

UC DAVIS HEALTH ORTHOPAEDIC SURGERY GRADUATE RESEARCH SYMPOSIUM

June 23, 2023 | 7:00 AM

Medical Education Building LH 1222



UC DAVIS
HEALTH

Department of
Orthopaedic Surgery



PROGRAM NOTES

AGENDA

- 7:00 AM Continental Breakfast
- 7:30 AM Welcome – Department Chair, R. Lor Randall, M.D., F.A.C.S., F.A.O.A.
- 7:35 AM Introduction of Guest Speaker (Research), J. Kent Leach, Ph.D.
- 7:40 AM Anu and Hari Reddi Lectureship Visiting Professor: Vicki Rosen, Ph.D.
“Matching Stem Cells with Bioactive Factors to Enhance Bone Repair”
- 8:40 AM Introduction of Research Resident, J. Kent Leach, Ph.D.
- 8:45 AM 2022-2023 Dickenson Research Resident: Weston Ryan, M.D.
“Tibia Fracture Management and Outcomes with Single or Dual-Incision Fasciotomy”
- 9:00 AM Introduction of Visiting Speaker (Clinical), R. Lor Randall, M.D., F.A.C.S., F.A.O.A.
- 9:05 AM Elizabeth C. and Michael W. Chapman Lectureship Visiting Professor: Kristy Weber, M.D.
“Courage over Comfort: Creating an Orthopaedic Culture of Belonging”
- 10:05 AM BREAK/DEPARTMENT PHOTO (OUTSIDE MEDICAL EDUCATION BUILDING)
- 10:40 AM Introduction of PGY-5 Residents: Hai Le, M.D., M.P.H.
- 10:45 AM RESIDENT: Joseph Wick, M.D. – *“Patient Characteristics, Injury Types, and Costs Associated with Secondary Over-Triage of Isolated Cervical Spine Fractures”*
- 11:00 AM RESIDENT: Kranti Peddada, M.D. – *“Optimizing Cup Position with a Mathematical Model of the Hip-Spine Interaction”*
- 11:15 AM RESIDENT: Erika Valentine, M.D. – *“PROMIS Scores in Idiopathic Scoliosis Patients Treated with Vertebral Body Tethering Compared to Posterior Spinal Fusion and Instrumentation”*
- 11:30 AM RESIDENT: William Baumgartner, M.D. – *“Video Training of the Active Movement Scale for Brachial Plexus Birth Palsy”*
- 11:45 AM RESIDENT: Connor Delman, M.D. – *“Adductor Canal Block Versus No Block in Anterior Cruciate Ligament Reconstruction Surgery: A Prospective, Randomized Trial”*
- 12:00 PM LUNCH
- 12:30 PM Introduction of PGY-2 Residents: Hai Le, M.D., M.P.H.
- 12:35 PM RESIDENT: Lydia McKeithan, M.D. – *“Influence Of Female Mentorship On Orthopedic Residency Applications”*
- 12:45 PM RESIDENT: Jacob Priester, M.D. – *“Prospective Evaluation of Rate of Fusion with Augment® Injectable Bone Graft”*
- 12:55 PM RESIDENT: Jared Watson, M.D. – *“Sonographic Evaluation of Quadriceps Tendon Harvest Site and Functional Recovery After ACL Reconstruction with Quadriceps Tendon Autograft”*
- 1:05 PM RESIDENT: Grace Hernandez, M.D. – *“Does Vascular Injury Detected on CT Angiogram Correlate with Postoperative Wound Complications for Tibial Fractures?”*
- 1:15 PM RESIDENT: Michelle Scott, M.D. – *“Timing of Diagnosis of Adolescent Meniscal Tears in the Setting of Anterior Cruciate Ligament Injury”*
- 1:25 PM BREAK
- 1:40 PM CLINICAL CHALLENGES PANEL: **Panelists: R Lor Randall, M.D.; Steven Thorpe, M.D.; Kristy Weber, M.D.;**
Moderator: Steven Thorpe, M.D. – *“Point-Counterpoint Debate: Expandable Endoprosthetics Versus Biologic Reconstructions in Children Afflicted with Bone Sarcoma”*
- 2:10 PM Introduction of 2023 Lipscomb Alumni Speakers: Dave Manske, M.D.
- 2:15 PM GUEST SPEAKER: Paul Sasaura, M.D. – *“The Business of Orthopaedic Surgery. What We Need to Know in Private and Academic Practice”*
- 2:30 PM GUEST SPEAKER: Mark Sucher, M.D. – *“What I Would Have Done Differently in My First Years After Graduation”*
- 2:45 PM GUEST SPEAKER: Holly Leshikar, M.D. – *“Lessons Learned from Complications and Difficult Cases in my Practice”*
- 3:00 PM Discussion
- 3:10 PM Adjournment

WELCOME TO THE 2023 LIPSCOMB-CHAPMAN ALUMNI SOCIETY GRADUATE RESEARCH SYMPOSIUM

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

We are honored to be hosting this year's distinguished visiting speakers from some of the most prestigious universities in the country. We are delighted to welcome Kristy Weber, M.D. from Penn Medicine, and Vicki Rosen, Ph.D. from Harvard School of Dental Medicine.

In addition, we will also hold a Clinical Challenges Panel on Point-Counterpoint Debate and Alumni presentations from guest speakers. It is always fascinating to listen to the experiences and insights of those who have graduated from the program and have gone on to successful careers in their field.

This day celebrates the wonderful camaraderie and legacy of our department. It is also a special occasion to recognize the graduation of five outstanding residents into the ranks of orthopaedic surgery. Thank you for being a part of this year's graduate research symposium to celebrate the excellence of our academic program and the dedication of our trainees, faculty, and staff.

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



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

Resident Research Advisor



Mark Lee, M.D.

Vice Chair of Education



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 was recruited to UC Davis in 1997 as the Lawrence J. Ellison Endowed Chair by Dr. Michael W Chapman. Dr. Reddi was previously the Virginia Percy Chair at Johns Hopkins University School of Medicine in the Department of Orthopaedic Surgery (1991-1997), Chief of Bone Cell Biology Section in the NIH (1977-1991) and Assistant Professor in the Ben May Laboratory for Cancer Research in the University of Chicago (1972-1977). He is well known for his research on Bone Morphogenetic Proteins (BMPs) and regeneration of bone and cartilage. He was the recipient of the inaugural Marshall R. Urist Award of the Orthopaedic Research Society (ORS) in 1997 and the Nicolas Andry Award of the Association of Bone and Joint Surgeons in 1999. Dr. Reddi was elected as a Fellow of the National Academy of Inventors in 2015. The A. Hari Reddi Orthopaedic Research Lectureship was established to honor his career and continued legacy within the Department of Orthopaedic Surgery.

VISITING PROFESSOR



Vicki Rosen, Ph.D.

Professor of Developmental Biology,
Chair of the Department of Developmental Biology,
Harvard School of Dental Medicine, Cambridge, MA

Presentation Title: *“Matching Stem Cells with Bioactive Factors to Enhance Bone Repair”*

Dr. Vicki Rosen is a Professor of Developmental Biology and Chair of the Department of Developmental Biology at Harvard School of Dental Medicine. Dr. Rosen began her career at Harvard after her stint as a scientist at Genetics Institute, a biotechnology company. In 1988, she was part of the research team to identify bone morphogenetic protein genes. In 2001, she was appointed as a professor in the Faculty of Medicine, and in 2005, she became the chair of the Department of Developmental Biology at HSDM. Dr. Rosen’s lab studies the physiological roles that bone morphogenetic proteins (BMPs) play in the development, maintenance, and repair of musculoskeletal tissues (bone, cartilage, tendon, ligament, meniscus, muscle) with the goal of developing novel strategies for their repair and regeneration. Dr. Rosen has received grants from the National Institute of Arthritis, Musculoskeletal and Skin Diseases, the National Institutes of Health, and the U.S. Department of Defense. She has received several accolades for her work, such as the Kappa Delta Ann Donner Vaughn Award for exceptional orthopaedic research, the Marshall Urist Award for outstanding tissue engineering research, the Raine Medical Research Foundation Medal, and the highly esteemed William F. Neuman Award, the most prestigious recognition granted by The American Society for Bone and Mineral Research.

ELIZABETH C. AND MICHAEL W. CHAPMAN LECTURESHIP



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

Dr. Michael Chapman's modern, aggressive approaches to the treatment of patients with multiple system injuries resulted in improved recovery times and outcomes for severe fractures, earning him recognition as one of the founding fathers of modern trauma surgery. Dr. Michael "Mike" Chapman and his wife, Mrs. Elizabeth "Betty" Chapman have been long time supporters of UC Davis Health and the Department of Orthopaedic Surgery. Dr. Chapman, is a UC Davis alumnus and chairman emeritus of the Department of Orthopaedic Surgery at UC Davis Medical Center. In 1991, the Chapmans established the Michael W. & Elizabeth C. Chapman Endowed Research Fund to support research in the Department of Orthopaedic Surgery. Dr. Chapman is a former trustee and chair of the UC Davis Foundation Board (2001 – 2007, 2010 – 2016). Mike and Betty were instrumental in securing many multi-million-dollar gifts to the medical school from alumni, friends, and grateful patients as well as cultivating donors for the Mondavi Center (performing arts center). Dr. Chapman is the 2018 recipient of the UC Davis Medal, the highest honor UCD bestows on individuals to celebrate extraordinary contributions that embody the campus' vision of excellence. Mike and Betty are members of UC Davis CAAA, Davis Chancellor's Club, UCD Shields Society, UCDH Heritage Circle, Leadership Giving Society, life-long supporters of the Mondavi Center's producers Circle, and namesake to the Lipscomb-Chapman Orthopaedic Alumni Society. The annual resident graduation symposium clinical lecture is named in honor of their tremendous service to UC Davis Health and Orthopaedics.

VISITING PROFESSOR



Kristy Weber, M.D., F.A.C.S., F.A.A.O.S.

Professor and Vice-Chair of Faculty Affairs
Abramson Family Professor in Sarcoma Care Excellence,
University of Pennsylvania Department of Orthopaedic Surgery,
Director, Sarcoma Program at the Abramson Cancer Center,
Philadelphia, PA

Presentation Title: *"Courage over Comfort: Creating an Orthopaedic Culture of Belonging"*

Dr. Kristy Weber is the Abramson Family Professor in Sarcoma Care Excellence in the Department of Orthopaedic Surgery at the University of Pennsylvania (Penn). Dr. Weber completed her orthopaedic residency training at the University of Iowa and a two-year research/clinical fellowship in orthopaedic oncology at the Mayo Clinic. She initially joined the faculty at The University of Texas MD Anderson Cancer Center and developed a robust orthopaedic oncology practice and a basic science research program related using murine models to characterize biologic mechanisms and targeted treatments of sarcoma and renal cell carcinoma metastases. Five years later, Dr. Weber was recruited to Johns Hopkins as Chief of Orthopaedic Oncology and Director of the Sarcoma Program. She co-directed an externally funded laboratory focused on breast and renal cell carcinoma metastasis to bone, and her team received the Kappa Delta national orthopaedic research award for this work. Dr. Weber was recruited to Penn in 2013 to serve as Vice-Chair of Faculty Affairs in the Department of Orthopaedic Surgery and Director of the Sarcoma Program in the Abramson Cancer Center (ACC). She leads the continued growth of a high-quality, multidisciplinary clinical sarcoma team as well as the development of a collaborative scientific team focused on targeted treatments for sarcoma across Penn Medicine, Penn Veterinary Medicine, and the Children's Hospital of Philadelphia (CHOP).

Dr. Weber is a recognized national and international leader who has served on Boards of Directors of orthopaedic and cancer organizations, including the American Academy of Orthopaedic Surgeons (AAOS), the American Orthopaedic Association (AOA), the Orthopaedic Research Society (ORS), and the Connective Tissue Oncology Society. She has served as President of the Musculoskeletal Tumor Society (MSTS) and the Ruth Jackson Orthopaedic Society (RJOS), Secretary of the Orthopaedic Research Society, and Critical Issues Chair on the AOA Executive Committee. She spent four years as Chair of the AAOS Council on Research and Quality. Dr. Weber served as the first woman president of the AAOS Board of Directors (2019). She is a founding member of the nonprofit International Orthopaedic Diversity Alliance (IODA) and served as its inaugural President in 2021-22. Dr. Weber is committed to improving the culture and diversity of orthopaedic surgery and received the 2022 FOCUS Award for the Advancement of Women in Medicine.

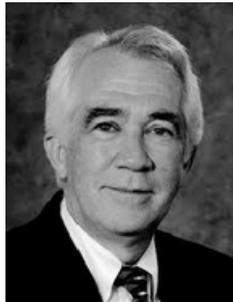
ORTHOPAEDIC SURGERY CHAIRS



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 Weber, M.D.
Chapman Lectureship

FACULTY

Adult Reconstruction Service

Mauro Giordani, M.D.

Professor, Chief of Service

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.

Professor, Chief of Service

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

Associate Professor

Hand and Upper Extremity Service

Robert Allen, M.D.

Professor

Christopher Bayne, M.D.

Associate Professor, Chief of Service

Michael Daly, M.D.

Assistant Professor

Robert Szabo, M.D., M.P.H., F.A.O.A.

Distinguished Professor

Musculoskeletal Oncology Service

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

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

Associate Professor, Chief of Service

Pediatrics Service

Jon R. Davids, M.D.

Professor

Brian Haus, M.D.

Associate Professor

Michelle James, M.D.

Professor

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

Assistant Professor, Chief of Service

Claire Manske, M.D.

Assistant Professor

Amanda Whitaker, M.D.

Assistant Professor

Spine Service

Yashar Javidan, M.D.

Associate Professor

Eric Klineberg, M.D.

Professor, Chief of Service

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

Assistant Professor

Rolando Roberto, M.D.

Professor

Sports Medicine Service

Nicole Friel, M.D.

Assistant Professor

Cassandra Lee, M.D.

Professor, Chief of Service

Richard Marder, M.D.

Professor

James Van den Bogaerde, M.D.

Professor

Trauma Service

Sean Campbell, M.D.

Assistant Professor

Ellen Fitzpatrick, M.D.

Associate Professor

Mark Lee, M.D.

Professor, Chief of Service

Augustine Saiz, M.D.

Assistant Professor

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

Associate Professor

Research Faculty

Thomas Ambrosi, Ph.D.

Assistant Professor

Blaine Christiansen, Ph.D.

Professor

David Fyhrie, Ph.D.

Professor Emeritus

Dominik Haudenschild, Ph.D.

Professor

Maury Hull, Ph.D.

Professor Emeritus

Gabriela Loots, Ph.D.

Professor

J. Kent Leach, Ph.D.

Professor

Polly Fu Teng, M.D.

Assistant Professor

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

Professor

FACULTY: Shriners Hospitals for Children — Northern California

Jon Davids, M.D.

Professor

Nicole Friel, M.D.

Assistant Professor

Michelle James, M.D

Professor

Vedant Kulkarni, M.D.

Assistant Professor

Joel Lerman, M.D.

Associate Professor

Mary Claire Manske, M.D.

Assistant Professor

Debra Templeton, M.D.

Associate Professor

Weston Ryan, M.D., 2022-2023 Dickenson Research Resident



Advisor: Augustine Saiz, M.D.

Title: Tibia Fracture Management and Outcomes with Single or Dual-Incision Fasciotomy

Study design: Retrospective chart review

Objective: To compare single and dual fasciotomy techniques and evaluate fasciotomy effect on surgical decision making during tibia fracture fixation.

Background:

Single- or dual-incision techniques for fasciotomies of the leg are well described and commonly performed in the setting of acute compartment syndrome (ACS) or ischemia. Creating an additional large wound adjacent to a fracture may disturb the local biology, introduce difficulties in fracture approach or fixation, and generate a larger nidus for infection near implants. This study evaluates the relationship of fasciotomy technique with fracture fixation choices and subsequent wound management.

Methods:

A retrospective chart review was performed of 314 patients presenting to a single level-1 trauma center who underwent either single- or dual-incision fasciotomy of the leg over an 8-year period. Inclusion in final review were patients with a tibial fracture who also had complete 4-compartment fasciotomy without subsequent amputation or death. Fasciotomy wounds underwent similar postoperative care. Demographic, mechanistic, and operative details were collected for all patients, as well as fasciotomy wound management, need for split thickness skin graft (STSG) and fracture reduction and instrumentation through fasciotomy wounds. Descriptive statistics, χ^2 , Fischer's, and one-way ANOVA tests with post-hoc analysis were used for appropriate variables.

Results:

Of 314 patients reviewed, 62 had a tibial fracture in conjunction with leg fasciotomy. Single- (44, 71%) or dual-incision (18, 29%) fasciotomy had no correlation with fracture type, union, or infection rate. Of patients who had reduction and fixation performed through a fasciotomy wound (single: 19, 41%, dual: 10, 53%), no increase in complication rate was noted ($p=.32$). However, fixation through fasciotomy wounds after an open fracture was associated with an increased infection rate ($p=.04$). Standard subsequent surgical approaches for definitive fracture fixation were performed in nearly all cases. STSG was performed in 57% of single- and 67% dual-incision cases, with medial wounds closed quicker than lateral (mean 4.2 vs 7.6 days, $p=.004$) and rarely requiring STSG.

Conclusion:

Of patients with tibia fractures in the setting of ACS, no increase in complication rate was observed with reduction and instrumentation utilizing the fasciotomy wound. Care should be taken if utilizing fasciotomy wounds for fracture fixation after open fractures. Additionally, standard surgical approaches for internal fixation can be used successfully following either single- or dual-incision fasciotomy. Good outcomes were observed in both single and dual-incision fasciotomies during tibia fracture management, with no significant difference between technique or fracture pattern.

Chief Resident Abstract Presentations

Joseph Wick, M.D.

“Patient Characteristics, Injury Types, and Costs Associated with Secondary Over-Triage of Isolated Cervical Spine Fractures”

Kranti Peddada, M.D.

“Optimizing Cup Position with a Mathematical Model of the Hip-Spine Interaction”

Erika Valentine, M.D.

“PROMIS Scores in Idiopathic Scoliosis Patients Treated with Vertebral Body Tethering Compared to Posterior Spinal Fusion and Instrumentation”

William Baumgartner, M.D.

“Video Training of the Active Movement Scale for Brachial Plexus Birth Palsy”

Connor Delman, M.D.

“Adductor Canal Block Versus No Block in Anterior Cruciate Ligament Reconstruction Surgery: A Prospective, Randomized Trial”

Joseph Wick, M.D.



Education:

Saint John's University – B.A. 2014
Vanderbilt University School of Medicine – M.D. 2018

Next Step: Orthopaedic Spine Fellowship at Twin Cities Spine Center

Career Objective: Spine surgery practice in the upper Midwest

Spouse/Significant Other: Katie Wick

Pets: Lily (goldendoodle)

Personal Remarks: Residency would have been impossible without a strong support system. I am very grateful for the help and guidance I have received from my mentors within the department, and feel fortunate to have been part of a program where residents are true team players. Most importantly, my wife, Katie, has been incredibly selfless and flexible, even while completing internal medicine residency at UC Davis and building her own career, including two years as a clinical research fellow at UCSF. Lily, our goldendoodle, is a constant source of joy. She is always happy and affectionate, no matter how difficult the day has been. My parents and Katie's family have also made the last five years possible. Their investment in helping us succeed is truly appreciated, and impossible to pay back.

Katie, Lily, and I look forward to the next chapter as we move back to Minnesota and closer to family. Katie will be working as a hospitalist at Mayo Clinic, and I will be starting spine fellowship in Minneapolis. While we look forward to new opportunities, we certainly will not forget the experiences, connections, and friendships we have made through UC Davis. Needless to say, the past five years have been some of the most pivotal years of our personal and professional lives.

Advisor: Eric Klineberg, M.D.

Title: Patient Characteristics, Injury Types, and Costs Associated with Secondary Over-Triage of Isolated Cervical Spine Fractures

Study design: Retrospective cohort

Objective: The aim of this study was to identify patient variables, injury characteristics, and costs associated with operative and non-operative treatment following inter-facility transfer of patients with isolated cervical spine fractures.

Background: Patients with isolated cervical spine fractures are subject to inter-facility transfer for surgical assessment, yet are often treated nonoperatively. The American College of Surgeons' benchmark rate of "secondary over-triage" is <50%. Identifying patient and injury characteristics as well as costs associated with treatment following transfer of patients with isolated cervical spine fractures may help reduce rates of secondary over-triage and healthcare expenditures.

Methods: Patients with isolated cervical spine fractures are subject to inter-facility transfer for surgical assessment, yet are often treated nonoperatively. The American College of Surgeons' benchmark rate of "secondary over-triage" is <50%. Identifying patient and injury characteristics as well as costs associated with treatment following transfer of patients with isolated cervical spine fractures may help reduce rates of secondary over-triage and healthcare expenditures.

Results: Nearly 75% of patients were treated non-operatively. Over 97% of transfers were accepted by the general surgery trauma service. Multivariable modeling found that higher BMI, presence of any neurologic deficit including spinal cord or isolated spinal nerve root injuries, present smoking status, or cervical spine magnetic resonance imaging obtained post-transfer, were associated with surgical treatment for isolated cervical spine fractures. Among patients with type II dens fractures, increased fracture displacement was associated with surgical treatment. Median charges to patients treated operatively and nonoperatively were \$380,890 and \$90,734, respectively. Median hospital expenditures for patients treated operatively and nonoperatively were \$55,115 and \$12,131, respectively.

Conclusion: A large proportion of patients with isolated cervical spine fractures are subject to over-triage. Injury characteristics are important for determining need for surgical treatment, and therefore interfacility transfer. Improving communication with spine surgeons when deciding to transfer patients may significantly reduce health care costs and resource use.

Kranti Peddada, M.D.

Education:

Washington University in St. Louis – B.S. 2014

Johns Hopkins University School of Medicine – M.D. 2018

Next Step: Total Joint Arthroplasty Fellowship at Brigham and Women's Hospital

Career Objective: To become an orthopaedic surgeon specializing in adult reconstruction

Spouse/Significant Other: Samhitha Peddada (wife)

Personal Remarks: It feels surreal realizing I am about to complete my residency in orthopaedic surgery. As I think back to the countless hours spent in residency training and numerous years of education it took to arrive at this point, I feel incredibly grateful to the people who helped me on this path. My parents were my first mentors and inspiration. They encouraged me to discover my passion and inculcated in me the work ethic I have. My older brother was the first in our family to pursue medicine and was an enormous source of wisdom as I embarked on the same journey. My wife, Samhitha, has been my rock and an incredible source of support throughout residency.

Advisor: John Meehan, M.D.

Title: Optimizing Cup Position with a Mathematical Model of the Hip-Spine Interaction

Study design: Prospective case series

Objective: To develop a mathematical model correlating the coronal and sagittal parameters of the acetabulum and pelvis, validate this model with radiographic measurements on postoperative primary total hip arthroplasty (THA) patients, and modify the Lewinnek safe zones to ensure safe cup positioning before and after spinal deformity correction surgery.

Background: Total hip arthroplasty (THA) cup orientation changes with pelvic tilt (PT). Spinal fusion to pelvis for sagittal malalignment may increase dislocation risk if changes in PT result in cup radiographic anteversion (RA) and/or inclination (RI) outside the intended safe zone. Developing a model to quantify changes in PT and cup parameters may help optimize cup positioning in patients needing future spinal deformity correction.

Methods: The model was derived mathematically and validated with a retrospective case series of postoperative primary THA patients. Patients with bilateral THA implants and revision cups were excluded. 50 patients were included in the sample based on a priori power analysis. Radiographic anteversion (RA) and radiographic inclination (RI) were measured on standing and sitting AP pelvis radiographs and ante-inclination (AI), PT, sacral slope, and pelvic incidence were measured on standing and sitting lateral radiographs. Measured and model-predicted values were correlated using linear regression analysis.



Results: Model-predicted sitting RA, RI, and AI were strongly correlated to measured sitting RA ($R^2 = 0.7686$, $p < 0.001$), RI ($R^2 = 0.9028$, $p < 0.001$), and AI ($R^2 = 0.9402$, $p < 0.001$), respectively. The model showed standing, sitting RA increased 0.7° for every 1° increase in PT. Standing, sitting RI increased 0.4° for every 1° increase in PT when $\Delta PT > 0$ but was nearly unchanged when $\Delta PT < 0$. ΔPT and ΔAI were related in a 1:1 ratio. Based on these relationships, we added the following PT correction factors for acetabular cup position: $15 \pm 10^\circ + [0.7 \times (-\Delta PT)]$ for RA, and $40 \pm 10^\circ + [0.4 \times (-\Delta PT)]$ when $\Delta PT > 0^\circ$ and $40 \pm 10^\circ$ when $\Delta PT \leq 0^\circ$ for RI.

Conclusion: We quantified the relationship between pelvic mobility and cup orientation in a mathematical model. Our acetabular safe zone modification can enable safer cup placement when spinal deformity correction is anticipated.

Erika Valentine, M.D.



Education:

SUNY Geneseo – B.S. 2013

State University of New York at Buffalo School of Medicine – M.D. 2018

Next Step: Orthopaedic Pediatric Fellowship at Children's Hospital of Los Angeles

Career Objective: To utilize my specialized skills and knowledge in pediatric orthopaedics, delivering exceptional healthcare to children with musculoskeletal disorders, while continuously learning and innovating to enhance patient outcomes and contribute to advancements in the field.

Spouse/Significant Other: Brandon Borko

Children: Oliver Valentine Borko

Brief Personal Remarks: As I embark on the next chapter of my journey in orthopaedic surgery I reflect with profound gratitude on my transformative residency at UC Davis. The mentorship I've received, the deep connections I've forged, and the relentless pursuit of excellence in patient care that was ingrained in me will forever be etched in my professional ethos. The birth of my child during this intense period added a layer of complexity, but the unwavering support I received from my UC Davis family truly exemplified their commitment not only to our patients, but to us, their trainees. As I step into my future I carry these lessons and relationships with me, enriching my practice and the lives of the patients I serve.

Advisor: Rolando Roberto, M.D.

Title: PROMIS Scores in Idiopathic Scoliosis Patients Treated with Vertebral Body Tethering Compared to Posterior Spinal Fusion and Instrumentation

Study design: Retrospective cohort

Objective: The aim of this study is to establish that both vertebral body tethering and posterior spinal fusion and instrumentation result in satisfactory improvements in scoliosis curve reduction and return to normal quality of life outcomes as measured by PROMIS assessments.

Background: Vertebral body tethering is a recent FDA-approved technique that has shown potential in modulating spinal growth and reducing spinal deformity while maintaining flexibility in patients with idiopathic scoliosis. However, there is a lack of Patient Reported Outcomes (PROs) with studies on tethering, making it difficult to gauge patient satisfaction, pain, and function. This study aims to address this gap by using the Patient Reported Outcomes Measurement Information System (PROMIS), a validated PRO tool, to assess pain interference, peer relationships, mobility, upper extremity function, and pain intensity. Findings from this study may help refine treatment plans for patients with idiopathic scoliosis.

Methods: This retrospective study evaluated 58 patients aged 8 to 15 years with juvenile idiopathic scoliosis who were treated at Shriners Hospitals for Children Northern California (SHCNC) between 2017 and 2022. There were 37 patients who underwent 40 VBT procedures (3 patients had two stage procedures), and 21 patients who underwent PSF. Inclusion criteria were children who completed PROMIS assessment or Parent Proxy PROMIS assessment in English or Spanish; children in Sanders stage 3, 4 or 5; scoliosis curve Cobb angle between 40-80 degrees; and had progressive scoliosis despite bracing or operative magnitude scoliosis at presentation.

Results: The study observed significant patient improvement at various follow-up points for patients undergoing VBT as well as PSF. Notably, significant improvements in upper extremity function and mobility were seen as early as one month post-treatment for both groups. One year after treatment patients demonstrated significant improvements in both upper extremity function and pain levels in the VBT group. Two years post-op patients continued to exhibit significant progress in upper extremity function and mobility in the VBT group. The PSF group did not show a statistically significant improvement in PROMIS scores beyond 6 months.

Conclusion: The progression in PROMIS scores among the group who underwent vertebral body tethering suggests that VBT has a positive, sustained impact on patient mobility, function, and pain management over time. Through appropriate patient selection, VBT is an effective procedure for correcting spinal curves in patients with idiopathic scoliosis.

William Baumgartner, M.D.

Education:

Duke University – B.A. 2014
Duke University School of Medicine – M.D. 2018

Next Step: Hand and Upper Extremity Fellowship at Icahn School of Medicine Mount Sinai Morningside

Career Objective: To move back home to Colorado and provide excellent orthopaedic care to my community.

Spouse/Significant Other: Regina Magaril

Personal Remarks: Thank you to all of the people who dedicated their time and expertise to train us to be the surgeons and people we are today, to the faculty who let us struggle and watched us succeed. To my parents for always believing in me, Rita for keeping me strong and always inspired, Grace and Tommy for keeping me going. To Regina for supporting me through so many long days and nights.

Advisors: M. Claire Manske, M.D., Michelle James, M.D.

Title: Video Training of the Active Movement Scale for Brachial Plexus Birth Palsy

Study design: Prospective Cohort Study

Objective: This study aims to determine whether physical examination skills can be taught effectively through video. The objective is to test the hypothesis that Orthopaedic surgery residents can learn the principles and steps of performing the Active Movement Scale (AMS) to a proficient standard (defined by performance of trained providers) more reliably by viewing a video that demonstrates and teaches the examination in addition to reading an article than the baseline of reading an article alone.

Background: Brachial plexus birth injury is a traction injury during childbirth. Is the most common birth trauma as well as the most common cause of upper extremity paralysis in infants. It has been reported to occur in two out of 1000 live births. Orthopedic surgical providers who take care of these infants utilize a physical examination tool called the active movement scale (AMS). The AMS is a validated tool evaluating all 15 movements of the upper extremity and the strength with which these movements occur (rated from 0-7). It is used in infancy to assess the extent of injury, monitor trajectory of recovery, and make decisions regarding the need for reconstructive brachial plexus surgery in infants.

Methods: Subjects were given a pre-quiz then given access to study materials split randomly into cohorts of a training video created for this study in addition to the standard written article or the article alone. They were then given a post-quiz and changes in score for the movements tested were examined. T tests were used to compare a number of different outcomes, including overall improvement between groups, raw scores between pre and post-tests, and subgrouped scores using the most common motions used to determine progress and surgical planning including the Toronto Score and a Modified Toronto Score.

Results: No statistically significant differences were detected between the following groups: raw score pre vs post ($p=0.86$), post article+video group vs post article group ($p=0.50$), improvement of scores between groups ($p=0.53$), Toronto movement score improvement between groups ($p=1$), and Modified Toronto score improvement between groups ($p=0.72$).

Conclusion: This study was unable to demonstrate any improvement in resident examination skills by either teaching method. It is complicated by many variables including inconsistent adherence to training modules and difficulty of using video loops as a proxy for physical examination of actual infants. Ultimately, the creation of a video to teach this physical examination is still a worthwhile goal and the authors of this paper are of the opinion that we are unable to quantitatively capture the subjective influence of such a video.



Connor Delman, M.D.

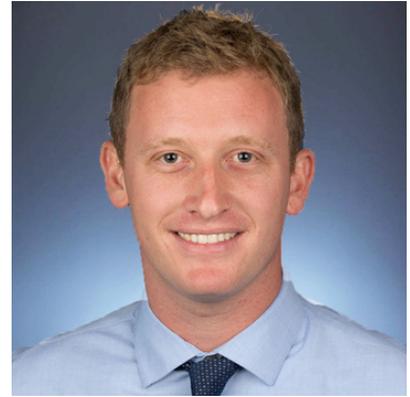
Education:

University of California, Los Angeles – B.S. 2012

University of California, Davis School of Medicine – M.D. 2017

Next Step: Sports Medicine Fellowship at Southern California Orthopaedic Institute

Career Objective: To pursue an academic career committed to research, innovation, mentorship, and the delivery of high-quality care in Orthopaedics and Sports Medicine. Most importantly, my life objective is to be an excellent husband to my wife, Nicole, and father to my daughter, Quinn.



Spouse/Significant Other: Nicole Delman

Children: Quinn Delman

Pets: Brody and Finn (chocolate lab and golden retriever)

Personal Remarks: I am filled with immense gratitude for the opportunity I was given to train at UC Davis under the guidance of premier orthopaedic surgeons, lifelong mentors, and leaders in the field. It amazes me that my journey to pursue orthopaedics began as a medical student on this very campus a decade ago. My passion for academic pursuits, surgical excellence, and scientific inquiry has been nurtured by the numerous mentors, colleagues, and friends I have encountered along the way. I have learned something from every attending at UC Davis, Shriners, and Kaiser who have entrusted me with the care of their patients. I am confident I would not be the person I am today without this invaluable experience.

This accomplishment would not have been possible without the support of family and friends. I am forever grateful to my wife Nicole, whose unwavering support and dedication to my training, alongside her own exceptional work as a NICU nurse and being the best mom to our daughter Quinn, have been nothing short of remarkable. I want to thank my parents, sister, and in-laws for their continual encouragement and support. Thank you to my mom and sister, who have been by my side every step of the way. I am also deeply grateful to my dad and Kirk Lewis, both accomplished orthopaedic surgeons, who have consistently led by example throughout my life and served as role models for me to emulate as I embark on my own career. This journey has been transformative and challenging. As I move forward, I eagerly anticipate a stimulating and fulfilling career. I hope to reflect positively on the program and contribute to its legacy. With profound gratitude, I express my heartfelt appreciation to all who have played a part in my journey. Thank you!

Advisor: Cassandra Lee, M.D.

Title: Adductor Canal Block Versus No Block in Anterior Cruciate Ligament Reconstruction Surgery: A Prospective, Randomized Trial

Background: There are no consensus guidelines for perioperative pain management in anterior cruciate ligament reconstruction (ACLR) surgery. An adductor canal block (ACB) is a popular, motor-sparing alternative to a femoral nerve block (FNB) in ACLR with studies showing no difference in postoperative opioid consumption and pain. Limited prospective, randomized studies have assessed the efficacy of ACBs beyond the immediate postoperative period.

Purpose/hypothesis: To compare the efficacy of a single shot, preoperative ACB versus no block on postoperative pain control after ACLR. We hypothesized there would be decreased pain levels and opioid requirements in the ACB group with no difference in functional outcomes.

Study design: Randomized controlled trial; Level of evidence, 1.

Methods: We performed a prospective, randomized controlled trial. Patients indicated for a primary ACLR were randomized to receive either an ACB or no block preoperatively. All patients received a standardized preoperative medication regimen (400 mg celecoxib, 300 mg gabapentin, and 1000 mg acetaminophen). The surgical team was blinded to the treatment intervention. All patients completed a Brief Resilience Scale (BRS) questionnaire the day of surgery and the score was used to stratify patients into low, normal, or high resilience groups. Visual analogue scale (VAS) pain level and morphine equivalent dose (MED) requirements were assessed in the post-anesthesia care unit (PACU) and daily through 5 days postoperatively. Knee Injury and Osteoarthritis Outcomes Scores (KOOS) were completed at 6 weeks and 12 weeks postoperatively.

Results: 50 patients were included in the study (ACB, n = 25; no block, n = 25) with no differences in patient demographics, surgical characteristics, or graft type. The cohort consisted of a young patient population (age of 24.4 vs 24.7, P = 0.83) and there was no difference in preoperative BRS levels. PACU VAS scores were significantly lower in the ACB group at 15 minutes postoperatively (3.30 vs 5.83, P = 0.007), but no difference was noted at the time of discharge (P = 0.16). VAS scores at 5 days postoperatively were comparably low in both the ACB and no block groups (3.44 vs 3.70, P = 0.65). There was no difference in opioid consumption with similar MEDs between groups in the PACU (21.4 vs 31.9, P = 0.17) and through 5 days postoperatively (45.0 vs 60.8, P = 0.29). There was no difference in the median reported KOOS outcome scores at 6 and 12 weeks.

Conclusion: The addition of a preoperative ACB to a multimodal, non-opioid pain medication regimen improves immediate postoperative analgesia in patients undergoing ACLR, but does not provide a longstanding benefit in pain control and opioid consumption

PGY2 Research Project Presentations

Lydia McKeithan, M.D.

“Influence Of Female Mentorship On Orthopedic Residency Applications”

Jacob Priester, M.D.

“Prospective Evaluation of Rate of Fusion with Augment® Injectable Bone Graft”

Jared Watson, M.D.

“Sonographic Evaluation of Quadriceps Tendon Harvest Site and Functional Recovery After ACL Reconstruction with Quadriceps Tendon Autograft”

Grace Hernandez, M.D.

“Does Vascular Injury Detected on CT Angiogram Correlate with Postoperative Wound Complications for Tibial Fractures?”

Michelle Scott, M.D.

“Timing of Diagnosis of Adolescent Meniscal Tears in the Setting of Anterior Cruciate Ligament Injury”

Lydia McKeithan, M.D.



Advisors: Gillian Soles, M.D., Cassandra Lee, M.D.

Title: Influence Of Female Mentorship On Orthopedic Residency Applications”

Study design: Retrospective cohort study

Objective: To determine factors associated with gender parous mentorships for female applicants applying to orthopedic residency

Background: Mentoring relationships have a significant positive influence on career development and advancement. Many orthopedic surgeons reported the lack of female mentors in medical school as a deterring factor for going into orthopedic surgery. While the rate of women in orthopedic surgery continues to grow, the representation in academics is still low and women make up only 17.8% of academic faculty. Furthermore, the rate of women being promoted to executive and advisory positions, such as chair, vice chair, program director, or division chief, lags behind, contributing to the lack of exposure of female mentors.

The purpose of this study is to determine the factors contributing to and the influence of gender parous mentorships for female applicants applying to orthopedic residency. We hypothesize that increased female representation at the faculty and resident level leads to increased female collaboration and mentorship to medical students. We also hypothesize that female applicants will have less influential letter writers as a result of seeking gender parous mentorships compared to male applicants.

Methods: Analyze orthopedic applications from 2021 and/or 2022. Identify through research experiences, which female applicants have worked with a female principal investigator and determine if there is an association between female research mentorship and program or applicant characteristics. Program characteristics will include the percentage of female faculty, female residents, and females in executive or advisory leadership positions, medical school ranking, and geographic location. Applicant characteristics will include the number of volunteer, work, and research experiences, and publication items. Quantify the number of letters written from influential letter writers, defined by associate professorship in orthopedic surgery, for each applicant and determine if there is a difference in the number of influential letter writers for male and female applicants.

Jacob Priester, M.D.

Advisor: Christopher Kreulen, M.D.

Title: Prospective Evaluation of Rate of Fusion with Augment® Injectable Bone Graft

Study design: Prospective cohort study



Objective: To assess fusion rates in subjects receiving Augment® Injectable Bone Graft (AIBG) during hindfoot and/or ankle arthrodesis at three primary time points.

Background: Arthrodesis is considered a reliable surgical treatment option to address a variety of debilitating clinical conditions affecting the joints, which includes end stage osteoarthritis and inflammatory arthropathy]. However, nonunion at the surgical site continues to be a troubling and common complication following arthrodesis. Accordingly, foot and ankle surgeons have traditionally relied on harvesting autologous bone grafts to promote bony fusion; however, this additive procedure often carries inherent health risks or adverse consequences to patients. Notably, in 2013, DiGiovanni et al. reported that using a graft mixture comprised of recombinant human platelet derived growth factors (rhPDGF-BB) isoform and (β TCP) was a safe and suitable alternative to autograft gold standard during foot and ankle arthrodesis, and thus mitigating the potential pain and risks associated with autografts. As such, Augment® Bone Graft, a mixture of the aforementioned rhPDGF-BB and β TCP and bovine collagen, received FDA approval for use as a substitute for autografts during hindfoot and/or ankle arthrodesis.

In our study, we will specifically use an injectable form of Augment® Bone Graft (Augment® Injectable Bone Graft), which has recently received labeling change approval. Augment® Injectable Bone Graft consists of rhPDGF-BB and β TCP mixture with the addition of bovine collagen. The goals of our study are to assess fusion rates in patients who receive AIBG during hindfoot and/or ankle arthrodesis, and subsequently compare fusion rates between primary vs revision hindfoot and/or ankle arthrodesis as primary outcomes. Furthermore, we will assess time to ambulation, surgical outcomes surveys, and wound healing as secondary outcomes of the study. It is our hope to further our current knowledge of AIBG in hindfoot and/or ankle arthrodesis, and thus shed light on its clinical implications for both patients and foot and ankle surgeons alike.

Methods: This is a prospective cohort of 100 patients operated on at UCD with the orthopaedic foot and ankle team. At least 20 of 100 subjects will be revision hindfoot and /or ankle arthrodesis cases. No more than 80 of 100 subjects will be primary hindfoot and /or ankle arthrodesis cases. Within this population, we will record the primary outcomes including postoperative fusion rates via radiographs at three primary time points, and postoperative fusion rates at four month time points via CT. Secondary outcomes will include patient reported outcomes, surgical wound healing, and time to ambulation. These outcomes will be analyzed for statistical significance to determine if AIBG improves fusion rates.

Jared Watson, M.D.

Advisor: Cassandra Lee, M.D.

Title: Sonographic Evaluation of Quadriceps Tendon Harvest Site and Functional Recovery After ACL Reconstruction with Quadriceps Tendon Autograft

Study design: Prospective cohort study



Objective: To assess quadriceps tendon harvest site by utilizing sonographic techniques to evaluate healing of quadriceps tendon (volume, echogenicity, neovascularization, contractility, stiffness) after anterior cruciate ligament (ACL) reconstruction with quadriceps tendon autograft and to objectively and subjectively quantify functional recovery of quadriceps (limb symmetry index (LSI), EMG, Biodex, Patient Acceptable Symptom State (PASS), Knee Injury and Osteoarthritis Outcome Score (KOOS)).

Background: Quadriceps weakness is frequently observed in patients following ACL rupture and reconstruction. This condition can become a limiting factor in postoperative rehabilitation and can lead to long-term consequences including poor function, dynamic instability, gait abnormality, extension deficit, muscle atrophy, persistent pain, and early osteoarthritis. Comparative studies evaluating quadriceps strength and functional outcomes of patients undergoing ACL reconstruction with quadriceps tendon (QT) and the gold standard, bone-patella tendon-bone (BTB) graft, suggest similar outcomes overall. However, it has been observed that some patients undergoing ACLR with QT reach knee extensor strength LSI of 90% even at 2 years postoperatively.

Although several studies have been conducted to investigate quadriceps inhibition after ACLR with autograft, literature primarily investigating the harvest sites of these grafts and overall recovery of knee extensor function is scarce. Sonography has been proven as an effective and cost-efficient method of evaluating muscle function and musculotendinous pathology. Previous studies using real-time ultrasound have demonstrated a significant correlation between the architectural features of the quadriceps muscle and its strength.

The aim of this study is to assess QT harvest sites and their healing prospectively with the use of sonography, while simultaneously quantifying functional recovery of the quadriceps muscle in patients undergoing ACLR with QT autograft. The primary goal of this study is to further understand QT healing after ACLR with QT and its effects on functional recovery of the injured extremity. By further understanding the healing of harvest sites after ACLR, this may provide useful information regarding graft selection, patient expectations, and may influence rehabilitation protocols postoperatively.

Methods: Individuals with unilateral ACL rupture undergoing ACLR with QT or BTB autograft will be selected to participate. Ultrasound of injured and uninjured extremities will be obtained to assess quadriceps muscle at preoperative visit. Quadriceps activation will be assessed bilaterally with surface EMG and preoperative LSI will be obtained. Knee extensor strength will be measured bilaterally with an isokinetic dynamometer. Functional tests will include single leg hop tests and step length symmetry. Self-reported function will be determined with Patient Acceptable Symptom State (PASS) and Knee Injury and Osteoarthritis Outcome Score (KOOS).

Grace Hernandez, M.D.



Advisor: Augustine Saiz, M.D.

Title: Does Vascular Injury Detected on CT Angiogram Correlate with Postoperative Wound Complications for Tibial Fractures?

Study design: Retrospective cohort

Objective: To determine the association between computed tomography angiography (CTA) identified vascular injuries and postoperative wound complications for tibial plateau, tibial shaft, pilon, and ankle fractures.

Background: Computed tomography angiography (CTA) is a useful tool to evaluate for vascular injury in the trauma patient, though is frequently obtained based on clinical suspicion rather than specific exam findings. Not only do unwarranted studies delay care and place burden on the institution, CTA is not a benign study and is associated with potential kidney injury. Prior studies suggest against routine use of CTA for lower extremity fractures without at least one hard or soft sign of vascular injury. Importantly, though, tibial fractures are associated with increased risk of vascular injury. Studies have also shown that fracture healing is directly related to perfusion.

A better understanding of the relationship between vascular injury on CTA and surgical site wound complications allows for improved clinical decision making for both the orthopaedic surgeons as well as those performing the initial assessment and workup of trauma patients. This information can help determine the value of performing CTA in patients with tibial fractures. Should vascular injury be correlated with postoperative wound complication risk, this may prompt surgeon consideration of variables such as timing to procedure, approach, or implant.

Methods: A retrospective chart review was performed of patients presenting to a single level-1 trauma center who sustained an operative tibia fracture over a 9-year period and underwent CTA of that lower extremity. Patients who underwent surgical stabilization of a tibial plateau, shaft, or plafond fracture between 2014 and 2023 and also had a CTA scan were included in the study. Charts will be reviewed to collect demographic data as well as details about each patient's injury, fracture management, and clinical outcomes. Patients will be stratified by fracture characteristics as well as degree and location of vascular injury noted on CTA. Statistical analyses will then be performed to evaluate primarily for relationships between vascular injury and wound healing complications including wound dehiscence, superficial surgical site infection (SSI), and deep SSI. Secondary outcome measurements will be association between vascular injury with other complications including fracture nonunion and need for reoperation.

Michelle Scott, M.D.

Advisor: Nicole Friel, M.D.

Title: Timing of Diagnosis of Adolescent Meniscal Tears in the Setting of Anterior Cruciate Ligament Injury

Study design: Retrospective chart review



Objective: To determine association between meniscus tears in the setting of an ACL diagnosis as it relates to a delay in referral or delay to definitive care or both.

Background: Anterior cruciate ligament reconstruction is one of the most common procedures performed and it has a profound effect on patients' lives who are highly active. This is especially true in the pediatric population as there is an increase in the hours of participation and intensity of organized sports. It has been shown that a delay in timing for definitive treatment for ACL injuries has an increased association of concomitant meniscus tears. Our study aims to look at a cohort of adolescent patients with meniscal injury in the setting of an ACL tear to determine the timing of diagnosis of the meniscal injury prior to referral or at the time of surgery. We hypothesize that both a delay in referral and delay to definitive care will show an increased incidence of meniscal injury diagnosis.

Methods: A cohort of patients over a minimum of 2-year time span who are under the age of 21 presenting with either ACL tear with or without a concomitant meniscal injury without previous ACL reconstruction will be retrospectively enrolled. Charts will be reviewed to collect the following information: date of injury, date of referral, date of surgery, and demographics. Additionally, MRI findings will be reviewed. We plan to divide the cohort into subtypes based on time of referral, injury date and time to surgery. Statistical analysis will then be performed to compare patients with and without meniscal injury, incidence of those found to have meniscal injury found later than initial diagnosis.



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