative predictor of return to work status in workers' compensation patients undergoing lumbar fusion surgery for DDD.

### Poster No. P390

The Limits of Single Level Posterior Lumbar Interbody Fusion for Lumbar Spinal Stenosis with Adult Spinal Deformity Ryoji Yamasaki, MD, PhD, Osaka, Japan Shinya Okuda, Sakai, Japan

The greater pre-operative coronal Cobb angle caused the worsened clinical outcomes after single level posterior lumbar interbody fusion for lumbar spinal stenosis with adult spinal deformity.

# Poster No. P391

Novel Index to Quantify the Surgical Risk in Adult Spinal Deformity: 10,912 Patients from National Inpatient Sample Bassel Diebo, MD, New York City, NY Vincent Challier, MD, New York, NY Bryan J. Marascalchi, MD, New York, NY Cyrus Jalai, BA, New York, NY Nancy Worley, MS, New York, NY Virginie Lafage, PhD, New York, NY Peter G. Passias, MD, Westbury, NY

This study used the NIS to determine independent risk factors for increasing the medical and surgical complications, revisions and mortality rates following ASD surgical treatment.

### Poster No. P392

Cost per Quality Adjusted Life Years Gained of Degenerative Lumbar Spine Surgery in Elderly Patients Clinton J. Devin, MD, Nashville, TN Silky Chotai, Nashville, TN Scott L. Parker, MD, Nashville, TN Lindsay Tetreault, BS, Oakville, ON, Canada Michael Fehlings, MD, Toronto, ON, Canada Matthew McGirt, Charlotte, NC

Lumbar decompression and fusion surgery provided a signif cant improvement in outcomes and gain in health state utility in elderly patients with degenerative lumbar diseases.

# SPINE

## Poster No. P393

Increased Periostin Expression is Associated with Hypertrophy of Ligamentum Flavum in Lumbar Spinal Stenosis Sittisak Honsawek, MD, PhD, Bangkok, Thailand Worawat Limthongkul, MD, Bangkok, Thailand Wicharn Yingsakmongkol, MD, Bangkok, Thailand

The elevated expression of periostin was associated with the hypertrophic ligamentum f avum, indicating that periostin could play a key role in pathogenesis in lumbar spinal stenosis patients.

### Poster No. P394

### The Effect of Local Intraoperative Steroid Administration on the Rate of Postoperative Dysphagia Following ACDF

Jourdan M. Cancienne, MD, Charlottesville, VA Brian C. Werner, MD, Charlottesville, VA Scott S. Yang, MD, Charlottesville, VA Hamid Hassanzadeh, MD, Charlottesville, VA Anuj Singla, MD, Charlottesville, VA Francis H. Shen, MD, Charlottesville, VA Adam L. Shimer, MD, Charlottesville, VA

Use of local intraoperative steroid is associated with a signif cantly reduced rate of postoperative dysphagia and length of stay after ACDF.

# Poster No. P395

# Does Low Back Pain Improve After Lumbar Discectomy for Disc Herniations?

Michael H. Moghimi, MD, Houston, TX Kempland C. Walley, BS, Boston, MA Rishabh D. Phukan, BA, Boston, MA Dana A. Leonard, BA, Boston, MA Christopher M. Bono, MD, Boston, MA Kevin J. McGuire, MD, Needham Hgts, MA

Our data provide evidence that improvement can be expected in back pain in a proportion of patients after lumbar discectomy, albeit less likely than improvement in leg pain.

### Poster No. P396

### Outcomes and Revision Rates in Normal, Overweight, and Obese Patients Five Years after Lumbar Fusion

Roger K. Owens II, MD, Prospect, KY Ikemefuna Onyekwelu, MD, Louisville, KY Mladen Djurasovic, MD, Louisville, KY Kelly Bratcher, RN, Louisville, KY Katlyn E. McGraw SR, BA, Louisville, KY Leah Y. Carreon, MD, Louisville, KY

Overweight and obese patients achieved similar improvements in outcomes and have similar rates of revision to normal patients f ve years after posterior instrumented lumbar fusion.

# Poster No. P397

Expectations of Pain Improvement and Actual Pain Improvement: A Prospective Comparison for Lumbar Spine Surgery Carol A. Mancuso, MD, New York, NY M Carrington Reid, MD, PhD, New York, NY Roland Duculan, MD, Ny City, New York Frank P. Cammisa Jr, MD, New York, NY Andrew A. Sama, MD, New York, NY Alexander P. Hughes, MD, New York, NY Darren R. Lebl, MD, New York, NY Federico P. Girardi, MD, New York, NY

Back pain is common 2 years after lumbar surgery with most patients having less pain improvement than expected preoperatively; expectations are also associated with patients' ratings of outcome.

### Poster No. P398

Vancomycin Tissue Concentrations during Posterior Spinal Fusions in Neuromuscular Scoliosis James R. Gregory, MD, Oklahoma City, OK June C. Smith, MPH, Saint Louis, MO

Sarah M. Brown, Saint Louis, MO Alexis Elward, MD, MPH, Saint Louis, MO Scott J. Luhmann, MD, Ladue, MO

Median serum vancomycin levels were above Minimum Inhibitory Concentration(MIC) up to 4 hours after incision, however median tissue levels failed to reach MIC levels at any of the time points

### Poster No. P399

# The Pathoanatomy of Congenital Cervical Stenosis: The Triangle Model

Harry Mai, BS, Manhattan Beach, CA Tyler J. Jenkins, MD, Chicago, IL Robert Burgmeier, BS, Chicago, IL Jason W. Savage, MD, Chicago, IL Alpesh A. Patel, MD, River Forest, IL Wellington K. Hsu, MD, Chicago, IL

The global changes in congenital cervical stenosis are illustrated by the triangle model and are driven by the posterior elements of the cervical spine.

### Poster No. P400

Cost per Quality Adjusted Life Years Gained for Anterior Cervical Discectomy and Fusion in Elderly Population Harrison F. Kay, BS, Nashville, TN Silky Chotai, Nashville, TN Joseph B. Wick, BA, Nashville, TN David Stonko, BS, MS, Nashville, TN Matthew McGirt, Charlotte, NC Clinton J. Devin, MD, Nashville, TN

ACDF provided a signif cant gain in health state utility in elderly patients with degenerative cervical pathology, with a mean cumulative 2-year cost per QALY gained of \$75,703/QALY.

# SPORTS MEDICINE/ARTHROSCOPY

# Poster No. P401

Can Meniscal Geometry be Predictive of Meniscal Tears in Patients With or Without Concomitant ACL Injury? Damon A. Greene, MD, Brooklyn, NY Robert Pivec, MD, Brooklyn, NY Bhaveen H. Kapadia, MD, Baltimore, MD Preston W. Grieco, MD, Brooklyn, NY Qais Naziri, MD, Brooklyn, NY Alexander H. Tejani, MD, Brooklyn, NY William P. Urban, MD, Belle Harbor, NY

This study demonstrates that meniscal cross-sectional area may play a role in the natural history of knee injury.

# Poster No. P402

### All-Inside vs. Inside-Out Meniscal Repair with Concurrent ACL Reconstruction: A Meta-Regression Analysis

Reconstruction: A Meta-Regression Analysis Robert W. Westermann, MD, Iowa City, IA Kyle Duchman, MD, Iowa City, IA Natalie A. Glass, PhD, Iowa City, IA Annunziato Amendola, MD, Iowa City, IA Brian R. Wolf, MD, Iowa City, IA

A systematic review and meta-regression analysis identif ed inside-out meniscal repairs may have fewer clinical failures than all-inside repairs when performed concurrently with ACLR

# Poster No. P403

The Effects of Anterior Cruciate Ligament Def ciency on the Meniscus and Articular Cartilage: A Novel Model Justin W. Arner, MD, Pittsburgh, PA Liying Zheng, PhD, Pittsburgh, PA Tom Gale, MS, Pittsburgh, PA James Irvine, MD, Pittsburgh, PA Eric Thorhauer, Pittsburgh, PA Ermias Abebe, MD, Pittsburgh, PA Scott Tashman, PhD, Pittsburgh, PA Xudong Zhang, Pittsburgh, PA Christopher D. Harner, MD, Houston, TX

With ACL-def ciency, cartilage contact location translates more posteriorly than meniscal translation, lateral more than medial and vertical meniscal deformation increases.

# Poster No. P404

### A Biomechanical and In Vivo Evaluation of A Novel Cryopreserved Viable Meniscal Allograft Thomas R. Carter, MD, Phoenix, AZ

S. Michael Sinclair, PhD, Columbia, MD Jin-Qiang Kuang, MD, Columbia, MD Sandra Geraghty, Phd, Columbia, MD C T. Vangsness Jr, MD, Los Angeles, CA Alla Danilkovitch, PhD, Columbia, MD

Implantation of a cryopreserved viable meniscal allograft after partial meniscectomy reduced contact pressures in cadaveric knees and integrated with host meniscus in sheep

## Poster No. P405

Cartilage Changes after Subtotal Lateral Meniscectomy and the Effect of Meniscal Transplantation on Radiographs Seongil Bin, MD, PhD, Seoul, Republic of Korea Jongmin Kim, MD, Seoul, Republic of Korea Bum-Sik Lee, MD, Incheon, Republic of Korea

At the time of subtotal/total lateral meniscectomy, patients had substantial articular cartilage degeneration which progressed thereafter. Radiographic arthritic changes were delayed after Lateral MAT

### Poster No. P406

Body Mass Index Predicts Anatomic Locations of Nearby Neurovascular Bundles in Meniscus Repairs Jonathan Yin, MD, Milton, MA Vincent M. Moretti, MD, Chicago, IL Samuel J. Chmell, MD, Riverside, IL

In an anatomic study using axial knee MRIs, patient BMI is found to be highly correlated with the distances of the peroneal nerve to the suture tracks used in meniscus repairs.

# Poster No. P407

Arthroscopic Meniscal Allograft Transplantation without Bone Plugs: Survival Analysis of 147 Patients Stefano Zaffagnini, MD, Bologna, Italy Alberto Grassi, MD, Bologna, Italy Giulio Maria Marcheggiani Muccioli, MD, Bologna, Italy Francesco Iacono, MD, Bologna, Italy Maria Pia Neri, MD, Bologna, Italy Tommaso Bonanzinga, MD, Bologna, Italy Maurilio Marcacci, MD, Bologna, Italy

Arthroscopic transplantation of a fresh-frozen meniscal allograft without bone plugs can signif cantly relieve pain and improve function of the knee joint in 80% of patients at six years.

# Poster No. P408

◆ Autologous Chondrocyte Implantation in the Military: Increased Surgical Failure with Prior Marrow Stimulation Nicholas Zarkadis, DO, El Paso, TX Nicholas A. Kusnezov, MD, El Paso, TX E'Stephan J. Garcia, MD, West Point, NY Brian R. Waterman, MD, El Paso, TX

Tobacco use, junior enlisted, and patients with previous marrow stimulation technique procedures were more likely to fail after undergoing ACI for a focal chondral lesion of the knee.

# Poster No. P409

Inf uence of Donor Age and Graft Storage Duration on Outcomes of Osteochondral Allografting of the Knee Clayton W. Nuelle, MD, Columbia, MO Julia Vetter Nuelle, MD, Columbia, MO James L. Cook, DVM, PhD, Columbia, MO James P. Stannard, MD, Columbia, MO

This study correlates f nal patient clinical outcomes to fresh osteochondral allograft donor chronological age and graft storage duration.

# SPORTS MEDICINE/ARTHROSCOPY

### Poster No. P410

• Focal Articular Surface Replacement for Femoral Lesions: Results at Five Years

Turlough O'Donnell, MD, Dublin 14, Ireland

Focal Articular Surface Replacement is a successful alternative to biological regeneration for the treatment of focal articular lesions of the knee

# Poster No. P411

◆ Cell-Free Biomimetic Osteochondral Scaffold: A Pilot Prospective Clinical Study at 96 Months of Follow Up

Elizaveta Kon, MD, Italy, Italy Giuseppe Filardo, MD, Bologna, Italy Stefano Zaffagnini, MD, Bologna, Italy Francesco Tentoni, Bologna, Italy Luca Andriolo, MD, Bologna, Italy Berardo Di Matteo, Med Student, Bologna, Italy Maurilio Marcacci, MD, Bologna, Italy

This one-step surgery is an effective procedure for chondral and osteochondral lesions of the knee, showing satisfactory and stable outcomes over mid-term of follow-up

## Poster No. P412

Matrix-Assisted Autologous Chondrocyte Transplantation Versus Mosaicplasty: A Long-Term Comparison

Elizaveta Kon, MD, Italy, Italy Giuseppe Filardo, MD, Bologna, Italy Alessandro Di Martino, MD, Bologna, Italy Francesco Perdisa, MD, Bologna, Italy Luca Andriolo, MD, Bologna, Italy Francesca De Caro, Parma, Italy Maurilio Marcacci, MD, Bologna, Italy

This study showed that both ACI and MP are suitable surgical options for knee articular defects, with signif cant improvement up to long-term follow-up.

### Poster No. P413

Methylparaben Preservative in Multi-dose Vials of Local Anesthetics Negatively Affects Cartilage Health Grigory Gershkovich, MD, Philadelphia, PA Dillon Arango, MD, Philadelphia, PA Grigory Gershkovich, MD, Philadelphia, PA Katharine T. Criner, MD, Bryn Mawr, PA Solomon Samuel, Philadelphia, PA

Local anesthetics contain the preservative methylparaben. This chemical negatively affects cartilage and tendon health. It is benef cial to avoid these medications to minimize negative outcomes.

### Poster No. P414

◆ Return to Active Duty After Autologous Chondrocyte Implantation for Knee Cartilage Defects in US Marines Michael A. Kuhn, MD, Cape Carteret, NC Kevin Wilson, MD, Emerald Isle, NC

In the largest series among US service members, ACI was shown to reduce pain and allow a return to duty in 72% of patients treated.

### Poster No. P415

Valgus Extension Overload Syndrome of the Elbow in Baseball Players: Who Returns to Play Earlier? Jin-Young Park, MD, Seoul, Republic of Korea Jang Eun Kim, MD, Seoul, Republic of Korea

Arthroscopic treatment of VEOS can lead to good clinical results and a high rate of return to sports. The recovery period was 3.8 months; professional players exhibited faster returns to sport.

### Poster No. P416

### The Moving Valgus Stress Test Produces More Strain at the Ulnar Collateral Ligament: A Biomechanical Study

Michael D. Wigton, MD, Winston-Salem, NC Mark Carl Miller, PhD, Pittsburgh, PA Patrick Schimoler, Pittsburgh, PA Alexander Kharlamov, MD, PhD, Pittsburgh, PA Darren Frank, MD, Pittsburgh, PA Sam Akhavan, MD, Pittsburgh, PA Patrick J. DeMeo, MD, Sewickley, PA

A cadaveric biomechanical study compared the moving valgus stress test to static valgus stress, f nding more strain of the ulnar collateral ligament within the shear zone during the moving test.

# Poster No. P417

### Media Perceptions of Tommy John Surgery Stan A. Conte, PT, DPT, San Carlos, CA Justin L. Hodgins, MD, Toronto, ON, Canada Nancy Patterson-Flynn, MS, ATC, Clinton, NY Christopher S. Ahmad, MD, New York, NY

Common misconceptions exist regarding UCL reconstruction within the professional baseball media and efforts for physicians to educate the media on overuse throwing injuries are encouraged.

### Poster No. P418

Elbow Valgus Laxity after Ulnar Collateral Ligament Reconstruction in Competitive Athletes Teruhisa Mihata, MD, PhD, Takatsuki, Osaka, Japan Yasuo Itami, MD, Ibaraki, Osaka, Japan Masashi Neo, Takatsuki, Japan

Elbow valgus laxity restored to the intact level after UCLR. The restored elbow valgus stability after UCLR has been kept until return to sports.

# Poster No. P419

### Elbow Arthroscopy for the Treatment of Rheumatoid Arthritis: Functional Outcomes and Complications

Peter L. Kok, MD, Rochester, MN Ian J. Barrett, MD, Rochester, MN George F. Bonadurer III, BS, Rochester, MN Julie E. Adams, MD, Hixson, TN Ryan Planchard, BE, Rochester, MN Sean Cantwell, BS, Rochester, MN Scott P. Steinmann, MD, Rochester, MN

Elbow arthroscopy for rheumatoid arthritis improves range of motion and function there but 40% of patients suffer a complication and 33% of patients require repeat surgery.arthritis.

The Cost-Effectiveness of Anterior Cruciate Ligament Reconstruction in Competitive Athletes Bruce A. Stewart, MD, Holland, MI Amit Momaya, MD, Homewood, AL Marc D. Silverstein, MD, Mashpee, MA David M. Lintner, MD, Houston, TX

ACL reconstruction has high success rates but studies indicate that many patients may do well with nonsurgical treatment. Our cost analysis shows that ACL reconstruction is a cost-effective strategy.

# Poster No. P421

### Comparison of Outcomes and Graft Healing Between Outside-In and Transpotral Techniques in ACL Reconstruction

Jaeang Sim, MD, Incheon, Republic of Korea Jong-Keun Seon, MD, Hwasungun, Republic of Korea Eun K. Song, MD, Hwasun-Gun, Jeollanam-Do, Republic of Korea

The acute graft bending angle at the femoral tunnel in ACL reconstruction using outside-in technique did not give any adverse effect on graft healing or failure in the clinical study.

# Poster No. P422

# ACL Reconstruction: Is There a Difference in Graft Motion for Bone-Tendon-Bone and Hamstring Autograft?

Justin W. Arner, MD, Pittsburgh, PA Eric Thorhauer, Pittsburgh, PA James Irvine, MD, Pittsburgh, PA Ermias Abebe, MD, Pittsburgh, PA Verena M. Schreiber, MD, Pittsburgh, PA Jennifer L. D'Auria, MD, Pittsburgh, PA Scott Tashman, PhD, Pittsburgh, PA Christopher D. Harner, MD, Houston, TX

During walking and stair descent, there was no difference between BTB or hamstring grafts in femoral or tibial tunnel motion at 6 weeks or 1 year.

### Poster No. P423

### High Hip Abductor Muscle Strength is Risk Factor for Non-Contact ACL Injury in Female High School Athletes Junsuke Nakase, MD, Kanazawa, Japan Katsuhiko Kitaoka, MD, Kanazawa, Japan Yosuke Shima, PhD, MD, Kanazawa City, Japan Hitoaki Numata, MD, Ishikawa, Japan Takeshi Oshima, Kanazawa-City, Japan Yasushi Takata, MD, Ishikawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We performed prospective 3-year cohort study assessed to determine risk factors for non-contact ACL injury. The high hip abductor muscle power was identif ed as risk factor for noncontact ACL injury.

### Poster No. P424

# Improving Diagnostic Accuracy in Detecting Anterior Cruciate Ligament Rupture Alessandro Lelli, MD, Bologna, Italy Rita Paola Di Turi, Bologna, Italy Marcello Domini, MD, Bologna, Italy Francesco Pegreff, MD, PhD, Bologna, Italy

The purpose of this prospective study is to measure the sensitivity of a new test, the Lever Test, comparing the test outcomes with MRI f ndings.

### Poster No. P425

Analysis of 2,019 ACL Reconstruction Revisions from a Community-Based Registry Afshin Arianjam, MD, Irvine, CA Maria C. Inacio, PhD, Adelaide, Australia Tadashi T. Funahashi, MD, Irvine, CA Gregory B. Maletis, MD, Baldwin Park, CA

Large community based ACLRR are useful in informing surgeons of current treatment practices and show that revision ACLR can be performed successfully with a low revision rate and few complications.

# Poster No. P426

 Liposomal Bupivacaine Versus Femoral Nerve Block in Managing Pain After Anterior Cruciate Ligament Reconstruction Kelechi Okoroha, MD, Northville, MI Robert A. Keller, MD, Detroit, MI Edward Jung, MD, Berkley, MI Nima Mehran, MD, Pacif c Palisades, CA Eric T. Owashi, MD, Detroit, MI Vasilios Moutzouros, MD, Northville, MI

Following a randomized clinical trial we found Liposomal Bupivacaine is at least as effective as FNB and can be used as a primary method to manage pain control post-ACL reconstruction.

### Poster No. P427

Adding an Extra-Articular Tenodesis to Intra-Articular ACL Reconstruction Results in Higher Infection Rate Antonio Vadala, MD, Rome, Italy Lorenzo Proietti, MD, Rome, Italy Pierluigi Serlorenzi, MD, Rome, Italy Domenico Lupariello, Roma, Italy Priscilla Di Sette, Rome, Italy Angelo De Carli, MD, Rome, Italy Andrea Ferretti, MD, Rome, Italy

Adding lateral tenodesis to arthroscopic assisted intra-articular ACL reconstruction with hamstrings results in statistically higher rate of infection as compared with intra-articular procedure alone

# SPORTS MEDICINE/ARTHROSCOPY

### Poster No. P428

### Knee Stability Provided by Anterolateral Structures

Daniel Guenther, MD, Pittsburgh, PA Amir Ata Rahnemai Azar, MD, Pittsburgh, PA Kevin M. Bell, MS, Pittsburgh, PA Sebastian Irarrazaval, Santiago, Chile Freddie H. Fu, MD, Pittsburgh, PA Volker Musahl, MD, Pittsburgh, PA Richard E. Debski, PhD, Pittsburgh, PA

At low f exion angles in the ACL def cient knee, the anterolateral capsule is a primary restraint to anterior tibial load. LCL and anterolateral capsule are restraints to internal tibial torque.

### Poster No. P429

# The Prevalence of Hip Abnormalities Associated with FAI in

Asymptomatic Asian Volunteers - Is It Really Low? Pil Whan Yoon, MD, Seoul, Republic of Korea Taesoo Ahn, MD, Seoul, Republic of Korea Mi Yeon Jeong, Seoul, Republic of Korea Jeong J. Yoo, MD, Seoul, Republic of Korea Kang Sup Yoon, MD, Seoul, Republic of Korea Hee J. Kim, MD, Seoul, Republic of Korea Jae Suk Chang, MD, PhD, Seoul, Republic of Korea

The prevalence of FAI features in asymptomatic Korean volunteers is high, so it is also important to determine whether FAI is a cause of hip pain when considering surgery in Asian patients.

### Poster No. P430

# Anterior Cruciate Ligament Graft Metabolic Activity Assessed by PET-MRI

Robert A. Magnussen, MD, Columbus, OH Katherine Binzel, PhD, Columbus, OH Jun Zhang, PhD, Columbus, OH WENBO WEI, PhD, Columbus, OH David C. Flanigan, MD, Columbus, OH Timothy E. Hewett, PhD, Columbus, OH Christopher C. Kaeding, MD, Powell, OH Michael V. Knopp, MD, PhD, Columbus, OH

Signif cantly lower PET signal was noted in ACL grafts that had been in place for greater than 24 months compared to grafts in place for shorter periods of time (p < 0.02).

### Poster No. P431

Synovialization and Clinical Outcomes after Stem Cell Implantation for Anterior Cruciate Ligament Reconstruction Dong Beom Heo, MD, Seoul, Republic of Korea Dae Hyun Tak, MD, Seoul, Republic of Korea Yun-Jin Choi, Seoul, Republic of Korea Dongsuk Suh, Seoul, Republic of Korea Oh-Ryong Kwon, MD, Seoul, Republic of Korea Yong-Gon Koh, Seoul, Republic of Korea

Second-look arthroscopic synovialization and clinical outcomes after mesenchymal stem cell implantation for anterior cruciate ligament reconstruction

# Poster No. P432

Altered Tibiofemoral Kinematics After Anterior Cruciate Ligament Injury Lead to Early Cartilage Matrix Changes Keiko Amano, MD, San Francisco, CA Valentina Pedoia, PhD, San Francisco, CA Drew Lansdown, MD, San Francisco, CA Favian Su, BS, Milpitas, CA Musa Zaid, MD, Palo Alto, CA Richard Souza, ATC, PhD, San Francisco, CA Xiaojuan Li, PhD, San Francisco, CA ChunBong B. Ma, MD, San Francisco, CA

Quantitative MRI can be used to measure subtle changes in kinematics and cartilage matrix after ACL reconstruction, years before the onset of post-traumatic osteoarthritis.

## Poster No. P433

ACL Outcome Measures: A Comparison Between Preinjury, Preoperative Post-injury, and 2 Years Postoperative Scores Ayman Gabr, MBBCh, MRCS, London, United Kingdom Mohsin Khan, Essex, United Kingdom Fares S. Haddad, FRCS, London, United Kingdom

The aim of this study was to compare the pre-injury functional scores with the post-injury preoperative score and postoperative outcome scores following ACL reconstruction

### Poster No. P434

# Increased Risk of Second Anterior Cruciate Ligament Injury for Female Soccer Players

Melissa M. Allen, MD, Rochester, MN Alexander H. King, BS, Rochester, MN Michael J. Stuart, MD, Rochester, MN Bruce A. Levy, MD, Rochester, MN Diane L. Dahm, MD, Rochester, MN Aaron J. Krych, MD, Rochester, MN

Female soccer players treated with ACL reconstruction had an increased rate of both graft retear and contralateral ACL injury, compared to a similar group of non-soccer female athletes.

### Poster No. P435

### A Randomized Controlled Trial with 16-Year Follow Up After Anterior Cruciate Ligament Reconstruction

Kristian Samuelsson, MD, PhD, MSc, Molndal, Sweden Haukur Bjornsson, MD, Reykjavik, Iceland David Sundemo, MD, Gothenburg, Sweden Neel Desai, Molndal, Sweden Ninni Sernert, RPT, Trollhattan, Sweden Juri Kartus, MD, Trollhättan, Sweden

Only minor and mostly insignif cant differences were found between the patellar and hamstrings tendon autograft groups in this true long term randomized controlled trial on ACL reconstruction.

Short Semi-tendinosis ACL Reconstruction And Return To Sport. Experience Of A Non-inventor Team. Jean-Yves Jenny, MD, Illkirch, France

A short graft with only one hamstring tendon may be an attractive alternative to conventional transplant using two hamstring tendons for ACL reconstruction.

# Poster No. P437

◆ Can We Prevent Muscle Atrophy after ACL Tears? A Novel Biological Approach

Caroline Wolfe, MD, Ann Arbor, MI Jonathan P. Gumucio, BS, Ann Arbor, MI Jeremy Grekin III, MS, Ann Arbor, MI Roger K. Khouri, Ann Arbor, MI Stuart M. Roche, BS, Ann Arbor, MI Asheesh Bedi, MD, Ann Arbor, MI Christopher L. Mendias, PhD, ATC, Ann Arbor, MI

In a preclinical rat model, targeted inhibition of myostatin protected leg muscles from muscle atrophy and improved force production after ACL tear.

# Poster No. P438

Knee Hyperextension as a Predictor of Failure in Revision ACL Reconstruction: A Prospective Cohort Study Daniel E. Cooper, MD, Dallas, TX Warren Dunn, MD, MPH, Madison, WI Rick W. Wright, MD, Saint Louis, MO Amanda Haas, MA, Waterloo, IL Laura J. Huston, MS, Nashville, TN

This is the f rst study to investigate and conf rm knee physiologic hyperextension as a risk factor (over 2X odds ratio) of graft rupture in a large prospectively studied revision ACL surgery cohort.

# Poster No. P439

#### Periarticular Injection Versus Femoral Nerve Block for Pain Control After ACL Reconstruction

Kenji Kurosaka, MD, Nishinomiya Hyogo, Japan Hiroshi Nakayama, MD, Nishinomiya, Japan Kaori Kashiwa, MD, Hyogo, Japan Tomoya Iseki, Hyogo, Japan Ryo Kanto, MD, Hyogo, Japan Shinichi Yoshiya, MD, Nishinomiya, Hyogo, Japan

Periarticular multimodal drug injection was safe and signif cantly more effective than femoral nerve block as a pain control measure following double-bundle hamstring ACL reconstruction.

### Poster No. P440

# The Effect of Hamstring Autograft Diameter on Likelihood for Revision of Anterior Cruciate Ligament Reconstruction Lindsey M. Spragg, MD, Manhattan Beach, CA Jason Chen, MA, San Diego, CA

Raffy Mirzayan, MD, Baldwin Park, CA Rebecca Love, BSN, RN, San Diego, CA Gregory B. Maletis, MD, Baldwin Park, CA

In this case-control study, the likelihood of a patient being a case (i.e revision of primary ACL Reconstruction) was 0.82 times lower for every 0.5mm increase in graft diameter from 7.0mm to 9.0mm.

### Poster No. P441

### <sup>Donor Age Does Not Effect Clinical Outcomes of Allograft Anterior Cruciate Ligament Reconstruction </sup>

COL Edward D. Arrington, MD, University Place, WA Jason A. Grassbaugh, MD, Tacoma, WA Josef K. Eichinger, MD, Gig Harbor, WA Joseph W. Galvin, DO, Dupont, WA Joseph H. Dannenbaum IV, MD, Spokane, WA Betsey K. Bean, DO, Dupont, WA Bryant Marchant, MD, DuPont, WA

Reconstruction of the ACL can utilize a variety of allograft tissues. There was no difference in donor age or clinical outcomes between the allograft ACL treatment groups.

### Poster No. P442

Increased Risk of ACLR Revision with Soft Tissue Allograft: Time and Graft Processing Make a Difference *Gregory B. Maletis, MD, Baldwin Park, CA* 

Jason Chen, MA, San Diego, CA Maria C. Inacio, PhD, Adelaide, Australia Rebecca Love, BSN, RN, San Diego, CA Tadashi T. Funahashi, MD, Irvine, CA

Soft tissue allografts are at increased risk of revision compared to autografts which is both time and graft processing dependent.

### Poster No. P443

# ACL Reconstructed Patients Have Persistent Hip Strength and Functional Def cits After Return-to-Play

Jeremy M. Burnham, MD, Lexington, KY Michael C. Yonz, MD, Lexington, KY Darren L. Johnson, MD, Lexington, KY Mary L. Ireland, MD, Lexington, KY Brian Noehren, PT, PhD, Lexington, KY

ACL reconstructed patients had hip strength, step down test, and hop test def ciencies, even after being cleared to return to sports.

### Poster No. P444

Tibial Tunnel Location in Posterior Cruciate Ligament Reconstruction on Three-dimensional Computed Tomography Yun-Liang Chang, MD, Taipei, Taiwan Jyh-Horng Wang, MD, PhD, Taipei, Taiwan

We compared two different methods for tibial tunnel drilling in PCL reconstruction. Post-op 3DCT was used for analysis of tibial tunnel location. Signif cant differences were found between two groups.

### Poster No. P445

Intervention for Arthrof brosis after Anterior Cruciate Ligament Reconstruction: Trends over Two Decades Thomas L. Sanders, MD, Rochester, MN Andrew J. Bryan, MD, Rochester, MN Hilal Maradit-Kremers, MD, MSc, Rochester, MN Michael J. Stuart, MD, Rochester, MN Walter K. Kremers, PhD, Rochester, MN Aaron J. Krych, MD, Rochester, MN

Arthrof brosis is a rare complication after ACL reconstruction and occurs in roughly 2% of patients.

# SPORTS MEDICINE/ARTHROSCOPY

### Poster No. P446

# Predictors of Revision Surgery Following Anterior Cruciate Ligament Reconstruction

William M. Pullen, MD, Portsmouth, VA Brandon J. Bryant, MD, Chesapeake, VA Amber Evans, Trevose, PA Nicholas Sicignano, Trevose, PA Marlene DeMaio, MD, Huntington, WV Trevor R. Gaskill, MD, Portsmouth, VA

In a large cohort study, the overall revision rate following ACL reconstruction was 3.6% with increased risk of revision associated with age younger than 35 years and use of NSAIDs and COX2 inhibitors

# Poster No. P447

### Performance Outcomes After Metacarpal Fractures in National Basketball Association Players

Michael S. Guss, MD, New York, NY John Begly, MD, New York, NY Austin Ramme, MD, PhD, New York, NY Richard M. Hinds, MD, New York, NY Raj Karia, MPH, New York, NY John T. Capo, MD, Jersey City, NJ

NBA players sustaining metacarpal fractures can reasonably expect to return to their pre-injury performance levels following appropriate treatment.

### Poster No. P448

### Landmarks of the Graft Placement in the Anatomical Reconstruction of the Lateral Ankle Ligaments

Satoru Ozeki, MD, Koshigaya, Japan Yuki Tochigi, MD,PhD, Koshigaya, Japan Yoko Masuda, MD, Saitama Koshigaya City, Japan Masataka Kakihana, MD, Koshigoya, Japan

The ideal reconstructive site for ATFL and CFL in the lateral malleolus should be the tip of the facet joint. This point is in the anterior site of the lateral malleolus.

### Poster No. P449

# Posterior Ankle Pain Originating from Sural Nerve Lateral Calcaneal Branch

Young Yi, MD, Seoul, Republic of Korea Jae Young Kim, MD, Seoul, Republic of Korea Ji-Beom Kim, Seoul, Republic of Korea Woo Chun Lee, Seoul, Republic of Korea

The lesions of lateral calcaneal branch of the sural nerve should be considered as a clinical entity since this can result in a painful posterior ankle.

## Poster No. P450

Comparison of Outcomes of Hip Arthroscopy in Patients with Tönnis Grade 0, 1, and 2 Sivashankar Chandrasekaran, Denham Court, Australia Nader Darwish, BS, Westmont, IL Carlos E. Suarez, MD, Mexico City, Mexico Parth Lodhia, MD, Westmont, IL Benjamin G. Domb, MD, Oak Brook, IL

We conducted a matched pair analysis with minimum two year follow-up to evaluate the outcomes of hip arthroscopy in patients with Tönnis grade 2 OA with matched control groups of Tönnis 0 and 1.

# Poster No. P451

Preoperative DGEMRIC Scores are Predictive of Magnitude of Improvement of Patients Undergoing Hip Arthroscopy Sivashankar Chandrasekaran, Denham Court, Australia S Pavan Vemula, Naperville, IL Dror Lindner, MD, Hinsdale, IL Parth Lodhia, MD, Westmont, IL Carlos E. Suarez, MD, Mexico City, Mexico Benjamin G. Domb, MD, Oak Brook, IL

This study aims to determine whether dGEMRIC indices are predictive of two-year patient reported outcomes (PRO) and pain scores in hip arthroscopy.

### Poster No. P452

Clinical Outcomes of Hip Arthroscopy: A Prospective Survival Analysis of Primary and Revision Surgeries Parth Lodhia, MD, Westmont, IL Chengcheng Gui, BS, Westmont, IL Mark R. Hutchinson, MD, Elmhurst, IL Shane J. Nho, MD, Chicago, IL Michael A. Terry, MD, Chicago, IL Benjamin G. Domb, MD, Oak Brook, IL

These are the clinical outcomes of surgery in a high volume hip arthroscopy referral surgery center. We have follow-up greater than 2 years, for over a thousand cases.

# Poster No. P453

Labral Repair and Treatment of Impingement in Borderline Dysplastic Patients with Femoroacetabular Impingement Kiyokazu Fukui, MD, Kahoku-gun, Japan Karen K. Briggs, MPH, Vail, CO Christiano Trindade, MD, Vail, CO Marc J. Philippon, MD, Vail, CO

Our 2-year outcomes showed treatment using modern arthroscopic technique for intra-articular hip pathology allowed patients with borderline dysplasia and symptomatic hips to improve their function.

Hip Arthroscopy Failure in the Setting of Acetabular Dysplasia: A Concerning Trend? Tonya W. An, BS, Saint Louis, MO Jacob Haynes, MD, Saint Louis, MO Jeffrey Nepple, MD, Saint Louis, MO

ANCHOR Group, Saint Louis, MO John C. Clohisy, MD, Saint Louis, MO

The incidence of failed hip arthroscopy in patients with acetabular dysplasia requiring PAO has doubled from 2009 to 2014. This shows a need for ref ned arthroscopy indications in dysplastic patients.

# Poster No. P455

### Combined MPFL Reconstruction and Tibial Tubercle Osteotomy: A Retrospective Comparative Analysis

Christopher J. Hadley, BS, Barnegat, NJ Fotios P. Tjoumakaris, MD, Ocean View, NJ Brandon Eck, DO, Egg Hbr Twp, NJ Nicholas J. Lombardi, BS, Egg Harbor Township, NJ Matthew D. Pepe, MD, Linwood, NJ Luke S. Austin, MD, Linwood, NJ Robert W. Frederick, MD, Villanova, PA Bradford S. Tucker, MD, Ocean City, NJ

MPFL reconstruction combined with tibial tubercle transfer has a high rate of success for patients presenting with patellar instability and extensor mechanism mal-alignment.

## Poster No. P456

### A Safe Surgical Technique Performed For Thoracic Outlet Syndrome In Athletes

Kozo Furushima, MD, PhD, Tatebayashi, Gunma, Japan Ryuji Koga, MD, Tatebayashi, Japan Yasuhiro Mitsui, Kurume, Japan Yoshiyasu Itoh, MD, Tatebayashi, Japan

The objective of this study was to report f rst-rib resection with the combined use of an endoscope in 124 athletes with TOS. 88.7% were able to return to their original sports activities.

# Poster No. P457

# Four Chemical Agents for Pain: Are They Cytotoxic for Osteoarthritic Human Chondrocytes?

Christopher Cooke, MD, Troy, MI Nancy M. Jackson, Southf eld, MI Patrick Keating, BS, Warren, MI Jeffrey Flynn, Southf eld, MI David C. Markel, MD, Southf eld, MI Stephen E. Lemos, MD, PhD, Warren, MI

Chondrotoxicity of Bupivacaine, Toradol, Duramorph, and Acetominophen are measured and compared in an osteoarthritic environment.

### Poster No. P458

# Do Patient Populations from High Quality Prospective Sports and Shoulder Studies and National Databases Differ?

Gregory L. Cvetanovich, MD, Chicago, IL Daniel D. Bohl, MD, MPH, Chicago, IL Peter N. Chalmers, MD, Chicago, IL Anthony A. Romeo, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL Bernard R. Bach Jr, MD, River Forest, IL

There were signif cant differences in patient age, gender, and BMI between patients included in major sports medicine and shoulder clinical studies and a nationwide database.

### Poster No. P459

Return to Play Protocols in Youth Sports: Are There Guidelines for Coaches?

Kathryn D. Dwight, BS, Philadelphia, PA Sommer Hammoud, MD, Philadelphia, PA Katherine M. Bagnato, OTC, ATC, Egg Harbor Twp, NJ John L. Moyer JR, ATC, Wyomissing, PA Michael G. Ciccotti, MD, Philadelphia, PA Kevin B. Freedman, MD, Bryn Mawr, PA

This study is aimed at analyzing the current system for determining return to play after any injury within youth soccer clubs.

### Poster No. P460

Medial Opening Wedge High Tibial Osteotomy: A Retrospective Review of Patient Outcomes over 10 Years Fotios P. Tjoumakaris, MD, Ocean View, NJ

Nicholas J. Lombardi, BS, Egg Harbor Township, NJ Bradford S. Tucker, MD, Ocean City, NJ Matthew D. Pepe, MD, Linwood, NJ

Following high tibial osteotomy, a majority of patients reported positive outcomes and few complications. In our analysis, obese patients faired equally as well as their non-obese counterparts.

### Poster No. P461

Second-Look Arthroscopic Findings after Periacetabular Osteotomy in Patients with Hip Dysplasia Norihito Watanabe, MD, Fukuoka, Japan Masatoshi Naito, MD, Fukuoka, Japan Kouichi Kinoshita, MD, Fukuoka, Japan So Minokawa, MD, Fukuoka, Japan Hajime Seo, MD, Fukuoka, Japan Tomohiko Minamikawa, MD, Fukuoka-Ken, Japan Tetsuro Ishimatsu, Fukuoka, Japan Satohiro Ishii, MD, Fukuoka, Japan Ayumi Matsunaga, MD, Fukuoka-Ken, Japan

Thirty-six hips underwent second-look arthroscopy after primary surgery consisting of arthroscopy and PAO. Upon the second-look arthroscopy, we did not f nd any substantial changes in labral tears.

# SPORTS MEDICINE/ARTHROSCOPY

### Poster No. P462

Radiostereometric Evaluation of Tendon Elongation after Distal Biceps Repair

Nathan E. Marshall, MD, Detroit, MI Robert A. Keller, MD, Detroit, MI John M. Guest, Grosse Pointe Woods, MI Vasilios Moutzouros, MD, Northville, MI

Radiostereometric evaluation of distal biceps tendon repair was performed to evaluate for tendon elongation at different healing stages, showing signif cant tendon lengthening after surgery.

# Poster No. P463

# Hip Arthroscopy Outcomes with Respect to Minimal Clinically Important Difference (MCID): A Systematic Review

David M. Levy, MD, Chicago, IL Benjamin Kuhns, Chicago, IL Jaskarndip Chahal, MD, Mississauga, ON, Canada Marc J. Philippon, MD, Vail, CO Bryan T. Kelly, MD, New York, NY Shane J. Nho, MD, Chicago, IL

This systematic review of 9,317 hip arthroscopies reveals statistically and clinically signif cant improvements in over 90% of studies, as measured by minimal clinically important difference (MCID).

# Poster No. P464

### Comparison of Reconsturction Methods for Shoulder Instability with Glenoid Bone Loss - Latarjet vs. Bristow Sang-hoon Lhee, Seoul, Republic of Korea Do Young Lee, MD, PhD, Seoul, Republic of Korea Yoon Gi Kim, MD, Seoul, Republic of Korea

Bristow and Latarjet procedure are good treatment option for recurrent shoulder dislocation with severe glenoid defect. Bristow group showed better external rotation compared to Latarjet group.

### Poster No. P465

Bennett Lesions in Baseball Players: Identif cation and Evaluation Using Magnetic Resonance Imaging Youngmin Noh, MD, Seoul, Republic of Korea

The length of time that the patient had played baseball, and the size of the glenoid versions seems to be smaller in those found with Bennett legions.

# Poster No. P466

### Anterior Bone Block Augmentation for Complex Anterior Shoulder Instability in a Military Population Brian R. Waterman, MD, El Paso, TX Philip Chandler, MD, El Paso, TX CDR (ret) Matthew T. Provencher, MD, Boston, MA John M. Tokish, MD, Simpsonville, SC

Mark P. Pallis, DO, El Paso, TX

Servicemembers undergoing open bone block glenoid augmentation for recurrent anterior shoulder instability can successfully return to military duty at short-term follow-up.

# Poster No. P467

Trends in the National Utilization of Latarjet versus Bankart Repair: Analysis of 26,573 Patients Rachel M. Frank, MD, Chicago, IL Samuel Rosas, MD, Fort Lauderdale, FL Tsun Yee Law, MD, Fort Lauderdale, FL Alexander Weber, MD, Ann Arbor, MI CDR (ret) Matthew T. Provencher, MD, Boston, MA Nikhil N. Verma, MD, Chicago, IL Brian J. Cole, MD, MBA, Chicago, IL Anthony A. Romeo, MD, Chicago, IL Frank McCormick, MD, Pompano Beach, FL

Within a large United States private payer database from 2007 to 2011, the rate of utilization of Latarjet as a treatment for anterior shoulder instability doubled.

# Poster No. P468

SLAP Repair with Combined Procedures have Lower Failure Rates than Isolated SLAP Repairs

William Arroyo, MD, El Paso, TX Kenneth Heida, MD, El Paso, TX Robert Burks, PhD, Seaside, CA Mark P. Pallis, DO, El Paso, TX Brian R. Waterman, MD, El Paso, TX

Favorable outcomes can be anticipated in the majority of military service members after arthroscopic SLAP repair, particularly with combined or traumatic injuries.

### Poster No. P469

### Abduction Angle Affects Stability and Internal Impingement in a Cadaveric Model of the Throwing Shoulder

Masaki Akeda, MD, Redondo Beach, CA Teruhisa Mihata, MD, PhD, Takatsuki, Osaka, Japan Woongkyo Jeong, Seoul, Republic of Korea Michelle H. McGarry, MD, Long Beach, CA Tetsuya Yamazaki, Yokohama, Japan Thay Q. Lee, PhD, Long Beach, CA

For throwers with unstable shoulders, higher abduction may increase stability during throwing, while lower abduction angle may decrease risk of rotator cuff injuries through internal impingement.

### Poster No. P470

### Return to Play in Major League Baseball Pitchers Following Superior Labral Anterior Posterior Repair

Charles Frank, Applegate, MI Gannon Curtis, BS, Royal Oak, MI Drew Schupbach, BS, Clarkston, MI Ryan Smith, MD, Taylor, MI Daniel Lombardo, MD, Taylor, MI Vani J. Sabesan, MD, Kalamazoo, MI

Elite overhead athletes have poor outcomes following superior labrum anterior posterior repair, this study will evaluate the return to play rates in MLB pitchers.

Athletes with Shoulder Instability: Prospective Study of Player

Attitudes on Operative vs. Nonoperative Treatment Leslie F. Barnes, MD, Philadelphia, PA Timothy J. Luchetti, MD, Chicago, IL John Buza, MD, New York, NY Charles M. Jobin, MD, New York, NY Christopher S. Ahmad, MD, New York, NY

For athletes with shoulder instability, treatment decisions were more strongly related to perceptions of injury severity and inf uence of the treating surgeon than to seasonal or career consideration.

# Poster No. P472

### The Relationship Between Range of Motion of the Lead Hip in Baseball Pitchers and Prior Arm Injury Donna Scarborough, MS, PT, Boston, MA

Ryan T. Fallon, South Berwick, ME Clifford L. Hancock, MS, Natick, MA Luke S. Oh, MD, Foxborough, MA Eric M. Berkson, MD, Boston, MA

Pitchers with a history of throwing arm injury present with greater functional internal rotation of the lead hip.

### Poster No. P473

# Can Ultrasound guided Nerve Block be a Useful Method of Anesthesia for Arthroscopic Knee Surgery?

Young-Mo Kim, Prof, Dae Jeon, Republic of Korea Chan Kang, MD, Daejeon, Republic of Korea Yong Bum Joo, Daejeon, Republic of Korea Woo-Yong Lee, Daejeon, Republic of Korea Chang-Kyun Noh, Daejeon, Republic of Korea Il Young Park, Daejeon, Republic of Korea Dong-Yeol Kim, MD, Dae-Jeon, Republic of Korea Je Hyung Jeon, Daejeon, Republic of Korea

This study was performed to compare general anesthesia, spinal anesthesia, and ultrasound-guided nerve block for knee arthroscopic surgery.

# Poster No. P474

# Evaluation of the Diagnostic Yield of Initial Shoulder Radiographs in a Sports Medicine Practice

Hayley Ennis, Miami, FL Samuel R. Huntley, BS, Miami Beach, FL Alberto Caban-Martinez, BS, PhD, Miami, FL Ross A. Wodicka, MD, Miami, FL Michael G. Baraga, MD, Miami, FL

Shoulder radiographs in the initial evaluation of patients in a sports medicine practice setting may yield limited information and should not be regarded as the only initial imaging option.

### Poster No. P475

What are Complications and Risk Factors for Morbidity in Elective Hip Arthroscopy? A Review of 1,325 Patients Christopher Anthony, MD, Iowa City, IA Andrew J. Pugely, MD, Coralville, IA Yubo Gao, PhD, Iowa City, IA Robert W. Westermann, MD, Iowa City, IA Christopher T. Martin, MD, Coralville, IA Brian R. Wolf, MD, Iowa City, IA Annunziato Amendola, MD, Iowa City, IA

Among 1,325 patients who underwent elective hip arthroscopy, 1.21% of patients experienced a complication; age greater than 65 years was an independent predictor of complication.

# TRAUMA

### Poster No. P476

Management of Severe Open Tibial Fractures Using Circular Hexapod Frames Konstantinos J. Doudoulakis, MD, MSc, London, United Kingdom Satyajit Naique, FRCS, Northwood, Middlesex, United Kingdom

A look at outcomes of sever open fractures treated in a combined orthoplastic approach using circular hexapod f xators

# Poster No. P477

Phonomyography: A Noninvasive Continuous Monitoring Technique to Diagnose Acute Compartment Syndrome Adriana P. Martinez, MD, MSc, Montreal, QC, Canada Neil Saran, MD, FRCSC, Montreal, QC, Canada Marilene Paquet, DVM, MSc, St-Hyacinthe, QC, Canada Thomas Hemmerling, Montreal, QC, Canada Gregory Berry, MD, Montreal, QC, Canada

Changes in phonomyography signals were able to detect early ischemic injury in the setting of ACS prior to the onset of nerve or muscle necrosis.

### Poster No. P478

A Comparison of Femur Lengthening with a Magnetic Internal Lengthening Nail versus Lengthening Over a Nail Anton Kurtz, MD, New York, NY Jonathan Barclay, BS, New York, NY Joseph Nguyen, MPH, New York, NY Austin T. Fragomen, MD, New York, NY S R. Rozbruch, MD, New York, NY

A comparison of femur lengthening with a magnetic internal lengthening nail demonstrates this technique is more accurate, heals faster, and is better tolerated than lengthening over a nail.

# TRAUMA

# Poster No. P479

How Can We Discriminate between Periprosthetic Fracture and Nutrient Artery Canal of the Femur following THA? Kwang Woo Nam, MD, PhD, Jeju, Republic of Korea Sang-Rim Kim, MD, Jeju, Republic of Korea Sung-Wook Choi, Jeju, Republic of Korea Kyu-Bum Seo, MD, Jeju, Republic of Korea Hee J. Kim, MD, Seoul, Republic of Korea Harry E. Rubash, MD, Boston, MA Guoan Li, PhD, Boston, MA Dimitris Dimitriou, MD, Cambridge, MA Kee H. Rhyu, MD, Seoul, Republic of Korea

This study evaluated the radiographic parameters of nutrient artery canal to distinguish them from periprosthetic fractures following Total Hip Arthroplasty.

### Poster No. P480

The Natural History of Cortical Stress Reactions on the Femur: Do All of Them Evolve to Atypical Femoral Fractures? Kwang Woo Nam, MD, PhD, Jeju, Republic of Korea Sang-Rim Kim, MD, Jeju, Republic of Korea Sung-Wook Choi, Jeju, Republic of Korea Hee J. Kim, MD, Seoul, Republic of Korea

Kyu-Bum Seo, MD, Jeju, Republic of Korea Han-Jun Lee, MD, Seoul, Republic of Korea Seung B. Han, MD, Seoul, Republic of Korea Guoan Li, PhD, Boston, MA Mark S. Vrahas, MD, Boston, MA

This study provide insight into the pathogenesis of atypical femoral fractures, in which a localized cortical thickening eventually evolved to complete fractures over time.

### Poster No. P481

Fracture Repair in Hemodialysis Patients is Associated with Higher Complication Rate and Worse Quality Measures Ravi Vaswani, BS, New York, NY Arthur Manoli III, MD, Detroit, MI Kenneth A. Egol, MD, New York, NY

Surgical fracture repair in HD patients is associated with a higher risk of complications, longer lengths of stay and a lower likelihood of being discharged to home as compared to those without ESRD.

# Poster No. P482

◆ Microdialysis Detects Ischemic Change Early in the Evolution of Acute Compartment Syndrome Alexander Crespo, MD, New York, NY Sanjit R. Konda, MD, Rye, NY Abraham M. Goch, New York, NY Kenneth A. Egol, MD, New York, NY

Microdialysis is capable of detecting local ischemia in acute compartment syndrome. This technology may serve as a new diagnostic modality.

### Poster No. P483

# Sagittal Alignment Measurements in Operatively Treated Distal Femur Fractures

Patrick B. Horrigan, MD, Saint Paul, MN Joshua Olson, Saint Paul, MN Paul M. Lafferty, MD, Woodbury, MN

This study was performed in search of a reliable measurement of distal femoral anatomy following fracture f xation, and found that two angular measurements are reproducible in over 90% of patients.

### Poster No. P484

Healing of Long Bone Fractures in Vitamin D Def cient Patients Treated with High-Dose Vitamin D Supplementation Nikkole M. Haines, MD, Charlotte, NC Laurence Kempton, MD, Indianapolis, IN Rachel Seymour, PhD, Charlotte, NC

Madhav A. Karunakar, MD, Charlotte, NC

This randomized double-blind placebo-controlled trial investigates nonunion rates in vitamin D def cient patients with long bone fractures and evaluates the utility of vitamin D supplementation.

### Poster No. P485

Bone Repair is Impaired in Diabetes via an Increased Formation of Methylglyoxal

Takao Aikawa, Kanazawa-Shi, Japan Yasuhiko Yamamoto, MD, Kanazawa, Japan Hidenori Matsubara, MD, Kanazawa, Japan Yasuhisa Yoshida, Kanazawa, Japan Shogo Shimbashi, Kanazawa-Shi, Ishikawa, Japan Shuhei Ugaji, PhD, Kanzawa City, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Methylglyoxal was increased in diabetes mouse and acted directly to inhibit differentiation/proliferation of osteoblast resulting in delayed bone formation in diabetes.

### Poster No. P486

◆ Decreasing Infection in Traumatic Wounds with Local Antibiotics: A Contaminated Fracture Model David J. Tennent, MD, San Antonio, TX Stefanie Shiels, PhD, Fort Sam Houston, TX Carlos J. Sanchez JR, PhD, JBSA Ft Sam Houston, TX Krista Niece, PhD, Charlottesville, VA Kevin Akers, MD, Fort Sam Houston, TX MAJ Daniel J. Stinner, MD, San Antonio, TX Joseph C. Wenke, PhD, San Antonio, TX

Whereas Vancomycin and Rifampin powder effectively decrease infection when treatment is performed early, only Rifampin is effective when treatment is delayed.

### Thrombin-Antithrombin III Complexes as a Useful Predictor of Venous Thromboembolism after Fracture Surgery

Sang Y. Lee, MD, Kobe, Japan Takahiro Niikura, MD, PhD, Kobe, Japan Takashi Iwakura, MD, PhD, Kobe, Japan Yoshitada Sakai, MD, PhD, Kobe, Japan Ryosuke Kuroda, MD, Kobe, Japan Masahiro Kurosaka, MD, Kobe, Japan

In 96 patients with pelvic and/or lower extremity fractures, both the TAT and D-dimer tests measured 7 days after surgery have excellent diagnostic power for predicting VTE.

# Poster No. P488

### The Impact of Orthopaedic Implants on Airport Security Screening in a Post 9/11 World

Robert Hymes, MD, Falls Church, VA Lolita Ramsey, RN, PhD, Falls Church, VA John Marcel JR, MD, Washington, Dist. of Columbia Jihui Li, PhD, Burke, VA, Annandale, VA Tricia Brannan, BSN, MS, RN, Falls Church, VA A S. Malekzadeh, MD, Great Falls, VA Cary C. Schwartzbach, MD, Annandale, VA Michael Holzman, MD, Fairfax, VA Jeff E. Schulman, MD, Annandale, VA

The rate of detection of intramedullary nails and plate/screw constructs is low; however, when given an option, patients prefer to travel with a medical device card.

# Poster No. P489

### A Novel Method for the Diagnosis of Traumatic Knee Arthrotomy

Roman Trimba, MD, Beavercreek, OH Eric Szymanski, BS, Fairborn, OH Brandon R. Horne, MD, Dayton, OH Indresh Venkatarayappa, MD, Dayton, OH

Exploratory Study of a Novel Method for Detection of a Traumatic Knee Arthrotomy

# Poster No. P490

### Fewer Complications with Hemiarthroplasty Compared to Total Hip Arthroplasty for Femoral Neck Fractures Scott Eskildsen, MD, Chapel Hill, NC R Carter Clement, MD, MBA, Durham, NC Ganesh V. Kamath, MD, Chapel Hill, NC Daniel I. Del Gaizo, MD, Chapel Hill, NC

Patients that underwent THA for femoral neck fractures had a higher rate of complications and increased rates of revision than those who underwent HA in a national database of Medicare patients.

# Poster No. P491

◆ Comparison of Callus Detection using 2D Computerized Radiographic Image Analysis and 3D Computed Tomography Scans

Hannah L. Dailey, PhD, Bethlehem, PA Katherine A. Hollar, Boise, ID Stephen M. Porter, Meridian, ID James A. Harty, MD, Cork, Ireland Brigitte von Rechenberg, MD, Zurich, Switzerland Trevor Lujan, PhD, Boise, ID

Projected callus area measured from plane radiographs using a validated Java-based software application had a strong positive correlation with callus volume from micro-CT scans of the same fractures.

# Poster No. P492

Knee Injury Associated with Acetabular Fractures: A Multicenter Study of 1,273 Patients Harish Kempegowda, MD, Danville, PA Hemil H. Maniar, MD, Danville, PA Akhil Tawari, MBBS, MD, Danville, PA Gregory C. Fanelli, MD, Danville, PA Clifford B. Jones, MD, FACS, Grand Rapids, MI Yelena Bogdan, MD, Boston, MA Paul Tornetta III, MD, Boston, MA Andrew J. Marcantonio, DO, Wellesley, MA Daniel S. Horwitz, MD, Danville, PA

We conclude that knee injuries associated with high energy acetabular fractures constitute a signif cant portion of the patient population.

# Poster No. P493

Comparing the Reliability of Two Different Radiographs to Assess Midshaft Clavicle Fracture Shortening Ryan P. Ponton, MD, San Diego, CA Ryan P. Ponton, MD, San Diego, CA Andrew Johnson, MD, San Diego, CA Patrick B. Morrissey, MD, San Diego, CA Dean Asher, MD, San Diego, CA David M. Dromsky, MD, Kathleen, GA Kevin M. Kuhn, MD, San Diego, CA

When assessing midshaft clavicle fracture shortening, panoramic shoulder girdle f lms produced a statistically signif cant improvement in intra-observer and inter-observer reliability.

# Poster No. P494

### Complication Prof le of Enoxaparin Use in Orthopaedic Trauma Patients Herman Johal, MD, Waterdown, ON, Canada

Timothy Costales, Baltimore, MD Max Coale, BA, Baltimore, MD Matthew Christian, MD, Baltimore, MD Robert V. O'Toole, MD, Baltimore, MD Theodore T. Manson, MD, Bel Air, MD

In orthopaedic trauma patients, we found a low incidence of venous thromboembolism (3.5%), and a signif cant number of bleeding complications (14.7%) associated with low molecular weight heparin use.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

# TRAUMA

# Poster No. P495

Is this Autograft Worth It? The Blood Loss and Transfusion Rates Associated with RIA Bone Graft Harvest Lucas S. Marchand, MD, Salt Lake City, UT Erik Kubiak, MD, Salt Lake Cty, UT David Rothberg, MD, Salt Lake Cty, UT Thomas F. Higgins, MD, Salt Lake City, UT

Reamer Irrigator Aspirator (RIA) has gained popularity as a method of bone graft harvest. We identif ed a large hematocrit drop and high transfusion rate associated with this procedure.

# Poster No. P496

# Beyond Survival - Results and Functional Outcome following

Operative Treatment of Necrotizing Fasciitis in Adults Marlon O. Coulibaly, MD, Bochum, Germany Danial J. Hutter, Witten, Germany Matthias Koenigshausen, Bochum, Germany Jan Gessmann, MD, Bochum, Germany Dominik Seybold, MD, Bochum, Germany Thomas A. Schildhauer, MD, Bochum, Germany

Mortality and morbidity in the adult population after nectrotizing faciitis is still high. However, patients surviving NF show persistent functional impairment in the long-run

## Poster No. P497

### Comparison of Three Methods for Maintaining Inter-Fragmentary Compression After Fracture Fixation

Brigham K. Au, MD, Coppell, TX John Groundland, MD, Tampa, FL Brandon G. Santoni, PhD, Tampa, FL Kyle Stoops, MD, Tampa, FL Henry C. Sagi, MD, Tampa, FL

The purpose of this study is to compare three different methods of maintaining inter-fragmentary compression using a sawbone model.

### Poster No. P498

Short versus Long Intramedullary Nail Fixation for Treatment of Unstable Intertrochanteric Hip Fractures Vamsi Kancherla, MD, Bethlehem, PA Paul N. Morton, MD, Fountain Hill, PA Chinenye O. Nwachuku, MD, Randolph, NJ William G. DeLong Jr, MD, Bethlehem, PA

Unstable intertrochanteric hip fractures treated with short intramedullary nails may offer less surgical morbidity and increased complications when compared to long intramedullary nail f xation.

## Poster No. P499

Suprapatellar Intramedullary Nail Technique Improves Rate of Malalignment of Distal Tibia Fractures Frank Avilucea, MD, Salt Lake City, UT Konstantinos Triantaf llou, MD, Memphis, TN Paul S. Whiting, MD, Nashville, TN Edward Perez, MD, Memphis, TN

Hassan R. Mir, MD, MBA, Nashville, TN

Suprapatellar IMN technique results in lower rates of malalignment following surgical treatment of distal tibia fractures compared to infrapatellar IMN insertion.

# Poster No. P500

Predicting the Postoperative Length of Stay for the Orthopaedic Trauma Patient

Sarah Greenberg, BA, Nashville, TN Catherine Bulka, MPH, Nashville, TN Amir A. Jahangir, MD, Nashville, TN Hassan R. Mir, MD, MBA, Nashville, TN William T. Obremskey, MD, MPH, Nashville, TN Manish K. Sethi, MD, Nashville, TN

We created the f rst personalized LOS calculator for orthopaedic trauma patients based on preoperative comorbidities, postoperative complications and location of surgery.

### Poster No. P501

### A New Algorithm Reduces Mortality in Patients Selected for Total Hip Replacements with Femoral Neck Fractures

James Pegrum, MBBS, BSc, Oxford, United Kingdom Geraint E. Thomas, MA, MBBS, Oxford, United Kingdom Reza Mayahi, MD, East Riding of Yorkshire, United Kingdom Gregoris Kambouroglou, MD, London, United Kingdom

A new algorithm with 3 year follow up provides clinicians with a mortality based outcome to select patients for a total hip replacement versus hemiarthroplasty in displaced femoral neck fractures.

### Poster No. P502

Removal of Painful Hardware in Surgically Managed Bimalleolar Ankle Fractures

Senthil N. Sambandam, MD, Cheyenne, WY Vishesh Khanna, MBBS, New Delhi, India

Painful hardware in surgically f xed complex bimalleolar ankle fractures often necessitates removal which produces predictable improvement in pain and function

# Poster No. P503

OTA Best Poster of the 2015 Annual Meeting Manish K. Sethi, MD, Nashville, TN

This poster will be the top rated clinical poster of the 2015 OTA Annual Meeting chosen by the OTA program committee.

Readability of Online Orthopaedic Trauma-Related Patient Educational Materials Rohith Mohan, BA, Fremont, CA Paul H. Yi, MD, San Francisco, CA Saam Morshed, MD, San Francisco, CA

The majority of orthopaedic trauma-related patient education materials are written at a level too high to be comprehended by the average patient.

# Poster No. P505

◆ Outcomes and Complications of Anterior Subcutaneous Pelvic Fixation: A Single Center Study Rahul Vaidya, MD, Ann Arbor, MI Adam Martin, MD, Worthington, OH Frederick E. Tonnos, DO, Novi, MI Bryant W. Oliphant, MD, Detroit, MI Jon B. Carlson, MD, Detroit, MI

The Anterior Internal Pelvic Fixator is Effective. Outcomes Depend on Time from Injury and Severity of Associated Injuries

# Poster No. P506

Anil Sethi, MD, Detroit, MI

# Lawn Mower Injuries in Pediatric Patients in the State of PA from 2002 to 2013

Mariano Garay, BS, Hummelstown, PA Joseph Hess, RN, Hershey, PA William L. Hennrikus Jr, MD, Hershey, PA Douglas G. Armstrong, MD, Hummelstown, PA

If the current guidelines on prevention of pediatric lawn mower injuries had been followed, 69% of the cases in this cohort would have been prevented.

# Poster No. P507

# The Risk Factors of Mortality and Infection Following Open Pelvic Ring Fractures

Andrew G. Dubina, MD, Millersville, MD Julie A. Taylor, MD, MPH, Pikesville, MD Robert V. O'Toole, MD, Baltimore, MD Theodore T. Manson, MD, Bel Air, MD

The primary objective of this study was to assess if pelvic ring fracture pattern or wound location predicts mortality or infection.

# Poster No. P508

### Outcomes in the Treatment of Femur Fractures in Patients with Pre-Existing Spinal Cord Injury Crystal A. Perkins, MD, Charlotte, NC Madhav A. Karunakar, MD, Charlotte, NC

Non-operative treatment of femur fractures in patients with preexisting spinal cord injury results in superior outcomes as compared to operative treatment.

### Poster No. P509

The Amplitude of the Intramuscular Pressure Oscillations in Simulated Acute Compartment Syndrome Andreas Nilsson, MSc, Gothenburg, Sweden Qiuxia Zhang, MD, Goteborg, Sweden Jorma Styf, MD, Goteborg, Sweden

The amplitude of oscillations in the intramuscular pressure originating from arterial pulsations was recorded at IMP levels corresponding to the levels seen in patients with acute compartment syndrome

# Poster No. P510

Hip Fracture Treatment at Orthopaedic Teaching Hospitals: Better Care at a Lower Cost Sanjit R. Konda, MD, Rye, NY Arthur Manoli III, MD, Detroit, MI Karan S. Patel, New York, NY Kenneth A. Egol, MD, New York, NY

When controlling for hospital bed number, OTH status is associated with lower hospital charges, LOS and lower in-hospital mortality.

# Poster No. P511

CT-Based Metric of Tibial Plateau Fracture Energy Corresponds Well to Clinician Assessment of Fracture Severity Laurence Kempton, MD, Indianapolis, IN Kevin Dibbern, BS, Iowa City, IA Donald D. Anderson, PhD, Iowa City, IA Saam Morshed, MD, Berkeley, CA Thomas F. Higgins, MD, Salt Lake City, UT John L. Marsh, MD, Iowa City, IA Todd O. McKinley, MD, Indianapolis, IN

CT-based calculation of tibial plateau fracture energy corresponds to surgeon assessment of fracture severity.

# Poster No. P512

Experimental Modif cation of Masquelet's Technique by Use of Conditioned Media Produced by Mesenchymal Stem Cells Gabriel F. Fletscher, MD, Cali, Colombia Ricardo A. Gaona, Bogota, Colombia Enrique Vergara, MD, Bogota DC, Colombia

Experimental modif cation of masquelet's technique

### Poster No. P513

Fixation Failure Related Risk Factor of Cephalomedullary Proximal Femoral Nailing for Intertrochanteric Fracture Kwang J. Oh, MD, Seoul, Republic of Korea Young-Bong Ko, Seoul, Republic of Korea

The large neck shaft angle difference (varus reduction), screw type lag screw and anterior placement of lag screw are the risk factors of f xation failure in patient undergone cephalomedullary nailing

# TRAUMA

# Poster No. P514

# Fatigue Strength of the Proximal Tibia Donor Site after Extensive Bone Grafting

Chin Tat Lim, MD, Singapore, Singapore David Q. Ng, Singapore, Singapore Amit K. Ramruttun, MSc, Singapore, Singapore Fucai Han, MD, Singagore, Singapore Ken Jin Tan, Singapore, Singapore Desmond Y. Chong, PhD, Singapore, Singapore

The likelihood of fatigue fractures occurring at the proximal tibia after extensive bone grafting was investigated through a biomechanical cadaveric experiment.

# Poster No. P515

# Is a Postoperative Chest X-ray Needed After Fixation of Clavicle Fractures in Trauma Patients?

Benjamin Service, MD, Orlando, FL Geoffrey Hancy, MD, Orlando, FL Robert C. Palmer, MD, Jacksonville, FL Joshua Langford, MD, Orlando, FL George J. Haidukewych, MD, Orlando, FL Kenneth J. Koval, MD, Belle Isle, FL

76 patients were retrospectively reviewed after ORIF of a clavicle fracture to determine when and if a postoperative CXR was needed by comparing trauma patients and isolated clavicle injury groups.

### Poster No. P516

Vancomycin and Cef pime antibiotic prophylaxis for open fractures is as effective as Cefazolin and Gentamicin Benjamin Maxson, DO, Dayton, OH Rafael Serrano-Riera, MD, Tampa, FL Mark I. Bender, DC, Lutz, FL Henry C. Sagi, MD, Tampa, FL

Vancomycin and Cef pime antibiotic prophylaxis for open fractures is as effective as Cefazolin and Gentamicin, avoids potential nephrotoxicity, and does not result in antibiotic resistance with MRSA.

# Poster No. P517

◆ Topical Vancomycin Powder Decreases the Incidence of S. aureus in Operatively Treated Fractures Rabah Qadir, MD, The Woodlands, TX Timothy Costales, Baltimore, MD Max Coale, BA, Baltimore, MD Timothy J. Zerhusen JR, BS, Baltimore, MD Manjari Joshi, Baltimore, MD Robert V. O'Toole, MD, Baltimore, MD

Vancomycin powder decreases the incidence of S. aureus in operatively treated fractures. These f ndings may prompt a change in our infection prevention strategies for fracture f xation surgery.

# Poster No. P518

### Posterior Malleolar Fractures Associated with Tibia Fractures: Incidence and the Sequence of Fixation

Harish Kempegowda, MD, Danville, PA Hemil H. Maniar, MD, Danville, PA Raveesh Richard, MD, Danville, PA Akhil Tawari, MBBS, MD, Danville, PA Jove Graham, PhD, Danville, PA Chris Han, MD, Boston, MA Paul Tornetta III, MD, Boston, MA Erik Kubiak, MD, Salt Lake City, UT Daniel S. Horwitz, MD, Danville, PA

A posterior malleolus fracture is commonly associated with a spiral fracture of the distal tibia and we recommend f xation of malleolus prior to nailing of tibia in associated fracture patterns.

### Poster No. P519

◆ An Osseointegrated Percutaneous Prosthetic System for Treatment of Transfemoral Amputees: A Prospective Follow Up Orjan K. Berlin, MD, Goteborg, Sweden Kerstin Hagberg, PT, Gothenburg, Sweden Katarzyna Kulbacka-Ortiz, Gothenburg, Sweden Rickard Branemark, MD, Gothenburg, Sweden

An osseointegrated percutaneous prosthetic system for treatment of transfemoral amputees (OPRA): clinical and functional results from prospective study

### Poster No. P520

Eff cacy of Electrical Stimulators for Bone Healing: A Meta-Analysis of Sham-Controlled Randomized Trials Ilyas Aleem, MD, Rochester, MN Idris Aleem, MSc, Pickering, ON, Canada Nathan Evaniew, MD, Hamilton, ON, Canada Michael J. Yaszemski, MD, PhD, Rochester, MN Thomas A. Einhorn, MD, New York, NY Mohit Bhandari, MD, FRCSC, Hamilton, ON, Canada

Patients treated with electrical stimulation as an adjunct for bone healing have a reduced risk of radiographic nonunion and less pain compared to a sham device.

### Poster No. P521

A Dedicated Orthopaedic Trauma Room Decreases Patient Hospital Length of Stay (LOS) and After-Hours Surgery

Carlos A. Sagebien, MD, Skillman, NJ Amy Smith, MS, RN, Martinsville, NJ Mark S. Ayoub, MD, New Brunswick, NJ Howard Bar-Eli, MD, New Brunswick, NJ

The designation of a daily orthopaedic trauma room resulted in a signif cant decrease in after-hours surgery as well as a signif cant decrease in patient length of stay. Utilization was high.

# Poster No. P522

Do We Really Understand the Patient Populations in National Database When Doing Trauma Research? Andre Samuel, New Haven, CT

Adam Lukasiewicz, MSc, New Haven, CT Matthew L. Webb, BA, New Haven, CT Daniel D. Bohl, MD, MPH, Chicago, IL Daniel D. Bohl, MD, MPH, Chicago, IL Bryce A. Basques, MD, Chicago, IL Arya G. Varthi, MD, New Haven, CT Michael P. Leslie, DO, New Haven, CT Jonathan N. Grauer, MD, New Haven, CT

Three commonly used national databases have very different populations of femoral shaft fracture patients, potentially biasing implications of studies that do not acknowledge these differences.

# Poster No. P523

## Does Radiation Therapy Decrease Heterotopic Ossif cation After Posterior Approach for Acetabular Fracture?

Jason A. Davis, MD, Houston, TX Brennan A. Roper, MS, Houston, TX Matthew C. Galpin, Houston, TX Timothy S. Achor, MD, Bellaire, TX Andrew M. Choo, MD, Houston, TX John W. Munz, MD, Bellaire, TX Joshua L. Gary, MD, Houston, TX

Radiation therapy after posterior approach for acetabular fracture signif cantly decreased HO formation compared with gluteus minimus debridement alone.

# Poster No. P524

◆ Does Intraoperative Antibiotic Powder Decrease Infection in Combat-Related Lower Extremity Amputations? Gabriel Pavey, MD, Bethesda, MD Peter Formby, MD, Washington, Dist. of Columbia Scott Wagner, MD, Rockville, MD

Benjamin K. Potter, MD, Bethesda, MD

Combat-related amputations are wrought with infection, often requiring late debridement causing delay in rehabilitation; efforts to decrease this risk include the use of intraowound antibiotic powder.

# Poster No. P525

Aspirin Utilized for DVT Chemoprophylaxis Increases Non-Unions in Tibial Shaft and Plafond Fractures John P. Eggers, MD, PhD, Kansas City, MO Jordan P. Barker, MD, Kansas City, MO Mark Bernhardt, MD, Kansas City, MO Jonathan Dubin, MD, Leawood, KS

Aspirin utilized for DVT chemoprophylaxis signif cantly delayed tibial shaft and plafond fractures healing and increased nonunions compared to other anti-coagulation modalities.

# Poster No. P526

An Analysis of Patient-Reported Outcome Measures in Trauma and Inf uences on Return to Work in Trauma Patients Samuel Folkard, Hampshire, United Kingdom Thomas Bloomf eld, MBBS, Brighton, United Kingdom Piers R. Page, MBBS, Camberley, United Kingdom Daniel Wilson, MD, Maidstone, United Kingdom Benedict Rogers, MBBS, Ardingly, United Kingdom

In our MTC PROMs study, lower socio-economic groups responded best. The self-rated health status scores were correlated with predicted return to work, dignity, and satisfaction.

# Poster No. P527

Use of Partial Weight Bearing Treadmill for Early Rehabilitation Following Lower Extremity Trauma

Aaron E. Barrow, MD, Fort Sam Houston, TX MAJ Daniel J. Stinner, MD, San Antonio, TX Johnny Owens, San Antonio, TX Jason M. Wilken, PhD, PT, Fort Sam Houston, TX Joseph R. Hsu, MD, Charlotte, NC

Pilot study to establish the safety and of using an "anti-gravity" treadmill in an early weight bearing rehabilitation protocol following operative treatment of lower extremity trauma.

# Poster No. P528

Outcomes of Patients with Successful Flap Coverage After Skeletal Trauma of the Lower Extremity Daniel Choi, MD, New York, NY Bensen B. Fan, MD, Princeton Jct, NJ Mark Paiste, DO, Conshohocken, PA Virak Tan, MD, Newark, NJ

There is a high rate of complications after successful f ap coverage of lower extremity trauma, similar to high complication rates reported in prior patient cohorts that included failed f aps.

# Poster No. P529

#### Is Radiation Exposure Killing Our Residents?

Peter Boyle, DO, Swedesboro, NJ Fabio Orozco, MD, Egg Hbr Twp, NJ Zachary D. Post, MD, Egg Harbor Township, NJ Eric Buxbaum, DO, Glassboro, NJ Victor H. Hernandez, MD,MS, Miami, FL Alvin C. Ong, MD, Philadelphia, PA

Orthopaedic surgery residents and attending surgeons need to remain aware of the harmful effects of ionizing radiation.

# Poster No. P530

## A Teachable Moment after Orthopaedic Fracture in the Smoking Patient: A Randomized Controlled Trial

Matthew D. Baron, MD, Seattle, WA Christopher J. Defrancesco, BS, Philadelphia, PA Tiffany C. Liu, BA, Philadelphia, PA Frank T. Leone, MD, MS, Philadelphia, PA Jaimo Ahn, MD, PhD, Philadelphia, PA

This randomized, controlled trial suggests that smokers may benef t from a brief intervention in the hospital after sustaining a fracture.

# TRAUMA

# Poster No. P531

Femoral Nerve Catheters After Open Reduction Internal Fixation of Tibial Plateau Fractures: A Randomized Trial Paul Tornetta III, MD, Boston, MA Margaret Cooke, MD, Boston, MA Tyler Welch, MD, Santa Monica, CA Oleg Gusakov, Boston, MA

The purpose of this study was to determine whether a continuous femoral nerve block after ORIF of tibial plateau fractures would diminish VAS scores and / or systemic narcotic intake.

# Poster No. P532

# Fluoroquinolone-Associated Tendon Rupture is Age and Time Dependent

Jessica Phillips, Philadelphia, PA Rowena McBeath, MD, Philadelphia, PA Richard Light, MD, Yardley, PA

6013 cases of f uoroquinolone-associated tendon rupture and disorders were reviewed from 4/1997 to 1/2014 and revealed trends in upper middle-aged adults, maximal within 14 days of therapy initiation.

# Poster No. P533

## Field Tourniquet Use for Severe Extremity Trauma Capt. Dana C. Covey, MD, MSc, San Diego, CA Christopher E. Gentchos, MD, Concord, NH

Tourniquets applied for extremity injuries with severe bleeding can signif cantly reduce hemorrhage. Tourniquets do not result in amputation or affect immediate amputation level in mangled limbs.

# Poster No. P534

## Factors Inf uencing Rates of Infection and Nonunion After Open Fractures of the Humerus Brian Cash, MD, Santa Monica, CA

Justin Zumsteg, MD, Nashville, TN Donald H. Lee, MD, Nashville, TN Nicholas D. Pappas, MD, New Orleans, LA

The Gustilo-Anderson type and fracture location have a greater inf uence on rates of infection and nonunion of open humerus fractures than does the time to operative debridement

#### Poster No. P535

A Novel Method of Percutaneous Reduction for Type C Pelvic Ring Injuries: Technique and Radiographic Results Bradley C. Johnson, MD, West Hollywood, CA Kyle Mombell, MD, San Diego, CA Paul Merkle, MD, Frisco, TX Geoffrey Marecek, MD, Los Angeles, CA

The study presents the results and complications of 32 patients with complete disruptions of the posterior pelvic ring treated with a novel percutaneous reduction technique.

# **TUMOR/METABOLIC DISEASE**

## Poster No. P536

◆ Five-Aminolevulinic (5-ALA) Tumor Paint in Myxof brosarcoma: An In Vitro Study Shachar Kenan, MD, , NY Andrew Jacobs, Hillsdale, NJ Daniel A. Grande, PhD, Manhasset, NY Haixiang Liang, MD, MS, Manhasset, NY Amanda Chan, PhD, Manhasset, NY Adam S. Levin, MD, Baltimore, MD

Myxof brosarcoma is known to have high local recurrence rates. Tumor paint using 5-ALA may aid in intraoperative margin assessment. This study assesses 5-ALA's capacity to f uoresce MFS cells.

# Poster No. P537

Custom Orthopaedic Oncology Implants: One Institution's Experience with Meeting Current IRB and FDA Requirements Alexander Willis, MD, Belle Mead, NJ Joseph A. Ippolito, BA, West Orange, NJ Joseph Benevenia, MD, Newark, NJ Francis R. Patterson, MD, Newark, NJ Kathleen S. Beebe, MD, Montclair, NJ

This study discusses the use of an institutional protocol to facilitate acquisition of custom orthopaedic implants for limb salvage in oncology patients.

# Poster No. P538

Percutaneous Image-Guided Bone Biopsy in Diagnosis of Neoplastic Bony Lesions Adel R. Ahmed, MBBS, PhD, Alexandria, Egypt

Percutaneous image guided bone biopsy is a safe, easy and effective technique for the diagnosis of neoplastic bony lesion.

#### Poster No. P539

Eff cacy of Fluorescence-Guided Surgery of Retroperitoneal Implanted Human Fibrosarcoma in Nude Mice Fuminari Uehara, MD, San Diego, CA Shinji Miwa, MD, Ishikawa, Japan Yasunori Tome, MD, PhD, Okinawa, Japan Hiroki Maehara, PhD, Nishihara, Japan Kazuhiro Tanaka, MD, PhD, Nishihara, Okinawa, Japan Robert M. Hoffman, PhD, San Diego, CA Fuminori Kanaya, MD, Okinawa-Ken, Japan

FGS improve outcomes in a retroperitoneal-implanted nudemouse model of human f brosarcoma, reducing residual tumor tissue, thereby decreasing tumor recurrence and increasing disease-free survival.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

# Poster No. P540

Can Targeted Therapy Improve Postoperative Survival in Inoperable Lung Cancer with Spinal Metastasis? Hsi-Hsien Lin, Taipei City, Taiwan Shih-Tien Wang, MD, Taipei, Taiwan Chau-Wei Huang, MD, Taipei City, Taiwan Po-Hsin Chou, MD, Taipei, Taiwan Szu-Han Ying, MD, New Taipei City, Taiwan

Surgical treatment for spinal metastasis of inoperable NSCLC yielded a better clinical outcome after operation. EGFR-TKI was not related to longer postoperative survival compared with chemotherapy.

# Poster No. P541

Ten Years of Cases from Recently Trained Tumor Fellows: An Analysis of the ABOS Part II Database Kyle Duchman, MD, Iowa City, IA Yubo Gao, PhD, Iowa City, IA Josef N. Tofte, MD, Iowa City, IA Benjamin J. Miller, MD, Iowa City, IA

The proportion of tumor procedures performed by fellowship trained orthopaedic oncologists has decreased in recent years while trauma and adult reconstruction cases have increased.

# Poster No. P542

#### Joint-Preserving Reconstruction of Osteosarcoma with Tumor-Bearing Bone Treated by Liquid Nitrogen

Takashi Higuchi, Kanazawa, Japan Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan Katsuhiro Hayashi, MD, Kanazawa, Japan Akihiko Takeuchi, MD, Kanazawa, Japan Shinji Miwa, MD, Ishikawa, Japan Hiroyuki Inatani, MD, Nagoya, Japan Yu Aoki, Kanazawa, Japan Kensaku Abe, MD, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We evaluated the results of joint-preserving reconstruction using tumor-bearing autografts treated with liquid nitrogen and excellent function were obtained in patients with osteosarcoma.

# Poster No. P543

## Minimally Invasive Surgery Using a Hydroxyapatite Cannulated Pin for Simple Bone Cysts

Takashi Higuchi, Kanazawa, Japan Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan Katsuhiro Hayashi, MD, Kanazawa, Japan Akihiko Takeuchi, MD, Kanazawa, Japan Shinji Miwa, MD, Ishikawa, Japan Hiroyuki Inatani, MD, Nagoya, Japan Yu Aoki, Kanazawa, Japan Kensaku Abe, MD, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We evaluated the outcomes of cannulation with HA cannulated pins for simple bone cysts. The surgical technique had a high cure rate and minimal invasiveness compared with artificial bone f lling.

# Poster No. P544

Usefulness of Increased Fluorodeoxyglucose Uptake for Detecting Local Recurrence in Osteosarcoma Chang-Bae KONG, MD, Seoul, Republic of Korea Byung Hyun Byun, Seoul, Republic of Korea

The combination of SUV2 and SUV change was more useful than the SUV2 or SUV change used alone for the prediction of local recurrence.

## Poster No. P545

Bone Bank, Allobone Graft, Bone Bank Processing Om Prakash Lakhwani, MBBS, MS, New Delhi, India

EFFect of Bone bank processing on Allobone graft on Biomechanical properties of Bone

# Poster No. P546

Symptomatic Small Schwannoma Is A Risk Factor For Postoperative Neurological Def cits: Retrospective Cohort Study Kensaku Abe, MD, Kanazawa, Japan Akihiko Takeuchi, MD, Kanazawa, Japan Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan Katsuhiro Hayashi, MD, Kanazawa, Japan Shinji Miwa, MD, Ishikawa, Japan Hiroyuki Inatani, MD, Nagoya, Japan Yu Aoki, Kanazawa, Japan Takashi Higuchi, Kanazawa, Japan Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Symptomatic schwannomas were usually detected within the small size. Numbness of small tumors was signif cantly correlated with postoperative neurological def cits, which may be a novel risk factor.

#### Poster No. P547

Salvage of Aggressive Giant Cell Tumor of Bones (GCTB) with Denosumab

Raju Vaishya, MD, MBBS, New Delhi, India Amit K. Agarwal, MBBS, MS, New Delhi, India Vipul Vijay, MBBS, MS, New Delhi, India

Unsalvagable and recurrent giant cell tumours which are not immediately amenable to surgery can be treated with Denosumab with signif cant reduction in tumour load.

# Poster No. P548

A Prospective Surgical Treatment Protocol of Pathological Proximal Femur Fractures Bulent Erol, MD, Istanbul, Turkey Mert O. Topkar, MD, Istanbul, Turkey

We aimed to evaluate a prospective treatment protocol and develope a treatment strategy for pathological fractures of the proximal femur through benign bone lesions in children.

## Poster No. P549

Prognostic Factors and Outcomes of Dedifferentiated Chondrosarcoma - A Single Institution Experience Christopher Matthews, MD, Gainesville, FL Andre R. Spiguel, MD, Gainesville, FL C P. Gibbs Jr, MD, Gainesville, FL

The prognosis of dedifferentiated chondrosarcoma is universally poor. Adjuvant therapy, surgical margins, and tumor size do not effect disease free survival, which is 15.7% at f ve years.

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

# **TUMOR/METABOLIC DISEASE**

## Poster No. P550

Socioeconomic Measures Inf uence Survival in Osteosarcoma: An Analysis of the National Cancer Data Base Benjamin J. Miller, MD, Iowa City, IA Josef N. Tofte, MD, Iowa City, IA Yubo Gao, PhD, Iowa City, IA Kyle Duchman, MD, Iowa City, IA

A review of the NCDB demonstrated decreased survival in osteosarcoma in patients with metastasis, axial primary, positive margins, >10 cm, >18 years, and lowest socioeconomic status.

## Poster No. P551

## Outcomes of Distal Femur Replacement with or without Patellar Resurfacing After Resection of the Distal Femur Mauricio Etchebehere, MD, PhD, Campinas, Brazil

Justin E. Bird, MD, Houston, TX Patrick P. Lin, MD, Bellaire, TX Robert L. Satcher Jr, MD, Houston, TX Bryan S. Moon, MD, HOUSTON, TX JUN YU, MS, Houston, TX Liang Li, Ph.D., Houston, TX Valerae O. Lewis, MD, Houston, TX

The outcomes of patients who underwent distal femur resection and endoprosthesis reconstruction were studied. Resurfaced patellas were compared to non-resurfaced in terms of function and complications

#### Poster No. P552

Comparison of Bone Scintigraphy and PET/CT To Predict Histologic Response To Neoadjuvant Chemotherapy. Chang-Bae Kong, MD, Seoul, Republic of Korea Byung Hyun Byun, Seoul, Republic of Korea

This study shows that both 99mTc-MDP bone scintigraphy and 18F-FDG PET/CT are useful for predicting histologic response in osteosarcoma.

## Poster No. P553

Diagnosis of Septic Arthritis in Immunocompromised Patients Alan H. Lee, MD, Menlo Park, CA Martha Pemberton Heath, B.A., Charlotte, NC Kevin A. Raskin, MD, Boston, MA

Immunocompromised patients are unable to mount the same immune response to septic arthritis as non-immunocompromised patients. Blood and synovial WBC count is lower in these patients.

# Poster No. P554

Assessing Physical Function in Patients with Lower Extremity Bone Metastases

Stein Jasper Janssen, MD, Cambridge, MA Nuno Rui Cools Paulino Pereira, MD, Boston, MA Kevin A. Raskin, MD, Boston, MA Marco Ferrone, MD, FRCSC, Boston, MA Francis J. Hornicek, MD, Boston, MA Santiago Lozano Calderon, MD, PhD, Boston, MA Joseph H. Schwab, MD, Boston, MA

The PROMIS Physical Function questionnaire is superior to the PROMIS Mobility, TESS, LEFS, and MSTS as a result of its reliability, validity, brevity, and coverage through Computer Adaptive Testing.

## Poster No. P555

Tumor Recurrence After the Use of Frozen Tumor-BearingAutograft During Total En Bloc SpondylectomyTakashi Igarashi, MD, Kanazawa, JapanHideki Murakami, MD, Kanazawa, JapanSatoru Demura, MD, Kanazawa, JapanSatoshi Kato, MD, Kanazawa, JapanKatsuhito Yoshioka, MD, Kanazawa, JapanNoriaki Yokogawa, MD, Kanazawa, JapanMoriyuki Fujii, MD, Kanazawa, JapanNoritaka Yonezawa, Kanazawa, JapanHiroyuki Tsuchiya, MD, Kanazawa, Japan

In frozen-autograft TES, we do not need to be concerned about local recurrence from tumor-bearing autografts frozen with liquid nitrogen.

# **GUEST NATION**

## Poster No. P556

Clinical validation of Hamstring Biped Extension Test (HBET) for the differential diagnosis of mechanical origin low back pain Juan M. Herrea, MD, Bogotá, Colombia Eduardo A. Reina, MD, Bogotá, Colombia Nicolas Hernandez, MD, Bogotá, Colombia

The mechanical origin low back pain (MLBP) is the leading cause of work disability and the largest generator of direct and indirect care costs of any described health system. There is no medical test to diagnose MLBP. In 2.004 a test was designed for clinical diagnosis of MLBP.

# Poster No. P557

Cerebral Fat Embolism in Revision Hip Surgery: Case Report Miguel Fabian Mantilla Duran, MD, Cucuta, Colombia Julio Cesar Palacio, MD, Cali, Colombia Andres A. Echeverri, MD Bogotâ, Colombia Willy Paul Stangl, MD, Cali, Colombia

We report a case of an forty two years old female patient, who underwent a scheduled revision hip surgery suffering a cerebral fat embolism.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 15.

# Poster No. P558

# Surgical Treatment of Carpal Tunnel Syndrome. Endoscopic Versus Open Carpel Tunnel Release

Jhon Fredy Castañeda López, MD, Cali, Colombia Alvaro Antonio Kafury Goeta, MD, Cali, Colombia Juliana Andrea Rojas Neira, MD, Cali, Colombia Diego Fernando Rincon Cardozo, MD, Cali, Colombia

To compare the clinics and functional results of the surgical treatment of carpal tunnel syndrome evaluating the endoscopic versus the open carpal tunnel release techniques.

# Poster No. P559

Anatomical Description of the Tendon and Muscle-Tendon Junction Portion of the Long Head of the Biceps Brachial Luis Fernando Calixto, MD, Bogotá, Colombia Diego Alejandro Dâvalos, MD, Bogotä, Colombia Luis Alejandro Satizâbal, MD, Bogotâ, Colombia

Pathologies of the long head of biceps tendon are a source of pain. Tenodesis has proved to be an elective procedure in the management of this condition in patients under 50 years old. There is no evidence to def ne the ideal level to perform an open subpectoral tenodesis.

# Poster No. P560

# A Novel Device for Taking Accurate Xrays of Infant Hips Arturo Sarmiento, MD, Bogotá, Colombia

Vanessa Salinas Álvarez, MD, Bogotá, Colombia

The diagnostic work-up of Developmental dysplasia of the hip (DDH) begins in 3 to 4 months of age infants with an initial AP pelvic X-Ray screening. We designed a device that maximizes the quality of the X-Ray for infants while standardizing the hip angle and reducing the number of X-Ray shots required.

# Poster No. P561

# Anterior Approach to the Elbow: Decription of a Novel New Approach

Alejandro Ramírez, MD, Bogotá, Colombia Luis Fernando Calixto, MD, Bogotá, Colombia Jairo Fernando Gómez, MD, Bogotá, Colombia

We describe a new anterior approach. A single transverse incision to the elbow f exion crease grants access to the anterior articular surface through three neurovascular intervals.

# Poster No. P562

Geriatric Orthopedics meetings in Colombia: A 6 year experience Miguel Ángel González, MD, Bogotâ, Colombia Carlos Manuel Pereira, MD, Cartagena, Colombia Luis Antonio Solano, MD, Barranquilla, Colombia

Population aging leads to a higher incidence of fragility fractures and degenerative diseases taking into account the specif c characteristics of older adults. A program of continuing medical education in order to deepen the understanding and proper management of these patients is required. The purpose of this paper is to present our experience in conducting these courses.

# Poster No. P563

Patellar Osteosynthesis with the Dog-Bone System: Report of a Case and Surgical Technique Description Daniel Saavedra, MD, Bogotâ, Colombia Angela Guinard, MD, Bogotâ, Colombia Angela Almanza, MD, Bogotâ, Colombia

# Poster No. P564

Evaluation of endoscopic anterior cruciate ligament elongation sign (EACLES) in patients with partial anterior cruciate ligament (ACL) tears. Pilot study.

Orlando Ramos, MD, Bogotâ, Colombia Eduardo Antonio Reina, MD, Bogotâ, Colombia

ACL injuries represent the most common knee ligament injuries in athletes, with an incidence of 38%. Partial ACL tears diagnosis is diff cult because of the absence of Lachman and pivot shift signs and its poor correlation within the diagnostic images. In 2.010 an endoscopic test was designed for the diagnosis of partial ACL injuries

# Poster No. P565

Behavior of the Mechanical Loads in the Brachial Biceps after Tenodesis. Analysis Dimensional Finite Element Model Luis Fernando Calixto, MD, Bogotâ, Colombia Diego Alejandro Dâvalos, MD, Bogotâ, Colombia

Forces involved in the normal contraction of biceps and the participation of each of the heads were simulated using the f nite element method of a coronal section of the assembly of muscle tendon entire length of the brachial biceps muscle.

# **BEST OF ORS**

# Poster No. 566

## Multi-segmental Foot Kinematics During Walking In Subjects With Medial Tibial Stress Syndrome

Takumi Okunuki, PT, Sapporo, Japan Yuta Koshino, PT, PhD, Sapporo, Japan Harukazu Tohyama, MD, PhD, Sapporo, Japan Masato Igarashi, PT, Sapporo, Japan Yuya Ezawa, PT, MS, Sapporo, Japan Mina Samukawa, PT, PhD, Sapporo, Japan Hiroshi Saito, PT, PhD, Sapporo, Japan Masanori Yamanaka, PT, PhD, Sapporo, Japan

The present study showed that the subjects with the MTSS have increased eversion and abduction in the forefoot during walking.

# Poster No. 567

# In Vivo Reduction in Carpal Tunnel Pressure during Radioulnar Wrist Compression

Zong-Ming Li, Cleveland, OH Tamara L. Marquardt, Cleveland, OH Joseph N. Gabra, Cleveland, OH Peter J. Evans, Cleveland, OH William H. Seitz, Cleveland, OH Edward Diao, San Francisco, CA

Radioulnar wrist compression decreased carpal tunnel pressure in carpal tunnel syndrome patients and has the potential for median nerve decompression.

# Poster No. 568

A Novel Ceramic Coating for Reduced Metal Ion Release in Metal-on-Metal Hip Surgery Melanie Coathup PhD, Stanmore, UK Roberta Ferro-De-Godoy, PhD, Stanmore, UK Jay Meswania, Stanmore, PhD, UK Tim Briggs, FRCS, Stanmore, UK Philippa Tyler, FRCR, Stanmore, UK Rikin Hargunani, FRCR, Stanmore, UK Hannah Wilson, Swindon, PhD, UK

Imran Khan, Swindon, PhD, UK Gordon Blunn, PhD, Stanmore, UK

The use of a ceramic coating reduced metal ion release and offers the potential to increase metal-on-metal bearing implant survival.

# Poster No. 569

# Relationship Between Patella Alta, MPFL Elongation, and Patellar Dislocation

Clare Fitzpatrick, PhD, Denver, CO Robert Steensen, MD, Columbus, OH Paul Rullkoetter, PhD, Denver, CO

The effect of MPFL reconstruction and patella re-positioning was evaluated to assist with surgical decisions on a subject-specif c basis.

## Poster No. 570

Bone Quality Variations in Osteoarthritic B2 Glenoids Following Eccentric Reaming during Total Shoulder Arthroplasty Akhil Reddy, New York, NY, Xiang Chen, New York, NY,

Andreas Kontaxis, New York, NY Daniel Choi, New York, NY David Dines, New York, NY Russell Warren, New York, NY Lawrence Gulotta, New York, NY

An investigation of eccentric reaming on B2 glenoids and how it effects bone quality metrics.

# Poster No. 571

Spinal Correction And Fusion Surgery Improves The Asymmetrical Trunk Kinematics During Gait Of Adolescent Idiopathic Scoliosis With Thoracic Single Major Curve

Mitsuhiro Nishida, Tokyo, Japan Takeo Nagura, Tokyo, Japan Nobuyuki Fujita, Tokyo, Japan Masaya Nakamura, Tokyo, Japan Morio Matsumoto, Tokyo, Japan Kota Watanabe, Tokyo, Japan

The posterior spinal correction and fusion surgery was effective for improving the asymmetrical trunk kinematics in patients with AIS.

# Poster No. 572

Round Cell-specif c Microrna Contributes to Malignancy and Morphological Change In Myxoid Liposarcoma Yutaka Nezu, Tokyo, Japan Keitaro Hagiwara, Tokyo, Japan Tomohiro Fujiwara, Yokohama, Japan Akira Kawai, Tokyo, Japan Kosuke Matsuo, Yokohama, Japan Tomoyuki Saito, Yokohama, Japan Takahiro Ochiya, Tokyo, Japan

Round cell-specif c miR-135b impacts tumor progression and histopathological change, and is also linked to poor prognosis in human myxoid liposarcoma.

# BOS

# Poster No. P573

SOMOS: The Research Year in Orthopaedic Residencies: Does it Impact Research Productivity? Chad A. Krueger, MD, Southern Pines, NC

George C. Balazs, MD, Elkridge, MD Jeffrey Hoffmann, MD, El Paso, TX Benjamin K. Potter, MD, Bethesda, MD Anthony E. Johnson, MD, Fort Sam Houston, TX Philip J. Belmont Jr, MD, El Paso, TX

Adding an elective or mandatory research year increases the research productivity of a residency department.

# Poster No. P574

American Association for Hand Surgery: Does SLAC IV exist? A Radiographic and MRI Analysis Alexia Hernandez-Soria, MD, New York, NY Steve K. Lee, MD, New York, NY Lauren E. Lamont, MD, Dallas, TX Nadja A. Farshad-Amacker, Zurich, Switzerland Hollis Potter, MD, New York, NY Scott W. Wolfe, MD, New York, NY

MRI with cartilage sensitive sequencing may be used to more accurately grade SLAC/SNAC arthritis as the f ndings and location of radiolunate cartilage loss may inf uence treatment decisions.

# **ALLIED HEALTH**

## Poster No. P575

American Fracture Association Diana D. Carr, MD, Sebring, FL Judy L. Wright, MD, Bloomington, IL Alfonso E. Pino, MD, Dublin, TX Geoffrey M. Miller, MD, El Segundo, CA Jose G. Ramon, MD, Miami, FL Maxime Coles, MD, Coffeyville, KS

The American Fracture Association was founded in 1838 to improve fracture care. There is an emphasis on practical solutions to diff cult cases seen by the community orthopedist.

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# Nursing and Allied Health Program Continuing Education Nurses

A total of 32 contact hours are being offered through NAON; 4.0 contact hours for each NUR course and for the 8.0 each for the CAST1 and CAST2 courses. Each session is provider approved by the California Board of Registered Nursing, Provider Number CEP3432, for 16.00 total contact hours for all of the NUR courses and 16.00 contact hours both the CAST1 and the CAST2 courses. The National Association of Orthopaedic Nurses is accredited as a provider of continuing nursing education by the American Nurses' Credentialing Center's Commission on Accreditation.

# **Orthopaedic Technologists**

Applying to the National Board for Certif cation of Orthopaedic Technologists for approval of a total of 32 contact hours or 4 contact hours for each NUR session and 8 contact hours each for the CAST1 and CAST2 courses.

# **Physician Assistants**

Applying to the American Academy of Physician Assistants (AAPA) for Category 1 CME credit from the AOA Council on Continuing Medical Education, Prescribed credit from the AAFP and AMA Category 1 CME credit for the PRA from organizations accredited by the ACCME. Total number of contact hours: 32.

# **Orthopaedic Physician Assistants**

Applying to the National Board for Certif cation of Orthopaedic Physician Assistants for approval of a total of 32 contact hours for orthopaedic physician assistants or 4 contact hours for each NUR session and 8 contact hours each for the CAST1 and CAST2 courses.

# General

Certif cates for sessions will be available online once a participant completes a session. A link to the evaluation will be distributed to participants via email following each session. Please be sure to give your correct e-mail address when registering for the courses. Once participants complete the evaluation, a contact hour certif cate will be available to print. To receive any certif cate other than nursing, please visit the registration counter in front of the session. For credit that may be acceptable to state medical associations, specialty societies or state boards of medical licensure, please contact those organizations. NAON, AAOS and NAOT make every effort to have the course approved for credit prior to the course dates. It is not always possible to obtain approval in advance of a program.

# CAST1 - Casting and Splinting: Fundamentals Tuesday, March 1 8:15 AM – 5:45 PM

# Rosen Centre Hotel, Junior Ballroom G

Course Co-Chairs: Cynthia Henderson, OTC, CO Continuing Education Chair, National Association of Orthopaedic Technologists Harpal S. Khanuja, MD AAOS Allied Health Program Director

# Overview

This course will feature presentations about innovations in immobilization, casting complication causes and solutions, and the casting procedure. Demonstration and return demonstration will include application and removal of a short arm cast, thumbspica cast, short leg cast, and a sugar tong splint. Intended Audience Orthopaedic allied healthcare professionals, including orthopaedic technologists, orthopaedic physician's assistants, orthopaedic nurses, physician extenders, athletic trainers and orthotists.

# Program

8:15 AM	<b>Casting Complications</b> Cynthia Henderson, OTC, CO		
	Identify causes and solutions of common casting complications.		
8:45 AM	<b>Demonstration: Short Arm Cast</b> Cynthia Henderson, OTC, CO		
	Demonstrate the steps involved in the application and removal of a short arm cast		
9:05 AM	Demonstration: Thumb Spica Cast		

Nicole Williams, OTC, MBA

Demonstrate the steps involved in the application and removal of a thumb spica cast.

- 9:30 AM Break
- 9:45 AM Casting Return Demonstration: Short Arm and Thumb Spica Casts Cynthia Henderson, OTC, CO Sean Conkle, OTC Nicole Williams, OTC, MBA Robyn Masseth, OTC Kristie Woolems, OTC Samuel A. Brown, MS, OTC
- 11:45 AM Demonstration: Sugar Tong Splint Kristie Woolems, OTC
- 12:05 PM Casting Return Demonstration: Sugar Tong Splint Cynthia Henderson, OTC, CO Sean Conkle, OTC Nicole Williams, OTC, MBA Robyn Masseth, OTC Kristie Woolems, OTC Samuel A. Brown, MS, OTC

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

# 330 EDUCATIONAL PROGRAMS

12:30 PM	Lunch
1:30 PM	Demonstration: Short Leg Cast Robyn Masseth, OTC
2:15 PM	Break
2:30 PM	Casting Return Demonstration: Short Leg Cast Cynthia Henderson, OTC, CO Sean Conkle, OTC Nicole Williams, OTC, MBA Robyn Masseth, OTC Kristie Woolems, OTC Samuel A. Brown, MS, OTC
5:00 PM	History & Innovations in Immobilization Sean Conkle, OTC
5:45 PM	Adjournment

# **CAST 2 - Casting and Splinting - Advanced**

Wednesday, March 2 8:15 AM – 5:45 PM Rosen Centre Hotel, Junior Ballroom G Course Co-Chairs: Cynthia Henderson, OTC, CO Continuing Education Chair, National Association of Orthopaedic Technologists Harpal S. Khanuja, MD AAOS Allied Health Program Director

#### Overview

This course will feature presentations about necessary supplies and procedures for advanced casting. Demonstration and return demonstration will include Muenster, PTB, and Total Contact Casting. Intended Audience Orthopaedic allied healthcare professionals, including orthopaedic technologists, orthopaedic physician's assistants, orthopaedic nurses, physician extenders, athletic trainers and orthotists.

#### Program

8:15 AM Demonstration: Muenster Cast Nicole Williams, OTC, MBA

Demonstrate the steps involved in the application and removal of a Muenster Cast.

9:00 AM Demonstration: Patellar Tendon-Bearing Cast (PTB) Cynthia Henderson, OTC, CO

> Demonstrate the steps involved in the application and removal of a Patellar Tendon-Bearing Cast (PTB).

9:45 AM Break

10:00 AM Casting Return Demonstration: Muenster and PTB Casts Cynthia Henderson, OTC, CO Sean Conkle, OTC

# Kristie Woolems, OTC Samuel A. Brown, MS, OTC 12:30 PM Lunch 1:30 PM Total Contact Casting History & Treatment Options Cynthia Henderson, OTC, CO 2:00 PM Break 2:15 PM Demonstration: Total Contact Cast Cynthia Henderson, OTC, CO 3:00 PM Casting Return Demonstration: Total Contact Cast Cynthia Henderson, OTC, CO Sean Conkle, OTC Nicole Williams, OTC, MBA Robyn Masseth, OTC Kristie Woolems, OTC Samuel A. Brown, MS, OTC

Nicole Williams, OTC, MBA

Robyn Masseth, OTC

# 5:45 PM Adjournment

# NUR1 - Best Practices for the Patient Experience, Pain Management, and Hand Trauma Thursday, March 3 7:30 AM – 12:00 PM Rosen Centre Hotel, Junior Ballroom F Course Chair:

Crystal Heishman MSN, RN, CIC, ONC

# Overview

The collective expertise of the inter-professional team is highlighted in this Best Practices Course. Discussions will entail a look at the outpatient experience for patients and families, providing patient-centered care at end-of-life, pain management modalities for specialty populations, and team member contributions in the care of the severely injured hand. Intended Audience Nurses, orthopaedic technologists, physician assistants, physicians, physical and occupational therapists and other allied health professionals who care for orthopaedic patients in the acute care setting, off ce and outpatient clinics.

# Program

7:30 AM	Welcome		
	Tandy Gabbert, MSN, RN, ONC		
	NAON Director of Education		
	Harpal S. Khanuja, MD		
	AAOS Allied Health Program Director		
	Robert Lonadier, MSN, RN, BN, ONC		
	2015-2016 NAON President		

Introduction

Crystal Heishman MSN, RN, CIC, ONC

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- 7:45 AM Cultivating Patient Experience in Outpatient Orthopaedics using Design Thinking and Quality Improvement Methods Andrea Shaffer Ellis, MSN, RN, CPN Julia Elkus, BA, MBA
- 8:30 AM The Elephant in the (Hospital) Room: Tools for Talking About Palliative Care with Orthopaedic Patients and Providers James Hayden, MD, PhD Heidi Funke, RN, BSN, MA Kimberly Rich, MS, RN, GNP-BC, FNP-BC
- 9:15 AM Break
- 9:30 AM Pain Protocols: A Rational Approach For Change Jennifer E Quastler, RN, BSHA, ONC, CLSSGB Daniel M. Adair, MD
- 10:15 AM Improving Post-Operative Pain Control for Opioid Tolerant Patients Undergoing Orthopaedic Spine Surgery Robin Lynne Evans, RN, MSN Mary Beth Pais, RN, MNEd, ONC
- 11:00 AM Pharmacology of Orthopaedic Surgery: Pain Management, Minimizing Postoperative Anemia, Venous Thromboprophylaxis, Preventing Postoperative Complications MaryAnne Cronin, MS, PharmD, BCPS Ayal Segal, MD
- 11:30 AM The Severely Injured Hand Michael Nancollas, MD
- 12:00 PM Adjournment

## NUR2 - The Inter-Professional Team in Orthopaedic Trauma and Spine Pathology Thursday, March 3

1:30 PM – 6:00 PM Rosen Centre Hotel, Junior Ballroom F Course Chair:

Crystal Heishman MSN, RN, CIC, ONC

# Overview

Patients who sustain Orthopaedic Trauma or experience spine conditions are treated in diverse settings throughout the healthcare continuum. This course highlights current innovative approaches and various team members' contributions. Intended Audience Nurses, orthopaedic technologists, physician assistants, physicians, physical and occupational therapists and other allied health professionals who care for orthopaedic patients in the acute care setting, off ce and outpatient clinics.

#### Program 1:30 PM

Welcome Tandy Gabbert, MSN, RN, ONC NAON Director of Education Harpal S. Khanuja, MD AAOS Allied Health Program Director Robert Lonadier, MSN, RN, BN, ONC 2015-2016 NAON President

Introduction Crystal Heishman MSN, RN, CIC, ONC

- 1:45 PM Multidisciplinary Management of Spinal Trauma Patients Angela N. Pearce, MS, RN, FNP-C, ONP-C Mohammed Khaleel, MD
- 2:30 PM Care Across the Continuum Geriatric Fracture Program at a Level One Trauma Facility Kelly Jackson, FNP-C, MSN, RNFA, GRN, FLS Brian Miller, MD Mary Bachhuber, RN, MSN, CPHQ
- 3:15 PM Cervical Myelopathy Dorothy Pietrowski, RN, MSN, ACNP, ONC
- 3:45 PM Break
- 4:00 PM Creating a Community Orthopedic Trauma and Acute Care Program Zachary Adler, MD Corey Lieber, MD Marisa R. Swain, MSN, RN, CNS-BC, ONC
- 4:45 PM Spinal Surgery Implants From Nuts to Bolts! A Historical Perspective on the Current State of the Art and Future Trends Sanjeev Suratwala, MD Kathleen Altner, RN, MS, ANP
- 5:30 PM Acute to Chronic Pain Transition in Extremity Trauma: Biopsychosocial Factors Involved and Preventive Interventions Melanie Berube, MScN, NP, CNCC (c), PhD (cand.)

6:00 PM Adjournment

# NUR3 - Innovations in Care: New Approaches with Pelvic Fractures and Total Joint Patients

Friday, March 4 7:30 AM – 12:00 PM

# Rosen Centre Hotel, Junior Ballroom F

Course Co-Chairs: Elizabeth Turcotte, MSN RN-BC, ONC Walter Leclair, MD

# Overview

Healthcare Reform has generated opportunities to explore and create best practices for best outcomes. Discussions will include improving outcomes following pelvic fracture, improving bone health, improving population health, improving collaboration and bundled payments. Intended Audience Nurses, orthopaedic technologists, physician assistants, physicians, physical and occupational therapists and other allied health professionals who

An alphabetical faculty f nancial disclosure list can be found starting on page 334.

care for orthopaedic patients in the acute care setting, off ce and outpatient clinics.

Program 7:30 AM	<b>Welcome</b> Tandy Gabbert, MSN, RN, ONC	for orthopaedic patients in the acute care setting, off ce and outpatient clinics.	
	NAON Director of Education Harpal S. Khanuja, MD AAOS Allied Health Program Director Robert Lonadier, MSN, RN, BN, ONC 2015-2016 NAON President Introduction Elizabeth Turcotte, MSN RN-BC, ONC Walter Leclair, MD	Program 1:30 PM	Welcome Tandy Gabbert, MSN, RN, ONC NAON Director of Education Harpal S. Khanuja, MD AAOS Allied Health Program Director Robert Lonadier, MSN, RN, BN, ONC 2015-2016 NAON President
7:45 AM	Pelvic Fractures Made Simple Miki Patterson, PhD, NP, ONP-C Walter Leclair, MD		Introduction Elizabeth Turcotte, MSN RN-BC, ONC Miho Tanaka, MD
8:30 AM	Incorporating Strong Bones Program into the Total Joint Arthroplasty Population Stephanie Fegley, MSN, FNP-BC Angela Godek, BSN, RN-BC James Rubano, MD	1:45 PM	Ten Year Follow Up of Rotating Platform Total Knee Arthroplasty in Patients Under 60 Years of Age Susanne L. Porter, RN, MSN, FNP-C, CRNFA, CNOR Robert S. Gorab, MD
9:15 AM	Break	2:30 PM	Chasing 0, Best Practices for the Reduction of Surgical Site Infections in the Total Joint
9:30 AM	<b>Patient Centered Population Health</b> Michelle Giarrusso, RN, BSN, MS, MBA Sarah Clayton, MIS, RHIA		Replacement Patient Eugene S. Krauss, MD Stephanie Russo, RN, MSN, NE-BC
10:30 AM	Navigating Bundle Payments: One Health System's Success Story Jennifer Smith, MSN, APRN, BC Kate S Gillespie, RN, MBA, NE-BC	3:15 PM	Utilizing a Protocol to Reduce Postoperative Urinary Retention in Total Joint Arthroplasty Joseph Nessler, MD Gina L Anderson-Malum, BSN, RN, ONC
11:15 AM	JOINT-ing Together - How We Brought Multiple Surgical Practices To The Table and Created	4:00 PM	Break
	a Successful Joint Replacement Program With Impressive Outcomes Barbara J Brush, CNS-BC, MSN, RN Matthew W Lawless, MD	4:15 PM	Women's Sports Medicine: What is It, and Why Should We Care? Miho Tanaka, MD
12:00 PM	Scott Johnson, PT Adjournment	4:45 PM	<b>Improving Outcomes for Joint Replacement</b> <b>Patients</b> Laura Williams, MSN, CNS, ONC, CCNS Summer Bragg, MSPT, MBA
NUR4 - Total Joint Outcomes and Specialty Orthopaedic Topics Friday, March 4		5:30 PM	Radiographic Interpretation in Orthopaedic Trauma Erik Hasenboehler, MD
1:30 PM – 6:00 PM Rosen Centre Hotel, Junior Ballroom F Course Co-Chairs: Elizabeth Turcotte, MSN RN-BC, ONC Miho Tanaka, MD		6:00 PM	Adjournment

# Overview

This session highlights research and practice outcomes that have improved the quality of Total Joint care. Sessions on Sports Medicine and Radiographic Interpretation will enhance

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knowledge. Intended Audience Nurses, orthopaedic technologists,

physician assistants, physicians, physical and occupational therapists and other allied health professionals who care

# 2016 Disclosures



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Shin Yokoya, MD This individual reported nothing to disclose

Yasukazu Yonetani, MD, PhD This individual reported nothing to disclose

Noritaka Yonezawa This individual reported nothing to disclose

Michael Christopher Yonz, MD This individual reported nothing to disclose

Disclosures

Brad J. Yoo, MD Synthes: Research support

Je Hyun Yoo, MD, PhD This individual reported nothing to disclose

Jeong Joon Yoo, MD Corentec: IP royalties

Jung U. Yoo, MD Osiris Therapeutics: IP royalties

Byung Jo "Victor" Yoon, MS Pf zer: Stock or stock Options

Caroline Yoon Alphatec Spine: Stock or stock Options Biomet: IP royalties; Research

support Meditech: IP royalties; Stock or stock Options Medyssey: Stock or stock Options

National Institutes of Health (NIAMS & NICHD): Research support

Nuvasive: Research support

Pf zer: Research support Phygen: Stock or stock Options Stryker: IP royalties

Jong Pil Yoon, MD This individual reported nothing to disclose

Kang Sup Yoon, MD This individual reported nothing to disclose

**Patrick Yoon, MD** Arthrex, Inc: Paid consultant Orthof x, Inc.: Paid consultant

Pil Whan Yoon, MD This individual reported nothing to disclose

Richard S. Yoon, MD This individual reported nothing to disclose

S. Tim Yoon, MD, PhD Alphatec Spine: Stock or stock Options Biomet: Paid consultant; Research support Meditech: Paid consultant Meditech Advisor: IP royalties Meditech Advisor: Stock or stock Options Medyssey: Stock or stock Options Nuvasive: Research support Phygen: Stock or stock Options Stryker: IP royalties; Paid consultant

Sun Jung Yoon, MD, PhD This individual reported nothing to disclose

Taek Rim Yoon, MD, PhD This individual reported nothing to disclose

Munehito Yoshida, MD This individual reported nothing to disclose

Yasuhisa Yoshida This individual reported nothing to disclose

Ichiro Yoshimura, MD This individual reported nothing to disclose

Noriko Yoshimura, MD This individual reported nothing to disclose

Katsuhito Yoshioka, MD Bayer Healthcare research grant: Other f nancial or material support

Shinichi Yoshiya, MD This individual reported nothing to disclose

Thomas Youm, MD Arthrex, Inc: Paid consultant; Paid presenter or speaker Smith & Nephew: Paid consultant; Paid presenter or speaker

Ernest Young, MD This individual reported nothing to disclose

Simon Young, MD, FRACS Stryker: Research support Vidacare: Research support

Alastair S. E. Younger, MD Acumed, LLC: Paid consultant; Research support Biomimetic: Research support Cartiva: Paid presenter or speaker Smith & Nephew: Research support Synthes: Research support Wright Medical Technology, Inc.: Paid consultant; Paid presenter or speaker; Research support Zimmer: Research support

Victoria Ann Younger, BS This individual reported nothing to disclose

Sohail Yousaf, MRCS This individual reported nothing to disclose lim A. Youssef, MD Amedica: IP royalties; Paid consultant: Stock or stock Options Benvenue: Stock or stock Options Globus Medical: Research support Integra: IP royalties; Paid consultant; Research support ISD: Stock or stock Options Nuvasive: IP royalties; Paid consultant: Research support Osprey: IP royalties Paradigm Spine: Stock or stock Options Promethean Surgical: Stock or stock Options Providence Medical: Stock or stock Options Spinal Ventures: Stock or stock Options Spinicity: Stock or stock Options Vertif ex: Research support; Stock or stock Options Charles Cong Yu, MD This individual reported nothing to disclose

Jun Yu, MS This individual reported nothing to disclose

Stephen Yu, MD This individual reported nothing to disclose

Zhu Yuan, MD This individual reported nothing to disclose

David Yucha, MD Biomet: Paid consultant Biomet Sports Medicine: Paid presenter or speaker Fusion/Isomeric Pharmacies: Paid consultant Mitek: Paid consultant

Andrew Yun, MD Smith & Nephew: IP royalties; Paid presenter or speaker

Jayson D. Zadzilka, MS This individual reported nothing to disclose

Stefano Zaffagnini, MD DePuy, A Johnson & Johnson Company: Paid presenter or

speaker I + srl.: Other f nancial or material support

Smith & Nephew: Paid presenter or speaker Springer.: Publishing royalties,

f nancial or material support

Talal Zahoor, MD This individual reported nothing to disclose

Musa Zaid, MD This individual reported nothing to disclose

Charalampos Zalavras, MD This individual reported nothing to disclose Ira Zaltz, MD DePuy, A Johnson & Johnson Company: Research support Pivot Medical: Paid consultant

Lester Zambrana, BA This individual reported nothing to disclose

Jay Michael Zampini, MD Biomet: Paid consultant

Biagio Zampogna, MD This individual reported nothing to disclose

Gerardo Zanotti Sr This individual reported nothing to disclose

Nicholas Zarkadis, DO This individual reported nothing to disclose

Joseph M. Zavatsky, MD Amendia: Paid consultant Biomet: IP royalties; Paid consultant DePuy, A Johnson & Johnson Company: Paid consultant Innovative Surgical Solutions: Stock or stock Options

Safe Wire: Stock or stock Options Mohamed Zbaeda, MBChB

This individual reported nothing to disclose

Ian M. Zeller, MS This individual reported nothing to disclose

David Steven Zelouf, MD This individual reported nothing to disclose

Wenjing Zeng, MD This individual reported nothing to disclose

Timothy James Zerhusen Jr, BS This individual reported nothing to disclose

Miltiadis H. Zgonis, MD This individual reported nothing to disclose

Alan Zhang, MD This individual reported nothing to disclose

Caiyan Zhang, MS This individual reported nothing to disclose

Jun Zhang, PhD This individual reported nothing to disclose

Meng Zhang, PhD This individual reported nothing to disclose

Qiuxia Zhang, MD This individual reported nothing to disclose

Steven Zhang, BA This individual reported nothing to disclose Wei Zhang, PhD This individual reported nothing to disclose

Xudong Zhang This individual reported nothing to disclose

Yue Zhang This individual reported nothing to disclose

Chunfeng Zhao, MD This individual reported nothing to disclose

Huaqing Zhao, PhD This individual reported nothing to disclose

Kristin D. Zhao This individual reported nothing to disclose

Liying Zheng, PhD This individual reported nothing to disclose

Xuanlin Zheng, MD This individual reported nothing to disclose

Hanbing Zhou, MD This individual reported nothing to disclose

Xiang Zhou, PhD This individual reported nothing to disclose

Mark Zhu This individual reported nothing to disclose

Suwei Zhu, PhD Grandhope Biotech: Employee; IP royalties; Stock or stock Options

Max Zhukovsky, BS This individual reported nothing to disclose

Bashir A. Zikria, MD, MSc This individual reported nothing to disclose

Joseph Zimmerman, MD This individual reported nothing to disclose

Lewis Evan Zionts, MD This individual reported nothing to disclose

Bruce Ziran, MD, FACS Acumed, LLC: Paid consultant Powers Medical Group: Stock or stock Options Synthes: Paid consultant Tekartis: Stock or stock Options

Jianchun Zong, PhD This individual reported nothing to disclose

Joseph D. Zuckerman, MD AposTherapy, Inc.: Stock or stock Options Exactech, Inc: IP royalties Gold Humanism Foundation: Unpaid consultant

- Hip Innovation Technology: Stock or stock Options
- J3Personica/Residency Select: Unpaid consultant
- Musculoskeletal Transplant Foundation: Paid consultant
- SLACK Incorporated: Publishing royalties, f nancial or material support
- Thieme, Inc.: Publishing royalties, f nancial or material support
- Wolters Kluwer Health Lippincott Williams & Wilkins: Publishing royalties, f nancial or material support

David Zukor, MD This individual reported nothing to disclose

Steven Zumbrun, PhD This individual reported nothing to disclose Thomas Zumbrunn This individual reported nothing to disclose

Justin Zumsteg, MD This individual reported nothing to disclose

Matthias Zumstein, MD Medacta International: Paid consultant David Zurakowski, PhD This individual reported nothing to disclose

Corinne Andrea Zurmuehle, MD Mathys Ltd: Employee

## Annual Meeting of the American Academy of Orthopaedic Surgeons



## **2017** Annual Meeting

March 14 – 18 San Diego, California

## **2018** Annual Meeting

March 6 – 10 New Orleans, Louisiana



All Academy members will automatically receive an Annual Meeting Registration Packet in mid-October.

## I learn by

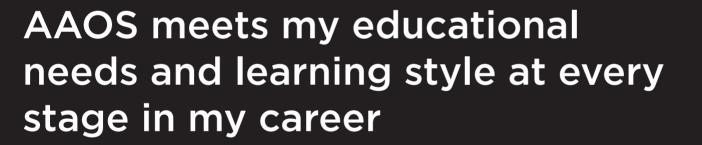
doing

## watching

## teaching



reviewing



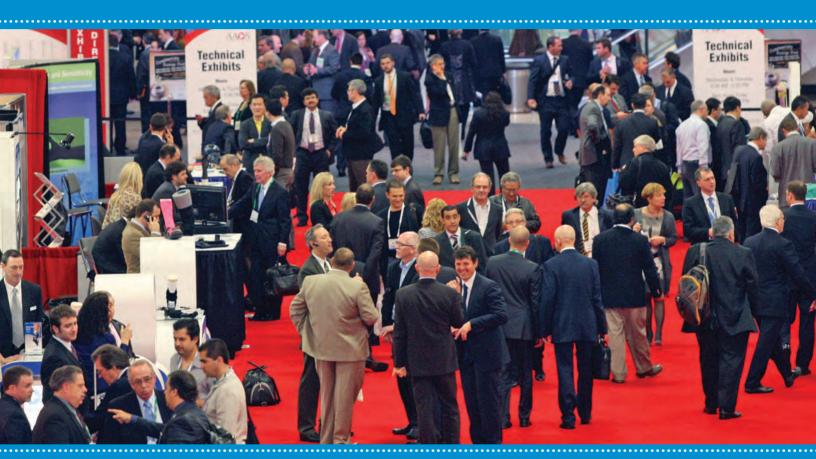
- OITE, Board Part I, Board Part II and MOC study tools and CME courses build my test-taking confidence.
- Orthopaedic Video Theater, AAOS eBooks, Self-Assessment Exams, Webinars and CME Courses keep me at the top of my game.
- AAOS coding products, AAOS Member advantage programs, Ortholnfo and patient education resources keep my office running smoothly and my patients informed.

#### To fill your lifelong education needs, visit the

AAOS Resource Center Academy Hall C and Booth#1933 in Hall B aaos.org/store



# Technical Exhibits



## **Technical Exhibits**

#### Halls A – B

The Technical Exhibits provide you with the opportunity to:

- View and discuss the most current technologies.
- Evaluate products and services f rst-hand.
- Attend product demonstrations.
- Plan your purchases of products and services.

Visiting the Technical Exhibits assists you in providing a higher level of care to your patients and effectively managing your practice. Over 700 companies are displaying their products and services.

### **Exhibit Hours**

Wednesday and Thursday 9:00 AM – 5:00 PM

Friday 9:00 AM – 4:00 PM

### **Unopposed Exhibit Time**

Wednesday through Friday 12:30 – 1:30 PM

#### **Complimentary Beverage Breaks**

Booths 1509, 2493, 3209

Wednesday and Thursday 3:30 – 4:00 PM

Friday 10:00 – 10:30 AM

#### While in the Exhibit Hall AAOS Redemption Centers

#### Booths 538, 2593 and 4195

Visit the Redemption Centers to pick up a complimentary tote bag and AAOS T-shirt. Enter to win an iPad, GoPro camera, and more! Check your registration packet for special coupons, redeemable exclusively at AAOS Redemption Centers.

#### Beverage Breaks

#### Booths 1509, 2493 and 3209

Complimentary beverages are served in the exhibit hall on Wednesday and Thursday from 3:30 to 4:00 PM between scientif c sessions, and on Friday at 10:00-10:30 AM

#### **Food Service**

Enjoy complimentary food and beverage items supplied by many of the exhibitors in their booth. Food service areas located throughout the exhibit hall will offer a variety of food and beverage options for purchase.

#### **AAOS Bistro**

The AAOS Bistro provides a comfortable setting for exhibitors and attendees to eat, meet and network. Located directly on the show f oor with an all-inclusive buffet lunch and available table reservations, Wednesday through Friday from 11:00 AM to 2:30 PM. Tickets can be purchased in Academy Hall C or at the AAOS Bistro.

#### **Exhibit Hall Social**

Booths 1509, 2493 and 3209

Be sure to stop by the exhibit hall on Friday from 2:30-3:30 PM to enjoy a favorite treat – warm mini donuts, or an apple or banana. Complimentary beverages will also be available.

#### **Seating Areas**

Park benches are placed throughout the exhibit hall and additional seating is available at the food service areas and in the lounges located in Exhibit Halls A-B.

#### **Navigating the Exhibit Hall**

- Stop at Internet Connections kiosks located in the lobby areas to view a listing of all exhibitors, their contact and product information, and create and print your personal *My Expo Plan.*
- Pick up an updated f oor plan and exhibitor listing at the *You Are Here* signs located at select entrances to the Exhibit Hall. These signs and maps are color coded to help you f nd your way around the exhibit hall.
- Booth numbers are located on the aisle carpet and aisle numbers are on signs hanging overhead.
- There's no need to tote a bulging bag or cram papers in your suitcase when you leave. Simply present your badge to exhibitors whose literature you want to receive. After scanning the QR code, exhibitors will be able to mail materials directly to you after the meeting, enabling you to spend more time in face-to-face discussions with vendors.

# Ask an Expert Schedule – Booth 672, Hall A

TIME	ΤΟΡΙϹ	EXPERTS	
Wednesday, March 2			
10:30 – 11:15 AM	KNEE	Giles R. Scuderi, MD	Kelly Vince, MD
11:30 AM – 12:15 PM	HIP ARTHROSCOPY AND JOINT PRESERVATION	Joseph C. McCarthy, MD	Marc J. Philippon, MD
1:30 – 2:15 PM	HAND	David L. Nelson, MD	David C. Ring, MD
2:30 – 3:15 PM	SPORTS MEDICINE	James R. Andrews, MD	Mark E. Steiner, MD
3:30 – 4:15 PM	HIP AND KNEE	David G. Lewallen, MD	Wayne G. Paprosky, MD
Thursday, March 3			
9:30 – 10:15 AM	SHOULDER	Mark A. Frankle, MD	Scott P. Steinmann, MD
10:30 – 11:15 AM	HIP AND KNEE	Adolph V. Lombardi, Jr. MD	
11:30 AM – 12:15 PM	SPINE	Sheeraz Qureshi, MD Paul T. Rubery, Jr., MD	
1:30 – 2:15 PM	PEDIATRIC	Brian Snyder, MD, PhD Stuart L. Weinstein, MD	
2:30 – 3:15 PM	HIP	John J. Callaghan, MD	Allan E. Gross, MD, FRCSC, Prof
3:30 – 4:15 PM	TUMOR	Joel Mayerson, MD	Benjamin J. Miller, MD
Friday, March 4			
9:30 – 10:15 AM	HIP	Clive P. Duncan, MD, MSc, FRCSC	Douglas E. Padgett, MD
10:30 – 11:15 AM	FOOT AND ANKLE	Lew C. Schon, MD Keith L. Wapner, MD	
11:30 AM – 12:15 PM	SHOULDER	Carl J. Basamania, MD Joseph D. Zuckerman, MD	
1:30 – 2:15 PM	HIP AND KNEE	Daniel J. Berry, MD	Aaron G. Rosenberg, MD, FACS
2:30 – 3:15 PM	TRAUMA	Kenneth J. Koval, MD	Christian Krettek, MD

Take this opportunity to present a perplexing case to an expert in orthopaedics. We invite you to bring your HIPAA-compliant case challenges on a f ash drive 10 minutes prior to the start of the session and present them for diagnosis and recommendation. We encourage audience participation to complement the exchange of ideas. Pick a session and participate. No ticket needed, sessions are totally free!



# Technology Theater Schedule – Booth 2987, Hall B (formerly known as the Electronic Skills Pavilion)

Presentations that showcase the latest technology and applications beneficial to orthopaedic surgeons and their staffs. Totally free, no ticket needed!

# Wednesday, March 2

# 10:30 - 11:30 AM

11:45 AM - 12:30 PM

# The Way I See It....

**How Social Media is Changing Healthcare Building Your Practice Managing Your Online Reputation** 

Presenters: Howard Luks, MD, Bill Champion, MD, Roger Holstein, MD

No podiums, but plenty of passion. Learn the "whys" behind what the experts do. Benef t from the inside story-what each presenter wants to know about a top-of-mind issue.

# Wednesday, March 2

# **Digital Templating – Make the Move**

Presenter: A. Herbert Alexander, MD PACS is widespread though not all have adapted digital templating. Presentation highlights: features of good digital templating software, techniques common to templating software, template libraries, PACS integration.

# Wednesday, March 2

# **Incorporating Smartphone Apps into Your Sports Medicine Practice: Linking Community With Providers to Provide Real-time Care**

Presenters: Eric C. Makhni, MD, MBA and Vasilios Moutzouros, MD In sports medicine, timely care of athletes' injuries is of utmost

importance. Learn how we connect trainers, therapists, and physicians right when the injury occurs.

# Wednesday, March 2

# **Incorporating Electronic Outcomes Reporting into Your Orthopaedic Practice**

Presenters: Eric C. Makhni, MD, MBA and Nikhil N. Verma, MD Want to track clinical outcomes but don't have the manpower? Learn how electronic systems can help you track outcomes AND improve practice eff ciency as well.

# Wednesday, March 2

# Video Tech for the Orthopaedic Practice: A **Comprehensive Review**

Presenter: Ryan J. Grabow, MD

Don't miss your opportunity to experience this introduction to the latest video tech and accessories available for your practice. Recording, Streaming, Storage - We cover it all.



### 1:30 - 2:15 PM

2:30 - 3:15 PM

3:30 - 4:15 PM

NIHPromis, and DADOS that can provide f exible solutions for

The Future of Video Use in Your Practice: How to Use Video to Increase Clinic Eff ciency and Patient Satisfaction Presenter: Ryan J. Grabow, MD

In the age of YouTube, video is everywhere - Is your practice ready? Learn how to use video to increase staff productivity, maximize clinic eff ciency, and make your patients happy. Welcome to the future.

# **Thursday, March 3**

# **HIPAA Without the Hassle – Integrating Compliant Habits** Presenter: Orrin Franko, MD

A surgeon's perspective on how to integrate HIPAA into your practice without excessive inconvenience: keeping case logs, communicating with staff and colleagues.

# **Thursday, March 3**

**HOTTEST New Apps for 2016** 

Presenter: Orrin Franko, MD 2016 Update of the "must-have" iPhone and iPad apps for orthopaedic surgeons. Will highlight the newest technologies for your practice and personal life.

# Friday, March 4

# **Defending Your Internet Reputation**

You are being rated on many online forums that are backed by Wall Street f rms, whether you like it or not. You need to take charge or risk losing the battle for your reputation.

# Friday, March 4

# Off ce Websites: Optimize Yours to Save You Time and Monev

Presenter: David L. Nelson, MD

Websites are much more than advertising: they are a way to save money and time. Learn how to put your site to work for you.

# Friday, March 4

# Trends in Wearable Technology in Orthopaedic Surgery

Presenter: Christian Veillette, MD

Learn about the challenges involved with the adoption of wearable technologies, recent developments in the wearables market and a conceptual framework for understanding the potential of wearable technology to revolutionize your surgical practice.

# Friday, March 4

# How 3D Anatomy Will Change Surgeon Education

Presenter: Orrin Franko, MD

An overview of existing and upcoming 3D anatomy iPad apps that will revolutionize the training, continuing education, and certif cation of surgeons.

# Friday, March 4

# **HOTTEST New Apps for 2016**

Presenter: Orrin Franko, MD 2016 Update of the "must-have" iPhone and iPad apps for orthopaedic surgeons. Will highlight the newest technologies for your practice and personal life

**TECHNICAL EXHIBITS** 433

# Seeing Is Believing: Making Polished Videos for Presentation

Presenter: Randipsingh R. Bindra, MD This course will demonstrate the technique of trimming and joining high-def nition clips captured on your camera or smartphone to make a slick educational video with voice-over.

# **Thursday, March 3**

Thursday, March 3

Incorporating Wearable Video Capture Technology into

9:30 - 10:15 AM

10:30 - 11:15 AM

Your Practice: Education, Coaching, and Self-Improvement Presenter: Eric C. Makhni, MD, MBA and Charles M. Jobin, MD Join us in learning how you can incorporate wearable video recording technology into your practice! This session will review pertinent technical pearls, as well as how wearable technology can be a valuable coaching tool for you and your colleagues.

# **Thursday, March 3**

# 11:30 AM - 12:15 PM

1:30 - 2:15 PM

2:30 - 3:15 PM

3:30 - 4:15 PM

**Open Up for Patient Reported Outcomes in Orthopaedics** Presenter: Christian Veillette, MD

Several barriers limit the widespread collection, management, sharing and integration into clinical decisions of patient reported outcome measures across the orthopaedic community. Learn about open source tools and initiatives including RedCAP, your electronic data capture needs but not break your budget.

# Thursday, March 3

10:30 - 11:15 AM

11:30 AM - 12:15 PM

1:30 - 2:15 PM

2:30 - 3:15 PM

# **CONTINUING MEDICAL EDUCATION**

AAOS is the sole provider of Continuing Medical Education (CME) credits at the annual meeting between the hours of 7:30 AM to 6:00 PM. CME credit is not provided for presentations in the exhibit hall or time spent viewing the technical exhibits.

# **AAOS EXHIBITS COMMITTEE**

The Exhibits Committee is responsible for evaluating the companies that exhibit at the annual meeting. The committee also reviews the exhibits on-site for content, presentation and compliance with FDA guidelines. During the annual meeting, Joseph T. Moskal, MD, chair of the committee, can be reached onsite at the AAOS Exhibits Off ce located in Lobby C of Orange County Convention Center. Joseph T. Moskal, MD, Roanoke, VA, Chair Jonathan J. Carmouche, MD, Roanoke, VA Karen S. Duane, MD, Newberry, FL Steven I. Grindel, MD Milwaukee, WI Tim P. Lovell, MD, Spokane, WA Vivek Mohan, MD, Naperville, IL Jeffrey M. Schwartz, MD, FACS, New York, NY Fernando Techy, MD, Johnstown, CO Scott D. Weiner, MD Akron, OH Dean Ziegler, MD, Milwaukee, WI

# **EXHIBITORS' ADVISORY COUNCIL**

A Technical Exhibitors' Advisory Council has been established to serve in an advisory capacity to the Academy on issues affecting exhibitors. You are encouraged to contact the Council members with your concerns. Melanie Schimmer, DJO Global, Chair Marie Bukowski, Wright Medical Technology Christina Cruz, LocumTenens.com Steven Marchese, FUJIFILM Medical Systems USA Brent Mellecker, FusionOne, Inc. Renee Power, Arthrex Ana Sermeno-DeJesus, Hospital for Joint Diseases at NYU Langone Medical Center Barbara Sharpe, Stryker Instruments Tommy Thompson, Smith & Nephew Inc. **ANNUAL MEETING SPONSORS** Thank you! The American Academy of Orthopaedic Surgeons wishes to thank the following companies for their f nancial support of the AAOS 2016 Annual Meeting promotional opportunities:

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Johnson & Johnson	Stryker
DJO Global	Think Surgical
Houston Methodist Hospital	Zimmer Biomet

# **PRODUCT LISTINGS**

For your convenience, the technical exhibiting companies are listed alphabetically and the products/services they offer are identif ed by the following codes.

AM	Anatomical Model	
AO	Allied Organizations	
AS	Arthroscopic Systems	
BLD	Blood Products	
BNE	Bone Products	
BB	Business to Business/OEM	
CS	Casting Supplies & Equipment	
COM	Computer Hardware/Software	
DEV	Devices	
DI	Diagnostic Equipment	
EDU	Education – Patient and Physician	
EMR	Electronic Medical Records	
FPD	Facility Planning & Design	
FIN	Financial Planning/Investments	
FRST	First-Time Exhibitor	
IMG	Image Guiding/Navigation Systems	
Ι	Implants	
MKT	Market Research Services	
MS	Medical Supplies	
MRI	MRI	
0	Orthoses	
OTH	Other	
PH	Pharmaceuticals	
PR	Physician Recruitment	
PM	Practice/Off ce Management	
Р	Prostheses	
PUB	Publishers	
REHB	Rehabilitation/Exercise Equipment	
SF	Shoes & Foot Supplies	
SG	Soft Goods (Supports)	
SURG	Surgical Equipment	
SI	Surgical Instruments	
Т	Tissue Products	
XRAY	X-Ray	

Exhibitor Listing as of January 13, 2016	COMPANY BOOTH NO.	COMPANY BOOTH NO.
The American Academy of Orthopaedic Surgeons invites you to visit the technical exhibits as a part of your educational experience at the annual meeting. The products displayed in the	Jupiter, FL Phone: 561-876-5492 Web: www.accelleratedbiologics.com Product Codes: BLD, EDU, FRST, T	AlloSource2835Centennial, COPhone: 720-873-0213Web: www.allosource.orgProduct Codes: BNE, OTH, T
technical exhibits area and the uses suggested by the manufacturer do not represent an endorsement nor imply that the products have been evaluated or approved by the American Academy of Orthopaedic Surgeons.	Active Implants Corporation3864Driebergen, Utrecht3864Netherlands9hone: 31 343200140Web: www.activeimplants.com9roduct Codes: DEV, I	Allotech Co., Ltd.764Namyangju-si, Gyeonggi-doRepublic of KoreaPhone: 82 315557308Web: www.allotech.krProduct Codes: SI
COMPANY BOOTH NO	Naples, FL	Alpine Pharmaceuticals546San Rafael, CASan Rafael, CA
<b>3D Systems</b> 101 Golden, CO Phone: 303-273-5344	5 Phone: 239-643-8023 Web: www.aculux.net Product Codes: FRST, SURG, SI	Phone: 415-451-6978 Web: www.alpinepharm.com Product Codes: FRST, PH
Web: www.3dsystems.com Product Codes: AM, COM, DEV, OTH 3M Health Care 260 St Paul, MN Phone: 800-228-3957	Acumed715Hillsboro, ORPhone: 888-627-9957Web: www.acumed.netProduct Codes: DEV, I, SURG, SI	AME/Orthotec International2722Miami, FLPhone: 305-662-2855Web: www.artroscopia.netProduct Codes: AS, I, SURG, SI
Web: www.3m.com/immobilization Product Codes: CS, DEV A AAOS Advocacy Booth 213	Advanced Endoscopy Devices, Inc. 2604 Canoga Park, CA Phone: 818-227-2720 x107 Web: www.aed.md Product Codes: AS, OTH, SI	Amedica Corp.3044Salt Lake City, UTPhone: 801-839-3536Web: www.amedicacorp.comProduct Codes: BNE, I, T
Washington, DC Phone: 202-548-4150 Web: www.aaos.org Product Codes: EDU, OTH AAOS Board of Councilors 213	Advanced Healing MD 3414 Sanger, TX Phone: 310-401-7419 Product Codes: CS, FRST	American 3B Scientif c1711Tucker, GAPhone: 678-405-5612Web: www.3bscientif c.comProduct Codes: AM, EDU, REHB, SG
AAOS Exhibit Hall Resource 193	Advanced Orthopaedic3755Solutions, Inc.Torrance, CAPhone: 310-533-9966Web: www.aosortho.com	American Express OPEN1381New York, NYPhone: 415-655-2220Web: www.open.comProduct Codes: FIN
Center Rosemont, IL Phone: 800-626-6726 Web: www.aaos.org Product Codes: EDU, PM, PUB	Aesculap Implant Systems3815Center Valley, PAPhone: 610-984-9206Web: www.aesculapimplantsystems.comProduct Codes: DEV, IMG, I	American Journal of Orthopedics2018Parsippany, NJPhone: 973-290-8228Web: www.amjorthopedics.comProduct Codes: PUB
aap Implantate AG 363 Berlin Germany Phone: 49 30750190 Web: www.aap.de Product Codes: BNE, BB, I, SI, T	Aesculap, Inc.4015Center Valley, PAPhone: 610-984-9206Web: www.aesculapusa.comProduct Codes: SURG, SI	American Medical Endoscopy, Inc. 2408 Doral, FL Phone: 305-436-0599 Web: www.endoscopia.com Product Codes: AS, DEV, SURG, SI
AccelLAB Inc. 124 Boisbriand, QC Canada Phone: 450-435-9482 x225 Web: www.accellab.com Product Codes: AM, BB, DI, I, IMG, MRI,	5AIP Precision Machining2632Daytona Beach, FLPhone: 386-274-5335Web: www.aipdaytona.comProduct Codes: DEV, IMG, I, OTH, SURG, SI, XRAY	American Orthopaedic Association 2816 Rosemont, IL Phone: 847-318-7330 Web: www.ownthebone.org Product Codes: AO, OTH
XRAY	AllMeds Specialty Practice Services 3181 Oak Ridge, TN Phone: 888-343-6337 Web: www.allmeds.com Product Codes: COM, EMR, PM	

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Amniox Medical Atlanta, GA Phone: 678-426-2829 Web: www.amnioxmedical.co Product Codes: T	2475 om
Amplitude Valence, Drome France Phone: 33 623612061 Web: www.amplitude-ortho. Product Codes: IMG, I	3523 com
Apex Tools and Orthoped Guangzhou China Phone: 86 15975591031 Web: www.apexitool.net Product Codes: DEV, I, MS,	
Applied Biologics, LLC Scottsdale, AZ Phone: 602-325-1221 Web: www.appliedbiologics. Product Codes: I, T	709 com
Applied Medical Rancho Santa Margarita, CA Phone: 949-713-8000 Web: www.appliedmedical.cc Product Codes: SURG, SI	
Aprima Medical Software Carrollton, TX Phone: 214-466-8082 Web: www.aprima.com Product Codes: EMR, PM	3081
APS Materials, Inc. Dayton, OH Phone: 937-278-6547 Web: www.apsbiomedical.co Product Codes: I, OTH	3222 m
AquaShield USA Grass Valley, CA Phone: 530-477-8450 Web: www.aquashieldusa.com Product Codes: CS, MS	1322 m
ARC Korea Co., Ltd. Seongnam-si, Gyeonggi-do Republic of Korea Phone: 82 1030946093 Web: www.arc-korea.com/ Product Codes: BB, FRST, I,	1304 SI
Arcam AB Mölndal, MA Sweden Phone: 46 707199405 Web: www.arcam.com Product Codes: BNE, I	4008

COMPANY	BOOTH NO.
Arcamed, LLC Indianapolis, IN Phone: 317-822-7799 Web: www.arcamed.com Product Codes: BB, DEV, SU	<b>3516</b> RG
Aribex Orem, UT Phone: 801-226-5522 Web: www.aribex.com Product Codes: DI, XRAY	3127
Army Medical Recruiting Fort Knox, KY Phone: 502-626-1981 Web: www.goarmy.com Product Codes: PR	2581
Arteriocyte Medical Syster Hopkinton, MA Phone: 508-497-8958 Web: www.arteriocyte.com Product Codes: BLD, DEV, S	
Artery Studios Inc. Chicago, IL Phone: 800-721-1721 Web: www.arteryhealthcarev Product Codes: AM, BB, EDU	
Arthrex, Inc. Naples, FL Phone: 239-643-5553 x1133 Web: www.arthrex.com Product Codes: AS, BLD, DE SURG, SI, T	1445 V, EDU, IMG, I,
Arthritis Foundation Atlanta, GA Phone: 404-965-7609 Web: www.arthritis.org Product Codes: EDU, FRST	2012
ArthroPlastics, Inc. Chagrin Falls, OH Phone: 440-247-5131 Web: www.arthroplastics.com Product Codes: AS, MS, SG,	
Arthroplastie Diffusion St Maurice de Gourdans France Phone: 33 979327663 Web: www.arthrodif.fr Product Codes: BNE, FRST, J	662 I, P
Arthrosurface, Inc. Franklin MA	731

COMPANY

BOOTH NO.

Franklin, MA Phone: 508-520-3003 Web: www.arthrosurface.com Product Codes: AS, BNE, DEV, I, P, SURG, SI, T

# COMPANYBOOTH NO.Artisan Medical Displays, LLC1072

Zeeland, MI Phone: 616-748-8950 Web: www.artisanmedicaldisplays.com Product Codes: FRST

# Asociacion Argentina de 1416

Ortopedia y Traumatologia Buenos Aires Argentina Phone: 54 1148012320 Web: www.aaot.org.ar Product Codes: AO

Aspect Imaging

# 3616

3230

Shoham Israel Phone: 972 732239000 Web: www.aspectimaging.com Product Codes: FRST, MRI

Aspen Medical Products 1003 Irvine, CA Phone: 949-681-0200 x301 Web: www.aspenmp.com Product Codes: DEV, O, SG

### Assut Europe s.p.a. Magliano dei Marsi, L'Aquila Italy Phone: 39 863517956 Web: www.assuteurope.com Product Codes: DEV, I, O, SURG

# Austen Simulation Center for873Safety & ReliabilityAkron, OHPhone: 330-543-3360Web: www.simulation.akronchildrens.orgProduct Codes: FRST

# Autocam Medical2615Kentwood, MIPhone: 616-541-8080Web: www.autocam-medical.comProduct Codes: BNE, BB, DEV, I, SI

Automated Healthcare Solutions919Miramar, FLPhone: 786-207-4363Web: www.ahcs.comProduct Codes: COM, OTH

### Auxein Medical

3617

1781

Delhi India Phone: 91 9811720999 Web: www.auxeinmedical.com Product Codes: I, P, SI

# Avalign Technologies

Greenwood, IN Phone: 317-859-2300 Web: www.avaligntech.com Product Codes: DEV, I, SURG, SI

I ECHNICAL EXHIBITS 43/	TECHNICAL	EXHIBITS	437
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COMPANY	BOOTH NO.
AVICENNE Puteaux Cedex France Phone: 33 147784600 Web: www.avicenne.com Product Codes: I, MKT	n
AxoGen, Inc. Alachua, FL Phone: 888-296-4361 Web: www.axogeninc.co Product Codes: I, T	1609 om
E	3
Baitella AG Zürich Switzerland Phone: 41 443058000 Web: www.f sso.com Product Codes: DEV, M	2315 S, SURG
<b>Bal Seal Engineering,</b> Foothill Ranch, CA Phone: 800-366-1006 Web: www.balseal.com Product Codes: BB, OTH	
Barrier Technologies Davie, FL Phone: 954-921-0330 Web: www.barriertechno Product Codes: DEV, M	
BBL Medical Facilitie Albany, NY Phone: 518-452-8200 Web: www.bblmedicalfa Product Codes: FPD	
Becker Orthopedic Troy, MI Phone: 800-521-2192 Web: www.beckerorthop Product Codes: O	2527 pedic.com
Beijing AK Medical C Beijing China Phone: 86 10801095816 Web: www.ak-medical.m Product Codes: I, P	507
Beijing Chunlizhengd Instruments Co., Ltd. Beijing China Phone: 86 1058611761 Web: www.clzd.com Product Codes: DEV, I,	2373

COMPANY H	BOOTH NO.
Beijing Fule Science & Tech Development Co., Ltd. Beijing China Phone: 86 1060999862 Web: www.fulekeji.com Product Codes: BNE, I, MS, O	
Benvenue Medical Santa Clara, CA Phone: 408-203-1278 Web: www.benvenuemedical.co Product Codes: DEV, I	1111 om
Berkeley Advanced Biomaterials, Inc. Berkeley, CA Phone: 775-339-1933 Web: www.ostetic.com Product Codes: BNE, DEV, I, T	2381
Better Walk Inc. Atlanta, GA Phone: 614-551-9543 Web: www.bwcrutches.com Product Codes: DEV, REHB	2210
BHI Therapeutic Sciences, Hackensack, NJ Phone: 201-342-7662 Web: www.bhisciences.com Product Codes: BLD, FRST, T	LLC 777
BioAccess Baltimore, MD Phone: 410-675-8586 Web: www.bioaccess.com Product Codes: SURG, SI	3848
Biocomposites Wilmington, NC Phone: 910-350-8015 Web: www.biocomposites.com Product Codes: BNE, DEV, I	2631
BioD, LLC Memphis,, TN Phone: 901-417-7868 Web: www.biodlogics.com Product Codes: FRST, T	2814
Biodynamic Research Corporation (BRC) San Antonio, TX Phone: 210-582-0709 Web: www.brconline.com Product Codes: PR	3803
Biologica Technologies Carlsbad, CA Phone: 800-677-6610 Web: www.biologicatechnolog Product Codes: BNE	3908

### COMPANY BOOTH NO.

Biomatlante	
Vigneux de Bretagne	
France	
Phone: 33 228020009	
Web: www.biomatlante.com	
Product Codes: BNE, BB, I	

# **Bionova Medical**

Germantown, TN Phone: 901-748-2581 Web: www.bionovamedical.com Product Codes: BNE, DEV, FRST

## BioPro, Inc.

2637

1887

3746

2703

1851

1480

1460

556

Port Huron, MI Phone: 810-982-7777 Web: www.bioproimplants.com Product Codes: DEV, I, SI

# **Biopsybell S.r.l.**

Mirandola, Modena Italy Phone: 39 3441768603 Web: www.biopsybell.it Product Codes: BNE, BB, DEV, FRST, I, MS, REHB, SURG, SI, XRAY

# **Bioretec Ltd**

Tampere Finland Phone: 35 8207789500 Web: www.bioretec.com Product Codes: DEV, I

# **BIOTECK S.p.A.**

Arcugnano, Vicenza Italy Phone: 39 3939894621 Web: www.bioteck.com Product Codes: BNE

### **Bioventus**

Durham, NC Phone: 919-474-6766 Web: www.bioventusglobal.com Product Codes: DEV

### 2945 Bird & Cronin, Inc.

Eagan, MN Phone: 651-683-8089 Web: www.birdcronin.com Product Codes: O, REHB, SF, SG, SI

### BK Meditech Co., Ltd. 2308

Seoul Republic of Korea Phone: 82 1026186212 Web: www.bkmeditech.com Product Codes: I, SI

# **BLOXR Solutions**

Salt Lake City, U T Phone: 801-590-9895 Web: www.bloxr.com Product Codes: DEV, OTH, Xray

COMPANY	BOOTH NO.
Blue Belt Technologies Plymouth, MN Phone: 763-452-4921 Web: www.bluebelttech.com Product Codes: IMG, I, SUR	<b>3681</b> G
<b>BM Korea Co., Ltd.</b> Gunpo-Si, Gyunggi-Do Republic of Korea Phone: 82 106332514 Web: www.bmkmedi.com Product Codes: DEV, I, SI	2202
<b>BME - BioMedical Enterg</b> San Antonio, TX Phone: 210-881-0060 Web: www.bme-tx.com Product Codes: DEV, I	prises 2428
<b>BMJ</b> Hoboken, NJ Phone: 855-458-0579 Web: www.bmj.com Product Codes: FRST, PUB	1912
Bonaf de Management Sy Inc. Thousand Oaks, CA Phone: 805-908-2333 Web: www.bonaf de.com Product Codes: COM, EMR	
Bodycote London, OH Phone: 740-852-4955 Web: www. bodycote.com Product Codes: OTH	1580
Bone & Joint Journal (formerly JBJS (Br)) London United Kingdom Phone: 44 2077820010 Web: www.bjj.boneandjoint. Product Codes: PUB	2016 org.uk
Bone Foam Inc. Plymouth, MN Phone: 763-559-1830 Web: www.bonefoam.com Product Codes: SURG	2829
Bonutti Technologies Eff ngham, IL Phone: 217-342-3412 Web: www.bonuttitechnolog Product Codes: DEV, I, O, R	
Boston Engineering Corp Waltham, MA Phone: 781-314-0767 Web: www.boston-engineerin Product Codes: DEV, OTH,	ng.com

Alpha Listings

COMPANY	BOOTH NO.
Bovie Medical Corporat Clearwater, FL Phone: 727-803-8627 Web: www.boviemed.com Product Codes: FRST, SUR	
Bradshaw Medical, Inc. Kenosha, WI Phone: 262-925-1374 Web: www.bradshaw-medi Product Codes: DEV, SI	2067 cal.com
Brainlab Chicago, IL Phone: 708-486-1953 Web: www.brainlab.com Product Codes: DEV, IMG,	2871 SI
Brasseler USA Savannah, GA Phone: 800-569-6738 Web: www.brasselerusa.com Product Codes: BNE, SURG	
Breg Carlsbad, CA Phone: 760-795-5945 Web: www.breg.com Product Codes: CS, COM,	745 Dev, O, PM, P, SG
BRM Extremities S.r.l. Milan Italy Phone: 39 36735123 Product Codes: I	2108
Brownmed Spirit Lake, IA Phone: 816-581-7001 Web: www.brownmed.com Product Codes: O, SG	1725
BSN Medical Charlotte, NC Phone: 704-551-7167 Web: www.bsnmedical.com Product Codes: CS, SG	1209
Buxton BioMedical, Inc East Hanover, NJ Phone: 973-560-4848 x114 Web: www.buxtonbio.com Product Codes: CS, SI	
C	
<b>C&amp;A Tool Engineering,</b> Churubusco, IN Phone: 260-693-2167 x120 Web: www.catool.com Product Codes: BB, DEV, I,	08
O1T I 1	4.4.50

C2F Implants Nogent France Phone: 33 325027289 Web: www.c2f-implants.com Product Codes: I, P, SI

# COMPANY BOOTH NO.

CAE Healthcare	2823

Sarasota, FL Phone: 941-536-2845 Web: www.caehealthcare.com Product Codes: AM, AS, BB, COM, EDU, SURG

# Camber Spine 2131

Wayne, PA Phone: 484-580-0084 Web: www.cambermedtech.com Product Codes: FRST

### Cannuf ow, Inc. 904

Campbell, CA Phone: 408-764-0220 Web: www.cannuf ow.com Product Codes: DEV

# Canwell Medical Co., Ltd. 2105

Jinhua, Zhejiang China Phone: 86 18805796665 Web: www.canwell.com.cn Product Codes: BB, I, OTH, SI

# Captiva Spine, Inc. 1103

Jupiter, FL Phone: 561-277-9480 Web: www.captivaspine.com Product Codes: BNE, DEV, I, OTH, SI

# Captive One 2675

Wellington, FL Phone: 561-275-9051 Web: www.captiveone.com Product Codes: FIN, FRST, PM

CarboFix Orthopedics, Inc. 4089 Collierville, TN Phone: 800-408-0120 Web: www.carbo-f x.com Product Codes: I

CareCredit Costa Mesa, CA Phone: 714-434-4532 Web: www.carecredit.com Product Codes: OTH

**Case Medical** 

1008

4164

2809

1314

South Hackensack, NJ Phone: 201-313-1999 x206 Web: www.casemed.com Product Codes: AS, DEV, MS, SURG

Cases By Source, Inc. Mahwah, NJ Phone: 201-831-0005 Web: www.casesbysource.com Product Codes: BB, MS

# Cayenne Medical

1469

Scottsdale, AZ Phone: 480-502-3661 Web: www.cayennemedical.com Product Codes: AS, DEV, I, SI

Product Codes: FRST, I

COMPANY	BOOTH NO.	COMPANY	в
Celling Biosciences Austin, TX Phone: 512-206-0770 Web: www.cellingbioscien Product Codes: BLD, BNF		Changzhou Waston Appliance Co., Ltd Changzhou, Jiangsu China Phone: 86 519865222 Web: www.wastonme	<b>.</b> 226
Cellright Technologies, Universal City, TX Phone: 210-659-9353 Web: www.cellrighttechno		Product Codes: BNE,	
Product Codes: BNE, I, T		Salt Lake City, UT Phone: 801-365-1800	)
<b>CERAMED S.A.</b> Loures Portugal	565	Web: www.chartlogic Product Codes: COM	
Phone: 35-1217151959 Web: www.ceramed.pt Product Codes: FRST, I		Checkpoint Surgica Cleveland, OH Phone: 216-378-9115 Web: www.checkpoin	Ţ
CeramTec Medical Pro Plochingen	ducts 1581	Product Codes: DEV,	
Germany Phone: 49 7153611828 Web: www.biolox.com Product Codes: DEV, I, O	TH, SI	ChM Sp. z o.o. Juchnowiec Koscielny Poland Phone: 48 85713132( Web: www.chm.eu	
Cerapedics, Inc. Royal Oak, MI	4109	Product Codes: I, SI	
Phone: 303-974-6275 Web: www.cerapedics.con Product Codes: BNE, DEV		CID Management Westlake Village, CA Phone: 866-301-6568 Web: www.cidmcorp.	
CES, Inc. Springf eld, IL	4237	Product Codes: FRST	
Phone: 856-366-3156 Web: www.cesplip.com Product Codes: FIN		Citieffe S.r.l. Bologna Italy Phone: 39 366644693	30
Ceterix Orthopaedics Menlo Park, CA Phone: 650-209-7270	3769	Web: www.citieffe.com Product Codes: DEV,	m
Web: www.ceterix.com Product Codes: DEV, SI, T	[	CME/1st-dragon St. Petersburg, FL Phone: 877-272-8280	)
Champion Medical Sol Northridge, CA Phone: 858-345-7260	utions 2711	Web: www.1st-dragor Product Codes: COM	n.com
Web: www.championmed. Product Codes: BB, PH, P.		Collagen Matrix, In Oakland, NJ Phone: 201-405-1477	
Changzhou Hengjie Me Devices Co., Ltd. Changzhou	edical 2708	Web: www.collagenm Product Codes: DEV	
China Phone: 86 13775080393 Web: www.hjyl.cn Product Codes: I, MS, SI		Community Health Indianapolis, IN Phone: 317-621-7347 Web: www.ecommun Product Codes: FRST	ity.com
Changzhou Nanxiang Medical Device Co., Lt Changzhou, Jiangsu China Phone: 86 51986380098 Web: www.cznanxiang.cn Product Codes: ERST L	1073 d.	Community Health Franklin, TN Phone: 615-465-7478 Web: www.chsmedcar Product Codes: PR	:

Appliance Co., Ltd. Changzhou, Jiangsu China Phone: 86 51986522226 Web: www.wastonmedical.com Product Codes: BNE, BB, I, MS, SI	
ChartLogic, Inc. Salt Lake City, UT Phone: 801-365-1800 Web: www.chartlogic.com Product Codes: COM, EMR, PM	2677
Checkpoint Surgical, LLC Cleveland, OH Phone: 216-378-9115 Web: www.checkpointsurgical.com Product Codes: DEV, SURG, SI	2089
<b>ChM Sp. z o.o.</b> Juchnowiec Koscielny Poland Phone: 48 857131320 Web: www.chm.eu Product Codes: I, SI	1775
CID Management Westlake Village, CA Phone: 866-301-6568 Web: www.cidmcorp.com/corporate/car Product Codes: FRST, PR	3615 reers/
Citieffe S.r.l. Bologna Italy Phone: 39 3666446930 Web: www.citieffe.com Product Codes: DEV, I, SI	4035
<b>CME/1st-dragon</b> St. Petersburg, FL Phone: 877-272-8280 Web: www.1st-dragon.com Product Codes: COM	2894
<b>Collagen Matrix, Inc.</b> Oakland, NJ Phone: 201-405-1477 Web: www.collagenmatrix.com Product Codes: DEV	2729
Community Health Network Indianapolis, IN Phone: 317-621-7347 Web: www.ecommunity.com Product Codes: FRST, PR	568
Community Health Systems Franklin, TN Phone: 615-465-7478 Web: www.chsmedcareers.com Product Codes: PR	2887

### COMPANY BOOTH NO.

BOOTH NO.

2455

Community Tissue Services	3236
Kettering, OH	
Phone: 937-461-3364	
Web: www.communitytissue.org	
Product Codes: T	

3319

761

2181

3831

2961

1409

### CompHealth Salt Lake City, UT Phone: 800-453-3030 Web: www.comphealth.com Product Codes: PR

Compression Solutions, Inc.	664
Tulsa, OK	
D1 040 744 4070	

Phone: 918-744-1078 Web: www.compressionsolutions.us Product Codes: FRST, MS

### Compulink Business Systems, Inc. 2589 Thousand Oaks, CA Phone: 800-456-4522 Web: www.compulinkadvantage.com

Product Codes: COM, EMR, PM

# **CoNextions Medical**

Sandy, UT Phone: 385-351-1461 Web: www.conextionsmed.com Product Codes: DEV, FRST, I

# **ConforMIS**

CONMED

Bedford, MA Phone: 781-345-9001 Web: www.conformis.com Product Codes: I

Largo, FL Phone: 727-399-5327 Web: CONMED.com Product Codes: AS, COM, DEV, EDU, I, SURG, SI, T

### **Consensus Medical System Inc.** 4184 Richmond, BC Canada Phone: 604-369-3964 Web: www.consensusmed.com Product Codes: COM, FRST

**Consensus** Orthopedics El Dorado Hills, CA Phone: 916-355-7125 Web: www.consensusortho.com Product Codes: DEV, I, SI

# ContainMed, Inc.

Speedway, IN Phone: 317-487-8800 Web: www.containmed.com Product Codes: BB, DEV, SURG

Alpha Listings

COMPANY BOC	OTH NO.	COMPANY BOOT	H NO.	COMPANY BOC	OTH NO.
Conventus Orthopaedics, Inc. Maple Grove, MN Phone: 763-515-5000 Web: www.conventusortho.com Product Codes: DEV, I, SI	716	Current Concepts Institute Cleveland, OH Phone: 216-295-1900 Web: www.ccjr.com Product Codes: EDU	2022	Data Trace Publishing Towson, MD Phone: 410-494-4994 Web: www.datatrace.com Product Codes: PUB	2028
CoorsTek Medical Fort Worth, TX Phone: 817-890-4093 Web: www.coorstekmedical.com Product Codes: AS, BB, CS, DEV, I, T	<b>961</b> SURG, SI,	Curvebeam Warrington, PA Phone: 267-483-8081 Web: www.curvebeam.com Product Codes: DEV, DI, XRAY	4165	Decision Resources Group Toronto, ON Canada Phone: 781-364-7776 x160 Web: www.mrg.net Product Codes: MKT	3744
Corentec Co., Ltd. Cheonan-Si, Chungcheongnam-do Republic of Korea Phone: 82 234455492 Web: www.corentec.com	2167	Custom Fab, Inc. Garden Grove, CA Phone: 714-891-9119 Web: www.customfabinc.com Product Codes: SG	1014	Del Medical, Inc. Bloomingdale, IL Phone: 847-288-7970 Web: www.delmedical.com Product Codes: DI, XRAY	3137
Product Codes: I, SI CORFLEX INC. Manchester, NH Phone: 603-623-3344 Web: www.corf ex.com	2537	Custom Orthopaedic Solutions Cleveland, OH Phone: 216-445-2164 Web: www.customorthopaedics.com Product Codes: AM, EDU, IMG, SI	1369	DePuy Synthes companies of Johnson & Johnson Warsaw, IN Phone: 800-473-3789 Web: www.depuysynthes.com	2545
Product Codes: O, SG Corin Group Cirencester, Gloucestershire	3865	Cutting Edge Laser Technologies Fairport, NY Phone: 800-889-4184 Web: www.CELasers.com	560	Product Codes: AS, BNE, DEV, EDU SI Designs for Vision, Inc.	J, IMG, I, 2503
United Kingdom Phone: 44 1285659866 Web: www.coringroup.com Product Codes: DEV, IMG, I, SI		Product Codes: FRST, OTH CyMedica Orthopedics Inc. Scottsdale, AZ	2109	Ronkonkoma, NY Phone: 631-585-3300 Web: www.DesignsForVision.com Product Codes: SURG	
Corto Financial Group, LLC York, PA Phone: 717-747-0000	1526	Phone: 844-296-2014 Web: www.cymedicaortho.com Product Codes: DEV, MS, REHB, SG		DeSoutter Medical Ltd Aylesbury, Bucks United Kingdom	2361
Web: www.cortof nancial.com Product Codes: FIN, FRST Cross Current Corporation	564	Cytonics Corporation Jupiter, FL Phone: 561-575-4451 Web: www.ustanias.com	1010	Phone: 44 1296634000 Web: www.de-soutter.com Product Codes: CS, SI	
Doylestown, PA Phone: 302-547-3213 Web: www.crosscurrent.com		Web: www.cytonics.com Product Codes: BLD, OTH D		DGIMed Ortho Minnetonka, MN Phone: 952-582-6713	2671
Product Codes: COM, EMR, FRST, CrossRoads Extremity Systems	отн, рм 654	Daiichi Sankyo, Inc. Parsippany, NJ	550	Web: www.distalock.com Product Codes: DEV, I, SURG, SI	
Memphis, TN Phone: 901-828-0091 Web: www.crextremity.com Product Codes: FRST		Phone: 973-944-2827 Web: www.dsi.com Product Codes: FRST, PH		Dicarre LLC Las Vegas, NV Phone: 732-337-6492 Web: www.dicarre.com	1124
Cura Surgical, Inc.	2828	Danco Anodizing Warsaw, CA	3872	Product Codes: DEV, MS, O, REHE	, SF, SG
Geneva, IL Phone: 630-232-2510 Web: www.curasurgical.com Product Codes: MS		Phone: 574-269-5900 Web: www.danco.net Product Codes: DEV, DI, I, SURG, SI		DJO Global Vista, CA Phone: 760-734-3125 Web: www.djoglobal.com	1029
CuraMedix	1584	Darco International Barboursville, WV	2444	Product Codes: DEV, I, MS, P, REH SURG, SI	B, SF, SG,
Lincoln, RI Phone: 401-333-6500 Web: www.curamedix.com Product Codes: DEV		Phone: 304-521-8129 Web: www.darcointernational.com Product Codes: SF, SG		DoctorsInternet.com New Rochelle, NY Phone: 914-393-8830	2893
		Dartmouth-Hitchcock Lebanon, NH Phone: 603-653-0469	2087	Web: www.doctorsinternet.com Product Codes: BB, PM	

Phone: 603-653-0469

Product Codes: FRST, PR

Web: www.dartmouth-hitchcock.org

COMPANY

COMPANY	BOOTH NO.	СО
Dong-A ST Seoul Republic of Korea Phone: 82 1093118042 Web: www.donga-st.co.kr Product Codes: BNE, FRST,	762 SURG, SI	Eide Dae Rep Pho Web Proc
DragonBio Implants Shenzhen China Phone: 86 75581886815 Web: www.dragonbio.com Product Codes: BNE, BB, D SI, XRAY	3223 I, I, MRI, P, SURG,	Eife St. C Pho Web Proc Eler Fair
Dry Corp, LLC Wilmington, NC Phone: 910-791-0009 Web: www.drycorp.com Product Codes: CS, MS, P	4011	Pho Web Proc Ellij Alis
DSM Biomedical Exton, PA Phone: 484-713-2100 Web: www.dsm.com/medica Product Codes: DEV, I	<b>2309</b> Il	Pho Web Proc Ellij Sola
Dynamic Surgical Pvt. Lt Sialkot, Punjab Pakistan Phone: 92 3008610243 Web: www.dynamic-surgica Product Codes: I, OTH, SI E		Pho Web Proc Ellio Balc Pho Web
East Coast Orthotic and Corporation Deer Park, NY Phone: 646-884-0279 Web: www.ec-op.com Product Codes: O, P, SF	Prosthetic 1202	Proc Plsc Phil Pho Web Proc
Ebone Kenosha, WI Phone: 262-553-2111 Web: www.medicalties.com Product Codes: EDU, OTH	3750	Em Dall Pho Web Proc
ECA Medical Instrument Thousand Oaks, CA Phone: 805-376-2509 Web: www.ecamedical.com Product Codes: SI	is 2556	Emi Geo Pho Web Proc
eClinicalWorks Westborough, MA Phone: 508-836-2700 Web: www.eclinicalworks.cc Product Codes: EMR, PM	3381 om	Emj Colo Pho Web Proc
eData Services US, LLC Beverly Hills, CA Phone: 310-870-9733	875	

Web: www.edataservices.com Product Codes: BB, FRST, PM

## OMPANY

# los Life Sciences

egu oublic of Korea one: 82 1085761661 b: www.dermatolwoundhealing.com duct Codes: FRST, SI

### 1172 eler Coatings Technology Charles, IL one: 630-883-3020 b: www.eifeler.us duct Codes: FRST 2949

ement Cincinnati rf eld, OH one: 513-984-4112 b: www.element.com duct Codes: OTH

### ipse Technologies, Inc. 2023 so Viejo, CA one: 949-837-3600 b: www.ellipse-tech.com duct Codes: I

iptiGO Inc. 3515 ana Beach, CA one: 281-684-7845 b: www.elliptigo.com duct Codes: DEV, OTH, REHB

# quence LLC dwin, NY one: 516-277-9016 b: www.elliquence.com duct Codes: DEV, SURG

evier ladelphia, PA one: 215-239-3900 b: www.us.elsevierhealth.com duct Codes: PUB

Care Surgical Services 2988 llas, TX one: 805-563-3004 b: www.emcare.com duct Codes: PR

inent Spine 1522 orgetown, TX one: 512-868-5980 b: www.eminentspine.com duct Codes: DEV, I, MS, SURG, SI

### pirical lorado Springs, CO one: 719-310-6609 b: www.empiricaltech.com oduct Codes: DEV, I, OTH, SI, T

# BOOTH NO.

748

3745

1903

2103

# BOOTH NO.

ENDO Manufacturing Co., Ltd. Tsubame, Niigata Japan Phone: 81 256638165 Web: www.endo-mfg.co.jp/eng/ Product Codes: I, SI	2716
Endo Pharmaceuticals Malvern, PA Phone: 215-345-1515 x103 Web: www.endo.com Product Codes: PH	2453
Endolab GmbH Thansau/Rosenheim Germany Phone: 49 803123132317 Web: www.endolab.org Product Codes: BB. I, OTH	1861
Endotec Inc. Boonton Township, NJ Phone: 862-703-6730 Web: www.endotec.com Product Codes: DEV, I	3161
Engineered Medical Solutions Phillipsburg, NJ Phone: 908-329-0160 Web: www.scintillantlight.com Product Codes: SURG, SI	3774
Enhatch New York, NY Phone: 917-374-3857 Web: www.enhatch.com Product Codes: BB, COM, FRST, O	1061
Enova Illumination St Paul, MN Phone: 651-492-7910 Web: www.enovaillumination.com Product Codes: SURG	927
Enovative Technologies Bishopville, MD Phone: 443-863-6645 Web: www.magicpulsemassage.com Product Codes: FRST	1808
EOS Electro Optical Systems Novi, MI Phone: 248-306-0143 x8116 Web: www.eos.info Product Codes: AM, BB, CS, DEV, I, O, SURG, SI	2803 P,
EOS Imaging Paris, MA Phone: 678-564-5400 Web: www.eos-imaging.com Product Codes: COM, DI, XRAY	2909

COMPANY	BOOTH NO.
EPIC Extremity Cranberry Twp, PA Phone: 724-779-4747 Web: www.EPICextremity.co Product Codes: FRST, I	645 om
<b>EPIX Orthopaedics, Inc.</b> Palo Alto, CA Phone: 650-656-5961 Web: www.epixortho.com Product Codes: FRST	1323
<b>EPM Endo Plant Muller</b> Kleinwallstadt, Bayern Germany Phone: 49 602225419 Web: www.epm-mueller.de Product Codes: COM, SI	GmbH 2636
Equimedic SAS Bogota Colombia Phone: 57 3106878752 Web: www.indumedic.com Product Codes: AS, DI, FRS	4233 T, O, SURG, SI
Ergoactives Aventura, FL Phone: 305-776-8837 Web: www.ergoactives.com Product Codes: DEV, MS	967
Ermi, Inc. Atlanta, GA Phone: 678-681-7659 Web: www.getmotion.com Product Codes: DEV	1710
Esaote North America Indianapolis, IN Phone: 317-813-6014 Web: www.esaoteusa.com Product Codes: DI, IMG, M	2923 RI
Estar Medical Ltd. Holon Israel Phone: 972 544531844 Web: www.estar-medical.cor Product Codes: AS, BLD, BN	
<b>Eurocoating S.p.A.</b> Pergine Valsugana, Trento Italy Phone: 39 461518901 Web: www.eurocoating.it Product Codes: BB, I, P	861
European Federation of Orthopaedics and Traum (EFORT) Rolle Switzerland Phone: 41 444484402 Web: www.efort.org Product Codes: AO	1811 atology

Alpha Listings

DIIS	
COMPANY	BOOTH NO.
	BOOTHING:
Eurospine L'Hay les Roses France Phone: 33 146866007 Web: www.eurospine.com Product Codes: I	4168
<b>Evonik Corporation</b> Parsippany, NJ Phone: 937-608-0299 Web: www.evonik.com/ves Product Codes: BB, DEV, D SI	
Exactech, Inc. Gainesville, FL Phone: 352-377-1140 Web: www.exac.com Product Codes: BLD, BNE,	<b>3881</b> , dev, img, i, si, t
ExamWorks Woburn, MA Phone: 339-987-9106 Web: www.examworks.com Product Codes: BB, OTH, 1	
Excera Orthopedics Solon, OH Phone: 860-367-6729 Web: www.exceraortho.com Product Codes: FRST	665 n
Expeditor Systems, Inc. Alpharetta, GA Phone: 770-442-0405 Web: www.expeditor.com Product Codes: PM	4182
Exscribe, Inc. Bethlehem, PA Phone: 610-419-2050 Web: www.exscribe.com Product Codes: COM, EM	2681 R, PM
Extremity Medical, LLC Parsippany, NJ Phone: 973-588-8903 Web: www.extremitymedic Product Codes: DEV, I	
F	
FBD Medical Suites, PL New York, NY Phone: 646-864-1025 Web: www.surgerylabnyc.c Product Codes: FRST	
Federacion de Sociedade Ortopedia y Traumatolo America Latina - SLAO Bogota Colombia Phone: 57 3157862902 Web: www.slaot.org Product Codes: AO	ogia de

Product Codes: AO

NO.	COMPANY
168	Federacion M de Ortopedia

# BOOTH NO.

Federacion Mexicana de Colegios de Ortopedia y Traumatologia AC (FEMECOT) Guadalajara, Jalisco Mexico Phone: 52 3331064388 Web: www.femecot.org.mx Product Codes: AO	1908
Ferring Pharmaceuticals Parsippany, NJ Phone: 973-206-4471 Web: www.euf exxa.com Product Codes: DEV, PH	3103
FH Orthopedics Chicago, IL Phone: 708-667-7723 Web: www.fhortho.com Product Codes: I, P	1345
Fidia Pharma USA Parsippany, NJ Phone: 973-577-6106 Web: www.f diapharma.us Product Codes: DEV	2003
Five Star Surgical New Bedford, MA Phone: 508-944-0371 Web: www.f vestarcompanies.net Product Codes: I, SI	2808
Flagship Surgical, LLC Warren, NJ Phone: 888-633-5843 Web: www.f agshipsurgical.com Product Codes: AS, BB, DEV, MS, SF, SG SURG, SI	1122 G,
Flower Orthopedics Horsham, PA Phone: 215-394-8909 Web: www.f owerortho.com Product Codes: I	3809
Flow-FX LLC Mokena, IL Phone: 815-531-4424 Web: www.f ow-fx.net Product Codes: DEV, I	2605
FORE - Foundation for Orthopaedic Research and Education Tampa, FL Phone: 813-910-3667 Web: www.foreonline.org Product Codes: BB, EDU, OTH	1922 on
Foster Group, Inc. West Des Moines, IA Phone: 800-798-1012 Web: www.fostergrp.com Product Codes: FIN, FRST	976

1731

2774

1517

### Francis Lamont Innovations Ltd 4023 Gainesville, VA Phone: 703-477-5834 Web: www.f iuk.com Product Codes: BB, DEV, PR, SURG, SI FSN Medical Technologies 874 Anaheim, CA Phone: 714-300-0540 Web: www.fsnmed.com Product Codes: AS, FRST, IMG, SURG **FUJIFILM Medical Systems** 3031 USA, Inc. Stamford, CT Phone: 203-602-3625 Web: www.fujiprivatepractice.com Product Codes: DI, XRAY FusionOne Electronic Healthcare 3082 Roselle, IL Phone: 630-815-4818 Web: www.fusiononeinc.com Product Codes: EMR **Fx Solutions** 2723 Viriat France Phone: 33 474553555 Web: www.fxsolutions.fr Product Codes: DEV, I, P, SI FzioMed. Inc. 1724 San Luis Obispo, CA Phone: 805-546-0610 Web: www.fziomed.com Product Codes: I G G-21 S.r.l. 1475 San Possidonio (MO)

BOOTH NO.

Italy Phone: 39 53530312 Web: www.g-21.it Product Codes: BNE, DEV, I

COMPANY

Game Ready Concord, CA Phone: 510-692-4109 Web: www.gameready.com Product Codes: DEV, REHB

# Gannet Hengelo, OV Netherlands Phone: 31 651659550 Web: www.gannetimplant.com Product Codes: FRST, I

## Gauthier Biomedical, Inc. Grafton, WI Phone: 866-546-0010 x9004 Web: www.gauthierbiomedical.com Product Codes: SI

# COMPANY

# BOOTH NO.

GE Healthcare 1161 Milwaukee, WI Phone: 414-721-2611 Web: www.gehealthcare.com Product Codes: DEV, DI, EMR, MRI, PM, SURG, XRAY

# GenCure

San Antonio, TX Phone: 855-326-5764 Web: www.gencure.org Product Codes: BNE, FRST, T

# Gensco Laboratories

Doral, FL Phone: 855-743-6726 Web: www.genscolabs.com Product Codes: PH

# Glacier Tek

elbourne, FL Phone: 612-327-9438 Web: www.coolvest.com Product Codes: FRST, MS, REHB, SG, SURG

# Globus Medical1617Audubon, PAPhone: 610-930-1800 x2108Web: www.globusmedical.comProduct Codes: DEV, I, SI

GMReis	1216
Campinas/SP	
Brazil	
Phone: 55 1937659900	
Web: www.gmreis.com.br	
Product Codes: I, MS, P, SI	

## GPI Prototype 2325 Lake Bluff, IL Phone: 847-615-8900 Web: www.gpiprototype.com Product Codes: AM, DEV, EDU, I, SURG, SI

GraMedica Macomb, MI Phone: 586-677-9600 Web: www.gramedica.com Product Codes: I, SI	4102
Greatbatch, Inc. Frisco, TX Phone: 925-334-6601	1337

Web: www.greatbatchmedical.com Product Codes: AS, BB, DEV, I, SI

# Groupe Lepine2345GenayFrancePhone: 33 472350518Web: www.groupe-lepine.comProduct Codes: I, P, SG, T

# H NO. COMPANY

1822

1622

569

# BOOTH NO.

COMPANY	boomino.
Gruppo Bioimpianti SRL Peschiera Borromeo, Milano Italy Phone: 39 3400854005 Web: www.bioimpianti.it Product Codes: DEV, I, SI	1437
<b>gSource, LLC</b> Emerson, NJ Phone: 201-599-2277 Web: www.gsource.com Product Codes: BB, SI	2447
GSquared Medical LLC Brentwood, TX Phone: 800-520-8893 Web: www.gsquaredmedical. Product Codes: DEV, FRST	4207 com
Н	
Halifax Biomedical Inc. Boston, MA Phone: 425-418-2774 Web: www.halifaxbiomedical Product Codes: DI, SI, XRAY	
Halyard Health Irvine, CA Phone: 949-293-9298 Web: www.halyardhealth.cor Product Codes: DEV	1481 n
Hand Biomechanics Lab, Sacramento, CA Phone: 916-923-5076 Web: www.handbiolab.com Product Codes: DEV	Inc. 2445
Hangzhou Rejoin Mastin Device Co., Ltd. Hangzhou, Zhejiang China Phone: 86 57186353288 Web: www.mastin-medical.co Product Codes: DEV, I, SI	
Hans Biomed USA, Inc. Englewood Cliffs, NJ Phone: 201-224-2333 Web: www.hansbiomed.com Product Codes: BNE, T	2009
Hapad, Inc. Bethel Park, PA Phone: 412-835-1234 Web: www.hapad.com Product Codes: SG	902
Harvest Technologies Cor Lakewood, CO Phone: 303-231-4691 Web: www.harvesttech.com Product Codes: BLD_BNE_D	р. 1960

Product Codes: BLD, BNE, DEV

# Alpha Listings

COMPANY	BOOTH NO.
Healthgrades Denver, CO Phone: 303-716-0041 Web: www.healthgrades.com Product Codes: COM, EDU,	
Hectec GmbH Landshut, Bavaria Germany Phone: 914-331-1221 Web: www.hectec.de Product Codes: FRST	3208
Hensler Surgical Products Wilmington, NC Phone: 910-297-1377 Web: www.henslersurgical.co Product Codes: SURG	
Hitachi Medical Systems America, Inc. Twinsburg, OH Phone: 330-425-1313 Web: www.hitachimed.com Product Codes: DEV, DI, MI	3123 RI, XRAY
HNM Medical Miami, FL Phone: 866-291-8498 Web: www.hnmmedical.com Product Codes: AS, SI	1987
Hologic Marlborough, MA Phone: 508-263-8901 Web: www.hologic.com Product Codes: BNE, DEV, I	2937 DI, XRAY
Horizon Pharma, Inc. Deerf eld, IL Phone: 224-383-3000 Web: www.horizonpharma.c Product Codes: PH	2088
Houston Methodist Hosp Houston, TX Phone: 713-501-4275 Web: www.methodisthealth. Product Codes: EDU	
Human Regenerative Tec Redondo Beach, CA Phone: 310-796-5680 Web: www.skyebiologics.cor Product Codes: BNE, I, T	
1	
ICON plc Dublin Ireland Phone: 508-597-6000 Web: www.aptivsolutions.co Product Codes: DEV, OTH,	

COMPANY	BOOTH NO.
<b>iData Research Inc.</b> Burnaby, BC Canada Phone: 604-266-6933 Web: www.idataresearch.cor Product Codes: MKT	1722 n
IHI Ionbond Inc. Madison Heights, MI Phone: 248-398-9100 x2214 Web: www.ionbond.com Product Codes: AS, BLD, BN T	
iKcare Medical Electrical Equipment Co., Ltd. Chengdu, Sichuan China Phone: 86 2886035163 Web: www.ikcare.com Product Codes: BNE, DEV, I	557 FRST, O, REHB
IlluminOss Medical East Providence, RI Phone: 508-523-1533 Web: www.illuminoss.com Product Codes: I	1303
IMEDICOM Co., Ltd Gunpo-si, Gyeonggi-do Republic of Korea Phone: 82 314791156 Web: www.imedicom.co.kr Product Codes: I, O, SURG,	3730 SI
I-Ming Sanitary Materials Changhua Taiwan Phone: 886 48681868 Web: www.supports.com.tw Product Codes: O, REHB	s Co., Ltd. 1346
Implanet Boston, MA Phone: 855-444-4675 Web: www.implanet.com Product Codes: DEV, I, MS,	3874 SI
Implantcast North Ameri Dallas, TX Phone: 214-233-7717 Product Codes: I	ca 3703
In2Bones USA, LLC Memphis, TN Phone: 901-412-1766 Web: www.in2bones.com Product Codes: DEV, MS, P,	867 SI
Incisive Surgical, Inc. Plymouth, MN Phone: 952-591-2543 Web: www.insorb.com Product Codes: DEV, OTH,	2602 SI

# NO. COMPANY

# BOOTH NO.

Indian Orthopaedic Association2027New Delhi, DelhiIndiaIndiaPhone: 91 9425863999Web: www.ioaindia.orgProduct Codes: AO

Industrias Medicas Sampedro S.A.S 1717 La Estrella, Antioquia Colombia Phone: 57 43223375 Web: www.imsampedro.com Product Codes: AM, BNE, BB, DEV, I, SURG, SI

# INEX Surgical Inc.

2624

1219

3723

Niles, IL Phone: 847-674-2595 Web: www.inexsurgical.com Product Codes: AS, DEV, DI, O, SURG, SI

Inf nite Therapeutics3522Kingston, NHPhone: 603-347-6006Web: www.inf nitymassagechairs.comProduct Codes: OTH, REHB

**Inf nite Trading Inc.** Las Vegas, NV Phone: 888-415-9964 Product Codes: DEV, FRST

Ingen Orthopedics, LLC1418Cranbury, NJPhone: 609-409-3316Web: www.ingenortho.comProduct Codes: DEV, I, P

# Inion Inc

Weston, FL Phone: 954-659-9224 Web: www.inion.com Product Codes: DEV, I, SI

Innomed, Inc. 3073 Savannah, GA Phone: 912-236-0000 Web: www.innomed.net Product Codes: CS, SURG, SI

Innovative Medical Products4135Plainville, CTPhone: 800-467-4944Web: www.impmedical.comProduct Codes: DEV, MS, SG, SURG, SI

Innovative Sports Medicine4235Plainville, CTPhone: 860-793-0391Web: www.ismmedical.comProduct Codes: DEV, MS, SG, SURG

COMPANY	BOOTH NO.
Instratek Houston, TX Phone: 281-890-8020 Web: www.instratek.com Product Codes: DEV, I, SI	2509
INSURGICAL Power To Key Largo, FL Phone: 305-807-4858 Web: www.insurgical.com Product Codes: BNE, DEV,	
Intai Technology Corp. Taichung, Taiwan Taiwan Phone: 88 6423595336 Web: www.intai.com.tw Product Codes: BNE, BB, I	4124 , SI
In'Tech Medical Memphis, TN Phone: 901-647-1304 Web: www.intech-medical.e Product Codes: BB, DEV, I,	
Integra Plainsboro, NJ Phone: 609-275-0500 Web: www.integralife.com Product Codes: BNE, DEV,	723 I, SURG, T
Integrated Endoscopy Rancho Santa Margarita, C Phone: 949-887-9860 Web: www.iescope.com Product Codes: AS, DEV, S	
Intellijoint Surgical Waterloo, ON Canada Phone: 519-342-3178 Web: www.intellijointsurgic Product Codes: BB, COM,	
Intrauma SRL Rivoli, TO Italy Phone: 39 119539496 Web: www.intrauma.com Product Codes: I, SI	3327
Intrepid Orthopedics Richf eld, OH Phone: 330-659-0855 Web: www.intrepidortho.co Product Codes: DEV, I, SI	2818 om
Invibio Biomaterial Solu West Conshohocken, PA Phone: 484-342-6004 Web: www.invibio.com Product Codes: BB, DEV, I,	

COMPANY	BOOTH NO.
InVivoLink Nashville, TN Phone: 866-478-8981 Web: www.invivolink.com Product Codes: COM	4288
Invuity San Francisco, CA Phone: 415-655-2178 Web: www.invuity.com Product Codes: SI	1726
IOT - Innovative Orthope Technologies, LLC Houston, TX Phone: 409-658-1017 Web: www.iotiot.com Product Codes: MS, SURG, S	
<b>ITS.</b> Maitland, FL Phone: 407-971-8054 Web: www.its-implant.com Product Codes: I	1761
IU Kelley School Physicia Indianapolis, IN Phone: 317-274-3855 Web: www.kelley.iupui.edu/p Product Codes: EDU, PM	
J	
Jackson & Coker Alpharetta, GA Phone: 800-272-2707 Web: www.jacksoncoker.com Product Codes: PR, PM	1629
Jade Precision Medical Components, LLC Huntingdon Valley, PA Phone: 215-947-5762 Web: www.jademed.com Product Codes: BB, DEV, FR	<b>4181</b> ST

JALEX Medical	1863
Westlake, OH	
Phone: 440-242-7585	
Web: www.jalexmedical.com	
Product Codes: BB, DEV, SI	
Janco, Inc.	1627
Dover NH	

Dover, NH Phone: 207-752-2559 Web: www.janco-inc.com Product Codes: FRST, MS, OTH, SURG

### Jeil Medical Corporation Seoul Republic of Korea Phone: 82 23503898 Web: www.jeilmed.co.kr Product Codes: BB, DEV, I

COMPANY	BOOTH NO.
<b>Jewel Precision</b> Cedar Grove, NJ Phone: 973-857-5545 Web: www.jewelprecision.com Product Codes: DEV	1344 n
Jiangsu BaiDe Medical Instrument Co., Ltd. Zhangjiagang, Jiangsu China Phone: 86 51256987731 Web: www.bd-ortho.com Product Codes: I, O, SI	2714
Jiangsu Jinlu Group Medie Device Co., Ltd. Jiangsu China Phone: 86 13962470752 Web: www.jinluyx.cn Product Codes: BNE, DEV, I,	
JJ International Instrumen Raleigh, NC Phone: 919-264-4292 Web: www.myjjonline.com Product Codes: SI	ts 2314
<b>joimax, Inc.</b> Irvine, CA Phone: 949-859-3472 Web: www.joimaxusa.com Product Codes: AS, I, SURG,	1281 SI
JointPoint Largo, FL Phone: 305-975-5922 Web: www.jointpoint.com Product Codes: COM, DI, FR	<b>1966</b> .st, IMG
Jones & Bartlett Learning Burlington, MA Phone: 978-639-3422 Web: www.jblearning.com Product Codes: EDU, PUB	1916
Joslin Orthopedic Gear San Diego, CA Phone: 415-656-3500 Web: www.armsling.com Product Codes: DEV, MS, SG	910
<b>JRF Ortho</b> Centennial, CO Phone: 310-351-7251 Web: www.JRFORTHO.org Product Codes: DEV, T	1454
JRI Orthopaedics Ltd Sheff eld, South Yorkshire	3765

Sheff eld, South Yorkshire United Kingdom Phone: 44 1143453200 Web: www.jri-ltd.com Product Codes: EDU, I, P

4167

COMPANY BOOT	H NO.	COMPANY
K K2M, Inc. Leesburg, VA Phone: 703-777-3155 Web: www.k2m.com	2267	kinematechs, LLC Cincinnati, OH Phone: 513-900-0514 Web: www.kinematechs. Product Codes: COM, D
Product Codes: BNE, DEV, I, SURG, SI Kaiser Medical Inc. Southampton, NJ Phone: 609-257-3542 Web: www.kaisermedicalinc.com Product Codes: DEV, FRST, REHB	1482	Kinetec USA Jackson, WI Phone: 561-345-1911 Web: www.kinetec.fr Product Codes: REHB, S Kneebourne Therapeu
Kaiser Technology Co., Ltd. Taichung City, Taiwan Taiwan Phone: 425-308-2149 Web: www.kaiser-tech.com.tw Product Codes: SURG	2482	Noblesville, IN Phone: 317-770-8355 Web: www.eliteseat.com Product Codes: DEV, RE Komet Medical Savannah, GA
Kapp Surgical Instrument Inc. Cleveland, OH Phone: 216-587-4400 Web: www.kappsurgical.com Product Codes: I, MS, SI	3844	Phone: 888-463-5803 Web: www.ortho-circle.c Product Codes: SI Konica Minolta Garner, NC Phone: 919-792-6420
Kapstone Medical Waxhaw, NC Phone: 704-665-5538 Web: www.kapstonemedical.com Product Codes: BB, DEV, IMG, I, SUR(		Web: www.viztek.net Product Codes: COM, D Koros USA, Inc. Moorpark, CA Phone: 805-529-0825
Karl Storz Endoscopia-Latino America El Segundo, CA Phone: 424-218-8304 Product Codes: OTH	2822	Web: www.korosusa.com Product Codes: SI KYOCERA Medical C Osaka Japan
Karl Storz Endoscopy-America, Ind El Segundo, CA Phone: 424-218-8304 Web: www.karlstorz.com Product Codes: AS, COM, DEV, SURG		Phone: 81 663501036 Web: www.kyocera-md.j Product Codes: DEV, I, N
Kasios L'Union France Phone: 33 534273323 Web: www.kasios.com Product Codes: BNE, I	1611	L3 Healthcare Design Altamonte Springs, FL Phone: 407 865-6160 Product Codes: FPD Leader Biomedical Amsterdam, North Holla
Keeler Instruments Broomall, PA Phone: 610-353-4350 Web: www.keelerusa.com Product Codes: SI	803	Netherlands Phone: 31 207997793 Web: www.leaderbiomed Product Codes: BNE, BB
Kinamed, Inc. Camarillo, CA Phone: 805-384-2748 x220 Web: www.kinamed.com Product Codes: DEV, I, SURG, SI	1745	Naples, FL Phone: 239-732-2915 Web: www.lenkbar.com Product Codes: SI

COMPANY	BOOTH NO.
kinematechs, LLC Cincinnati, OH Phone: 513-900-0514 Web: www.kinematechs.org Product Codes: COM, DI, FI	<b>974</b> RST
Kinetec USA Jackson, WI Phone: 561-345-1911 Web: www.kinetec.fr Product Codes: REHB, SG	4065
Kneebourne Therapeutic Noblesville, IN Phone: 317-770-8355 Web: www.eliteseat.com Product Codes: DEV, REHB	LLC 3773
Komet Medical Savannah, GA Phone: 888-463-5803 Web: www.ortho-circle.com Product Codes: SI	1325
Konica Minolta Garner, NC Phone: 919-792-6420 Web: www.viztek.net Product Codes: COM, DI, E	3023 MR, XRAY
Koros USA, Inc. Moorpark, CA Phone: 805-529-0825 Web: www.korosusa.com Product Codes: SI	1944
KYOCERA Medical Corp Osaka Japan Phone: 81 663501036 Web: www.kyocera-md.jp Product Codes: DEV, I, MS,	
L	
L3 Healthcare Design Inc Altamonte Springs, FL Phone: 407 865-6160 Product Codes: FPD	. 2323
Leader Biomedical Amsterdam, North Holland Netherlands Phone: 31 207997793 Web: www.leaderbiomedical Product Codes: BNE, BB, I, 7	
Lenkbar, LLC Naples, FL	4173

# Р LH Medical Corporation 3776 Fort Wayne, IN Phone: 260-432-5670 Web: www.lhindustries.com Product Codes: I, SI Li Wai Precision International Ltd. 3802 Tsim Sha Tsui, Kowlon Hong Kong Phone: 852 23746238 Web: www.aquilamedical.com Product Codes: BNE, SURG Life Instrument Corporation 2335 Braintree, MA Web: www.lifeinstruments.com Product Codes: SURG, SI Lifebridge Health/Rubin Institute for Advanced Orthopedics Baltimore, MD Phone: 410-601-9798 Web: www.rubininstitute.com Product Codes: COM, EDU, PR, PUB 2329 LifeLink Tissue Bank Tampa, FL Phone: 813-886-8111 Web: www.lifelinktb.org Product Codes: BNE, T LifeNet Health Virginia Beach, VA Phone: 757-609-4382 Web: www.lifenethealth.org Product Codes: BNE, I, T LifePoint Health Brentwood, TN Phone: 615-218-2413 Web: www.lifepointgoodlife.com Product Codes: PR Lilly USA, LLC 2481 Indianapolis, IN Phone: 317-276-2000 Web: www.lilly.com Product Codes: PH 2173 LimaCorporate Spa Villanova di San Daniele del Friuli, UD Italy

Phone: 39 432945414 Web: www.limacorporate.com Product Codes: DEV, I, P, SI

Lipogems 646 Norcross, GA Phone: 404-626-7122 Product Codes: DEV, FRST, T

# ).

# BOOTH NO.

3314

LEXI Co., Ltd.
Tokyo
Japan
Phone: 81 353944833
Web: www.lexi.co.jp/index_en.php
Product Codes: COM, IMG, SI

COMPANY

# Phone: 781-849-0109

# 1809

1751

# 3080

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COMPANY	BOOTH NO.
Llambrich Precision, S.L. Barcelona Spain Phone: 34 932649623 Web: www.llambrich.com Product Codes: BB, DEV, MS	<b>2922</b> 5, OTH, SI
Lockdown Surgical Inc. Chanhassen, MN Phone: 855-856-2536 Web: www.lockdownsurgical Product Codes: DEV, I, SI	3911 I.com
Locum Leaders, Inc. Alpharetta, GA Phone: 678-636-4416 Web: www.locumleaders.con Product Codes: BB, EDU, PR	
LocumTenens.com Alpharetta, GA Phone: 678-992-1267 Web: www.locumtenens.com Product Codes: PR	3180
Lomed Nederland BV 'S-Hertogenbosch Netherlands Phone: 31 736417464 Web: www.lomed.com Product Codes: CS, FRST, O'	1074 TH, SG
Lowell, Inc. Minneapolis, MN Phone: 763-493-6629 Web: www.lowellinc.com Product Codes: BB, DEV, I, S	3805 SI
Lumitex MD Strongsville, OH Phone: 440-243-8401 Web: www.lumitexmd.com Product Codes: SURG, SI	1247
М	
M*Modal Franklin, TN Phone: 267-535-7222 Web: www.mmodal.com Product Codes: COM, EMR	, FRST, OTH
M.J. Markell Shoe Co., Ir Yonkers, NY Phone: 914-963-2258 Web: www.markellshoe.com Product Codes: O, SF, SG	nc. 744
Madison Ortho Inc. San Juan Puerto Rico Phone: 787-945-5800 Web: www.madisonorthoinc. Product Codes: DEV, I, P	1253 .com

I ECHNICAL J	EXHIBITS	44

COMPANY BOOT	
<b>1agnus Magnetica, LLC</b> os Angeles, CA none: 323-680-5411 7eb: www.deltapulse.net roduct Codes: DEV, REHB	3426
<b>Iahe Medical GMBH</b> mmingen-Liptingen ermany none: 49 746592750 /eb: www.mahe-med.de roduct Codes: BB, FRST, I, SURG, SI	1423
fallinckrodt Pharmaceuticals, Inc an Diego, CA none: 858-436-1464 Zeb: www.mallinckrodt.com roduct Codes: PH	. 1215
<b>fammon International Corp.</b> aipei City aiwan none: 886 227174777 Veb: www.mammonmedical.com.tw roduct Codes: O, SF, SG	1223
AQUET Vayne, NJ none: 973-709-7792 Veb: www.maquet.com roduct Codes: SURG, SI	2353
farle Group fogent rance none: 33 325313734 Web: www.marle.fr roduct Codes: BB, DEV, FRST, I, SI	1115
<b>fatch Grade Medical</b> Geenah, WI none: 920-422-4952 Veb: www.matchgrademed.com roduct Codes: DEV, SURG	4108
<b>laterialise</b> euven elgium none: 32 16396256 /eb: www.ortho.materialise.com roduct Codes: AM, COM, DEV, I, O <sup>*</sup>	<b>3781</b> TH, P, SI
IatOrtho Ltdeatherhead, Surreynited Kingdomnone: 44 1372 2242547eb: www.matortho.com/roduct Codes: I	4272

Maxx Plymouth Meeting, PA Phone: 267-391-9590 Web: www.maxxmed.com Product Codes: DEV, I

## O. COMPANY

# BOOTH NO.

767

Mazor Robotics
Drlando, FL
Phone: 407-581-3464
Web: www.mazorrobotics.com
Product Codes: COM, DEV, SURG

# McGinley Orthopaedic 1981 Innovations, LLC Casper, WY Phone: 307-315-6419 Web: www.mcginleyorthopaedicinnovations. com Product Codes: DEV, SURG, SI

MCS - Medical Compression	1967
Systems	
Or Akiva	
Israel	
Phone: 972 46266630	
Web: www.mcsmed.com	
Product Codes: DEV, MS	

# Aedacta International

Castel San Pietro Switzerland Phone: 41 916966060 Web: www.medacta.com Product Codes: I, P

# Aedartis, Inc.

Exton, PA Phone: 610-961-6106 Web: www.medartis.com Product Codes: I

### 1383

753

3231

MedCure, Inc. Portland, OR Phone: 702-338-2626 Web: www.medcurestc.org Product Codes: AM, EDU, OTH, T

Medelita Scrubs & Lab Coats3422San Clemente, CAPhone: 877-987-7979Web: www.medelita.comProduct Codes: MS, OTH, SF, SG

MedFix International, LLC	2303
Tucson, AZ	
Phone: 520-398-5467	
Web: www.medf x.com	
Product Codes: BB, DEV, I, MS, SURG,	SI

Medical Component Specialists 773 Bellingham, MA Phone: 508-966-0992 Web: www.medicalcomponentspecialists.com Product Codes: FRST

# Medical Consultants Network3323Seattle, WAPhone: 206-621-9097Web: www.mcn.comProduct Codes: OTH, PR

COMPANY	BOOTH NO.
Medical Device & Implan LLC (MDI) Lancaster, PA Phone: 717-945-7451 Web: www.mdi-llc.net Product Codes: DEV, FRST,	
Medical Device Specialty San Antonio, TX Phone: 210-286-9298 Product Codes: DEV, FRST	4284
Medical Education Resea Institute Memphis, TN Phone: 901-722-8001 Web: www.meri.org Product Codes: BB	rch 2525
Medical Illumination/NU Surgical San Fernando, CA Phone: 818-838-3025 Web: www.medillum.com Product Codes: FRST, SURC	
Medical Practice Solution Plano, TX Phone: 469-500-0699 Web: www.medipracticesolu Product Codes: BB, FRST, O	tions.com
Medical Products Resour Burnsville, MN Phone: 952-277-1263 Web: www.m-p-r.com Product Codes: SG, SURG, S	
Medicalwriters.com LLC Zurich Switzerland Phone: 41-7965137995 Web: www.medicalwriters.cc Product Codes: BB, EDU, FF	
MediCapture Plymouth Meeting, PA Phone: 610-238-0701 Web: www.medicapture.com Product Codes: DI, IMG, O	
MedicMicro SA Sainte-Croix Switzerland Phone: 41 245577583 Web: www.medicmicro.ch Product Codes: DEV, MS, SU	3675 JRG, SI
Mediliant Le Locle Switzerland Phone: 41 325521000 Web: www.mediliant.com Product Codes: BB, DEV, I	2718

Alpha Listings

COMPANY	BOOTH NO.
MediNatura Albuquerque, NM Phone: 844-633-4628 Web: www.medinatura.com Product Codes: FRST	660
Medipro Hospital Equipr Ontario, CA Phone: 909-390-9313 Web: www.mediproonline.cc Product Codes: AS, BNE, DI MS, MRI, OTH, P, REHB, S	om EV, DI, IMG, I,
Meditech Group, LLC New City, NY Phone: 845-639-9509 Web: www.meditechny.com Product Codes: CS, MS, O, I	<b>1319</b> P, SF, SG
Medmix Systems AG Rotkreuz Switzerland Phone: 41 417980680 Web: www.medmix.ch Product Codes: BB, DEV, MS	<b>2316</b> S, PH, SI, T
MedShape, Inc. Atlanta, GA Phone: 678-235-3316 Web: www.medshape.com Product Codes: DEV, I	3503
Medstrat, Inc Downers Grove, IL Phone: 630-960-8700 Web: www.medstrat.com Product Codes: DI	2903
Medtech Surgical, Inc Newark, NJ Phone: 855-767-2268 Web: www.medtechsurgical. Product Codes: DEV, SURG	3709
Medtronic Memphis, TN Phone: 800-876-3133 Web: www.medtronic.com Product Codes: DEV, IMG, I	1533 I, SURG, SI
Medweb San Francisco, CA Phone: 415-690-6224 Web: www.medweb.com Product Codes: BB, COM, D PM, Xray	3480 DI, EMR, OTH,
Medyssey Spine Elk Grove Village, IL Phone: 847-427-0200	1167

Phone: 847-427-0200 Web: www.medyssey.com Product Codes: I, SI

### IO. COMPANY

# BOOTH NO.

2229

Merete Medical, Inc.		
Berlin		
Germany		
Phone: 49 30779980124		
Web: www.merete-medical.com		
Product Codes: BB, I, P, SURG, SI		

Merge Healthcare 2931 Chicago, IL Phone: 312-946-2511 Web: www.merge.com Product Codes: COM, DI, EMR, IMG, PM

Meridian Medical Management 2693 Windsor, CT Phone: 860-787-1200 Web: www.m3meridian.com Product Codes: OTH, PM, COM

Metabiomed Inc.	1413
Chalfont, PA	
Phone: 267-282-5893	
Web: www.meta-biomed.com	
Product Codes: BNE, SURG, SI	

Metal Craft

2719

Elk River, MN Phone: 763-635-3133 Web: www.metal-craft.com Product Codes: I, SI

4185

Miami Anatomical Research Center 1462 Doral, FL Phone: 305-716-0966 Web: www.marctraining.com Product Codes: EDU, OTH

**MicroAire Surgical Instruments** 3237 Charlottesville, VA Phone: 434-975-8000

Web: www.microaire.com Product Codes: SI

**Micron Products** Fitchburg, MA Phone: 978-602-1482 Web: www.micronproducts.com Product Codes: CS, I, SI

**MicroPort Orthopedics** 4123 Arlington, TN Phone: 901-867-4681 Web: www.ortho.microport.com Product Codes: I

Microsurgery Instruments, Inc. 2402 Bellaire, TX Phone: 713-664-4707 Web: www.microsurgeryusa.com Product Codes: SURG, SI

### **Midwest Medical**

Atlanta, GA Phone: 877-593-3546 Web: www.mwmedical.us Product Codes: DEV

1483

### COMPANY BOOTH NO. Millstone Medical Outsourcing 1375 Fall River, MA Phone: 508-679-8384 Web: www.millstonemedical.com Product Codes: BNE, BB, COM, DEV, I, OTH, SI, T SI MiMedx 1261 Marietta, GA Phone: 770-823-3104 Web: www.mimedx.com Product Codes: T Mizuho OSI 3873 Union City, CA Phone: 510-429-1500 Web: www.mizuhosi.com Product Codes: MS, SG, SURG MMC Medical & ASC Finance 3387 Orlando, FL Phone: 321-231-8747 Web: www.mmcmedical.net Product Codes: FRST Mobile Workforce Inc. 3289 Port Orchard, WA Phone: 360-895-7500 Web: www.mobile-workforce.com Product Codes: BB, COM, EDU, MS, PM Modal Manufacturing 668 North Palm Beach, FL Phone: 561-440-4460 Product Codes: FRST, I, MS Models Plus, Inc. 1361 Kingsford Heights, IN Phone: 219-393-5591 Web: www.bonemodels.com Product Codes: AM Modernizing Medicine, Inc. 2881 Boca Raton, FL Phone: 561-880-2998 Web: www.modmed.com Product Codes: COM, EMR Austin, TX 977 Mount Sinai Health System New York, NY Phone: 212-241-6500 Web: www.mountsinaihealth.org/patient-care/ orthopaedics Product Codes: FRST **MSM Products, LLC** 1712 Centerville, OH Phone: 937-238-2660 Web: www.msmproductsllc.com Product Codes: FRST, MS, REHB, SG MTF 3737

Edison, NJ Phone: 732-661-2574 Web: www.mtf.org Product Codes: BNE, I, T

### COMPANY

# BOOTH NO.

MTM Medical Inc. 650 Tequesta, FL Phone: 561-746-0828 Web: www.mtmmedical.net Product Codes: AS, BNE, FRST, OTH, SURG,

Multi Radiance Medical Solon, OH Phone: 440-542-0761 Web: multiradiance.com Product Codes: DEV, FRST, OTH

Musculoskeletal Clinical **Regulatory Advisers**, LLC Washington, DC Phone: 202-552-5800 Web: www.mcra.com Product Codes: OTH

**Muve Health** Broomf eld, CO Phone: 888-534-6883 Web: www.muvehealth.com Product Codes: FRST, PR

MX Orthopedics, Corp. Cambridge, MA Phone: 617-733-9935 Web: http://www.mxortho.com Product Codes: BNE, FRST, I

**Myoscience** Fremont, CA Phone: 408-421-5857 Web: www.iovera.com Product Codes: DEV, FRST

# Ν

N2 Biomedical, LLC Bedford, MA Phone: 781-275-6001 Web: www.spirecorp.com Product Codes: O Nadia International, Inc.

Phone: 512-301-3888 Web: www.ronadro.com Product Codes: OTH

National Association of 1910 Orthopaedic Technologists - NAOT Indianapolis, IN Phone: 317-205-9484 Web: www.naot.org Product Codes: AO

National Board Certif cation 2026 Orthopaedic Physician Assistant Burlington, WI Phone: 262-757-3373 Product Codes: AO

# COMPANY

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1102

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# BOOTH NO.

Commun Doo	111100
NCS Lab S.r.L. Carpi, Modena Italy Phone: 39-059669813 Web: www.ncs-lab.com	1484
Product Codes: AS, BNE, DEV, I, SI	
Nebula Surgical Pvt. Ltd. Rajkot India Phone: 02812238989 Web: www.nebulasurgical.com Product Codes: FRST, SURG, SI	1380
NewClip Technics Haute Goulaine France Phone: 33 228212323 Web: www.newcliptechnics.com Product Codes: DEV, I	1417
NextGen Healthcare Horsham, PA Phone: 215-657-7010 Web: www.nextgen.com Product Codes: COM, EMR, OTH,	1203 PM
NIH Osteoporosis & Related Bone Diseases Rockville, MD Phone: 800-624-2663 Web: www.bones.nih.gov Product Codes: BNE, OTH	1917
Nimbic Systems, Inc. Stafford, TX Phone: 281-565-5715 Web: www.nimbicsystems.com Product Codes: SURG	3714
Ningbo Boly Medical Equipmen Co., Ltd. Yuyao, Zhejiang China Phone: 86 13567453385 Web: www.bolymedical.com Product Codes: FRST, SI	t 972
Nordson Medical Saint Paul, MN Phone: 310-702-9958 Web: www.nordsonmedical.com Product Codes: DEV, SURG	1009
Norman Noble, Inc. Highland Heights, OH Phone: 216-851-4145 Web: www.nnoble.com Product Codes: BB	1452
North American Spine Society Burr Ridge, IL Phone: 630-230-3635 Web: www.spine.org Product Codes: EDU, PUB	1923

COMPANY	BOOTH NO.
NovaBone Products LLC Alachua, FL Phone: 386-462-7660 Web: www.novabone.com Product Codes: BNE, DEV, I	2622
Nuance Burlington, MA Phone: 781-791-8978 Web: www.emdat.com Product Codes: COM, PM	1422
NueHealth Leawood, KS Phone: 913-387-0510 Web: www.nuehealth.com Product Codes: FPD, PR, PM	2214
NuTech Birmingham, AL Phone: 205-290-2158 Web: www.nutechmedical.com Product Codes: BNE, I, T	3409 m
Nutramax Laboratories Consumer Care, Inc. Edgewood, MD Phone: 410-776-4000 x4022 Web: www.nutramaxlabs.com Product Codes: OTH	4003 n
NYU Langone Hospital for Diseases New York, NY Phone: 212-598-6263 Web: www.orthosurgery.med Product Codes: EDU	
0	
Oberd Columbia, MO Phone: 573-442-7101 Web: www.oberd.com Product Codes: COM, EDU,	2786 MKT, PM
ODI North America Tampa, FL Phone: 813-443-4905 Web: www.ODI-NA.com Product Codes: I, SI	2223
Off ce Practicum Horsham, PA Phone: 800-218-9916 Web: www.off cepracticum.cc specialty-ehr/ Product Codes: EMR, FRST,	
OLC Education and Conf Center Rosemont, IL Phone: 847-384-4208 Web: www.olcevents.com Product Codes: EDU	erence 4017

Alpha Listings

COMPANY	BOOTH NO.	COMPANY
Omega Surgical Instrumen Grand Blanc, MI Phone: 810-695-9800 Web: www.omegasurgical.con Product Codes: CS, DEV, SI		ORTHO CARE New Delhi India Phone: 91 9810038 Web: www.orthoca Product Codes: I, F
OMNI East Taunton, MA Phone: 617-283-0162 Web: www.omnils.com Product Codes: DEV, IMG, I	3823	Ortho Developm Draper, UT Phone: 801-619-34 Web: www.odev.co Product Codes: DE
<b>Operation Walk USA</b> Rosemont, IL Phone: 847-420-5750 Web: www.opwalkusa.com Product Codes: AO	2010	Orthoconnection Reading, Berks United Kingdom Phone: 44 2031153 Web: www.orthoco
Orascoptic Middleton, WI Phone: 800-369-3698 Web: www.orascoptic.com Product Codes: FRST	1024	Product Codes: AS. DI, FRST, IMG, I, SG, SURG, SI, T OrthoD
Orca Health Sandy, UT Phone: 801-391-9519 Web: www.orcahealth.com Product Codes: BB, COM, ED	1481 DU	Gloucestershire United Kingdom Phone: 44 145182 Web: www.orthod. Product Codes: DE
Orchid Orthopedic Solutio Holt, MI Phone: 517-694-2300 Web: www.orchid-ortho.com Product Codes: BB, DEV, I, O		Orthof x Lewisville, TX Phone: 214-937-22 Web: www.orthof x Product Codes: DE
OrmoSys by Schuh Langm Raubling, Bavaria Germany Phone: 49 80358739232 Web: www.ormosys.com Product Codes: BB, DI, OTH,		OrthoGrid Syster Salt Lake City, UT Phone: 801-703-58 Web: www.orthogr Product Codes: FR Orthokey Italia S
Orrex Medical Technologi Eustis, FL Phone: 321-279-7565 Web: www.orrexmedical.com Product Codes: FRST	es LLP 1425	Firenze Italy Phone: 39 3402545 Web: www.orthoke Product Codes: DI,
Ortech Data Centre Inc. London, ON Canada	3187	OrthoMed, Inc. Tigard, OR Phone: 503-234-96 Web: www.orthom

Phone: 226-663-5399 x110 Web: www.ortechsystems.com

Product Codes: COM, PM

Phone: 610-971-0992

Web: www.orteq.com Product Codes: FRST, I

Phone: 949-525-9027

Product Codes: IMG

Web: www.orthalign.com

OrthAlign, Inc.

Aliso Viejo, CA

Orteq Ltd.

Wayne, PA

661

2571

Phone: 91 9810038246 Web: www.orthocare.in Product Codes: I, P, SI Ortho Development 2953 Draper, UT Phone: 801-619-3449 Web: www.odev.com Product Codes: DEV, I Orthoconnections 746 Reading, Berks United Kingdom Phone: 44 203115574 Web: www.orthoconnections.com Product Codes: AS, BNE, BB, CS, COM, DEV, DI, FRST, IMG, I, MKT, MRI, O, P, REHB, SF, SG, SURG, SI, T 2219 **OrthoD** Gloucestershire United Kingdom Phone: 44 1451821311 Web: www.orthod.com Product Codes: DEV, I, SURG 1569 Orthof x Lewisville, TX Phone: 214-937-2205 Web: www.orthof x.com Product Codes: DEV OrthoGrid Systems, Inc. 754 Salt Lake City, UT Phone: 801-703-5866 Web: www.orthogrid.com Product Codes: FRST, DEV, SURG, XRAY Orthokey Italia S.R.L. 3014 Firenze Italy Phone: 39 3402549494 Web: www.orthokey.eu Product Codes: DI, IMG, SI OrthoMed, Inc. 3902 Tigard, OR Phone: 503-234-9691 x103 Web: www.orthomedinc.com Product Codes: I, MS, SURG, SI 2574 **Orthopaedic Innovation Centre** Winnipeg, MB Canada Phone: 204-926-1290 Web: www.orthoinno.com Product Codes: BB, DEV, I, P **Orthopaedic Solutions Center** 2824 Decines-Charpieu France Phone: 90 5332588232 Web: www.my-osc.eu Product Codes: I, P, SI

BOOTH NO.

2802

COMPANY	BOOTH NO.	COMPANY	BOOTH NO.
ORTHOWORLD Inc.	1813	Р	
Chagrin Falls, OH Phone: 440-543-0931		P. & M. Corporate Fina	ince 3386
Web: www.orthoworld.com		P & M Corporate Fina Southf eld, MI	iii.ce 5500
Product Codes: PUB		Phone: 248-223-3416	
Ortomac S.A.S.	4280	Web: www.pmcf.com	MUT
Bogota	4280	Product Codes: BB, FIN,	MK I
Colombia		Pacif c Instruments, Inc	c. <u>3225</u>
Phone: 571 5190515		Honolulu, HI	
Web: www.ortomacsa.com Product Codes: FRST, I		Phone: 808-941-8880 Web: www.pacif cinstrum	ente biz
,		Product Codes: BB, DEV,	
Ortosintese Ind. E Com.	LTDA 3417		
São Paulo Brazil		Pacira Pharmaceuticals	, Inc. 3509
Phone: 55 113948400		Parsippany, NJ Phone: 973-254-4320	
Web: www.ortosintese.com.	br	Web: www.pacira.com	
Product Codes: I, P, SI		Product Codes: EDU, PH	
OSSim Technologies Inc	1357	Palakkad Surgical Indu	stries Pyt Ltd 752
Montreal, QC		Palakkad, Kerala	
Canada Phone: 514-231-7505		India	
Web: www.ossimtech.com		Phone: 91 9447008452 Web: www.palakkadsurgi	cals com
Product Codes: EDU		Product Codes: BB, FPD,	
Ossur Americas	2735	Denergia	4203
Foothill Ranch, CA	2733	Panasonic Newark, NJ	4205
Phone: 949-382-3842		Phone: 210-636-7158	
Web: www.ossur.com		Web: www.panasonic.com	
Product Codes: O, P, SG		Product Codes: AS, COM	I, IMG, OTH
OsteoMed	1737	Panmed US Corp	2387
Addison, TX Phone: 972-677-4600		St Petersburg, FL Phone: 727-914-3932	
Web: www.osteomed.com		Web: www.panmed.us	
Product Codes: BNE, DEV,	I, SI	Product Codes: BNE, DE	V, I, SI
OsteoNovus	2126	Paonan Biotech Co., L	td. 3909
Toledo, OH Phone: 419-230-0965		Taipei	
Web: www.osteonovus.com		Taiwan Phone: 886 226274366	
Product Codes: BNE		Web: www.biomech-spine	e.com
0 . P . I'	2 < 0.0	Product Codes: I	
OsteoRemedies Memphis, TN	3609	Paragon Medical	3244
Phone: 901-849-5757		Pierceton, IN	3244
Web: www.osteoremedies.co	om	Phone: 574-594-2140 x10	
Product Codes: DEV, I		Web: www.paragonmedic	
Otto Trading Inc.	619, 1826	Product Codes: I, OTH, S	JURG, SI
Santa Ana, CA		Parcus Medical, LLC	2623
Phone: 949-660-8072		Sarasota, FL	
Web: www.irestmassager.com Product Codes: OTH	11	Phone: 941-755-7965 Web: www.parcusmedical	com
		Product Codes: AS, I, SUI	
Outpatient Surgery Maga	azine 1918		
Malvern, PA Phone: 610-240-4918		PCC Medical Group Portland, OR	3519
Web: www.outpatientsurger	y.net	Phone: 503-794-2099	
Product Codes: EDU, PUB		Web: www.pccstructurals	
Oxford Performance Mate	erials, LLC 3748	Product Codes: DEV, I, SI	
South Windsor, CT	JULC 3/ TO		
Phone: 860-698-9300			
Web: www.oxfordpm.com Product Codes: DEV, I			
Troduct Coucs. DE V, I			

	000111100.	COMIAN
Orthopaedic Surgery Tianjin China Phone: 86 13920006965 Web: www.onlinelibrary.wiley.o Product Codes: PUB	1819 com/journal	ORTHOWORLD Inc. Chagrin Falls, OH Phone: 440-543-0931 Web: www.orthoworld.co Product Codes: PUB
Orthopaedics Overseas, a D of HVO Washington, DC Phone: 202-296-0928 Web: www.hvousa.org Product Codes: AO	Division 1316	Ortomac S.A.S. Bogota Colombia Phone: 571 5190515 Web: www.ortomacsa.con Product Codes: FRST, I
OrthoPediatrics Warsaw, IN Phone: 877-268-6339 Web: www.orthopediatrics.con Product Codes: CS, DEV, I, SG		Ortosintese Ind. E Com São Paulo Brazil Phone: 55 113948400 Web: www.ortosintese.cor Product Codes: I, P, SI
Orthopedic Analysis LLC Oak Park, IL Phone: 312-733-7121 Web: www.orthopedicanalysis. Product Codes: OTH	2228 com	OSSim Technologies In Montreal, QC Canada Phone: 514-231-7505 Web: www.ossimtech.com Product Codes: EDU
Orthopedic Design & Tech Magazine Ramsey, NJ Phone: 201-880-2243 Web: www.odtmag.com Product Codes: PUB	nology 1919	Ossur Americas Foothill Ranch, CA Phone: 949-382-3842 Web: www.ossur.com Product Codes: O, P, SG
Orthopedic Sciences, Inc. Seal Beach, CA Phone: 562-799-5550 Web: www.orthopedicsciences. Product Codes: AS, DEV, I	2367 com	OsteoMed Addison, TX Phone: 972-677-4600 Web: www.osteomed.com Product Codes: BNE, DEV
Orthorebirth Co., Ltd. Yokohama City, Kanagawa Japan Phone: 81 455323650 Web: www.orthorebirth.com Product Codes: BNE	1309	OsteoNovus Toledo, OH Phone: 419-230-0965 Web: www.osteonovus.com Product Codes: BNE
OrthoScan Scottsdale, AZ Phone: 480-503-8010 Web: www.orthoscan.com Product Codes: DEV, DI, IMG	3013 , SURG, XRAY	OsteoRemedies Memphis, TN Phone: 901-849-5757 Web: www.osteoremedies. Product Codes: DEV, I
OrthoSensor, Inc. Dania Beach, FL Phone: 954-604-4540 Web: www.orthosensor.com Product Codes: DEV, EMR, IN	<b>3113</b> 1G, I, SI	Otto Trading Inc. Santa Ana, CA Phone: 949-660-8072 Web: www.irestmassager.c Product Codes: OTH
OrthoSolutions Maldon, Essex United Kingdom Phone: 44 1621874376 Web: www.orthosolutions.com Product Codes: BNE, DEV, ED		Outpatient Surgery Ma Malvern, PA Phone: 610-240-4918 Web: www.outpatientsurg Product Codes: EDU, PUE Oxford Performance Ma
SURG, SI		South Windsor, CT Phone: 860-698-9300 Web: www.oxfordpm.com

BOOTH NO. COMPANY

COMPANY

COMPANY	BOOTH NO.
PediFix, Inc. Brewster, NY Phone: 845-277-2850 Web: www.pedif x.com Product Codes: SF	3145
Pega Medical, Inc. Laval, QC Canada Phone: 514-815-6065 Web: www.pegamedical.co Product Codes: DEV, I, SI	4083
Penn State Milton S. He Medical Center Hershey, PA Phone: 720-412-3856 Web: www.pennstatehersh Product Codes: FRST, PR	
Perceive3D Coimbra Portugal Phone: 35 1239406474 Web: www.perceive3d.con Product Codes: AS, BB, FF	
Phillips Precision Media Elmwood Park, NJ Phone: 201-693-2236 Web: www.phillipsmedicra Product Codes: AS, BB, D SI	aft.com
Phoenix Ortho Orondo, WA Phone: 214-427-1416 Web: www.phoenixortho.n Product Codes: EMR	3286
Physician Assistants in Surgery Glendale, AZ Phone: 800-804-7267 Web: www.paos.org Product Codes: OTH	Orthopaedic 2008
Physician Owned Surge Houston, TX Phone: 281-558-5240 Product Codes: FPD, PM	ry Centers 3382
Planmed, Inc. Roselle, IL Phone: 630-894-2200 Web: www.planmed.com Product Codes: DI, XRAY	3108
Polygel, LLC Whippany, NJ Phone: 973-884-8995 Web: www.polygel.com Product Codes: BB, DEV, 1	<b>1708</b> FRST, O, SG

COMPANY	BOOTH NO.
Practice Flow Solutions Roswell, GA Phone: 678-983-0229 Web: www.practicef owsolut Product Codes: FPD, PM	2689
Practice Partners in Healt Birmingham, AL Phone: 205-824-6250 Web: www.practicepartners. Product Codes: FPD, PM	
PracticeLink.com Hinton, WV Phone: 304-250-4435 Web: www.practicelink.com Product Codes: EDU, PR, PU	2029 JB
Practis, Inc. Charlotte, NC Phone: 704-887-5300 Web: www.practis.com Product Codes: EDU, FRST,	3325 отн
PractiStem LLC Huntington Beach, CA Phone: 562-296-5165 Web: www.practistem.com Product Codes: BB, DEV, FF	1508 RST, MS, PM
Praxis Powder Technolog Queensbury, NY Phone: 518-812-0112 Web: www.praxisti.com Product Codes: I, OTH, SI	y, Inc. 4166
Precision Medical Techno Warsaw, IN Phone: 574-267-6385 Web: www.premedtec.com Product Codes: FRST, I, SI	ologies 4114
PrePak Products Oceanside, CA Phone: 800-544-7257 Web: www.prepakproducts. Product Codes: FRST, REHI	
Promimic AB Gothenburg Sweden Phone: 46 730794207 Web: www.promimic.com Product Codes: BNE, OTH	4009
ProScan Reading Services Cincinnati, OH Phone: 513-229-7115 Web: www.proscan.com Product Codes: OTH	s 3003
Prosidyan Warren NI	1365

### Warren, NJ Phone: 908-517-3666 Web: www.prosidyan.com Product Codes: BNE, DEV, SURG

NO.		COMPANY
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# BOOTH NO.

1110

657

Protech Medical, Inc.
Palm Beach Gardens, FL
Phone: 561-401-2286
Web: www.protechmed.com
Product Codes: OTH, XRAY

### Prothia LLC Worcester, MA Phone: 774-502-8409 Web: www.prothia.com Product Codes: DI, FRST, REHB

# Pulse Systems, Inc. 2787

Wichita, KS Phone: 800-444-0882 x1505 Web: www.pulseinc.com Product Codes: COM, EMR, PM

# Purac Biomaterials 2461

Tucker, GA Phone: 470-545-7107 Web: www.corbion.com/biomaterials Product Codes: BB, I, PH

### Puracon GmbH

Rosenheim, Bavaria Germany Phone: 49 80319005870 Web: www.puracon.com Product Codes: OTH

4264

756

644

1016

Pyxidis Doylestown, PA Phone: 215-230-7307 Web: www.pyxidis-medical.com Product Codes: BB, DEV, OTH

# Q

QAL Medical Marinette, WI Phone: 920-883-8243 Web: www.qalmedical.com Product Codes: DEV, REHB

QTC Medical Services, a Lockheed 4116 Martin Co. San Antonio, TX Phone: 909-978-3456 Web: www.qtcm.com Product Codes: PR

Quality Tech Services, Inc. Bloomington, MN Phone: 952-942-8321 Web: www.qtspackage.com Product Codes: FRST

# Quantum Medical Imaging,3131Division of CarestreamRonkonkoma, NYPhone: 631-567-5800Web: www.quantummedical.netProduct Codes: XRAYRAY

COMPANY	BOOTH NO.
Quest Healthcare Solu Atlanta, GA Phone: 404-645-7605 Web: www.quesths.com Product Codes: FRST, PR	
Quinn Medical San Clemente, CA Phone: 855-784-6600 Web: www.quinnmedical Product Codes: DEV, O,	
Quintus Composites Camp Verde, AZ Phone: 928-600-1677 Web: www.quintus-inc.cc Product Codes: OTH, SI	909 om
R	
Ranfac Corp. Avon, MA Phone: 508-588-4400 Web: www.marrowcellut Product Codes: BLD, BN	
Rayence Inc Fort Lee, NJ Phone: 201-585-0290 x2 Web: www.rayenceusa.co Product Codes: DI, XRA	m
Raymond Fox & Asso San Diego, CA Phone: 619-296-4595 Web: www.raymondfox.c Product Codes: EDU, FPI	com
ReadySet Surgical Cincinnati, OH Phone: 513-800-8525 Web: www.readysetsurgio Product Codes: FRST	1119 cal.com
Recro Pharmaceuticals Malvern, PA Phone: 484-395-2423 Web: www.recropharma. Product Codes: FRST, PH	com
Ref exion Health San Diego, CA Phone: 702-280-3644 Web: www.ref exionhealt Product Codes: COM, D	
Regen Lab Le Mont-Sur-Lausanne Switzerland Phone: 41 218640111 Web: www.regenlab.com Product Codes: BLD, BN	1881 E, DEV

COMPANY	BOOTH NO.
Reimbursity Medical Bi West Palm Beach, FL Phone: 561-600-4111 Web: www.reimbursity.net Product Codes: FRST, PM	:
Rendina Healthcare Re Jupiter, FL Phone: 561-630-5055 Web: www.rendina.com Product Codes: FPD, FRST	
Research for Life, LLC Phoenix, AZ Phone: 480-253-7209 Web: www.researchforlife. Product Codes: T	1348 org
RespondWell St. Louis, MO Phone: 314-422-0228 Web: www.respondwell.co Product Codes: COM, ED	
Response Ortho LLC Edgewater, NJ Phone: 201-203-5773 Web: www.responseortho. Product Codes: BNE, COM	
RevMed Inc. Gyeoung gi-do Republic of Korea Phone: 82 1088450393 Web: www.revmedinc.com Product Codes: AS, BLD, J	
Rhino SuperCart LLC Salt Lake City, UT Phone: 801-879-9362 Web: www.rhinosupercart Product Codes: FRST	.com
Riches International Gr Shanghai China Phone: 86 2120231310 Web: www.fruitsmedical.c Product Codes: FRST, O, 1	om
rms Surgical Anoka, MN Phone: 612-599-2559 Web: www.rmssurgical.com Product Codes: I, SURG, S	
Rochling Engineering P Dallas, NC Phone: 704-884-3506	lastics 2562

COMPANY	BOOTH NO.

3318

647

553

933

1911

<b>RoG Sports Medicine</b>
Orland Park, IL
Phone: 708-949-4300
Web: www.buyrog.com
Product Codes: I, SI

Rose Micro Solutions 1414, 2560, 4019 West Seneca, NY Phone: 716-608-0009 Web: www.rosemicrosolutions.com Product Codes: MS, SURG, SI

Rose Plastic USA
California, PA
Phone: 724-938-8530
Web: www.rose-medipack.com
Product Codes: FRST, OTH

RS Investments	
Denver, CO	
Phone: 720-692-6007	
Web: www.hidow.com	
Product Codes: FRST, REHB	

**RTI Surgical, Inc.** Alachua, FL Phone: 386-418-8888 x4580 Web: www.rtix.com Product Codes: BNE, DEV, I

# RYU Medical USA, Inc.3777Duluth, GAPhone: 678-878-3147Web: www.ryumedical.comProduct Codes: CS

# S

SAGE Thousand Oaks, CA Phone: 805-410-7239 Web: www.sagepub.com Product Codes: PUB

Sall Myers Medical Associates	3488
Paterson, NJ	
Phone: 201-647-7162	
Web: www.sallmyers.com	
Product Codes: PR	

Sanatmetal Ltd.3431EgerHungaryPhone: 36 302394498Web: www.sanatmetal.comProduct Codes: DEV, I, P, SISanDance Technology, LLC1324

Boston, MA Phone: 774-239-8574 Web: orthosecure.com Product Codes: COM

COMPANY	BOOTH NO.
Sanof Biosurgery Cambridge, MA Phone: 908-981-6349 Web: www.sanof .com Product Codes: DEV, T	1272
Sawbones/Pacif c Researce Vashon, WA Phone: 206-463-5551 x115 Web: www.sawbones.com Product Codes: AM, AS, ED	
SBM Inc. Winchester, MA Phone: 781-369-1782 Web: www.s-b-m.us Product Codes: BNE, I	3633
Schaerer Medical USA Cincinnati, OH Phone: 513-561-9170 Web: www.schaerermedicalu Product Codes: DEV, FPD, S	
SCHOTT North America Lighting and Imaging Southbridge, MA Phone: 508-765-9744 Web: www.us.schott.com/lig Product Codes: BB, DI, IMG SURG, XRAY	htingimaging
Science Care Phoenix, AZ Phone: 623-385-4405 Web: www.sciencecare.com Product Codes: EDU, OTH,	3248 T
Scimpla SA DCV Colonia San Anton, Mexico Mexico Phone: 281-847-4098 Web: www.arzzt.com Product Codes: BNE, DEV, I	
Seabrook International Seabrook, NH Phone: 603-760-1520 Web: www.seabrookinternat Product Codes: DEV, I, SI	2924 ional.com
SegWAY Orthopaedics San Diego, CA Phone: 760-929-0313 Web: www.segwayortho.con Product Codes: AS, DEV, FP	
SERF Decines France Phone: 33 687966845 Product Codes: I	1355

COMPANY	BOOT
SGS Specialty Group Columbia City, IN Phone: 517-914-4584 Web: www.sgsspecialtygroup Product Codes: DEV, FRST,	
SH Medical Corp. Miami, FL Phone: 305-406-2222 Web: www.shmedical.com/ Product Codes: AS, DI, SUR	G, SI
Shanghai Bojin Electric Instrument & Device Co. Shanghai China Phone: 86 2166308077 Web: www.bojin-medical.com Product Codes: BNE, XRAY	m
SheerVision, Inc. Rolling Hills Estates, CA Phone: 310-265-8918 Web: www.sheervision.com Product Codes: DEV, OTH,	SURG, SI
Shimadzu Medical System Torrance, CA Phone: 800-228-1429 Web: www.shimadzu.com/m Product Codes: DI	
Showa Ika Kohgyo Co., I Toyohashi Japan Phone: 81 532321543 Web: www.showaika.com Product Codes: I, SI	Ltd.
Shukla Medical Plscataway, NJ Phone: 734-474-1757 Web: www.shuklamedical.co Product Codes: SI	om
SI-BONE, Inc. San Jose, CA Phone: 408-207-0700 Web: www.si-bone.com Product Codes: DEV	
SICOT St. Lazare, QC Canada Phone: 514-924-3476 Web: www.sicot.org Product Codes: AO	

# **Siemens Healthcare**

Malvern, PA Phone: 610-448-6360 Web: www.usa.healthcare.siemens.com Product Codes: AS, COM, DI, EDU, FPD, IMG, MRI, SURG, XRAY

### H NO. COMPANY

3517

2614

3716

1022

3315

908

1061

1123

3324

3102

# BOOTH NO.

**Skeletal Dynamics** Miami, FL Phone: 305-596-7585 x7006 Web: www.skeletaldynamics.com Product Codes: DEV, EDU, I, P, SI

### 1823 **SLACK Incorporated**

Thorofare, NJ Phone: 856-848-1000 Web: www.healio.com/orthopedics Product Codes: PUB

### SlingShirt

3322

2015

Boca Raton, FL Phone: 561-212-7883 Web: www.slingshirt.com Product Codes: FRST, MS, OTH, SG

### Smart Medical Devices, Inc. 975

Las Vegas, NV Phone: 310-569-9499 Web: www.smartmeddevices.com Product Codes: BNE, BB, DEV, DI, FRST, IMG, SURG, SI, XRAY

### Smith & Nephew Inc.

1945

3281

Andover, MA Phone: 800-248-4668 Web: www.smith-nephew.com Product Codes: AS, DEV, EDU, I, SURG, SI

### 1945 Smith & Nephew Inc.

Cordova, TN Phone: 901-399-5849 Web: www.smith-nephew.com Product Codes: AS, DEV, EDU, I, SURG, SI

### Smith & Nephew Inc., Advanced 1945 Wound Management St Petersburg, FL Phone: 727-392-1261 Web: www.smith-nephew.com Product Codes: AS, DEV, EDU, I, SURG, SI

### **Snap On Optics** 1318

Phoenix, AZ Phone: 602-272-0827 Web: www.snaponoptics.com Product Codes: FRST

# Sociedade Brasileira de Ortopedia e 3217 Traumatologia - SBOT Sao Paulo Brazil Phone: 55 1121375414

Web: www.portalsbot.org.br/ Product Codes: AO

# Socrates Ortho

Rozelle, NSW Australia Phone: 61 416271011 Web: www.socratesortho.com Product Codes: COM, PM

Alpha Listings

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# **E**

COMPANY BOOTH	NO. COMPANY BOOTH N	10.
Solvay 1 Alpharetta, GA Phone: 770-772-8731 Web: www.SolvaySpecialtyPolymers.com Product Codes: OTH	O74Sperings Orthopaedics40Nijmegen Netherlands Phone: 31 628225657 Web: www.jointortho.org Product Codes: BNE, BB, DEV, I, SURG, SI	081 I, T
Buffalo Grove, IL Phone: 847-807-4378 Web: www.sonomaorthopedics.com Product Codes: BNE, DEV, I	232 Spinal Balance, Inc. 5 Toledo, OH Phone: 419-530-5940 Web: www.spinalbalance.us Product Codes: DEV, FRST, I, SI	561
SonoSim3Santa Monica, CAPhone: 818-370-0012Web: www.sonosim.comProduct Codes: COM, EDU, FRST	005 Spinal Simplicity LLC 22 Overland Park, KS Phone: 913-451-4414 Web: www.spinalsimplicity.com Product Codes: DEV, I, SI	209
Bothell, WA Phone: 425-951-1200 Web: www.sonosite.com Product Codes: DEV, DI, IMG	Shelton, CT Phone: 203-944-9494 Web: www.spinewave.com Product Codes: FRST	876
Sontec Instruments, Inc. 2 Centennial, CO Phone: 303-790-9411 Web: www.sontecinstruments.com Product Codes: SI	531 Spineway 10 Ecully France Phone: 33 478655690 Web: www.spineway.com	018
Park Ridge, NJ Phone: 551-804-1608 Web: www.sony.com/medical Product Codes: DI, SURG, XRAY	Product Codes: I, PSpiracur33Sunnyvale, CAPhone: 408-701-5361Web: www.spiracur.comProduct Codes: DEV, SI	326
Buenos Aires Argentina Phone: 54 1153681574 Web: www.southamericaimplants.com Product Codes: AS, BNE, FRST, I, P, SURC	Spring Loaded Technology 15 Dartmouth, NS Canada , SI Phone: 902-448-3578 Web: www.springloadedtechnology.com	527
Barrie, ON Canada Phone: 705-726-9383 Web: www.southmedic.com Product Codes: DEV, MS, SURG, SI, T	New York, NY Phone: 212-460-1600 Web: www.springer.com Product Codes: PUB	902
Deer Park, NY Phone: 646-884-0279 Web: www.fortebrace.com Product Codes: O, SF, SG	Montvale, NJ Phone: 201-802-1300 Web: www.srssoft.com Product Codes: COM, EMR, IMG, PM	781
Spark, Inc. 4 Jacksonville, FL Phone: 904-732-4391 Web: www.thinksparkinc.com Product Codes: FRST, MKT, OTH	Stability Biologics       20         Nashville, TN       20         Phone: 855-267-5551       20         Web: www.stabilitybio.com       20         Product Codes: BNE, T       20	081

nical Exhi	BITS 45
COMPANY	BOOTH N
Stelkast, Inc. Mc Murray, PA Phone: 724-731-2212 Web: www.stelkast.con Product Codes: DEV, I	n
STERIS Corporation Mentor, OH Phone: 440-392-7117 Web: www.steris.com Product Codes: FPD, S	
Steute Meditech, Inc Ridgef eld, CT Phone: 203-244-6302 Web: www.steutemedit Product Codes: BNE, I SI, XRAY	ech.com
Stryker Mahwah, NJ Phone: 201-831-5677 Web: www.stryker.com Product Codes: AS, BL DEV, EDU, EMR, I, IN SI, SURG, T	D, BNE, COM, CS,
Summit Manufactur Machining Bremen, IN Phone: 574-546-4571 Web: www.summitmm Product Codes: FRST, 1	i.com
Summit Medical St. Paul, MN Phone: 888-229-2875 : Web: www.instrusafe.c Product Codes: AS, BB	om
Surface Dynamics, L Cincinnati, OH Phone: 513-772-6635 Web: www.sdbiocoatin Product Codes: BNE, I	gs.com
Surgical Aff liates M Group, Inc. Sacramento, CA Phone: 217-377-2781 Web: www.samgi.com Product Codes: PR	
Surgical Devices Inc. Athens, GA Phone: 404-579-1612 Web: www.surgicaldev Product Codes: SURG	
Surgical Planning As Boston, MA Phone: 617-840-0063 Web: www.hipxpert.co Product Codes: DEV, II	m

# Alpha Listings

COMPANY	BOOTH NO.
Surgical Specialties Corpo Braintree, MA Phone: 781-602-6777 Web: www.quilldevice.com Product Codes: DEV, SI	oration 3416
SurgiMate New York, NY Phone: 212-923-5225 Web: www.surgimate.com Product Codes: EMR, PM	3389
Surgionix Ltd. Auckland New Zealand Phone: 64 94769246 Web: www.surgionix.com Product Codes: DEV, SURG	911 , SI
SurgiPrice Rockville, MD Phone: 301-807-3840 Web: www.surgiprice.com Product Codes: FRST	1709
Surgitel/General Scientif Ann Arbor, MI Phone: 734-926-4161 Web: www.surgitel.com Product Codes: SURG, SI	c Corp. 2638
Surgival Co., S.A.U. Paterna, Valencia Spain Phone: 34 961318050 Web: www.surgival.com Product Codes: I, P, SI	3866
Suzhou Kangli Orthopaet Instrument Co., Ltd. Suzhou City, Jiangsu China Phone: 86 15062474860 Web: www.kang-li.cn Product Codes: I, SI	dics 3316
Suzhou Youbetter Medica Apparatus Co., Ltd. Zhangjiagang, Jiangsu China Phone: 86 13913613681 Web: www.youbetter.cn Product Codes: FRST, I, MS	
Swiftpath DTC White Plains, NY Phone: 718-466-8132 Web: www.dtchealthcom.com Product Codes: COM, EMR	
Syncera, Powered by Smi Nephew, Inc. Andover, MA Phone: 800-248-4668 Web: www.syncera.com Product Codes: OTH	th & 2235

Alpha Listings

# BOOTH NO.

3388

2609

3287

2776

3531

1431

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2546

# Synergy Surgicalists

Bozeman, MT Phone: 509-991-5678 Web: www.synergysurgicalists.com Product Codes: PR, PM

Syntec Scientif c Corporation	4274
Taipei,	
Taiwan	
Phone: 886 227523216	
Web: www.syntec.com.tw	
Product Codes: I, SI	

# TDM Co., Ltd. Gwangju-Si, Jeollanam-do Republic of Korea Phone: 82 31732631 Web: www.tradimedics.com Product Codes: DEV, I

### TeamHealth

Morrisville, TN Phone: 865-293-5485 Web: www.teamhealth.com Product Codes: PR

### Techmetals, Inc.

Dayton, OH Phone: 937-253-5311 Web: www.techmetals.com Product Codes: BNE, BB, FRST, I, MS, P, SURG, SI, XRAY

# Tecomet

Warsaw, IN Phone: 574-267-8700 Web: www.symmetrymedical.com Product Codes: AS, BB, DEV, I, SURG, SI

# Tecres Spa

Sommacampagna Italy Phone: 39 459217311 Web: www.tecres.it Product Codes: BNE, DEV, P

# TeDan Surgical Innovations4103Sugar Land, TXPhone: 832-532-8708

Web: www.tedansurgical.com Product Codes: DEV

## **Tegra Medical** Franklin, MA Phone: 508-541-4200 Web: www.tegramedical.com Product Codes: BNE, BB, DEV, I, SI

# Teknimed

L'Union France Phone: 33 534251060 Web: www.teknimed.com Product Codes: BNE, DEV, I, P

# COMPANY BOOTH NO.

Tekscan, Inc.2630South Boston, MAPhone: 617-464-4500Web: www.tekscan.comProduct Codes: COM, DI, O, OTH, REHB

# Telef ex Medical OEM2523Gurnee, IL

Phone: 847-596-3132 Web: www.telef exmedicaloem.com Product Codes: BB, OTH

# The Journal of Bone and Joint 1831

Surgery, Inc. Needham, MA Phone: 781-449-9780 Web: www.jbjs.org Product Codes: EDU, PUB

# The Medcom Group, Ltd.

Windsor, CO Phone: 970-674-3032 Web: www.medcomgroup.com Product Codes: MS, REHB

# The Medicines Company 2810

1026

New Providence, NJ Phone: 908-771-0804 Web: www.themedicinescompany.com Product Codes: DEV, PH

# The Progressive Orthopaedic666Company8North Palm Beach, FL9Phone: 561-440-44609Product Codes: FRST, I, MS

Therapeutic Dimensions Inc.547Spokane, WAPhone: 509-323-9275Web: www.myrangemaster.comProduct Codes: EDU, FRST, REHB

# ThermoTek, Inc

Flower Mound, TX Phone: 972-874-4949 Web: www.thermotekusa.com Product Codes: DEV, MS, REHB, SI

### THI - Total Healthcare Innovation 3618 GmbH Feistritz im Rosental Austria Phone: 43 422830100 Web: www.thigmbh.at Product Codes: DEV, OTH, SURG, T

# Thieme Publishers, Inc.

New York, NY Phone: 212-584-4665 Web: www.thieme.com Product Codes: PUB 2404

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COMPANY	BOOTH	NO.	COMPANY
Think Surgical, Inc. Fremont, CA Phone: 510-249-2300 Web: www.thinksurgical.co Product Codes: DEV, OTH		3665	Triangle Upper Saddle Ri Phone: 201-825 Web: www.trian Product Codes:
Thompson Surgical Inst Inc. Traverse City, MI Phone: 231-922-0177 Web: www.thompsonsurgic Product Codes: SI	,	2434	Trice Medical King of Prussia, Phone: 610-989 Web: www.tricer Product Codes:
Thortex Portland, OR Phone: 503-969-9740 Web: www.thortexinc.com Product Codes: DEV, I, SI		1529	TriMed, Inc. Santa Clarita, C. Phone: 800-633 Web: www.trime Product Codes:
Tianjin ZhengTian Med Instrument Co., Ltd. Beijing China Phone: 86 1082292929 Web: www.ztmed.cn Product Codes: I, SI	ical	3723	TriZetto Provi Saint Louis, MC Phone: 515-570 Web: www.gater Product Codes: TST R Tibbi A e Tic. Ltd. Sti.
Tiemann Surgical Hauppauge, NY Phone: 516-849-3942 Web: www.georgetiemann. Product Codes: SURG, SI		2414	Pendik, Istanbul Turkey Phone: 90 2165 Web: www.tstsa Product Codes:
<b>Top Shelf Orthopedics</b> Tracy, CA Phone: 800-726-9180 x760 Web: www.topshelforthope Product Codes: O, REHB, S	)3 edics.com	2552	Turbett Surgic Rochester, NY Phone: 585-755 Product Codes: T Twistle, Inc.
Total Joint Orthopedics Salt Lake City, UT Phone: 801-456-6070 Web: www.tjoinc.com Product Codes: FRST		3603	Albuquerque, N Phone: 832-455 Web: www.twist Product Codes:
Total Plastics Kalamazoo, MI Phone: 269-553-5848 Web: www.totalplastics.cor Product Codes: BB, DEV, I,	n	3147	U&I Corporat Uijeongbu-Si, G Republic of Kor Phone: 82 31852 Web: www.youi Product Codes:
Townsend Design Bakersf eld, CA Phone: 661-837-1795 Web: www.townsenddesign Product Codes: O, REHB		1845	U.S. Jaclean, In Gardena, CA Phone: 310-538 Product Codes:
TranS1, Inc. Denver, CO Phone: 888-659-6630 Web: www.trans1.com		1075	UBS Financial Oakbrook Terra Phone: 630-572 Web: www.ubs.c Product Codes

Product Codes: FRST, I, SI

JMPAN Y	BOOTH NO.
i <mark>angle</mark> per Saddle River, NJ one: 201-825-1212 b: www.trianglemfg.com oduct Codes: DEV, I, SI	3309
<b>ice Medical</b> ng of Prussia, PA one: 610-989-8080 b: www.tricemedical.com oduct Codes: AS, DEV, DI,	<b>3016</b> IMG
Med, Inc. ata Clarita, CA one: 800-633-7221 b: www.trimedortho.com oduct Codes: I	3167
Zetto Provider Solution nt Louis, MO one: 515-570-9442 b: www.gatewayedi.com oduct Codes: FRST, PM	ns 2892
<b>T R Tibbi Aletler San.</b> <b>Tic. Ltd. Sti.</b> adik, Istanbul ekey one: 90 2165950182 b: www.tstsan.com aduct Codes: I, P, SI	V 2117
<mark>rbett Surgical</mark> chester, NY one: 585-755-0133 oduct Codes: DEV, FRST, I	2772 MS, SURG, SI
r <mark>istle, Inc.</mark> ouquerque, NM one: 832-455-7373 b: www.twistle.com oduct Codes: EDU, EMR, T	653 Frst, pm
U	
<b>Corporation</b> eongbu-Si, Gyeonggi-Do public of Korea one: 82 318520102 b: www.youic.com oduct Codes: I, MS, SI	3053
<mark>S. Jaclean, Inc.</mark> rdena, CA one: 310-538-2298 oduct Codes: REHB	2230
<b>3S Financial Services In</b> kbrook Terrace, IL one: 630-572-2287	z. <u>3182</u>

-5/2-228/ Web: www.ubs.com/team/tategroup Product Codes: FIN

### BOOTH NO. COMPANY

# BOOTH NO.

545

1973

3415

3749

1067

**Ultralight Optics** Costa Mesa, CA Phone: 323-316-4514 Web: www.ultralightoptics.com Product Codes: FRST, MS, SURG

### 2331 Union Surgical, LLC Doylestown, PA

Phone: 877-223-6340 Web: www.unionsurgical.com Product Codes: DEV, I, SI

### United Endoscopy 4172

Corona, CA Phone: 951-270-3400 Web: www.endoscope.com Product Codes: AS, DI, MS, SURG, SI

### US Orthopedics, Inc. 4209

Boca Raton, FL Phone: 954-210-7775 Web: www.usorthopedic.com Product Codes: DEV, I, SI

# **United Orthopedic Corporation**

Taipei Taiwan Phone: 88 6229294567 Web: www.uoc.com.tw Product Codes: I, P, SI

# V

Vasyli Medical San Rafael, CA Phone: 415-526-6923 Web: www.vasylimedical.com Product Codes: FRST, O, SF

### Velocity Orthopedics, Inc. 1023

Rancho Cucamonga, CA Phone: 909-987-4343 Web: www.velocityorthopedics.com Product Codes: AS, DEV, SI

# Venel

Omaha, NE Phone: 402-995-9143 Web: www.Venel.com Product Codes: EDU, MKT, OTH

# Vilex, Inc. Mc Minnville, TN

Phone: 931-474-7550 Web: www.vilex.com Product Codes: BNE, DEV, I, SURG, SI

### VisionScope Technologies 3009 Littleton, MA Phone: 978-961-0961 Web: www.myvsi.com

Product Codes: AS, DI

COMPANY	BOOTH NO
Vivorte, Inc. Louisville, KY Phone: 502-714-7234 Web: www.vivorte.com Product Codes: I, T	2129
VOX Telehealth Pennington, NJ Phone: 609-730-1435 Web: www.voxtelehealth.cor Product Codes: FRST	2792 n
VQ OrthoCare Irvine, CA Phone: 949-261-3814 Web: www.vqorthocare.com Product Codes: BNE, DEV, I REHB, SG	
<b>VSMPO-Tirus, US</b> Leesdale, PA Phone: 724-251-9400 Web: www.vsmpo-tirus.com Product Codes: BB, I	2203
W	
Waldemar Link GmbH & Hamburg Germany Phone: 49 4053995246 Web: www.linkhh.de Product Codes: DEV, I, P, SI	c Co. KG 1231
Webb Dordick, Rare Med Somerville, MA Phone: 617-776-1365 Product Codes: PUB	ical Books 1909
Weigao Orthopaedic Dev Co., Ltd. Weihai City, Shandong China Phone: 86 6315788927 Web: www.en.wegortho.com Product Codes: BB, I, SI	
Westlake Plastics Lenni, PA Phone: 610-306-4886 Web: www.westlakeplastics.o Product Codes: BB	2436 com
Whale Imaging Waitham, MA Phone: 781-449-7200 Web: www.whaleimaging.co Product Codes: SURG, XRA	
White Coat Video Solution Henderson, NV Phone: 702-994-8573 Web: www.whitecoatvideoso Product Codes: BB, EDU, O	olutions.com

Alpha Listings

COMPANY	BOOTH NO
White Towel Services Inc Fort Worth, TX Phone: 817-868-7900 Web: www.wtowel.com Product Codes: CS, OTH, P	
Wiltrom Co., Ltd. Hsinchu Taiwan Phone: 886 36107168 Product Codes: I	2480
Wolters Kluwer Health Philadelphia, PA Phone: 612-259-8114 Web: www.lww.com Product Codes: PUB	1837
Wound Care Innovations Addison, TX Phone: 214-205-5528 Web: www.wmgtech.com Product Codes: BNE, MS, C	
Wound Care Technologie Chanhassen, MN Phone: 952-937-2804 Web: www.dermaclose.com Product Codes: SI	es, Inc. 1302
Wright Medical Technolo Memphis, TN Phone: 901-867-4546 Web: www.wmt.com Product Codes: DEV, SI, T	ogy 945
Wuhu Ruijin Medical Ins Device Co., Ltd. Wuhu, Anhui China Phone: 86 5532672510 Web: www.whruijin.com Product Codes: DEV, I, SUF	
Х	
Xenex Disinfection Servi San Antonio, TX Phone: 210-853-2875 Web: www.xenex.com Product Codes: DEV, FRST	ces 4223
X-NOV Medical Techno Porrentruy Switzerland Phone: 41 325446560 Web: www.xnov.com Product Codes: I, P, SI	logy 4069
Xray Artistry	3139

Philadelphia, PA Phone: 856-981-6783 Web: www.xrayartistry.com Product Codes: AM, FRST, MRI, OTH, XRAY

Xtant Medical
Miamisburg, OH
Phone: 937-847-8400
Web: www.x-spine.com
Product Codes: BNE, DEV, I

YKM Medical Claims Processing2702Santa Barbara, CAPhone: 805-685-1039Web: www.ykmmedical.comProduct Codes: FRST, PM

Y

4113

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Your Practice Online, LLC 3380 Irvine, CA Phone: 877-388-8569 Web: www.yourpracticeonline.net Product Codes: BB, COM, EDU, OTH, PM, PUB

Ζ

Ziehm Imaging Inc Nuremburg Germany Phone: 49 9112172353 Web: www.ziehm.com Product Codes: SURG, XRAY

### Zigg Design LLC

Nibley, UT Phone: 435-752-7244 Web: www.ziggdesign.com Product Codes: AS, BB, DEV, I, SURG, SI

Zimmer Biomet 3245 Warsaw, IN Phone: 800-613-6131 Web: www.zimmer.com Product Codes: BLD, BNE, DEV, EDU, IMG, I, MS, SG, SURG, SI

Zimmer Biomet Institute 3437 Warsaw, IN Phone: 574-372-6672 Web: www.zimmerbiomet.com Product Codes: FRST

ZipLine Medical, Inc. Campbell, CA Phone: 888-326-8999 Web: www.ziplinemedical.com Product Codes: DEV, MS, SURG

# Ziptek LLC

Sarasota, FL Phone: 941-953-5509 Web: www.ziptekglobal.com Product Codes: I

### **ZyDoc Transcription** Islandia, NY

Phone: 631-273-1963 Web: www.zydoc.com Product Codes: EMR, PM

Anatomical Models			-
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3D Systems 1015
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American 3B Scientif c 1711
Artery Studios Inc 1108
CAE Healthcare 2823
Custom Orthopaedic Solutions 1369
EOS Electro Optical Systems 2803
GPI Prototype
Industrias Medicas Sampedro S.A.S. 1717
Materialise
MedCure, Inc 1383
Models Plus, Inc 1361
Sawbones/Pacif c Research
Xray Artistry

# **AO - Allied Organization**

American Orthopaedic Association 2816
Asociacion Argentina de Ortopedia y
Traumatologia1416
European Federation of Orthopaedics and
Traumatology (EFORT) 1811
Federacion de Sociedades de Ortopedia
y Traumatologia de America Latina -
SLAOT Federacion 2217
Federacion Mexicana de Colegios de
Ortopedia y Traumatologia AC
(FEMECOT) 1908
Indian Orthopaedic Association 2027
National Association of Orthopaedic
Technologists - NAOT 1910
National Board Certif cation Orthopaedic
Physician Assistant 2026
Operation Walk USA 2010
Orthopaedics Overseas, a Division of
HVO 1316
SICOT 3324
Sociedade Brasileira de Ortopedia e
Traumatologia - SBOT 3217

# Arthroscopic Systems

Advanced Endoscopy Devices, Inc 2604
AME/Orthotec International
American Medical Endoscopy, Inc 2408
Arthrex, Inc 1445
ArthroPlastics, Inc
Arthrosurface, Inc
CAE Healthcare
Case Medical 1008
Cayenne Medical
CONMED
CoorsTek Medical
DePuy Synthes companies of
Johnson & Johnson
Equimedic SAS 4233
Estar Medical Ltd 1176
Flagship Surgical, LLC 1122
FSN Medical Technologies
Greatbatch, Inc
HNM Medical 1987

IHI Ionbond Inc 3219
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Integrated Endoscopy 3775
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Karl Storz Endoscopy-America, Inc 3153
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Sawbones/Pacif c Research
SegWAY Orthopaedics 1713
SH Medical Corp
Siemens Healthcare
Smith & Nephew Inc 1945, 2235
South America Implants S.A 1582
Stryker
Summit Medical
Tecomet
Trice Medical
United Endoscopy
Velocity Orthopedics, Inc 1023
VisionScope Technologies 3009
Zigg Design LLC

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BHI Therapeutic Sciences, LLC	.777
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Estar Medical Ltd.	1176
Exactech, Inc	3881
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Ranfac Corp	1867
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RevMed Inc.	1427
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Amedica Corp	3044
Arcam AB	
Arthroplastie Diffusion	662
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Bionova Medical 556
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BIOTECK S.p.A. 2703
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Celling Biosciences 1382
Cellright Technologies, LLC 4122
Cerapedics, Inc
Changzhou Waston Medical
Appliance Co., Ltd
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Johnson & Johnson 2545
Dong-A ST
DragonBio Implants
Estar Medical Ltd 1176
Exactech, Inc 3881
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GenCure 1822
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Harvest Technologies Corp 1960
Hologic
Human Regenerative Technologies 1875
IHI Ionbond Inc
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Equipment Co., Ltd 557
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S.A.S
INSURGICAL Power Tools
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Jiangsu Jinlu Group Medical
Device Co., Ltd
Device Co., Ltd
K2M, Inc 2267
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K2M, Inc.2267Kasios1611Leader Biomedical4077Li Wai Precision International Ltd.3802LifeLink Tissue Bank2329
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K2M, Inc.2267Kasios1611Leader Biomedical.4077Li Wai Precision International Ltd.3802LifeLink Tissue Bank.2329LifeNet Health1751Medipro Hospital Equipment4231Metabiomed Inc.1413Millstone Medical Outsourcing.1375MTF3737
K2M, Inc.2267Kasios1611Leader Biomedical.4077Li Wai Precision International Ltd.3802LifeLink Tissue Bank.2329LifeNet Health1751Medipro Hospital Equipment4231Metabiomed Inc.1413Millstone Medical Outsourcing.1375MTF3737MTM Medical Inc.650
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K2M, Inc.2267Kasios1611Leader Biomedical.4077Li Wai Precision International Ltd.3802LifeLink Tissue Bank.2329LifeNet Health1751Medipro Hospital Equipment4231Metabiomed Inc.1413Millstone Medical Outsourcing.1375MTF3737MTM Medical Inc.650MX Orthopedics, Corp.567NCS Lab S.r.L.1484
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K2M, Inc.2267Kasios1611Leader Biomedical.4077Li Wai Precision International Ltd.3802LifeLink Tissue Bank.2329LifeNet Health1751Medipro Hospital Equipment4231Metabiomed Inc.1413Millstone Medical Outsourcing.1375MTF3737MTM Medical Inc.650MX Orthopedics, Corp.567NCS Lab S.r.L.1484NIH Osteoporosis & Related Bone1917Diseases1917NovaBone Products LLC2622NuTech3409Orthoconnections746Orthorebirth Co., Ltd.1309OrthoSolutions2973OsteoNovus2126Panmed US Corp.2387Promimic AB4009Prosidyan1365Ranfac Corp.1867Regen Lab1881

Scimpla SA DCV
Shanghai Bojin Electric Instrument
& Device Co., Ltd
Smart Medical Devices, Inc
Sonoma Orthopedic Products
South America Implants S.A
Spierings Orthopaedics 4081
Stability Biologics
Steute Meditech, Inc 1464
Stryker 3845
Surface Dynamics, LLC
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Tecres Spa 1431
Tegra Medical 4073
Teknimed
Vilex, Inc 1067
VQ OrthoCare1331
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Xtant Medical 4113
Zimmer Biomet

# **Business to Business/OEM**

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Invibio Biomaterial Solutions
Jade Precision Medical
Components, LLC 4181
JALEX Medical 1863
Jeil Medical Corporation 4167
Kapstone Medical 2208
Leader Biomedical 4077
Llambrich Precision, S.L 2922
Locum Leaders, Inc 4219
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Mahe Medical GMBH 1423
Marle Group 1115
MedFix International, LLC 2303
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Medical Practice Solutions, LLC 4183
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Mediliant 2718
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Merete Medical, Inc 2229
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Orthopaedic Innovation Centre 2574
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Tecomet
Tegra Medical 4073
Telef ex Medical OEM 2523
Total Plastics
VSMPO-Tirus, US
Weigao Orthopaedic Device
Co., Ltd
Westlake Plastics
White Coat Video Solutions
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Zigg Design LLC
000 01121
Casting Supplies & Equip
3M Health Care

3M Health Care2	2603
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BSN Medical	1209
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RYU Medical USA, Inc	3777
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# Computer Hardware/Software

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3D Systems 1015
AllMeds Specialty Practice Services 3181
Automated Healthcare Solutions 919
Bonaf de Management
Systems, Inc
Breg
CAE Healthcare
ChartLogic, Inc
CME/1st-dragon
Compulink Business Systems, Inc 2589
CONVERSION 2021
CONMED
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Cross Current Corporation
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EPM Endo Plant Muller GmbH 2636
Exscribe, Inc 2681
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Karl Storz Endoscopy-America, Inc 3153
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Mazor Robotics
Merge Healthcare
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Meridian Medical Management 2693 Millstone Medical Outsourcing 1375
Milistone Medical Outsourcing 13/3
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Modernizing Medicine, Inc
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Orca Health 1481
Ortech Data Centre Inc 3187

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RespondWell	1525
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Socrates Ortho	3281
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3M Health Care	
Active Implants Corporation	3864
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Solutions, Inc	3755
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Aspen Medical Products	1003
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Baitella AG	2315
Barrier Technologies	3109
Beijing Chunlizhengda Medical	
Instruments Co., Ltd	2373
Benvenue Medical	1111
Berkeley Advanced Biomaterials,	
Inc	2381
Better Walk Inc.	2210
Biocomposites	
Bionova Medical	556
BioPro, Inc.	2637
Biopsybell S.r.l.	1887
Bioretec Ltd	3746
Bioventus	1851
BLOXR Solutions	1480
BM Korea Co., Ltd.	2202
BME - BioMedical Enterprises	2428
Bonutti Technologies	3337
Boston Engineering Corporation	2186
Bradshaw Medical, Inc	2067
Brainlab	
Breg	745
C&A Tool Engineering, Inc	2619
Cannuf ow, Inc	
Captiva Spine, Inc.	1103
Case Medical	

Cayenne Medical	
Celling Biosciences	
CeramTec Medical Products	1581
Cerapedics, Inc	4109
Ceterix Orthopaedics	3769
Checkpoint Surgical, LLC	2089
Citieffe S.r.l.	4035
Collagen Matrix, Inc	
CoNextions Medical	
CONMED	
Consensus Orthopedics	
ContainMed, Inc.	
Conventus Orthopaedics, Inc.	
CoorsTek Medical	
Corin Group	
CuraMedix	
Curvebeam	
CyMedica Orthopedics Inc	
Danco Anodizing	3872
DePuy Synthes companies of	
Johnson & Johnson	2545
DGIMed Ortho	2671
Dicarre LLC	1124
DJO Global	
DSM Biomedical	
ElliptiGO Inc.	
Elliquence LLC	
Eminent Spine	
Empirical	2103
Empirical Endotec Inc.	2103 3161
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Empirical Endotec Inc EOS Electro Optical Systems Ergoactives Ermi, Inc Estar Medical Ltd Evonik Corporation	2103 3161 2803 .967 1710 1176 .923
Empirical Endotec Inc. EOS Electro Optical Systems Ergoactives Ermi, Inc. Estar Medical Ltd. Evonik Corporation Exactech, Inc.	2103 3161 2803 .967 1710 1176 .923 3881
Empirical Endotec Inc EOS Electro Optical Systems Ergoactives Ermi, Inc Estar Medical Ltd Evonik Corporation Exactech, Inc Extremity Medical, LLC	2103 3161 2803 .967 1710 1176 .923 3881 .703
Empirical Endotec Inc. EOS Electro Optical Systems Ergoactives. Ermi, Inc. Estar Medical Ltd. Evonik Corporation Exactech, Inc. Extremity Medical, LLC Ferring Pharmaceuticals	2103 3161 2803 .967 1710 1176 .923 3881 .703 3103
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Empirical Endotec Inc EOS Electro Optical Systems Ergoactives Ermi, Inc Estar Medical Ltd Evonik Corporation Exactech, Inc Extremity Medical, LLC Ferring Pharmaceuticals Fidia Pharma USA Flagship Surgical, LLC	2103 3161 2803 .967 1710 1176 .923 3881 .703 3103 2003 1122
Empirical Endotec Inc EOS Electro Optical Systems Ergoactives Ermi, Inc Estar Medical Ltd Evonik Corporation Exactech, Inc Extremity Medical, LLC Ferring Pharmaceuticals Fidia Pharma USA Flagship Surgical, LLC Flextronics Medical	2103 3161 2803 .967 1710 1176 .923 3881 .703 3103 2003 1122 2814
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Empirical Endotec Inc EOS Electro Optical Systems Ergoactives Ermi, Inc Estar Medical Ltd Evonik Corporation Exactech, Inc Extremity Medical, LLC Ferring Pharmaceuticals Fidia Pharma USA Flagship Surgical, LLC Flextronics Medical	2103 3161 2803 .967 1710 1176 .923 3881 .703 3103 2003 1122 2814 2605
Empirical Endotec Inc EOS Electro Optical Systems Ergoactives Ermi, Inc Estar Medical Ltd Evonik Corporation Exactech, Inc Extremity Medical, LLC Ferring Pharmaceuticals Fidia Pharma USA Flagship Surgical, LLC Flextronics Medical Flow-FX LLC Francis Lamont Innovations Ltd	2103 3161 2803 .967 1710 1176 .923 3881 .703 3103 2003 1122 2814 2605 4023
Empirical Endotec Inc EOS Electro Optical Systems Ergoactives Ermi, Inc Estar Medical Ltd Evonik Corporation Exactech, Inc Extremity Medical, LLC Ferring Pharmaceuticals Fidia Pharma USA Flagship Surgical, LLC Flextronics Medical Flextronics Medical Flow-FX LLC Francis Lamont Innovations Ltd Fx Solutions	2103 3161 2803 .967 1710 1176 .923 3881 .703 3103 2003 1122 2814 2605 4023 2723
Empirical Endotec Inc EOS Electro Optical Systems Ergoactives. Ermi, Inc Estar Medical Ltd Evonik Corporation Exactech, Inc Extremity Medical, LLC Ferring Pharmaceuticals Fidia Pharma USA Flagship Surgical, LLC Flagship Surgical, LLC Flextronics Medical Flow-FX LLC Francis Lamont Innovations Ltd Fx Solutions G-21 S.r.l.	2103 3161 2803 .967 1710 1176 .923 3881 .703 3103 2003 1122 2814 2605 4023 2723 1475
Empirical Endotec Inc EOS Electro Optical Systems Ergoactives. Ermi, Inc Estar Medical Ltd Evonik Corporation Exactech, Inc Extremity Medical, LLC Ferring Pharmaceuticals Fidia Pharma USA Flagship Surgical, LLC Flagship Surgical, LLC Flextronics Medical. Flow-FX LLC Francis Lamont Innovations Ltd Fx Solutions Game Ready	2103 3161 2803 .967 1710 1176 .923 3881 .703 3103 2003 1122 2814 2605 4023 2723 1475 1731
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Orthopaedic Solutions Center
OrthoSolutions 2973
Ortosintese Ind. E Com. LTDA 3417
Ossur Americas
Sanatmetal Ltd 3431
Skeletal Dynamics 2015
South America Implants S.A 1582
Spineway 1018
Surgival Co., S.A.U
Techmetals, Inc 2776
Tecres Spa 1431
Teknimed
Total Plastics
TST R Tibbi Aletler San.
Ve Tic. Ltd. Sti
United Orthopedic Corporation 1973
Waldemar Link GmbH & Co. KG 1231

#### Publisher

AAOS Resource Center
Artery Studios Inc
BMJ
Bone & Joint Journal
(formerly JBJS (Br)) 2016
Data Trace Publishing 2028
Jones & Bartlett Learning 1916
Elsevier
Lifebridge Health/Rubin Institute for
Advanced Orthopedics 1809
Medicalwriters.com LLC 566
North American Spine Society 1923
Orthopaedic Surgery 1819
Orthopedic Design & Technology
Magazine 1919
ORTHOWORLD Inc 1813
Outpatient Surgery Magazine 1918
PracticeLink.com

X-NOV Medical Technology ...... 4069

SAGE	1911
SLACK Incorporated	1823
Springer	1902
The Journal of Bone and Joint	
Surgery, Inc	1831
Thieme Publishers, Inc	1803
Webb Dordick, Rare Medical Books	1909
Wolters Kluwer Health	1837
Your Practice Online, LLC	3380

#### **Rehabilitation/Exercise Equipment**

American 3B Scientif c 1711
Better Walk Inc
Biopsybell S.r.l
Bird & Cronin, Inc
Bonutti Technologies
CyMedica Orthopedics Inc
Dicarre LLC 1124
DJO Global
ElliptiGO Inc
Game Ready
Glacier Tek
iKcare Medical Electrical
Equipment Co., Ltd
Inf nite Therapeutics
Kinetec USA 4065
Kneebourne Therapeutic LLC
Magnus Magnetica, LLC
Medipro Hospital Equipment
MSM Products, LLC
Orthoconnections
PrePak Products
Prothia LLC
QAL Medical
Ref exion Health 809
Riches International
Group Limited 1174
RS Investments 553
Tekscan, Inc
The Medcom Group, Ltd 1026
Therapeutic Dimensions Inc 547
ThermoTek, Inc 2404
Top Shelf Orthopedics2552
Townsend Design 1845
U.S. Jaclean, Inc 2230
VQ OrthoCare1331
Shoes and Foot Supplies

Bird & Cronin, Inc 2945
Darco International
Dicarre LLC 1124
DJO Global1029
East Coast Orthotic and Prosthetic
Corporation 1202
Flagship Surgical, LLC 1122
M.J. Markell Shoe Co., Inc 744
Mammon International Corp 1223
Medelita Scrubs & Lab Coats
Meditech Group, LLC 1319

OrmoSys by Schuh Langmeier e.K	2122
Orthoconnections	746
PediFix, Inc	3145
Span Link International, LLC	1109
Vasyli Medical	3415

#### Soft Goods (Supports)

American 3B Scientif c 1711
ArthroPlastics, Inc
Aspen Medical Products 1003
Bird & Cronin, Inc 2945
Breg
Brownmed 1725
BSN Medical 1209
CORFLEX INC
Custom Fab, Inc 1014
CyMedica Orthopedics Inc 2109
Darco International
Dicarre LLC 1124
DJO Global
Flagship Surgical, LLC
Glacier Tek
Groupe Lepine
Hapad, Inc
Innovative Medical Products
Innovative Sports Medicine
Joslin Orthopedic Gear
Kinetec USA
Lomed Nederland BV 1074
M.J. Markell Shoe Co., Inc
Mammon International Corp 1223
Madelita Scrubs & Lab Coats
Medical Products Resource
Meditech Group, LLC
Mizuho OSI
MSM Products, LLC
Orthoconnections
OrthoPediatrics
Osturo Pediatrics
Polygel, LLC
Quinn Medical
Span Link International, LLC 1109
Stryker
VQ OrthoCare
Zimmer Biomet 3245

#### **Surgical Equipment**

AcuLux, Inc
Acumed
Aesculap, Inc 4015
AIP Precision Machining
AME/Orthotec International
American Medical Endoscopy, Inc 2408
Apex Tools and Orthopedics
Applied Medical
Arcamed, LLC
Arthrex, Inc 1445
ArthroPlastics, Inc
Arthrosurface, Inc

	2220
Assut Europe s.p.a.	
Avalign Technologies	1781
Baitella AG	
BioAccess	
Biopsybell S.r.l.	1887
Blue Belt Technologies	
Bone Foam Inc.	2829
Bonutti Technologies	
Boston Engineering Corporation	2186
Bovie Medical Corporation	4217
Brasseler USA	015
CAE Healthcare	2823
Case Medical	1008
Checkpoint Surgical, LLC	2089
CONMED	3831
ContainMed, Inc	1409
CoorsTek Medical	
Danco Anodizing	3872
Designs for Vision, Inc.	
DGIMed Ortho	
DJO Global	1029
Dong-A ST	762
DragonBio Implants	
Elliquence LLC	3745
Eminent Spine	
Engineered Medical Solutions	
Engineered Medical Solutions	5//4
Enova Illumination	927
EOS Electro Optical Systems	2803
Equimedic SAS	
Evonik Corporation	
Flagship Surgical, LLC	1122
Flextronics Medical	2811
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FSN Medical Technologies	874
GE Healthcare	
Glacier Tek	
GPI Prototype	2325
Hensler Surgical Products, LLC	2/22
Thensiel Surgical Floquets, LLC	3423
IHI Ionbond Inc.	3219
IMEDICOM Co., Ltd	3730
Industrias Medicas	
Sampedro S.A.S	1717
INEX Surgical Inc.	2624
Innomed, Inc	
Innovative Medical Products	
Innovative Sports Medicine	4235
INSURGICAL Power Tools	
In'Tech Medical	
Integra	723
Integrated Endoscopy	
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Technologies, LLC	2317
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Janco, Inc.	
K2M, Inc	2267
Kaiser Technology Co., Ltd	2482
Kapstone Medical	2200
Karl Storz Endoscopy-America, Inc	
Kinamed, Inc	1745
Li Wai Precision International Ltd	
Life Instrument Corporation	
Lumitex MD	1247

Mahe Medical GMBH 1423
Marie Medical GMDH 1425
MAQUET 2353
Match Grade Medical 4108
Mazor Robotics
McGinley Orthopaedic
Innovations, LLC 1981
Innovations, LLC
MedFix International, LLC 2303
Medical Illumination/NUVO
Surgical
Medical Products Resource
MediCapture
MedicMicro SA 3675
Medipro Hospital Equipment 4231
Medtech Surgical, Inc 3709
Medtronic 1533
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Metabiomed Inc 1413
Microsurgery Instruments, Inc 2402
Mizuho OSI 3873
MTM Medical Inc650
Nebula Surgical Pvt. Ltd
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OrthoGrid Systems, Inc754
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Rochling Engineering Plastics
Kochling Engineering Plastics
Rose Micro Solutions 1414, 2560, 4019
Schaerer Medical USA 3731
SCHOTT North America, Inc
Lighting and Imaging 2715
SegWAY Orthopaedics
SH Medical Corp
SheerVision, Inc 1022
Siemens Healthcare 3102
Smart Medical Devices, Inc 975
Smith & Nephew Inc 1945
Sony Electronics
South America Implants S.A 1582
Southmedic Inc 3427
Spierings Orthopaedics 4081
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Steute Meditech, Inc 1464
Stryker
Summit Medical
Surgical Devices Inc 4180
Surgionix Ltd 911
Surgitel/General Scientif c Corp 2638
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Tecomet
THI - Total Healthcare Innovation
GmbH

Think Surgical, Inc 3655, 3	665
Tiemann Surgical 2	414
Turbett Surgical 2	772
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United Endoscopy 4	172
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Wuhu Ruijin Medical Instrument &	
Device Co., Ltd	714
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Zigg Design LLC 3	424
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Product Listings

#### Surgical Instruments

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Acumed	
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Advanced Orthopaedic	
Solutions, Inc	3755
Aesculap, Inc	4015
AIP Precision Machining	
Allotech Co., Ltd.	
AME/Orthotec International	2722
American Medical Endoscopy, Inc	
Apex Tools and Orthopedics	
Applied Medical	
ARC Korea Co., Ltd.	1304
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ArthroPlastics, Inc	2448
Arthrosurface, Inc.	731
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Development Co., Ltd.	1523
BioAccess	
BioPro, Inc.	2637
Biopsybell S.r.l.	1887
Bird & Cronin, Inc	2945
BK Meditech Co., Ltd.	
BM Korea Co., Ltd.	
Boston Engineering Corporation	
Bovie Medical Corporation	4217
Bradshaw Medical, Inc	
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Brasseler USA	
Buxton BioMedical, Inc.	2515
C&A Tool Engineering, Inc	2619
C2F Implants	1469
Canwell Medical Co., Ltd	2105
Captiva Spine, Inc.	
Cayenne Medical	2809
CeramTec Medical Products	
Ceterix Orthopaedics	
Changzhou Hengjie Medical	
Devices Co., Ltd.	
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Changzhou Waston
Medical Appliance Co., Ltd 2455
Checkpoint Surgical, LLC 2089
ChM Sp. z o.o
Citieffe S.r.l
CONMED
Consensus Orthopedics
Conventus Orthopaedics, Inc
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Corentec Co., Ltd
Corin Group
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Greatbatch, Inc
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Kapp Surgical Instrument Inc	
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MedicMicro SA	
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Merete Medical, Inc.	
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MicroAire Surgical Instruments	
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Millstone Medical Outsourcing	
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SGS Specialty Group	
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Showa Ika Kohgyo Co., Ltd	
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Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker	2209 3326 1464
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and	2209 3326 1464 3845
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining	2209 3326 1464 3845 3419
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining Summit Medical	2209 3326 1464 3845 3419 3614
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining Summit Medical Surgical Planning Associates, Inc	2209 3326 1464 3845 3419 3614 2576
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining Summit Medical Surgical Planning Associates, Inc Surgical Specialties Corporation	2209 3326 1464 3845 3419 3614 2576 3416
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining Summit Medical Surgical Planning Associates, Inc Surgical Specialties Corporation Surgionix Ltd	2209 3326 1464 3845 3419 3614 2576 3416 911
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining Summit Medical Surgical Planning Associates, Inc Surgical Specialties Corporation Surgionix Ltd Surgionix Ltd	2209 3326 1464 3845 3419 3614 2576 3416 911 2638
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining Surgical Planning Associates, Inc Surgical Specialties Corporation Surgionix Ltd. Surgionix Ltd. Surgival Co., S.A.U.	2209 3326 1464 3845 3419 3614 2576 3416 911 2638
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining Summit Medical Surgical Planning Associates, Inc Surgical Specialties Corporation Surgionix Ltd Surgionix Ltd Surgival Co., S.A.U Suzhou Kangli Orthopaedics	2209 3326 1464 3845 3419 3614 2576 3416 911 2638 3866
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining Surgical Planning Associates, Inc Surgical Specialties Corporation Surgionix Ltd. Surgionix Ltd. Surgival Co., S.A.U.	2209 3326 1464 3845 3419 3614 2576 3416 911 2638 3866
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining Surgical Planning Associates, Inc Surgical Specialties Corporation Surgionix Ltd Surgionix Ltd Surgival Co., S.A.U. Surgival Co., S.A.U. Suzhou Kangli Orthopaedics Instrument Co., Ltd	2209 3326 1464 3845 3419 3614 2576 3416 911 2638 3866 3316
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Summit Manufacturing and Machining Summit Medical Surgical Planning Associates, Inc Surgical Specialties Corporation Surgionix Ltd Surgival Co., S.A.U. Surgival Co., S.A.U. Suzhou Kangli Orthopaedics Instrument Co., Ltd Syntec Scientif c Corporation	2209 3326 1464 3845 3419 3614 2576 3416 911 2638 3866 3316 4274
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Stryker Summit Manufacturing and Machining Summit Medical Surgical Planning Associates, Inc Surgical Specialties Corporation Surgionix Ltd Surgionix Ltd Surgival Co., S.A.U Surgival Co., S.A.U Suzhou Kangli Orthopaedics Instrument Co., Ltd Syntec Scientif c Corporation	2209 3326 1464 3845 3419 3614 2576 3416 911 2638 3866 3316 4274 2776
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Summit Manufacturing and Machining Summit Medical Surgical Planning Associates, Inc Surgical Specialties Corporation Surgionix Ltd Surgionix Ltd Surgival Co., S.A.U Surgival Co., S.A.U Suzhou Kangli Orthopaedics Instrument Co., Ltd Syntec Scientif c Corporation Fechmetals, Inc	2209 3326 1464 3845 3419 3614 2576 3416 911 2638 3866 3316 4274 2776 3531
Spinal Simplicity LLC Spiracur Steute Meditech, Inc Summit Manufacturing and Machining Summit Medical Surgical Planning Associates, Inc Surgical Specialties Corporation Surgionix Ltd Surgival Co., S.A.U. Surgival Co., S.A.U. Suzhou Kangli Orthopaedics Instrument Co., Ltd Syntec Scientif c Corporation	2209 3326 1464 3845 3419 3614 2576 3416 911 2638 3866 3316 4274 2776 3531 4073

Thompson Surgical Instruments 2434
Thortex
Tianjin ZhengTian Medical
Instrument Co., Ltd
Tiemann Surgical
Total Plastics
TranS1, Inc 1075
Triangle
TST R Tibbi Aletler San.
Ve Tic. Ltd. Sti
Turbett Surgical
U&I Corporation
Union Surgical, LLC 2331
United Endoscopy 4172
United Orthopedic Corporation 1973
US Orthopedics, Inc 4209
Velocity Orthopedics, Inc 1023
Vilex, Inc 1067
Waldemar Link GmbH & Co. KG 1231
Weigao Orthopaedic Device
Co., Ltd
Wound Care Technologies, Inc 1302
Wright Medical Technology 945
Wuhu Ruijin Medical Instrument &
Device Co., Ltd 714
X-NOV Medical Technology 4069
Zigg Design LLC 3424

#### **Tissue Products**

aap Implantate AG	3637
AcCELLerated Biologics	
AlloSource	2835
Amedica Corp	3044
Amniox Medical	2475
Applied Biologics, LLC	709
Arthrex, Inc.	1445
Arthrosurface, Inc.	731
AxoGen, Inc	1609
Berkeley Advanced Biomaterials,	



BHI Therapeutic Sciences, LLC	777
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Ceterix Orthopaedics	. 3769
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CoorsTek Medical	961
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IHI Ionbond Inc	. 3219
Integra	723
JRF Ortho	. 1454
Leader Biomedical	
LifeLink Tissue Bank	. 2329
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Lipogems	
MedCure, Inc	
Medmix Systems AG	
Millstone Medical Outsourcing	
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MTF	. 3737
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Research for Life, LLC	
Sanof Biosurgery	
Science Care	
SegWAY Orthopaedics	
Southmedic Inc	. 3427
Spierings Orthopaedics	. 4081
Stability Biologics	. 2081
Stryker	. 3845
THI - Total Healthcare Innovation	
GmbH	
Vivorte, Inc	. 2129
Wright Medical Technology	945

Exhibit Hours: Wednesday and Thursday 9:00 AM – 5:00 PM

> Friday 9:00 AM – 4:00 PM

#### **Unopposed Exhibit Time:**

Wednesday through Friday 12:30 – 1:30 PM

#### **Complimentary Beverage Breaks**

Booths 1509, 2493, 3209

Wednesday and Thursday 3:30 – 4:00 PM

Friday 10:00 – 10:30 AM

TECHNICAL EXHIBITS 471

X-Ray
AccelLAB Inc 1245
AIP Precision Machining
Aribex
Barrier Technologies
Biopsybell S.r.l
BLOXR Solutions 1480
Curvebeam
Del Medical, Inc 3137
DragonBio Implants 3223
EOS Imaging
FUJIFILM Medical Systems
USA, Inc 3031
GE Healthcare 1161
Halifax Biomedical Inc 2919
Hitachi Medical Systems
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Rayence Inc
SCHOTT North America, Inc
Lighting and Imaging 2715
Shanghai Bojin Electric Instrument &
Device Co., Ltd
Siemens Healthcare
Smart Medical Devices, Inc
Sony Electronics
Steute Meditech, Inc 1464
Techmetals, Inc
Whale Imaging
Xray Artistry
Ziehm Imaging Inc





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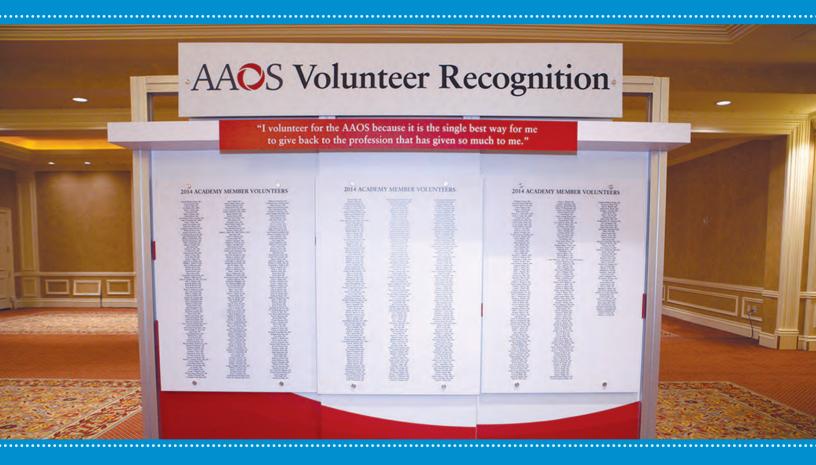
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# About our Members and Volunteers



## 474 AAOS COMMITTEE MEETINGS

All events will take place Convention Center unless		Fellowship Match Oversight Committee	Thursday, March 3 6:00 - 8:00 AM Room W108A
AAOS New Member Welcor	ne Luncheon	Health Policy Committee	Thursday, March 3
Luncheon	Friday, March 4 11:30 AM - 1:30 PM		6:00 - 8:00 AM Room W102B
AAOS Women's Health Issu	Room W224 es Advisory Board	Research & Quality Committee	6:00 - 8:00 AM
Luncheon	Wednesday, March 2		Room W107
	12:30 - 3:00 PM Room W107	Business Meeting	Friday, March 4 6:00 - 8:00 AM
Annual Meeting Committe	e		Room W311A
Breakfast Meeting	Saturday, March 5	Candidate, Resident and Fe	llow Committee
C C	6:15 - 7:30 AM Room W303B	Breakfast Meeting	Thursday, March 3 6:30 - 8:30 AM Room W108B
<b>Biological Implants Commi</b>	ittee		Koom w108b
Breakfast Meeting	Thursday, March 3	Central Evaluation Commit	tee
	6:00 - 8:00 AM Room W105B	Business Meeting	Thursday, March 3 12:00 - 1:30 PM Room W110B
Biomedical Engineering Co	ommittee		
Breakfast Meeting	Friday, March 4	Central Instructional Course	
	6:00 - 8:00 AM Room W105A	Breakfast Meeting	Saturday, March 5 7:30 - 9:00 AM Room W303A
Board of Councilors			
Executive Committee	Wednesday, March 2	Communications Cabinet N	
	1:00 - 2:00 PM Room W101B	Business Meeting	Thursday, March 3 2:00 - 4:00 PM Room W110A
Orientation	Wednesday, March 2		
	2:30 - 4:00 PM Room W110A	Diversity Advisory Board	
		Business Meeting	Thursday, March 3 3:30 - 5:30 PM
Committee on Economic Issues	Thursday, March 3 2:00 - 4:00 PM		Room W108B
1050105	Room W109B	<b>Evaluation Committees (OS</b>	ie)
State Legislative	Thursday Marsh 2	Business Meeting	Friday, March 4
State Legislative and Regulatory Issues Committee	Thursday, March 3 4:00 - 6:00 PM Room W109A	Submos Preeding	12:00 - 1:30 PM Room W110A
Business Meeting	Friday, March 4	<b>Evaluation Leadership</b>	
business meeting	7:30 - 11:00 AM Room W311E	Meeting & Luncheon	Wednesday, March 2 11:30 AM - 12:30 PM Room W110B
Board of Specialty Societie	S	Evaluation New Member Ite	em Writing Workshop
Communications Committee	Thursday, March 3 6:00 - 8:00 AM Room W101A	Seminar	Wednesday, March 2 1:00 - 3:00 PM Room W110B
Education Committee	Thursday, March 3 6:00 - 8:00 AM Room W101B		

		Membership Committee	
All events will take place Convention Center unles		Breakfast Meeting	Thursday, March 3 8:00 - 10:00 AM
<b>Exhibitors Advisory Counc</b>	;il		Room W106
Business Meeting	Friday, March 4 11:30 AM - 1:30 PM	OrthoGuidelines: Presented by the AAOS Committee or Evidence-Based Quality and Value	
Exhibits Committee	Room W105B	Reception	Thursday, March 3 11:00 AM - 2:00 PM Room, W104B
Business Meeting	Tuesday, March 1		K00111, W104D
0	4:00 - 6:00 PM	<b>OrthoInfo Editorial Board</b>	
	Room W105B	Luncheon	Wednesday, March 2 12:30 - 2:30 PM
Breakfast Meeting	Wednesday, March 2		Room W108B
	7:00 - 9:00 AM Room W105B	Orthopaedic Learning Cer	nter
		Industry Forum	Tuesday, March 1
Health Care Systems Com		industry roruni	2:00 - 3:00 PM
Luncheon	Wednesday, March 2 10:30 AM - 12:30 PM		Room W106
	Room W109B	Board of Directors Meeting	Friday, March 4
JAAOS Deputy Editors Bre	akfast Meeting		6:00 - 8:00 AM
Breakfast Meeting	Friday, March 4		Room W108B
Breakfast Meeting	7:00 AM - 9:00 AM	Orthopaedic PAC Donor L	uncheon
	Room W102B	Luncheon	Wednesday, March 2
Journal Editors Meeting			11:30 AM - 1:30 PM Room W224
Business Meeting	Thursday, March 3		
·	4:00 - 6:00 PM	PAC Resident Networking	Reception
	Room W102B	Reception	Thursday, March 3 6:30 - 7:30 PM
Journal Readership Metric	s Meeting		Hyatt Regency Orlando,
Business Meeting	Tuesday, March 1		Plaza International Ballroom K
	8:00 - 9:00 AM Room 102B	Patient Education Commit	ttee
		Breakfast Meeting	Thursday, March 3
Leadership Development			7:00 - 9:00 AM
Luncheon	Friday, March 4 12:00 - 2:00 PM		Room W311D
	Room W108B	Patient Safety/Section on	Safety Education Committee
the dealer with the Reserve		Breakfast Meeting	Wednesday, March 2
Leadership Fellows Progra			6:00 - 8:00 AM
Graduation and Orientation	Friday, March 4 6:00 - 8:00 AM		Room W108B
	Room W103A	Periodicals Reception	
Decention	Eriden March 4	Reception	Friday, March 4
Reception	Friday, March 4 6:00 - 7:00 PM		6:00 - 8:00 PM Hyatt Regency Orlando,
	Plaza International Ballroom K		Plaza International Ballroom F
Medical Liability Committ	ee	Program Committees	
Business Meeting	Wednesday, March 2	Breakfast Meeting	Wednesday, March 2
	1:00 - 3:00 PM	Dicakiast witting	7:00 - 8:00 AM
	Room 101A		Room W109A

All events will take place at the Orange County Convention Center unless noted otherwise.

#### **Resident Assembly**

Education Committee	Thursday, March 3 6:30 - 7:30 AM Room W105A
Health Policy Committee	Thursday, March 3 6:30 - 7:30 AM Room W104A
Practice Management Committee	Thursday, March 3 6:30 - 7:30 AM Room W103A
Research Committee	Thursday, March 3 6:30 - 7:30 AM Room W103B
Technology Committee	Thursday, March 3 6:30 - 7:30 AM Room W104B

#### State Orthopaedic Society Executive Director Luncheon

Friday, March 4 11:00 AM - 1:00 PM Room W101B

Luncheon

Courtesy of Thinkstock

#### **Aff liate Hotels**

Doubletree by Hilton Orlando at SeaWorld 10100 International Drive Orlando, Florida 32821 Ph: (407) 352-1100

Hilton Orlando 6001 Destination Parkway Orlando, Florida 32819 Ph: (407) 313-4300

Rosen Centre Hotel 9840 International Drive Orlando, Florida 32819 Ph: (407) 996-9840

Rosen Plaza 9700 International Drive Orlando, Florida 32819 Ph: (407) 996-9700

Rosen Shingle Creek 9939 Universal Boulevard Orlando, Florida 32819 Ph: (407) 996-9939

Nominating Committee

Membership Committee

Meeting

Wednesday, March 2

Wednesday, March 2

Celebration 16

10:00 AM - 12:00 PM

Hvatt Regency Orlando.

#### **Allegheny General Hospital**

Alumni Reception

March 3, 2016 6:30 - 8:30 PM Rosen Centre, Salon 10

#### American Association of Hip and Knee Surgeons (AAHKS)

American Association of Hi	p and Knee Surgeons (AAHKS)	Menting	11.20 AM 1.20 DM
AAHKS Committee Member Breakfast Meetings	Wednesday, March 2 6:00 - 8:00 AM Hyatt Regency Orlando,	Meeting	11:30 AM - 1:30 PM Hyatt Regency Orlando, Manatee Spring 1
	Plaza International Ballroom I	Finance and Investment Committee Meetings	Wednesday, March 2 1:30 - 3:30 PM
JOA Editorial Meeting	Wednesday, March 2 3:30 - 5:30 PM Hyatt Regency Orlando,		Hyatt Regency Orlando, Manatee Spring 2
A ALIVE POD Masting	Plaza International Ballroom K	Fellowships Coordinating Committee Meeting	Wednesday, March 2 2:00 - 3:00 PM
AAHKS BOD Meeting	Wednesday, March 2 5:30 - 8:00 PM Hyatt Regency Orlando,		Hyatt Regency Orlando, Celebration 16
	Plaza International Ballroom J	Young Leaders Committee Meeting	Wednesday, March 2 3:00 - 4:30 PM
Industry Breakfast	Thursday, March 3 6:00 - 8:00 AM Hyatt Regency Orlando,		Hyatt Regency Orlando, Manatee Spring 1
	Rock Spring	Development Committee Meeting	Wednesday, March 2 4:00 PM - 6:00 PM
International Reception	Thursday, March 3 4:30 - 8:00 PM Hyatt Regency Orlando,		Hyatt Regency Orlando, Coral Spring
American Accession of L	Barrel Spring	Leadership Development Committee Meeting	Wednesday, March 2 4:30 - 6:30 PM
(AALOS)	tino Orthopaedic Surgeons		Hyatt Regency Orlando, Blue Spring
Luncheon	Friday, March 04 12:00 - 2:00 PM Hyatt Regency Orlando, Plaza International Ballroom D	Fellowships Alumni Reception	Wednesday, March 2 6:00 - 7:00 PM Hyatt Regency Orlando, Orchid Room/Verandah
American Joint Replaceme	nt Registry (AJRR)	Critical Issues	Thursday March 2
AJRR Board Meeting	Monday, February 29 6:00 AM - 3:00 PM Hyatt Regency Orlando, Manatee Spring	Committee Meeting	Thursday, March 3 11:00 AM - 1:30 PM Hyatt Regency Orlando, Coral Spring
AJRR Update and User Group	Wednesday, March 2 12:00 - 2:00 PM Hyatt Regency Orlando, Silver Spring	CORD Governing Committee Meeting	Thursday, March 3 1:00 - 2:30 PM Hyatt Regency Orlando, Manatee Spring 1
American Orthopaedic Ass		Academic Leadership Committee Meeting	Thursday, March 3 3:00 PM - 5:00 PM
Off cer's Meeting	Tuesday, March 1	č	Hyatt Regency Orlando,

3:00 PM - 5:00 PM Hyatt Regency Orlando, Off cer's Meeting Tuesday, March 1 3:00 - 4:00 PM **Coral Spring** Hyatt Regency Orlando, Celebration 11 Council for Residency Friday, March 4 Directors (CORD) Conference 7:00 - 10:00 AM Own the Bone Steering Tuesday, March 1 Hyatt Regency Orlando, Committee Meeting 4:00 - 6:30 PM Orlando Ballroom Hyatt Regency Orlando, Manatee Spring 1

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Executive Committee Meeting	Friday, March 4 10:30 AM - 1:00 PM Hyatt Regency Orlando, Plaza International Ballroom F	FAI Reviewers	Friday, March 4 9:30 - 10:30 AM Hyatt Regency Orlando, Bayhill 31/32
OMeGA Board Meeting	Friday, March 4 1:00 - 2:30 PM Hyatt Regency Orlando, Blue Spring	CPT/RUC Committee	Friday, March 4 10:15 - 11:15 AM Hyatt Regency Orlando, Celebration 9 & 10
OMeGA Board and Review Committee Meeting	Friday, March 4 2:30 - 3:30 PM Hyatt Regency Orlando, Blue Spring	Research Committee/ Luncheon	Friday, March 4 12:00 - 1:00 PM Hyatt Regency Orlando, Bayhill 31/32
American Orthopaedic Foo	t & Ankle Society (AOFAS)	Health Policy Committee	Friday, March 4
IFFAS Council Luncheon Meeting	Thursday, March 3 12:00 - 1:30 PM Hyatt Regency Orlando,		1:00 - 2:00 PM Hyatt Regency Orlando, Celebration 9 & 10
Education Committee Luncheon	Bayhill 31/32 Thursday, March 3 12:30 - 2:00 PM Hyatt Regency Orlando,	Public Education Committee	Friday, March 4 1:00 - 2:00 PM Hyatt Regency Orlando, Bayhill 31/32
	Boardroom	Humanitarian Services	Friday, March 4
OFAR Managerial Board	Thursday, March 3 1:30 - 3:30 PM Hyatt Regency Orlando,	Committee	2:30 - 3:30 PM Hyatt Regency Orlando, Celebration 9 & 10
	Bayhill 31/32	AOFAS Board of Directors	Friday, March 4
Membership Committee	Friday, March 4 2:30 - 3:30 PM Hyatt Regency Orlando, Bayhill 31/32		4:00 - 5:00 PM Hyatt Regency Orlando, Celebration 9 & 10
Evidence Based Medicine Committee	Thursday, March 3 3:30 - 4:30 PM Hyatt Regency Orlando,	(AOFAS) Ortho Foot & Ankle Foundation Board	Friday, March 4 5:00 - 6:00 PM Hyatt Regency Orlando, Celebration 9 & 10
FAI Managerial Board	Bayhill 31/32 Thursday, March 3 4:30 - 5:30 PM Hyatt Regency Orlando,	Foot & Ankle Fellowship Directors Meeting	Saturday, March 5 6:00 - 7:00 AM Orange County Convention Center, Room W208C
	Bayhill 31/32	American Orthopaedic Soci (AOSSM)	ety for Sports Medicine
Young Physicians Committee	Friday, March 4 6:30 - 7:30 AM		Thursday March 2
	Hyatt Regency Orlando, Celebration 9 & 10	Corporate Relations Committee	Thursday, March 3 6:45 - 8:00 AM Hyatt Regency Orlando, Columbia 37
Post Graduate Education & Training Committee	Friday, March 4 7:30 - 8:30 AM Hyatt Regency Orlando, Celebration 9 & 10	Accreditation Task Force	Thursday, March 3 7:00 - 8:00 AM Hyatt Regency Orlando, Columbia 36
FAI CME Committee	Friday, March 4 8:30 - 9:30 AM Hyatt Regency Orlando, Bayhill 31/32	Fellowship Match Committee	Thursday, March 3 11:30 AM - 12:15 PM Hyatt Regency Orlando, Columbia 36

Fellowship Committee	Thursday, March 3 12:15 - 1:00 PM Hyatt Regency Orlando, Celebration 11	Orthopaedic Surgery Sports Medicine Program Directors	Friday, March 4 1:00 - 2:30 PM Hyatt Regency Orlando, Flordia Ballroom A
Enduring Education Committee	Friday, March 4 6:30 - 8:00 AM Hyatt Regency Orlando, Columbia 36	Stop Advisory Committee	Friday, March 4 1:30 - 2:30 PM Hyatt Regency Orlando, Columbia 34
Legislative and Regulatory Advocacy Committee	Friday, March 4 7:00 - 8:00 AM Hyatt Regency Orlando, Columbia 34	Education Committee	Friday, March 4 3:00 - 4:30 PM Hyatt Regency Orlando, Rock Spring
PICME Committee	Friday, March 4	American Shoulder and Elb	oow Surgeons (ASES)
	9:00 - 10:00 AM Hyatt Regency Orlando, Challenger 39	JSES Board of Trustees Meeting	Friday, March 4 10:00 AM - 12:30 PM Hyatt Regency Orlando, Coral Spring
Team Physician Committee	Friday, March 4 9:00 - 10:00 AM Hyatt Regency Orlando, Columbia 36	Executive Committee Meeting	Friday, March 4 12:30 - 4:00 PM Hyatt Regency Orlando,
Nominating Committee	Friday, March 4 10:30 AM - 12:00 PM Hyatt Regency Orlando,	American Sports Medicine Education & Research Four	Coral Spring Fellowship Society /Andrews Indation
	Columbia 34	Alumni Reception	Friday, March 04
Publications Committee	Friday, March 4 10:30 - 12:00 PM Hyatt Regency Orlando,		6:00 - 8:00 PM Hilton Orlando, Lake Sheen A
	Celebration 16	ARCO International	
Research Committee	Friday, March 4 11:00 AM - 1:00 PM Hyatt Regency Orlando,	Meeting	Monday, February 29 8:00 AM - 6:00 PM Rosen Plaza, Salon 8
	Rock Spring	Arthroscopy Association of	f North America (AANA)
Council of Delegates	Friday, March 4 11:30 AM - 1:00 PM Hyatt Regency Orlando, Barrel Spring	Membership Committee	Thursday, March 3 7:00 - 8:00 AM Hyatt Regency Orlando, Peacock Spring
Hall of Fame Committee	Friday, March 4 12:00 - 1:00 PM Hyatt Regency Orlando, Celebration 11	AANA/ISAKOS Meeting	Thursday, March 3 10:00 - 11:30 AM Hyatt Regency Orlando, Boardroom
OJSM Editorial Board	Friday, March 4 12:00 - 1:30 PM	Association of Residency C 13th ARCOS Conference	oordinators -
	Hyatt Regency Orlando, Celebration 7 & 8	New Coordinators Welcome	Tuesday, March 01 4:00 - 5:30 PM Rosen Centre, Salon 6
Public Relations Committee	Friday, March 4 12:00 - 1:00 PM Hyatt Regency Orlando, Columbia 36	Welcome Reception	Tuesday, March 01 6:00 - 8:00 PM Rosen Centre, Salon 1

Business Meeting	Wednesday, March 02	Charles R. Drew University	
Business Meeting	7:00 AM - 5:00 PM Rosen Centre, Salon 9/10 Thursday, March 03	Alumni Meeting and Reception	Thursday, March 03 6:00 - 8:00 PM Residence Inn by Marriott, 8800 Universal Blvd
	7:00 AM - 5:00 PM		8800 Oliversal bivu
	Rosen Centre, Salon 9/10	<b>Cincinnati Sports Medicine</b>	and Orthopaedic Center
Business Meeting	Friday, March 04 7:00 AM - 5:00 PM Rosen Centre, Salon 9/10	Alumni Reception	Thursday, March 03 6:00 - 9:00 PM Rosen Centre, Salon 13
Association of VA Orthope	dic Surgeons	Cleveland Clinic	
Luncheon Meeting	Thursday, March 03 12:00 - 2:00 PM Rosen Centre, Salon 5/6	Alumni Reception	Friday, March 04 6:00 - 8:00 PM Rosen Centre, Salon 16
Balboa Navy Alumni		Drexel Orthopaedic Surger	у
Alumni Reception	Friday, March 04 6:30 - 9:00 PM Rosen Centre, Salon 6	Alumni Reunion	Thursday, March 03 6:00 - 7:30 PM Hilton Orlando, Turkey Lake
	Kosen Centre, Salon o	Emory University	
Boston Medical Center	Thursday Marsh 02	Alumni Reception	Friday, March 04
Alumni Reception	Thursday, March 03 6:00 - 9:00 PM Hilton Orlando, Clear Lake		6:00 - 8:00 PM Hilton Orlando, Orange Ballroom C
Brown University			
2017 Spine Fellowship	Thursday, March 03	FOSA Executive Board Mee	
Interviews	6:00 - 9:00 PM Hilton Orlando, Spring Lake	Board of Directors Meeting	Saturday, March 5 6:00 - 7:30 AM Orange County Convention
California Orthopaedic Ass	sociation	_	Center, Room W305A
Board of Directors Meeting	Thursday, March 03	Foundation for Orthopaed	ic Trauma
	6:30 - 9:00 AM Rosen Centre, Salon 13	Business Meeting	Thursday, March 03 4:30 - 6:30 PM
Canadian Orthopaedic Ass	ociation	-	Rosen Centre, Salon 5
Members' Reception	Thursday, March 03 6:00 - 9:00 PM	<b>George Washington Univer</b>	rsity Orthopaedics
	Hilton Orlando, Orange Ballroom AB	Alumni Reception	Friday, March 04 6:30 - 8:30 PM
Carolinas Medical Center	-		Copper Canyon Grill, 9101 International Drive
Orthopaedic Surgery	Friday, March 04	- Girdlestone Orthopaedic S	ociety
Residency Alumni Reception	6:30 - 9:00 PM Rosen Plaza, Salon 13	Reception	Wednesday, March 02 6:00 - 8:00 PM
Center for Advanced Speci	ality Surgery	_	Rosen Centre, Pool Balcony
Nigerian Orthopaedic	Wednesday, March 02	- Harvard Combined Orthop	aedics Residency Program
Surgeons Luncheon	11:00 AM - 2:00 PM Rosen Centre, Salon 4	Alumni Reception	Friday, March 04 6:00 - 8:00 PM
Nigerian Orthopaedic Surgeons Reception	Friday, March 04 6:00 - 10:00 PM Rosen Centre, Salon 3		Hyatt Regency Orlando, Rocks Lounge

Henry Ford Health System	Orthopaedic Surgery	ISTA	
Alumni Reception	Friday, March 04 6:00 - 8:00 PM Fogo de Chao Brazilian Steakhouse, 8282 International	Board of Directors Meeting	Wednesday, March 02 4:00 - 7:00 PM Rosen Centre, Salon 5
	Steakhouse, 8282 International Drive	J. Robert Gladden Orthop	aedic Society (JRGOS)
Hospital for Special Surger	у	Board of Directors Meeting	Thursday, March 3 6:00 - 9:00 AM
Alumni Luncheon	Thursday, March 03 11:30 AM - 1:30 PM Rosen Plaza, Salon 13		Hyatt Regency Orlando, Orlando Ballroom M
Alumni Luncheon	Friday, March 04 11:30 AM - 1:30 PM Rosen Plaza, Salon 13	Annual Luncheon Registratio	n Thursday, March 3 11:30 AM - 12:30 PM Hyatt Regency Orlando, Plaza International Ballroom H
Class Representative & International Ambassador Meeting	Friday, March 04 5:00 - 6:00 PM Itta Bena, Pointe Orlando, Upper Level	Annual Luncheon	Thursday, March 3 12:30 - 2:30 PM Hyatt Regency Orlando, Plaza International Ballroom H
Alumni Reception	Friday, March 04 6:00 - 8:00 PM Itta Bena, Pointe Orlando, Upper Level	Medical Student Mentoring Program	Thursday, March 3 3:30 - 6:30 PM Hyatt Regency Orlando, Celebration 9 & 10
International Congress for	Joint Reconstruction	Medical Student Mentoring	Thursday, March 3
Outpatient Hip & Knee Replacement - The Changing Landscape: What You Need	Friday, March 04 5:30 - 7:30 AM Rosen Centre, Grand Ballroom D	Reception	6:00 - 7:30 PM Hyatt Regency Orlando, Plaza International Ballroom F
to Know		Trilogy Breakfast	Friday, March 4
International Geriatric Frac Breakfast Meeting	Thursday, March 03		7:00 - 8:00 AM Hyatt Regency Orlando, Florida Ballroom B
	6:30 - 8:00 AM Hilton Orlando, Lake Sheen A	Johns Hopkins	
International Society of Ar	throplasty Registries	Alumni Reception	Thursday, March 03
Steering Committee Meeting	Thursday, March 03 4:30 - 5:30 PM		6:00 - 8:30 PM Rosen Centre, Salon 3
	Rosen Plaza, Salon 8	Lenox Hill Hospital	
General Meeting	Thursday, March 03 5:30 - 8:30 PM Rosen Plaza, Salon 13/14	Staff and Alumni Reception	Thursday, March 03 6:00 - 8:00 PM Rosen Plaza, Salon 10
Iranian-American Orthopa	edic Association	Long Island Jewish Medica	al Center
Alumni Dinner	Thursday, March 03 6:30 - 9:30 PM Charley's Steakhouse,	Alumni Reception	Friday, March 04 6:00 - 7:30 PM Hilton Orlando, Lake Highland F
	8255 International Drive	Loyola University Medical	Center
Irish-American Orthopaed		Reception	Friday, March 04 6:00 - 8:00 PM
Cocktail Reception	Friday, March 04 6:30 - 9:00 PM Rosen Centre, Pool Balcony		Rosen Centre, Salon 2

Mayo Clinic Orthopedic Al		NYU Langone Hospital for	
Reception	Friday, March 04 6:00 - 9:00 PM Hilton Orlando, Lake Mizell A	Alumni Reception	Friday, March 04 6:00 - 9:00 PM Hilton Orlando, Orange Ballroom B
Medical College of Wiscon	sin		
Alumni Reception	Friday, March 04	Oregon Health & Science U	
	6:00 - 8:00 PM The Ritz-Carlton Orlando, Grand Lakes, 4012 Central Florida	Alumni Reception	Thursday, March 03 6:00 - 10:00 PM Rosen Centre, Salon 15
	Parkway	Orthopaedic Laser Society	of North America
Medical University of Sout	h Carolina (MUSC)	Meeting	Friday, March 04
Alumni Reception	Friday, March 04 7:00 - 10:00 PM Rosen Centre, Salon 18		6:00 - 8:00 AM Rosen Plaza, Salon 8
Monicous Transplantation :		Orthopaedic Trauma Assoc	iation (OTA)
Meniscus Transplantation	Thursday, March 03	Military Committee	Wednesday, March 2 7:00 - 8:00 AM
Wieeting	1:30 - 4:00 PM Rosen Centre, Salon 1		Hyatt Regency Orlando, Celebration 11
Montef ore Medical Center		Classif cation & Outcomes	Wednesday, March 2
Alumni Association Reception	1 Thursday, March 03 6:00 - 8:00 PM Rosen Centre, Salon 6	Committee	8:00 - 10:00 AM Hyatt Regency Orlando, Columbia 34
MOON Shoulder Group		Research Committee Meeting	Wednesday, March 2
Research Meeting	Friday, March 04 5:00 - 7:00 PM Rosen Centre, Salon 8		8:00 - 10:30 AM Hyatt Regency Orlando, Blue Spring
Mount Sinai Hospital		Fellowship Committee	Wednesday, March 2 9:00 - 10:00 AM
Alumni Reception	Thursday, March 03 6:30 - 8:30 PM Hilton Orlando, Conway Lake		Hyatt Regency Orlando, Celebration 7 & 8
Musculoskeletal Tumor So	· ·	Fellowship Directors Meeting	Wednesday, March 2 10:00 - 11:00 AM
MSTS Executive Committee Meeting	Friday, March 4 1:00 - 4:30 PM		Hyatt Regency Orlando, Celebration 7 & 8
	Plaza International Ballroom I	OTA/AO Classif cation $(1, 1, 2)$	Wednesday, March 2
Naval Medical Center Ports		(part 1 of 3)	10:00 AM - 1:00 PM Hyatt Regency Orlando,
Alumni Reception	Thursday, March 03 6:00 - 8:00 PM Hilton Orlando, Sand Lake	Public Relations Committee	Celebration 15 Wednesday, March 2
Northwestern University. F	einberg School of Medicine	Public Relations Committee Meeting	10:30 - 11:30 AM
Alumni Reception	Thursday, March 03		Hyatt Regency Orlando, Rock Spring
	6:00 - 8:30 PM Hilton Orlando, Lake Nona A	SRI Task Force Meeting	Wednesday, March 2
NYOH Alumni Association / Columbia Orthopedics			1:00 - 2:30 PM Hyatt Regency Orlando,
Cocktail Reception	Friday, March 04 6:00 - 9:00 PM		Celebration 11

Hilton Orlando, Lake Sheen B

Board of Directors Meeting	Wednesday, March 2 6:00 - 8:00 PM Hyatt Regency Orlando, Florida Ballroom A	EBVQ Committee	Friday, March 4 10:00 - 11:00 AM Hyatt Regency Orlando, Challenger 41
HWB Meeting	Thursday, March 3 6:00 - 8:00 AM Hyatt Regency Orlando, Manatee Spring	Database Project Team Meeting	Friday, March 4 11:00 AM - 12:00 PM Hyatt Regency Orlando, Challenger 40
Membership Committee Meeting	Thursday, March 3 6:30 - 7:30 AM Hyatt Regency Orlando, Challenger 39	Health Policy & Planning Committee	Friday, March 4 12:00 - 1:00 PM Hyatt Regency Orlando, Manatee Spring 1
COTA Board Meeting	Thursday, March 3 9:00 - 11:00 AM Hyatt Regency Orlando, Celebration 16	ACS COT	Friday, March 4 1:00 - 2:00 PM Hyatt Regency Orlando, Boardroom
OTA/AO Classif cation (part 2 of 3)	Thursday, March 3 10:00 AM - 1:00 PM Hyatt Regency Orlando, Celebration 15	Basic Science Committee Meeting	Saturday, March 5 6:30 - 7:30 AM Orange County Convention Center Room, W105B
Education Committee Meetin	g Thursday, March 3	<b>Orthopaedics</b> Overseas	
	10:30 AM - 12:00 PM Hyatt Regency Orlando, Blue Spring	Luncheon	Friday, March 04 12:00 - 2:00 PM Rosen Plaza, Salon 9/10
Disaster Management	Thursday, March 3	Pediatric Orthopaedic Soc	iety of North America (POSNA)
Disaster Management Committee Meeting	1:00 - 2:00 PM		<b>iety of North America (POSNA)</b> Wednesday, March 2
Committee Meeting	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34	<b>Pediatric Orthopaedic Soc</b> Board of Directors Meeting	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando,
	1:00 - 2:00 PM Hyatt Regency Orlando,	Board of Directors Meeting	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring
Committee Meeting	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM Hyatt Regency Orlando,	Board of Directors Meeting Penn State Hershey Bone	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring
Committee Meeting	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM	Board of Directors Meeting	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring
Committee Meeting	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM Hyatt Regency Orlando, Peacock Spring Friday, March 4 6:30 - 7:30 AM	Board of Directors Meeting Penn State Hershey Bone	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04
Committee Meeting OTA/AO Project Team Video Library Project	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM Hyatt Regency Orlando, Peacock Spring Friday, March 4 6:30 - 7:30 AM Hyatt Regency Orlando,	Board of Directors Meeting Penn State Hershey Bone	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A
Committee Meeting OTA/AO Project Team Video Library Project Team Meeting	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM Hyatt Regency Orlando, Peacock Spring Friday, March 4 6:30 - 7:30 AM Hyatt Regency Orlando, Coral Spring	Board of Directors Meeting Penn State Hershey Bone Reception	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A
Committee Meeting OTA/AO Project Team Video Library Project Team Meeting OTA/AO Classif cation	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM Hyatt Regency Orlando, Peacock Spring Friday, March 4 6:30 - 7:30 AM Hyatt Regency Orlando, Coral Spring Friday, March 4	Board of Directors Meeting Penn State Hershey Bone a Reception Piedmont Orthopedic Soc	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A iety Friday, March 04 6:30 - 8:30 PM
Committee Meeting OTA/AO Project Team Video Library Project Team Meeting	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM Hyatt Regency Orlando, Peacock Spring Friday, March 4 6:30 - 7:30 AM Hyatt Regency Orlando, Coral Spring	Board of Directors Meeting Penn State Hershey Bone a Reception Piedmont Orthopedic Soc Mid-Winter Meeting /	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A iety Friday, March 04 6:30 - 8:30 PM Hilton Orlando,
Committee Meeting OTA/AO Project Team Video Library Project Team Meeting OTA/AO Classif cation	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM Hyatt Regency Orlando, Peacock Spring Friday, March 4 6:30 - 7:30 AM Hyatt Regency Orlando, Coral Spring Friday, March 4 7:00 - 10:00 AM	Board of Directors Meeting Penn State Hershey Bone a Reception Piedmont Orthopedic Soc Mid-Winter Meeting / Reception	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A iety Friday, March 04 6:30 - 8:30 PM Hilton Orlando, Orange Ballroom F
Committee Meeting OTA/AO Project Team Video Library Project Team Meeting OTA/AO Classif cation	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM Hyatt Regency Orlando, Peacock Spring Friday, March 4 6:30 - 7:30 AM Hyatt Regency Orlando, Coral Spring Friday, March 4 7:00 - 10:00 AM Hyatt Regency Orlando, Celebration 15	Board of Directors Meeting Penn State Hershey Bone a Reception Piedmont Orthopedic Soc Mid-Winter Meeting / Reception Reception Rhode Island Hospital / Br	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A iety Friday, March 04 6:30 - 8:30 PM Hilton Orlando, Orange Ballroom F own Medical School
Committee Meeting OTA/AO Project Team Video Library Project Team Meeting OTA/AO Classif cation (part 3 of 3)	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM Hyatt Regency Orlando, Peacock Spring Friday, March 4 6:30 - 7:30 AM Hyatt Regency Orlando, Coral Spring Friday, March 4 7:00 - 10:00 AM Hyatt Regency Orlando, Celebration 15 Friday, March 4 8:00 - 9:00 AM	Board of Directors Meeting Penn State Hershey Bone a Reception Piedmont Orthopedic Soc Mid-Winter Meeting / Reception	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A iety Friday, March 04 6:30 - 8:30 PM Hilton Orlando, Orange Ballroom F own Medical School Thursday, March 03
Committee Meeting OTA/AO Project Team Video Library Project Team Meeting OTA/AO Classif cation (part 3 of 3)	1:00 - 2:00 PM Hyatt Regency Orlando, Columbia 34 Thursday, March 3 4:00 - 5:00 PM Hyatt Regency Orlando, Peacock Spring Friday, March 4 6:30 - 7:30 AM Hyatt Regency Orlando, Coral Spring Friday, March 4 7:00 - 10:00 AM Hyatt Regency Orlando, Celebration 15 Friday, March 4	Board of Directors Meeting Penn State Hershey Bone a Reception Piedmont Orthopedic Soc Mid-Winter Meeting / Reception Reception Rhode Island Hospital / Br	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A iety Friday, March 04 6:30 - 8:30 PM Hilton Orlando, Orange Ballroom F own Medical School
Committee Meeting OTA/AO Project Team Video Library Project Team Meeting OTA/AO Classif cation (part 3 of 3)	<ul> <li>1:00 - 2:00 PM</li> <li>Hyatt Regency Orlando,</li> <li>Columbia 34</li> <li>Thursday, March 3</li> <li>4:00 - 5:00 PM</li> <li>Hyatt Regency Orlando,</li> <li>Peacock Spring</li> <li>Friday, March 4</li> <li>6:30 - 7:30 AM</li> <li>Hyatt Regency Orlando,</li> <li>Coral Spring</li> <li>Friday, March 4</li> <li>7:00 - 10:00 AM</li> <li>Hyatt Regency Orlando,</li> <li>Celebration 15</li> <li>Friday, March 4</li> <li>8:00 - 9:00 AM</li> <li>Hyatt Regency Orlando,</li> <li>Celebration 16</li> <li>Friday, March 4</li> </ul>	Board of Directors Meeting Penn State Hershey Bone a Reception Piedmont Orthopedic Soc Mid-Winter Meeting / Reception Reception Rhode Island Hospital / Br	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A iety Friday, March 04 6:30 - 8:30 PM Hilton Orlando, Orange Ballroom F own Medical School Thursday, March 03 6:00 - 9:00 PM Rosen Shingle Creek, Suwannee 17
Committee Meeting OTA/AO Project Team Video Library Project Team Meeting OTA/AO Classif cation (part 3 of 3) International Relations	<ul> <li>1:00 - 2:00 PM</li> <li>Hyatt Regency Orlando,</li> <li>Columbia 34</li> <li>Thursday, March 3</li> <li>4:00 - 5:00 PM</li> <li>Hyatt Regency Orlando,</li> <li>Peacock Spring</li> <li>Friday, March 4</li> <li>6:30 - 7:30 AM</li> <li>Hyatt Regency Orlando,</li> <li>Coral Spring</li> <li>Friday, March 4</li> <li>7:00 - 10:00 AM</li> <li>Hyatt Regency Orlando,</li> <li>Celebration 15</li> <li>Friday, March 4</li> <li>8:00 - 9:00 AM</li> <li>Hyatt Regency Orlando,</li> <li>Celebration 16</li> </ul>	Board of Directors Meeting Penn State Hershey Bone a Reception Piedmont Orthopedic Soc Mid-Winter Meeting / Reception Reception Rhode Island Hospital / Br Alumni Reception	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A iety Friday, March 04 6:30 - 8:30 PM Hilton Orlando, Orange Ballroom F own Medical School Thursday, March 03 6:00 - 9:00 PM Rosen Shingle Creek, Suwannee 17
Committee Meeting OTA/AO Project Team Video Library Project Team Meeting OTA/AO Classif cation (part 3 of 3) International Relations	<ul> <li>1:00 - 2:00 PM</li> <li>Hyatt Regency Orlando,</li> <li>Columbia 34</li> <li>Thursday, March 3</li> <li>4:00 - 5:00 PM</li> <li>Hyatt Regency Orlando,</li> <li>Peacock Spring</li> <li>Friday, March 4</li> <li>6:30 - 7:30 AM</li> <li>Hyatt Regency Orlando,</li> <li>Coral Spring</li> <li>Friday, March 4</li> <li>7:00 - 10:00 AM</li> <li>Hyatt Regency Orlando,</li> <li>Celebration 15</li> <li>Friday, March 4</li> <li>8:00 - 9:00 AM</li> <li>Hyatt Regency Orlando,</li> <li>Celebration 16</li> <li>Friday, March 4</li> <li>9:00 - 10:00 AM</li> </ul>	Board of Directors Meeting Penn State Hershey Bone a Reception Piedmont Orthopedic Soc Mid-Winter Meeting / Reception Rhode Island Hospital / Br Alumni Reception Rush University Medical C	Wednesday, March 2 9:00 AM - 3:00 PM Hyatt Regency Orlando, Rainbow Spring and Joint Institute Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Mediterranean A iety Friday, March 04 6:30 - 8:30 PM Hilton Orlando, Orange Ballroom F own Medical School Thursday, March 03 6:00 - 9:00 PM Rosen Shingle Creek, Suwannee 17 enter

Rutgers New Jersey Medical School		Southern California Orthopedic Institute		
Alumni Dinner	Friday, March 04 7:00 - 10:00 PM Roy's Orlando, 7760 West Sand Lake Road	Sports Medicine Fellowship Reception	Friday, March 04 8:00 - 11:00 PM Rosen Centre, Salon 13	
		St. Mary's Medical Center-SFORP		
Ruth Jackson Orthopaedic Board of Directors Meeting	Tuesday, March 1 1:00 - 4:00 PM Hyatt Regency Orlando, Coral Spring	Alumni Reception	Friday, March 04 6:00 - 7:30 PM Vines Grille and Wine Bar, 7533 Sand Lake Road	
Annual & Member Business	Tuesday, March 1	Summa Health System, Dep		
Meetings	5:00 - 9:30 PM Hyatt Regency Orlando, Regency Ballroom O	Alumni Reception	Thursday, March 03 6:00 - 9:00 PM Hilton Orlando, Pocket Lake	
Due she et De she Chale	Wednesday, March 2 7:00 - 8:00 AM Hyatt Regency Orlando, Peacock Spring	SUNY Downstate Medical Center		
Breakfast Book Club		Alumni Reception	Friday, March 04 7:00 - 10:00 PM Rosen Centre, Salon 14	
RJOS/Perry Initiative Outreach Program	Wednesday, March 2 8:00 - 11:30 AM Orange County Convention Center, Room W311A	SUNY Stony Brook Department of Orthopaedics		
		Alumni Association Reception		
Saint Louis University Sch	ool of Medicine	The Association of Bone an	d Joint Surgeons (ABJS)	
Alumni Reception	Friday, March 04 6:00 - 8:30 PM Rosen Centre, Salon 15	CORR® Editorial Advisory Board Meeting	Wednesday, March 2 7:00 - 8:00 AM Hyatt Regency Orlando, Barrel Spring 1	
Scoliosis Researsh Society	(SRS)		burrer opring 1	
5th Annual POSNA/SRS Kids Forum	Thursday, March 3 12:00 - 2:00 PM Hyatt Regency Orlando, Celebration 7 & 8	CORR® Publishers Meeting	Wednesday, March 2 8:30 - 11:30 AM Hyatt Regency Orlando, Celebration 9	
Société Internationale de Chirurgie Orthopédique et de Traumatologie (SICOT)		CORR® Board of Trustees Meeting	Wednesday, March 2 11:30 AM - 3:30 PM	
US Section Luncheon	Friday, March 4 12:30 - 2:00 PM Hyatt Regency Orlando, Peacock Spring	ABJS Executive Committee Meeting	Hyatt Regency Orlando, Celebration 9 Thursday, March 3	
Society of Military Orthop	Peacock Spring ociety of Military Orthopaedic Surgeons (SOMOS)		12:00 - 4:00 PM Hyatt Regency Orlando, Celebration 16	
Board of Director's Meeting	Thursday, March 3 3:00 - 7:00 PM Hyatt Regency Orlando, Orlando Ballroom L	ABJS CORR Reception	Friday, March 4 7:00 - 10:00 PM Orchid Room/Verandah	
Member Reception	Thursday, March 3	The Herodicus Society		
	7:00 - 10:00 PM Hyatt Regency Orlando, Regency Ballroom P	Reception	Friday, March 04 7:00 - 9:00 PM Hilton Orlando, Lake Mizell	

AAOS Aff liate & Alumni Meetings

Rosen Plaza, Salon 17

The Hip Society Reard of Directory Marting Thursday, Marsh 2		University of California, San Diego Orthopaedic Alumni Association		
Board of Directors Meeting	Thursday, March 3 6:00 - 7:40 AM Hyatt Regency Orlando, Barrel Spring 1	Reception	Thursday, March 03 6:00 - 8:00 PM Doubletree SeaWorld, Coral B	
The Knee Society		University of California, San Francisco		
Executive Board Meeting	Friday, March 4 6:00 - 7:40 AM Hyatt Regency Orlando, Blue Spring	Alumni Cocktail Reception	Thursday, March 03 6:00 - 9:00 PM Tommy Bahama Restaurant and Bar, 9101 International Drive	
The Ohio State University	,	University of Cincinnati -	Freiberg Society	
Reception	Thursday, March 03 6:00 - 8:00 PM Rosen Centre, Salon 2	Reception	Friday, March 04 6:30 - 9:00 PM Rosen Shingle Creek, Suwannee 16	
The University of Chicago		University of Connecticut Health		
Alumni Reception	Friday, March 04 6:30 - 8:30 PM Doubletree SeaWorld, Coral B	Alumni Reception	Thursday, March 03 6:00 - 8:00 PM Hilton Orlando, Ruby Lake	
Thomas Jefferson University		University of Florida		
Alumni Reception	Friday, March 04 6:00 - 8:00 PM Hilton Orlando, Orange Ballroom G	Alumni Reception	Friday, March 04 6:30 - 9:30 PM Cuba Libre Restaurant, 9101	
Tufts Medical Center		_	International Drive	
Alumni Reception	Friday, March 04 6:30 - 9:00 PM Rosen Shingle Creek, Suwannee 18/19	University of Illinois at Chicago		
		Alumni Reception	Thursday, March 03 7:00 - 9:00 PM Rosen Centre, Salon 20	
Tulane Medical School		University of Iowa Health	care / Orthopaedic Surgery	
Caldwell Society Reception	Thursday, March 03 6:30 - 8:30 PM Rosen Centre, Salon 18	Alumni Reception	Friday, March 04 6:00 - 8:00 PM Rosen Shingle Creek, Suwannee 11/12	
UCLA Orthopaedic Surgery           Alumni Reception         Friday, March 04		University of Kansas		
Aumin Reception	6:00 - 8:00 PM Hilton Orlando, Lake Hart B	Orthopedics Alumni Recepti	on Thursday, March 03 6:00 - 8:00 PM Itta Bena,	
University at Buffalo		-	9101 International Drive	
Alumni Reception	Friday, March 04 7:00 - 10:00 PM Hilton Orlando, Ruby Lake	University of Kansas-Wich	nita Orthopaedics	
		Alumni Reception	Thursday, March 03 6:30 - 8:00 PM	
University of Alabama at Alumni Reception	Thursday, March 03	-	Hilton Orlando, Lake Highland A	
Alumni Reception	6:00 - 8:00 PM Hilton Orlando, Orange Ballroom C	University of Louisville		
		Alumni Reception	Thursday, March 03 6:00 - 9:00 PM	

6:00 - 9:00 PM

Hilton Orlando, Lake Nona A

University of Maryland		University of Rocheste	r
Alumni Reception	Thursday, March 03 7:00 - 10:00 PM Hilton Orlando, Lake Hart B	Alumni Reception	Friday, March 04 7:00 - 10:00 PM Hilton Orlando, Sand Lake
University of Massachusetts		University Of Southern California Graduate Orthopedic	
Alumni Reception	Friday, March 04 6:00 - 9:00 PM Doubletree SeaWorld, Mediterranean B	Surgeons (SOGOS) Reception	Thursday, March 03 6:00 - 9:30 PM Tommy Bahama Restaurant and Bar, 9101 International Drive
University of Miami		University of Texas Me	dical Branch, Orthonaedic Surgery
Alumni Reception	Thursday, March 03 6:00 - 8:00 PM	University of Texas Medical Branch, Orthopaedic Surger at Galveston	
University of Michigan	Doubletree SeaWorld, Mediterranean BC	Alumni Reception	Wednesday, March 02 6:00 - 8:00 PM Rosen Shingle Creek, Suwannee 11
Badgley Alumni Society	Thursday, March 03	University of Toronto	Suwannee 11
Reception University of Missouri O	6:00 - 8:00 PM Hilton Orlando, Lake Sheen A <b>rthopedic Association</b>	Alumni Reception	Friday, March 04 6:30 - 10:00 PM Rosen Plaza, Salon 8
Reception	Thursday, March 03	University of Virgina	Rusen Haza, Salon o
	6:30 - 8:30 PM Hilton Orlando, Lake Highland B	Alumni Reception	March 3, 2016 6:30 - 9:00 PM
University of Missouri-K	University of Missouri-Kansas City		Rosen Centre, Salon 9
Alumni Reception	Thursday, March 03 6:30 - 8:30 PM Tommy Bahama Restaurant and Bar, 9101 International Drive	University of Wisconsin	
		Alumni Reception	Thursday, March 03 6:00 - 8:00 PM
University of Nebraska I	Nedical Center		Rosen Plaza, Salon 9
Alumni Gathering	Thursday, March 03 6:30 - 8:30 PM Copper Canyon Grill, 9101 International Drive	Wake Forest	
		Alumni Reception	Thursday, March 03 6:30 - 8:30 PM Rosen Centre, Salon 7
University of New Mexico - Sandia Orthopaedic Alumni		Walter Reed Bethesda Orthopaedic Alumni Association	
Society Reception	Friday, March 04 6:30 - 9:30 PM Rosen Centre, Salon 4	Member Reception	Thursday, March 3 6:00 - 7:00 PM Regency Ballroom P
University of North Carolina Orthopaedics		Washington State Orthopaedic Association	
Alumni Dinner	Thursday, March 03 6:00 - 8:00 PM Hard Rock Café, Woodstock Room & Terrace,	Alumni Reception	Friday, March 04 6:30 - 8:30 PM Rosen Centre, Salon 17
		Washington University	/
University of Pennsylva	6050 Universal Blvd	Alumni Reception	Friday, March 04 6:30 - 8:30 PM
Alumni Reception	Friday, March 04		Rosen Centre, Salon 11

#### **West Virginia University**

#### Alumni Reception

Friday, March 04 6:00 - 7:30 PM Doubletree SeaWorld, Mediterranean C

#### **William Beaumont Hospital**

Alumni Reception

Friday, March 04 6:30 - 10:00 PM Texas de Brazil, 5259 International Drive

#### Willis C. Campbell Club

Alumni Reception

Friday, March 04 6:00 - 8:00 PM Hilton Orlando, Orange Ballroom E

#### **Wright State Orthopaedics**

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Alumni Reception
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Friday, March 04 7:00 - 10:00 PM Hilton Orlando, Pocket Lake

#### **Yale Orthopedic Association**

Reception

Thursday, March 03 6:00 - 8:00 PM Doubletree SeaWorld, Caribbean AB

AAOS Aff liate & Alumni Meetings

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## AAOS: Distraction City CITIZENS BEWARE!

Distractions are everywhere and we are all guilty, but did you know they are causing unnecessary injuries and orthopaedic traumas? Too frequently, we hear about distracted driving-related crashes, or about pedestrians tripping, falling or colliding with another person, object or traffic because of dis acted walking.

Orthopaedists want to educate patients and the public about ways to keep their bones and joints safe from harm and injury. Are you doing your part?



The Academy has two multimedia campaigns— Decide to Drive and Digital Deadwalkers—to help you promote this effort in your local markets and offices.

Take a walk through Distraction City durin Annual Meeting, located in Academy Hall. Can you make it through with little to no distractions?

> AAQOS American Academy of Orthopaedic Surgeons

#### 488 AAOS CLASS OF 2016

#### **ACTIVE FELLOWS**

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Patrick Woods O'Donnell, MD Babajide A. Ogunseinde, MD Shelley Marie Oliver, MD Trevor William Oren, MD Daniel Osei, MD Randall Otto, MD Trevor Marshall Owen, MD

#### Ρ

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Allison J. Rao. MD Raj D. Rao, MD Venkatesh Rao, MBBS, MS Timothy Rapp, MD Kevin A. Raskin, MD Linda J. Rasmussen. MD Karl E. Rathjen, MD Monthakan Ratnarathorn, MD Michael A. Rauh. MD Afshin Razi, MD John E. Ready, MD Kelsey Rebehn, MD Glenn R. Rechtine II, MD Robert N. Reddix, MD Sudheer C. Reddy, MD Fred C. Redfern, MD John Michael Redmond, MD Harold Wharton Rees, MD Motasem I. Refaat, MD Stephen Andrew Refsland, MD Sagib Rehman, MD Michael Reich, MD J. Spence Reid, MD John Patrick Reilly, MD Mark C. Reilly, MD Kent A. Reinker, MD Tom E. Reinsel, MD Mark S. Rekant, MD Richard B. Ressman, MD John M. Reynolds, MD Alan M. Reznik, MD, MBA John J.M. Rhee, MD Peter C. Rhee, MD Jason Troy Rhodes, MD Anthony S. Rhorer, MD Eric Thomas Ricchetti, MD William M. Ricci, MD Anthony Ian Riccio, MD B. Stephens Richards III, MD David R. Richardson, MD Nicholas Scott Richardson, MD William J. Richardson, MD John C. Richmond, MD Alexander Richter, MD, MS James B. Rickert, MD John Riehl, MD Michael D. Ries, MD Danielle Ries de Chaff n, MD K. Daniel Riew, MD Andrew Joseph Riff, MD Jeffrey A. Rihn, MD Aimee Riley, DO Lee H. Riley III, MD David C. Ring, MD Damian Mark Rispoli, MD William L. Ritchie IV, MD

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Richard Woodson Rutherford Jr. MD Adrian B. Ryan, MD Andrew Wilson Ryan, MD Deirdre Dunn Rvan, MD John M. Rvan, MD Richard K.N. Ryu, MD Coleen S. Sabatini, MD, MPH Vani Janaki Sabesan, MD Sanieev Sabharwal, MD, MPH Ranian Sachdev, MD Ramin Sadeghpour, MD Kazuhiko Saeki, MD, PhD Shannon David Saf er. MD Marc Safran, MD Henry Claude Sagi, MD Alexander P. Sah, MD Shawn Sahota, MD Augustine Saiz, MD Kaveh Robert Sajadi, MD Peter B. Salamon, MD Jonathon Salava, MD Khaled J. Saleh, MD, MSc, FRCSC, FACS Lissette Salgueiro-Canetti, MD Justin D. Saliman, MD Bryan Michael Saltzman, MD Charles L. Saltzman, MD Matthew D. Saltzman, MD Paul M. Saluan, MD Ralph T. Salvagno, MD Gonzalo Samitier Solis, MD G. James Sammarco, MD Vincent James Sammarco, MD Julie Samora, MD Thomas G. Sampson, MD Joaquin Sanchez-Sotelo, MD James A. Sanders, MD James O. Sanders, MD Julia S. Sanders, MD Kristopher Case Sanders, MD Roy W. Sanders, MD Robert H. Sandmeier, MD Andrew K. Sands, MD Bruce J. Sangeorzan, MD Jose A. Sanhudo, MD Wudbhav N. Sankar, MD Richard F. Santore, MD Anthony Sapienza, MD John F. Sarwark, MD Rick C. Sasso, MD Adam Sassoon, MD Akhilesh Sastry, MD Jibanananda Satpathy, MD James Matthew Saucedo, MD, MBA Jason W. Savage, MD David Savin, MD Felix H. Savoie III, MD

Olga D. Savvidou, MD Aenor J. Sawyer, MD Jeffrey R. Sawyer, MD Siraj A. Sayeed, MD Jason James Scalise, MD Brian Scannell, MD Richard A. Schaefer, MD Michael F. Schafer, MD Jonathan L. Schaffer, MD Joseph Schaffer, MD William W. Schairer, MD Thomas J. Scharschmidt, MD Emil H. Schemitsch, MD Robert C. Schenck, MD Anthony A. Schepsis, MD Susan A. Scherl, MD Mark S. Schickendantz, MD Adam Paul Schiff, MD Peter Schilling, MD Oliver Schipper, MD Theodore F. Schlegel, MD Harry Schmaltz, MD Gregory J. Schmeling, MD Andrew H. Schmidt, MD Christopher C. Schmidt, MD Gary L. Schmidt, MD Kenneth Schmidt, MD Todd A. Schmidt, MD Matthew R. Schmitz, MD Michael L. Schmitz, MD Erik Schnaser, MD Bradley S. Schoch, MD Jonathan G. Schoenecker, MD Perry L. Schoenecker, MD Andrew J. Schoenfeld, MD Lew C. Schon, MD Patrick Christopher Schottel, MD Tim Schrader, MD Nicholas Schraut, MD Michael J. Schreck, MD Verena M. Schreiber, MD Gregory Douglas Schroeder, MD William C. Schroer, MD David Schub, MD Dean R. Schueller, MD Richard B. Schultz, MD Mark Schultzel, MD Brian M. Schulz, MD Steven F. Schutzer, MD Joseph Hasbrouck Schwab, MD Adam Schwartz, MD Alexandra Kay Schwartz, MD Brian Edward Schwartz, MD Jeffrey M. Schwartz, MD, FACS Randy Steven Schwartzberg, MD Ran Schwarzkopf, MD

Stefan Schwienbacher Anthony Scillia, MD Mark Scioli, MD John Alan Scolaro, MD Giles R. Scuderi, MD Peter Keyes Sculco, MD Thomas P. Sculco, MD Scott Beecher Scutchf eld, MD Beniamin W. Sears. MD Ariun Sebastian, MD Laurent SiGismond Sedel, MD, PhD Mark Seeley, MD Lee S. Segal, MD Daniel N. Segina, MD William H. Seitz Jr, MD Stephen A. Sems, MD Milan Kumar Sen, MD Robert A. Sershon, MD Blane Adam Sessions, MD Manish Kumar Sethi, MD Paul Sethi, MD Rajiv K. Sethi, MD Erik Paul Severson, MD Joseph Milo Sewards, MD James J. Sferra, MD Nicholas A. Sgaglione, MD William O. Shaffer, MD, BS Adam B. Shafritz, MD Aakash A. Shah, MD Akash K. Shah, MD Ashish Shah, MD Mehul R. Shah, MD Roshan P. Shah, MD, JD Suken A. Shah, MD James S. Shaha, MD Shazad Shaikh, MD Irshad A. Shakir, MD Steven F. Shannon, MD Timothy J. Shannon, MD Matthew S. Shapiro, MD Steven L. Shapiro, MD Alok D. Sharan, MD Melinda Sharkey, MD Peter F. Sharkey, MD Kipling P. Sharpe, MD William J. Shaughnessy, MD Brian A. Shaw, MD Kenneth Aaron Shaw, DO Scott Shawen, MD Kevin G. Shea, MD Andrew Joseph Sheean, MD Eoin C. Sheehan, MD, FRCS (ORTHO) Lindsey C. Sheff er, MD Peter Shekailo, MD Scott T. Shemory, MD Francis H. Shen, MD

David Morton Sheps, MD, MSc, FRCSC Paul Strawn Sherbondy, MD Seth Sherman, MD William Franklin Sherman, MD Lewis L. Shi. MD Stephen W. Shick, MD Naomi N. Shields, MD Grant Shiff ett. MD Koh Shimizu, MD Alexander Yong Shik Shin, MD Jason Shin. MD Steven S. Shin, MD Andrew A. Shinar, MD Konsei Shino, MD Eric D. Shirley, MD Brian Shiu, MD Paul Y. Shonnard, MD Benjamin J. Shore, MD, MPH, FRCSC Michael Wade Shrader, MD Kevin B. Shrock, MD Thomas Edwin Shuler, MD Theodore Shybut, MD Faisal A. Siddigui, MD Klaus Siebenrock, MD Herrick Siegel, MD Judith Siegel, MD John Sielatycki, MD Rafael Jose Sierra, MD Paul Charles Siffri, MD Andres Silberman, MD Selina Rae Silva, MD Vincent J. Silvaggio, MD Lance M. Silverman, MD Matthew John Simons, MD Bonnie Simpson Mason, MD Stephen H. Sims, MD Ira Joel Singer, MD Anshuman Singh, MD Kern Singh, MD Anuj Singla, MD Steven Brian Singleton, MD Ernest L. Sink, MD Marcelo Bogliolo Piancastelli Sigueira, MD Gregory H. Sirounian, MD Zachary Sisko, MD David Lee Skaggs, MD Nathan William Skelley, MD Martin Charles Skie, MD Robert R. Slater Jr, MD Gerard Slobogean, MD, MPH, FRCSC James A. Slough, MD James D. Slover, MD Gaston Slullitel, MD Brian G. Smith, MD Bruce Laron Smith Jr, MD

Christopher S. Smith, MD Douglas G. Smith, MD Eric Louis Smith, MD Harvey E. Smith, MD Jeffrev Mark Smith. MD Jeffrey Percey Smith Jr, MD Jennifer Lauren Smith, MD Jeremy T. Smith, MD Matthew V. Smith. MD Micah Smith. MD Patrick Judson Smith, MD Joseph Douglas Smucker, MD Niall Adair Smyth, MD Mark Snoddy, MD Rvan Snowden, MD Barry J. Snyder, MD Brian Snyder, MD, PhD Mark A. Snyder, MD Stephen J. Snyder, MD Stephen R. Soffer, MD Gregory W. Soghikian, MD David H. Sohn, JD, MD Michael Solomon, MD Thomas Greg Sommerkamp, MD Jason Somogyi, MD Kit M. Song, MD Kevin Sonn, MD John K. Sontich, MD Nelson Fong SooHoo, MD Joel I. Sorger, MD Louis J. Soslowsky, PhD Dean G. Sotereanos, MD Gabriel Elias Soto, MD Paul Louis Sousa, MD Ted Sousa, MD Edward Paul Southern, MD Richard Douglas Southgate, MD Stephen R. Southworth, MD Ken Sowards Mark J. Spangehl, MD Amy L. Speeckaert, MD Samantha A. Spencer, MD Luke Spencer-Gardner, MD Dan M. Spengler, MD John William Sperling, MD, MBA David Andrew Spiegel, MD Andrea Spiker, MD Kurt P. Spindler, MD Robert Jay Spinner, MD Clay A. Spitler, MD Andrew I. Spitzer, MD Paul D. Sponseller, MD Scott M. Sporer, MD Bryan Donald Springer, MD Dempsey S. Springf eld, MD Murray D. Spruiell, MD

Shaf c A. Sraj, MD Anand Srinivasan, MD Patrick St Pierre, MD Kathryne Stabile, MD, MS Paul R. Stafford, MD Jeffrey Benjamin Stambough, MD Jacob McEachern Stanf eld, MD Jay Michael Stanley, MD James P. Stannard, MD Robert A. Stanton, MD Robert P. Stanton, MD Walter Stanwood, MD Jonathan Robert Staples, MD Andrew M. Star, MD Harlan McMillan Starr Jr, MD Eugene Stautberg, MD Alexandra Stavrakis, MD Matthew R. Steensma, MD Andrew B. Stein, MD David R. Steinberg, MD Mark E. Steiner, MD Scott P. Steinmann, MD Byron Fitzgerald Stephens II, MD Scott Stephens, MD John Michael Stephenson, MD Robert S. Sterling, MD Peter J. Stern, MD William B. Stetson, MD Cory Michael Stewart, MD Robert Stewart, MD MAJ Daniel J. Stinner, MD Andrew T. Stith, MD Steven Marc Stoller, MD Norman E. Stone, MD Jason W. Stoneback, MD Michael David Stover, MD Richard E. Strain Jr, MD Robert J. Strauch, MD Eric Jason Strauss, MD Philipp Nicolas Streubel, MD Benjamin David Streufert, MD Sabrina Strickland, MD Sophia A. Strike, MD D. Alexander Stroh, MD Joseph J. Stuart, MD Michael J. Stuart, MD Allston J. Stubbs IV, MD Steven Andrew Stuchin, MD Bernard N. Stulberg, MD S. David Stulberg, MD Peter F. Sturm, MD Joseph F. Styron, MD, PhD Edwin P. Su, MD Daniel J. Sucato, MD, MS Michael Suk, MD Linda Suleiman, MD

Matthew Patrick Sullivan, MD Hobie D. Summers, MD Dale R. Sumner Jr. PhD Adam Sunderland, MD James P. Sutherland, MD, FACS Larry Suva, PhD Steven James Svoboda, MD Kenneth Girvan Swan Jr. MD Vineeta T. Swaroop, MD Ishaan Swarup, MD Marc F. Swiontkowski, MD Julie A. Switzer, MD Robert Morris Szabo, MD, MPH Jan Paul Szatkowski, MD Benjamin Szerlip, DO Lisa Taitsman, MD Norimasa Takahashi, MD Richelle C. Takemoto, MD Carl T. Talmo, MD Paul Talusan, MD Vishwas R. Talwalkar, MD Miho Jean Tanaka, MD Oliver O. Tannous, MD David P. Taormina, MD Minal D. Tapadia, MD, JD, MA John S. Taras, MD Ivan Seth Tarkin, MD Jason Tartaglione, MD Robert Zaray Tashjian, MD Robert L. Tatsumi, MD Michael J. Taunton, MD Benjamin Craig Taylor, MD Dean C. Taylor, MD Kenneth F. Taylor, MD Ross Taylor, MD Ryan Metri Taylor, MD David C. Teague, MD Fernando Techy, MD Nicholas S. Tedesco, DO Steven M. Teeny, MD Robert Allan Teitge, MD Nirmal C. Tejwani, MD Sam G. Tejwani, MD Jessica Jewel Maxine Telleria, MD H. Thomas Temple, MD David C. Templeman, MD Jesse Ellis Templeton, MD Kimberly J. Templeton, MD Michael A. Terry, MD Kevin Tetsworth, MD David Teuscher, MD Matthew J. Teusink, MD Savyasachi C. Thakkar, MD Vijay B. Thangamani, MD Steven M. Theiss, MD

J. Andy Sullivan, MD

Alexander Theologis, MD Emmanuel Thienpont, MD Claudia L. Thomas. MD Ruth Lourdes Thomas. MD Capt. (ret) Michael A. Thompson. MD George H. Thompson, MD Stephen Thompson, MD Terry L. Thompson, MD Brian Thomson, MD Jeffrev D. Thomson, MD David B. Thordarson. MD Thomas S. Thornhill, MD Thomas Ward Throckmorton, MD Chad R. Thurman. DO James E. Tibone, MD Andrew Tice, MD Jonathan B. Ticker, MD John E. Tis, MD Fotios Paul Tjoumakaris, MD John M. Tokish, MD Vernon T. Tolo, MD Matthew M. Tomaino, MD, MBA Bryan J. Tompkins, MD Marc Tompkins, MD John R. Tongue, MD Pietro M. Tonino, MD Paul Toogood, MD Brian Christopher Toolan, MD Roger P. Torga-Spak, MD Edward A. Toriello, MD Paul Tornetta III, MD Paul Justin Tortolani, MD Laura Lowe Tosi, MD Peter G. Trafton, MD Samir Trehan, MD Alfred J. Tria Jr, MD Clifford B. Tribus, MD Caroline R. Triepel, MD Roman Trimba, MD Krishna Raj Tripuraneni, MD David Trofa, MD Robert T. Trousdale, MD Eeric Truumees, MD Creighton Collins Tubb, MD Norman S. Turner III, MD Harrison G. Tuttle, MD John R. Tuttle, MD Wakenda K. Tyler, MD, MPH Richard Uhl, MD Marc Evan Umlas, MD Ashwin Unnithan, MBBS, MSc, FRCS (Ortho) Vidyadhar V. Upasani, MD Ekaterina Urch, MD Kenneth Urish, MD, PhD Alexander Vaccaro, MD, PhD

Rahul Vaidya, MD Thomas Parker Vail, MD Heather A. Vallier, MD Frank Valone III. MD C. Niek Van Dijk, MD Carola F. Van Eck, MD Ann E. Van Heest, MD Jerry W. Van Meter, MD Geoffrey Van Thiel, MD, MBA Curtis D. VandenBerg, MD Kelly L. Vanderhave, MD C. Thomas Vangsness Jr, MD Jed S. Vanichkachorn, MD, MBA Mark Anthony Vann II, MD Thomas F. Varecka, MD Eric Varley, DO Zachary Vaupel, MD Patrick Vavken, MD Olivier Verborgt, MD, PhD Nikhil N. Verma, MD Brian Keith Vickaryous, MD Armando Felipe Vidal, MD Jonathan Vigdorchik, MD Tomas Vilaseca, MD Diego C. Villacis, MD Randall W. Viola, MD Walter W. Virkus, MD Mark A. Vitale, MD, MPH Michael G. Vitale, MD, MPH Michael Vives, MD David A. Volgas, MD Ilva Voloshin, MD Diane E. Von Stein, MD James Everett Voos, MD Bryan George Vopat, MD Anand Mahesh Vora, MD John Vorhies, MD Frank R. Voss, MD James Turner Vosseller, MD Mark S. Vrahas, MD Bradford Sutton Waddell, MD James P. Waddell, MD Eric R. Wagner, MD Peter John Wagner, MD Scott Wagner, MD Christopher John Wahl, MD Sean Michael Wahlguist, MD Gilles Walch, MD Larry Waldrop, MD Norman Waldrop III, MD Kristina Sinacori Walick, MD Brett Walker, DO Peter S. Walker, PhD Bryan T. Wall, MD Eric J. Wall, MD Maegen Wallace, MD

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Robert W. Westermann, MD Geoffrey H. Westrich, MD F. Todd Wetzel, MD Peter G. Whang, MD Daniel Whelan, MD Col. Daniel W. White. MD Klane K. White, MD Rebecca Whitesell, MD Leo A. Whiteside. MD Daniel Whiting, MD Scott Robert Whitlow, MD A. Paige Whittle, MD Graeme Whyte, FRCSC, MD, MSc Brett Peter Wiater, MD J. Michael Wiater, MD Mark T. Wichman, MD Roger F. Widmann, MD Carl Wierks, MD David L. Wiest, MD Anatole Vilhelm Wiik, MBBS Benjamin Wilke, MD Rick Wilkerson, DO Joe B. Wilkinson, MD John Thomas Wilkinson, MD Ryan Edward Will, MD Melissa Willenborg, MD Michael C. Willey, MD Ariel Williams, MD Chad Williams, MD Craig S. Williams, MD Gerald R. Williams Jr, MD John J. Williams, MD Matthew Williams, MD Seth K. Williams, MD

Susan Lai Williams, MD Samuel Clifton Willimon, MD Robert George Willson, MD Philip L. Wilson, MD Robert Horace Wilson, MD Timothy C. Wilson, MD Travis J. Wilson, MD Robert Lane Wimberly, MD Russell E. Windsor, MD Nathaniel C.H. Wingert, MD Jessica Wingf eld, MD Jeffrey C. Wint, MD Roland H. Winter, MD Donald A. Wiss. MD Daniel Witmer, MD Felasfa M. Wodajo, MD Andrew John Wodowski, MD Marcella Rae Woiczik, MD Robert D. Wojahn, MD Brian R. Wolf, MD Andrew Barrett Wolff, MD Jesse Isaac Wolfstadt, MD Philip R. Wolinsky, MD Theodore Scott Woll, MD Andrew Matthew Wong, MD Christopher Wong, MD Jeffrey Wong, MD Justin Wong, MD Montri D. Wongworawat, MD Thomas Woo, MD Julie C. Woodside, MD Adam N. Wooldridge, MD, MPH Steven T. Woolson, MD Zachary Working, MD

Jacob Richard Worsham, MD Jennifer K. Wozniczka, MD James G. Wright, MD Raymond Dayne Wright Jr, MD Rick W. Wright, MD Rory R. Wright, MD Thomas W. Wright, MD Timothy M. Wright, PhD Vonda J. Wright, MD Andrew Wroblewski, MD Thomas H. Wuerz, MD Dane K. Wukich, MD Ronald W.B. Wyatt, MD James Wylie, MD Theresa O. Wyrick, MD Zhiqing Xing, MD Demian M. Yakel, DO Madhusudhan Reddy Yakkanti, MD Ken Yamaguchi, MD Suzanne Marie Yandow, MD Juan Yanez Arauz, MD Charlie C. Yang, MD Justin Yang, MD Scott S. Yang, MD Adam Blair Yanke, MD Jeffrey Yao, MD Walid K. Yassir, MD Burt Yaszay, MD Adolph J. Yates Jr, MD Yi-Meng Yen, MD Nancy Yen Shipley, MD Jane Yeoh, MD Jonathan George Yerasimides, MD Christopher A. Yeung, MD

Anthony Yi, MD Paul Hyunsoo Yi, MD Marilyn L. Yodlowski, MD, PhD Nicholas Yohe, MD Brad J. Yoo, MD Patrick Yoon, MD Richard S. Yoon, MD Sun Jung Yoon, MD, PhD Thomas Youm, MD Scot Alan Youngblood, MD Alastair S.E. Younger, MD Brandon J. Yuan, MD David Yucha, MD Stephen John Zabinski, MD Musa Zaid, MD Ira Zaltz, MD David P. Zamorano, MD Robert Zbeda, MD Steven Zeitzew, MD Daniel Zelazny, MD Boris A. Zelle, MD Dean W. Ziegler, MD Bashir A. Zikria, MD, MSc Lewis Evan Zionts, MD Bruce Ziran, MD, FACS Lewis G. Zirkle Jr, MD Benjamin Zmistowski, MD Ioannis Zouzias, MD Joseph D. Zuckerman, MD Justin Zumsteg, MD Michael G. Zywiel, MD

#### Member Name

Daniel M. Adair, MD Tony Nguyen Aram, MD Frank T. Barranco, Sr. MD Marco Berard, MD Leslie M. Bodnar, MD John Charles Bouillon, MD Christopher M. Brian, MD Robert W. Bright, MD John D. Broms. MD Wesley H. Burnham, MD G. David Casper, MD Antonio E. Castellvi, MD John Monte Clark, MD Jerry L. Cochran, MD William C. Collins, MD William H. Davidson, MD Jack L. Davis, DO J. Randall Davis, MD Gerald L. Davis, MD Frank L. Denoff, MD Albert F. Dingley, Jr, MD Michael W. Eaton, MD Erik W. Ellis, MD Ted K. Encke, MD Jerry S. Farber, MD Shep J. Friedman, MD Herbert H. Gamber, MD William F. Garvin, MD Robert C. George, MD Malcolm E. Ghazal, MD Victor Goldberg, MD John S. Gould, MD James A. Groh, MD Karl Robert Hamson, MD J. Paul Harvey, Jr, MD Harry E. Hoerner, MD Brian L. Hotchkiss, MD J. Thomas Hulvey, MD William J. Kane, MD, PhD Melvin R. Krohn, MD Leon Levine, MD David B. Lovejoy, Jr, MD Ralph Lusskin, MD James W. Lyons, MD James M. Marlowe, MD E. Thomas Marguardt, MD

In Memoriam

#### Date of Death City, State

9/7/2015 Springf eld, IL 6/23/2014 Bethesda, MD 3/21/2015 Parkville, MD 9/10/2015 Potsdam, NY 12/16/2014 South Bend, IN 8/12/2012 Great Barrington, MA 6/30/2014 Littleton, CO 1/5/2015 Lodi, CA Ventura. CA 2/19/2015 1/14/2014 Minneapolis, MN 12/19/2014 Oklahoma City, OK 2/8/2014 Temple Terrace, FL Seattle, WA 4/13/2015 7/10/2014 Midland, TX 2/25/2013 Atlanta, GA 5/24/2015 San Diego, CA 2/11/2015 Carson City, NV 7/23/2015 Pacif c Palisades, CA 9/18/2013 Naples, FL 9/7/2015 Orange City, FL 8/24/2014 Lake Placid, NY 5/19/2015 Anchorage, AK 12/16/2014 Colorado Springs, CO 7/27/2015 Fairhope, PA 5/21/2015 Rockville, MD 5/24/2015 Cooperstown, NY Richland, WA 5/3/2015 5/18/2015 Lincoln, NE 1/13/2015 Darien, CT 3/10/2015 Fresno, CA 2/8/2015 Gates Mills, OH 9/29/2015 Birmingham, AL 8/17/2015 Sun City Center, FL 10/31/2014 Corona, CA 8/12/2010 Pasadena, CA 6/27/2014 New Orleans, LA 12/27/2013 Grand Rapids, MI 3/7/2005 Abingdon, VA 3/27/2015 Minneapolis, MN 4/23/2015 Zanesville, OH 4/1/2015 Steilacoom, WA 5/27/2013 Peabody, MA 1/17/2015 New York, NY 8/21/2013 Traverse City, MI 12/16/2014 High Point, NC 9/3/2015 Green Lake, WI

#### Member Name

William C. Martin, MD Malcolm A. Meyn, Jr, MD Francisco J. Miranda, MD Michael E. Moore, MD Robert Delevan Mussey, MD Gerald M. Paul. MD Richard B. Peoples, MD Robert D. Ray, MD Michael K. Riley, MD Leon Root, MD Benjamin S. Shaffer, MD Glyndon B. Shaver, Jr, MD Robert C. Shoemaker, MD Robert D. Small, MD John D. States, MD Irving D. Strouse, MD Elizabeth Ann Szalay, MD Richard H. Tapogna, MD Douglas Tappan, MD William A. Teipner, MD Robert E. Tooms. MD Joseph Robert Trubia, MD Noel T. Van Ness, MD Paul S. Van Puffelen, MD Jon Carper Vessely, MD Jerome F. Wall, MD Clarence E. Walls, MD John Stephen Waters MD Niels J. West, MD Martin C. Wilber, MD Robert S. Wilson, MD Robert B. Winter, MD Milton A. Wohl, MD

#### Date of Death City, State

1/15/2015 Bay City, MI 11/17/2014 Cincinnati, OH 5/6/2014 Scotch Plains, NJ Novelty, OH 8/23/2015 3/18/2015 Urbana, IL 10/25/2013 Encino, CA 12/11/2014 Fort Worth, TX Unknown Santa Rosa, CA 10/2/2015 Ocala, FL 9/21/2015 5/20/2015 9/25/2010 6/15/2013 7/14/2015 3/26/2015 1/6/2015 12/29/2014 8/23/2013 4/9/2015 2/16/2015 9/10/2013 2/2/2015 2/15/2015 12/30/2014 3/27/2015 11/9/2015 3/12/2015 5/14/2015 8/9/2015 10/28/2015 Unknown 6/1/2014 4/20/2015

### New York, NY Washington, DC Weaverville, NC Claremont, NH White Plains, NY Pittsford, NY Long Branch, NJ Albuquerque, NM Springf eld, OH Pensacola, FL Katy, TX Germantown, TN Gallatin, TN Redding, CA Saint Paul, MN Lake Oswego, OR Riverside, CA Holland, MI Gainesville, FL Oakland, OR Nacogdoches, TX Chapel Hill, NC Saint Paul, MN Philadelphia, PA

### International

John R. Huckell, MD James F. McMillan, MD Arturo Quiros, MD Dietrich Hempel, MD Hatem S. Sadi, MD Romeo Jose Romero Zavaleta. MD Antoon B. Stibbe, MD

7/1/2014 Edmonton, AB, Canada 3/27/2015 Edmonton, AB, Canada 8/1/2014 San Jose, Costa Rica October 2014 Hamburg, Germany 12/1/2014 Zarga, Jordan 1/6/2015 Veracruz, Mexico 2/25/2015 Amsterdam,

Netherlands

### **STANDARDS OF PROFESSIONALISM Orthopaedic Surgeon-Industry Relationships** Adopted April 18, 2007; Amended April 23, 2012

AAOS Standards of Professionalism (SOPs) establish the minimum standards of acceptable conduct for orthopaedic surgeons. Violations of any SOP may result in professional compliance actions against an AAOS Fellow or Member found in violation. Not prepared using a systematic review, SOPs are developed through a consensus process and are ultimately adopted as off cial AAOS statements by the two-thirds vote of the AAOS Fellowship casting ballots.

The primary focus of the orthopaedic profession is care of the patient. As part of their lifetime commitment to patients, orthopaedic surgeons must maintain specialized knowledge and skills through participation in continuing medical education (CME) programs, seminars, and professional meetings. Often, these professional functions are sponsored by the manufacturers of medical devices, biologics, drugs and other items use in the care of the patient (Product). These businesses play an important role in the support of CME events and the development of new technologies. This collaborative effort ensures that patients have the best outcomes through the invention and testing of new technology, research and evaluation of existing technology, and continued education of orthopaedic surgeons.

Cooperative relationships between orthopaedic surgeons and industry benef t patients. Orthopaedic surgeons are best qualif ed to provide innovative ideas and feedback, conduct research trials, serve on scientif c advisory boards, and serve as faculty to teach the use of new technology. Orthopaedic surgeons, in an effort to improve patient care, rely on industry to bring their creative ideas to fruition. A collaborative relationship between orthopaedic surgeons and industry is necessary to improve patient care, but must be carefully scrutinized to avoid pitfalls of improper inducements, whether real or perceived.

A potential conf ict of interest exists when professional judgment concerning the well being of the patient has a reasonable chance of being inf uenced by other interests of the physician. Disclosure of a conf ict of interest is required in communications to patients, the public and colleagues. Orthopaedic surgeons, like all physicians, have an ethical obligation to present themselves and the services they provide to patients in a clear and accurate manner.

When faced with a potential conf ict of interest that cannot be resolved, an orthopaedic surgeon should consult with colleagues or an institutional ethics committee to determine whether there is an actual or potential conf ict of interest and how to address it.

These Standards of professionalism draw from the aspirational *Code of Medical Ethics and Professionalism for Orthopaedic Surgeons* that appears in bold italics. The statements that follow the **aspirational** *Code* establish the **mandatory** minimum standards of acceptable conduct for orthopaedic surgeons when engaged in relationships with industry. Violations of these minimum standards may serve as grounds for a formal complaint to and action by the AAOS as outlined in the AAOS Bylaws Article VIII.

The Standards of Professionalism on Orthopaedic Surgeon -Industry Relationships apply to all AAOS Fellows and Members. Only an AAOS Fellow or Member may f le complaints of an alleged violation of these Standards of Professionalism regarding another AAOS Fellow or Member.

### Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, I.A.:

The orthopaedic profession exists for the primary purpose of caring for the patient. The physician-patient relationship is the central focus of all ethical concerns.

### Mandatory Standards:

- 1. An orthopaedic surgeon shall, while caring for and treating a patient, regard his or her responsibility to the patient as paramount.
- 2. An orthopaedic surgeon shall prescribe products or other treatments primarily on the basis of medical considerations and patient needs, regardless of any direct or indirect interests in or benef t from industry.

### Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, II. C.:

The orthopaedic surgeon should obey all laws, uphold the dignity and honor of the profession, and accept the profession's self-imposed discipline. Within legal and other constraints, if the orthopaedic surgeon has a reasonable basis for believing that a physician or other health care provider has been involved in any unethical or illegal activity, he or she should attempt to prevent the continuation of this activity by communicating with that person and/or identifying that person to a duly-constituted peer review authority or the appropriate regulatory agency. In addition, the orthopaedic surgeon should cooperate with peer review and other authorities in their professional and legal efforts to prevent the continuation of unethical or illegal conduct.

Mandatory Standard:

3. An orthopaedic surgeon shall comply with all relevant federal and state conf ict of interest and fraud and abuse laws.

### Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, III.A.:

The practice of medicine inherently presents potential conf icts of interest. When a conf ict of interest arises, it must be resolved in the best interest of the patient. The orthopaedic surgeon should exercise all reasonable alternatives to ensure that the most appropriate care is provided to the patient. If the conf ict of interest cannot be resolved, the orthopaedic surgeon should notify the patient of his or her intention to withdraw from the relationship.

### Mandatory Standards:

- 4. An orthopaedic surgeon shall, when treating a patient, resolve conf icts of interest in accordance with the best interest of the patient, respecting a patient's autonomy to make health care decisions.
- 5. An orthopaedic surgeon shall notify the patient of his or her intention to withdraw from the patient-physician relationship, in a manner consistent with state law, if a conf ict of interest cannot be resolved in the best interest of the patient.

### Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, III.C.:

When an orthopaedic surgeon receives anything of signif cant value from industry, a potential conf ict exists which should be disclosed to the patient. When an orthopaedic surgeon receives inventor royalties from industry, the orthopaedic surgeon should disclose this fact to the patient if such royalties relate to the patient's treatment. It is unethical for an orthopaedic surgeon to receive compensation of any kind from industry for using a particular product. Fair market reimbursement for reasonable administrative costs in conducting or participating in a scientif cally sound research clinical trial is acceptable.

#### Mandatory Standards:

- 6. An orthopaedic surgeon shall decline subsidies or other f nancial support from industry, except that an orthopaedic surgeon may accept non-monetary items which benef t patients or serve an educational function and which have a fair market value of less than \$100.
- 7. An orthopaedic surgeon who has inf uence in selecting a particular product or service for an entity shall disclose any relationship with industry to colleagues, the institution and other affected entities.
- 8. An orthopaedic surgeon shall disclose to the patient any f nancial arrangements with industry that relate to the patient's treatment, including the receipt of inventor royalties, stock options or paid consulting arrangements with industry.
- 9. An orthopaedic surgeon shall accept no direct f nancial inducements from industry for utilizing a particular product or for switching from one manufacturer's product to another.
- 10. An orthopaedic surgeon shall enter into consulting agreements with industry only when such arrangements are established in advance and in writing to include evidence:
  - That there is an actual need for the service;
  - That the provision of the service will be verif ed;
  - That the compensation for services provided by the orthopaedic surgeon is based on fair market value;
  - That the compensation for services provided by the orthopaedic surgeon is not based on the volume or value of business he or she generates; and
  - That reimbursement for reasonable and actual expenses, such as modest meals, travel and lodging, incurred by the orthopaedic surgeon is based on appropriate need and accurate documentation.
- 11. An orthopaedic surgeon shall consult at only those meetings that are conducted in clinical, educational, or conference settings conducive to the effective exchange of basic science and/or clinical information.

### Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, IV.A.:

The orthopaedic surgeon continually should strive to maintain and improve medical knowledge and skill and should make available to patients and colleagues the benef ts of his or her professional attainments. Each orthopaedic surgeon should participate in continuing medical educational activities.

### Mandatory Standards:

- 12. An orthopaedic surgeon shall accept no f nancial support from industry to attend industry- related social functions where there is no educational element.
- 13. An orthopaedic surgeon who is attending a CME event shall accept no industry f nancial support for attendance at a CME event. Residents and orthopaedists-in-training may accept an industry grant to attend a CME event if they are selected by their training institution or CME sponsor and the payment is made by the training program or CME sponsor. The industry entity funding the grant shall have no inf uence

in the selection of the individual recipients. Bona f de faculty members at a CME event may accept industry-supported reasonable honoraria, travel expenses, lodging and modest meals from the conference sponsors.

- 14. An orthopaedic surgeon, when attending an industrysponsored non-CME educational event, shall accept only tuition, travel and modest hospitality, including meals and receptions. The time and focus of the event must be for the presentation of bona f de scientif c, educational or business information or training.
- 15. An orthopaedic surgeon, when attending an industrysponsored non-CME educational event, shall accept no f nancial support for meals, hospitality, travel, or other expenses for his or her guests or for any other person who does not have a bona f de professional interest in the information being shared at the meeting.

### Aspirational: AAOS Code of Medical Ethics and Professionalism for Orthopaedic Surgeons, III.D.:

An orthopaedic surgeon reporting on clinical research or experience with a given procedure or product must disclose any f nancial interest in that procedure or product if the orthopaedic surgeon or any institution with which that orthopaedic surgeon is connected has received anything of value from its inventor or manufacturer.

#### Mandatory Standards:

- 16. An orthopaedic surgeon, when reporting on clinical research or experience with a given procedure or product, shall disclose any f nancial interest in that procedure or product if he or she or any institution with which he or she is connected has received anything of value from its inventor, manufacturer, or distributor.
- 17. An orthopaedic surgeon who is an investigator shall make his or her best efforts to ensure at the completion of an industrysponsored study that relevant research results are reported and reported truthfully and honestly with no bias or inf uence from funding sources, regardless of positive or negative f ndings.

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