



UC DAVIS HEALTH ORTHOPAEDIC SURGERY GRADUATE RESEARCH SYMPOSIUM

June 14, 2024

Medical Education Building

LH 1222

**UCDAVIS
HEALTH**

Department of
Orthopaedic Surgery



Department Values: Compassion | Integrity | Stewardship | Respect | Ethics | Innovation | Community

PROGRAM NOTES

Graduate Research Symposium Agenda

- 7:00 AM Continental Breakfast
- 7:30 AM Welcome remarks by R. Lor Randall, M.D., Department Chair
- 7:35 AM Introduction of Anu and Hari Reddi Lectureship Research Visiting Professor: J. Kent Leach, Ph.D.
- 7:40 AM Christopher H. Evans, Ph.D.
"The Clinical Translation of Orthopaedic Research: Arthritis Gene Therapy as an Example"
- 8:40 AM Introduction of 2023-2024 Dickenson Research Resident: J. Kent Leach, Ph.D.
- 8:45 AM RESIDENT: Michelle Scott, M.D. - *"Residual Dysplasia after Pavlik in Developmental Dysplasia of the Hip"*
- 9:00 AM Introduction of Elizabeth C. and Michael W. Chapman Lectureship Clinical Visiting Professor: R. Lor Randall, M.D.
- 9:05 AM MaCalus V. Hogan, M.D., M.B.A.
"My Path to Now: One Orthopods Unfinished Journey"
- 10:05 AM BREAK/DEPARTMENT PHOTO/RESIDENT CLASS PHOTOS (OUTSIDE MEDICAL EDUCATION BUILDING)
- 10:55 AM Introduction of PGY-5 Residents: Hai Le, M.D., M.P.H.
- 11:00 AM RESIDENT: Max Haffner, M.D. – *"Biomechanical Analysis of a Modified Triangular Osteosynthesis Technique for Treatment of Spinopelvic Dissociation"*
- 11:15 AM RESIDENT: William Ip, M.D. – *"Salvage of Failed Ankle Arthrodesis by Conversion to Total Ankle Arthroplasty- Intermediate Term Results"*
- 11:30 AM RESIDENT: Judas Kelley, M.D. – *"Clinical Differences Between Periprosthetic and Native Distal Femur Fractures"*
- 11:45 AM RESIDENT: Wyatt Vander Voort, M.D. – *"Unanticipated Emergency Department Encounters after Elective Lumbar Fusion Surgery"*
- 12:00 PM LUNCH
- 12:30 PM Introduction of PGY-2 Residents: Hai Le, M.D., M.P.H.
- 12:35 PM RESIDENT: Daniel Santana, M.D. – *"Flexor Pulley Characterization in Recreational Climbers: Bridging the Gap in Climbing Injury Research"*
- 12:45 PM RESIDENT: George Chavez, M.D. – *"Comparing Outcomes after Fracture Fixation versus Revision Arthroplasty for Vancouver B Periprosthetic Fractures of the Hip"*
- 12:55 PM RESIDENT: Kelsey Hideshima, M.D. – *"Evaluating the Radiologic Differences for Adjacent Segment Disease between Primary and Secondary Anterior Cervical Discectomy and Fusions"*
- 1:05 PM RESIDENT: Ijezie Ikwuezunma, M.D. – *"Failure rate in patients 50 to 65 years old receiving THA Vs ORIF for femoral neck fractures"*
- 1:15 PM RESIDENT: Sahej Randhawa, M.D. – *"Ascertaining Risk Factors for Displacement of Pediatric Diaphyseal Radius and Ulna Fractures after Closed Reduction and Casting"*
- 1:25 PM BREAK
- 1:40 PM LIPSCOMB ALUMNI PROGRAM: Building a Successful Academic Career in Orthopaedics
Moderator: Michelle James, M.D.
- 1:45 PM Augustine Saiz, M.D. - *"Building a Research Career as a Young Investigator – Opportunities and Challenges"*
- 2:05 PM Justin Lucas, M.D. – *"Establishing Credibility and Reputation as a Surgeon"*
- 2:25 PM Safdar Khan, M.D. – *"Establishing a National and International Presence"*
- 2:45 PM Discussion
- 3:00 PM Adjournment



WELCOME TO THE 2024 LIPSCOMB-CHAPMAN ALUMNI SOCIETY GRADUATE RESEARCH SYMPOSIUM

Welcome to the annual graduate research symposium. This event is a significant highlight of our academic calendar, providing an opportunity for both chief and junior residents to showcase their research work and gain feedback from their peers.

We are honored to welcome MaCalus V. Hogan, M.D., M.B.A., from the University of Pittsburgh Medical Center, and Christopher H. Evans, Ph.D., from Mayo Clinic as our visiting professors.

Additionally, we will feature an alumni program with presentations from guest speakers. It is always fascinating to listen to the experiences and insights of our program's graduates who have gone on to successful careers in their fields.

We appreciate your presence at this year's graduate research symposium. This day is a testament to the camaraderie and legacy of our department and a special occasion to honor the graduation of four outstanding residents into the ranks of orthopedic surgery.

Thank you for celebrating the excellence of our academic program and the dedication of our trainees, faculty, and staff with us.

Enjoy the symposium!



R. Lor Randall, M.D., F.A.C.S.

Professor & Chair

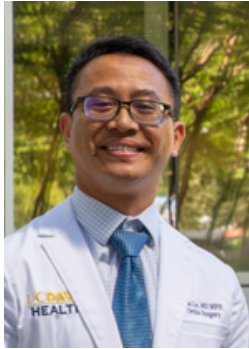
The David Linn Chair in Orthopaedic Surgery

Director, Sarcoma Advanced Research & Clinical Fellowships

RESIDENT PROGRAM LEADERSHIP



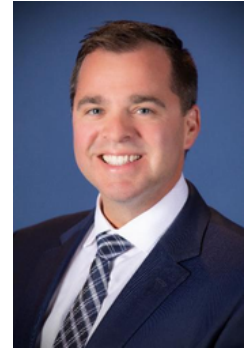
Michelle James, M.D.
Vice Chair of Education



Hai Le, M.D., M.P.H.
Resident Research Advisor



Gillian Soles, M.D.
Residency Program Director



Steven Thorpe, M.D.
Residency Selection Director

PROGRAM ADMINISTRATION

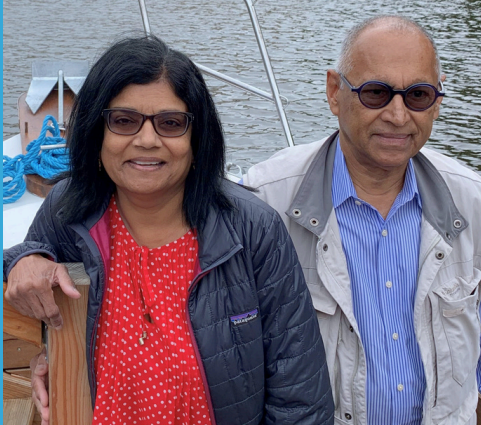


Margaret MacNitt
Education Programs Manager



Maggie Allen
Education Programs Coordinator

ANU AND A. HARI REDDI ORTHOPAEDIC LECTURESHIP



A. Hari Reddi, Ph.D. Emeritus Professor

Dr. A. Hari Reddi joined UC Davis in 1997 as the first Lawrence J. Ellison Endowed Chair of Musculoskeletal Biology. He has since been a prominent figure in the field of molecular and cellular biology, specifically focusing on bone regeneration for over four decades. Upon moving from the National Institutes of Health (NIH), he continued his career in Northern California and made a profound impact on our department through his scientific contributions, mentorship, and unwavering curiosity. His impressive career spans several prestigious positions, including the Virginia M. and William A. Percy Chair and Professor in Orthopaedic Surgery, Professor of Biological Chemistry, and Professor of Oncology at the Johns Hopkins University School of Medicine.

His groundbreaking research played an indispensable role in the identification of Bone Morphogenetic Proteins (BMPs) and their ability to stimulate new bone growth, laying the groundwork for the field of musculoskeletal molecular biology. Dr. Reddy's research has also contributed significantly to the advancement of tissue engineering, particularly in demonstrating how morphogens bound to an insoluble extracellular matrix scaffolding, collaborate to stimulate stem cells to form cartilage and bone. His research on BMPs and their role in bone and cartilage regeneration has earned him prestigious accolades, including the Marshall R. Urist Award of the Orthopaedic Research Society (ORS) and the Nicolas Andry Award of the Association of Bone and Joint Surgeons. In 2015, Dr. Reddi's remarkable contributions to the field led to his election as a Fellow of the National Academy of Inventors, one of the 14 fellows among UC Davis Honorees.

A. Hari Reddi Orthopaedic Research Lectureship was established to honor Dr. Reddi's longtime service to the UC Davis Health and the Department of Orthopaedic Surgery.

RESEARCH VISITING PROFESSOR



Christopher H. Evans, Ph.D., D.Sc.

John and Posy Krehbiel Professor in Orthopaedics
Professor of Physical Medicine & Rehabilitation and Molecular
Medicine, Mayo Clinic

Presentation Title: *“The Clinical Translation of Orthopaedic Research:
Arthritis Gene Therapy as an Example”*

Christopher H. Evans, Ph.D., D.Sc., earned his B.Sc. in genetics and microbiology and his Ph.D. in biochemistry at the University of Wales, U.K. He completed a postdoctoral fellowship in molecular biology at Free University of Brussels, Belgium. From there he took a junior faculty position in the Department of Orthopaedic Surgery at the University of Pittsburgh Medical School, working his way through the ranks to become the inaugural Henry Mankin Professor of Orthopaedic Surgery and Professor of Molecular Genetics and Biochemistry. While at the University of Pittsburgh he earned a master's in the history and philosophy of science. He was subsequently awarded a D.Sc. degree by the University of Wales and has an honorary M.A. from Harvard University.

Dr. Evans uses his background in cell and molecular biology to study clinical problems involving bones and joints, with an emphasis on developing novel therapies that can be translated into early phase clinical trials. His research has two main areas of focus: arthritis and regenerative orthopaedics. He has developed a gene therapy for osteoarthritis that recently completed a Phase I human, clinical trial at Mayo Clinic; it is now the subject of a Phase Ib trial. Research in regenerative orthopaedics focuses on the use of gene delivery to promote the healing of bone, cartilage, tendon and the intervertebral disc. This work is at a preclinical stage. Dr. Evans's research into bone healing has led to pioneering studies on the use of mRNA as an agent of osteogenesis, with highly encouraging results. Dr. Evans is an associate editor for *European Cells and Materials*, *Bone and Joint Research*, *Molecular Therapy*, and *Osteoarthritis and Cartilage Open*. He previously served as chair of the Editorial Advisory Board of the *Journal of Orthopaedic Research*.

In addition to his research activities, Dr. Evans has mentored over 50 individuals, a number of whom now hold senior academic positions. Dr. Evans holds full faculty privileges in Clinical and Translational Science within the Mayo Clinic Graduate School of Biomedical Sciences. Dr. Evans is a fellow of the Royal Society of Chemistry, the Royal College of Pathologists, and the Learned Society of Wales; an honorary fellow of Swansea University and an inaugural fellow of International Orthopaedic Research and the Orthopaedic Research Society, where he served as President from 2005-2006. He is also an honorary member of the Croatian Orthopaedic Society. Dr. Evans has received a number of research awards including the Kappa Delta Award of the American Academy of Orthopaedic Surgeons, the Nicolas Andry Award of the Association of Bone and Joint Surgeons and, from the Orthopedic Research Society, the Arthur Steindler Award for significant contributions to understanding the musculoskeletal system, the Marshall Urist Award for excellence in tissue regeneration research, and the Distinguished Investigator Award. He is the recipient of the 2024 OREF Clinical Research Award.

ELIZABETH C. AND MICHAEL W. CHAPMAN ORTHOPAEDIC LECTURESHIP



**Betty and Michael Chapman, M.D.
Emeritus Chair**

Dr. Michael W. Chapman, an alumnus of UC Davis, has contributed immensely to the field of orthopaedic surgery through his innovative treatment methods for patients with multiple system injuries. His dedication and aggressive approach have led to improved recovery times and outcomes for severe fractures, establishing him as a pioneer in modern trauma surgery.

Early in his career, Dr. Chapman served as the chief of orthopaedic surgery at the Supreme Headquarters Allied Powers Europe and rose to the rank of U.S. Army major. His leadership and expertise later led him to chair the Department of Orthopaedic Surgery at UC Davis for two decades, where he also served as the chief of the Orthopaedic Trauma Service. Both Dr. Michael "Mike" Chapman and his wife, Mrs. Elizabeth "Betty" Chapman, have been steadfast supporters of UC Davis Health and the Department of Orthopaedic Surgery. Their generous contributions include the establishment of the Michael W. & Elizabeth C. Chapman Endowed Research Fund in 1991, which has facilitated numerous innovative research efforts in the department.

Dr. Chapman's impact extends beyond the medical realm, as he has also played a pivotal role in securing substantial donations for the medical school and the Mondavi Center, renowned for its outstanding acoustics and attractive design. His significant contributions were recognized in 2018 when he was honored with the prestigious UC Davis Medal, the highest accolade bestowed by the university to individuals who have demonstrated extraordinary dedication and excellence. Both Mike and Betty are actively involved in various UC Davis organizations, including UC Davis CAAA, Davis Chancellor's Club, UCD Shields Society, UCDH Heritage Circle, and Leadership Giving Society, and they have been lifelong supporters of the Mondavi Center's Producers Circle.

Dr. Chapman's legacy is commemorated through the Lipscomb-Chapman Orthopaedic Alumni Society, and the annual resident graduation symposium clinical lectureship is named in honor of his remarkable service to UC Davis Health and Orthopaedics. His impact and contributions continue to inspire and shape the future of orthopaedic surgery at UC Davis and beyond.

CLINICAL VISITING PROFESSOR



MaCalus V. Hogan, M.D., M.B.A.

David Silver Professor and Chair, Department of Orthopaedic Surgery
University of Pittsburgh Medical Center
Chief, UPMC Orthopaedic Service Line
Chief, Division of Foot and Ankle Surgery
Professor, Department of Orthopaedic Surgery and Bioengineering
Director of the Foot and Ankle Injury Research (FAIR) Group and
co-director of the Musculoskeletal Growth and Regeneration Lab

Presentation title: *“My Path to Now: One Orthopods Unfinished Journey”*

MaCalus V. Hogan, M.D., M.B.A., completed his undergraduate studies at Xavier University of Louisiana with a B.S. in biochemistry and minor in biology. He received his medical degree from Howard University College of Medicine in Washington, D.C., and completed his orthopaedic surgery residency at the University of Virginia Health System in Charlottesville, Virginia, which included a National Institutes of Health (NIH) Clinician Scientist fellowship year with a focus in musculoskeletal tissue repair and regeneration. He completed his foot and ankle fellowship at the Hospital for Special Surgery in New York, where he served as a consultant for the New York Ballet Company, American Ballet Theatre, and several collegiate and professional sports teams. Following the completion of his training in 2013, Dr. Hogan joined UPMC and the University of Pittsburgh School of Medicine. He earned an Executive Master of Business Administration (EMBA) in health care at the University of Pittsburgh – Katz School of Business in 2018.

He is a member of the American Academy of Orthopaedic Surgeons, the American Orthopaedic Association, the American Orthopaedic Foot & Ankle Society, and Orthopaedic Research Society. He has over 150 manuscripts, book chapters, and presentations. Dr. Hogan presents both nationally and internationally on his management of foot and ankle injuries, regenerative medicine, clinical outcomes research, and health care delivery transformation. In addition to his clinical and research practice, Dr. Hogan serves as a foot and ankle consultant for the athletic departments at the University of Pittsburgh, Carnegie Mellon University, Duquesne University, and Robert Morris University. He also serves as the assistant team physician for Point Park University, including the Conservatory of Performing Arts, and the Pittsburgh Ballet Theatre.

Dr. Hogan currently serves on the board of directors for the American Orthopaedic Foot and Ankle Society and has been selected as a “Best Doctor” by Best Doctors in America® and Pittsburgh Magazine annually since 2016. His physician executive and community efforts resulted in his selection to DiversityMBA's Top 100 Under 50 Executive Leaders in 2018. Most notably, he was selected as one of Modern Healthcare's Top 15 Up and Comers as an emerging national leader in health care in 2018.

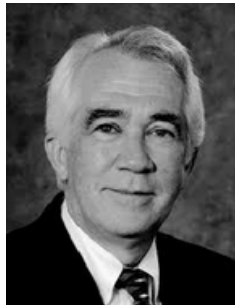
ORTHOPAEDIC SURGERY CHAIRS



Paul R. Lipscomb, M.D.
Professor
Emeritus Chair
1969-1979



Michael W. Chapman, M.D.
Professor
Emeritus Chair
1979-1999



George T. Rab, M.D.
Professor
Emeritus Chair
1999-2006



Paul E. Di Cesare, M.D., F.A.C.S.
Professor and Chair
Michael W. Chapman Chair
2006-2011



Richard A. Marder, M.D.
Professor and Chair
Michael W. Chapman Chair
2011- 2018



R. Lor Randall, M.D., F.A.C.S., F.A.O.A.
Professor and Chair
The David Linn Endowed Chair
2018- present

VISITING PROFESSORS

- 1982 — Robert B. Winter, M.D.
1983 — Anthony Catterall, M.D.
1984 — Eugene E. Bleck, M.D.
1985 — Paul P. Griffin, M.D.
1986 — M. Mark Hoffer, M.D.
1987 — Robert B. Salter, M.D.
1988 — Colin F. Moseley, M.D.
1989 — James R. Gage, M.D.
1990 — James F. Kellman, M.D.
1991 — David S. Bradford, M.D.
1992 — Adrian E. Flatt, M.D.
1993 — Augusto Sarmiento, M.D.
1994 — M. Mark Hoffer, M.D.
1995 — James R. Andrews, M.D.
1996 — James R. Urbaniak, M.D.
1997 — Stuart L. Winstein, M.D.
1998 — Robert A. Mann, M.D.
1999 — Joseph M. Lane, M.D.
2000 — Andrew J. Weiland, M.D.
2001 — Joel M. Matta, M.D.
2002 — Terry R. Trammell, M.D.
2003 — Kaye E. Wilkins, M.D.
2004 — Richard Gelberman, M.D.
2005 — Robert H. Hensinger, M.D.
2006 — James Heckman, M.D.
2007 — Thomas A. Einhorn, M.D.
2008 — Joseph A. Buckwalter, M.D.
2009 — Peter J. Stern, M.D.
2010 — Joseph Borrelli, Jr., M.D.
2011 — Keith Bridwell, M.D.
2012 — Gary G. Poehling, M.D.
2013 — Robert Anderson, M.D.
2014 — Jeffrey Eckardt, M.D.
2015 — J. Tracy Watson, M.D.
2015 — Matthew L. Warman, M.D.
2016 — Stuart B. Goodman, M.D.
2016 — Cosimo De Bari, Ph.D.
2017 — Frank P. Luyten, M.D., Ph.D.
2017 — Marc J. Philippon, M.D.
2018 — Michael W. Chapman, M.D.
2018 — Joseph A. Buckwalter, M.D.
2019 — Nobel Laureate, Mario R Capecchi, Ph.D.
Reddi Lectureship
2019 — Thomas P. Vail, M.D.
Chapman Lectureship
2020 — Cancelled due to COVID-19
2021 — Pamela G. Robey, Ph.D.
Reddi Lectureship
2021 — Todd J. Albert, M.D.
Chapman Lectureship
2022 — Michael T. Longaker, M.D.
Reddi Lectureship
2022 — John M. Flynn, M.D.
Chapman Lectureship
2023 — Vicky Rosen, Ph.D.
Reddi Lectureship
2023 — Kristy L. Weber, M.D.
Chapman Lectureship
2024 — Christopher H. Evans, Ph.D.
Reddi Lectureship
2024 — MaCalus V. Hogan, M.D., M.B.A.
Chapman Lectureship

FACULTY

Adult Reconstruction Service

Mauro Giordani, M.D.

Chief of Service, Professor

John Meehan, M.D.

Professor

Gavin Pereira, M.D., (M.B.B.S), F.R.C.S. (Eng), F.A.A.O.S.

Professor

Foot and Ankle Service

Eric Giza, M.D.

Chief of Service, Professor

Christopher Kreulen, M.D., M.S.

Associate Professor

Hand and Upper Extremity Service

Michelle James, M.D.

Vice Chair of Education, Professor

Robert Allen, M.D.

Professor

Claire Manske, M.D.

Associate Professor

Micah Sinclair, M.D.

Associate Professor

Musculoskeletal Oncology Service

Steven Thorpe, M.D., F.A.C.S., F.A.O.A., F.A.A.O.S.

Chief of Service, Associate Professor

Janai Carr-Ascher, M.D., Ph.D.

Assistant Professor

R. Lor Randall, M.D., F.A.C.S., F.A.O.A.

Professor and Chair

Pediatrics Service

Holly Leshikar, M.D., M.P.H.

Chief of Service, Associate Professor

Jon Davids, M.D.

Professor

Brian Haus, M.D.

Professor

Megan Terle, M.D.

Assistant Professor

Amanda Whitaker, M.D.

Associate Professor

Spine Service

Yashar Javidan, M.D.

Chief of Service, Associate Professor

Safdar Khan, M.D.

Professor, Vice Chair of Surgical Innovation

Hai Le, M.D., M.P.H.

Assistant Professor

Rolando Roberto, M.D.

Professor

Sports Medicine Service

Cassandra Lee, M.D.

Chief of Service, Professor

Christopher Bayne, M.D.

Associate Professor

Nicole Friel, M.D.

Associate Professor

Richard Marder, M.D.

Professor

Trauma Service

Mark Lee, M.D.

Chief of Service, Professor

Sean Campbell, M.D.

Assistant Professor

Ellen Fitzpatrick, M.D.

Associate Professor

Augustine Saiz, M.D.

Assistant Professor

Gillian Soles, M.D., F.A.C.S., F.A.O.A.

Associate Professor

Community Orthopaedics

Zachary Lum, M.D.

Chief of Community Orthopaedics, Assistant Professor

Susan Tseng, M.D.

Assistant Professor, Medical Staff Physician

Peter Rinaldi, M.D.

Assistant Professor, Medical Staff Physician

Research Faculty

J. Kent Leach, Ph.D.

Vice Chair of Research, Professor

Thomas Ambrosi, Ph.D.

Assistant Professor

Blaine Christiansen, Ph.D.

Professor

Gabriela Loots, Ph.D.

Professor, Director of Research Laboratories

Polly Fu Teng, M.D.

Assistant Professor

Barton Wise, M.D., M.Sc. F.A.C.P.

Professor, Associate Vice Chair for Clinical Research

FACULTY: Shriners Hospitals for Children — Northern California

Jon Davids, M.D.

Professor

Nicole Friel, M.D.

Associate Professor

Michelle James, M.D.

Professor

Vedant Kulkarni, M.D.

Assistant Professor

Joel Lerman, M.D.

Associate Professor

Holly Leshikar, M.D., M.P.H.

Associate Professor

Mary Claire Manske, M.D.

Associate Professor

Rolando Roberto, M.D.

Professor

Micah Sinclair, M.D.

Associate Professor

Debra Templeton, M.D.

Associate Professor

Michelle Scott, M.D.

2023-2024 Dickenson Research Resident



Advisor: Holly Leshikar, M.D., M.P.H.

Title: Residual Dysplasia After Pavlik In Developmental Dysplasia Of The Hip

Study design: Retrospective data collection

Objective: To identify factors on initial and post-treatment ultrasound predicting residual acetabular dysplasia on later radiographs, along with determining the rate of operative intervention in harness-treated patients.

Background: Modern infant developmental dysplasia of the hip (DDH) treatment emphasizes early intervention and identification for improved femur and acetabulum interaction, preventing early hip degeneration. Pre-ossific nucleus appearance, ultrasound is the primary method for monitoring infant hips, measuring femoral head coverage percentage (FHC) and alpha angle (AA) (>50% and >60%, respectively). Subsequent hip monitoring includes pelvic radiographs, measuring acetabular index (AI) and center edge angle (CEA). Initial treatment commonly employs a Pavlik harness (PH), with early success rates of 97% in hip reduction. However, recent research reveals discrepancies between ultrasound and radiograph assessments, indicating that a 'normalized' ultrasound does not guarantee a normal hip radiograph.

Methods: Retrospective data collection included all institution-diagnosed hip dysplasia patients, identifying PH-treated cases. Measurements from initial and post-treatment ultrasound and radiographs at roughly 6 months, 1 year, 2 year, and final follow-up underwent statistical analysis. Complete correction was defined as AA >60 degrees and FHC >50%. Residual dysplasia was defined as AI >30 degrees at 6 months, >24 degrees at 1 year, and >20 degrees thereafter.

Results: A total of 116 patients were included in the study. On average, these patients were seen at 49 days old. Among them, 22% were male, 46% had a breech presentation, and 51% were first-born children. Overall, 19% of left hips and 9.5% of right hips tested positive for the Barlow maneuver, while 9.5% (left hips) and 8.6% (right hips) tested positive for the Ortolani maneuver. A minimum follow-up period of 2 years revealed that 64% of the hips corrected to normal AA or FHC, with 50% achieving correction in both parameters. Residual dysplasia in right hips was observed in 13% at 6 months, 73% at 1 year, 71% at 2 years, and 45% at more than 2 years. For left hips, residual dysplasia occurred at 17% at 6 months, 81% at 1 year, 76% at 2 years, and 52% at more than 2 years. Any patients who underwent operative intervention were excluded and had an average follow-up period of 4.1 years (range: 2-8.2 years).

Conclusion: Residual acetabular dysplasia after PH treatment occurs, but surgical intervention is rare. Current ultrasonographic and clinical dysplasia variables do not reliably predict residual dysplasia or likelihood of surgical intervention

Chief Resident Abstract Presentations

Max Haffner, M.D.

“Biomechanical Analysis Of A Modified Triangular Osteosynthesis Technique For Treatment Of Spinopelvic Dissociation”

William Ip, M.D.

“Salvage Of Failed Ankle Arthrodesis By Conversion To Total Ankle Arthroplasty- Intermediate Term Results”

Judas Kelley, M.D.

“Clinical Differences Between Periprosthetic And Native Distal Femur Fractures”

Wyatt Vander Voort, M.D.

“Unanticipated Emergency Department Encounters After Elective Lumbar Fusion Surgery”

Max Haffner, M.D.



Education:

Medical School: UC Davis School of Medicine

Undergrad: University of San Francisco

Next Step: Fellowship: Orthocolina Sports, Shoulder and Elbow

Career Objective: I hope to find an orthopedic sports practice within an academic, privademic or private model where I can continue to grow as a surgeon.

Currently, I'm interested in well-rounded sports practice with shoulder, hip and knee pathology. I anticipate this will be refined as I enter my fellowship experience. Ultimately, my objective is to have a career that my family, mentors, and UC Davis can be proud of.

Spouse/Significant Other: Karli Haffner **Children:** Koa Haffner, 4, Kai Haffner, 1

Personal Remarks: These past 6 years have been transformative for personally and professionally more than I could have imagined since I first started at UC Davis. I'm grateful first and foremost for my wife, Karli, who has kept me afloat since I was in undergraduate. She guided our family through the ups and downs of training with two wonderful/terrible boys. This day is probably more exciting for her than it is for me. Also, a close second is my Mom, who has been the second parent in my absence over the years. Love you, Mom!

Lastly, I want to thank my coresidents and mentors for being as great as you all are. Being surrounded by such successful and amazing people is infectious. I would not be the person I am today without all of you. Thank you!

Advisor: Augustine Saiz, M.D.

Title: Biomechanical Analysis Of A Modified Triangular Osteosynthesis Technique For Treatment Of Spinopelvic Dissociation

Study design: Biomechanical, saw bone

Background/Objective: Spinopelvic dissociation is a spectrum of injury with the defining feature being discontinuity between the appendicular and axial skeletons. Today, triangular osteosynthesis for the treatment of these injuries has become standard due to improved biomechanics and clinical results compared to historical constructs. We developed a previously reported modified triangular osteosynthesis construct and technique with resulting improved reductions and excellent patient outcomes in high-energy U-type sacral fractures.

The purpose of this study was to evaluate the biomechanical stability of a modified triangular osteosynthesis construct with S1 pedicle screws compared to other described lumbopelvic fixation constructs in a U-type sacral fracture model.

Methods: U-type sacral fractures were created in validated 4th generation spinopelvic models. Four different constructs were cyclically loaded with displacement measured in all planes and loaded to failure: 1) bilateral L5 pedicle screws with rods attached to iliac bolts (L5-IB); 2) bilateral L5 and S1 pedicle screws with rods attached to iliac bolts (L5-S1-IB); 3) bilateral L5 pedicle screws with rods attached to iliac bolts with a transsacral-transiliac screw (L5-IB + TSTI); 4) bilateral L5 and S1 pedicle screws with rods attached to iliac bolts with a transsacral-transiliac screw (L5-S1-IB + TSTI).

Results: The L5-S1-IB + TSTI construct had significantly decreased horizontal, vertical, and angular displacement compared to all other constructs. Furthermore, the L5-S1-IB + TSTI construct had the greatest load of failure.

Conclusion: From a biomechanical perspective, a modified triangular osteosynthesis construct with S1 pedicle screws improves stability in fixation of U-type sacral fractures.

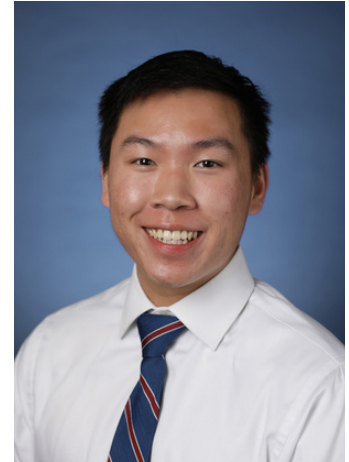
William Ip, M.D.

Education:

Medical School: McGovern Medical School at UTHealth Houston – M.D.
Undergrad: University of Texas at Austin – B.S

Next Step: Fellowship: Foot and Ankle Fellowship at Cedars-Sinai Medical Center

Career Objective: To deliver exceptional orthopaedic and foot and ankle care to my patients while I continue to expand my knowledge and hone my surgical skills in fellowship and first years of practice



Spouse/Significant Other: Eunji Kim

Personal Remarks: As I near the end of my training at UC Davis, I am filled with immense gratitude for the unwavering support of my attendings and family. Throughout this journey, their guidance and encouragement have led me through the most challenging moments of residency. To my mentors, your expertise and wisdom have shaped me into the clinician I am today. To Eunji, your sacrifices and belief in my dreams have been my source of strength. I look forward to the next chapter of my training with profound appreciation for my time at UC Davis.

Advisor: George Lian, M.D., Christopher Kreulen, M.D., Eric Giza, M.D.

Title: Salvage Of Failed Ankle Arthrodesis By Conversion To Total Ankle Arthroplasty- Intermediate Term Results

Study design: Retrospective case series

Objective: This retrospective study examines the mid-term follow-up of 21 patients treated by a single surgeon using a standard technique with a single prosthesis and includes patients with a deficient distal fibula and concomitant hindfoot fusions.

Background: Ankle arthroplasty has been employed as a salvage procedure for failed ankle arthrodesis. Prior studies have generally combined patients treated by several surgeons using a variety of different prostheses, with short-term follow-up. Early reports showed failure in patients with an absent distal fibula. Others have expressed concerns about doing hindfoot arthrodeses at the same setting.

Methods: 21 adults underwent conversion of their failed ankle arthrodesis to a total ankle arthroplasty using a prosthesis with an intramedullary tibial component. Three modes of ankle arthrodesis failure were identified: solid fusion with a painful malposition, painful nonunion, and solid fusion with painful hindfoot arthritis. The patients in the first two groups were treated with arthroplasty alone, while those in the third group had an arthroplasty with hindfoot fusion. Five patients had a deficient distal fibula.

Results: Mean follow-up was 7.6 years. Complications included fracture with or without subsequent surgery (n=4), subsequent sub-talar fusion (n=1), varus deformity (n=1), and wound dehiscence or infection (n=2). 3 patients had revision of their talar components. 2 patients developed lucencies about the tibial stem, and 1 had mild subsidence of the talar component. There were no hindfoot nonunions. 5 patients with a deficient distal fibula were all able to be salvaged with an intact ankle arthroplasty. Mean (\pm SD) VAS Score was 4.6 ± 3.0 and AOFAS score was 71.2 ± 21.7 . 67% reported that they were satisfied or very satisfied.

Conclusion: Total ankle arthroplasty should be considered as a salvage procedure for patients with a failed ankle arthrodesis. With the described techniques it can be combined with concomitant hindfoot arthrodesis procedures and can be used successfully in patients who have a deficient distal fibula.

Judas Kelly, M.D.

Education:

Medical School – University of Colorado School of Medicine
Undergrad – University of Colorado at Denver

Next Step: Fellowship: UCHealth Steadman Hawkins Clinic Denver

Career Objective: Provide excellent care for patients with Orthopedic Sports injuries including shoulder, hip and knee pathologies.



Spouse/Significant Other: Jaime Kelley **Children:** Jevyn Kelley, 9 and Vega Kelley, 7

Personal Remarks: I am incredibly grateful for all of the education, surgical training, and mentorship I have received as a resident at UC Davis. Our program is incredibly demanding with high standards for the way we care for our patients Thank you to all of the faculty. You have pushed me to become an exceptional surgeon. You have taught me how to think critically about the way I treat my patients and not to accept anything but the best for those who entrust us with their care. I will take the lessons I have learned here about leadership, grit, and resiliency with me throughout the rest of my career. To my co-residents, all of those who came before and after me, thank you for your support and camaraderie. Thank you for being there with me in the trenches day in and day out, and for inspiring me to work harder and go further than I thought possible. You are all exceptional, and I wish the best for every one of you. To my family, thank you so much for your sacrifice and for your love and support while chasing my dream. There is no way I could have made it this far without you. Jaime, Jevyn, and Vega I love you with all my heart!

Advisor: Mark Lee, M.D., Augustine Saiz, M.D.

Title: Clinical Differences Between Periprosthetic And Native Distal Femur Fractures

Study design: Retrospective Cohort Study

Objective: The objective of this study was to compare the demographics, fracture characteristics, treatment, and outcomes of periprosthetic versus native distal femur fractures (NDFF).

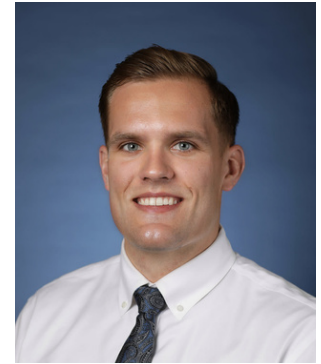
Background: Periprosthetic distal femur fractures (PDFF) are becoming more prevalent as total knee replacements become more common.

Methods: This is a retrospective cohort study of patients greater than or equal to 18 years old who underwent surgical fixation of NDFF or PDFF from 2012-2020 at a level 1 trauma center. Primary outcomes included demographics, AO/OTA fracture classification, fixation construct, and unexpected return to the operating room (UROR). Secondary outcomes were concomitant fractures, polytrauma rates, low bone density, and reduction quality. T-test, Fisher's exact test, and multivariable analysis were used for statistical analysis.

Results: 209 patients were identified, including 70 PDFF and 139 NDFF. PDFF patients were elderly females (81%) with isolated (80%) and comminuted (85%) 33A.3 (71%) fractures. NDFF patients included 53% females, were commonly middle-aged, and displayed comminuted (92%) 33C.2 fractures. 48% of NDFF patients had concomitant fractures. Intramedullary nailing was the primary fixation for both groups, followed by nail-plate combination (37%) for PDFF and lateral locking plates (21%) for NDFF. NDFF patients experienced longer hospital stays and higher UROR rates ($p < 0.05$). PDFF patients had a significantly higher prevalence of low bone density ($p < 0.05$).

Conclusion: PDFFs occur as isolated injuries with significant metaphyseal comminution in elderly females with low bone quality. NDFF commonly occurs in younger patients with less metaphyseal comminution and concomitant fractures. Intramedullary nailing was the most common treatment for both groups, though preferences for nail-plate combination fixation is increasing. NDFF type 33C fractures are at higher risk of UROR.

Wyatt Vander Voort, M.D.



Education:

University of Iowa Roy J. and Lucille A. Carver College of Medicine
United States Air Force Academy

Next Step: Fellowship: Cleveland Clinic Spine

Career Objective: I will begin my career by fulfilling an 11-year obligation to the Air Force as an Active Duty spine surgeon. I am excited and grateful for the opportunity to care for this patient population. Ultimately, I hope to practice in an academic setting where I can work with residents and fellows, remain involved in research, care for complex patients, and collaborate with leaders in spine and orthopaedic surgery.

Spouse/Significant Other: Angela Vander Voort **Children:** Alexandra and William

Personal Remarks: It's hard to believe how quickly these five years have gone. I still remember the phone call I received from Dr. Thorpe when I was in my final year of medical school regarding the newly created position of an Air Force resident at UCD. At the time, my wife was stationed at Travis AFB, where she worked as a PA. I immediately pursued the opportunity to train here and am so glad I did. First, I'd like to thank the attendings who have committed their time, energy, and probably a few gray hairs to train me. Thank you for the opportunity to learn from you all. Thank you to the spine faculty for fostering my interest in the specialty. Thank you and congratulations to my co-residents who are graduating today. And thank you to all the residents. You are individuals of high character, excellent surgeons, and some of my closest friends. I will cherish the relationships I have developed over the last five years.

To my parents, Jeff and Christi, you've encouraged me to persevere and to do hard things since I was a boy. Thank you for your endless love and support. To the twins, Alex and Will, you are the joy of my life. I love being your dad more than anything. Most of all, thank you to my wife. Angela, you are selfless and gracious, and you inspire me every day. I'm amazed by your ability to balance your professional and personal responsibilities. I couldn't have done it without you.

Advisor: Hai Le, M.D., M.P.H.

Title: Unanticipated Emergency Department Encounters After Elective Lumbar Fusion Surgery

Study design: Retrospective case series

Objective: To identify patient-related and surgical risk factors for ED utilization following elective lumbar fusion surgery at our institution.

Background: Emergency department (ED) utilization after lumbar fusion surgery is common. These encounters are associated with long wait times and low patient satisfaction and are an under-recognized source of healthcare costs. The purpose of this study was to identify patient and surgical risk factors for ED utilization following elective lumbar fusion surgery.

Methods: Patients aged ≥ 18 years undergoing elective lumbar or lumbosacral fusion surgery for degenerative pathology from 2018 to 2022 at a single academic institution were included. Patients undergoing surgery for trauma, tumor, infection, and/or deformity were excluded. A retrospective review of medical records was conducted. Patient and surgical characteristics and preoperative patient-reported outcomes (PRO) scores including Oswestry Disability Index (ODI), 12-Item Short Form Survey (SF-12), and Patient-Reported Outcomes Measurement Information System Computer Adaptive Testing (PROMIS/CAT) were obtained. ED visits within 3 months postoperatively were recorded. Univariate and multivariate regression models were used to identify independent factors associated with return to ED.

Results: A total of 495 patients were eligible to be included in the study. 268 (54.1%) were male while 227 (45.9%) were females. The mean age was 65.3 years and mean number of levels fused was 2.03.[HS1] [HL2] 58 patients (11.7%) had fusion to the pelvis. 93 patients (18.7%) presented to the ED within 3 months postoperatively. Risk factors for return to ED included preoperative ODI, SF-12 Social Functioning, Mental Health, and Pain scores, and PROMIS/CAT Pain Interference and Depression scores. Surgical factors associated with return to ED included fusion to the pelvis and postoperative length of hospital stay. For each one-unit increase in ODI, the odds of returning to the ED increased by 3.6%. For each one-unit increase in PROMIS/CAT Depression Subscale, the odds of returning to the ED increased by 4.1%. For patients who have fusion to the pelvis, the odds of returning to the ED is increased by 111.7%. For each additional day stay in the hospital, the odds of returning to the ED increased by 8.3%.

Conclusion: ED utilization following elective lumbar spine surgery is an under-recognized source of healthcare costs and leads to patient dissatisfaction. Preoperative PRO scores may serve as a proxy for patient resilience and social support. This study demonstrated increased odds of ED utilization in patients with poorer preoperative PRO scores. This information may assist in patient counseling, selection, and optimization prior to elective lumbar spine surgery.

PGY2 Research Project Presentations

Daniel Santana, M.D.

“Flexor Pulley Characterization In Recreational Climbers:
Bridging The Gap In Climbing Injury Research”

George Chavez, M.D.

“Comparing Outcomes After Fracture Fixation Versus Revision Arthroplasty
For Vancouver B Periprosthetic Fractures Of The Hip”

Kelsey Hideshima, M.D.

“Evaluating The Radiologic Differences For Adjacent Segment Disease Between
Primary And Secondary Anterior Cervical Discectomy And Fusions ”

Ijezie Ikwuezunma, M.D.

“Failure Rate In Patients 50 To 65 Years Old
Receiving THA Vs ORIF For Femoral Neck Fractures”

Sahej Randhawa, M.D.

“Ascertaining Risk Factors For Displacement Of Pediatric Diaphyseal
Radius And Ulna Fractures After Closed Reduction And Casting”

Daniel Santana, M.D.

Advisor: Christopher Bayne, M.D.

Title: Flexor Pulley Characterization In Recreational Climbers:
Bridging The Gap In Climbing Injury Research

Study design: Cross sectional; diagnostic test accuracy

Objective: To understand flexor pulley morphology and create diagnostic criteria for flexor pulley injuries in recreational rock climbers



Background: As rock climbing grows in popularity and training methods evolve, the prevalence of flexor-tendon pulley injuries is increasing. The flexor pulleys are critical ligamentous structures that allow force transmission to the fingertips. As a result, they are subject to both acute and overuse injuries while climbing. Prior studies have focused on characterizing the pulley morphology of elite climbers and have demonstrated significant morphologic adaptations compared to non-climbers. A gap remains in characterizing the pulley morphology of the largest population of climbers: recreational athletes. The knowledge gained from this project will inform clinical diagnosis and will establish a foundation for evaluating novel diagnostic devices, rehabilitation protocols, and surgical techniques.

Methods: This project will characterize the normal pulley morphology of uninjured recreational climbers using ultrasound to create injury diagnostic criteria in this population. To explore adaptations in pulley morphology, each recreational climber's activity level, demographic characteristics, and sport specific parameters will be collected to understand how these factors relate to flexor pulley anatomy. This newly developed criteria will be applied to a cohort of injured climbers to understand its impact and utility for flexor pulley injury diagnosis in recreational athletes.

George Chavez, M.D.

Advisors: Gillian Soles, M.D.

Title: Comparing Outcomes After Fracture Fixation Versus Revision Arthroplasty For Vancouver B Periprosthetic Fractures of the Hip

Study design: Retrospective case series

Objective: To compare treatment options such as ORIF alone with revision arthroplasty and revision arthroplasty + ORIF in patients presenting to our tertiary care trauma center with Vancouver type B periprosthetic hip fractures.

Background: The total hip arthroplasty (THA) remains one of the most commonly performed and successful operations within the field of orthopedic surgery. As the population ages, and operative indications expand, the volume at which this procedure is performed is expected to rise. While complications with this procedure remain low, postoperative periprosthetic femoral fractures are a serious entity that can lead to significant patient morbidity and substantial impact to the health system. The Vancouver classification has long been used to classify these fracture patterns and also has a role in guiding treatment. Although historical guidelines have long proposed that Vancouver B2 and B3 periprosthetic femur fractures be treated with revision arthroplasty, recent literature has suggested that open reduction with internal fixation alone may lead to an equivalent outcome. Further characterization of specific patient demographics, fracture morphology, and treatment methods which lead to favorable outcomes after ORIF alone remain to be elucidated.

Methods: The electronic health record of a single level one trauma center will be queried for all patients receiving the ICD-10 diagnosis codes for periprosthetic fractures of the hip within the last 5 years. Fractures that occur intraoperatively as well as fractures that occur distal to the prosthesis will be excluded. Fractures will be classified based on their initial Vancouver classification and/or intraoperative assessment of prosthesis stability. Patient demographics including age, sex, comorbid conditions, use of assistive devices to ambulate, etc will be analyzed. Surgical treatment including ORIF versus revision arthroplasty alone versus revision arthroplasty + ORIF will be compared based on parameters including EBL, operative time, type of implants used. Primary outcomes such as return to initial weight-bearing status/use of assistive devices, presence of pain at 3 months postoperative, and need for reoperation for any reason will be assessed to look for statistically significant differences amongst treatment types for different classifications of fractures.



Kelsey Hideshima, M.D.

Advisor: Safdar Khan, M.D., Hai Le, M.D., M.P.H.

Title: Evaluating The Radiologic Differences For Adjacent Segment Disease Between Primary And Secondary Anterior Cervical Discectomy And Fusions

Study design: Retrospective observation study

Objective: The purpose of this study is to describe the radiologic similarities and differences of cervical disc pathology in the setting of symptomatic adjacent segment disease between primary and secondary ACDF procedures.



Background: Surgical interventions for degenerative cervical spine disease are one of the most common elective spine procedures in the United States. With increasing life expectancy within the United States, the incidence of degenerative cervical spine disease is increasing and the number of surgical procedures to address this is also increasing. One of the main complications after an anterior cervical discectomy and fusion (ACDF) is adjacent segment degeneration and adjacent segment disease (ASD) with studies reporting incidence of 2.9% per year during 10 years and 25.6% within 10 years. Given that nearly 1 in 4 patients who undergo ACDF procedure develop ASD there is a large amount of literature investigating etiology, interventions and prevention of ASD. However, even with this vast amount of literature prevention of ASD is still not well understood. This is likely because ASD is thought to be multifactorial in nature stemming from natural disease progression, biomechanical alteration, and soft tissue disruption. In order to understand ASD, many studies have looked at patient outcomes and radiographic changes. However, no study to our knowledge has directly compared the radiologic findings of a symptomatic disc following primary ACDF versus a patient's symptomatic disc prior to the index procedure.

Methods: Patients aged ≥ 18 years who underwent ACDF and a revision ACDF procedure at a single academic institution will be evaluated. Preoperative radiographs and MRIs from the index procedure and the revision procedure will be analyzed and compared. Metrics such as new osteophyte formation, enlargement of osteophytes, sagittal alignment will be recorded from the radiographs. Disc signal intensity, anterior and posterior disc protrusion, disc height, foraminal stenosis and anterior compression of the dural sac will be recorded from the MRIs. Descriptive statistics will be presented as frequencies and percentages for radiographical variables. Categorical variables will be analyzed using chi-square analysis while continuous variables will be analyzed using student t-tests or man-Whitney tests. Comparative analysis will be conducted between primary and secondary pathology patients regarding the radiographical parameters. The statistical significance is set for all analyses at a P-value < 0.05 .

Ijezie Ikwuezunma, M.D.

Advisor: Gillian Soles, M.D.

Title: Failure Rate In Patients 50 to 65 Years Old Receiving THA Vs ORIF For Femoral Neck Fractures

Study design: Multi-center retrospective case series

Objective: The aim of this study is to check the implant failure rate in patients 50-65 years old with femoral neck fractures receiving total hip arthroplasty (THA) vs open reduction internal fixation (ORIF).

Background: The literature usually recommends that patients younger than 50 years of age with femoral neck fracture old receive an ORIF¹ while patients older than 65 years of age should receive a THA or hemiarthroplasty². However, the age group of 50-65 years old is a grey zone whereby the recommendation on how to treat this fracture is controversial between ORIF and THA without any clear analysis depicting which one is more favorable. If the hypothesis is proven true, treatment recommendations can be tailored to this patient age group accordingly, whereby THA will be recommended more than an ORIF.

Methods: Patients aged 50 to 65 years who underwent ORIF vs THA procedure after sustaining a femoral neck fracture at two academic institutions from *** to *** will be evaluated. Retrospective chart review from the index procedure will be performed to collect metrics including demographic variables, medical comorbidities, type of femoral neck fracture, radiographic measurements (leg length discrepancy, femoral offset, center of rotation), complications (infection/hemorrhage, hardware or implant failure, avascular necrosis, non union, periprosthetic fracture), and revision rate (including conversion from ORIF to THA, revision of THA).



Sahej Randhawa, M.D.

Advisor: Holly Leshikar, M.D.

Title: Ascertaining Risk Factors For Displacement Of Pediatric Diaphyseal Radius And Ulna Fractures After Closed Reduction And Casting

Study design: Retrospective cohort

Objective: To elucidate characteristics of patients, their fracture, and their closed treatment in the emergency department by orthopedic consultants that place them at risk of displacement in their clinical follow-up. This may further clarify important features to refine technique for closed treatment and shape initial decision-making for early operative management in certain cases

Background: Pediatric radius and ulna diaphyseal fractures (“Both bone forearm fractures”) have historically defined parameters for acceptable alignment. This can often be met initially through nonoperative measures such as closed reduction and casting in the acute, but interval displacement does occur that can escalate management to repeat reduction or surgical treatment. This is especially of importance in older skeletally immature individuals with fewer years of growth remaining and narrower parameters of acceptable alignment. This study aims to delineate which patient, injury, and initial treatment parameters may portend interval displacement of this injuries that would require this escalation of management and influence earlier decision-making

Methods: Through a retrospective chart review, skeletally immature individuals who sustained diaphyseal radius and ulna fractures (including plastic deformities) will be isolated. Patient characteristics including age, biological sex, BMI, and mechanism of injury will be assessed along with initial injury characteristics including open versus closed fracture status, alignment parameters on injury films, and fracture morphology including obliquity of the fracture spikes, location of the fracture along the length of the bones. The same parameters will be assessed post-reduction along with cast parameters including cast index, ulnar border, ulnar deviation of the wrist, and whether the cast was applied using short-arm to long-arm conversion. The same fracture parameters will be assessed at the patient’s first outpatient clinical visit and last clinical visit under this current treatment strategy (ie until repeat closed reduction, operative management, or acceptance of current alignment). Inferential statistical methods will be subsequently utilized to isolate risk factors for displacement that are based in patient, injury, or treatment characteristics.





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