



UC San Diego

SCHOOL OF MEDICINE

Department of Orthopaedic Surgery

OREF WESTERN REGION RESIDENT RESEARCH SYMPOSIUM

Wednesday, September 16, 2026

The Ida and Cecil Green Faculty Club
On University of California, San Diego Campus
Atkinson Pavilion and Patio
9500 Gilman Drive
La Jolla, CA 92093

Hosted by:

Reid Abrams, MD
Interim Chair
Department of Orthopaedic Surgery
University of California, San Diego

Table of Contents

Resident Research Symposium Summary Agenda	5
Keynote Speaker	7
Judges and Moderator.....	9
Detailed Agenda.....	11
Abstracts	14
Sponsors	33
OREF Resident Research Opportunities.....	35
2025 OREF Resident Research Symposium Winners.....	37

About OREF:

The Orthopaedic Research and Education Foundation (OREF) is a charitable 501(c)(3) organization committed to improving lives by supporting excellence in orthopaedic research through its grant funding and research education programs. As an independent nonprofit, OREF strives to improve clinical care and patient outcomes by advancing innovative research, developing new investigators and uniting the orthopaedic community in promoting musculoskeletal health.

Visit oref.org or follow OREF on LinkedIn (Orthopaedic Research and Education Foundation) YouTube (@OREFoundation), Facebook (OREFtoday) and X (@OREFtoday).

***Excited about today's research?
Share it with your colleagues! Post on social media with #Orthosymposia***

OREF Western Region Resident Research Symposium
SUMMARY AGENDA
Wednesday, September 16, 2026

7:00 a.m. – 7:45 a.m.	Registration and Breakfast The Ida and Cecil Green Faculty Club On University of California San Diego Campus Atkinson Pavilion and Patio 9500 Gilman Drive La Jolla, CA 92093
7:45 a.m. – 7:50 a.m.	Welcome and Introductions Reid Abrams, MD Interim Chair Department of Orthopaedic Surgery University of California, San Diego
7:50 a.m. – 8:00 a.m.	OREF Welcome Lee Grossman, MBA, ML Chief Executive Officer Orthopaedic Research and Education Foundation
8:00 a.m. – 8:35 a.m.	Session I – Resident Research Presentations & Discussion Upper Extremity and Sports
8:35 a.m. – 9:05 a.m.	Session II – Resident Research Presentations & Discussion Trauma
9:05 a.m. – 9:10 a.m.	<i>Break – please submit your scores from Sessions I and II to OREF Staff</i>
9:10 a.m. – 9:40 a.m.	Session III – Resident Research Presentations & Discussion Joints
9:40 a.m. – 10:05 a.m.	Session IV – Resident Research Presentations & Discussion Tumor
10:05 a.m. - 10:30 a.m.	Session V – Resident Research Presentations & Discussion Spine
10:30 a.m. – 10:40 a.m.	<i>Break – please submit your scores from Sessions III, IV and V to OREF staff</i>
10:40 a.m. -10:43 a.m.	Introduction of Keynote Speaker
10:43 a.m. - 11:03 a.m.	Keynote Speaker Billy Eppler Founder, The Development Arc Former General Manager, New York Mets and Los Angeles Angels
11:03 a.m.-11:18 a.m.	Keynote Speaker Question and Answer
11:18 a.m.- 11:38 a.m.	Closing Remarks and Awards Presentation
12:00 p.m. – 1:00 p.m.	Lunch

KEYNOTE SPEAKER



Billy Eppler

Founder, The Development Arc
Former General Manager, New York Mets and Los Angeles Angels

Billy Eppler is a Major League Baseball executive with more than two decades in professional baseball front offices. He served as General Manager of the New York Mets and the Los Angeles Angels, and before that as Assistant General Manager of the New York Yankees. As a GM he oversaw every dimension of building a roster: scouting, player development, contract negotiation, analytics, and the medical and performance operations that keep elite athletes on the field. Signature moves include signing two-way star Shohei Ohtani (2017), negotiating Mike Trout's record 12-year extension (2019), and guiding the 2022 Mets to 101 wins, the second-highest total in franchise history.

Today he is the founder of The Development Arc, a San Diego-based advisory practice for leaders and high performers—people who operate where every decision is visible and every outcome is evaluated. He translates the decision-making and talent-evaluation discipline of a major-league front office into other high-stakes settings and works selectively with athletes and families navigating the competitive athletic path. His focus sits at the intersection of front-office strategy and player performance optimization: how to diagnose and assess athletes, prescribe interventions, and enhance performance and longevity. A San Diego native, he lives there with his family.

Judges

David Berry, MD
University of California, San Diego

Andrew Hurvitz, MD
University of California, San Diego

Richard Santore, MD
University of California, San Diego

Rachel M. Thompson, MD
Rady Children's Health, San Diego

Samuel Ward, MD
University of California, San Diego

Moderator

Joseph Mitchell, MD
University of California, San Diego

**OREF Western Region Resident Research Symposium
DETAILED AGENDA
Wednesday, September 16, 2026**

- 7:00 a.m. – 7:45 a.m. **Registration/Breakfast**
The Ida and Cecil Green Faculty Club
On University of California, San Diego Campus
Atkinson Pavilion and Patio
9500 Gilman Drive
La Jolla, CA 92093
- 7:45 a.m. – 7:50 a.m. **Welcome**
Reid Abrams, MD
Interim Chair
Department of Orthopaedic Surgery
University of California, San Diego
- 7:50 a.m. – 8:00 a.m. **OREF Welcome**
Lee Grossman, MBA, ML
Chief Executive Officer
Orthopaedic Research and Education Foundation
- Session I – Resident Research Presentations and Discussion
Upper Extremity and Sports**
- 8:00 a.m. – 8:05 a.m. *Endoprosthetic Proximal Humeral Reconstructions Demonstrate Greater Loads to Failure than Allograft Prosthetic Composite Constructs in a Cadaveric Reverse Shoulder Arthroplasty Model*
Mathangi Sridharan, MD, University of California, Los Angeles
- 8:05 a.m. – 8:10 a.m. *Shoulder Arthroplasty Outcomes in Patients with Neurodegenerative Disease: A Propensity-Matched Analysis*
Liam Wong, MD, University of California, San Francisco
- 8:10 a.m. – 8:15 a.m. *Impact of Ehlers-Danlos Syndrome on Peri-Procedural Management and Post-Operative Outcomes After ACL Reconstruction: A Case-Control Study*
Wyatt David, MD, University of California, San Francisco
- 8:15 a.m. – 8:20 a.m. *Bisphosphonate-Targeted Cathepsin K-Triggered Delivery of BMP2 for Tendon-Bone Regeneration*
Timothy Liu, MD, University of California, Los Angeles
- 8:20 a.m. – 8:25 a.m. *Selective G9a/GLP Inhibition Reprograms Human Fibro-Adipogenic Progenitors Toward Myogenic Differentiation and Improves Muscle Quality After Rotator Cuff Tear*
Hannah Chi, MD, University of California, San Francisco
- 8:25 a.m. – 8:35 a.m. **Question and Answer**

Excited about today's research? Share it with your colleagues!
Post on social media with [#Orthosymposia](#)

**OREF Western Region Resident Research Symposium
DETAILED AGENDA
Wednesday, September 16, 2026**

**Session II – Resident Research Presentations and Discussion
Trauma**

- 8:35 a.m. – 8:40 a.m. *Overcoming Space and System Limitations: A Novel Lamina Spreader Technique for Optimal Reduction via External Fixation*
Jourdan Meltzer, MD, Cedars Sinai Medical Center
- 8:40 a.m. – 8:45 a.m. *GLP-1 Receptor Agonists Are Associated with Higher Risk of Acute Fractures but Decreased Post-operative Complications: A Large Database Study*
Alexander Chang, MD, University of California, San Diego
- 8:45 a.m. – 8:50 a.m. *Talofibular Dissociation in Pilon Fractures: Association with Perioperative Management and Short-Term Outcomes*
Kanwar Parhar, MD, University of California, San Diego
- 8:50 a.m. – 8:55 a.m. *Adjunctive Bacteriophage Therapy for Staphylococcal Septic Non-Union: Protocol for a Prospective Pilot Clinical Trial*
Preston Terle, MD, University of California, San Diego
- 8:55 a.m. – 9:05 a.m. **Question and Answer**
- 9:05 a.m. – 9:10 a.m. **Break - please submit your scores from Sessions I & II to OREF Staff**

**Session III – Resident Research Presentations & Discussion
Joints**

- 9:10 a.m. – 9:15 a.m. *A Prospective, Randomized Parallel Group Study of the Efficacy of Vancomycin Administered Through Intraarticular Injection Versus Intraosseous Injection Versus Intravenous Infusion in Patients Undergoing Total Knee Arthroplasty*
Kevin Y. Zhu, MD, University of California, San Diego
- 9:15 a.m. – 9:20 a.m. *Patient-Level Factors and Salvage Timing Associated with Progression to Above-Knee Amputation After Periprosthetic Knee Infection*
Brandon Gettleman, MD, University of California, Los Angeles
- 9:20 a.m. – 9:25 a.m. *The Influence of Surgeon Experience on Cemented Femoral Stem Outcomes in Total Hip Arthroplasty*
Michaela Juels, MD, University of California, San Francisco
- 9:25 a.m. – 9:30 a.m. *Advancing Preoperative Planning Technology in Total Joint Arthroplasty with a Real-Time Machine Learning Calculator: 1-Year Mortality Risk in a Value-Based Care Era*
Alexander King, MD, University of California, Los Angeles
- 9:30 a.m. – 9:40 a.m. **Question and Answer**

**Session IV – Resident Research Presentations & Discussion
Tumor**

- 9:40 a.m. – 9:45 a.m. *RNA-Protein Discordance Reveals CRISPR-Defined Vulnerabilities in Sarcoma*
Alexandra E. Richards, MD, University of California, Los Angeles
- 9:45 a.m. – 9:50 a.m. *Machine Learning Prediction of Tumor Infiltration in Myxofibrosarcoma Using Histopathology Images*
Rachel Loyst, University of California, Los Angeles
- 9:50 a.m. – 9:55 a.m. *Demographic and Clinicopathologic Risk Factors for Metastasis in Chondrosarcoma*
Camille Sullivan, MD, University of California, San Francisco
- 9:55 a.m. -10:05 a.m. **Question and Answer**

**OREF Western Region Resident Research Symposium
DETAILED AGENDA (continued)
Wednesday, September 16, 2026**

**Session V – Resident Research Presentations & Discussion
Spine**

10:05 a.m. – 10:10 a.m.	<i>T4–L1 Hip Axis Error Not L1 Pelvic Angle Error Predicts Early Proximal Junctional Failure Following Adult Spinal Deformity Surgery: A Single Institution Study</i> Thaddeus Kevin Woodard, MD, University of California, San Diego
10:10 a.m. – 10:15 a.m.	<i>Automated AI-Based Quantification of Total Paraspinal Muscle Fatty Infiltration: A Clinically Scalable Predictor of Proximal Junctional Failure Following Thoracolumbar Fusion for Adult Spinal Deformity</i> Pearce B. Haldeman, MD, University of California, San Diego
10:15 a.m. – 10:20 a.m.	<i>Minimum 10-Year Outcomes of Anterior Thoracoscopic Instrumentation for Scoliosis</i> Ashley “Lexy” Ellingwood, MD, University of California, San Diego
10:20 a.m. – 10:30 a.m.	Question and Answer
10:30 a.m. – 10:40 a.m.	Break – <i>please submit your scores from Sessions III, IV & V to OREF Staff</i>
10:40 a.m. – 10:43 a.m.	Introduction of Keynote Speaker
10:43 a.m. – 11:03 a.m.	Keynote Speaker Billy Eppler Founder, The Development Arc Former General Manager, New York Mets and Los Angeles Angels
11:03 a.m. – 11:18 a.m.	Keynote Speaker Question and Answer
11:18 a.m. – 11:38 p.m..	Closing Remarks and Awards Presentation
12:00 p.m. – 1:00 p.m.	Lunch

Endoprosthetic Proximal Humeral Reconstructions Demonstrate Greater Loads to Failure than Allograft Prosthetic Composite Constructs in a Cadaveric Reverse Shoulder Arthroplasty Model

Mathangi Sridharan, MD
University of California, Los Angeles

Purpose: This study hypothesizes that two common techniques for proximal humerus reconstruction, allograft prosthetic composite (APC) and endoprosthesis, will have different loads to failure.

Significance: Limited comparative data exists to inform clinical use of these techniques.

Methods: Ten cadaveric humeri (five matched pairs) from adult donors were utilized. One side of each pair was randomized to receive an endoprosthesis construct; the other an APC construct. All constructs were cemented and utilized a reverse shoulder arthroplasty (RSA) joint. Following physiologic loading with a robotic KUKA manipulator, the proximal portion of each specimen was clamped, and the distal segment was subjected to a continuous external rotation moment at a rate of 1 degree/second until failure. Paired *t-tests* were used to compare removal torque between matched pairs (R studio). Significance was set at $P < 0.05$.

Results: The mean removal torque of the endoprosthetic constructs was 2.5-times greater than that of the APC constructs (46.9 $\pm$ 11.4 Nm vs. 21.4 $\pm$ 10.2 Nm, $P = 0.005$). All endoprosthetic constructs failed with periprosthetic spiral fracture. APC constructs failed predominantly with bone-cement separation at the allograft-native bone interface.

Conclusion: Endoprosthetic constructs fail at significantly greater removal torque than APC constructs in a RSA cadaveric model of massive proximal humeral bone loss.

Shoulder Arthroplasty Outcomes in Patients with Neurodegenerative Disease: A Propensity-Matched Analysis

Liam Wong, MD

University of California, San Francisco

Purpose: To compare patient-reported outcomes (PROs), range of motion (ROM), and complication rates between neurodegenerative disease (NDD) and propensity-matched non-NDD patients following total shoulder arthroplasty (TSA), hypothesizing that NDD patients demonstrate inferior outcomes.

Significance: NDD represents a growing burden in the aging surgical population, yet TSA outcomes remain poorly characterized, with prior work limited by small cohorts and a lower-extremity focus.

Methods: Forty-six NDD patients were matched 1:1 to non-NDD controls by age, sex, BMI, and exact matching on TSA type (rTSA, aTSA) and indication. PROs (ASES, SF-12) and ROM were compared from baseline through 3 years using paired t-tests. Complications were analyzed with Kaplan-Meier and Cox regression, supplemented by a national database of 808 matched pairs.

Results: NDD patients had significantly lower ASES scores at 6 months (64.9 vs. 78.4; $P=0.013$). By 2 years, deficits extended to operative (65.5 vs. 85.4; $P=0.009$) and non-operative shoulders (69.5 vs. 87.3; $P=0.002$), pain ($P=0.014$), and SF-12 Physical ($P=0.016$). ROM deficits resolved by 1 year. Complication rates did not differ significantly in either cohort or in the national analysis.

Conclusion: NDD patients achieve meaningful improvement after TSA with similar incidence in complications but follow a prolonged, functionally inferior recovery that informs preoperative counselling.

Impact of Ehlers-Danlos Syndrome on Peri-Procedural Management and Post-Operative Outcomes After ACL Reconstruction: A Case-Control Study

Wyatt David, MD

University of California, San Francisco

Purpose: Patients with Ehlers-Danlos syndrome undergoing ACL reconstruction are a particularly at-risk population, yet there remains a significant lack of evidence regarding the impact of this syndrome on clinical outcomes and optimal peri-operative care.

Significance: The aim of this study was to investigate the impact of Ehlers-Danlos syndrome on peri-procedural management and post-operative outcomes after ACL reconstruction .

Methods: A retrospective case-control study was performed using the PearlDiver Mariner 8 database to identify patients who underwent ACLR from October 2015 through December 2023.

Results: Patients with EDS (n=199) were six times as likely to undergo concomitant LET with ACLR than controls (n=597) (6.0% vs 1.0%, $P < .001$; OR, 6.32; 95% CI, 2.34-17.07). From 90 days to 2 years following ACLR, the EDS cohort had nearly a nearly three times greater risk of revision ACLR (8.0% vs 2.9%, $P = .018$; OR, 2.94; 95% CI, 1.27-6.82). EDS patients who underwent ACLR with concomitant LET underwent fewer subsequent knee surgeries than EDS patients who did not receive LET, though this difference is not statistically significant (0%, n=0/12 vs 10.7%, n=20/187; $P = 1.00$).

Conclusion: Peri-procedural management and post-operative outcomes were found to significantly differ between EDS patients and healthy controls.

Bisphosphonate-Targeted Cathepsin K-Triggered Delivery of BMP2 for Tendon-Bone Regeneration

Timothy Liu, MD

University of California, Los Angeles

Purpose: We hypothesize that we can enhance tendon-bone healing using a novel bone-targeting strategy for growth factor delivery.

Significance: Rotator cuff tears affect millions of patients. Surgical repair frequently fails, which is partially due to the formation of biomechanically weak scar tissue at the tendon-bone interface. Bone morphogenetic protein-2 (BMP2) can enhance soft tissue-to-bone healing in animal models but is clinically limited by the need for high local doses and associated side effects such as heterotopic ossification. Therefore, we developed a novel molecule BP-BMP2 to specifically target the site of tendon-bone repair.

Methods: Adult male Sprague-Dawley rats (n=16/group) underwent supraspinatus tendon transection and repair, followed by administration of subcutaneous saline or BP-BMP2 (0.5, 1, 5, or 10µg dose). Unoperated shoulders served as controls. Animals underwent serial microCT imaging and functional testing and were sacrificed at 6 weeks for biomechanical and histologic analyses. Statistics included one-way ANOVA with post-hoc Tukey.

Results: The 10µg BP-BMP2 group demonstrated significantly greater load to failure (p=0.001) at the repaired interface compared to saline controls. No ectopic bone formation or adverse subchondral bone changes were observed.

Conclusion: Systemic BP-BMP2 enhanced tendon-bone healing after rotator cuff repair in rats. This represents a paradigm-shifting strategy for reinforcing tendon repairs.

Selective G9a/GLP Inhibition Reprograms Human Fibro-Adipogenic Progenitors Toward Myogenic Differentiation and Improves Muscle Quality After Rotator Cuff Tear

Hannah Chi, MD

University of California, San Francisco

Purpose: To determine whether G9a/GLP inhibition with A-366 reprograms human fibro-adipogenic progenitors (hFAPs) toward myogenic differentiation and improves muscle quality after rotator cuff tear.

Significance: FAPs drive irreversible atrophy and fibrosis after rotator cuff tears via G9a/GLP-mediated H3K9 dimethylation of myogenic loci.

Methods: hFAPs were isolated by FACS and treated with A-366 or DMSO for 10 days; a subset underwent single-cell RNA sequencing. Western blotting quantified G9a, GLP, and H3K9 methylation. Young and aging PDGFR α -reporter mice underwent massive rotator cuff tear and received intraperitoneal A-366 or DMSO for 14 days. A-366- or DMSO-pretreated hFAPs were xenotransplanted into immunodeficient mice post-tear.

Results: A-366 induced hFAP myotube formation under proliferative conditions without affecting proliferation. hFAPs expressed higher G9a/GLP than satellite cells; A-366 selectively reduced H3K9me2. Sequencing revealed a trajectory from PDGFRA+/PRDM16+ progenitors through PDGFRA+/MYOD1+ intermediates to terminally myogenic MYOG+/MYH3+ cells. In vivo, A-366 reduced atrophy and fibrosis and induced FAP myogenic differentiation equivalently in young and aging mice. Xenotransplanted A-366-pretreated hFAPs engrafted as myogenic cells and reduced atrophy and fibrosis.

Conclusion: G9a/GLP inhibition reprograms hFAPs toward myogenesis and reduces muscle degeneration after rotator cuff injury with efficacy preserved in aging, identifying H3K9 dimethylation as a targetable mechanism to improve muscle quality.

Overcoming Space and System Limitations: A Novel Lamina Spreader Technique for Optimal Reduction via External Fixation

Jourdan Meltzer, MD
Cedars Sinai Medical Center

Purpose: Complex distal tibial and pilon fractures with soft tissue compromise often require temporizing ankle-spanning external fixation, yet standard delta-frame constructs provide limited independent control of coronal and sagittal alignment.

Significance: We describe a novel lamina spreader technique that addresses this gap using only universally available equipment.

Methods: Our stepwise technique employs tibial, calcaneal, and midfoot fixation points combined with fixed bar-to-pin clamps and a lamina spreader. Fixed clamps are applied to the medial and lateral bars, lamina spreader is positioned between clamp interfaces to allow incremental coronal correction. Distal tibial pin placed off a horizontal bar functions as lever arm for iterative sagittal and coronal plane correction, converting standard external fixator into an active reduction device.

Results: In the index case, a 78-year-old male with open Gustilo–Anderson grade IIIA pilon fracture underwent successful multiplanar reduction with restoration of fibular length, centralization of talus beneath tibial plafond, and neutral sagittal alignment. Soft tissue integrity was maintained, enabling uncomplicated definitive fixation by fusion at 11 days.

Conclusion: This implant-system-independent technique enables finely controlled, stepwise multiplanar reduction with standard equipment and without sustained manual traction. This is the first description of lamina spreader-assisted distraction for provisional multiplanar ankle reduction in the literature.

GLP-1 Receptor Agonists Are Associated with Higher Risk of Acute Fractures but Decreased Post-operative Complications: A Large Database Study

Alexander Chang, MD
University of California, San Diego

Purpose: To evaluate the association between glucagon-like peptide-1 receptor agonist (GLP-1RA) use, fracture risk, and postoperative outcomes following fracture fixation.

Significance: GLP-1RAs are increasingly prescribed for obesity and type 2 diabetes mellitus, but their effects on fracture risk and orthopaedic outcomes remain unclear.

Methods: In a retrospective cohort study using the TriNetX Analytics Network, adult patients with axial or appendicular fractures were stratified by GLP-1RA exposure. Fracture risk was compared between users and non-users, with subgroup analyses by diabetes status and fracture location. A separate cohort undergoing operative fracture fixation was evaluated for postoperative complications, including surgical site infection (SSI), deep venous thrombosis (DVT), pulmonary embolism (PE), acute kidney injury (AKI), malunion, nonunion, and wound complications.

Results: GLP-1RA use was associated with increased fracture risk overall (RR 1.86, $p < 0.001$) and among patients with diabetes (RR 1.92, $p < 0.001$). Risk was elevated for lower extremity (RR 2.26), upper extremity (RR 1.51), and spinal fractures (RR 1.65) (all $p < 0.001$). Following operative fixation, GLP-1RA use was associated with lower rates of deep SSI, DVT, PE, AKI, wound complications, malunion, and nonunion.

Conclusion: GLP-1RA use was associated with increased risk of fracture, but lower post-operative complications for deep SSI, DVT, PE, AKI, wound complications, malunion, and nonunion.

Talofibular Dissociation in Pilon Fractures: Association with Perioperative Management and Short-Term Outcomes

Kanwar Parhar, MD

University of California, San Diego

Purpose: To evaluate the impact of traumatic talofibular dissociation (TFD) on surgical, clinical, and radiographic outcomes in pilon fractures. We hypothesized that patients with TFD would demonstrate differences in postoperative mortise alignment, secondary procedure rates, radiographic arthrosis at 1 year, and perioperative management.

Significance: Pilon fractures are high-energy injuries with high complication rates, and associated injuries influence treatment. The prognostic role of TFD remains poorly characterized.

Methods: Retrospective cohort study at a single level 1 trauma center. Skeletally mature patients with operatively treated pilon fractures (staged external fixation then definitive articular fixation, or direct fixation) were grouped by presence or absence of TFD on initial radiographs. Outcomes included fixation type, discharge location, nonunion, infection, unplanned revision, subsequent fusion, and Kellgren-Lawrence grade at 3 months and 1 year.

Results: Of 126 pilon fractures, 38 (30.2%) had TFD. TFD patients more often had retained external fixation (18.4% vs 6.7%, $p=0.049$) and rehabilitation discharge (23.7% vs 6.7%, $p=0.007$). Among patients with >3-month follow-up, mortise alignment and clinical outcomes were comparable; 1-year radiographic outcomes did not differ.

Conclusion: TFD was not associated with worse short-term outcomes; these fractures can be fixed with acceptable results. Retention of external fixation is one viable management option.

Adjunctive Bacteriophage Therapy for Staphylococcal Septic Non-Union: Protocol for a Prospective Pilot Clinical Trial

Preston Terle, MD
University of California, San Diego

Purpose: Septic non-union caused by methicillin-susceptible (MSSA) and methicillin-resistant (MRSA) *Staphylococcus aureus* remains a difficult orthopaedic challenge because of persistent infection, biofilm formation, and antimicrobial resistance despite standard treatment. We hypothesize that adjunctive bacteriophage therapy will be a safe and effective treatment, improving infection eradication and fracture healing when combined with surgical and antibiotic management.^{1,2}

Significance: Bacteriophages selectively target bacteria and demonstrate biofilm-disrupting activity. Preclinical studies and early clinical experience suggest bacteriophage therapy may enhance infection control while maintaining a favorable safety profile, making it a promising adjunct for complex orthopaedic infections.^{3,5}

Methods: This prospective single-arm pilot trial will enroll adults with MSSA- or MRSA-associated septic non-union undergoing operative management. Participants will receive local and/or systemic bacteriophage therapy in addition to standard antibiotic treatment.^{2,4} Primary outcomes are safety and feasibility; secondary outcomes include infection eradication, fracture union, and time to union.

Results: Results are pending, as this is a pilot clinical trial. Data will evaluate the safety profile of bacteriophage therapy and provide preliminary evidence regarding its effectiveness in infection control and fracture healing.

Conclusion: This study will provide preliminary clinical evidence regarding bacteriophage therapy for septic non-union and guide future randomized controlled trials.⁵

1. Clarke AL, De Soir S, Jones JD, et al. The safety and efficacy of phage therapy for bone and joint infections: a systematic review. *Antibiotics (Basel)*. 2020;9(11):795. doi:10.3390/antibiotics9110795.
2. Genevière J, McCallin S, Huttner A, et al. A systematic review of phage therapy applied to bone and joint infections. *EFORT Open Rev*. 2021;6(12):1148–1156. doi:10.1302/2058-5241.6.210073.
3. Suh GA, Ferry T, Abdel MP. Phage therapy as a novel therapeutic for bone and joint infections. *Clin Infect Dis*. 2023;77(Suppl S4):S407–S415.
4. Ortiz-Cartagena C, Blasco L, Bleriot I, et al. Phage Therapy for Bone and Joint Infections: Towards Clinical Translation. *Antibiotics (Basel)*. 2025;14(12):1187.
5. Mobarezi Z, Esfandiari AH, Abolbashari S, Meshkat Z. Efficacy of phage therapy in controlling staphylococcal biofilms: a systematic review. *Eur J Med Res*. 2025;30(1):605.

A Prospective, Randomized Parallel Group Study of the Efficacy of Vancomycin Administered Through Intraarticular Injection Versus Intraosseous Injection Versus Intravenous Infusion In Patients Undergoing Total Knee Arthroplasty

Kevin Y. Zhu, MD
University of California, San Diego

Purpose: This study compares tissue and serum vancomycin concentrations across intraosseous (IO), intravenous (IV), and intraarticular (IA) administration routes for prosthetic joint infection (PJI) prophylaxis following total knee arthroplasty (TKA)

Significance: PJI following TKA carries significant morbidity and costs the healthcare system over \$1 billion annually. IO vancomycin has gained popularity for local prophylaxis but requires an incision; IA delivery is less invasive and has not been thoroughly studied.

Methods: A prospective randomized trial enrolled 30 patients undergoing elective primary TKA. Patients received vancomycin via IO (500mg, 10 min pre-incision), IA (500mg, 10 min pre-incision), or IV (weight-based 15–20mg/kg, 2 hours pre-incision) routes. Bone, synovium, and subcutaneous fat specimens were analyzed by mass spectrometry, and serum levels were drawn 30 minutes post-incision.

Results: IA administration achieved significantly higher vancomycin concentrations in bone (23.9 vs 1.8 and 3.8 µg/g; $p < 0.05$) and synovium (349.3 vs 9.7 and 9.1 µg/g; both $p < 0.001$) compared to IO and IV routes. IO and IV groups did not differ in tissue and bone concentrations. IA produced markedly lower serum levels than both IO and IV ($p < 0.002$).

Conclusion: IA vancomycin delivers superior local tissue concentrations with minimal systemic absorption, offering a less invasive and potentially safer prophylactic alternative to IO administration.

Patient-Level Factors and Salvage Timing Associated with Progression to Above-Knee Amputation After Periprosthetic Knee Infection

Brandon Gettleman, MD

University of California, Los Angeles

Purpose: We evaluated demographic factors, frailty, salvage timing, and treatment patterns associated with above-knee amputation (AKA) after knee periprosthetic joint infection (PJI).

Significance: PJI after total knee arthroplasty can result in limb loss, yet risk factors for AKA remain poorly characterized.

Methods: From the TriNetX Network, 10,160 patients with knee PJI were identified. The primary outcome was AKA after PJI diagnosis. Exposures included sex, race/ethnicity, a 30-component frailty index weighted for amputation risk, and salvage timing (early ≤ 7 days, intermediate 8–30, delayed >30). Multivariable logistic regression identified independent predictors of AKA.

Results: Of 218 patients (2.15%) undergoing AKA, female sex was independently protective (OR=0.71, $p=0.017$) despite higher baseline frailty. The highest frailty quartile demonstrated a 4.2-fold increase in amputation risk versus the lowest (3.74% vs 0.90%, $p<0.001$). Intermediate salvage had the highest amputation rate (5.64%) and significantly elevated risk compared with early salvage (OR=1.89, $p=0.009$); delayed salvage (3.31%) was comparable to early intervention ($p=0.597$). No racial disparities were observed.

Conclusion: Female sex protects against amputation despite higher frailty, while intermediate-delay salvage confers elevated risk despite similar treatment strategies and lower organism virulence, suggesting a window where biofilm maturation reduces the effectiveness of implant-retaining procedures, increasing risk of progression to AKA.

The Influence of Surgeon Experience on Cemented Femoral Stem Outcomes in Total Hip Arthroplasty

Michaela Juels, MD

University of California, San Francisco

Purpose: To determine whether surgeon-specific cemented femoral stem volume is associated with early and mid-term failure risk following total hip arthroplasty (THA).

Significance: Cemented femoral fixation protects against periprosthetic fracture (PPF) in high-risk THA patients, but technical success is highly experience-dependent. The impact of surgeon cemented stem volume on outcomes has not been well characterized.

Methods: Retrospective cohort study using the PearlDiver database (2016–2020) of primary THAs with cemented femoral stems. Surgeons were stratified by 5-year cemented volume: low (<60 stems, Group 1) vs. high (≥60 stems, Group 2). Patients with ≥2-year follow-up were propensity score-matched 1:1 on age, sex, and comorbidities. Primary outcomes included all-cause revision, mechanical loosening, dislocation, PPF, and prosthetic joint infection (PJI) at up to 5 years.

Results: Among 7,174 matched patients (3,587/group), Group 1 patients had significantly higher odds of all-cause revision (OR 2.10; 95% CI 1.44–3.11), mechanical loosening (OR 2.21), PJI (OR 2.19), dislocation (OR 2.51), and PPF (OR 1.58) at 2 years. Revision risk diverged within the first postoperative year and persisted through 5 years. Group 1 also had longer hospital stays and higher 90-day readmission rates.

Conclusion: Surgeon cemented stem volume is strongly associated with failure risk in THA. Optimizing outcomes for high-risk patients may require volume thresholds, targeted training, or referral to experienced centers.

Advancing Preoperative Planning Technology in Total Joint Arthroplasty with a Real-Time Machine Learning Calculator: 1-Year Mortality Risk in a Value-Based Care Era

Alexander King, MD
University of California, Los Angeles

Introduction: Technological innovation in total joint arthroplasty (TJA) has largely focused on intraoperative precision through robotics, navigation, and implant design, while preoperative decision-making remains comparatively underdeveloped. Accurate estimation of patient-specific risk is central to surgical indications, yet existing tools provide limited resolution for consequential outcomes such as 1-year mortality.

Methods: A machine learning model was developed using the TriNetX Research Network. Patients undergoing total knee (TKA) or hip (THA) arthroplasty with verifiable 1-year follow-up were included in the analysis. An XGBoost model incorporating 43 preoperative variables was trained using nested cross-validation with isotonic calibration. Model performance was assessed using discrimination, calibration, and decision curve analysis, and the results were used to derive thresholds for a web calculator based on machine-learning-derived inputs. Feature contributions were assessed using Shapley Additive Explanations (SHAP).

Results: The observed 1-year mortality rate was 0.574% (n=1,344). On internal validation, the model demonstrated an Area Under the Receiver Operating Characteristic (AUROC) of 0.761 (95% CI: 0.728-0.793), a Brier score of 0.006, and an average precision of 0.037. Calibration remained stable across risk deciles, with mean absolute error below 0.15% for D1-D9 and modest overprediction confined to D10 (+0.38%). Mortality increased monotonically across stratified risk groups: the highest quintile had a 1.488% mortality rate (2.6-fold above baseline), the highest decile had 2.50% (4.4-fold), and the top 5% had 3.57% (6.2-fold). Feature importance analysis identified age as the dominant predictor (mean |SHAP| = 0.407), followed by male sex (0.218), serum creatinine (0.162), hemoglobin (0.153), and BMI (0.145). Threshold-based risk stratification yielded two clinically relevant operating points: a sensitivity-anchored threshold of 0.235% captured 90.1% of all deaths, while a Youden-optimal threshold of 0.767% achieved 83.9% specificity.

Conclusion: One-year mortality following primary THA and TKA can be estimated with reasonable discriminative accuracy using routinely available preoperative variables, with predictive importance attributable primarily to age and markers of physiologic reserve rather than discrete comorbidity burden. These findings further demonstrate that machine learning-derived mortality models are amenable to prospective clinical deployment via web-based interfaces, enabling individualized preoperative risk quantification at the point of care. This framework provides a foundation for subsequent expansion toward predicting additional postoperative complications and composite adverse outcomes.

RNA-Protein Discordance Reveals CRISPR-Defined Vulnerabilities in Sarcoma

Alexandra E. Richards, MD
University of California, Los Angeles

Purpose: We hypothesized that genes with high RNA-protein discordance in sarcoma cell lines are enriched for functional vulnerabilities detectable by CRISPR-Cas9 screening, revealing therapeutic targets missed by transcriptomic analysis alone.

Significance: Sarcomas are genomically complex tumors with limited systemic options. Most biomarker discovery relies on transcriptomics, yet post-transcriptional regulation—including RNA-binding protein activity and miRNA silencing—produces substantial RNA-protein mismatches, potentially obscuring actionable dependencies.

Methodology: Three datasets were integrated across 27 sarcoma cell lines: Chronos CRISPR gene effect scores, log-transformed RNA expression, and protein abundance from data-independent acquisition mass spectrometry (ProCan-DepMapSanger). Subtypes included osteosarcoma, undifferentiated pleomorphic sarcoma, Ewing sarcoma, and leiomyosarcoma. For 3,791 genes with matched data, linear regression residuals served as discordance scores. Spearman correlations with Chronos scores were calculated for 2,867 testable genes with Benjamini-Hochberg correction.

Results: Median RNA-protein R^2 was 0.117; 46% of genes had R^2 below 0.10. TRIM32 showed the strongest discordance-dependency association ($\rho=-0.754$), with GCN1 and RHOA emerging as additional candidates. Discordance patterns varied across histologic subtypes.

Conclusion: RNA-protein discordance is pervasive in sarcoma and strongly associated with CRISPR-defined essentiality. Integrating proteomic and functional dependency data provides a complementary framework for identifying therapeutic targets missed by RNA-based strategies alone.

Machine Learning Prediction of Tumor Infiltration in Myxofibrosarcoma Using Histopathology Images

Rachel Loyst, MD

University of California, Los Angeles

Purpose: To develop and evaluate a machine learning model for predicting tumor infiltration in myxofibrosarcoma using whole-slide histopathology images.

Significance: Myxofibrosarcoma demonstrates infiltrative growth patterns associated with increased local recurrence and challenges in achieving negative surgical margins. Currently, no standardized method exists to quantify infiltration. An objective machine learning-based approach may improve prognostic assessment and surgical planning.

Methods: Eleven hematoxylin and eosin-stained whole-slide images from resected myxofibrosarcoma specimens were analyzed. Tiles measuring 512×512 pixels at 10x magnification were extracted. Representative regions were annotated by a pathologist and classified into tissue subtypes, including infiltrative bands. A multilayer perceptron using UNI-derived image features was trained for multi-label classification with 4-fold cross-validation.

Results: Among 9,573 extracted tiles, 380 (4.0%) were infiltrative. Overall model performance was excellent (AUROC 0.98, accuracy 0.96). For infiltrative tile prediction, the model achieved AUROC 0.96, accuracy 0.97, precision 0.70, sensitivity 0.57, and specificity 0.99.

Conclusion: Machine learning demonstrates promise for identifying infiltrative tumor patterns in myxofibrosarcoma from whole-slide images and may support future objective tools for prognostication and surgical decision-making.

Demographic and Clinicopathologic Risk Factors for Metastasis in Chondrosarcoma

Camille Sullivan, MD

University of California, San Francisco

Purpose: Our goal was to uncover potential risk factors associated with chondrosarcoma metastasis.

Significance: Approximately 8-38% of all patients with chondrosarcoma develop metastasis, however, there has been no meaningful improvement in the dismal survival outcomes for these patients. Thus, there remains a critical need to better understand the disease progression of chondrosarcoma.

Methods: We performed a retrospective review of 131 patients with chondrosarcoma and treated at a renowned sarcoma center from 2015 to 2024. Clinical data was collected. Univariate and multivariate logistic regression were employed to evaluate associations between risk factors and metastasis.

Results: Our cohort comprised of 78 patients without metastasis and 53 patients with metastasis. Metastasis was significantly associated with tumor size (OR= 1.13, [95% CI=1.06, 1.22], tumor grade (OR= 4.96, [95% CI= 2.62, 10.27], extraskeletal myxoid subtype (OR= 4.24, [95% CI= 1.18, 17.36], and dedifferentiated subtype (OR= 19.38, [95% CI= 5.05, 128.2] on univariate analysis. Multivariate analysis identified tumor size, tumor grade, and dedifferentiated subtype as independent risk factors.

Conclusion: Tumor size, tumor grade, extra skeletal myxoid and dedifferentiated subtypes were significantly associated with chondrosarcoma metastasis. These results align with prior literature and support further investigation into defining metastatic chondrosarcoma risk factors to inform targeted and effective clinical decision-making and management.

T4–L1 Hip Axis Error Not L1 Pelvic Angle Error Predicts Early Proximal Junctional Failure Following Adult Spinal Deformity Surgery: A Single Institution Study

Thaddeus Kevin Woodard, MD
University of California, San Diego

Purpose: The purpose of this study is to determine whether T4–L1 Hip Axis Error (HAE) and L1 Pelvic Angle Error (L1PAE) predict early proximal junctional failure following ASD surgery.

Significance: The T4–L1 Hip Axis is an emerging patient-specific alignment concept used to define normative sagittal alignment relative to pelvic parameters. Mechanical complications following adult spinal deformity (ASD) surgery have been linked to deviations from this axis. Proximal junctional failure (PJF) remains a significant complication following ASD surgery; however, the direct relationship between T4–L1 Hip Axis error and early PJF has not been clearly established.

Methods: A prospective cohort was queried for eligible patients. Demographic variables, surgical metrics, and postoperative sagittal alignment parameters were collected. L1PA error was calculated as measured L1PA minus goal L1PA (goal L1PA = $0.5 \times \text{PI} - 19$). HAE was calculated as measured T4 pelvic angle minus L1PA angle. Multivariate logistic regression incorporating age, BMI, sex, number of levels fused, HAE, and L1PAE was performed to identify independent predictors of PJF.

Results: A total of 162 patients were included with a mean follow-up of 46 months and an average of 11.4 ± 3.4 levels fused. Proximal junctional failure occurred in 17% of patients ($n = 27$) at a mean of 16 months postoperatively. HAE was significantly greater in patients who developed PJF compared with those who did not (5.6° vs. 3.4° , $p < 0.01$), whereas L1PAE did not differ between groups (-0.92° vs. -0.84° , $p = 0.94$). There was a trend toward a greater number of levels fused in the non-PJF group (11.6 vs. 10.2 , $p = 0.057$). On multivariate analysis, HAE was an independent predictor of PJF (OR = 1.17, 95% CI 1.04–1.33; $p < 0.01$), while L1PAE and number of levels fused were not. Male sex was independently associated with a lower risk of PJF (OR = 0.27, 95% CI 0.07–0.82; $p = 0.03$).

Conclusion: T4–L1 Hip Axis Error independently predicted early proximal junctional failure following ASD surgery, whereas L1 Pelvic Angle Error did not. These findings support prior literature highlighting the importance of HAE in predicting mechanical complications after ASD correction.

Automated AI-Based Quantification of Total Paraspinal Muscle Fatty Infiltration: A Clinically Scalable Predictor of Proximal Junctional Failure Following Thoracolumbar Fusion for Adult Spinal Deformity

Pearce B. Haldeman, MD
University of California, San Diego

Purpose: Proximal junctional failure (PJF) remains a significant complication after long-segment posterior spinal fusion (PSF) for adult spinal deformity (ASD). Although paraspinal muscle fatty infiltration (FI) is associated with PJF risk, prior studies rely on manual segmentation and single-level measurements. This study evaluates automated, multi-level paraspinal FI in patients with and without PJF after thoracolumbar PSF.

Significance: Clinical use of paraspinal FI measurements remains limited by speed and reproducibility challenges, which are mitigated by this study's automated process.

Methods: A prospective ASD cohort was queried for patients with thoracolumbar PSF. Demographics, surgical variables, preoperative and 3-month postoperative sagittal alignment variables were collected. Automated MRI analysis quantified FI of the erector spinae (ES), multifidus(M), psoas(P), and quadratus lumborum (QL).

Results: 45 patients met inclusion criteria (mean follow-up=41 months); 10 patients (22%) developed PJF. M FI was greater in the PJF group($p=0.043$). Multivariate analysis adjusting for C2PA, T4PA, and L1PA demonstrated that increased M FI was independently associated with PJF($OR=1.09, 95\%CI=1.02-1.16$). ROC analysis found a predictive threshold of 42.8% M FI($Sensitivity=0.90, Specificity=0.61, AUC=0.726(95\%CI=0.548-0.905), p=0.013$).

Conclusion: Increased lumbar multifidus FI is independently associated with PJF after long-segment PSF, with an approximately 9% increased risk per 1% FI increase. Using a clinically implementable method, a multifidus FI threshold of 42.8% demonstrated 90% sensitivity for predicting PJF following PSF for ASD.

Minimum 10-Year Outcomes of Anterior Thoracoscopic Instrumentation for Scoliosis

Ashley “Lexy” Ellingwood, MD
University of California, San Diego

Purpose: To evaluate minimum 10-year outcomes after anterior thoracoscopic spinal instrumentation and fusion (TSF) for adolescent idiopathic scoliosis (AIS).

Significance: Surgical outcomes in patients with scoliosis at 2 and 5 years following TSF have been reported; however, there is limited long-term outcome data.

Methods: 48 patients with AIS treated with TSF were evaluated. Prospective data included demographics, radiographic measurements, clinical deformity measures, and Scoliosis Research Society (SRS-22) outcome scores. Complications were graded using the modified Clavien-Dindo classification (CDC). Patient data were compared at preoperative, 5-year, and 10-year intervals.

Results: Mean follow-up was 11.2 ± 2.1 years. Thoracic curve correction was maintained from 5 to 10 years (50% vs. 52%, $p=0.29$), while lumbar correction improved (37% vs. 43%, $p=0.019$). PJK decreased from 5 to 10 years (12° vs. 10° , $p=0.017$). SRS-22 pain scores decreased from 5 to 10 years (4.3 vs. 4.1, $p=0.05$). Late complications were uncommon, with one case of pseudarthrosis (CDC I) identified at 5.2 years and managed nonoperatively. Pulmonary function remained stable without significant changes in percent-predicted FEV₁ or FVC.

Conclusion: TSF for AIS provides maintenance of deformity correction and sustained improvement in patient-report outcomes at minimum 10 years of follow-up. Revision rates are low, and complications are predominantly low-grade.

**OREF gratefully acknowledges sponsors of the
2026 Resident Research Symposia**

**The Hark Family
in memory of Dr. Fred Hark
and Dr. William Hark**

Smith+Nephew



For supporting the Annual OREF Resident Research Symposia



OREF Resident Research Funding

New Investigator Grant

Provides \$50,000 to advance the scientific training of the next generation of orthopaedic physician-scientists with seed and start-up funding for promising research projects. Residents, fellows and orthopaedic surgeons having completed formal training within the last four years may apply.

OREF Resident Clinician Scientist Training Grant

Provides \$20,000 to prepare residents for a career with research as a major component.

OREF Resident Research Project Grant

Provides \$5,000 in funding to residents who are interested in research. Please note that these grants now require a Letter of Intent. They are offered twice each year, but you may submit only one application per grant year. Please apply during the time frame that most closely aligns with your research rotation in the labs.

OREF's Current grant schedule

Visit oref.org/grantprograms and sign up to receive email notifications about OREF grants and awards at oref.org/email.

Share your thoughts about OREF's Resident Research Symposia We appreciate your feedback!



- Complete and return the evaluation form to Carmen Metoyer **OR**
- Complete the form online by visiting oref.org/symposiumsurvey or scanning the QR code.



2025 OREF Resident Research Symposia Winners

NATIONAL

2025 OREF National Resident Research Symposium Champion

Julia Retzky, MD

The Hospital for Special Surgery
Early Anterior Cruciate Ligament Reconstruction Mitigates the Development of Post-Traumatic Osteoarthritis in a Murine Anterior Cruciate Ligament Rupture Model

Top Scoring Residents

Joshua T. Bram, MD

The Hospital for Special Surgery
Skeletal Age Assessment from Knee Radiographs Using Deep Learning

Bhargavi Maheshwer, MD

University Hospitals Cleveland Medical Center
Predictors of Anterior Cruciate Ligament Re-Injury and Return to Sports in Adolescent Athletes: Increased Risk in Younger Age and Earlier Time to Return to Sport

Katherine J. Montoya, MD

University of Arkansas for Medical Sciences
Ten Years of a Novel Telemedicine System for Management of Statewide Hand Trauma in Arkansas – A Decade in Review

Erik Nakken, MD

University of Michigan
Optimizing Contact Pressures of the Posterior Heel During Lower Extremity Immobilization: A Biomechanical Study

Sreetha Sidharthan, MD

The Hospital for Special Surgery
Reverse-Anatomical Front and Back Reconstruction for Volar Intercalated Segment Instability Non-Dissociative: A Biomechanical Study

Presenters' Choice

Alexander E. White, MD

The Hospital for Special Surgery
The Effect of Posterior Tibial Slope on Tibiofemoral Joint Biomechanics: An In-Vitro Analysis

MID-ATLANTIC

First Place

Julia Retzky, MD

The Hospital for Special Surgery
Early Anterior Cruciate Ligament Reconstruction Mitigates the Development of Post-Traumatic Osteoarthritis in a Murine Anterior Cruciate Ligament Rupture Model

Second Place

Zachary J. Herman, MD

University of Pittsburgh Medical Center
Overhead Athletes Have Comparable Intraoperative Injury Patterns and Clinical Outcomes to Non-Overhead Athletes Following Surgical Stabilization for First-Time Anterior Shoulder Instability at Average 6-year Follow-up

Alexander E. White, MD

The Hospital for Special Surgery
The Effect of Posterior Tibial Slope on Tibiofemoral Joint Biomechanics: An In-Vitro Analysis

Third Place

Alexander Berk, MD

University Hospitals/
Case Western Reserve University
Patients with Vitamin D Deficiency are More Likely to Develop Complex Regional Pain Syndrome After Extremity Fractures: A Large Database Propensity-Matched Cohort Study

Alexandra Baker Lutz, MD

University of Maryland
Impact of Obesity on Patient-Reported Outcomes Two Years After Multiple Ligament Knee Reconstruction

Margaret Sinkler, MD

Case Western Reserve University
To Fix or to Replace? An Analysis of Geriatric Periprosthetic Distal Femur Fractures Treated with Open Reduction Internal Fixation, Retrograde Intramedullary Nail, or Distal Femoral Replacement

Presenters' Choice

Alexander P. Hoffman, MD

University of Pittsburgh Medical Center
Intraoperative Evaluation of Sarcoma Surgical Margins with Indocyanine Green Fluorescence Imaging

MIDWEST

First Place

Katherine J. Montoya, MD

University of Arkansas for Medical Sciences
Ten Years of a Novel Telemedicine System for Management of Statewide Hand Trauma in Arkansas – A Decade in Review

Second Place

Bhargavi Maheshwer, MD

University Hospitals Cleveland Medical Center
Predictors of Anterior Cruciate Ligament Re-Injury and Return to Sports in Adolescent Athletes: Increased Risk in Younger Age and Earlier Time to Return to Sport

Erik Nakken, MD

University of Michigan
Optimizing Contact Pressures of the Posterior Heel During Lower Extremity Immobilization: A Biomechanical Study

Third Place

Apurva Choubey, MD

University of Illinois Chicago
Joint Arthroplasty in Breast Cancer: PE Risk and Thrombo-Prophylaxis Depend on Time Since Mastectomy

Kyleen Jan, MD

Rush University Medical Center
Midcarpal Stability Persists with $\leq 33\%$ Distal Scaphoid Resection: A 3D Computational Analysis

Mark Plantz, MD

Northwestern University
Pre-Clinical Safety and Efficacy Assessment of a Novel 3D-Printed Hydroxyapatite Demineralized Bone Matrix (HA-DBM) Composite Scaffold Using a Rodent Posterolateral Fusion Model

Presenters' Choice

Jordan Serotte, MD

University of Chicago
AI-Assisted MRI Interpretation Improves Surgeon Performance in Diagnosing Bankart Lesions

NORTHEAST

First Place

Joshua T. Bram, MD

The Hospital for Special Surgery
Skeletal Age Assessment from Knee Radiographs Using Deep Learning

Second Place

Sreetha Sidharthan, MD

The Hospital for Special Surgery
Reverse-Anatomical Front and Back Reconstruction for Volar Intercalated Segment Instability Non-Dissociative: A Biomechanical Study

Nathan Varady, MD

The Hospital for Special Surgery
Low Complication Rate Following Contemporary Pure Anteriorization Tibial Tubercle Osteotomy for Patellofemoral Overload

Third Place

Aonnicha Burapachaisri, MD

Icahn School of Medicine at Mount Sinai Hospital
Does the Distal Tip Position of Long Cephalomedullary Nails Impact Mechanical Failure Rates?

Austin C. Kaidi, MD

The Hospital for Special Surgery
A Novel Clinical Calculator to Identify Patients at Risk for Ileus after Short-Segment Lumbar Fusion

Gergo B. Merkely, MD

Harvard Combined Orthopaedic Residency
AI-Driven Virtual Athlete Avatars for Injury Risk Stratification and Performance Analysis in Sports Medicine

Presenters' Choice

Rafa Rahman, MD, MPH

The Hospital for Special Surgery
Novel Scapholunate Bridge Augmentation to Treat Scapholunate Interosseous Ligament Injury

SOUTHEAST

First Place

Joseph Geller, MD

Jackson Memorial Hospital/University of Miami
Tracking Wearable Device Compliance in Total Knee Arthroplasty Recovery

Second Place

David S. Constantinescu, MD

University of Miami
When the Robot Fails Us: A Comprehensive Analysis of a United States Food and Drug Administration Database of Technology-Assisted Arthroplasty

Olivia de Araujo, MD

Jackson Memorial Hospital/University of Miami
Consideration of Updated Breast Cancer Screening in Female Orthopaedic Surgeons: A Comprehensive Review

Third Place

James Frix, MD

Atrium Health Carolinas Medical Center
Early Implementation of Virtual Reality Therapy for Phantom Limb Pain: A Feasible and Effective Adjunct to Traditional Interventions

Aneesh V. Samineni, MD

Jackson Memorial Hospital/University of Miami
Prediabetes as an Unrecognizable Risk Factor for Inpatient Postoperative Complications After Total Knee Arthroplasty

Ryan Serbin, MD

Atrium Health Carolinas Medical Center
Targeted Brain Rehabilitation: A Novel Virtual Reality Protocol for Phantom Limb Pain Following Upper Extremity Amputation

Presenters' Choice

Blake H. Hodgens, MD

Atrium Health Carolinas Medical Center
Weightbearing After Distal Femur Fractures: Does the Surgeons' Postoperative Protocol Matter?

WESTERN

First Place

Kyla Petrie, MD

University of California, San Francisco
Comparison of Retear Rates and All-Cause Reoperation Rates in Pediatric and Adolescent AL Reconstructions Using Bone Patellar Tendon and Quadriceps Tendon Grafts

Second Place

Grant Schroeder, MD

Stanford University
Shorter Relative Patellar Defect Length After Bone Patellar Tendon Bone Anterior Cruciate Ligament Reconstruction is Associated with Better Postoperative Patient-Reported Outcomes at 1-year Follow-up

Mathangi Sridharan, MD

University of California, Los Angeles
Predictive Factors of Having a Second UBC Related Pathologic Fracture

Third Place

Kelechi Nwachuku, MD

University of California, San Francisco
Osteoarthritis and Total Joint Arthroplasty in Housing Insecure Patients at a Safety-Net Hospital in a Major Urban City

Alexa K. Pius, MD

Stanford University
Navigated and Robotic Total Knee Arthroplasty (TKA) Do Not Confer Improved 5-Year Survivorship Compared to Conventional TKA: An Analysis from the American Joint Replacement Registry (AJRR)

Karch M. Smith, MD

University of California, San Diego
Combined Root and Body (CRAB) Lateral Meniscus Tears in the Adolescent Population: An Underrecognized and Underreported Tear Pattern

Presenters' Choice

Oliver Dong, MD

San Francisco Orthopaedic Residency Program at University of California,
San Francisco Health St. Mary's Hospital
Osteochondral Autograft from the Proximal Tibiofibular Joint for Reconstruction of Acute Tibial Plateau Fractures with Severe Chondral Defects

Nicole J. Newman-Hung, MD

University of California, Los Angeles
Characteristics and Recurrence Risk of Upper Extremity Soft Tissue Sarcoma

CALIFORNIA ORTHOPAEDIC ASSOCIATION OREF RESIDENT AWARD WINNER

Ryan Halvorson, MD

University of California, San Francisco
Evaluation of a Pretrained Large Language Model as a Clinical- decision Support Tool in Musculoskeletal Health

**OREF EDWARD C. MCELFRESH AWARDS
FOR BEST RESIDENT ABSTRACT**

Hannah Levy, MD

Mayo Clinic

*Lumbar Facet Arthroplasty for Spondylolisthesis
and Stenosis: Interim Analysis of Four-Year
Outcomes from a Prospective Randomized
Clinical Trial*

Chris Chermiside-Scabbo, MD

University of Minnesota

*Better Functional Scores in Arthroscopic
Assisted Percutaneous Fixation Than Open
Reduction Internal Fixation of Lateral Tibial
Plateau Fractures*