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SIXTH ANNUAL

OREF VIRTUAL NATIONAL

RESIDENT RESEARCH SYMPOSIUM

Wednesday, November 18, 2026

5:30 p.m. CST

OREF National Resident Symposium Grand Champions

The winner of this evening's symposium will be named the 2026 OREF National Resident Research Symposium Champion. The winner will attend the 2027 AAOS Annual Meeting in Las Vegas as OREF's guest where they will be presented with their award.

Past National Symposium winners appreciated the opportunity that attending the Annual Meeting gave them to meet OREF grant recipient alumni who offered insights into their research careers.



2021 Champion
Katherine Gerull, MD
Washington University in St. Louis
Attrition Among Residents Entering U.S. Orthopedic Surgery Residency Programs: Analysis of National GME Census Data



2022 Champion
Kyle W. Morse, MD
The Hospital for Special Surgery
A Vertebral Stem Cell Mediating Spine Fusion



2023 Champion
Brendan Shi, MD
University of California, Los Angeles
Bisphosphonate Chaperones Effectively Target the Enthesis Without Impairing Soft Tissue-to Bone Repair Integrity



2024 Champion
Zaamin Hussain, MD
Emory University
Incision or Excision? What to do with the A1 Pulley for Trigger Finger: Results of a Multi-Surgeon Randomized Controlled Trial



2025 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

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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.

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OREF NATIONAL
RESIDENT RESEARCH SYMPOSIUM
SUMMARY AGENDA
Wednesday, November 18, 2026

5:30 p.m. – 5:40 p.m.	**Welcome and Introductions** **Andrew Pollak, MD** President Orthopaedic Research and Education Foundation **Lee Grossman, MBA, ML** Chief Executive Officer Orthopaedic Research and Education Foundation
5:40 p.m. – 6:15 p.m.	**Session I – Resident Research Presentations and Discussion** **Moderator: Andrew Pollak, MD**
	Break - ***Judges and Presenters – At this time, please finalize your scores for Session I***
6:20 p.m. – 6:55 p.m.	**Session II – Resident Research Presentations and Discussion** **Moderator: Andrew Pollak, MD**
	Break – ***Judges and Presenters – At this time, please finalize your scores for Session II***
7:00 p.m. – 7:35 p.m.	**Session III – Resident Research Presentations and Discussion** **Moderator: Andrew Pollak, MD**
	Break – ***Judges and Presenters – At this time, please finalize your scores for all Sessions***
7:40 p.m. – 7:45 p.m.	**Introduction of Keynote Speaker** Andrew Pollak, MD
7:45 p.m. – 8:05 p.m.	**Keynote Speaker** **Tackling Our Most Challenging Clinical Problems** **Gerard Slobogean, MD, MPH** Professor of Orthopaedic Surgery Research Director, Clinical Trials – Orthopaedic Surgery Director, Master of Science in Biomedical and Translational Science (MS-BATS) University of California, Irvine School of Medicine
8:05 p.m. – 8:15 p.m.	**Awards Presentation**
8:15 p.m. – 8:20 p.m.	**Closing Remarks**

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KEYNOTE SPEAKER



Gerard Slobogean, MD, MPH

Professor of Orthopaedic Surgery
Research Director, Clinical Trials — Orthopaedic Surgery
Director, Master of Science in Biomedical and Translational Science (MS-BATS)
University of California, Irvine School of Medicine

Dr. Slobogean is Professor and Vice-Chair for Research in the Department of Orthopaedic Surgery and Director of the Master of Science program in Biomedical and Translational Science at the University of California, Irvine. His clinical practice focuses on the surgical management of complex extremity fractures and polytrauma patients. Dr. Slobogean's research program focuses on large multicenter clinical trials and clinician-scientist mentorship. He is the co-founder of the Center for Orthopaedic Injury Research & Innovation, a national mentorship and research design service center available to early-career investigators. In the past five years, his national cohort of mentees has received >$20M in federal funding to lead multicenter clinical trials.

Judges and Moderators

Judges

OREF Research Grants Committee Members

Andrew Pollak, MD
University of Maryland

Thomas P. Sculco, MD
The Hospital for Special Surgery

Brian Snyder, MD, PhD
Boston Children's Hospital

Timothy Wright, PhD
The Hospital for Special Surgery

National Resident Research Symposium Champion Alumni

Zaamin Hussain, MD
University of Florida

Kyle W. Morse, MD
The Hospital for Special Surgery

Brendan Y. Shi, MD
University of California, Los Angeles

Moderator

Andrew Pollak, MD
University of Maryland

OREF National Resident Research Symposium
DETAILED AGENDA
Wednesday, November 18, 2026
Program commencing at 5:30 p.m. CST

5:30 p.m. – 5:40 p.m.	**Welcome and Introductions** **Andrew Pollak, MD** President Orthopaedic Research and Education Foundation **Lee Grossman, MBA, ML** Chief Executive Officer Orthopaedic Research and Education Foundation
	Session I – Resident Research Presentations & Discussion **Moderator: Andrew Pollak, MD**
5:40 p.m. – 5:45 p.m.	*Glycemic Control Prior to Total Joint Arthroplasty: New Updates to an Established Index* Thomas Bieganowski, MD, NYU Langone Health
5:45 p.m. – 5:50 p.m.	*Patient-Reported Outcomes After ACL Reconstruction are Non-Inferior Following Perioperative Opioid Counseling: Secondary Analysis of a Randomized Controlled Trial* Joseph Blommer, MD, University of Maryland
5:50 p.m. – 5:55 p.m.	*A Deep Learning Model Enhances Prediction of Meniscal Allograft Size from a Standard Knee Radiograph* Abhinaba Chatterjee, MD, Lenox Hill Hospital-Northwell Health
5:55 p.m. – 6:00 p.m.	*Does Ten Minutes of Intraoperative Nerve Stimulation Improve Outcomes Following Nerve Transfer?* Manohar Devarasetty, MD, Carolinas Medical Center/OrthoCarolina
6:00 p.m. – 6:05 p.m.	*Can Chronic Antibiotic Suppression After Two-Stage Exchange Arthroplasty Prevent Treatment Failure?* Dillon Graham, MD, Atrium Health Carolinas Medical Center
6:05 p.m. – 6:15 p.m.	Question and Answers
6:15 p.m. – 6:20 p.m.	Break – ***Judges and Presenters – At this time, please finalize your scores for Session I***
	Session II – Resident Research Presentations & Discussion **Moderator: Andrew Pollak, MD**
6:20 p.m. – 6:25 p.m.	*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
6:25 p.m. – 6:30 p.m.	*Preliminary Outcomes of Scapholunate Interosseous Ligament Reconstruction Using the Button Assisted Internal Brace Technique* Kyleen Jan, MD, Rush University Medical Center
6:30 p.m. – 6:35 p.m.	*Preoperative Psychiatric Diagnosis Predicts Worse Patient-Reported Outcome Measures, Higher Dissatisfaction, and Increased Health Care Utilization Following Total Knee Arthroplasty: Analysis of Over 13,000 Patients* Lori Jia, MD, Cleveland Clinic

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6:35 p.m. – 6:40 p.m.	*Targeted Delivery of Growth Factor to the Site of Tendon-Bone Healing* Timothy Liu, MD, University of California, Los Angeles
6:40 p.m. – 6:45 p.m.	*Preoperative MRI Derived Navigation Reduces Radiation Exposure in Pediatric Spinal Fusion* Logan A. Reed, MD, Orlando Health
6:45 p.m. – 6:55 p.m.	Question and Answer
6:55 p.m. – 7:00 p.m.	Break – ***Judges and Presenters – At this time, please finalize your scores for Session II***
	Session III – Resident Research Presentations & Discussion **Moderator: Andrew Pollak, MD**
7:00 p.m. – 7:05 p.m.	*Ebf3 Governs Skeletal Progenitor Cell Fate During Injury Repair and Aging: A Therapeutic Target for Impaired Bone Healing* Lindsey Remark, MD, NYU Langone Health
7:05 p.m. – 7:10 p.m.	*Oocyte Cryopreservation Experiences and Attitudes Among Female Orthopaedic Surgeons* Alexandra H. Seidenstein, MD, Johns Hopkins University
7:10 p.m. – 7:15 p.m.	*Is Inflammatory Arthritis an Absolute Indication for Patellar Resurfacing in Total Knee Arthroplasty?* Bryant Song, MD, Washington University School of Medicine
7:15 p.m. – 7:20 p.m.	*Intraoperative Cell Salvage in Thoracolumbar Spinal Deformity: Is it Worthwhile?* Goutham R. Yalla, MD, Johns Hopkins University
7:20 p.m. – 7:25 p.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
7:25 p.m. – 7:35 p.m.	Question and Answer
7:35 p.m. – 7:40 p.m.	Break - ***Judges and Presenters – At this time, please finalize your scores for all Sessions***
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8:05 p.m. – 8:15 p.m.	Awards Presentation
8:15 p.m. – 8:20 p.m.	Closing Remarks

Glycemic Control Prior to Total Joint Arthroplasty: New Updates to an Established Index

Thomas Bieganowski, MD
NYU Langone Health

Purpose: This study sought to correlate preoperative fructosamine level to adverse outcomes in patients undergoing total joint arthroplasty (TJA).

Significance: The best methods for predicting glycemic control prior to TJA continues to be an area of debate. Several laboratory markers and cut-off values have been proposed to guide preoperative optimization goals and limit postoperative complications.

Methods: We conducted a retrospective review of all TJA procedures from February 18, 2014, to February 25, 2025. Receiver operating characteristic curve analysis was used to determine what values of fructosamine yielded a higher likelihood of prosthetic joint infection (PJI). Binomial logistic regressions were then used to determine risk of adverse outcomes.

Results: Fructosamine level of $\geq$310 µmol/L was the optimal cut-off when determining adverse outcomes following TJA. Patients whose preoperative fructosamine was at least 310 µmol/L were over 18 times more likely to develop PJI ($P<0.001$) and over five times more likely to undergo all-cause revision ($P=0.001$) compared to patients whose fructosamine was below this cut-off.

Conclusion: Our data suggest that current fructosamine parameters may be conservative when stratifying adverse postoperative outcomes. Moving forward, surgeons should consider higher preoperative fructosamine values when indicating patients for surgery.

Patient-Reported Outcomes After ACL Reconstruction are Non-Inferior Following Perioperative Opioid Counseling: Secondary Analysis of a Randomized Controlled Trial

Joseph Blommer, MD
University of Maryland

Purpose: This study aimed to evaluate the effect of opioid-limiting perioperative pain management education and counseling on postoperative patient-reported outcomes (PROs).

Significance: Excessive opioid prescribing after anterior cruciate ligament (ACL) reconstruction remains a major concern.

Methods: This was a secondary analysis of a parallel-arm randomized controlled trial conducted at a single academic institution, including patients ≥14 years old who underwent ACL reconstruction. The treatment group underwent opioid-limiting perioperative pain management education and counseling with instructions to take opioids only as a last resort, while the control received traditional perioperative pain management instructions. Linear mixed-effects models compared postoperative PRO trajectories.

Results: There were 52 patients in the control group and 49 in the treatment group. Total morphine equivalents at 90 days were significantly lower among patients in the treatment group than in the control group. All measured PRO recovery trajectories over the two-year postoperative course in the treatment group were non-inferior to those of the control group.

Conclusion: Opioid-limiting pain management education and counseling led to a substantial difference in total opioid consumption at 90 days. All PRO recovery trajectories over 2 years after surgery among patients in the treatment group were non-inferior to those of the control group.

A Deep Learning Model Enhances Prediction of Meniscal Allograft Size from A Standard Knee Radiograph

Abhinaba Chatterjee, MD
Lenox Hill Hospital/Northwell Health

Purpose: To evaluate multimodal deep-learning models for predicting meniscal width and length.

Significance: A deep-learning model may allow patient-specific meniscus width and length estimates from a standard XR without requiring additional studies during prediction.

Methods: A deep-learning model that combined radiographic and anthropometric features was trained using Osteoarthritis-Initiative XR data from 1,472 knees in 736 patients. Patients with Kellgren-Lawrence grade>1 or any history of meniscal surgery were excluded. MRI-derived meniscal segmentations were used to obtain ground-truth width and length reference labels. Outcomes were mean absolute error (MAE), and the proportion of estimates within-10% of ground-truth.

Results: For medial and lateral width, the deep-learning model achieved MAEs of 1.22 and 1.39mm (Pollard/Yoon: 1.68 and 2.71mm; Contralateral MRI: 1.16 and 1.00mm). Within-10% rates were 94.6% and 91.0%, respectively (Pollard/Yoon: 80.7% and 72.2%; Contralateral-MRI: 92.2% and 96.7%). Contralateral-MRI had lower absolute error than deep-learning for all dimensions ($P<0.01$), but did not demonstrate statistically superior paired within-10% classification.

Conclusion: Multimodal deep-learning models had substantially improved accuracy compared to conventional radiographic sizing techniques. Although contralateral-MRI was more precise by continuous absolute error, it was not statistically superior for the paired within-10% endpoint. These findings support radiograph-based deep-learning as a potentially useful decision-support tool for meniscal allograft matching.

Does Ten Minutes of Intraoperative Nerve Stimulation Improve Outcomes Following Nerve Transfer?

Manohar Devarasetty, MD
Carolinas Medical Center/OrthoCarolina

Purpose: To compare motor recovery outcomes in patients undergoing upper extremity nerve transfers with versus without brief intraoperative electrical stimulation (ES).

Significance: Brief intraoperative ES is a promising adjunct for peripheral nerve surgery shown in prior studies to accelerate axonal regeneration, but clinical data for nerve transfer outcomes remain limited.

Methods: A retrospective cohort study was performed of adults undergoing radial-to-axillary or median/ulnar-to-musculocutaneous nerve transfers at a single center (2015–2025). Patients were divided into those who received 10 minutes of continuous ES (2 mA, 100 μs) intraoperatively versus those who did not. Primary outcome was postoperative Medical Research Council (MRC) motor grade. Chi-square and t-tests were used for analyses.

Results: Eighty-three patients (58 No ES; 25 ES) were analyzed. Groups were similar in age (median 48.5 years, p=0.699), time to surgery (p=0.998), and construct type (p=0.268). The ES group demonstrated superior recovery, with 88% achieving M4–M5 versus 58.6% in the No ES group (p=0.0269). Stimulated patients also achieved maximum strength faster (median 10.1 vs 14.3 months, p=0.031).

Conclusion: Ten minutes of intraoperative ES significantly improved motor recovery and decreased time to recovery following nerve transfer. Given these results, we now perform therapeutic ES in all nerve transfers.

Can Chronic Antibiotic Suppression After Two-Stage Exchange Arthroplasty Prevent Treatment Failure?

Dillon Graham, MD
Atrium Health Carolinas Medical Center

Background: Periprosthetic joint infection remains one of the most devastating complications of total joint arthroplasty, with two-stage exchange representing the gold standard treatment for chronic infections. Despite optimal surgical technique, failure rates remain substantial. Recent evidence suggests that oral antibiotic suppression after reimplantation may improve outcomes, but definitive data on its efficacy in preventing treatment failure after two-stage exchange remains limited.

Methods: We conducted a retrospective cohort study of patients who underwent two-stage exchange arthroplasty for chronic periprosthetic joint infection. All patients received a planned minimum of 6 months oral suppressive antibiotic after reimplantation, with the option for longer suppression based on surgeon discretion, patient tolerance, and preference. The primary outcome was treatment failure, defined as reinfection requiring additional surgical intervention or active infection at time of final follow-up. Patients were stratified based on whether they were on oral suppressive antibiotic therapy at the time of failure or at final follow-up. Finally, we compared the overall duration of use of antibiotic suppression using logistic regression to determine the optimal minimum duration of oral antibiotic therapy after reimplantation.

Results: A total of 534 eligible procedures in 512 patients were included in the study. Of the 446 patients not on oral antibiotic suppression at final follow-up, 88 failed (19.7%). Of the patients on chronic antibiotic suppression at final follow-up, none failed ($P < 0.0001$). All patients receiving chronic antibiotic suppression achieved infection-free survival at median follow-up of 2.3 years. The average duration of antibiotic use for patients who did not experience failure was 13.0 months (IQR 7.0-34.0) compared to 7.2 months (IQR 4.2-52.1) in the failure of treatment group ($P = 0.0375$). In a regression analysis, the optimum minimum duration of oral antibiotic therapy after reimplantation was 24 months ($P = 0.037$).

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.

Preliminary Outcomes of Scapholunate Interosseous Ligament Reconstruction Using the Button Assisted Internal Brace Technique

Kyleen Jan, MD
Rush University Medical Center

Purpose: Evaluate functional and radiographic outcomes following scapholunate interosseous ligament (SLIL) reconstruction using the Button Assisted Internal Brace (BAIB) technique.

Background: Numerous SLIL reconstruction techniques demonstrate variable success in restoring carpal alignment. We describe the performance of a novel technique that augments a flexor carpi radialis tendon slip with suture tape and cortical button fixation to reinforce the proximal carpal row.

Methods: Patients undergoing BAIB reconstruction were followed for ≥6 months. Functional outcomes (DASH, PRWHE, VAS pain, range of motion, grip strength) and radiographic parameters (scapholunate gap [SLG], scapholunate angle [SLA], radiolunate angle [RLA], radioscaphoid angle, dorsal scaphoid translation) were compared using paired t-tests or Wilcoxon signed-rank tests ($p<0.05$).

Results: 22 patients (mean age 38.6 years; 90.9% male) were followed for a mean of 21.4 months. Median DASH and PRWHE scores were 10.7 and 11.8, with low pain at final follow-up. Wrist flexion and extension decreased by 2.5° and 5.7° ($p>0.05$). Grip strength was 14.6% lower than the contralateral side. SLG improved from 5.6 mm to 3.9 mm ($p=0.003$). SLA and RLA decreased by 10.2° ($p=0.006$) and 7.6° ($p=0.03$). No major complications or revisions occurred.

Conclusion: BAIB reconstruction improves carpal alignment with favorable functional outcomes and minimal morbidity at short- to mid-term follow-up.

Preoperative Psychiatric Diagnosis Predicts Worse Patient-Reported Outcome Measures, Higher Dissatisfaction, and Increased Health Care Utilization Following Total Knee Arthroplasty: Analysis of Over 13,000 Patients

Lori Jia, MD
Cleveland Clinic

Purpose: To evaluate (1) clinically meaningful improvements in patient-reported outcome measures (PROMs), (2) self-reported satisfaction, and (3) health care utilization among patients undergoing total knee arthroplasty (TKA) with and without a psychiatric diagnosis.

Significance: To examine the impact of preoperative mental health conditions on postoperative outcomes after TKA.

Methods: Patients undergoing primary, unilateral TKA at a single academic center in the U.S. between 2016 and 2022 were included. Psychiatric diagnoses included anxiety, bipolar disorder, depression, PTSD, psychosis, substance abuse, and multiple diagnoses. PROMs included the Knee Injury and Osteoarthritis Outcome Score Pain Subscale (KOOS-Pain), Physical Function Shortform (KOOS-PS), and Joint Replacement (KOOS-JR).

Results: 13,894 patients who had 14,900 TKAs were included, of which 3,830 patients (28%) had a psychiatric diagnosis. Psychiatric disease predicted failure to achieve MCID and PASS in KOOS-Pain, KOOS-PS, and KOOS-JR ($p=0.01$). Patients with multiple psychiatric diagnoses had even higher odds of failing to achieve clinically meaningful improvements. Psychiatric disease also predicted prolonged length of stay, non-home discharge, and 90-day hospital readmission ($p<0.01$).

Conclusion: Over a quarter of individuals undergoing TKA have a preexisting mental health condition. A multidisciplinary approach to preoperative mental health optimization and postoperative surgical care may help improve outcomes for this key population.

Targeted Delivery of Growth Factor to the Site of Tendon-Bone Healing

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 factory 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 morphogenic 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.

Preoperative MRI-Derived Navigation Reduces Radiation Exposure in Pediatric Spinal Fusion

Logan Reed, MD
Orlando Health

Purpose: To evaluate whether MRI-derived synthetic CT navigation reduces radiation exposure while maintaining the benefits of navigated pedicle screw placement during posterior spinal fusion for adolescent idiopathic scoliosis (AIS).

Significance: Pediatric deformity patients are particularly susceptible to the cumulative lifetime effects of ionizing radiation. While CT-based navigation improves screw placement and decreases intraoperative fluoroscopy, it introduces substantial preoperative radiation exposure. MRI-derived synthetic CT imaging may provide a radiation-sparing alternative without sacrificing navigational utility.

Methodology: A retrospective cohort study of 94 AIS patients undergoing posterior spinal fusion compared fluoroscopy-only guidance (n=39), CT-based navigation (n=28), and MRI-derived synthetic CT navigation (n=27). Demographic, operative, and radiation variables were analyzed using comparative statistical methods, including fluoroscopy time and total effective radiation dose (mSv).

Results: Groups were demographically and operatively comparable (all $p>0.05$). Fluoroscopy time was significantly lower in the CT-navigation (48.2±21.9 seconds) and MRI-to-CT groups (47.5±21.7 seconds) compared with fluoroscopy-only guidance (90.9±28.0 seconds; $p<0.001$). Intraoperative radiation dose was similarly reduced in both navigation cohorts ($p=0.008$). Preoperative radiation exposure was significantly higher in the CT-navigation cohort because of preoperative CT imaging.

Conclusion: MRI-derived synthetic CT navigation achieved radiation profiles comparable to CT-based navigation while eliminating preoperative CT radiation exposure, supporting its utility as a radiation-sparing alternative in pediatric deformity surgery.

Ebf3 Governs Skeletal Progenitor Cell Fate During Injury Repair and Aging: A Therapeutic Target for Impaired Bone Healing

Lindsey Remark, MD
NYU Langone Health

Purpose: To determine whether Ebf3, a transcription factor that suppresses osteogenic differentiation of skeletal stem/progenitor cells (SSPCs) in homeostasis, governs SSPC fate during injury repair and is a therapeutic target for impaired healing with aging.

Significance: Aging shifts SSPCs from osteogenic toward adipogenic differentiation, impairing bone regeneration. We previously showed Notch signaling drives this fate switch and identified Ebf3 as a downstream Notch target enriched in SSPCs, making it a promising therapeutic target. Human data suggest Ebf3 functions downstream of teriparatide, supporting its clinical relevance.

Methods: A tibial defect was created in young mice; scRNA-sequencing and SCENIC regulon analysis occurred at baseline and postoperative days (POD) 5 and 10. Bulk RNA sequencing of young and aged mouse femur fractures compared Ebf3 expression.

Results: Ebf3 was expressed in SSPCs at baseline, declined by POD5 with a stress/metabolic regulon (Hif1a/Atf3/Myc), and began returning toward baseline by POD10 alongside an osteogenic regulon (Atf4/Jund/Smad1). Ebf3 was elevated in aged versus young SSPCs by bulk sequencing.

Conclusion: Ebf3 downregulation is required for osteogenic commitment during repair and may be dysregulated with aging, supporting it as a therapeutic target. Ongoing studies involve Ebf3 siRNA in a mouse tibial defect model to determine if knockdown enhances healing

Oocyte Cryopreservation Experiences and Attitudes Among Female Orthopaedic Surgeons

Alexandra H. Seidenstein, MD
Johns Hopkins University

Purpose: More women are entering orthopaedic surgery but face unique challenges in family building, while access to fertility preservation during training remains incompletely understood. We hypothesized that female orthopaedic surgeons face financial, scheduling, institutional, and knowledge barriers to oocyte cryopreservation, particularly during residency.

Significance: Oocyte cryopreservation may support women who delay childbearing during surgical training, yet barriers to access among female orthopaedic surgeons remain poorly characterized**.**

Methodology: A 45-question Qualtrics survey was distributed through the Ruth Jackson Orthopaedic Society, residency program directors, and regional orthopaedic societies to female orthopaedic residents, fellows, and attendings. Responses were summarized descriptively by training status.

Results: Among 169 respondents, 63% intentionally delayed childbearing, 54% considered oocyte cryopreservation, and 21% had undergone or planned a cycle. Among those who considered but did not proceed, 75% cited cost and 42% time constraints. Major barriers included inflexible scheduling, lack of insurance coverage, and restrictive leave policies. Attendings more often than residents/fellows reported discomfort disclosing planned cryopreservation (69% vs 38%) and inadequate residency scheduling flexibility (62% vs 32%). Mean fertility knowledge score was 1.46/5.

Conclusion: Barriers extend beyond cost to modifiable training-program factors. These findings support privacy-conscious scheduling, leadership support, insurance coverage, and reproductive health education.

Is Inflammatory Arthritis an Absolute Indication for Patellar Resurfacing in Total Knee Arthroplasty?

Bryant Song, MD
Washington University School of Medicine

Background: Inflammatory arthritis (IA) has been considered an absolute indication for patellar resurfacing (PR) in total knee arthroplasty (TKA), yet limited contemporary data exists to support this. The purpose of this study was 1) to compare outcomes of TKA without PR for IA and osteoarthritis (OA) and 2) to compare outcomes of TKA for IA with and without PR.

Methods: A retrospective review of all primary TKAs at an academic institution between March 2017 to May 2024 was performed. We identified 348 TKAs without PR performed for IA. This cohort was matched by demographics to 348 TKAs without PR performed for OA. A secondary comparison of 38 TKAs for IA with PR (IA-PR) during the same period was performed. Outcomes included reoperation, revision, patella-related complications, and presence of anterior knee pain (AKP). Mean follow-up was 24-months. T-tests and Fisher's Exact tests were performed.

Results:
Among TKA without PR, 20 (5.7%) IA and 13 (3.7%) OA underwent reoperation (P=0.28); 2 (0.6%) in each group underwent revision (P=1.0). There were no differences in aseptic (3.4% IA vs. 2.6% OA; P=0.66), patella-related (1.4% IA vs 0.9% OA, P=0.73), or septic (2.3% IA vs. 1.1% OA; P=0.38) reoperations. Four (1.1%) IA vs. 0 OA TKAs underwent secondary PR (P=0.12). Among TKA without PR, there was no difference in AKP between IA (4.9%) and OA (7.8%) (P=0.16). Among TKA for IA with and without PR, there was no difference in AKP (4.9% IA vs. 5.3% IA-PR; P=0.58). The PR group had more aseptic reoperations (3.4% IA vs. 13.2% IA-PR; P=0.02) and revisions (0.6% IA vs. 13.2% IA-PR; P< 0.01), but similar patella-related complications (1.4% IA vs 2.6% IA-PR, P=0.47).

Conclusion: In TKA without PR for IA compared to OA, there were no differences in reoperations, revisions, patella-related complications.

Intraoperative Cell Salvage in Thoracolumbar Spinal Deformity: Is it Worthwhile?

Goutham R. Yalla, MD
Johns Hopkins University

Purpose: To determine if intraoperative cell salvage use during adult thoracolumbar deformity surgery is associated with reduced perioperative allogeneic blood transfusion.

Significance: Adult spinal deformity surgery is associated with substantial blood loss, and allogeneic blood transfusion carries risks, including transfusion reactions and infections. Studies report mixed results on the efficacy of intraoperative cell salvage in reducing transfusions.

Methods: A large, multi-center cohort of thoracolumbar deformity patients were stratified by intraoperative cell salvage use. The primary outcome was perioperative allogeneic transfusion. Secondary outcomes included transfusion reactions and postoperative complications. Multivariate regression assessed associations, while controlling for confounders.

Results: Of 900 patients, 653 (72.6%) used intraoperative cell salvage. The cell salvage cohort had higher EBL, operative time, levels fused, and osteotomy rates (all $p<0.01$), yet median red blood cell (RBC) transfusion did not differ. On regression, cell salvage reduced transfusions of RBC (β −0.62, $p<0.001$), fresh frozen plasma (β −0.67, $p<0.001$), and platelets (β −0.10, $p=0.019$). Rates of transfusion reactions, medical complications, thromboembolic events, and surgical site infection (SSI) were similar, but on regression, cell salvage was associated with reduced deep SSI (OR 0.34, $p=0.021$).

Conclusion: Intraoperative cell salvage is associated with reduced perioperative allogeneic transfusion without increased transfusion-related or postoperative complications.

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.

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

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

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

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

MID-ATLANTIC

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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

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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

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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

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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

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Intraoperative Evaluation of Sarcoma Surgical Margins with Indocyanine Green Fluorescence Imaging

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

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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

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

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

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

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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

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

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

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Low Complication Rate Following Contemporary Pure Anteriorization Tibial Tubercle Osteotomy for Patellofemoral Overload

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Icahn School of Medicine at
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Austin C. Kaidi, MD
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Jackson Memorial Hospital/University of Miami
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David S. Constantinescu, MD
University of Miami
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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

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Blake H. Hodgens, MD
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Weightbearing After Distal Femur Fractures: Does the Surgeons' Postoperative Protocol Matter?

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

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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

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

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Combined Root and Body (CRAB) Lateral Meniscus Tears in the Adolescent Population: An Underrecognized and Underreported Tear Pattern

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Osteochondral Autograft from the Proximal Tibiofibular Joint for Reconstruction of Acute Tibial Plateau Fractures with Severe Chondral Defects

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