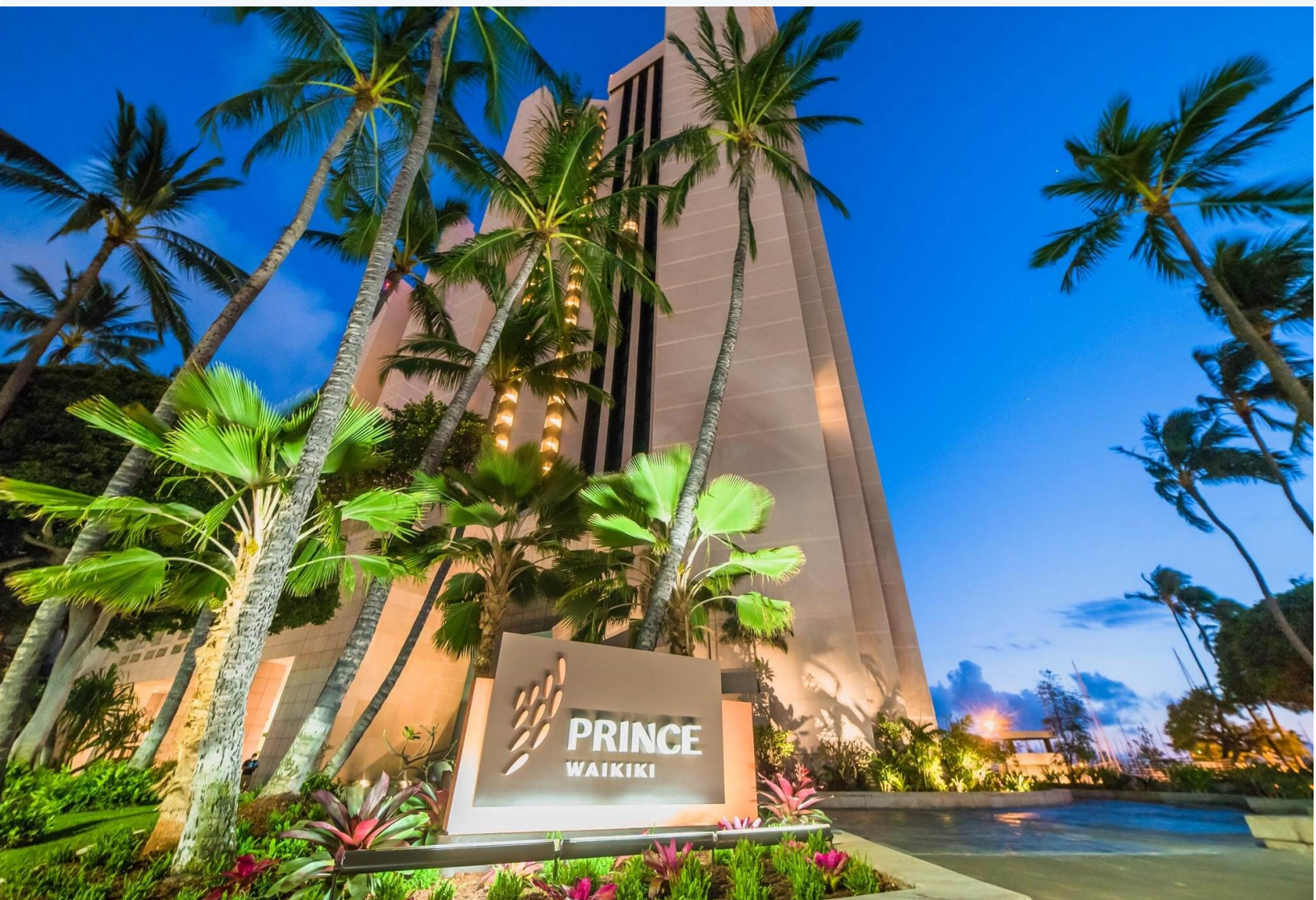




HAWAII ORTHOPAEDIC ASSOCIATION 36TH ANNUAL COMBINED ORTHOPAEDIC SPRING SYMPOSIUM

**PRINCE WAIKIKI
APRIL 22-23, 2022**



CME Offered

Let's reconnect and learn about what's new!

Continuing Education

36th Hawaii Annual Orthopaedic Association Symposium

April 22-23, 2022

Prince Waikiki – Honolulu, Hawai'i

CONFERENCE INFORMATION

GENERAL OBJECTIVES:

By the end of the course, the participant will be able to:

1. Identify diagnostic and treatment options available.
2. Improve patient care through application of accepted guidelines.
3. Improve performance in orthopaedic practice by implementing diagnostic and therapeutic guidelines to clinical care and enhancing patient care by coordination of resources.

CONTINUING EDUCATION:



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In support of improving patient care, this activity has been planned and implemented by Hawai'i Pacific Health (HPH) and the Hawai'i Orthopaedic Association (HOA). Hawai'i Pacific Health is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

Hawai'i Pacific Health designates this live activity for a maximum of 9.5 *AMA PRA Category 1 Credits™* for physicians. Physicians should only claim credit commensurate with the extent of their participation in the activity.

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Keith Berend, MD

Relationship

Research Support: *Firstkind, Parvizi Surgical Innovation Research Institute, Total Joint Orthopedics, Zimmer Biomet*

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Continuing Education

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Daniel Goldberg, MD
Christopher (Max) Hoshino, BS, MD

None
None
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Royalties: *LWW*
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Thank you to the Continuing Education (CE) Sponsor:



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Aloha and Welcome!



Thank you for joining us today and supporting the Hawaii Orthopaedic Association. We hope you find the program exciting and informative.

I would like to extend a warm welcome and thank you to our guest speakers Dr. Keith Berend and Dr. Christopher “Max” Hoshino for coming to Hawaii and sharing their knowledge and expertise with us. I also would like to thank our local faculty, University of Hawaii and Tripler residents and medical students for their presentations.

A sincere thank you to the vendors who supported the conference and for sharing their newest technologies with us.

I’m so glad that we can finally reconnect!

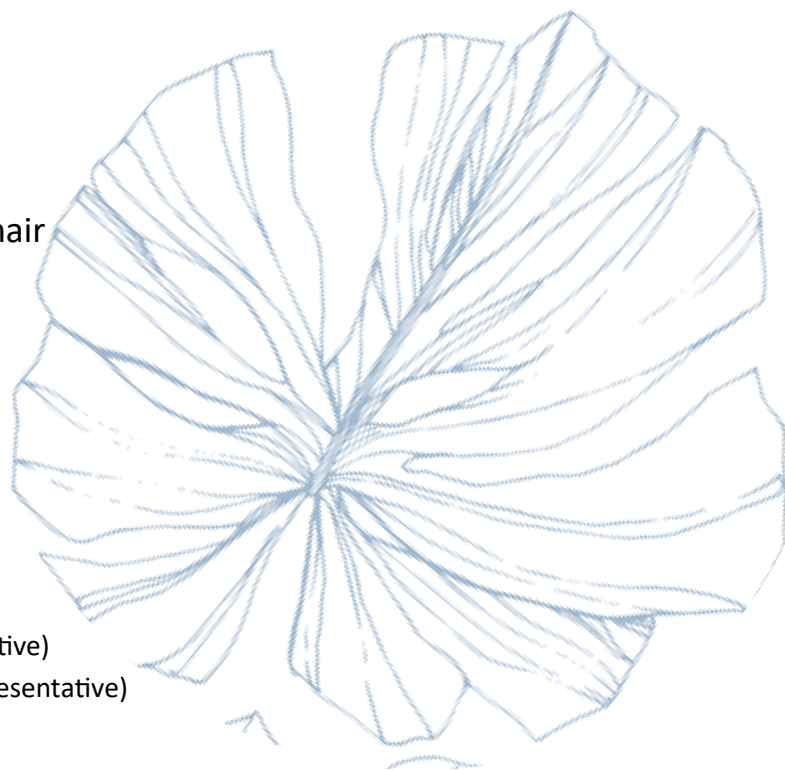
Aloha,

Kyle Mitsunaga

Kyle Mitsunaga, MD
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- Alicia Unangst, MD (Tripler Representative)



Speakers

KEYNOTE SPEAKERS



Keith Berend, M.D.

Dr. Keith Berend, a native of Columbus, Ohio, graduated from Upper Arlington High School in 1988. He received his undergraduate from Florida Southern College with honors. He completed his medical doctorate and orthopaedic residency at Duke University in Durham, North Carolina. Dr. Berend completed a fellowship in Adult Reconstruction of the Hip and Knee at Joint Implant Surgeons, Inc., with Dr. Thomas H. Mallory, MD, and Adolph V. Lombardi, Jr., MD. He joined that practice in 2003 and was a founding physician of New Albany Surgical Hospital. Dr. Berend was a Hip Society-British Hip Society Traveling Fellow in 2004 and a John N. Insall Knee Society Traveling Fellow in 2005. Dr. Berend is the author of over 180 scholarly articles. He is also a member of the Knee Society and the Hip Society, the highest honors bestowed upon a surgeon with those respective specialties.



Christopher "Max" Hoshino, MD

Clinical Professor—University of California Irvine &
Assistant Chief of Orthopedic Trauma at Harbor-UCLA

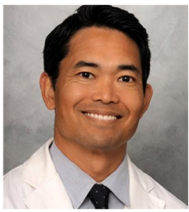
Max Hoshino is a board-certified and fellowship trained orthopaedic trauma surgeon. He treats a broad spectrum of traumatic musculoskeletal injuries including both simple and complex extremity fractures, pelvic and acetabular fractures, nonunions, malunions, and post-traumatic/surgical infections. Dr. Hoshino has expertise in traumatic soft tissue injuries and limb reconstruction including the treatment of bone defects. Finally, Dr. Hoshino performs arthroplasty (joint replacement) for the treatment of acute fractures and post-traumatic arthritis of the shoulder, elbow, knee, and hip.

LOCAL SPEAKERS



Paul Moroz

Paul Moroz, M.D., MS, FRCS(C), FAAOS, is board certified in orthopedic surgery in both Canada and the United States. He is a pediatric orthopedic and spine surgeon at Shriners Children's Hawaii and a clinical associate professor of surgery at the John A. Burns School of Medicine, University of Hawaii.



Cass Nakasone

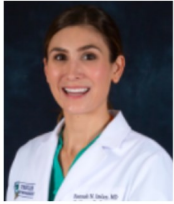
Dr. Cass Nakasone joined Straub in 2005. He specializes in minimally invasive joint replacement surgery. Professional interests include: Total knee, partial knee and direct anterior approach total hip replacements. Revision knee and hip replacement surgeries and research related to these surgical procedures.



Kanu Okike

A member of the American Academy of Orthopaedic Surgeons, the Hawaii Orthopaedic Association, and the Orthopaedic Trauma Association. The Hawaii Permanente Medical Group offers everything that I was looking for in a medical practice, including a collegial working environment, the opportunity to provide the highest quality of care, and the opportunity to conduct research that will advance the practice of orthopedic surgery, all in a place where my family is happy to be living! I strive to do my very best for my patients at each step of the way, not just during the procedure itself but also prior to surgery and during the recovery process as well.

Tripler Army Medical Center Orthopedic Residents



Hannah Imlay, MD—Intern

[Ulnar Shortening Osteotomy is an Effective Treatment for Ulnar Impaction Syndrome in a High Demand Athletic Population](#)



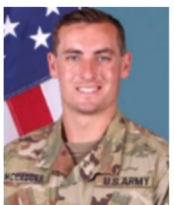
Andrew Lopez, MD—R4

[Correlation of Stress Radiographs to Injuries Associated with Lateral Ankle Instability](#)



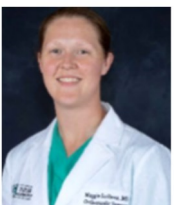
AJ Magee, MD—Intern

[Primary Repair of Distal Biceps Tendon Ruptures: High Complication Rate with an Overall Successful Return to Duty](#)



Austin McCadden—Intern

[Lower Trapezius Tendon Transfer for Brachial Plexopathy](#)



Maggie Scribner, MD—R2

[Fireworks related injuries presenting to US emergency rooms—an epidemiological study](#)



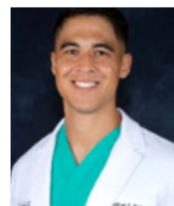
Alicia Unangst MD—R5

[Surgical Intervention for Lateral Epicondylitis is Effective After Failed Conservative Treatment](#)



Connor Venrick, MD—R3

[Sclerostin Expression in Giant Cell Tumor of Bone and Correlation to Patient Factors](#)



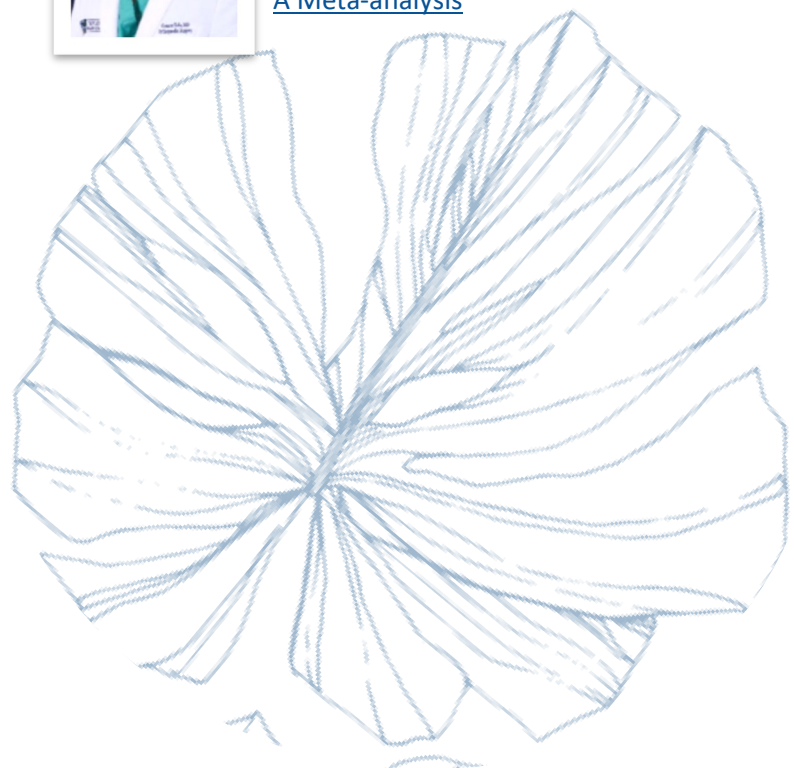
Jeffrey Wake, MD—R2

[Quantification of the differences in glenoid bone loss measurement techniques](#)

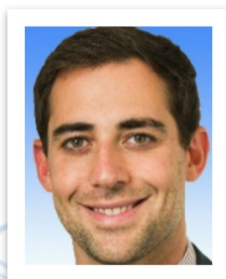


Connor Zale, MD—R3

[Surgical Prophylaxis with Vancomycin for Uninstrumented Spine Surgeries: A Meta-analysis](#)

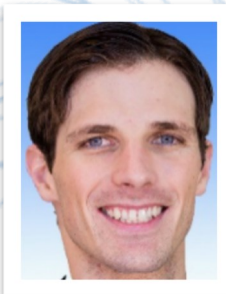


University of Hawaii Orthopaedic Residents



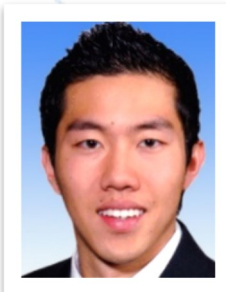
Daniel Goldberg, MD—R5 Chief

[Utility of Radial Sequence Imaging in the Diagnosis of CAM Type Impingement](#)



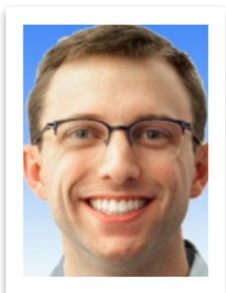
Thomas Kane, IV, MD—Research Fellow

[Simultaneous Bilateral Versus Unilateral Total Joint Arthroplasty Outcomes in Octogenarians](#)



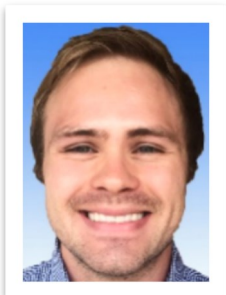
Gordon Lee, MD—R5 Chief

[Shoulder Arthrodesis: A Systematic Review and Meta-Analysis](#)



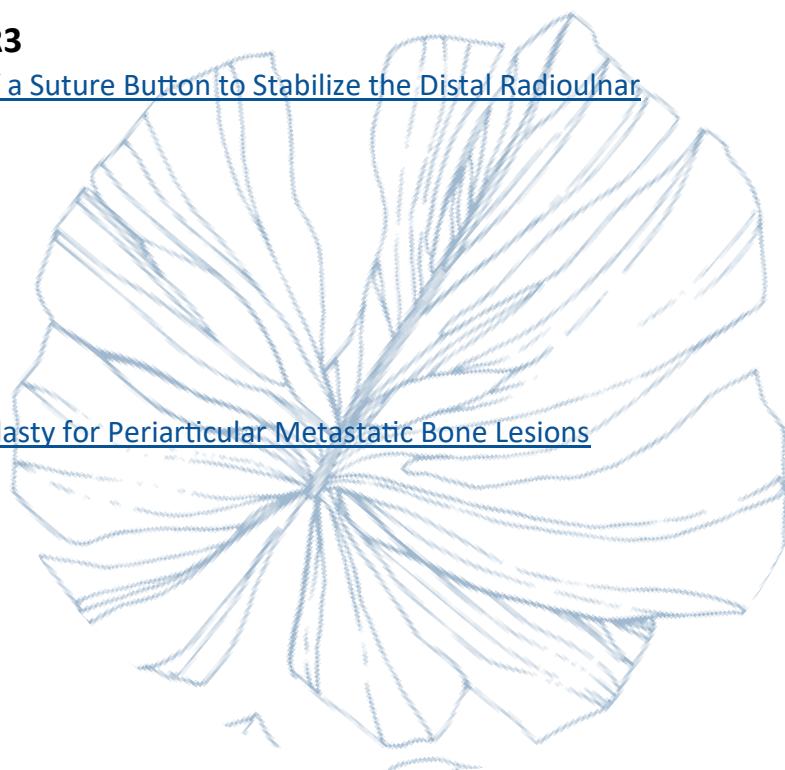
John Livingstone, MD—R3

[Optimizing the Orientation of a Suture Button to Stabilize the Distal Radioulnar Joint in a Bone Model](#)



Collin Walsh, MD—R3

[Screw Cannulated Cementoplasty for Periarticular Metastatic Bone Lesions](#)



University of Hawaii John A. Burns School of Medicine Medical Students



Dylan Combs, MS3

[Reducing Transfusion In Hip Arthroplasty: Tranexemic Acid Diminishes Influence Of Anesthesia Administered](#)



Kyle Obana, MS3

[Medical Student Authorship Trends: A 10-Year Analysis of Four Major Orthopaedic Journals](#)



Amelia Hummel, MS3

[Quadratus Lumborum Type 3 Block Vs Paravertebral Nerve Block Evaluation In Anterior Approach Total Hip Arthroplasty](#)



Julian Rimm, MS3

[Comparison of Early Outcomes Comparing Two Total Knee Implant Designs](#)



Makoa Mau, MS2

[Comparison Of Early Failures and Patient Reported Outcomes Between Press-Fit And Cemented TKA](#)



Edward Weldon, IV, MS1

[Extended Offset Femoral Stem Use In Anterior Approach Total Hip Arthroplasty](#)



Landon Morikawa, MS2

[Safety Of Single-Staged Bilateral Total Hip Arthroplasty In Patients Age >70](#)



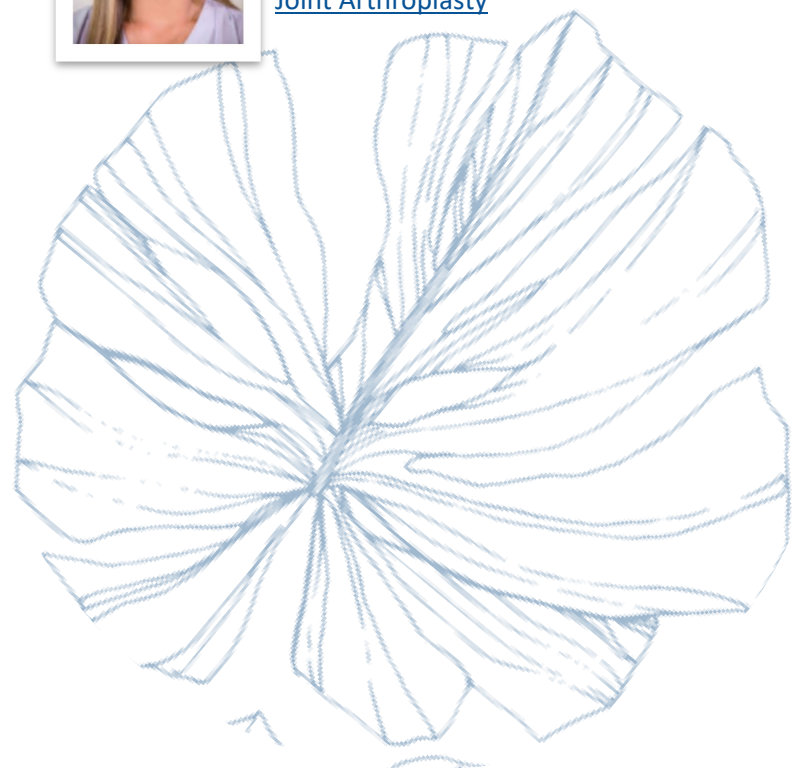
Krystin Wong, MS1

[Oara Score, Asa And Cci Are Poor At Predicting Failure In Outpatient Total Joint Arthroplasty](#)



Ryan Nguyen, MS1

[Risk Stratification for Same Day Discharge: An Evaluation of Three Comorbidity Indices](#)



Program - Friday, April 22, 2022

- 6:00 AM** Registration/Continental Breakfast/Exhibits
- 7:00** Welcome and Opening Remarks - Kyle Mitsunaga, MD
- 7:15** Board of Councilors Update - Craig Ono, MD
- 7:30** Physician Wellness Lecture - Jennifer Beals
- 8:00-8:30** Paul Moroz, MD - INORMUS: The International Orthopedic Multicenter Study of Fracture Care
- 8:30-9:00** Resident Research Panel (Shoulder and Elbow Moderator) - Kyong Min, MD
- 8:30 Jeffrey Wake, MD - Quantification of Difference in Glenoid Bone Loss Measurement Techniques
- 8:40 Austin McCadden, MD - Lower Trapezius Tendon Transfer for Brachial Plexopathy
- 8:50 Anthony Magee, MD - Primary Repair of a Distal Biceps Tendon Rupture has a High Complication Rate with an Overall Successful Return to Function
- 9:00 Gordon Lee, MD - Shoulder Arthrodesis: A System Review and Meta-Analysis
- 9:10-9:30** Resident Panel Discussion
- 9:30-10:00** BREAK - Exhibits Open
- 10:00-10:45** Keynote: Keith Berend, MD - Being a Compartmentalist
- 10:45-11:30** Honored Speaker: Joshua Green, MD—Healthcare in the Pandemic Era
- 11:30-12:30** LUNCH
- 12:30-1:15** Keynote: Christopher "Max" Hoshino, MD - Bone Defect Treatment Options
- 1:15-1:45** Resident Research Panel (Upper Extremity Moderator - Kevin Krul, MD)
- 1:15 Hannah Imlay, MD - Ulnar Shortening Osteotomy is an Effective Treatment for Ulnar Impaction Syndrome in a High Demand Athletic Population
- 1:25 John Livingstone, MD - Optimizing the Orientation of a Suture Button to Stabilize the Distal Radioulnar Joint in a Bone Model
- 1:35 Maggie Scribner, MD - Fireworks-Related Injuries Presenting to US Emergency Rooms – An Epidemiological Study
- 1:45-2:00** Resident Panel Discussion
- 2:00-2:30** BREAK - Exhibits Open
- 2:30-3:00** Cass Nakasone, MD - Choosing Appropriate Patients for Outpatient Arthroplasty: What I've Learned, Applied in Practice and Results Thus Far
- 3:00-3:30** Resident Research Panel (Orthopedic Oncology Moderator - Sean Kelly, MD)
- 3:00 Connor Venrick, MD - Sclerostin Expression in Giant Cell Tumor of Bone and Correlation to Patient Factors
- 3:10 Collin Walsh, MD - Screw Cannulated Cementoplasty for Periarticular Metastatic Bone Lesions
- 3:20 Connor Zale, MD - Surgical Prophylaxis with Vancomycin for Uninstrumented Spine Surgeries: A Meta-analysis
- 3:30-3:45** Resident Panel Discussion
- 3:45** Day 1 Closing Remarks - Dr. Kyle Mitsunaga
- 4:00** Program Ends/Exhibits Open
- 4:45-7:00 PM** Reception

Program - Saturday, April 23, 2022

- 6:00 AM** **Registration/Continental Breakfast/Exhibits**
- 7:00** **Welcome and Opening Remarks - Kyle Mitsunaga, MD**
- 7:15-8:00** **Keynote: Keith Berend, MD - Outpatient Arthroplasty: Home Safe, Same Day**
- 8:00-8:25** **Resident & Medical Student Research Panel (Total Joint Moderator - Andrew Richardson, MD)**
- 8:00** **Thomas Kane, IV, MD - Simultaneous Bilateral Versus Unilateral Total Joint Arthroplasty Outcomes in Octogenarians**
- 8:10** **Krystin Wong, MS1 - OARA score, ASA and CCI are Poor at Predicting Failure in Outpatient Total Joint Arthroplasty**
- 8:15** **Ryan Nguyen, MS1 - Risk Stratification for Same Day Discharge: An Evaluation of Three Comorbidity Indices**
- 8:20** **Edward Weldon, MS1 - Extended Offset Femoral Stem Use in Anterior Approach Total Hip Arthroplasty**
- 8:25-8:45** **Resident Panel Discussion**
- 8:45-9:00** **Paul Moroz, MD - H.O.P.E. for Ukraine: The "Hawaii Orthopedic Project for External-Fixators"**
- 9:00-9:30** **BREAK - Exhibits Open**
- 9:30-10:15** **Keynote: Christopher "Max" Hoshino, MD - Problem Ankle Fractures**
- 10:15-10:50** **Resident Panel Discussion (Sports Moderator - Brian Mannino, MD)**
- 10:15** **Andrew Lopez, MD - Correlation of Stress Radiographs to Injuries Associated with Lateral Ankle Instability**
- 10:25** **Daniel Goldberg MD - Utility of Radial Sequence Imaging in the Diagnosis of CAM Type Impingement**
- 10:35** **Alicia Unangst, MD - Surgical Intervention for Lateral Epicondylitis is Effective After Failed Conservative Treatment**
- 10:45-11:00** **Resident Panel Discussion**
- 11:00-11:30** **Kanu Okike, MD - Updates From The Kaiser Permanente Hip Fracture Registry**
- 11:30-12:00** **Medical Student Panel (Moderator: Cass Nakasone, MD)**
- 11:30** **Kyle Obana, MS3 - Medical Student Authorship Trends: A 10-Year Analysis of Four Major Orthopaedic Journals**
- 11:35** **Julian Rimm, MS3 - Comparison of Early Outcomes Comparing Two Total Knee Implant Designs**
- 11:40** **Amelia Hummel, MS3 - Quadratus Lumborum Type 3 Block vs Paravertebral Nerve Block Evaluation in Anterior Approach Total Hip Arthroplasty.**
- 11:45** **Dylan Combs, MS3 - Reducing Transfusion in Hip Arthroplasty: Tranexemic Acid Diminishes Influence of Anesthesia Administered**
- 11:50** **Landon Morikawa, MS2 - Safety of Single-Staged Bilateral Total Hip Arthroplasty in Patients Age >70.**
- 11:55** **Makoa Mau, MS2—Comparison of Early Failures and Patient Reported Outcomes Between Press-Fit and Cemented TKA**
- 12:00-12:15** **Medical Student Panel Discussion**
- 12:15-12:30** **ADJOURNMENT AND FINAL DRAWING**
- 1:00 PM** **PROGRAM ENDS**
- 

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Resident Research Abstracts



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RESIDENT RESEARCH ABSTRACTS

Hawaii Orthopaedic Association

36th Annual Combined Orthopaedic Spring Symposium

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Prince Waikiki

Daniel Goldberg, MD

John A. Burns School of Medicine/Hawaii Residency Program - Orthopaedic Residency

**UTILITY OF RADIAL SEQUENCE IMAGING IN THE DIAGNOSIS OF CAM TYPE
IMPINGEMENT**

The current gold standard for the identification of CAM type lesions is dynamic 6 view intra-operative fluoroscopy. While this modality has been shown to be highly accurate in the diagnosis of CAM lesions it is invasive and does not allow for pre-operative planning prior to the operation. The aim of our study is to compare the accuracy of Frog-Leg lateral x-ray, Standard Sequence MRI and Radial sequence MRI to the gold standard of Intra-operative fluoroscopy in the diagnosis of CAM lesions.

Hannah Imlay, MD

Tripler Army Medical Center Orthopedic Residency

ULNAR SHORTENING OSTEOTOMY IS AN EFFECTIVE TREATMENT FOR ULNAR IMPACTION SYNDROME IN A HIGH DEMAND ATHLETIC POPULATION

Introduction: Ulnar shortening osteotomy (USO) continues to be one of the gold standard operative treatment for ulnocarpal impaction, broadly characterized by ulnar-sided wrist pain. While various clinical indications and situations exist for the utilization of an USO, the overall goal of the procedure is to not only resolve the underlying pathology, but moreover to return the patient to prior levels of activity. While literature suggests excellent functional outcomes after surgical intervention with low complication rates, few studies have been conducted to analyze the rate return to sport or active military service. Therefore, this retrospective study aims to review return-to-duty rates among adult, active-duty military members who underwent USO in an effort to improve management and minimize delayed return to work, sport or activity.

Methods: Retrospective review of patients at a single institutional from 2013 to 2020 who underwent ulnar shortening osteotomy with or without wrist arthroscopy with associated procedures by multiple fellowship trained Orthopedic Hand surgeons. Exclusions criteria were those undergoing ulnar shortening osteotomy secondary to trauma or malunions related to trauma. Inclusion criteria were age 18 to 65, those on active duty, greater than 1 year follow up and documentation of return to duty and with what restrictions if any. Return to duty rates to include those on limited activities or restrictions based on the procedures were noted as well as any complications.

Results: There was a total of 19 Active-duty personnel. 17 males and 2 females with an average of 33 years of age. This included 8 Soldiers, 4 Airman, 3 Sailors and 4 Marines. 17/18 (94%) were able to return to Duty. 2/8 (25%) were on a permanent profile due to the surgery. 1/18 (5.6%) underwent medical evaluation board (MEB) resulting in their discharge from active military service. There were 6 total complications, 3 of which required revision surgery (2 for non-union and 1 for delayed union and 1 for hardware irritation). All who underwent revision surgery were able to return to full active duty.

Conclusions: Our study demonstrates that 94% were able to return to duty and perform all tasks to include their service specific physical requirements (push-ups, pull-up, ammo can carry etc). Despite 3/19 requiring revision surgery all were able to eventually return to duty and all eventually went on to union. This is a safe, reliable surgery which is successful at getting military personnel to bear weight and return to high demand athletic careers.

Tatebe, M.; Shinohara T.; Okui, N.; Yamamoto M.; Hirata H.; Imaeda T. Clinical, Radiographic, and Arthroscopic Outcomes After Ulnar Shortening Osteotomy: A Long- Terms Follow- Up Study. *Journal of Hand Surgery*. 2012;37A: 2468-2474.

Ownes, J.; Compton J.; Day M.; Glass N.; Lawler E. Noneunion Rates Amount Ulnar- Shortening Osteotomy for Ulnar Impaction Syndrome: A Systematic Review. *J Hand Surg Am*. 2019;44(7):612.e1-e12

Thomas Kane, IV, MD

John A. Burns School of Medicine/Hawaii Residency Program - Orthopaedic Residency

Simultaneous Bilateral Versus Unilateral Total Joint Arthroplasty Outcomes in Octogenarians

Thomas Jay Keola Kane IV, MD¹

Samantha Andrews, PhD, ATC^{1,2}

Paige Casil, BA²

Anna Gragas, BA²

Cass Nakasone, MD^{1,2}

¹University of Hawai'i, Department of Surgery, ²Straub Medical Center, Bone and Joint Center

Introduction:

As advances in medicine have increased life expectancy, more octogenarians are undergoing total hip and knee arthroplasty than ever before. Elderly patients with bilateral end-stage hip or knee arthritis want to know if it is safe to have bilateral surgery under a single anesthetic, to restore their quality of life as quickly as possible. Yet, simultaneous bilateral total joint arthroplasty (SBTJA) in octogenarians remains controversial.

The purpose of this study was to compare 90-day outcomes of simultaneous bilateral TJA versus unilateral TJA in patients ≥ 80 years old.

Methods:

We conducted a retrospective cohort study that included all patients ≥ 80 years old who underwent elective primary TJA performed by a single surgeon in a high-volume arthroplasty center between February 2014 and July 2021 as simultaneous or unilateral procedures. Patients were excluded if the procedure was performed for any reason other than degenerative joint disease or if hardware was removed at the time of surgery.

Outcome variables assessed in this study were hospital length of stay (LOS), blood transfusion rate, discharge disposition, and 90-day adverse events (i.e., emergency department visits, unplanned readmissions, complications, and mortality). Any patients who had an ER visit or readmission in the first 90 days after surgery were identified, and a detailed chart review was performed. Descriptive statistics were performed for all patients, and then separated by unilateral/bilateral procedures.

Results:

Of the 241 patients included in this study, 101 underwent unilateral TKA, 92 underwent unilateral THA, 40 underwent simultaneous bilateral TKA, and 8 underwent simultaneous bilateral THA. Overall, the patients included in this study had an average age of 83.4 years old, a BMI of 26.1, and 66.5% were female. There were no significant differences in age, gender, and BMI among unilateral TJA and simultaneous BTJA groups.

The simultaneous bilateral TJA cohort had a higher rate of postoperative blood transfusions (20.8% versus 3.6%) and a greater proportion of patients discharged to a rehabilitation facility rather than home (95.8% versus 39.9%).

There was no major difference in 90-day ED visit rates between simultaneous bilateral TJA (2/48, 4.2%) and unilateral TJA (5/193, 2.6%) cohorts.

In addition, 90-day hospital readmission rates were similar between simultaneous bilateral and unilateral TJA cohorts (4.2% versus 3.6%).

No patients died within 90 days postoperatively.

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Conclusion:

Although octogenarians who underwent simultaneous bilateral TJA were more likely to be discharged to a rehabilitation facility and required significantly more perioperative transfusions compared to those undergoing unilateral TJA, the odds of a 90-day major complication and readmission were similar between groups.

Simultaneous bilateral total hip and knee arthroplasty can be a safe and effective option for octogenarians. Complications and mortality are not higher for SBTJA compared to UTJA in this population.

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Gordon Lee, MD

John A. Burns School of Medicine/Hawaii Residency Program - Orthopaedic Residency

SHOULDER ARTHRODESIS: A SYSTEM REVIEW AND META-ANALYSIS

Shoulder arthrodesis is an often mentioned but understudied treatment for painful/functional shoulder problems resistant to other therapies. Through the years many various constructs and techniques have been utilized to varying levels of success. Many observational studies exist but there are no recent systematic reviews and meta-analysis. We performed a systematic review to look at outcomes and union rates after shoulder arthrodesis.

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John Livingstone, MD

John A. Burns School of Medicine/Hawaii Residency Program - Orthopaedic Residency

Journal of Hand Surgery

**OPTIMIZING THE ORIENTATION OF A SUTURE BUTTON TO STABILIZE THE
DISTAL RADIOULNAR JOINT IN A BONE MODEL**

--Manuscript Draft--

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Abstract:	<p>Purpose When left untreated, distal radioulnar joint (DRUJ) instability leads to prolonged wrist pain and weakness during pronosupination. Current treatment options are technically demanding, which has resulted in mixed outcomes. This study evaluates the potential of using a suture button to stabilize the DRUJ and find the optimal positioning of the suture button.</p> <p>Methods A synthetic bone model was used to compare the range of motion, dislocation events, dorsal translation, volar translation, and gapping between a straight across or obliquely placed suture button in six different configurations. The translation and gapping at three positions (60° supination, neutral, 60° pronation) were evaluated.</p> <p>Results Full range of motion (ROM) was achieved in all configurations except for suture buttons placed in 60° pronation. Obliquely placed suture buttons led to more dislocations than straight across suture buttons. The oblique 60° supination configuration had the lowest average dorsal translation ($p < 0.001$), but also the greatest total volar translation and total gapping. In configurations that achieved full ROM, the straight across 60° supination configuration obtained the least total volar translation, total gapping, and force to achieve full ROM.</p> <p>Conclusions In this model, suture buttons allowed full ROM and limited pathological wrist movement in several configurations, indicating that suture buttons have the potential to be used as a treatment option for stabilization of the DRUJ. The optimal positioning of a suture button is likely in the straight across 60° supinated configuration, as it provides an adequate balance of ROM and stability in comparison to the other suture button configurations.</p> <p>Clinical Relevance Additional treatment options for the stabilization of the DRUJ is needed. Suture buttons may be of use.</p>

Andrew Lopez, MD

Tripler Army Medical Center Orthopedic Residency

CORRELATION OF STRESS RADIOGRAPHS TO INJURIES ASSOCIATED WITH LATERAL ANKLE INSTABILITY

INTRODUCTION: Ankle instability is one of the most common sports related injuries and a large percentage of patients report residual symptoms after recovery from the initial injury to their lateral ligaments. Stress radiographs have demonstrated superior efficacy in the evaluation of ankle instability and proven useful in guiding treatment. The purpose of this study is to determine if there is a degree of instability evidenced by stress radiographs that is associated with pathology concomitant with ankle ligamentous instability.

METHODS: A retrospective review of 87 consecutive patients aged 18-74 who had stress radiographs performed at a single institution between 2014 and 2020 was performed. These manual radiographic stress views were then correlated with MRI and operative findings. The degree of widening on the talar tilt stress radiograph, millimeters of anterior translation on the anterior drawer stress radiograph, presence of an OLT, presence of a peroneal tendon tear or tendonitis, and documentation of operative management of an OLT or peroneal tendon were recorded and statistical analysis was performed.

RESULTS: While there were no statistical associations based upon the anterior drawer translation, the talar tilt angle was associated with several outcomes. A statistically significant association was determined for the mean and median stress radiographic values and the presence of peroneal tendonitis or peroneal tendon tears. Patients with the diagnosis of peroneal tendonitis had a larger talar tilt on average than patients without peroneal tendonitis (mean=11.8° vs. 7.5°). Similarly, patients with peroneal tears also had larger tilt angles on average than those without tears (mean=13.8° vs. 8.2°). A talar tilt test of < 10° did demonstrate a NPV of 98% when evaluating the presence of a peroneal tendon tear. Additionally, a significant inverse relationship was found between the presence of an osteochondral defect and increasing degrees of instability. Patients with an OLT had a median talar tilt of 6° while patients without an OLT had a median talar tilt of 9°. This inverse relationship remained significant for larger OLTs and for OLTs that underwent operative management.

DISCUSSION and CONCLUSION: Ankle instability remains a complex diagnosis with known associated conditions. Although valuable in the clinical evaluation of ankle instability, stress radiographs are not an independent predictor of conditions associated with ankle instability. While there was an association between larger degrees of instability and the presence of peroneal pathology, there was not a degree of instability that was predictive of additional pathology. An inverse relationship between the presence of OLTs and higher degrees of instability was also demonstrated. While stress radiographs may assist the surgeon in defining mechanical instability, this imaging study alone cannot be utilized to rule out or rule in concomitant pathology that is associated with ankle instability.

Key Words: Ankle stress radiographs; Lateral ankle instability; Osteochondral defect; Arthroscopy; Peroneal tendinopathy

Core Tip: Ankle Stress Radiographs were predictive of intraoperative findings. Specifically, they may assist the surgeon in clinical decision making regarding osteochondral lesions of the talus and peroneal tendon pathology.

Anthony “AJ” Magee, MD

Tripler Army Medical Center Orthopedic Residency

PRIMARY REPAIR OF A DISTAL BICEPS TENDON RUPTURE HAS A HIGH COMPLICATION RATE WITH AN OVERALL SUCCESSFUL RETURN TO FUNCTION

Introduction: Distal biceps tendon ruptures are becoming increasingly common occurring most commonly in the dominant arm of men between 30 and 50 years of age.^{1,2} The incidence of distal biceps tendon ruptures has steadily increased, with a recently estimated rate of 2.55 per 100,000 patient-years.^{3,4} Surgery is the gold standard treatment for optimal clinical and functional outcomes. Although improved strength has been shown after operative repair, there is no evidence available regarding military personnel return to active duty. The purpose of this study was to determine the rate of return to duty and rate of those on profile directly attributed to injury following distal biceps repair.

Methods: Retrospective review at a single institution from 2010-2020 for a consecutive series of primary distal biceps repairs performed by multiple orthopedic surgeons on active duty personnel. Exclusion criteria included revision distal biceps repair or known chronic tears >6 weeks. Inclusions criteria was : age 18-65, those on active duty, greater than 1 year follow up and documentation of return to duty and with what restrictions if any. Return to duty and those on profiles or limited duty were investigated. All complications and revisions were reviewed.

Results: 62 Active duty personnel identified: 37 Soldiers, 11 Sailors, 8 Marines and 6 Airman. There were 61 males and 1 female. 55/62 (89%) were able to return to duty. One underwent Medical Evaluation Board (MEB) for this injury. 1 retired, 1 separated for other causes and 4 were loss to long term follow up before return to duty could be determined. There were only 2/62 (3%) who were not able to return to full active duty and both were in the Army. We had a total of 20 complications (32.2%). 14 Neuropraxias, most commonly the LABC, of which 13/14 resolved spontaneously. 8/62 (12.9%) required revision surgery due to re-rupture and all but 1 were able to return to full active duty.

Conclusions: Distal biceps ruptures are relatively rare, however commonly encountered in the military population. There have been no studies looking specifically at return to duty, what level of duty and how this impacts careers. Our study demonstrates that 89% with primary repair are able to return to duty with no restrictions. There is a 32% complication rate with 13% re-rupture requiring revision surgery; however, despite revision repair all but 1 were able to continue on active duty.

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LOWER TRAPEZIUS TENDON TRANSFER FOR THE TREATMENT OF BRACHIAL PLEXOPATHIES

Abstract

Introduction: Traumatic injuries are the most common cause of brachial plexus lesions in children and adults. Lesions most commonly result from closed traction injuries, with many of those occurring during vehicular accidents. Whereas, Parsonage Turner Syndrome is a rare cause of brachial plexopathy that can lead to dysfunction similar to that caused by traumatic injuries. Loss of Suprascapular Nerve (SSN) function is common in brachial plexus injuries leading to weakness of the supraspinatus in shoulder abduction and the infraspinatus in external shoulder rotation. The treatment of brachial plexopathies varies depending on the etiology, pathophysiology, severity, and duration.

Case Series: In this paper, we report cases of partial brachial plexus palsy in a 32-year-old active duty male status post motorcycle accident and a 27-year-old active duty male diagnosed with Parsonage-Turner syndrome, both repaired by arthroscopically assisted lower trapezius transfer using Achilles tendon allograft.

Conclusion: Brachial plexopathies, with complete loss of SSN function can be treated with an arthroscopically assisted lower trapezius transfer. This procedure can provide significant improvement in strength, active range of motion (ROM), and functionality.

Maggie Scribner, MD

Tripler Army Medical Center Orthopedic Residency

**FIREWORKS-RELATED INJURIES PRESENTING TO US EMERGENCY ROOMS – AN
EPIDEMIOLOGICAL STUDY**

INTRODUCTION

Recreational use of fireworks is known risk factor for bodily injuries. Over the past 20 years, total consumption of fireworks in the United States has risen from 152 million to 405 million pounds per year. Driving the increase has been retail consumption; in 2020, 95% of fireworks were purchased by individual consumers as compared to 67% in 2000. This consumption leads to increasing numbers of patients presenting to the hospital with fireworks-related injuries. We sought to further clarify the incidence and characteristics of fireworks injuries in order to better educate physicians treating this patient population.

METHODS

The National Electronic Injury Surveillance System (NEISS) database was queried for firework-related injuries from 2010-2019. Cases were examined and data including age of patient, date of injury, type of injury, location of injury, diagnosis, and hospital disposition were extracted.

RESULTS

A total of 2,708 injuries were recorded, leading to a national estimate of 103,861 fireworks-related injuries over the 10 year period of 2010-2019 (95% CI 83,669-124,054). The most common type of injury was thermal burns (n=1,366, 50.4%) followed by contusions/abrasions (n=299, 11.0%), lacerations (n=229, 8.5%), and fractures (n=117, 4.3%). The hand was the most affected part of the body (n=598, 22.1%), with eye (n=410, 15.1%), finger (n=374, 13.8%), and facial (n=291, 10.7%) injuries being less common. Admission rates were low, with only 307 (11.3%) patients requiring hospital admission. Males comprised 69% of patients. Most patients were children or adolescents younger than 18 years of age (n=1,278, 47.2%), and the average patient age was 22 years old. The vast majority of firework injuries occurred in the month of July (n=1880, 69.4%), and most often on weekend days (Saturday n=454, 16.8% and Sunday n=498, 18.4%).

DISCUSSION and CONCLUSION

Injuries from fireworks disproportionately affect young adult males, and the hand is the single most injured region of the body. Admission rates are low, however risk factors for admission include male sex, age between 18-30 years, and presence of a finger injury. Fireworks injuries in the United States appear to be concentrated in time of the year, age group, and gender.

Alicia Unangst, MD

Tripler Army Medical Center Orthopedic Residency

SURGICAL INTERVENTION FOR LATERAL EPICONDYLITIS IS EFFECTIVE AFTER FAILED CONSERVATIVE THERAPY

Introduction: Lateral epicondylitis is a common overuse injury of the elbow, affecting an estimated 1 to 4% of the adult population, and often results in elbow pain from inflammation and tendinosis of the extensor carpi radialis brevis (ECRB) [1-2] . In general, isolated lateral epicondylitis successfully improves with primary non- operative treatment through utilization of NSAIDs, activity modification, physical therapy and bracing [3] . If no resolution is achieved through conservative treatment, surgical intervention may be indicated after failed trial of non-operative management over a 6- to 12-month period. The purpose of this retrospective study was to review return-to-duty rates among adult, active-duty military members who underwent operative debridement for isolated lateral epicondylitis in an effort to compare functional outcomes to those observed in the general population and ultimately minimize delayed return to work, sport or activity.

Methods: Retrospective review at a single institutional from 2010-2020 with multiple fellowship trained Orthopedic Hand surgeons who underwent lateral epicondyle debridement for failed conservative management of lateral epicondylitis. Inclusion criteria were: age greater than 18, those on active duty, and greater than 1 year follow up with final disposition documented. Return to duty rates to include those on limited activities or restrictions based on the procedures were noted as well as any complications ..

Results: There was a total of 22 Active duty personnel. 22 males and 2 females with an average of 41 years of age. This included 15 Soldiers, 1 Airman, 4 Sailors, 4 Marines and 1 Coast Guardman . All 22 were able to return to Duty. After surgery two were placed on a permanent profiles. No patients underwent medical discharge from active military service. There was only 1 complication.....

Conclusions: Lateral epicondylitis is a common tendinopathy which normally can be treated conservatively. Due to our high demand patient population, in some cases conservative management does not alleviate symptoms and surgical intervention has been undertaken. Despite prior evidence against surgical intervention, in this cohort that had specifically previously failed lengthy non-operative treatment, our study demonstrated that 100% were able to return to active duty and most without restrictions. This is a safe, reliable surgery which is successful at getting military personnel back to duty.

Connor Venrick, MD

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SCLEROSTIN EXPRESSION IN GIANT CELL TUMOR OF BONE AND CORRELATION TO PATIENT FACTORS

Authors: Connor B. Venrick, MD; Sean P. Kelly, MD; Dipak B. Ramkumar, MD; Zachary S. Peacock, MD; Erik T. Newman, MD; Santiago A. Lozano-Calderon, MD; Kevin A. Raskin, MD; Ivan Chebib, MD; Joseph H. Schwab, MD.

INTRODUCTION: Giant cell tumor of bone (GCTB) is a destructive lesion with a high potential for recurrence. RANK-Ligand targeted therapy (denosumab) has provided promising, yet mixed results in GCTB. Unfortunately, cessation of therapy frequently results in a high rate of recurrence and/or disease progression. Sclerostin (SOST) has been purported to act as an osteoblast inhibitor and anti-SOST therapeutic agents have been FDA approved for the treatment of osteoporosis. In this study we sought to identify the presence of SOST in GCTB and identify correlative patient factors for potential future therapeutic and diagnostic uses.

METHODS: A tissue micro array (TMA) was used for all patients at a single institution undergoing surgery for primary GCTB of the extremity between 1993-2008 with a minimum of 6 months follow-up. SOST antibody staining was evaluated by a bone and soft tissue pathologist blinded to both diagnosis and patient demographics. Primary outcomes included the presence of staining of the stromal cells and giant cells from GCTB specimens. Secondary outcomes included correlation of patient and tumor specific predictor variables and correlation with SOST expression. Statistical analysis was performed using non-parametric tests of association.

RESULTS: SOST antibody staining of any type was present in 47 of 48 cases (97.9%). Positivity in the stromal cells was present in 39 of 48 cases (81.3%) and was associated with clinical/radiographic aggressiveness, symptomatic lesions, previous surgical treatment, and age at time of surgery. Positivity in giant cells was present in 41 of 48 cases (85.41%) and was associated with aggressiveness on histology only.

DISCUSSION/CONCLUSION: We found that, overall, GCTB demonstrates a high level of SOST staining. The expression of SOST in the mononuclear stromal cells is not unexpected given the proposed pathway of GCTB development and the role of SOST in bone remodeling. The unregulated expression of RANKL in GCTB stromal cells and its effect on bone metabolism could happen in isolation or, more likely, with additional factors such as SOST. Our correlation to clinical aggressiveness and presence of clinical symptoms with SOST staining in stromal cells could suggest a contribution of SOST to osteolysis in these tumors. The presence of giant cells staining for sclerostin and the correlation with histologic aggressiveness may suggest SOST as a marker of clinically aggressive GCTB. This would most likely represent an induction of the giant cells as opposed to a tumor driver given previous literature delineating the reactive nature of the giant cells. SOST has been expressed in both malignant and benign bone-forming tumors and cartilaginous tumors (enchondroma, osteochondroma, and chondrosarcoma). While the role of SOST in healthy bone metabolism has been well studied, SOST expression in tumorigenesis is less well known. Further research is warranted to define the role of sclerostin as both a prognostic factor and potential therapeutic target in GCTB

Jeffrey Wake, MD

Tripler Army Medical Center Orthopedic Residency

SIGNIFICANT DIFFERENCES IN GLENOID BONE LOSS MEASUREMENT

ABSTRACT

Purpose: The purpose of this study is to determine the accuracy and difference between 3 common methods of measuring glenoid bone loss, and its application to previously published studies regarding bony stabilization procedures.

Methods: A list of patients with anterior bony glenoid defects was created by searching the electronic medical records. Three surgeons reviewed each patient's advanced imaging (CT, 3D CT, or MRI), and glenoid bone loss was measured using three different methods of measurement: 1) Linear Measurement Percentile (LMP), 2) Area Measurement Percentile (AMP), and 3) Circle-Line Method (CLM). The intraclass correlation coefficients (ICC) between reviewers and mathematical differences between measurement techniques were calculated.

Results: The images of one-hundred-twenty-five patients with anterior glenoid bone loss were measured. For all image sequences, the ICC was greatest with the AMP (0.738) and CT with 3D reconstruction (0.735). Of the entire sample, the average bone loss was LMP 21.3% (5.6%-43.5%), CLM 15.7% (1.6%-42.2%), and AMP 16.5% (2.3%-40.3%). On average, the difference between the LMP and AMP was 5.57%. When comparing the AMP and LMP, the greatest difference in measurement was 5.8%, and this occurred at an LMP of 19.1%, which is an AMP of 13.2%.

Conclusion: When measuring anterior glenoid bone loss, the CT with 3D reconstruction and AMP method have the greatest interobserver reliability. Furthermore, the greatest difference between LMP and AMP occurs at an LMP between 18.3% and 20.0% (AMP between 12.4% - 14.2%), and the difference is approximately 5%.

Collin Walsh, MD

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PERCUTANEOUS CEMENTOPLASTY THROUGH CANNULATED SCREW REINFORCEMENT FOR PERIARTICULAR METASTATIC BONE LESIONS – A REPORT OF TWO CASES

INTRODUCTION

Bone is one of the most common sites for tumor metastasis. Up to 50% of cancer patients will develop bony metastasis. Bony metastases are not only associated with shortened survival and increased healthcare costs, but also with serious skeletal-related events including pathologic fractures, bone pain, and needing radiation or surgery. Such lesions are typically treated non-surgically with pain medication, bisphosphonates, and radiation, however, refractory or recurrent lesions may require surgery for pain relief and skeletal stability. Percutaneous cementoplasty has emerged as a safe and effective surgical treatment for pain relief and osseous stability, especially with lesions in the bony pelvis and weight-bearing portions of long bones. Our study's purpose was to demonstrate two cases in which percutaneous cementoplasty was implemented through and combined with cannulated screw reinforcement for periarticular bony metastasis.

METHODS

Patient 1 is a 75-year-old male with renal cell carcinoma status-post nephrectomy with a painful, isolated right supra-acetabular osteolytic lesion. He was initially treated with pain medication radiation, however his right groin pain progressively worsened after his last dose of radiation, making ambulation difficult. On exam, he demonstrated reproducible groin pain with palpation, antalgic gait, and loss of hip range of motion. Due to concerns for continued pain and wound breakdown in the setting of high dose radiation, we proceeded with percutaneous cementoplasty with fixation and ablation. Two cannulated screws were placed intraosseously from the iliac crest into the lesion. Interventional radiology completed a radiofrequency ablation through the lumen of one of the cannulated screws. Subsequently, a kyphoplasty needle was inserted through one of the cannulated screws, the balloon was inflated, and 20 mL of polymethylmethacrylate cement was injected into the lesion.

Patient 2 is a 75-year-old man with metastatic lung adenocarcinoma status-post lobectomy and left proximal fibular resection with postoperative chemoradiation. Two years after the fibular resection, the patient again developed pain about the lateral knee and was found to have recurrence with infiltration into the lateral tibial metaphysis. On exam, he demonstrated an antalgic gait, tenderness about the left knee with intact knee range of motion, and severe radiation skin burns. Due to concern for impending pathologic fracture, we proceeded with prophylactic fixation and cement augmentation. He underwent tibial nail fixation with proximal and distal interlocking screws. A cannulated interlocking screw was inserted proximally. Two additional percutaneous cannulated screws were placed into the lesion to support the tibial plateau. A kyphoplasty needle was inserted through the proximal interlocking cannulated screw, the balloon was inflated, and 5 mL of polymethylmethacrylate cement was injected.

RESULTS

Patient 1 had significant pain relief, was capable of ambulating 250 feet without assistive devices, and discharged to home on postoperative day 1. There were no complications intra- or post-operatively at 1-month follow-up. At 1 month, he was performing physical therapy to return back to golfing.

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Patient two had moderate postoperative pain and remained inpatient for 3 days to progress with physical therapy. He was able to ambulate over 100 feet and climb stairs with an assistive device. There were no complications intra- or post-operatively at 2-month follow-up. His pain was significantly improved and he was able to fully bear weight.

DISCUSSION and CONCLUSION

Percutaneous cementoplasty alone for bony metastasis has been well-documented as a safe and effective option for pain relief. Percutaneous cementoplasty in conjunction with fixation devices as well as ablation has emerged as a newer treatment modality for painful metastatic lesions in load-bearing regions of bone. Additional benefits include killing residual tumor and improving mechanical stability at critical bony articulations. Our results are consistent with previous reports of pain relief and functional outcomes after this procedure. These two cases serve to further demonstrate the efficacy and safety of this technique, as well as exhibiting the use of cannulated screws as conduits for ablation and extra-spinal kyphoplasty balloon inflation and cementation of bony lesions.

Connor Zale, MD

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SURGICAL PROPHYLAXIS WITH VANCOMYCIN FOR UNINSTRUMENTED SPINE SURGERIES: A META-ANALYSIS

Introduction:

Spine surgery infections are serious complications for patients and health systems. Vancomycin powder has increasing use for surgical prophylaxis against MSSA and MRSA during spine surgery. Previous studies have demonstrated that intrawound vancomycin powder significantly reduces the infection rate for instrumented spine surgery. Our study aims to compare the rate of surgical site infection (SSI) in uninstrumented spine surgery that used vancomycin powder against controls.

Methods:

A search was performed on PUBMED/MEDLINE, Cochrane Database and Embase on 10 March 2021. Search keywords were “vancomycin, spine surgery, uninstrumented and spinal surgery”. Instrumented cases were excluded. Type of surgery, type of treatment and incidence of infection among experimental or control were recorded.

Results:

219 articles were obtained from a literature search. 16 studies met inclusion criteria. 6/16 studies that reported on the infection rate using vancomycin were obtained.

There were 1263 control cases with 12 cases of infection (0.95% overall). There were 1529 cases that received prophylactic vancomycin with 10 cases of infection (0.65%). There was no significant difference in infections between cases that received vancomycin compared to control. On subgroup analysis, studies that had a high rate of infection (Strom and Cannon) had a significant difference on the rate of infection with the use of vancomycin compared to control.

Discussion and Conclusion:

The current study was unable to conclude that vancomycin decreased the rate of surgical site infections. Vancomycin use may be useful in populations that have a high rate of infection. Limitations in this study include the small number of studies that report on the use of vancomycin on uninstrumented spine surgery.

Medical Student Research Abstracts



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Medical Student Research Abstracts

Dylan Combs, MS3

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REDUCING TRANSFUSION IN HIP ARTHROPLASTY: TRANEXAMIC ACID DIMINISHES INFLUENCE OF ANESTHESIA ADMINISTERED

Abstract

Background: The risk of transfusion following total hip arthroplasty (THA) continues to be problematic. The best choice of anesthesia (spinal vs general) and impact of tranexamic acid (TXA) use in reducing transfusions following surgery remain unclear. Therefore, the purpose of this study was to compare rates of blood transfusion following THA via the anterior approach using three different anesthesia protocols with and without TXA.

Methods and Materials: This retrospective review included 1399 patients (1659 hips), receiving spinal anesthesia (SA) without (248 patients) and with TXA (77 patients), general anesthesia (GA) without (151 patients) and with TXA (171) and general anesthesia with paravertebral block (GA-PVB) and TXA (748 patients). All procedures were performed by a single surgeon. Chi-Squared tests and logistic regression were performed to evaluate the rate and risks of transfusion between groups.

Results: Without TXA, transfusion rate with GA (24.5%) was higher than SA (13.4%) ($p=0.004$). With TXA, there was no difference in transfusion rates between GA (4.6%), SA (3.9%) or GA-PVB (4.0%). The multivariable regression revealed bilateral (Odds Ratio (OR): 6.473; $p<0.001$), female (OR: 2.046; $p=0.004$), age (OR: 1.028; $p=0.012$) and pre-operative anemia (OR: 2.604; $p<0.001$) as increasing the risk of transfusion while use of TXA (OR: 0.168; $p<0.001$) significantly reduced transfusion risk.

Conclusion: The use of TXA during THA via the anterior approach removed the influence of anesthesia type regarding risk of transfusion. The use of TXA may reverse presumed disadvantages of GA alone, potentially facilitating rapid discharge following surgery.

Keywords: Regional Nerve Block; Total Hip Replacement; Blood Management; Bilateral

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QUADRATUS LUMBORUM TYPE 3 BLOCK VS PARAVERTEBRAL NERVE BLOCK EVALUATION IN ANTERIOR APPROACH TOTAL HIP ARTHROPLASTY

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Background: This is a prospective single blinded evaluative study comparing the opioid consumption and motor weakness for patients undergoing total hip arthroplasty (THA) with either a Quadratus Lumborum Type 3 Nerve Block (QLB) or a Paravertebral Nerve Block (PVB).

Methods: A consecutive cohort of patients undergoing elective direct anterior approach (DAA) THA by a single high volume surgeon were randomly assigned an anesthesiologist by the charge anesthesiologist. One anesthesiologist performed all QLBs and the other six anesthesiologists performed the PVBs. Pertinent data to include quality surveys from blinded patients, floor nurses, and physical therapists were prospectively collected and recovered from the electronic medical record.

Results: Overall, 160 patients were included in the study divided equally between the QLB and PVB groups. The QLB group had a statistically higher perioperative narcotic use, greater intra-operative peak systolic blood pressure and respiratory rate, and higher incidence of post-operative lower extremity muscle weakness. There were no statistical group differences for floor narcotic use, post-operative hemoglobin levels or hospital length of stay.

Conclusion: The QLB required greater intraoperative narcotic use and resulted in greater postoperative weakness, however, provided nearly equal post-operative pain management and did not adversely affect rapid discharge success. Because of this the greater narcotic requirements and higher rates of postoperative weakness, the QLB appears to be a less favorable alternative for pain management in patients undergoing DAA THA, but is an acceptable option in cases where a PVB may be less likely to succeed.

Makoa Mau, MS2

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**COMPARISON OF EARLY FAILURES AND PATIENT REPORTED OUTCOMES
BETWEEN PRESS-FIT AND CEMENTED TKA**

Authors: Makoa Mau, BS; Charissa Tan, BS; Kyle K Obana, BA; Brent Shimoda, BA; Samantha N Andrews, PhD, ATC; Cass Nakasone, MD

INTRODUCTION: Although cemented implants have been the gold standard in total knee arthroplasty (TKA) for the past three decades, shifts in younger patients requiring TKA have raised concerns for decreased integrity at the cement-bone interface. Press-fit implants have been introduced to minimize the cement-associated risk for loosening. However, press-fit implants have not demonstrated lower rates of early failures. The purpose of this study was to evaluate patient reported outcomes and rates of early failure (<1 year) between press-fit and cemented TKA.

METHODS: A consecutive cohort of 129 cemented and 95 press-fit TKA patients were prospectively evaluated. Pre-operative patient demographics were collected. Knee Injury and Osteoarthritis Outcome Score for Joint Replacement (KOOS JR), Patient-Reported Outcomes Measurement Information System (PROMIS) Global Physical Health (GPH) and Global Mental Health (GMH) and satisfaction (very satisfied, satisfied, unsatisfied) were collected pre-operatively and post-TKA at six weeks, six months, and one-year. Revisions, manipulation under anesthesia (MUA), and other complications were evaluated with a minimum one-year follow-up.

RESULTS: There were no differences between groups regarding KOOS JR, PROMIS GPH, PROMIS GMH, or satisfaction throughout the year following surgery. At one-year, 80.6% and 70.9% of patients reported “very satisfied” and 12.9% and 12.6% reported “satisfied” in the cemented and press-fit groups, respectively. There were no revisions. The rate of MUA was similar for cemented (6.7%) and press-fit (10.4%) groups. There were no differences in complications. There were four deep vein thromboses (2.2%), one infection (0.6%) and one pulmonary embolism (0.8%) in the cemented group, and one fracture (0.7%) in the press-fit group.

DISCUSSION AND CONCLUSION: Without differences in clinical or patient reported outcomes between cemented and press-fit implants, these results would suggest both implant designs are sufficient for TKA. Furthermore, similarities in complications between cemented and press-fit groups support previous research on the latest generation of press-fit prosthesis.

Landon Morikawa, MS2

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IS BILATERAL TOTAL HIP REPLACEMENT SAFE IN OLDER PATIENTS?

Background: Despite the potential benefits of bilateral total hip arthroplasty (BTHA), it remains unclear if the procedure is safe for elderly patients. The purpose of this study was to compare early post-operative complications between unilateral THA and BTHA performed in patients younger and older than 70.

Methods: Prospective data was collected for 315 patients who had undergone THA (≤ 70 , N=143; >70 : N=103) or single-stage BTHA (≤ 70 : N=46; >70 : N=23) by a single, fellowship trained surgeon. Variables of interest included transfusion rate, length of stay, pre- and six-week post-THA Hip Disability and Osteoarthritis Outcome Score (HOOS JR), and 90-day complications and readmissions.

Results: Compared to THA >70 patients, BTHA >70 patients remained at the hospital longer (0.9 days vs 2.2 days, respectively) and were less likely to be discharged directly home (85% vs 74%, respectively). Transfusion requirement was not significantly different between BTHA >70 (13%) and BTHA ≤ 70 (4.3%). The complication rate in BTHA >70 (4.3%) was similar to that of THA >70 (4.9%) and BTHA ≤ 70 (2.2%). The lone readmission in the BTHA >70 group was due to a component dislocation requiring revision but no cases of pulmonary embolism or deep vein thrombosis were reported. There were no differences in pre- or post-THA satisfaction or HOOS JR scores.

Conclusion: Although BTHA >70 patients were most likely to require transfusion, this cohort demonstrated comparable complication rates and patient reported outcomes as THA >70 and BTHA ≤ 70 patients. These data suggest BTHA may be a reasonably safe treatment option for patients >70 with symptomatic bilateral hip osteoarthritis.

Keywords: Total hip arthroplasty, elderly, bilateral, single-staged, simultaneous

Ryan Nguyen, MS3

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RISK STRATIFICATION FOR SAME DAY DISCHARGE: AN EVALUATION OF THREE COMORBIDITY INDICES

Abstract

Background: Same-day (SD) discharge following unicompartmental knee arthroplasty (UKA) may be difficult from a community hospital due to treatment of unselected patients with various comorbidities commonly present. Therefore, this study evaluated the efficacy of three comorbidity indices in predicting successful SD discharge from a community hospital.

Methods: Data for 97 UKA patients were retrospectively collected to determine the American Society of Anesthesiology (ASA) comorbidity classification, Charlson Comorbidity Index (CCI) and Outpatient Arthroplasty Risk Assessment (OARA). Multivariable logistic regression were performed to evaluate the influence of independent variables.

Results: Overall, 77 (79.4%) patients achieved SD discharge, with SD discharge failure best predicted by gender (Odds Ratio (OR): 4.45, 95% Confident Interval (CI): 1.307-15.147) and pre-operative use of an assisted walking device (OR: 3.633, CI: 1.218-10.832). The ASA, CCI, and OARA demonstrated similar positive predictive values but were not significant indicators of SD discharge success. While race was not different between SD and next day discharge groups, racial differences were present with OARA score >79 and >110, with White patients having a greater proportion in these classifications than Asian and Native Hawaiian/Pacific Island patients (p=0.046 and p=0.010, respectively).

Conclusion: While no evaluated comorbidity index well predicted the failure of SD discharge, the OARA score was the only measure different between races. Future research should evaluate comorbidities and risk stratification in more ethnically diverse patient populations.

Keywords: Race; Discharge; Comorbidity; Risk Stratification

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MEDICAL STUDENT AUTHORSHIP TRENDS: A 10-YEAR ANALYSIS OF FOUR MAJOR ORTHOPAEDIC JOURNALS

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Background: Among various metrics used to evaluate medical students, orthopaedic-specific research demonstrates objective scholarly productivity, as well as interest in and commitment to the specialty. Given the rising competitiveness of attaining orthopaedic residency and increasing emphasis placed on research, the purpose of this study was to analyze medical student publication trends in four major orthopaedic journals over a 10-year period.

Methods: Websites of four major orthopaedic journals (*American Journal of Sports Medicine*, *Clinical Orthopaedics and Related Research*, *Journal of Arthroplasty*, and *Journal of Bone and Joint Surgery*) were accessed to identify articles published between 2011-2020. Articles were reviewed for the year, number of authors, degree(s) of each author, sex of each author, country, and state (if USA). Non-clinical studies were defined as basic science, biomechanical, technique, and educational studies. Country and state were determined based on affiliation of the senior author. Medical students were defined as authors who held a bachelor's only degree. Editorials and letters to the editor were not included.

Results: 15740 articles were included in this review (13510 clinical, 2230 non-clinical) with 82837 authors. MDs constituted 64.5% of first authors. A total of 5242 medical students authored 3769 publications (21.49% overall). Out of the 3769 publications, 919 (24.38%) were first author publications. Linear regression demonstrated an increasing annual trend of first author ($p=0.001$) and any author ($p<0.001$) medical student publications from 2011-2020, with increases of 291% and 206%, respectively. Linear regression demonstrated an increasing annual trend of male ($p=0.001$) and female ($p=0.01$) first author medical student publications from 2011-2020, with increases of 271% and 346%, respectively. Overall publications did not significantly change over the study period.

Conclusion: First author and any author medical student research productivity increased over the last 10 years, despite a constant number in overall orthopaedic publications. Additionally, there is growing female medical student involvement in the literature, highlighting the importance and efficacy of advocacy, mentorship, and opportunities in improving diversity in orthopaedics and medicine.

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COMPARISON OF EARLY OUTCOMES COMPARING TWO TOTAL KNEE IMPLANT DESIGNS

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Objective: Numerous total knee arthroplasty (TKA) implants are currently available, incorporating variations in tibial base symmetry and radius of curvature of the femoral component. Traditional implants have symmetric tibial base plates and multi-radius femoral components (SYM-MR), while newer TKA systems incorporate asymmetric tibial baseplates and single-radius femoral components (ASY-SR). However, literature comparing outcomes between these implant designs are conflicting. This study analyzed short-term patient-reported and radiographic outcomes between a SYM-MR and an ASY-SR TKA system.

Methods: This prospective study evaluated a consecutive cohort of unilateral and bilateral TKA patients receiving the SYM-MR or ASY-SR TKA system between 2019 and 2021. Improvements in the Knee Society Function Score, maximum knee flexion and Knee Injury Osteoarthritis Outcome Survey, Joint Replacement (KOOS JR) were calculated from pre-operative to six-months post-operatively. Mechanical axis was measured at six-weeks post-TKA from standing hip-to-ankle radiographs, with neutral defined as $0^{\circ} \pm 3^{\circ}$ and negative values indicating varus alignment.

Conclusion: Overall, 71 patients (96 knees) and 54 patients (79 knees) were included in the ASY-SR and SYM-MR groups, respectively. Six-month and overall improvements in clinical and patient reported outcomes were similar between groups. Post-operative MA was also similar between groups, with 79.2% and 82.3% of SYM-MR and ASY-SR patients having neutral post-TKA MA. The results of the current study demonstrated similar post-operative outcomes between a more traditionally designed SYM-MR and more novel ASY-SR. This suggests early outcomes are not affected by implant design and surgeons should not be overly concerned that one type of design offers clear advantages or disadvantages.

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EXTENDED OFFSET FEMORAL STEM USE IN ANTERIOR APPROACH TOTAL HIP ARTHROPLASTY

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Objective: Dislocation remains a feared complication of total hip arthroplasty (THA). To decrease the risk of dislocation, extended offset (EO) femoral stems are used to increase muscle tension around the implant following posterior THA. The anterior approach is suggested to reduce dislocation risk and thus reduce the need for EO stems. The purpose of this study was to report on the overall usage rates of EO stems and compare radiographic outcomes and complications between EO stems and a matched standard offset cohort following anterior approach THA.

Methods: A retrospective review was performed on 1515 consecutive anterior approach THA to determine rates of EO use. The most recent 100 EO were included in the radiographic and complication analysis and were matched to 100 standard offset stems based on stem size, procedure (unilateral/bilateral), sex, body mass index and age. Data collection included patient demographics, pre- and post-operative radiographic outcomes, and complications within one year. Independent t-tests and Chi-squared analyses were performed to compare extended offset and standard offset groups.

Conclusion: EO was used in 8% of all THA. Rates for extended offset use in Asian, Caucasian, and NH/PI patients were 1.6%, 13.1%, and 7.1%, respectively. Despite rigorous matching procedures, the distribution of ethnicity was different between extended and standard offset groups: Caucasian (75% vs 43%), Asian (12% vs. 35%), NH/PI (9% vs. 13%), and other (4% vs. 9%) ($p < 0.001$). No fractures, dislocations, or revisions occurred within one-year after surgery, and one deep infection was noted in the standard offset group. Hip offset difference was greater than 6mm in 24% and 18% of extended and standard offsets ($p = 0.193$), respectively. Leg length difference was greater than 6mm in 19% and 15% of extended and standard offsets ($p = 0.223$), respectively. EO was utilized much less frequently in this single surgeon, anterior approach THA cohort compared to previously reported rates for posterior approach THA (8% versus 49%, respectively). Additionally, the lack of dislocations and the ability to achieve limb symmetry suggests the use of EO is required to restore hip symmetry and not to achieve stability with anterior approach THA. The difference in the proportion of extended offset use between ethnicities was likely due to racial differences in hip anatomy.

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OARA SCORE, ASA AND CCI ARE POOR AT PREDICTING FAILURE IN OUTPATIENT TOTAL JOINT ARTHROPLASTY

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OBJECTIVE: The Outpatient Arthroplasty Risk Assessment (OARA) score was designed to identify suitable patients for outpatient total joint arthroplasty (TJA). However, there is limited research on its validity or applicability to minority racial groups. This study compared the predictive values of the OARA score, the American Society of Anesthesiologist (ASA), and the Charlson Comorbidity Index (CCI) amongst three racial groups regarding outpatient discharge success following TJA.

METHODS: This retrospective review included 288 consecutive total knee and hip arthroplasty patients (368 joints) for which OARA scores, ASA, and CCI were calculated. Ethnicity was self-reported as Caucasian, Asian, or Native Hawaiian/Pacific Islander (NHPI). Positive (PPV) and negative predictive values (NPV) were calculated for outpatient discharge and home discharge for all three indices.

RESULTS: Compared to Caucasians and Asians, NHPI had the highest body mass index yet the youngest age. There were no significant differences for OARA scores (51.4-67.1), ASA ≥ 3 (58.1-72.0%) or CCI (2.0-2.6) amongst all three racial groups. There were no significant differences in the PPV for all three scoring systems amongst the racial groups for either unilateral (91.9-95.4%) or bilateral (65.3-73.7%) procedures. The NPV for all three indices were equally poor amongst all racial groups for both unilateral (7.8-12.3%) and bilateral (34.9-40.0%) cases.

CONCLUSION: While the OARA score, ASA, and CCI did not show any significant differences amongst the three racial groups, all three scoring systems were equally poor in predicting which patients would fail to achieve outpatient discharge following TJA. Furthermore, all three scoring systems showed acceptable and equivalent PPV for unilateral TJA only. There is clearly a need for better assessment tools to accurately predict which patients are poor candidates to attempt outpatient TJA.