2019 ACADEMIC PRESENTATIONS
from the Annual Meetings of the
American Academy of Orthopaedic Surgeons & Orthopaedic Research Society
Dear Colleague,

I am pleased to inform you of Hospital for Special Surgery’s participation at this year’s annual AAOS and ORS meetings, where HSS faculty showcased important research in today’s orthopaedic field. The following pages show the diversity of moderated panels, and numerous oral and poster presentations.

You are invited to sign up at hss.edu/professional to receive updates about HSS eAcademy®, our online professional education platform, an unparalleled selection of over 600 on-site, live streaming and on-demand offerings; as well as news and information from HSS Education Institute.

This is an age of transformation in healthcare. I am proud of the work we do at HSS and our presence at these meetings underscores the valuable contributions HSS makes to patients around the world. Please reach out to professionaleducation@hss.edu should you want more information on these academic presentations.

Todd J. Albert, MD
Surgeon-in-Chief
AAOS Meeting

Adult Reconstruction & Joint Replacement Division

2-HOUR INSTRUCTIONAL COURSES

The Modern Total Knee Arthroplasty: What to Make of All of these Options?
Brett Levine, MD, Alejandro Gonzalez Della Valle, MD

Thromboembolism Prophylaxis for Orthopaedic Surgeons: Update 2019
Douglas Padgett, MD

ASK AN EXPERT

Ask an Expert: Hip and Knee
Allan Gross, MD, Jose Rodriguez, MD

AWARD

HIPS-III Specialty Day — Hip/AAHKS
Moderator: Mathias Bostrom, MD
Mathias Bostrom, MD, Benjamin Stronach, Adolph Lombardi Jr, Jeremy Gilbert

CASE PRESENTATIONS

The Personalized Approach to the Isolated Arthritic Knee: From Biologics to Metal—Drop that Total Knee Arthroplasty Tray
Mathias Bostrom, MD

The Post “OOP” Knee Classification:
Adult Reconstruction Knee
Fred Cusheer, MD, Steven Haas, MD, David Mayman, MD, Geoffrey Westrich, MD

Trunions, Tapers, and Corrosion in Total Hip Arthroplasty: What’s All the Fuss About? What Every Surgeon Should Know
Mathias Bostrom, MD, Joshua Jacobs, MD, Douglas Padgett, MD, Peter Sculco, MD

MODERATORS

A Case-Based Approach to High Risk Total Hip Arthroplasty — When Do I Do Something Differently?
Moderator: Douglas Padgett, MD
David J. Mayman, MD, Jonathan Vigdorchik, MD

ORTHOPAEDIC VIDEO LIBRARY

ARVIS: Wearable Surgeon-Centric Navigation System
David Mayman, MD

Cemented Total Hip Arthroplasty via a Direct Anterior Approach
Zachary Berliner, MD, Luke Menken, DO, Nathaniel Mercer, BA, Jose Rodriguez, MD

Optimal Anatomic Acetabular Component Positioning and Size for Total Hip Arthroplasty via the Direct Anterior Approach
Nathaniel Mercer, BA, Luke Menken, DO, Joseph Lipman, MS, Jonathan Robinson, MD, Evan Hawkins, MD, Jose Rodriguez, MD

PAPER PRESENTATIONS

A Multi-Center Randomized Clinical Trial of Tranexamic Acid in Revision Total Knee Arthroplasty: Does the Dosage Regimen Matter?
Yale Fillingham, MD, Brian Darrith, Matthew Abdel, MD, Arthur Malkani, MD, Ran Schwarzkopf, MD, Douglas Padgett, MD, Robert Sershon, MD, Stefano Bini, MD, Craig Della Valle, MD

Assessing the Role of Daptomycin as Antibiotic Therapy for Staphylococcal Prosthetic Joint Infection
Andy Miller MD, Celeste Russell, MPH, Alina Nocon, MPH, Geoffrey Westrich, MD, Barry Brause, MD, Michael Henry, MD

Complications Following Total Hip Arthroplasty in Inflammatory Arthritis versus Osteoarthritis
Shawn Richardson, MD, Cynthia Kahlenberg, MD, Susan Goodman, MD, Linda Russell, MD, Thomas Sculco, MD, Peter Sculco, MD, Mark Figgie, MD

Conversion of Hip Resurfacing with Retention of Monoblock Acetabular Shell Using Dual Mobility Components
Jason Blevins, MD, Tony Shen, MD, Rachelle Morgenstern, Edwin Su, MD

Does the Type of Antibiotic Spacer Affect Time-to-Failure in the Staged Treatment of Total Knee Periprosthetic Joint Infection?
Loong Woon, MD, Celeste Russell, MPH, Joseph Nguyen, MPH, Michael Henry, MD, Andy Miller, MD, Geoffrey Westrich, MD

Early Hip Fracture Surgery is Safe for Patients on Direct Oral Anticoagulants
Nicholas Koldychuk, BS, Michael Wong, Jereme Palmer, Brian Godshaw, MD, James Mautner, MD, Bradford Waddell, MD

Effect of Early Discharge on Postoperative Comorbidity and Complications for Patients Undergoing Revision Total Knee Arthroplasty
Alex Gu, BS, Eleanor Gerhard, BS, Chapman Wei, BS, Shane Sobrio, BS, Peter Sculco, MD, Alexander McLawhorn, MD

Efficiency Gains from Modularized System Trays
Scott Denegre, PhD, Kaitlin Carroll, BS, Vanessa Valenzuela, David Grace, Scott Wiebel, MS, David Mayman, MD

Eliminating Standard Hip Precautions Does Not Increase the Risk of Dislocation After Contemporary Posterior Approach Total Hip Arthroplasty
Peter Sculco, MD, Ugonna Ikekwazu, MD, Kaitlin Carroll, BS, Seth Jerabek, MD, Edwin Su, MD, Mark Figgie, MD, Friedrich Boettner, MD, Thomas Sculco, MD, David Mayman, MD

Evaluation of the Spine is Critical in Patients with Recurrent Instability After Total Hip Arthroplasty
Jonathan Vigdorchik, MD, Nima Eftekhary, MD, Ameer Elbuluk, MD, Matthew Abdel, MD, Aaron Buckland, FRACS, Ran Schwarzkopf, MD, Seth Jerabek, MD, David Mayman, MD
Impact of Chronic Steroid Usage on Postoperative Infection Following Revision Total Knee Arthroplasty
Alex Gu, BS, Dana Perim, MS, Chapman Wei, BS, Shane Sobrio, BS, Peter Sculco, MD

Insulin-Dependent Diabetic Patients Undergoing Total Joint Arthroplasty are at Increased Risk of Postoperative Hyperglycemia
Brian Godshaw, MD, Michael Warren, MD, George Chimento, MD, Alaa Mohammed, MPH, Bradford Waddell, MD

Is there a Safe Zone for Combined Anteversion in Total Hip Arthroplasty?
Seth Jerabek, MD, Christina Esposito, PhD, Peter Sculco, MD, Jonathan Vigidorchik, MD, David Mayman, MD

IV vs. Oral Acetaminophen as a Component of Multimodal Analgesia After Total Hip Arthroplasty: A Randomized, Double Blinded, Controlled Trial
Geoffrey Westrich, MD, Steven Harwin, MD, Peter Sculco, MD, Godfrey Westrich, MD

Outcomes of Non-Oncologic Total Femoral Replacement at an Orthopaedic Specialty Hospital
Alexander Christ, MD, Logan Mendez, BA, Elizabeth Gausden, MD, Jason Blevins, MD, Mathias Bostrom, MD, Peter Sculco, MD

Peripheral Nerve Injury After 207,000 Total Hip Arthroplasties Using a New York State Database (SPARCS)
Alexander Christ, MD, Yu-Fen Chiu, MS, Amethia Joseph, Geoffrey Westrich, MD, Stephen Lyman, PhD

Prevalence of Fixed Pelvic Axial Rotation and Its Effect on Functional Cup Position in Patients Undergoing Total Hip Arthroplasty
Ajay Premkumar, MD, Christina Esposito, PhD, Joseph Maratt, MD, Seth Jerabek, MD, David Mayman, MD

The Changing Face of Total Hip Arthroplasty Failures: An Analysis of 17, 853 Primary Hips
Sean Sutphen, DO, Ildefe Vaynberg, Amethia Joseph, Yu-Fen Chiu, MS, Christina Esposito, PhD, Douglas Padgett, MD

What Happened? Extreme Delamination and Oxidation in Modern Day Compression Molded Polyethylene
Brian Nickel, MD, Lydia Weitzler, MS, Douglas Padgett, MD, Timothy Wright, PhD

POSTERS

90-Day Readmission Rate and Complications Following Conversion Total Hip Arthroplasty
Christopher Jones, FRACS, Allina Nocon, MPH, Nicolas Selemon, BA, Thomas Sculco, MD, Peter Sculco, MD

Antibiotic Spacer Design Characteristics Influence the Rate of Complications in Two-Stage Revision Hip Arthroplasty
Christopher Jones, FRACS, Allina Nocon, MPH, Mathias Bostrom, MD, Geoffrey Westrich, MD, Thomas Sculco, Peter Sculco, MD

Antibiotic-Loaded Calcium Sulfate Beads Do Not Improve the Outcome of Debridement and Retention of Implants in Acute Prosthetic Joint Infection
Christopher Jones, FRACS, Allina Nocon, MPH, Nicolas Selemon, BA, Michael Henry, MD, Thomas Sculco, MD, Seth Jerabek, MD, David Mayman, MD, Peter Sculco, MD

Are One-Stage Revisions as Successful as Two-Stage Revisions in Eradicating Periprosthetic Joint Infections After Total Hip Arthroplasty and Total Knee Arthroplasty?
Sean Sutphen, DO, Chelsea Koch, BS, Ildefe Vaynberg, Yu-Fen Chiu, MS, Andy Miller, MD, Peter Sculco, MD, Michael Cross, MD

Can Presurgery PROMIS-29 Scores Identify Patients Likely to Do Well After Total Joint Replacements?
Michael Cross, MD, Charles Cornell, MD, Alejandro Gonzalez Della Valle, MD, Mark Figgie, MD, Seth Jerabek, MD, Justin Do, BS, Mayu Sasaki, MPH, Jackie Szymonifka, MA, Lisa Mandl, MD, MPH

Characterization of Postoperative Opioid Consumption and Disposal Patterns After Total Hip and Knee Arthroplasty With a Novel Mobile Phone Text Messaging Platform
Ajay Premkumar, MD, Francis Lovecchio, MD, Jeffrey Stephan, MD, Chelsea Koch, BS, Kaitlin Carroll, BS, Peter Sculco, MD, Seth Jerabek, MD, David Mayman, MD, Alejandro Gonzalez Della Valle, MD, Andrew Pearle, MD, Steven Haas, MD, Michael Alexiades, MD, Todd Albert, MD, Michael Cross, MD

Complications Associated with Staged Versus Simultaneous Bilateral Total Knee Arthroplasty
Shawn Richardson, MD, Cynthia Kahlenberg, MD, William Schairer, MD, Susan Goodman, MD, Thomas Sculco, MD, Mark Figgie, MD, Peter Sculco, MD

Dare to DAIR when BMI is Greater than Forty? Outcomes of Debridement, Antibiotics, and Implant Retention in the Severely Obese
Brian Nickel, MD, Allina Nocon, MPH, Celeste Russell, MPH, Ildefe Vaynberg, Geoffrey Westrich, MD, Andy Miller, MD

Does Surgeon Attire Affect Patient Satisfaction: A Multicenter, Nationwide Study
CL Barnes, MD, Kevin Garvin, MD, Andrew Spitzer, MD, Adam Sassoon, MD, Brian Curtin, MD, Paul Duwelius, MD, Jeffrey Lange, MD, Chris Grayson, MD, Bradford Waddell, MD
No Increased Risk of 90-Day Complication or Readmission, as Well as Decreased Cost, with Total Joint Replacement in a Private, Community-Based Ambulatory Surgery Center  
Michael Ast, MD, Destiny Davis, BS, Kaitlin Carroll, BS, Alvin Ong, MD

Peripheral Nerve Injury After 383,000 Total Knee Arthroplasties Using a New York State Database  
Alexander Christ, MD, Yu-Fen Chiu, MS, Amethia Joseph, Geoffrey Westrich, MD, Stephen Lyman, PhD

Prospective Evaluation of a Non-Invasive Hemoglobin Measurement System in Total Joint Arthroplasty  
Michael Casale, MD, Bradford Waddell, MD, Conor Ojard, MD, George Chimento, MD, Tyler Adams, Alaa Mohammed, MPH

Rheumatoid Arthritis Patients have Lower Preoperative Expectations but Greater Clinical Improvement After Total Knee Arthroplasty Compared to Osteoarthritis Patients  
Jason Blevins, MD, Yu-Fen Chiu, MS, Stephen Lyman, PhD, Susan Goodman, MD, Lisa Mandl, MD, MPH, Peter Sculco, MD, Mark Figgie, MD, Alexander McLawhorn, MD

Same-Day Surgery Does Not Increase the Manipulation Under Anesthesia and Reoperation Rate for Stiffness Following Bilateral Total Knee Arthroplasty  
Lazaros Poultsides, MD, Georgios Triantafyllopoulos, MD, Florian Wanivenhaus, MD, Matthias Pumberger, MD, Stavros Mentrinos, MD, Thomas Sculco, MD

The Influence of Microbial Diagnosis and Chronicity on the Outcome of Debridement with Antibiotics and Implant Retention  
Christopher Jones, FRACS, Nicolas Selemon, BA, Alina Nocon, MPH, Andy Miller, MD, Michael Henry, MD, Michael Cross, MD, Peter Sculco, MD

Thermal Stability of End of the Line Antibiotics When Used in Polymethylmethacrylate Bone Cement  
Ashley Levack, MD, MAS, Kathleen Turajane, BS, Xu Yang, MD, Andy Miller, MD, Mathias Bostrom, MD, David Wellman, MD

Utilization of Care following Total Knee Arthroplasty: The Impact of Patient Travel Distance to Hospital  
Nicholas Kolodychuk, BS, Michael Wong, Tyler Adams, Alaa Mohammed, MPH, William Waddell, BS, Bradford Waddell, MD

Valgus Angle Correction and Preoperative Valgus Angle are Radiographic Predictors of Common Peroneal Motor Nerve Injury After Primary Total Knee Arthroplasty  
Yi-Loong Woon, MD, Stephen Lyman, PhD, Eric Bogner, MD, Alissa Burge, MD, Joseph Nguyen, MPH, Mayu Sasaki MPH, Taylor Cogil, BA, Edwin Su, MD, Teena Shetty, MD

Younger Patients Undergoing Total Knee Arthroplasty Have Higher Complication Rates  
Jason Blevins, MD, Shawn Richardson, MD, Elizabeth Gausden, MD, Thomas Sculco, MD, Mark Figgie, MD, Peter Sculco, MD

SCIENTIFIC EXHIBITS

Adult Reconstruction Hip  
Ameer Elbuluk, MD, David Mayman, MD, Seth Jerabek, MD, Peter Sculco, MD

Adult Reconstruction Knee  
Cynthia Kahlenberg, MD, Peter Sculco, MD, Austin Fragomen, MD, S. Rozbruch, MD

Practice Management/Rehabilitation  
Ameer Elbuluk, MD, Michael Ast, MD, Michael Alexiades, MD, Michael Cross, MD, Peter Sculco, MD

SPECIALTY DAY

Bearing: Constrained Options  
Thomas Sculco, MD

Bearing: Role for “Standard” Head Sizes  
Amar Ranawat, MD

Lessons Learned from the Legends  
Thomas Sculco, MD, Robert Booth Jr., Adolph Lombardi Jr., Kelly Vince, Michael Mont

The Painful TKA Diagnostic Dilemmas: Case Presentations and Panel Discussion  
Christopher Peters, MD, Douglas Naudie, MD, Jean-Noel Argenson, MD, Mark Pagnano, MD, Russell Windsor, MD

SYMPOSIA

Preventing Early Hip Dislocation in At Risk Patients: Implant Selection: Big Heads? Dual Mobility?  
Douglas Padgett, MD

Single Use Alignment Technology for Arthroplasty  
David Mayman, MD

TECHNICAL SKILLS

Advanced Technology in Total Knee Arthroplasty  
Classification: Adult Reconstruction Knee  
Moderator: David Mayman, MD

Wolfgang Fitz, MD, Patrick Meere, MD, Jonathan Vigdorchik, MD

WELCOME/OPENING REMARKS

Classification: Adult Reconstruction Hip  
Moderator: Douglas Padgett, MD

Department of Biomechanics

PAPER PRESENTATION

Differences in Gait and Stair Ascent After Total Ankle Arthroplasty and Ankle Arthrodesis  
Austin Sanders, MD, Andrew Kraszewski, PhD, Scott Ellis, MD, Robin Queen, PhD, Sherry Backus, PT, DPT, MA, Howard Hillstrom, PhD, Constantine Demetracopoulos, MD
Department of Medicine

INSTRUCTIONAL COURSE
Update on Infection in Arthroplasty: Postoperative Treatment of Periprosthetic Joint Infection—The Use of Antimicrobials
Barry Brause, MD

PAPER PRESENTATIONS
Assessing the Role of Daptomycin as Antibiotic Therapy for Staphylococcal Prosthetic Joint Infection
Andy Miller, MD, Celeste Russell, MPH, Allina Nocon, MPH, Geoffrey Westrich, MD, Barry Brause, MD, Michael Henry, MD

Does the Type of Antibiotic Spacer Affect Time-to-Failure in the Staged Treatment of Total Knee Periprosthetic Joint Infection?
Yi-Loong Woon, MD, Celeste Russell, MPH, Joseph Nguyen, MPH, Michael Henry, MD, Andy Miller, MD, Geoffrey Westrich, MD

POSTERS
Antibiotic-Loaded Calcium Sulfate Beads Do Not Improve the Outcome of Debridement and Retention of Implants in Acute Prosthetic Joint Infection
Christopher Jones, FRACS, Allina Nocon, MPH, Nicolas Selemon, BA, Michael Henry, MD, Thomas Sculco, MD, Seth Jerabek, MD, David Mayman, MD, Peter Sculco, MD

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Complications Associated with Staged Versus Simultaneous Bilateral Total Knee Arthroplasty
Shawn Richardson, MD, Cynthia Kahlenberg, MD, William Schaider, MD, Susan Goodman, MD, Thomas Sculco, MD, Mark Figgie, MD, Peter Sculco, MD

Complications Following Total Hip Arthroplasty in Inflammatory Arthritis Versus Osteoarthritis
Shawn Richardson, MD, Cynthia Kahlenberg, MD, Susan Goodman, MD, Linda Russell, MD, Thomas Sculco, MD, Peter Sculco, MD, Mark Figgie, MD

Complications Following Total Knee Arthroplasty in Inflammatory Arthritis versus Osteoarthritis
Shawn Richardson, MD, Cynthia Kahlenberg, MD, Susan Goodman, MD, Linda Russell, MD, Thomas Sculco, MD, Peter Sculco, MD, Mark Figgie, MD

Foot & Ankle Service

2-HOUR INSTRUCTIONAL COURSE
Chronic Achilles Ruptures: From Bracing to Complex Reconstruction, Repair with Autograft and Allograft
Scott Ellis, MD

PAPER PRESENTATIONS
Comparison of Functional and Radiographic Outcomes of Talar Osteochondral Lesions Repaired with a Mixture of Particulate Cartilage Extracellular Matrix and Bone Marrow Aspirate Concentrate Versus Microfracture
Mark Drakos, MD, Taylor Cabe, BA, Carolyn Sofka, MD, Ashraf Fansa, Peter Fabricant, MD, MPH, Jonathan Deland, MD

Differences in Gait and Stair Ascent After Ankle Arthrodesis and Total Ankle Arthroplasty
Andrew Kraszewski, PhD, Guilherme Honda Saito, MD, Howard Hillstrom, PhD, Robin Queen, PhD, Scott Ellis, MD, Constantine Demetracopoulos, MD

Opioid Consumption Rate After Foot and Ankle Surgery
Peter Kvarda, MD, Noortje Hagemeijer, MD, Gregory Waryasz, MD, Daniel Guss, MD, Christopher DiGiovanni, MD, Anne Johnson, MD
Osteochondral Autograft Transplantation Augmented with Particulate Cartilage Extracellular Matrix and Bone Marrow Aspirate Concentrate Reduces Rate of Adjacent Postoperative Cysts in Treating Large Osteochondral Lesions of the Talus  
Mark Drakos, MD, Taylor Cabe, BA, Carolyn Sofka, MD, Jonathan Deland, MD, John Kennedy, MD

Results of Tibia and Fibula Osteotomies in the Setting of Total Ankle Replacement  
Samuel Adams Jr., MD, John Steele, Travis Dekker, MD, Constantine Demetracopoulos, MD, James Nunley II, MD, Mark Easley, MD, James DeOrio, MD

Risk Factors for Early Failure of Total Ankle Arthroplasty in 506 Patients with a Minimum Five Years of Follow Up  
Elizabeth Cody, MD, Lorena Bejarano-Pineda, MD, James Lachman, MD, Michel Taylor, MD, Elizabeth Gausden, MD, James DeOrio, MD, Mark Easley, MD, James Nunley II, MD

POSTERS

Factors Affecting Fulfillment of Expectations After Foot and Ankle Surgery  
Jensen Henry, MD, Andrew Roney, BA, Elizabeth Cody, MD, Scott Ellis, MD

Health Literacy in Patients Undergoing the Lapidus Procedure: A Study of Comprehension  
Lauren Volpert, BA, Andrew Roney, BA, Scott Ellis, MD, Andrew Rosenbaum, MD, Stephen Costigliola, PA-C

Middle Subtalar Joint Facet Subluxation as a Marker of Collapsing Flatfoot Deformity: A Case-Control Study  
Cesar De Cesar Netto Sr., MD, Alexandre Godoy-Santos MD, Guilherme Honda Saito MD, Lauren Roberts, MD, Sorin Siegler PhD, Francois Lintz, MD, Martin O’Malley, MD, Scott Ellis, MD, Jonathan Deland, MD

The Use of Synthetic Polyvinyl Alcohol Hydrogel Implants in the Lesser Metatarsal Heads: Is it Safely Doable? A Cadaveric Study  
Cesar De Cesar Netto Sr., MD, Alexandre Godoy-Santos, MD, Lauren Roberts, MD, Taylor Cabe, BA, Thos Harnroongroj, MD, Ashraf Fansa, Andrew Roney, BA, Mark Drakos, MD

Weight-Bearing CT and MRI Findings of Stage II Flatfoot Deformity: Can We Predict Patients at High-Risk for Foot Collapse?  
Cesar De Cesar Netto Sr., MD, Alexandre Godoy-Santos, MD, Guilherme Honda Saito, MD, Lauren Roberts, MD, Sorin Siegler, PhD, Francois Lintz, MD, Martin O’Malley, MD, Scott Ellis, MD, Jonathan Deland, MD

SCIENTIFIC EXHIBIT

Anterior and Posterior Ankle Impingement: Physical Examination Presentation, Imaging Findings, and Arthroscopic Management  
Brendan Emmons, BS, Kirk McCullough, MD, Eric Giza, MD, Anne Johnson, MD, Jorge Acevedo, MD, Dominic Carreira, MD

SPECIALTY DAY

A Comparison of Cyst Formation and Management in Mobile-Bearing and Fixed-Bearing Total Ankle Arthroplasty  
James Lachman, MD, Elizabeth Cody, MD, Michel Taylor, MD, Daniel Scott, MBA, Mark Easley, MD, James DeOrio, MD, James Nunley II, MD

Ankle Arthritis in Your 20’s: The Sad Future  
Scott Ellis, MD

The Use of Three-Dimensional (3D) Biometric Measurements to Predict Additional Alignment Procedures in Total Ankle Replacement  
Cesar De Cesar Netto Sr., MD, Lauren Roberts, MD, Ashraf Fansa, Meghan Newcomer, PA-C, Guilherme Honda Saito, MD, Jonathan Deland, MD, Scott Ellis, MD, Constantine Demetracopoulos, MD

SYMPOSIA

Annual Meeting Highlights  
Mark Drakos, MD

Is The Lateral Column Lengthening Dead?  
Jonathan Deland, MD

Posterior Tibial Tendon Dysfunction: Restoring the Flatfoot  
Scott Ellis, MD

Hand & Upper Extremity Service

2-HOUR INSTRUCTIONAL COURSES

Contemporary Questions and Controversies Regarding the Assessment and Management of Distal Radius Fractures: What is the Best Evidence in 2019?  
Duretti Fufa, MD

Reevaluation of the Scaphoid Fracture: What is the Current Best Evidence?  
Scott Wolfe, MD

CASE PRESENTATIONS

Common Conditions Affecting the Ulnar Side of the Wrist: Demystifying Ulnar Wrist Pain  
Steve Lee, MD

Common Conditions in Hand Surgery and How to Deal with Their Complications  
Daniel Osei, MD, MSc

Rescuing the Elbow  
Robert Hotchkiss, MD

INSTRUCTIONAL COURSE

Sports Injuries of the Hand, Wrist and Elbow  
Daniel Osei, MD, MSc
PAPER PRESENTATION
Evaluating Factors Associated with Scaphoid Nonunion Following Open Reduction and Internal Fixation
Pooja Prabhakar, Lauren Wessel, MD, Joseph Nguyen, MPH, Michelle Carlson, MD, Duretti Fufa, MD

POSTER
Effect of Plate Design on Flexor Pollicis Longus Tendon Irritation After Volar Locked Plating of Distal Radius Fractures
Jeffrey Step, MD, Danielle Marshall, BA, Lauren Wessel, MD, Yoshimi Endo, MD, Theodore Miller, MD, Aoife Macmahon, BA, Hayley Sacks, BA, Andrew Weiland, MD, Duretti Fufa, MD

SPECIALTY DAY
CMC Arthroplasty: Is There an Advantage to Replacement?
Scott Wolfe, MD, Daniel Osei, MD, MSc

Hip Preservation Service

CASE PRESENTATION
Adolescent Hip Pain: A Case-Based Approach to Common Causes
Asheesh Bedi, MD, Young Jo Kim, MD, Christopher Larson, MD, Jeffrey Nepple, MD, Christopher Peters, MD, James Ross, MD, Klaus Siebenrock, MD, Ernest Sink, MD, Moritz Tannast, MD, Ira Zaltz, MD

PAPER PRESENTATIONS
Conversion of Hip Resurfacing with Retention of Monoblock Acetabular Shell Using Dual Mobility Components
Jason Blevins, MD, Tony Shen, MD, Rachelle Morgenstern, Edwin Su, MD
Eliminating Standard Hip Precautions Does Not Increase the Risk of Dislocation After Contemporary Postererior Approach Total Hip Arthroplasty
Peter Sculco, MD, Ugonna Ihekweazu, MD, Kaitlin Carroll, BS, Seth Jerabek, MD, Edwin Su, MD, Mark Figge, MD, Friedrich Boettner, MD, Thomas Sculco, MD, David Mayman, MD
Gender Differences in Outcome After Corrective Surgery for Femoroacetabular Impingement (FAI) Reflect Differences in Preoperative Baseline Scores
Tristan Maerz, PhD, Geneva Baca, Paul Beaule, MD, John Clohisy, MD, Young Jo Kim, MD, Christopher Larson, MD, Michael Millis, MD, David Podeszwa, MD, Perry Schoenecker, MD, Rafael Sierra, MD, Ernest Sink, MD, Daniel Scuato, MD, Robert Trousdale, MD, Ira Zaltz, MD, Asheesh Bedi, MD
Narcotics Prescribing Education Program and Standardized Service Guidelines Decrease Postoperative Opioid Prescribing After Hip Arthroscopy
Jeffrey Step, MD, Michael Fu, MD, Francis Lovechio, MD, Ajay Premkumar, MD, Danyal Nawabi, MD, Anil Ranawat, MD, Bryan Kelly, MD

POSTERS
Evaluating the Use of an Electronic Inclinometer in Correcting Rotational Disorders of the Hip in Children
Ishaan Swarup, MD, Christine Goodbody, MD, Elizabeth Gausden, MD, Douglas Mintz, MD, David Scher, MD, Roger Widmann, MD
Predictors of Failure After Surgical Treatment of Femoroacetabular Impingement: Results of a Multicenter Prospective Cohort of 621 Hips
Jeffrey Nepple, MD, Asheesh Bedi, MD, Ira Zaltz, MD, Christopher Larson, MD, Paul Beaule, MD, Ernest Sink, MD, Young Jo Kim, MD, ANCHOR Study Group, John Clohisy, MD
Surgical Treatment of Femoroacetabular Impingement: Arthroscopy Versus Surgical Hip Dislocation – A Propensity Matched Analysis
Jeffrey Nepple, MD, Ira Zaltz, MD, Asheesh Bedi, MD, Paul Beaule, MD, Michael Millis, MD, Rafael Sierra, MD, Ernest Sink, MD, ANCHOR Study Group, John Clohisy, MD
Thermal Stability of End of the Line Antibiotics when Used in Polyethylmethacrylate Bone Cement
Ashley Levack, MD, MAS, Kathleen Turajane, BS, Xu Yang, MD, Andy Miller, MD, Mathias Bostrom, MD, David Wellman, MD
Valgus Angle Correction and Preoperative Valgus Angle Are Radiographic Predictors of Common Peroneal Motor Nerve Injury After Primary Total Knee Arthroplasty
Yi-Loong Woon, MD, Stephen Lyman, PhD, Eric Bogner, MD, Alissa Burge, MD, Joseph Nguyen, MPH, Mayu Sasaki, MPH, Taylor Cogsil, BA, Edwin Su, MD, Teena Shetty, MD

SPECIALTY DAY
Labrum Repair—All My Tricks
Bryan Kelly, MD

Limb Lengthening and Complex Reconstruction Service

POSTER
Musculoskeletal Oncology Poster Session II: A Case Series of Osseointegration Implant for Transfemoral Level Amputations
Diane Han, MD, Ronald Hillock, MD, S. Robert Rozbruch, MD, Daniel Allison, MD

SCIENTIFIC EXHIBIT
Adult Reconstruction Knee: Management of Extra-Articular Deformity in the Setting of Total Knee Arthroplasty
Moderator: Austin T. Fragomen, MD
Cynthia Kahlenberg, MD, Peter Sculco, MD, Austin T. Fragomen, MD, S. Robert Rozbruch, MD
SPECIALTY DAY

Session I: Lower Extremity: Clubfoot Management in the Adult
Austin T. Fragomen, MD

Session III: What’s New? Complex Arthrodesis of Knee and Ankle
S. Robert Rozbruch, MD

Session IV: Knee: Managing Knee Contractures in the Adult
S. Robert Rozbruch, MD

Metabolic Bone Disease/
Musculoskeletal Oncology Service

INSTRUCTIONAL COURSES
Orthopaedic Review Course: Refresh, Refocus, and Prepare
Joseph Lane, MD

Own Your Patient’s Bone Health: Know How to Treat Prior to Spine Surgery
Joseph Lane, MD

PAPER PRESENTATION
Nonoperative Treatment of LC-1 Pelvic Fractures: Do Patients Achieve Functional Outcomes Comparable to Healthy Controls?
Aidan Hadad, Matthew Cohn, MD, Rehan Saiyed, BS, Eric Marty, BA, Omer Or, MD, Joseph Lane, MD

Orthopaedic Trauma Service

CASE PRESENTATION
Rescuing the Elbow
Robert Hotchkiss, MD

INSTRUCTIONAL COURSE
The Spectrum of Human Metabolic Bone Disease: What You Need to Know/State of the Art Drug Treatment Regimes for Osteoporosis of the Skeleton
Joseph Lane, MD

ORTHOPAEDIC REVIEW COURSE
Upper Extremity/Metabolic - Bone Disease
Joseph Lane, MD

PAPER PRESENTATIONS
Factors Associated with Collapse of Intertrochanteric Femur Fractures
Michael Ricci, William Ricci, MD, Christopher McAndrew, MD, Anna Miller, MD

Failure and Reoperation Rates Following Arthroscopic Primary Repair Versus Reconstruction of the Anterior Cruciate Ligament
Jelle Van Der List, MD, Anne Jonkergouw, Gregory DiFelice, MD

Nonoperative Treatment of LC-1 Pelvic Fractures: Do Patients Achieve Functional Outcomes Comparable to Healthy Controls?
Aidan Hadad, Matthew Cohn, MD, Rehan Saiyed, BS, Eric Marty, BA, Omer Or, MD, Joseph Lane, MD

POSTERS
Are Two-Part Intertrochanteric Femur Fractures Stable?
Michael Ricci, William Ricci, MD, Anna Miller, MD, Christopher McAndrew, MD

Thermal Stability of End of the Line Antibiotics when Used in Polymethylmethacrylate Bone Cement
Ashley Levack, MD, MAS, Kathleen Turajane, BS, Xu Yang, MD, Andy Miller, MD, Mathias Bostrom, MD, David Wellman, MD

Pediatric Orthopaedic Service

2-HOUR INSTRUCTIONAL COURSE
Evaluation and Surgical Treatment of Knee Osteochondritis Dissecans and Adolescent Cartilage Injuries
Daniel Green, MD, MS, FAAP, FACS

CASE PRESENTATIONS
Adolescent Hip Pain: A Case-Based Approach to Common Causes
Ernest Sink, MD

Advances in Pediatric Fracture Management: A Case-Based Review of Common Pediatric Injury and Current Trends in Management
Daniel Green, MD, MS, FAAP, FACS

Principles of Management of Common Pediatric Sports Injuries
Daniel Green, MD, MS, FAAP, FACS

PAPER PRESENTATIONS
Comparison of Functional and Radiographic Outcomes of Talar Osteochondral Lesions Repaired with a Mixture of Particulate Cartilage Extracellular Matrix and Bone Marrow Aspirate Concentrate Versus Microfracture
Mark Drakos, MD, Taylor Cabe, BA, Carolyn Sofka, MD, Ashraf Fansa, Peter Fabricant, MD, MPH, Jonathan Deland, MD

Effect of Intravenous ε-Aminocaproic Acid on Blood Loss and Transfusion Requirements After Bilateral Varus Rotational Osteotomy: A Prospective, Double-Blinded, Randomized Controlled Trial
Ishaan Swarup, MD, Joseph Nguyen, MPH, Emily Dodwell, MD, David Scher, MD
Gender Differences in Outcome After Corrective Surgery for Femoroacetabular Impingement (FAI) Reflect Differences in Preoperative Baseline Scores
Tristan Maerz, PhD, Geneva Baca, Paul Beaule, MD, John Clohisy, MD, Young Jo Kim, MD, Christopher Larson, MD, Michael Millis, MD, David Podeszwa, MD, Perry Schoenecker, MD, Rafael Sierra, MD, Ernest Sink, MD, Daniel Sucato, MD, Robert Trousdale, MD, Ira Zaltz, MD, Asheesh Bedi, MD

The Epidemiology of Back Pain in Children and Adolescents: A Cross-Sectional Study of 3,669 American Youth
Jonathan Schachne, BA, Colleen Wixted, BS, Daniel Green, MD, Roger Widmann, MD, Peter Fabricant, MD, MPH

POSTERS
Evaluating the Use of an Electronic Inclinometer in Correcting Rotational Disorders of the Hip in Children
Ishaan Swarup, MD, Christine Goodbody, MD, Elizabeth Gausden, MD, Douglas Mintz, MD, David Scher, MD, Roger Widmann, MD

Incidence of Second Surgery After Medial Patellofemoral Ligament Reconstruction in the Pediatric Patient
Daniel Green, MD, MS, FAAP, FACS, Colleen Wixted, BS

Lenke 1 Adolescent Idiopathic Scoliosis: Effects of Thoracic Kyphosis Restoration on Regional and Global Alignment
Jonathan Elysee, Renaud Lafage, Brice Henry, MD, Colleen Wixted, BS, Manon Bolzinger, Han Jo Kim, MD, Matthew Cunningham, MD, PhD, Elie Choufani, Virginie Lafage, PhD, John Blanco, MD, Roger Widmann, MD, Jean Luc Jouve, Sébastien Pesenti, MD

Precocolligate Upper and Lower Extremity Injury is Associated with Higher Risk of Collegiate Injury in National Collegiate Athletic Association Division I Athletes
Danielle Greenberg, BA, James Chen, MD, Armin Arshi, MD, Wilson Lai, BS, Jeremy Vail, ATC, Sharon Hame, MD

Predictors of Failure After Surgical Treatment of Femoroacetabular Impingement: Results of a Multicenter Prospective Cohort of 621 Hips
Jeffrey Nepple, MD, Asheesh Bedi, MD, Ira Zaltz, MD, Christopher Larson, MD, Paul Beaule, MD, Ernest Sink, MD, Young Jo Kim, MD, ANCHOR Study Group, John Clohisy, MD

Prospectively Calculated Utility Values and Health Related Quality of Life in Children with Osteochondritis Dissecans of the Knee
Benedict Nwachukwu, MD, Joshua Adjei, BA, Yi Zhang, MS, Daniel Green, MD, MS, FAAP, FACS, Emily Dodwell, MD, MPH, FRSCSC, Peter Fabricant MD, MPH

TECHNICAL SKILL
Techniques of Graft Harvest (HS, Quads Tendon, BTB)/Epiphysseal ACLR Using Epiphysseal Tunnels
Daniel Green, MD, MS, FAAP, FACS

Radiology & Imaging

INSTRUCTIONAL COURSE
MRI of the Spine: Essentials for the Orthopaedic Surgeon
Darryl Sneag, MD

PAPER PRESENTATIONS
Comparison of Functional and Radiographic Outcomes of Talar Osteochondral Lesions Repaired with a Mixture of Particulate Cartilage Extracellular Matrix and Bone Marrow Aspirate Concentrate Versus Microfracture
Mark Drakos, MD, Taylor Cabe, BA, Carolyn Sofka, MD, Ashraf Fansa, Peter Fabricant, MD, MPH, Jonathan Deland, MD

Osteochondral Autograft Transplantation Augmented with Particulate Cartilage Extracellular Matrix and Bone Marrow Aspirate Concentrate Reduces Rate of Adjacent Postoperative Cysts in Treating Large Osteochondral Lesions of the Talus
Mark Drakos, MD, Taylor Cabe, BA, Carolyn Sofka, MD, Jonathan Deland, MD, John Kennedy, MD

POSTERS
Effect of Plate Design on Flexor Pollicis Longus Tendon Irritation After Volar Locked Plating of Distal Radius Fractures
Jeffrey Stepan, MD, Danielle Marshall, BA, Lauren Wessel, MD, Yoshimi Endo, MD, Theodore Miller, MD, Aoife Macmahon, BA, Hayley Sacks, BA, Andrew Weiland, MD, Duretti Fufa, MD

Magnetic Resonance Imaging and Clinical Outcomes of Osteochondral Allograft Transplantation of the Patella Using Femoral Hamochondyle
Kenneth Lin, MD, Dean Wang, MD, Francesca Coxe, BS, Mollyann Pais, BS, Alissa Burge, MD, Riley Williams, MD

Nonoperative Treatment of Elbow Ulnar Collateral Ligament Injuries in Professional Baseball Players: Understanding Outcomes by MRI Grade and Location of Tear
Aakash Chauhan, MD, Peter Chalmers, MD, Peter McQueen, MD, Christopher Camp, MD, Hollis Potter, MD, Michael Ciccotti, MD, John D’Angelo, BA, Stephen Fealy, MD, Jan Fronek, MD

Prevalence of Osteopenia and Osteoporosis Diagnosed by Quantitative Computed Tomography in 296 Consecutive Lumbar Fusion
Brandon Carlson, MD, Stephan Salzmann, MD, Toshiyuki Shirahata, MD, John Carrino, MD, MPH, Jennifer Shue, MS, Andrew Sama, MD, Frank Cammisa Jr., MD, Federico Girardi, MD, Alexander Hughes, MD
The Impact of Obesity on Regional Bone Mineral Density Measured by Quantitative Computed Tomography in the Lumbosacral Spine
Ichiro Okano, MD, Stephan Salzmann, MD, Toshiyuki Shirahata, MD, Courtney Ortiz Miller, BA, John Carrino, MD, MPH, Andrew Sama, MD, Frank Cammisa Jr., MD, Federico Girardi, MD, Alexander Hughes, MD

Valgus Angle Correction and Preoperative Valgus Angle are Radiographic Predictors of Common Peroneal Motor Nerve Injury After Primary Total Knee Arthroplasty
Loong Woon, MD, Stephen Lyman, PhD, Eric Bogner, MD, Alissa Burge, MD, Joseph Nguyen, MPH, Mayu Sasaki, MPH, Taylor Cogsl, BA, Edwin Su, MD, Teena Shetty MD

Weight-Bearing CT and MRI Findings of Stage II Flatfoot Deformity: Can We Predict Patients at High-Risk for Foot Collapse?
Cesar De Cesar Netto Sr., MD, Lauren Roberts, MD, Guilherme Honda Saito, MD, Ashraf Fansa, Alessio Bernasconi, MD, Carolyn Sofka, MD, Harry Greditzer, MD, Jonathan Deland, MD, Scott Ellis, MD

SPECIALTY DAY
Meniscus and Cartilage Injuries on MRI—What You Need to Know
Hollis Potter, MD

Vertebral Osteomyelitis—New Trends on Diagnostic and Treatment
Paul Huddleston, MD, Hollis Potter, MD

Rehabilitation/Leon Root, MD, Motion Analysis Laboratory

PAPER PRESENTATION
Coracoacromial Ligament Transection Increases Scapular Spine Strains Following Reverse Total Shoulder Arthroplasty
Samuel Taylor, MD, Xiang Chen, MD, Amirhossein Jahandar, MS, Lawrence Gulotta, MD, Andreas Kontaxis, PhD

PODIUM
Coracoacromial Ligament Transection Increases Scapular Spine Strains Following Reverse Total Shoulder Arthroplasty
Samuel Taylor, MD, Xiang Chen, MD, Amirhossein Jahandar, MS, Lawrence Gulotta, MD, Andreas Kontaxis, PhD

The Effect of Neck/Shaft Angle in Subscapularis Repair After Reverse Shoulder Arthroplasty
Andreas Kontaxis, PhD, Xiang Chen, MS, Amirhossein Jahandar, MS, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD

POSTER
The Effect of Neck/Shaft Angle in Subscapularis Repair After Reverse Shoulder Arthroplasty
Andreas Kontaxis, PhD, Xiang Chen, PhD, David Dines, MD, Russell Warren, MD, Lawrence Gulotta, MD

SPECIALTY DAY
ASES: Lateralization and Attachment Site Affect Subscapularis Biomechanics After Reverse Shoulder Arthroplasty
Andreas Kontaxis, PhD, Eric Windsor, Xiang Chen, MS, David Dines, MD, Lawrence Gulotta, MD, Samuel Taylor, MD

Research

INSTRUCTIONAL COURSE LECTURES
Dilemmas for the Team Physician: Return-to-play and Management of In-season Injuries
Scott Rodeo, MD

Incorporating Biologics into Your Practice: The New Horizon in Sports Medicine
Scott Rodeo, MD

Tendinopathy: What’s New, What Works?
Scott Rodeo, MD

MODERATORS
The Personalized Approach to the Isolated Arthritic Knee: From Biologics to Metal—Drop that Total Knee Arthroplasty Tray
Moderator: Khaled Saleh, FRCSC, MD, Mathias Bostrom, MD, Kyle Anderson, MD, Elizabeth Arendt, MD, Richard Berger, MD, Roland Brandt, DO, John Callaghan, MD, Brian, Cole, MD, Todd Frush, MD, Sam Hakki, MD, Adolph Lombardi, Jr., MD, Mark Mackey, MD, William Mihalko, MD, Mark Miller, MD, Tom Minas, MD, Anthony Miniacci, MD, David Murray, MD, David Patterson, MD, Andrew Pearle, MD, Michael Ries, MD, Robert Teitge, MD

ORTHOPAEDIC VIDEO LIBRARY
Optimal Anatomic Acetabular Component Positioning and Size for Total Hip Arthroplasty via the Direct Anterior Approach
Nathaniel Mercer, BA, Luke Menken, DO, Joseph Lipman, MS, Jonathan Robinson, MD, Evan Hawkins, MD, Jose Rodriguez, MD

PODIUM
Is There a Safe Zone for Combined Anteversion in Total Hip Arthroplasty?
Seth Jerebek, MD, Christina Esposito, PhD, Thomas Sculco, MD, Jonathon Vigdorchik, MD, David Mayman, MD
Prevalence of Fixed Pelvic Axial Rotation and Its Effect on Functional Cup Position in Patients Undergoing Total Hip Arthroplasty
Ajay Premkumar, MD, Christina Esposito, PhD, Joseph Maratt, MD, Seth Jerabek, MD, David Mayman, MD

What Happened? Delamination and Oxidation in Modern Day Compression Molded Polyethylene
Brian Nickel, MD, Lydia Weitzler, MS, Douglas Padgett, MD, Timothy Wright, PhD

POSTERS

Interlaminar Stabilization Surgery Versus Posterior Lumbar Fusion Surgery: Five-Year Follow Up in the ≤ 65 Year-Old Patient
Antonio Brecevich, MD, Christina Dowe, BS, Frank Cammisa Jr., MD, Celeste Abjornson, PhD

Thermal Stability of End of the Line Antibiotics When Used in Polymethylmethacrylate Bone Cement
Ashley Levack, MD, MAS, Kathleen Turajane, BS, Xu Yang, MD, Andy Miller, MD, Mathias Bostrom, MD, David Wellman, MD

SCIENTIFIC EXHIBIT

Step by Step Approach of Biologic Therapies for Soft Tissue Injuries in Sports Medicine
Scott Rodeo, MD

SPOTLIGHT SESSION

Flash Five®: What’s Coming Down the Pike: Biologics
Scott Rodeo, MD

ORS Clinical Translational Science Forum: Achilles Tendinopathy: Merging Science and Medicine
Scott Rodeo, MD

Spine Service

CASE PRESENTATION

Surgical Strategies for Cervical Spondylotic Myelopathy
Sheeraz Qureshi, MD (Table Facilitator)

INSTRUCTIONAL COURSE

Orthopaedic Review Course: Refresh, Refocus, and Prepare — Spine/Tumor — Degenerative
Todd Albert, MD

MODERATORS

Pragmatic Learning for New Techniques and Technologies in Spine Surgery (Technical Skills)
Charla Fisher, MD, Sheeraz Qureshi, MD

ORTHOPAEDIC VIDEO LIBRARY

Cervical Disk Arthroplasty: Surgical Technique and Technical Pearls
Andre Samuel, MD, Sheeraz Qureshi, MD

PAPER PRESENTATIONS

A Comparative Analysis of Young Versus Older Adult Spinal Deformity Patients Fused to the Pelvis: Who Benefits More?
Brian Neuman, MD, Micheal Raad, MD, Christopher Ames, MD, Robert Bess, MD, Jeffrey Gum, MD, Munish Gupta, MD, Eric Klineberg, MD, Virginie Lafage, PhD, Gregory Mundis, MD, Christopher Shaffrey, MD, Peter Passias, MD, Themistocles Protopsaltis, MD, Daniel Sciubba, MD, Justin Smith, MD, Khaled Kebaish, MD, International Spine Study Group

Bariatric Surgery Lowers Rates of Spinal Symptoms and Spinal Surgery in a Morbidly Obese Population
Moderator: Sergio Mendoza-Lattes, MD, Sheeraz Qureshi, MD
Peter Passias, MD, Samantha Horn, BA, Dennis Vasquez-Montes, MS, Frank Segreto, BS, Cole Bortz, BA, Michael Moses, MD, Daniel Sciubba, MD, John Afthinos, FACS, Virginie Lafage, PhD
Benefits of Medical Optimization Before Thoracolumbar Three-Column Osteotomies: An Analysis of 618 Patients
Moderator: Sergio Mendoza-Lattes, MD, Sheeraz Qureshi, MD
Andre Samuel, MD, Francis Lovecchio, MD, Avani Vaishnav, MBBS, Catherine Himo Gang, MPH, Steven McAnany, MD, Todd Albert, MD, Sheeraz Qureshi, MD

Changes in Health Related Quality of Life Measures Associated with Degree of Proximal Junctional Kyphosis
Peter Passias, MD, Nicholas Frangella, BS, Renaud Lafage, Virginie Lafage, PhD, Justin Smith, MD, Bassel Diebo, MD, Breton Line, BS, D. Kojo Hamilton, Alexandra Soroceano, MD, Pierce Nunley, MD, Munish Gupta, MD, Khaled Kebaish, MD, Frank Segreto, BS, Cole Bortz, BA, Samantha Horn, BA, Douglas Burton, MD, Robert Hart, MD, Christopher Ames, MD, Robert Bess, MD, Christopher Shaffrey, MD, Frank Schwab, MD, International Spine Study Group

Comparing Predictors of Complications Following Anterior Cervical Discectomy and Fusion (ACDF), Total Disc Replacement (TDR), and Combined ACDF-TDR With Minimum Two-Year Follow Up
Neil Shah, MD, Ishaan Jain, BS, Cameron Moattari, BS, John Connors, BS, George Beyer, BA, John Kelly, BA, Sarah Stroud, BA, Jared Newman, MD, Douglas Hollern, MD, Vincent Chailier, MD, Nicholas Post, MD, Renaud Lafage, Peter Passias, MD, Frank Schwab, MD, Virginie Lafage, PhD, Carl Paulino, MD, Bassel Diebo, MD

Complication Risk in Primary and Revision Minimally Invasive Lumbar Interbody Fusion: A Comparable Alternative to Conventional Open Techniques?
Cole Bortz, BA, Samantha Horn, BA, Frank Segreto, BS, Jessica Morton, MD, Bassel Diebo, MD, Renaud Lafage, Virginie Lafage, PhD, Michael Gerling, MD, Peter Passias, MD

Diminishing Clinical Returns of Multilevel Minimally Invasive Lumbar Interbody Fusion
Peter Passias, MD, Cole Bortz, BA, Samantha Horn, BA, Frank Segreto, BS, Kartik Shenoy, MD, Bassel Diebo, MD, Renaud Lafage, Aaron Buckland, FRACS, Michael Gerling, MD, Peter Passias, MD

Hospital-Acquired Conditions Occur More Frequently in Elective Spine Surgery than for other Common Elective Surgical Procedures
Moderator: Sergio Mendoza-Lattes, MD, Sheeraz Qureshi, MD
Peter Passias, MD, Samantha Horn, BA, Frank Segreto, BS, Cole Bortz, BA, Nicholas Shepard, MD, Shaleen Vira, MD, Bassel Diebo, MD, Renaud Lafage, Virginie Lafage, PhD

Incidence of Acute, Progressive, and Delayed Proximal Junctional Kyphosis Over an Eight-Year Period in Adult Spinal Deformity Patients
Peter Passias, MD, Frank Segreto, BS, Renaud Lafage, Virginie Lafage, PhD, Justin Smith, MD, Breton Line, BS, Gregory Mundis, MD, Pierce Nunley, MD, Cole Bortz, BA, Samantha Horn, BA, Alan Daniels, MD, Munish Gupta, MD, Jeffrey Gum, MD, D. Kojo Hamilton, Eric Klineberg, MD, Douglas Burton, MD, Robert Hart, MD, Frank Schwab, MD, Robert Bess, MD, Christopher Shaffrey, MD, Christopher Ames, MD, International Spine Study Group

Is Frailty Responsive to Surgical Correction of Adult Spinal Deformity? An Investigation of Sagittal Realignment and Component Drivers of Postoperative Frailty Status
Peter Passias, MD, Frank Segreto, BS, Renaud Lafage, Justin Smith, MD, Breton Line, BS, Juan Uribe, MD, Bassel Diebo, MD, D. Kojo Hamilton, Cole Bortz, BA, Samantha Horn, BA, Robert Eastlack, MD, Jeffrey Gum, MD, Munish Gupta, MD, Eric Klineberg, MD, Douglas Burton, MD, Robert Hart, MD, Robert Bess, MD, Christopher Shaffrey, MD, Christopher Ames, MD, Virginie Lafage, PhD, International Spine Study Group

Minimally Invasive Transforaminal Lumbar Interbody Fusion Versus Minimally Invasive Lateral Lumbar Interbody Fusion: A Comparison of Immediate Postoperative Outcomes for the Assessment of Decompression
Avani Vaishnav MBBS, Catherine Himo Gang, MPH, Steven McAnany, MD, Todd Albert, MD, Sheeraz Qureshi, MD

Predictive Factors of Postoperative Dysphagia in Single-level Anterior Cervical Discectomy and Fusion
Avani Vaishnav, MBBS, Philip Saville, MD, Steven McAnany, MD, Catherine Himo Gang, MPH, Kern Singh, MD, Brittany Haws, MD, Benjamin Khechen, BA, Sheeraz Qureshi, MD

Prospective Enumeration of Opioid Consumption Patterns After Lumbar Decompression or Microdiscectomy Using a Novel Text-Messaging Data Collection Platform: Moving Toward Evidence-Based National Opioid Prescribing Guidelines
Francis Lovecchio, MD, Ajay Premkumar, MD, Jeffrey Stepan, MD, Dianna Mejia, BA, Daniel Stein, BS, Russel Huang, MD, Sheeraz Qureshi, MD, Darren Lebl, MD, Todd Albert, MD

Recurrent Changes of Mild and Severe Cases of Proximal Junctional Kyphosis After Lumbo-Pelvic Spinal Fusions
Peter Passias, MD, Nicholas Frangella, BS, Renaud Lafage, Virginie Lafage, PhD, Justin Smith, MD, Breton Line, BS, D. Kojo Hamilton, Bassel Diebo, MD, Khaled Kebaish, MD, Frank Segreto, BS, Samantha Horn, BA, Cole Bortz, BA, Alexandra Soroceano, MD, Jeffrey Gum, MD, Munish Gupta, MD, Eric Klineberg, MD, Douglas Burton, MD, Robert Hart, MD, Christopher Ames, MD, Robert Bess, MD, Christopher Shaffrey, MD, Frank Schwab, MD, International Spine Study Group

Recovery Kinetics following Spinal Deformity Correction: A Comparison of Isolated Cervical, Thoracolumbar, and Combined Deformity Morphometries
Peter Passias, MD, Frank Segreto, BS, Renaud Lafage, Virginie Lafage, PhD, Justin Smith, MD, Breton Line, BS, Justin Scheer, MD, Cole Bortz, BA, Samantha Horn, BA, Gregory Mundis, MD, D. Kojo Hamilton, Han Jo Kim, MD, Bassel Diebo, MD, Munish Gupta, MD, Eric Klineberg, MD, Douglas Burton, MD, Robert Hart, MD, Frank Schwab, MD, Christopher Shaffrey, MD, Christopher Ames, MD, Robert Bess, MD, International Spine Study Group

Sagittal Imbalance Does Not Influence Cup Anteversion in Total Hip Arthroplasty Dislocations
Moderator: Sergio Mendoza-Lattes, MD, Sheeraz Qureshi, MD
Brittany Haws, MD, Kern Singh, MD, Benjamin Khechen, BA, Dil Patel, BS, Philip Louie, MD, Sرافishт Iyer, MD, Kaitlyn Cardinal, BS, Jordan Guntin, Andrew Block, BS
The Consequence of Nonoperative Management in Adult Spinal Deformity: Long-Term Durability of Alignment in Nonoperative and Operative Patients
Peter Passias, MD, Cole Bortz, BA, Renaud Lafage, Justin Smith, MD, Breton Line, BS, Gregory Mundis, MD, Munish Gupta, MD, Jeffrey Gurn, MD, Samantha Horn, BA, Frank Segreto, BS, Daniel Sciubba, MD, Eric Klineberg, MD, Douglas Burton, MD, Robert Hart, MD, Frank Schwab, MD, Robert Bess, MD, Christopher Shaffrey, MD, Virginie Lafage, PhD, International Spine Study Group

Three-Column Osteotomies: A Single Surgeon’s Learning Curve
Brandon Carlson, MD, Renaud Lafage, Srahisht Iyer, MD, Jonathan Elysee, Frank Schwab, MD, Virginie Lafage, PhD, Han Jo Kim, MD

Upper Thoracic Versus Lower Thoracic Upper Instrumented Vertebra for Treatment of Adult Spinal Deformity: Surgical Decision Making and Patient Outcomes
Alan Daniels, MD, Daniel Reid, MD, Wesley Durand, BS, D. Kojo Hamilton, Peter Passias, MD, Han Jo Kim, MD, Themistocles Protopsaltis, MD, Virginie Lafage, PhD, Justin Smith, MD, Christopher Shaffrey, MD, Munish Gupta, MD, Eric Klineberg, MD, Frank Schwab, MD, Douglas Burton, MD, Robert Bess, MD, Christopher Ames, MD, Robert Hart, MD

Complications Following Thoracolumbar Spinal Surgery for Adult Spinal Deformity in the Setting of Rheumatoid Arthritis with Minimum 2-Year Surveillance
George Beyer, BA, Neil Shah, MD, Joseph Scollan, Douglas Hollern, MD, Lee Bloom, MD, Peter Passias, MD, Carl Paulino, MD, Virginie Lafage, PhD, Bassel Diebo, MD

Correlation Between Neck Disability Index, Patient-Reported Outcomes Measurement Information System, and Short Form-12 in Minimally Invasive Anterior Cervical Disectomy and Fusion
Avani Vaishnav, MBBS, Catherine Himo Gang, MPH, Steven McAnany, MD, Todd Albert, MD, Sheeraz Qureshi, MD

Does L4/5 Pose Additional Neurolologic Risk in Lateral Lumbar Interbody Fusion?
Stephan Salzmann, MD, Toshiyuki Shirahata, MD, Oliver Sax, BA, Jingyan Yang, MS, Jennifer Shue, MS, Andrew Sama, MD, Frank Cammisa, Jr., MD, Federico Girardi, MD, Alexander Hughes, MD

Immediate Restoration of Lordosis in Single-Level Minimally Invasive Transforaminal Lumbar Interbody Fusion: A Comparison of Expandable and Static Interbody Cages
Philip Saville, MD, Avani Vaishnav, MBBS, Steven McAnany, MD, Sertac Kirnaz, MD, Rodrigo Navarro-Ramirez, MD, Roger Hartl, MD, Catherine Himo Gang, MPH, Sheeraz Qureshi, MD

Indicators for Non-Routine Discharge Following Cervical Deformity-Corrective Surgery: Radiographic, Surgical, and Patient-Related Predictors
Peter Passias, MD, Cole Bortz, BA, Virginie Lafage, PhD, Renaud Lafage, Justin Smith, MD, Breton Line, BS, Gregory Mundis, MD, Khaled Kebaish, MD, Michael Kelly, MD, Themistocles Protopsaltis, MD, Daniel Sciubba, MD, Alexandra Soroceanu, MD, Eric Klineberg, MD, Douglas Burton, MD, Robert Hart, MD, Frank Schwab, MD, Robert Bess, MD, Christopher Shaffrey, MD, Christopher Ames, MD, International Spine Study Group

Interlaminar Stabilization Surgery vs. Posterior Lumbar Fusion Surgery: Five-Year Follow Up in the ≤ 65 Year-Old Patient
Antonio T. Brecevich, MD, Christina Dowe, BS, Frank Cammisa, Jr., MD, Celeste Abjornson, PhD

Is Chronic Kidney Disease Associated with Postoperative Complications After Spinal Fusion Surgery?
George Beyer, BA, Stanley Weng, MS, Neil Shah, MD, Jared Newman, MD, Frank Cautela, BS, Sebastian Bustamante, BS, Omar Hariri, Scott Pascal, MD, Renaud Lafage, Frank Schwab, MD, Virginie Lafage, PhD, Bassel Diebo, MD, Carl Paulino, MD

Lenke 1 Adolescent Idiopathic Scoliosis: Effects of Thoracic Kyphosis Restoration on Regional and Global Alignment
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Patient Factors Affecting Emergency Department Utilization and Hospital Readmission Rates After Primary Anterior Cervical Discectomy and Fusion: A review of 41,813 cases
Evan Sheha, MD, Stephan Salzmann, MD, Sariah Khormaee, MD, Jingyan Yang, MS, Huong Do, MA, Federico Girardi, MD, Frank Cammisa, Jr., MD, Andrew Sama, MD, Stephan Lyman, PhD, Alexander Hughes, MD

Preoperative Planning and Patient-Specific Rods Improve Radiographic Outcomes Following Spine Surgery
Peter Passias, MD, Samantha Horn, BA, Frank Segreto, BS, Cole Bortz, BA, Dennis Vasquez-Montes, MS, Nicholas Shepard, MD, Renaud Lafage, Virginie Lafage, PhD

Prevalence of Osteopenia and Osteoporosis Diagnosed by Quantitative Computed Tomography (QCT) in 296 Consecutive Lumbar Fusion Patients
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The Impact of Obesity on Regional Bone Mineral Density (BMD) Measured by Quantitative Computed Tomography (QCT) in the Lumbosacral Spine
Ichiro Okano, MD, Stephan Salzmann, MD, Toshiyuki Shirahata, MD, Courtney Ortiz Miller, BA, John Carrino, MD, MPH, Andrew Sama, MD, Frank Cammisa, Jr., MD, Federico Girardi, MD, Alexander Hughes, MD

The Impact of Preoperative Cannabis Use on Outcomes Following Cervical Spinal Fusion: A Propensity Score-Matched Analysis
Neil Shah, MD, Cameron Moattari, BS, Joshua Lavian, BA, George Beyer, BA, Peter Passias, MD, Renaud Lafage, Han Jo Kim, MD, Carl Paulino, MD, Frank Schwab, MD, Virginie Lafage, PhD, Bassel Diebo, MD

SCIENTIFIC EXHIBIT
Combating the Opioid Crisis: Multidisciplinary Programs to Decrease Opioid Intake After Surgery
Jeffrey Stepan, MD, Francis Lovecchio, MD, Ajay Premkumar, MD, Cynthia Kahlenberg, MD, Lauren Wessel, MD, Hayley Sacks, BA, Benedict Nwachukwu, MD, Todd Albert, MD

SPECIALTY DAY
Adult Spinal Deformity Case Presentations (With Emphasis on Prevention/Management of Complications)
Todd Albert, MD, Neel Anand, MD, Han Jo Kim, MD, Eric Klineberg, MD, Gregory Mundis, MD

Debate on the Decision Tree and Technique of Sagittal Plane Reconstruction in Adult Spinal Deformity (With Particular Attention to the Interbody Space): Posterior Only Deformity Correction with PCO & TLI
Han Jo Kim, MD

When Does an Adult Degenerative Spine Case Become a Deformity Case?
Todd Albert, MD

SYMPOSIA
Surgeon Well Being for the Benefit of the Patient: How Can We Become Better For Everyone Else?
Todd Albert, MD

Sports Medicine Service

2-HOUR INSTRUCTIONAL COURSES
Brachial Plexus Palsy After Open and Arthroscopic Shoulder Surgeries
Moira McCarthy, MD

Cartilage Restoration Techniques
Andreas Gomoll, MD

Cartilage — Which Lesions Do I Ignore and How Do I Fix the Rest?
Moderator: Sabrina Strickland, MD
Andreas Gomoll, MD

Clinical and Biological Advances in Tendinopathy — What’s the Evidence?
Scott Rodeo, MD

Knee Injuries/Muscle Injury and Tendinopathy
Scott Rodeo, MD

Patellar Pathology
Moderator: Sabrina Strickland, MD
Andreas Gomoll, MD

Translational Medicine: Bench to Bedside Treatment Evolution
Scott Rodeo, MD

CASE PRESENTATIONS
Anterior Cruciate Ligament Revision Reconstruction Technical Issues: A Case-Based Approach
Joel Boyd, MD, Christopher Camp, MD, Thomas DeBerardino, MD, Gregory Fanelli, MD, Aaron Krych, MD, Bruce Levy, MD, Peter MacDonald, MD, Robert Marx, MD, MSc, FRSCSC, Daniel Whelan, MD, Rick Wright, MD

Complex Meniscal and Articular Cartilage Cases — Scratching the Surface
Brian Busconi, MD, Charles Bush-Joseph, MD, Cory Edgar, MD, Thomas DeBerardino, MD, Darren Johnson, MD, Robert Marx, MD, Eric McCarty, MD, Claude Moorman III, MD, Gehron Treme, MD, Brian Werner, MD

Complex Shoulder Arthroplasty: Primary and Revision, Anatomic and Reverse, Three-Dimensional Planning — When and How?
David Dines, MD, Joshua Dines, MD, Michael Freehill, MD, Evan Lederman, MD, Bradford Parsons

Multiple Ligament Knee Injuries — What Would You Do?
Annunziato Amendola, MD, Cory Edgar, MD, Gregory Fanelli, MD, Gehron Treme, MD, Darren Johnson, MD, Bruce Levy, MD, Robert Marx, MD, MSc, FRSCSC, Eric McCarty, MD, Claude Moorman III, MD, Brian Werner, MD
Current Research and What the Future May Hold
Scott Rodeo, MD

Optimizing Anterior Cruciate Ligament (ACL) Outcomes: What Else Needs Fixing Besides the ACL?
Moderator: Andreas Gomoll, MD
Sabrina Strickland, MD

Optimizing Anterior Cruciate Ligament (ACL) Outcomes: What Else Needs Fixing Besides the ACL?
Moderator: Andreas Gomoll, MD
Annunziato Amendola, MD, Alan Getgood, MD, Sabrina Strickland, MD

Clinical Outcomes Following Anterior Shoulder Stabilization in Overhead Athletes: An Analysis of the MOON Instability Cohort
Thai Trinh, MD, Micah Naimark, MD, Asheesh Bedi, MD, James Carpenter, MD, Christopher Robbins, MD, Keith Baumgarten, MD, Julie Bishop, MD, Matthew Bollier, MD, Jonathan Bravman, MD, Robert Brophy, MD, Charles Cox III, MD, Brian Feeley, MD, John Grant, MD, Carolyn Hettrich, MD, Grant Jones, MD, John Kuhn, MD, Robert Marx, MD, MSc, FRSCS, Eric McCarty, MD, Shannon Ortiz, MPH, Matthew Smith, MD, Brian Wolf, MD, Alan Zhang, MD, Bruce Miller, MD

Concussions in Rugby—Reporting, Behaviors, and Time Loss: A National Survey of Rugby Union Players in the United States
Johnathan Miller, BA, Beth Shubin Stein, MD, David Trofa, MD, Thomas Bottiglieri, DO, Hamish Kerr, MD, Christopher Ahmad, MD

Corticosteroid Injections within Three Months of Rotator Cuff Repair are Associated with Increased Revision Surgery at Two Years
William Schairer, MD, Shawn Richardson, MD, Russell Warren, MD, Matthew Provencher, MD

Delay to Arthroscopic Rotator Cuff Repair is Associated with Increased Risk of Revision Rotator Cuff Surgery
Michael Fu, MD, Evan O’Donnell, MD, William Schairer, MD, Samuel Taylor, MD, Joshua Dines, MD, David Dines, MD, Frank Cordasco, MD, MS, Russell Warren, MD, Lawrence Gulotta, MD

Do Patient Characteristics Implicated by Basic Science Predict Rotator Cuff Repair Revision Surgery?
Evan O’Donnell, MD, Michael Fu, MD, William Schairer, MD, Samuel Taylor, MD, Joshua Dines, MD, David Dines, MD, Russell Warren, MD, Lawrence Gulotta, MD

Does Perceived Effort Match Actual Measured Effort During Baseball Long Toss Programs?
Heath Melugin, MD, Dirk Larson, Glenn Fleisig, PhD, Stan Conte, ATC, Stephen Fealy, MD, Joshua Dines, MD, John D’Angelo, BA, Christopher Camp, MD

Does Preoperative Radiographic Patellofemoral Osteoarthritis Compromise Patellofemoral Specific Outcomes Scores Following Unicompartmental Knee Arthroplasty?
Laura Kleeblad, MD, Niels Laas, MD, Andrew Pearle, MD

History of Prior Surgery Negatively Affects Cell Culture Identity in Patients Undergoing Autologous Chondrocyte Implantation
Jakob Ackermann, Alexandre Mestriner, MD, Courtney Vanarsdale, PA-C, Andreas Gomoll, MD

Amniotic Suspension Allograft was Superior to Saline and Hyaluronic Acid for Treatment of Knee Osteoarthritis in a Randomized Controlled Multi-Center Trial
Jack Farr II, MD, Andreas Gomoll, MD, Kelly Kimmerling, MS, Katie Mowry, MS
POSTERS

A 52-Week Randomized, Double-Blind Phase 2 Study of an Intra-Articular, Wnt Pathway Inhibitor (SMO4690) for Osteoarthritis
Jeymi Tambiah, MD, Sarah Kennedy, PhD, C. Swearingen, PhD, Ismail Simsek, MD, Andreas Gomoll, MD, Deryk Jones, MD, Morgan Jones, MD, John Bergfeld, MD

Amniotic Suspension Allograft Decreases Inflammation and Pain in an In Vitro Synoviocyte Inflammation Model, and an In Vivo Monosodium Iodoacetate Model of Osteoarthritis in Rats
Andreas Gomoll, MD, Jack Farr II, MD, Kelly Kummerling, MS, Katie Mowry, MS

Characterization of Postoperative Opioid Consumption and Disposal Patterns After Total Hip and Knee Arthroplasty with a Novel Mobile Phone Text Messaging Platform
Ajay Premkumar, MD, Francis Lovecchio, MD, Jeffrey Stepan, MD, Chelsea Koch, BS, Kaitlin Carroll, BS, Peter Sculco, MD, Seth Jerabek, MD, David Mayman, MD, Alejandro Gonzalez Delia Valle, MD, Andrew Pearle, MD, Steven Haas, MD, Michael Alexiades, MD, Todd Albert, MD, Michael Cross, MD

Descriptive Epidemiology Study of the Justifying Patellar Instability Treatment by Early Results (JUPITER) Cohort
Meghan Bishop, MD, Jacqueline Brady, MD, Daphne Ling, MPH, Shiital Parikh, MD, Beth Shubin Stein, MD

Magnetic Resonance Imaging and Clinical Outcomes of Osteochondral Allograft Transplantation of the Patella Using Femoral Hemicondyle Allografts
Kenneth Lin, MD, Dean Wang, MD, Francesca Coxe, BS, Mollyann Pais, BS, Alissa Burge, MD, Riley Williams, MD

Nonoperative Treatment of Elbow Ulnar Collateral Ligament Injuries in Professional Baseball Players: Understanding Outcomes by MRI Grade and Location of Tear
Aakash Chauhan, MD, Peter Chalmers, MD, Peter McQueen, MD, Christopher Camp, MD, Hollis Potter, MD, Michael Ciccotti, MD, John D’Angelo, BA, Stephen Fealy, MD, Jan Fronek, MD

Patient-Reported Outcomes Following Isolated Medial Patellofemoral Ligament Reconstruction for Patellar Instability
Joseph Nguyen, MPH, Brandon Erickson, MD, Katelyn Gasik, ATC, Simone Gruber, BA, Beth Shubin Stein, MD

Prediction of Location and Extent of Labral Tear Based on Preoperative Range of Motion in Patients Undergoing Arthroscopic Stabilization for Anterior Shoulder Instability
Robin Dunn, MD, Darby Houck, Carolyn Hettrich, MD, Shannon Ortiz, MPH, Brian Wolf, MD, Eric McCarty, MD, Keith Baumgarten, MD, Julie Bishop, MD, Matthew Bollier, MD, Robert Brophy, MD, Charles Cox III, MD, Brian Feeley, MD, Grant Jones, MD, John Kuhn, MD, ChunBong Ma, MD, Robert Marx, MD, MSc, FRCSC, Eric McCarty, MD, Bruce Miller, MD, Matthew Smith, MD, Brian Wolf, MD, Rick Wright, MD, Alan Zhang, MD

Variability in Baseball Throwing Metrics During a Structured Long-Toss Program: Does One Size Fit All?
Nels Leafblad, MD, Dirk Larson, Glenn Fleisig, PhD, Stan Conte, ATC, Stephen Fealy, MD, Joshua Dines, MD, John D’Angelo, BA, Christopher Camp, MD

The Effect of Neck/Shaft Angle in Subscapularis Repair After Reverse Shoulder Arthroplasty
Andreas Kontaxis, PhD, Xiang Chen, MS, David Dines, MD, Russell Warren, MD, Lawrence Gulotta, MD
SCIENTIFIC EXHIBIT

Role of Patient Expectations on Outcomes and Satisfaction After Orthopaedic Surgery
Ishaan Swarup, MD, Ryan Rauck, MD, Curtis Henn, MD, Lawrence Gulotta, MD, R. Frank Henn III, MD

SPECIALTY DAY

DEBATE: I am Going to Tell You What is BEST for Cartilage Surgery! Biologics for the Knee – From Early OA to Tissue Repair – What to Do?
Scott Rodeo, MD

DEBATE: I am Going to Tell You What is BEST for Cartilage Surgery! When Do You Need an Osteotomy and How to Do It?
Andreas Gomoll, MD

Labrum Repair—All My Tricks
Bryan Kelly, MD

Lateralization and Attachment Site Affect Subscapularis Biomechanics After Reverse Shoulder Arthroplasty
Lawrence Gulotta, MD

Meniscus and Cartilage Injuries on MRI—What You Need to Know
Hollis Potter, MD

Platelet-Rich Plasma: What, Where, and When?
Scott Rodeo, MD

Session II Symposium: Vertebral Osteomyelitis—New Trends on Diagnostic and Treatment
Paul Huddleston, MD, Hollis Potter, MD

SYMPOSIA

ACL Reconstruction in the Multiple Ligament Injured Knee
Robert Marx, MD, MSc, FRCSC

FLASH FIVE

Biologics
Scott Rodeo, MD
ORS Annual Meeting

ePOSTERS

Adverse Local Tissue Reactions in Resurfacing Hip Arthroplasty Versus Primary Total Hip Arthroplasty — A Prospective, Longitudinal Study of Asymptomatic Individuals
Matthew Koff, PhD, Mauro Miranda, Bin Lin, Edwin Su, MD, Douglas Padgett, MD, Hollis Potter, MD

MODERATORS

Imaging for Functional and Structural Assessment of the Knee
Matthew Koff, PhD

Meniscus Degeneration: From Humans to Rodents
Matthew Koff, PhD

ORS Session Number 18: Rotator Cuff
Michael Hast, PhD, Andreas Kontaxis, PhD

Total Knee Replacement—Implant Design and Surgical Instruments
Carl Imhauser, PhD

ORS IMPLANTS SECTION

Use of Computational Modeling to Inform and to Replace, Reduce, and Refine (The 3Rs)
Moderator: Suzanne Maher, PhD

PAPER PRESENTATIONS

A Retrieval Analysis of Oxinium™ Heads: Do Oxinium™ Heads Decrease Tribocorrosion in Total Hip Arthroplasty?
Elexis Baral, BS, Chadwick Hampton, MD, Lydia Weitzler, MS, Timothy Wright, PhD, Mathias Bostrom, MD

Corrosion in Retrieved Metal Liners of Modular Dual Mobility Systems for THA
Kimberly Hemmerling, BS, Lydia Weitzler, MS, Elexis Baral, BS, Timothy Wright, PhD, Douglas Padgett, MD

Identification of Significant Inflammatory Mediators in a Novel Murine Model of Subacromial Impingement
Claire Eliasberg, MD, Susumu Wada, MD, PhD, Camila Carballo, PT, PhD, Yusuke Nakagawa, MD, PhD, Daniel Nemirov, BA, Miguel Otero, PhD, Xiang-Hua Deng, MD, Scott Rodeo, MD

Longitudinal Changes in 3D Jumping Biomechanics Correlate to Quantitative Ultrasound Measures of the Patellar Tendon in Elite Collegiate Basketball Players
Andrew Kraszewski, PhD, Mark Drakos, MD, Howard Hillstrom, PhD, Brett Toresdahl, MD, Answorth Allen, MD, Ogonna Kenechoi Nwawka, MD

MMP Inhibition With Doxycycline Potentially Affects the Progression of Post-Traumatic Osteoarthritis Following ACL Rupture: Evaluation in a Murine Model
Xueying Zhang, BS, Xiang-Hua Deng, MD, Zhe Song, MD, Zoe Album, BS, Yusuke Nakagawa, MD, PhD, Camila Carballo, PT, PhD, Ying Zhang, MD, Liang Ying, BS, Scott Rodeo, MD

Muscle-Derived Activated Endothelial Cells Improve Tendon-to-Bone Healing in a Murine Model of Rotator Cuff Repair: Comprehensive Gene Expression Analysis Using RNA Sequencing
Susumu Wada, MD, PhD, Amir Lebaschi, MD, Yusuke Nakagawa, MD, PhD, Camila Carballo, PT, PhD, Dean Wang, MD, Daniel Nemirov, BA, Zoe Album, BS, Brett Croen, Tony Chen, PhD, Liang Ying, BS, Xiang-Hua Deng, MD, Christopher Mendias, Scott Rodeo, MD

Pre-Ovulatory to Post-Ovulatory Changes in ACL T2*: New Biomarker for ACL Injury Risk?
Erin Argentieri, Tatum Braun, Ryan Breighner, Joseph Nguyen, Matthew Koff, PhD, Hollis Potter, MD

The Effect of Hip Capsulotomy and Repair on Resistive Torque
Andreas Kontaxis, PhD, Xiang Chen, MS, Amrhossein Jahandar, BS, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD

PODIUM

A Retrieval Analysis of Oxinium™ Heads: Do Oxinium™ Heads Decrease Tribocorrosion in Total Hip Arthroplasty?
Elexis Baral, BS, Chadwick Hampton, MD, Lydia Weitzler, MS, Timothy Wright, PhD, Mathias Bostrom, MD

Adding Diagnostic Utility and Value in Musculoskeletal MRI Using ZTE
Ryan Breighner, PhD, Erin Argentieri, BS, Matthew Koff, PhD, Hollis Potter, MD

Corrosion in Retrieved Metal Liners of Modular Dual Mobility Systems for THA
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Andreas Kontaxis, PhD, Xiang Chen, MS, Amirhossein Jahandar, MS, Russell Warren, MD, David Dines, MD, Lawrence Gulotta, MD

**Trunions, Tapers, and Corrosion in Total Hip Arthroplasty: What’s All the Fuss About? What Every Surgeon Should Know**

Robert Barrack, MD, Mathias Bostrom, MD, James Browne, MD, A. Seth Greenwald, Joshua Jacobs, MD, Atul Kamath, MD, Arthur Malkani, MD, Douglas Padgett, MD, Christopher Peters, MD, Peter Sculco, MD, Michael Taunton, MD, Thomas Vail, MD

**Ultrasound Measurement of the Skin as a Potential Marker of Bone Quality: A Prospective Pilot Study of Patients undergoing Lumbar Spinal Fusion**

Stephan Salzmann, Ichiro Okano, Colleen Rentenberger, Courtney Ortiz Miller, Paul Schadler, Oliver Sax, Theodore Miller, MD, Jennifer Shue, Adele Boskey, PhD, Andrew Sama, MD, Frank Cammisa, Jr., MD, Federico Girardi, MD, Alexander Hughes, MD

**A Systematic Review of the Diagnostic Performance of Combination Tests for Periprosthetic Joint Infection**

Alberto Carli, MD, Hesham Abdelbary, Nadera Ahmadzai, Wei Cheng, Beverley Shea, Brian Hutton, Jhase Sniderman, Brendan Sanders, Leila Esmaeilisaraji, Becky Skidmore, Olivier Gauthier-Kwan, Alexandra Bunting, Paul Gauthier, Agnes Cnic, Dean Fergusson, Paul Beaule

**Added Clinical Value of Isotropic MAVRIC SL Acquisitions of Total Hip Arthroplasties**

Kelly Zochowski, Jacky Cheung, Mauro Miranda, Erin Argentieri, Bin Lin, S. Sivaram Kaushik, Alissa Burge, Matthew Koff, PhD, Hollis Potter, MD

**Adverse Local Tissue Reactions in Resurfacing Hip Arthroplasty Versus Primary Total Hip Arthroplasty—A Prospective, Longitudinal Study of Asymptomatic Individuals**

Matthew Koff, PhD, Mauro Miranda, MA, Bin Lin, MS, Edwin Su, MD, Douglas Padgett, MD, Hollis Potter, MD

**Age-Based Comparison of Early Postoperative Outcomes and Dislocation Rates Following Total Hip Arthroplasty**

Kipling Sharpe, Ajay Rastogi, Geoffrey Westrich, MD, Ajay Aggarwal, Russell Cohen

**Age-Related Degenerative Changes In Lumbar Intervertebral Disc of Mice and its Association with Molecular And Behavioral Correlates of Back Pain**

Kathleen Vincent, PhD, Robert Pinelli, BSc, Chitra Dahia, PhD

**Alendronate Enhances Osseointegration in a Murine Implant Model**

Klemens Vertesich, MD, Yingzhen Niu, MD, Gang Ji, MD, Kathleen Turajane, BS, Sehwan Mun, PhD, Ren Xun, PhD, Juan Lopez, MD, Andrew Thomson, BS, Reinhard Windhager, MD, Kyung Parkmin, PhD, Lionel Ivashkiv, MD, Matthew Greenblatt, MD, PhD, Mathias Bostrom, MD, Xu Yang, MD

**Ankle and Hindfoot Kinematics of a Next-Generation Total Ankle Replacement During Simulated Gait**

Susan Rodriguez, MS, Guilherme Saito, MD, Scott Ellis, MD, Jonathan Deland, MD, Constantine Demetropoulos, MD, Daniel Sturnick, MS

**Ankle Subtalar Joint Range of Motion: Does it Correlate with Foot & Ankle Injuries in Professional and Collegiate Basketball Players?**

Sarav Shah MD, Michael Metcalf, ATC, Courtney Brothers, ATC, Danielle Monteiro ATC, Heather Gillespie, MD, Andreas Kontaxis, PhD, Brian McKeon, MD

**Are Early Inter-Limb Differences Of Knee Cartilage T2 Relaxation Times Predictive Signs Of Early Osteoarthritis Development Following Anterior Cruciate Ligament Reconstruction?**

Jack Williams, Kelsey Neal, Ashutosh Khandha, Hollis Potter, MD, Lynn Snyder-Mackler, Thomas Buchanan

**Biomechanical Evaluation of Ligaments in the Rat Knee**

Zhe Song, MD, Xiang-Hua Deng, MD, Scott Rodeo Jr., BS, Zoe Album, BS, Arielle Hall, BS, Tina Chen, Brett Croen, BS, Yusuke Nakagawa, MD, PhD, Ying Lilly, BS, Scott Rodeo, MD

**A New Geometric Ratio to Predict the Flexion Gap in TKA: A Computational Study**

Shady Elmasry, PhD, Peter Sculco, MD, Timothy Wright, PhD, Andrew Pearle, MD, Michael Cross, MD, David Mayman, MD, Geoffrey Westrich, MD, Carl Imhauser, PhD

**A Novel Bioreactor for Quantifying Chondrocyte Response to Physiological Loads: Effect of Boundary Conditions on Cell Response**

Tony Chen, PhD, Mehdi Khoshgoftar, Kirsty Culley, PhD, Russell Warren, MD, Peter Torzilli, PhD, Suzanne Maher, PhD

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**A Coupled Fem-Experimental Approach to Better Understand Mechanically Mediated Cell Response in Cartilage**

Catherine Yuh, Mehdi Khoshgoftar, PhD, Suzanne Maher, PhD, Markus Wimmer, PhD

**A Human Cadaveric Model for Quantifying Knee Joint Mechanics During Simulated Gait: Effect of ISO and ASTM Derived Inputs**

Olufunmilayo Adebayo PhD, Caroline Brial, MS, Amanda Wach, MS, Tony Chen, PhD, Russell Warren, MD, Peter Torzilli, PhD, Suzanne Maher, PhD

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Bone Health Index and Morphology in Two Skeletal Dysplasias
Sobiah Khan, BA, Elizabeth Yonko, BSE, Kate Citron, BS, Erin Carter, MS CGC, Karl Jepsen, PhD, Cathleen Raggio, MD

Characterization of Macrophage Function and Inflammatory Response through Gene Expression Profiling in a Murine Rotator Cuff Repair Model
Camila Carballo, PT, PhD, Yusuke Nakagawa, MD, PhD, Susumu Wada, MD, PhD, Elizabeth Selvaggio, BS, Amir Lebaschi, MD, Tyler Uppstrom, BS, Miguel Otero, PhD, Xiang-Hua Deng, MD, Scott Rodeo, MD

Clinical Assessments of Hand Function in 1st Carpometacarpal Osteoarthritis: Do They Correlate With Radiographic Findings?
Ogona Kenechi Nwawka, MD, Gwen Weinstock-Zlotnick, Bin Lin, Hollis Potter, MD

Clinical Feasibility of Multi-Acquisition Variable-Resonance Image Combination (MAVRIC) Based T2 Mapping Near Total Hip Arthroplasty
Jacky Cheung, Kelly Zochowski, Mauro Miranda, Sampada Bhave, Hollis Potter, MD, Kevin M. Koch, Matthew Koff, PhD

Coracoclavicular Ligament Transection Increases Scapular Spine Strains Following Reverse Total Shoulder
Samuel Taylor, MD, Xiang Chen, MD, Amirhossein Jahandar, MS, Lawrence Gulotta, MD, Andreas Kontaxis, PhD

Correlation of Equine Meniscal Magnetic Resonance Imaging T1rho Values with Quantitative Histologic Assessment
Sarah Pownder, MD, Lisa Fortier, Brian Caserto, Bin Lin, Hollis Potter, MD, Matthew Koff, PhD

Correlation of Meniscus Pathology to Gene Expression Profiles of Formalin-Fixed Paraffin Embedded Human Menisci in Patients With and Without Knee Osteoarthritis
Farrah Monibi, DVM, PhD, Tania Pannellini, MD, PhD, Camila Carballo, PT, PhD

Distribution of Bone Ongrowth in Metaphyseal Sleeves for Revision TKA: A Retrieval Analysis
Lydia Weitzler, MS, Elexis Baral, BS, Ugonna Ikekwuzo, MD, Timothy Wright, PhD, Douglas Padgett, MD

Does Posterior or Anterior Referencing Consistently Balance the Flexion Gap in Measured Resection TKA?
Shady Elmasry, PhD, Peter Sculco, MD, Timothy Wright, PhD, Andrew Pearle MD, Michael Cross, MD, David Mayman MD, Geoffrey Westrich, MD, Carl Imhauser, PhD

Does Muscle Elastography in Spastic Cerebral Palsy Correlate with Response to Botulinum Toxin Injection?
Ogona Kenechi Nwawka, MD, Aviva Wolff, Emily Casaletto, Bin Lin

Effect of Moberg Osteotomy on First Metatarsophalangeal Joint Contact Pressure
Oliver Morgan, BSc, Howard Hillstrom, PhD, Xiang Chen, Matthew Koff, PhD, Mark Lenhoff, Maxime Pouliquin, Scott Ellis, MD, Jonathan Deland, MD, Rajshree Hillstrom

Establishment of a New Post-Traumatic Osteoarthritis Model in Mice Induced by Non-Invasive ACL Rupture
Yusuke Nakagawa, MD, PhD, Xiang-Hua Deng, MD, Camila Carballo, PT, PhD, Xueying Zhang, BS, Susumu Wada, MD, PhD, Zoe Album, BS, Liang Ying, BS, Scott Rodeo, MD

Evaluation of Fibrin Sealant on Healing at the Supraspinatus Tendon Insertion Site
Xueying Zhang, BS, Xiang-Hua Deng, MD, Scott Rodeo, MD, Susumu Wada, MD, PhD, Amir Lebaschi, MD, Camila Carballo, PT, PhD, Richard Ma, MD, Brett Croen, BS, Liang Ying, BS, Michael Schar, MD

Evaluation of the Hedgehog Signaling Pathway Using a Novel Transgenic Mouse Model of Post-traumatic Osteoarthritis (PTOA): Functional and Radiographic Analysis
Tyler Uppstrom, BS, Camila Carballo, PT, PhD, Zoe Album, BS, Susumu Wada, MD, PhD, Liang Ying, BS, Daniel Nemirov, BS, Xueying Zhang, Scott Rodeo, MD

Expression of Alarmins in a Murine Rotator Cuff Tendinopathy Model
Ying Zhang, MSc, Xianghua Deng, MD, Amir H. Lebaschi, MD, Susumu Wada, MD, PhD, Tingcong Guang, MD, Camila Carballo, PT, PhD, Yusuke Nakagawa, MD, PhD, Ying Liang, BS, Scott Rodeo, MD

Expression of Alarmins in Human Tendinopathy
Ying Zhang, MSc, Yusuke Nakagawa, MD, PhD, Xueying Zhang, BS, Camila Carballo, PT, PhD, Brett Croen, BS, Ying Liang, BS, Xianghua Deng, MD, Scott Rodeo, MD

Freeze-dried Chitosan Solubilized In Platelet-rich Plasma In A Sheep Model Of Rotator Cuff Repair
Anik Chevrier, Mark Hurtig, François-Xavier Lacasse, Marc Lavertu, Hollis Potter, MD, Sarah Pownder, Scott Rodeo, MD, Michael Buschmann

Host Immune Response To Bone Injury In An Implant Osseointegration Model
Upneet Sokhi, PhD, Laura Frye, BS, Susan Chyou, BS, Kathleen Turajane, BS, Gang Ji, MD, Theresa Lu, MD, PhD, Mathias Bostrom, MD, Xu Yang, MD, Lionel Ivashkiv, MD

Identifying Discrete Adaptive Immune Cell Populations After Tendon Injury
Andrew Noah, MS, Thomas Li, Susumu Wada, MD, PhD, Jacob Swanson, BS, Nathaniel Disser, BS, Lionel Ivashkiv, MD, Scott Rodeo, MD, Theresa Lu, MD, PhD, Christopher Mendias, PhD, ATC

In-Vivo Kinematics of Total Wrist Arthroplasty Components Compared to Wrist in Range-of-Motion Tasks
Bardiya Akhbari, Amy Morton, Kalpit Shah, Douglas Moore, Arnold-Peter Weiss, Scott Wolfe, MD, Joseph Crisco

Inter- and Intra-rater Reliability of Skin Ultrasound Measurements for the Assessment of Bone Health
Colleen Rentenberger, Ichiro Okano, Stephan Salzmann, Courtney Ortiz Miller, Paul Schadler, Oliver Sax, Jennifer Shue, Theodore Miller, MD, Andrew Sama, MD, Frank Cammisa, Jr., MD, Federico Girardi, MD, Alexander Hughes, MD

Loads of the Pivot Shift Clinical Exam of the Knee: A Cadaveric Model
Hamidreza Jahandar, MS, Niv Marom, PhD, Herve Ouanezar, MD, Thomas Wickiewicz, MD, Danyal Nawabi, MD, Andrew Pearle, MD, Carl Imhauser, PhD, Matthew Tao, Mark Amirtharaj
Longitudinal Assessment of Tibial Cartilage Composition Following Meniscal Allograft Transplantation Using Quantitative MRI
Xiang Chen, Kristin Yu, Erin Argentieri, Farrah Monibi, PhD, Matthew Koff, PhD, Hollis Potter, MD, Scott Rodeo, MD, Suzanne Maher, PhD

Longitudinal Changes in 3D Jumping Biomechanics Correlate to Quantitative Ultrasound Measures of the Patellar Tendon in Elite Collegiate Basketball Players
Andrew Kraszewski, PhD, Mark Drakos, MD, Howard Hillstrom, PhD, Brett Toresdaal, MD, Answorth Allen, MD, Ogonna Kenechi Nwawka, MD

Magnetic Resonance Imaging Used to Study Detailed Bone Apposition and Fixation of an Additively Manufactured Cementless Acetabular Cup
Geoffrey Westrich, MD, Ahmad Faizan, Ahava Muskat, Matthew Koff, PhD, Hollis Potter, MD

Mitochondria Dysfunction in Tenocytes from Human Tendinopathy Patients
Yusuke Nakagawa, MD, PhD, Camila Carballo, PT, PhD, Ying Zhang, MSc, Susumu Wada, MD, PhD, Miguel Otero, PhD, Michelle Delco DVM, PhD, Lisa Fortier, DVM, PhD, Scott Rodeo, MD

Molecular Characterization of Formalin-Fixed Paraffin Embedded Human Menisci
Farrah Monibi, DVM, PhD, Camila Carballo, PT, PhD, Tania Pannellini, MD, PhD, Miguel Otero, PhD, Russell Warren, MD, Scott Rodeo, MD

Molecular Evaluation of Formalin-Fixed Paraffin Embedded Human Menisci from Knees with and without Osteoarthritis
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Novel Macrophage Subpopulations at Tendon-bone Interface After Rotator Cuff and ACL Repair Surgery In Mice
Takayuki Fujii, MD, PhD, Susumu Wada, MD, PhD, Camila Carballo, PT, PhD, Zhe Song, MD, Kyung Park-Min, PhD, Scott Rodeo, MD, Lionel Ivashkiv, MD

Orthopaedic Surgical Outcomes in the Ehlers-Danlos Syndromes: A Retrospective Review
Elizabeth Bernstein, Erin Carter, MS CGC, Sobiah Khan, BA, Elizabeth Yonko, BSE, Cathleen Raggio, MD

Patients with Cirrhotic Sarcopenia Have Smaller and Weaker Muscle Fibers
Jeffrey Talarek, MS, Kristoffer Sugg, MD, PhD, Logan Eckhardt, BS, Michael Volk, MD, MS, Christopher Mendias, PhD, ATC

Quantitative Ultrasound in 1st Carpometacarpal Osteoarthritis: Correlation with Clinical Assessments of Hand Function
Ogonna Kenechi Nwawka, MD, Gwen Weinstock-Zlotnick, Bin Lin, Hollis Potter, MD

Quantitative Ultrasound Measures in the Patellar Tendon Are Associated With VISA-P Scores of Collegiate Basketball Players Over One Season of Play
Ogonna Kenechi Nwawka, MD, Bin Lin, Brett Toresdaal, MD, Answorth Allen, MD, Mark Drakos, MD

Quantity and Quality of Isolated RNA from Formalin-Fixed Paraffin Embedded Human Menisci
Farrah Monibi, DVM, PhD, Camila Carballo, PT, PhD, Tania Pannellini, MD, PhD, Miguel Otero, PhD, Russell Warren, MD, Scott Rodeo, MD

Radiographic Assessment of the Dynasty Biofoam Acetabular Component With a Minimum 2-Years Follow-Up
Romain Galmiche, Paul Beaule, Johanna Dobransky, Alberto Carli, MD

RNAseq and CpG Methylation Analyses Reveal Distinct Transcriptomic and Epigenetic Signatures in Pseudo-synovium Retrieved from Patients with Arthrofibrosis at the Time of Revision Surgery
Tania Pannellini, MD, PhD, Samantha Lessard, MS, Linda Chen, MS, Purva Singh, PhD, Allina Nocon, PhD, MPH, David Oliver, PhD, Piali Mukherjee, PhD, Giorgio Perino, MD, Meghan Kirksey, MD, PhD, Matthew Koff, PhD, Hollis Potter, MD, Lionel Ivashkiv, MD, Alessandra Pernis, MD, Thomas Bauer, MD, PhD, Thomas Sculco, MD, Timothy Wright, PhD, Peter Sculco, MD, Miguel Otero, PhD

Targeting Skeletal Endothelium To Promote Bone Formation
Ren Xu, PhD, Xu Yang, MD, Mathias Bostrom, MD, Amanda Wach, MS, Laurie Glimcher, MD, Matthew Greenblatt, MD, PhD

The Associations Between Bone Material Properties Measured by Fourier Transform Infrared Spectroscopy (FTIR), Bone Microstructure, and Bone Mineral Density Among Caucasian Patients Undergoing Lumbar Spinal Fusion
Ichiro Okano, MD, Stephan Salzmann, MD, Colleen Rentenberger, MD, Courtney Ortiz Miller, BA, Paul Schadler, MD, Oliver Sax, MS, Jennifer Shue, MS, John Carrino, MD, MPH, Adele Boskey, PhD, Andrew Sama, MD, Frank Cammisa, Jr., MD, Federico Girardi, MD, Alexander Hughes, MD

The Correlation Between Urine N-terminal Telopeptide (uNTX) and New Bone Formation Parameters in Fourier Transform Infrared Spectroscopy (FTIR) Among Patients Undergoing Lumbar Fusion Surgery
Ichiro Okano, MD, Stephan Salzmann, MD, Colleen Rentenberger, MD, Courtney Ortiz Miller, BA, Paul Schadler, MD, Oliver Sax, MS, Jennifer Shue, MS, John Carrino, MD, MPH, Adele Boskey, PhD, Andrew Sama, MD, Frank Cammisa, Jr., MD, Federico Girardi, MD, Alexander Hughes, MD

The Effect of Lubricin-Mimetics on Post-Traumatic Osteoarthritis in a Rat Anterior Cruciate Ligament Transection Model
Daniel Nemirov, BS, Yusuke Nakagawa, MD, PhD, Zhexun Sun, Amir Lebaschi, MD, Susumu Wada, MD, PhD, Camila Carballo, PT, PhD, Xiang-Hua Deng, MD, David Putnam, PhD, Lawrence Bonassar, PhD, Scott Rodeo, MD

The Incidence of Subclinical Occult Infection in Primary Spine Fusion Procedures
Christina Dowe, BS, Tucker Callanan, BS, Antonio Brecevich, MD, Darren Lebl, MD, Frank Cammisa Jr., MD, Celeste Abjornson, PhD
The Role of Hedgehog Signaling in Tendon-To-Bone Healing After Rotator Cuff Repair: In Vivo Study Using Gli1 Knock-in Reporter Mice
Susumu Wada, MD, PhD, Zoe Album, BS, Yusuke Nakagawa, MD, PhD, Camila Carballo, PT, PhD, Tyler Uppstrom, BS, Zhe Song, MD, Ying Zhang, MSc, Xueying Zhang, BS, Daniel Nemirov, BS, Brett Croen, BS, Reyna Bhandari, BS, Conor Jones, BS, Liang Ying, BS, Xiang-Hua Deng, MD, Chitra Dahia, Scott Rodeo, MD

Thermal Stability of “End of the Line” Antibiotics When Used in Polymethylmethacrylate Bone Cement
Ashley Levack, MD, MAS, Kathleen Turajane, BS, Xu Yang, MD, Andy Miller, MD, Mathias Bostrom, MD, David Wellman, MD

Utility of Lavage in Addition to Native Fluid During Fluoroscopically-Guided Joint Aspiration in the Diagnosis of Infection
Ogonna Kenechi Nwawka, MD, Theodore Miller, MD, Brian Tischler, Bin Lin, Robert Schneider, MD

Vascular and Osteoanabolic Responses in Osseointegration
Kathleen Turajane, BS, Ed Purdue, PhD, Gang Ji, MD, Ugur Ayturk, PhD, Lionel Ivashkiv, MD, Matthew Greenblatt, MD, PhD, Mathias Bostrom, MD, Xu Yang, MD

VEGF Pathway Promotes Osseointegration and CD31-hi EMCN-hi Endothelium Expansion in a Mouse Tibial Implant Model
Gang Ji, MD, Ren Xu, PhD, YingZhen Niu, MD, Kathleen Turajane, BS, Na Li, PhD, Klemens Vertesich, MD, Lionel Ivashkiv, MD, Matthew Greenblatt, MD, PhD, Mathias Bostrom, MD, Xu Yang, MD

WORKSHOPS

Reproducibility in Modeling and Simulation of the Knee: An Academic Perspective
Carl Imhauser, PhD

PreClinical Testing Models
Suzanne Maher, PhD