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Orthopaedics

The San Antonio Orthopaedic Journal

2026 - VOLUME IX

EDITORS

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1. H John Cooper, Ronald P Silverman, Ashley Collinsworth, Christine Bongards and Leah Griffin. 2023. "Closed Incision Negative Pressure Therapy vs Standard of Care Over Closed Knee and Hip Arthroplasty Surgical Incisions in the Reduction of Surgical Site Complications: A Systematic Review and Meta-analysis of Comparative Studies." Arthroplasty Today 21, 101120. <https://doi.org/10.1016/j.artd.2023.101120>.

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Preface: Reflections and Transitions



Jason Coffman, MD and Jeffrey Hills, MD, MSCI-TS

It is our pleasure to present the ninth edition of the *San Antonio Orthopaedic Journal* (SAOJ). We feel that this edition represents another high-quality product and is a testament to the hard work and dedication of everyone within our organization. It is also an exciting opportunity to reflect on our accomplishments and progress over the past year. Special thanks go out to our industry sponsors, who make it possible for our department's journal to continue to grow in both size and quality. Moreover, we are grateful for the various contributions from members of the department who have provided valuable insights and helped to shape this edition. This year, we are especially proud to highlight the continued growth of our orthopaedic department, including our coverage of the San Antonio Spurs as well as celebrating the merger of The University of Texas Health Science Center at San Antonio and the University of Texas at San Antonio (UTSA). Our healthcare outreach has expanded to include the UT Health at Kyle Seale Parkway clinic and surgery center as well as UT Health San Antonio Multispecialty and

Research Hospital. This year marks the passing of the torch in leadership with new Editors-in-Chief Jason Coffman, MD, and Jeffrey Hills, MD, as well as Resident Editor Zachary Jodoin, MD. Over the past year, The University of Texas at San Antonio Department of Orthopaedics has continued to grow with new faculty members Adam McNulty, MD, Jacob Brennan, MD and Zachary Clarke, MD. We are also excited to share the results of our ongoing research efforts, which reflect the continued academic growth of our department. We hope that this journal will be an engaging read and an inspiring reminder of our collective efforts to make a positive impact. Finally, we would like to congratulate the graduating class of 2026. We are very proud of this talented group, with all graduating residents pursuing top-notch fellowships in sports medicine, hand, foot and ankle, adult reconstruction and spine surgery. We look forward to welcoming these skilled and knowledgeable individuals to our alumni program. We have no doubt that your future will be bright.

Resident Editor



Zachary Jodoin, MD, Resident Editor

It is an incredible honor to serve as the Resident Editor for this year's edition of the *San Antonio Orthopaedic Journal*. This has been a remarkable year marked by tremendous growth and progress within our department. We welcomed several outstanding new faculty members, including Adam McNulty, MD (Sports Medicine), Jacob Brennan, MD, and Zachary Clarke, MD (Adult Reconstruction), whose expertise and enthusiasm have already strengthened our educational and clinical programs.

Our department continues to hit its full stride at UT Health San Antonio Multispecialty and Research Hospital, where orthopaedics has maintained a strong presence with an ever-expanding surgical volume. The residency program has never been busier — balancing demanding clinical schedules with exceptional academic productivity. Over the past year, our residents and faculty have contributed to numerous peer-reviewed publications in journals such as *The Journal of Arthroplasty*, *The*

Journal of Bone and Joint Surgery (JBJS), *JBJS Open Access*, *The Journal of Pediatric Orthopaedics*, *JAAOS (The Yellow Journal)*, *International Orthopaedics* and many others.

We also celebrate our graduating seniors — Shane “Travis” Bullock, MD; Jordan Carter, MD; Andrew Eck, MD; Chimobi Emukah, MD; Ahmed Makhani, MD; John Parker, MD and William Young, MD. Their leadership, professionalism and camaraderie have left an indelible mark on the program and we are excited to watch them continue their success in fellowship and beyond.

This year has been one of tremendous momentum for the Department of Orthopaedics. I am proud of our collective achievements and confident that our trajectory will only continue upward. I hope you enjoy this year's edition of the *San Antonio Orthopaedic Journal* and join us in celebrating the people and progress that make our department truly exceptional.

Medical Students' Editorial



Daanish Sheikh, MS4 and Andrew Madsen, MS2

As this year's student editors, we are grateful for the opportunity to contribute to the *San Antonio Orthopaedic Journal*. Serving in this role has allowed us to see firsthand the energy, collaboration and dedication that drive the orthopaedic community at The University of Texas at San Antonio.

Although we are early in our medical training, our involvement with the department has been a meaningful part of our journey. Through shadowing, research experiences, student interest groups and time spent learning from faculty and residents, we have developed a deeper appreciation for the field of orthopaedic surgery. Every encounter, whether in clinic, the operating room or academic discussions, has reinforced why so many students are drawn to this specialty.

What stands out most is the culture of support within the department. Residents and faculty consistently welcome students, offer guidance and

encourage us to explore our interests. Their mentorship has helped us grow not only in our understanding of orthopaedics, but also in our confidence as developing physicians. It is this environment that motivates students to stay engaged, pursue research, attend conferences and seek opportunities to contribute. The impact of this environment can be seen in the academic contributions of medical students, through research, conference presentations and shared projects with resident and faculty mentors.

We extend our sincere thanks to everyone who contributed to this year's edition — authors, mentors, faculty, residents and fellow students. Your support makes this publication possible, and it inspires students like us to continue learning, asking questions and becoming part of the orthopaedic community at The University of Texas at San Antonio.

Chairman's Corner



Robert H. Quinn, MD, FAAOS, FAOA, Chair, Department of Orthopaedics

I am pleased to introduce the ninth edition of the *San Antonio Orthopaedic Journal* of The University of Texas at San Antonio, marking our department's 58th anniversary. I am very proud of the superb faculty we have on our team and their strong dedication to our combined missions of clinical excellence, research and education. After many years of hard work our future has arrived.

At an institutional level, the merger of UTSA with UT Health San Antonio is well under way. We are now the third largest university in Texas. This merger will position us in the top tier of universities nationally and promises a bright future for all of us and the patients and trainees that we serve.

The UT Health San Antonio Multispecialty and Research Hospital (MSRH) is now fully open and operational. MSRH is a state-of-the-art cancer/specialty hospital with a significant orthopaedic footprint. The single biggest impediment to growth at UT Health since its founding has been a lack of a large revenue source with which we can invest in our future. The practice plan has done exceedingly well, but simply does not create the type of margin necessary to advance our missions of patient care, education and research into the top tier of academic medical centers. This hospital represents a great step forward in the evolution of our academic medical center. Orthopaedics will play a prominent role in the success of this hospital. Plans are in the works for other new medical office buildings located in various strategic areas around the city.

Our partnership with the San Antonio Spurs continues to grow and evolve. A dedicated new building will be constructed on the location of the Spurs new practice facility with estimated completion in 2026/2027. The building will contain a large laboratory space, a large physical therapy center and clinic space including imaging.

Our multidisciplinary spine center has continued to mature under the direction of Chris Chaput, MD. This center is a partnership between Orthopaedics, Neurosurgery and Physical Medicine and Rehabilitation with an EOS imaging machine and has already seen early success.

Our research program continues to grow and mature under the leadership of our vice chair for research, Lawrence Lavery, DPM. This includes the laboratory research of Vaida Glatt, PhD and Joseph Alderete, MD, participation in multiple clinical trials and ongoing grant support including prestigious federal funding.

We are seeing rapid growth and increasing demand in all of our specialty areas and will continue to recruit and grow aggressively to meet this demand and continue to enhance our core missions of education and research. This includes podiatry, which is rapidly expanding under the leadership of Lee Rogers, DPM, who is well on his way to achieve his vision to reestablish our program as the international leader in the management of diabetic foot challenges.

I want to wish a warm welcome to our newest faculty members. We welcome back Adam McNulty, MD in sports medicine and shoulder reconstruction and Jacob Brennan, MD in adult reconstruction after completion of their residencies here and fellowships elsewhere. Zachary Clarke, MD has also joined us in adult reconstruction.

The last of our illustrious founding faculty members, Fred Corley, MD has retired and I wish him the very best for a well-deserved retirement. Fred will always be fondly remembered by our faculty, residents and alumni, for his dedication to teaching and patient care.

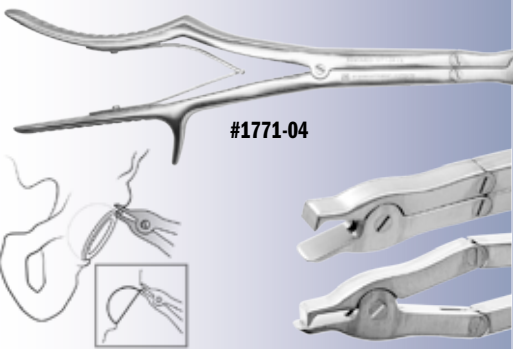
I remain proud, and humbled, to lead such a great group of faculty, residents, researchers and staff. These are exciting times in San Antonio and I look forward to watching our great program continue to grow and mature.

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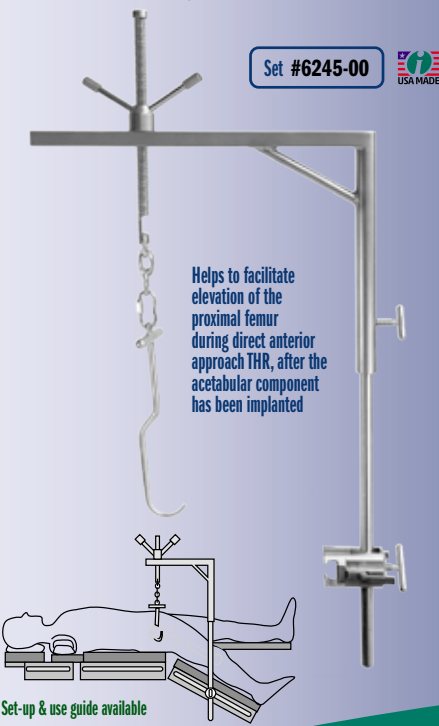
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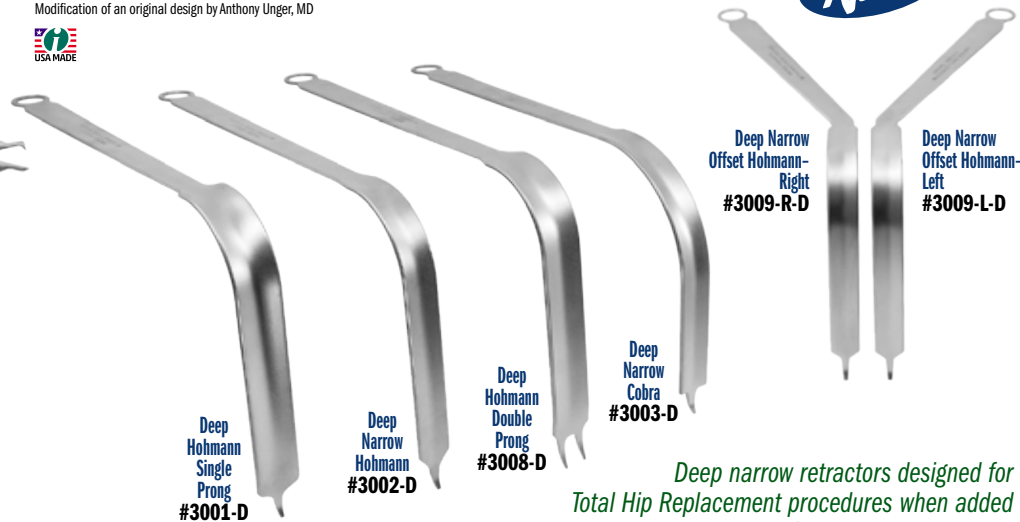
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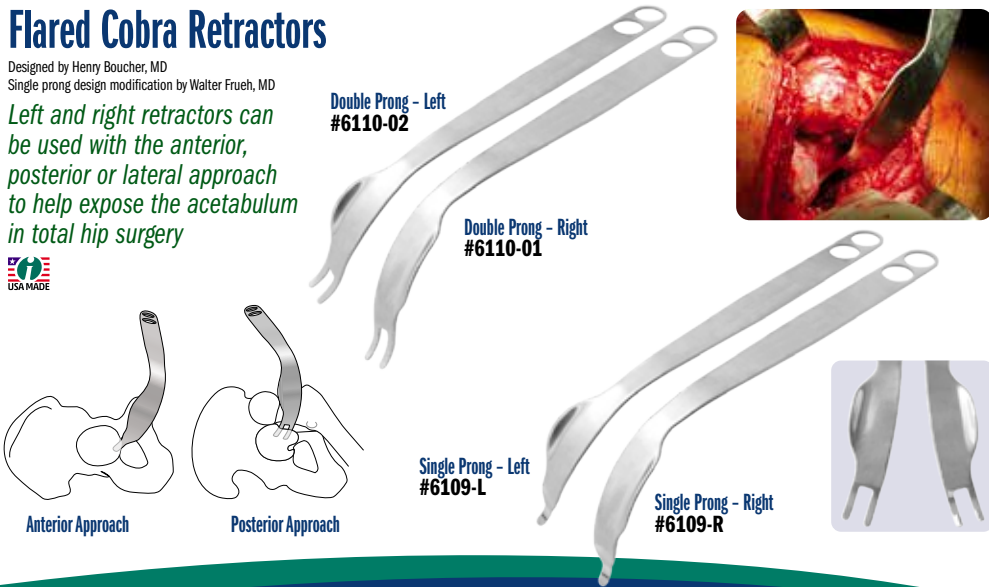
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Special Announcements

New Faculty



Adam McNulty, MD
Assistant Professor
The University of Texas at San Antonio

Adam McNulty, MD, a native of Tulsa, Oklahoma, is a graduate of the The University of Texas at San Antonio Orthopaedic Surgery residency program and returns to the department as a Sports Medicine and Shoulder Reconstruction surgeon. Dr. McNulty is passionate about delivering high-level, evidence-based orthopaedic care with a strong emphasis on both clinical excellence and academic contribution. His commitment to sports medicine and complex shoulder pathology has been shaped by extensive training at nationally recognized institutions and through exposure to high-performance athletes at all levels.

Dr. McNulty completed his undergraduate education at the University of Oklahoma, where his early interest in medicine, anatomy and biomechanics laid the foundation for a career in orthopaedic surgery. He went on to earn his medical degree, where he distinguished himself academically, including receiving recognition for his achievements in his anatomy coursework. He subsequently matched into orthopaedic surgery residency at The University of Texas at San Antonio, where he developed a strong academic and surgical interest in sports medicine and shoulder reconstruction. During residency, he was actively involved in research and education, contributing to multiple scholarly projects, presentations, and publications, while refining his technical skills across the breadth of orthopaedic surgery.

Following residency, Dr. McNulty pursued advanced fellowship training in Sports Medicine and Shoulder Reconstruction at the prestigious Steadman Hawkins Clinic of the Carolinas in Greenville, South Carolina. There, he received high-volume exposure to complex shoulder pathology, including both primary and revision shoulder arthroplasty, rotator cuff pathology, shoulder instability, trauma and cartilage restoration, as well as knee, hip and elbow pathology in athletes. His fellowship training emphasized meticulous surgical technique, patient-specific treatment planning and outcome-driven, data-supported decision making. He also participated in the care of competitive athletes ranging from high school to professional levels, further strengthening his experience in sideline coverage, injury prevention and return-to-play decision making.

Dr. McNulty's clinical interests include shoulder instability, rotator cuff pathology, complex and revision shoulder arthroplasty, cartilage restoration, knee arthroscopy and ligament re-

construction and comprehensive management of sports-related injuries. He is particularly interested in combining modern surgical techniques with individualized rehabilitation protocols to optimize patient outcomes. Academically, he remains committed to research, education and mentorship of residents and medical students, with a strong focus on advancing evidence-based orthopaedic practice.

Outside of medicine, Dr. McNulty enjoys spending time with his wife, Natalie, and their two dogs, Finley and Halle. They are excited to be welcoming their son, Cameron, later this year. He values an active lifestyle and exercise, cooking and grilling, collecting bourbon and pursuing projects that combine creativity and craftsmanship. Dr. McNulty is excited to return to The University of Texas at San Antonio and looks forward to contributing to the department's continued growth in clinical excellence and academic advancement.



Jacob Brennan, MD
Assistant Professor
The University of Texas at San Antonio

Jacob Brennan, MD is a Texas native and was raised in Georgetown, Texas. Dr. Brennan completed his undergraduate degree at Texas A&M University in Biology with a minor in Psychology. He was awarded honors in the Department of Biology and graduated summa cum laude. He then earned his medical degree from the University of Texas Medical Branch in Galveston graduating in the top of his class and was inducted into the prestigious National Honor Society, Alpha Omega Alpha. He then pursued an orthopaedic surgery residency here at UT Health San Antonio.

Following residency, he honed his skills in adult reconstruction at the University of Virginia. During his specialized fellowship, he was trained on advanced hip and knee replacement techniques, robotic assisted surgery, muscle sparing surgery and partial knee replacements.

Dr. Brennan returned to UT Health San Antonio as a fellowship-trained orthopaedic surgeon specializing in hip and knee replacement procedures. He is committed to restoring patients' mobility and improving their quality of life through personalized, compassionate and evidence-based care — bringing deep expertise in both primary and complex hip and knee replacement.

Outside the operating room, Dr. Brennan places his family at the center of his life. He enjoys spending time with his wife and two young children. In his free time, he likes to complete home improvement projects, enjoys being outside, playing sports, hiking, hunting and fishing. He is a proud Alumni of Texas A&M University and is always rooting for the Aggies!



Zachary Clarke, MD
Associate Professor
The University of Texas at San Antonio

Zachary Clarke, MD, brings a wealth of knowledge and expertise to our team, having completed an impressive educational and training journey.

Growing up in Beaumont, Texas, Dr. Clarke developed a passion for athletics as a soccer player at Washington and Lee University. This early interest in sports laid the foundation for a future in orthopaedic medicine. During medical school at UT Health Houston, Dr. Clarke excelled in academic and clinical settings, further honing skills and specializing in orthopaedic care.

Dr. Clarke has also made significant contributions to the field through research at Texas Scottish Rite Hospital. As a first author on multiple publications in the *Journal of Arthroplasty* over the last few years, Dr. Clarke's insights and findings enhance the understanding and treatment of orthopaedic conditions. After completing an orthopaedic surgery residency at the University of Colorado, Dr. Clarke pursued an Adult Reconstruction Fellowship at the Anderson Orthopaedic Research Institute, gaining valuable experience in advanced surgical techniques.

Now back in Texas with three children, Dr. Clarke is excited to provide expert care to patients in the San Antonio area. Outside of work, family time is a priority.

We are thrilled to have Dr. Clarke as part of our community and look forward to their contributions to orthopaedic surgery and patient care in San Antonio.

Promotions



Thomas L. Hand, MD
Promoted to Associate Professor
as of September 1, 2026



Jeffrey M. Hills, MD, MSCI-TS
Promoted to Associate Professor
as of September 1, 2026



Lee C. Rogers, DPM
Promoted to Professor
as of September 1, 2026

Honors and Awards

GLP-1 Total Joint Arthroplasty Research – National Recognition

The study titled “Malnutrition is Common in Patients Utilizing Glucagon-Like Peptide-1 Agonists Prior to Total Joint Arthroplasty,” authored by Zachary Jodoin, PGY 4; William H. Young, PGY 5; Daanish Sheikh, BS; Belinda Pena, FNP; Chance C. Moore, MD; and Frank Buttacavoli, MD, received multiple national distinctions during the 2025 academic year.

The project was awarded First Place Podium Presentation Award at the Clinical Orthopaedic Society (COS) Annual Meeting, recognizing its clinical relevance and scientific rigor. In addition, the study was selected as a Top 100 Poster at the American Association of Hip and Knee Surgeons (AAHKS) Annual Meeting and was also featured as a Podium Presentation at the American Academy of Orthopaedic Surgeons (AAOS) Annual Meeting.

These honors reflect the growing national interest in perioperative optimization and the implications of GLP-1 receptor agonist use in arthroplasty patients. The project highlights the importance of preoperative nutritional assessment and multidisciplinary collaboration in improving surgical outcomes and represents a significant scholarly contribution from our department.

Anil K. Dutta, MD – Faculty Educator of the Year Award

We are proud to recognize Anil K. Dutta, MD as the recipient of the Faculty Educator of the Year Award. This award reflects his unwavering commitment to resident and medical student education, mentorship and clinical excellence.

Dr. Dutta's dedication to teaching is exemplified in the operating room and clinic, where he consistently fosters critical thinking, technical development and academic growth among trainees. Additionally, his leadership in both research and education continues to shape the next generation of orthopaedic surgeons. This well-deserved recognition underscores the profound impact he has made on our trainees and our department as a whole.



Wound Healing Society Early Faculty Leadership Award

Arthur Tarricone, DPM, MPH, was honored with the Early Faculty Leadership Award from the Wound Healing Society. This recognition is presented to emerging faculty leaders who have demonstrated outstanding promise through academic achievement, clinical excellence and meaningful contributions to the field of wound healing. Dr. Tarricone’s work reflects a strong commitment to advancing limb preservation, multidisciplinary care and the education of future clinicians. This award highlights his growing national impact and brings further distinction to the Division of Podiatry at The University of Texas at San Antonio.



Appointed Chair of the Foot Interest Group, American Diabetes Association

Lawrence A. Lavery, DPM, MPH, has been appointed Chair of the Foot Interest Group of the American Diabetes Association. This appointment recognizes Dr. Lavery’s longstanding leadership and national influence in diabetic foot care, research and interdisciplinary



prevention of lower extremity complications. In this role, he will help guide scientific and clinical priorities related to the diabetic foot within one of the nation’s leading organizations dedicated to diabetes care and research. His appointment reflects the high regard in which he is held across the field and underscores the importance of foot health within comprehensive diabetes management.

Lifetime Achievement Award and Induction into the Podiatry Hall of Fame

Lee C. Rogers, DPM, received the PM Lifetime Achievement Award and was inducted into the Podiatry Hall of Fame in recognition of his enduring contributions to podiatric medicine, limb preservation and diabetic foot care. This honor acknowledges a career defined by clinical innovation, academic leadership, global education and advocacy for multidisciplinary team-based care. Dr. Rogers has played a major role in advancing the prevention of diabetes-related amputations through research, teaching and professional service at the national and international levels. This distinction reflects the broad and lasting impact of his work on the profession and on the patients it serves.



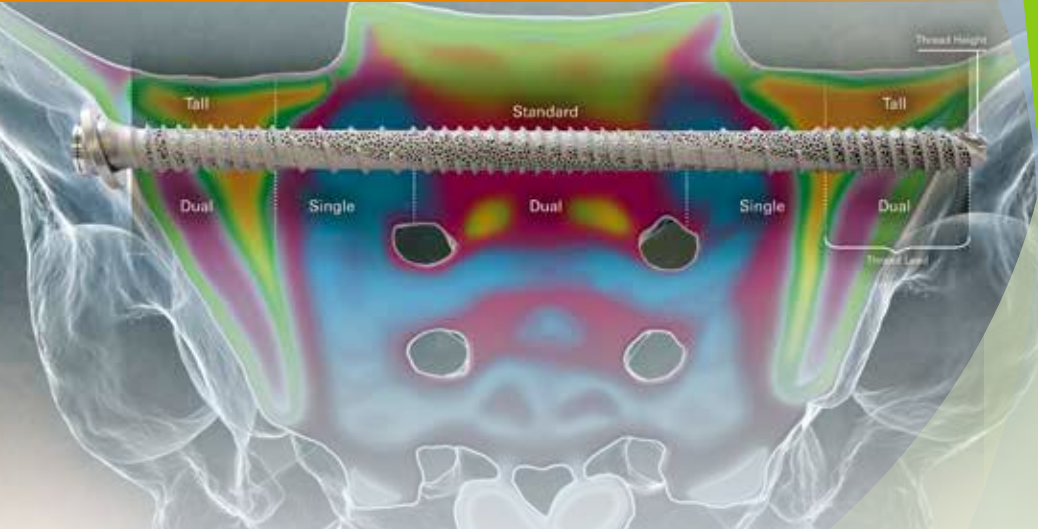
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1. Bone density mapping based on Thiesen DM, et al. Sci Rep. 2020 Mar 30;10(1):5690

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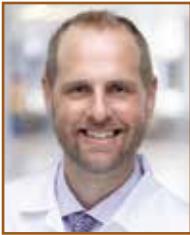


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02

Residency Updates

Residency Updates



Ryan Rose, MD, Program Director

The University of Texas at San Antonio Orthopaedic Surgery Residency continues to grow, keeping pace with San Antonio’s dynamic expansion. In 2025, the program welcomed its largest cohort ever, bringing the total number of residents to 35 and marking the culmination of a multi-year growth initiative. Yet, even as the residency expands, its foundation, built on decades of excellence, remains unchanged.

This year saw the launch of a new PGY 5 rotation designed to reflect the full spectrum of general orthopaedics, with a focus on the UT Health San Antonio Multispecialty and Research Hospital, providing residents with hands-on experience in a high-acuity, modern clinical environment. Our chief residents now oversee operating rooms daily, sharpening both their technical skills and leadership acumen. Complementing this domestic experience, the residency introduced a PGY 4 international rotation in Switzerland, led by Thomas Hand, MD, FAAOS, exposing residents to global surgical practices and diverse health care systems while reinforcing core orthopaedic principles. Together, these opportunities ensure that residents gain the expertise and perspective needed to become outstanding orthopaedic surgeons.

The department’s clinical footprint has grown alongside the residency. Since 2023, we have added faculty in hand, oncology, pediatrics and sports medicine, and in 2025, Adam McNulty, MD (Sports Medicine), Jacob Brennan, MD, and Zachary Clarke, MD (Adult Reconstruction), joined our team. These additions have propelled case volumes into the 90th percentile nationally, offering residents unmatched operative exposure.

The past year also marked the completion of full coverage for the San Antonio Spurs, positioning the Sports Medicine division as a central pillar of the residency. Residents now train in a truly unique environment, gaining experience with both a Division I program at UTSA Athletics and a professional NBA team, preparing them for high-level athletic care at every stage of their careers.

Our educational achievements are equally remarkable.

The class of 2025 achieved a 100% first-time pass rate on the American Board of Orthopaedic Surgery (ABOS) part I exam, while overall Office of Intramural Training & Education (OITE) performance reached the 76th percentile, the highest sustained achievement in recent program history. Research output has nearly doubled, reflecting residents’ engagement with the scholarly side of orthopaedics and reinforcing the residency’s national reputation.

These accomplishments are reflected in the 2025 fellowship matches, with graduates joining prestigious programs across multiple subspecialties:

- **Shane Bullock, MD** – Foot & Ankle, University of Tennessee – Campbell Clinic
- **Jordan Carter, MD** – Hand/Upper Extremity, University of Florida
- **Andrew Eck, MD** – Spine, Washington University School of Medicine
- **Chimobi Emukah, MD** – Spine, Houston Methodist
- **Sunny Makhani, MD** – Sports Medicine, University of Arizona – Phoenix
- **Jack Parker, MD** – Adult Reconstruction, Brown University
- **William Young, MD** – Adult Reconstruction, Brigham & Women’s Hospital / Harvard Medical School

As I complete my **fifth and final year as Program Director**, I reflect with pride on the residency’s growth and evolution. Serving in this role has been a tremendous honor, and I am thrilled to announce that **Dr. Steven Gibbons will transition into the Program Director role**, bringing vision and leadership to guide the residency into its next chapter.

I am deeply grateful to our residents, faculty and staff, whose dedication has made this program what it is today. Being part of their journey has been one of the greatest privileges of my career, and I look forward to seeing the residency continue to flourish under Dr. Gibbons’ guidance. Together, this remarkable team ensures that the future of orthopaedics in South Texas — and beyond — remains bright.

Class of 2026



Shane Bullock, MD

Raised in Comanche, Texas, a small Central Texas farming community, Shane Bullock, MD grew up playing football and basketball while also working alongside his brother, baling hay and running a landscape business. He attended Tarleton State University, where he majored in clinical laboratory science and went on to work as a blood banker for five years before deciding to pursue medicine. During medical school, Dr. Bullock was drawn to orthopaedic surgery for its hands-on nature and focus on restoring function. Next year, he will complete a fellowship in foot and ankle surgery at the Campbell Clinic in Memphis and looks forward to returning home after fellowship to join The University of Texas at San Antonio.



Jordan Carter, MD

Jordan Carter, MD grew up in Paradise, Texas, where he played football through high school. A senior-year ACL tear sparked his interest in orthopaedic surgery. He attended Midwestern State University for undergraduate studies, where he worked as a resident assistant and met his wife, Kady. During medical school at Texas Tech University Health Sciences Center, in El Paso, he developed a strong interest in hand surgery through research involvement. Next year, he will pursue fellowship training in hand and upper extremity surgery at the University of Florida in Gainesville. In his free time, he enjoys hunting, fishing and spending time with his wife and their two cats, Penny and Polly.



Chimobi Emukah, MD

Born in Houston, Texas to Nigerian immigrant parents, Chimobi Emukah, MD is the third of four children and grew up surrounded by a strong work ethic and close family ties. From an early age, he developed a love for physical fitness, playing basketball and running cross country throughout his youth. His passion for staying active sparked an interest in the musculoskeletal system, while a desire to serve others inspired him to pursue medicine. Dr. Emukah attended The University of Houston, where he studied biochemistry, and went on to earn his medical degree at The

University of Texas at San Antonio. He is currently completing his orthopaedic residency at The University of Texas at San Antonio. During residency, Dr. Emukah and his wonderful wife, Madison, welcomed their first child, Kacen, into the family. Next year, Dr. Emukah will return to Houston to complete a fellowship in spine surgery. In his free time, he enjoys spending time with his family and staying active through workouts and sports.



Andrew Eck, MD

Andrew Eck, MD was born and raised in Belvidere, Illinois, alongside his three brothers. Raised in a military family (his father is an Army veteran) he developed a strong sense of discipline and service early in life, which led him to enlist in the US Army. He served one tour in Afghanistan as a satellite communications operator before transitioning out of the military to pursue a career in medicine. Dr. Eck attended Judson University in Elgin, Illinois, where he played collegiate basketball, before completing medical school at The University of Texas Health Science Center at Houston. He subsequently matched into orthopaedic surgery residency at The University of Texas at San Antonio and will pursue a spine surgery fellowship at Washington University in St. Louis. Dr. Eck lives with his wife, their daughter Alessandra, and their golden retriever, Ollie. Outside of work, he enjoys playing sports and watching the Minnesota Vikings.



Ahmed A. Makhani, MD

Ahmed “Sunny” Makhani, MD was born in India and moved to the United States at the age of six, growing up in San Antonio as part of a first-generation immigrant family. From an early age, he learned the value of hard work and community involvement while working at his family’s local Indian grocery store. He attended Health Careers High School, where he met his beautiful wife, Valentina. They have been together for 14 years. He went on to attend the University of Texas at Austin’s prestigious McCombs School of Business, majoring in Finance with a focus in corporate finance and investment banking, before pursuing his medical degree at the The University of Texas at San Antonio. He was fortunate to train in and serve his hometown for his orthopaedic surgery residency and will soon continue his journey at the University of Arizona – Banner Health Orthopaedic Sports Medicine Fellowship program. In his free time, he enjoys spending time with his wife and their 15-year-old cockapoo, Andy.



John "Jack" Parker, MD

John "Jack" Parker, MD was born in Dallas, Texas, and raised in Claremore, Oklahoma. He graduated from Oklahoma State University with a Bachelor of Science in Biology. His decision to pursue a career in medicine was inspired by his father, an ophthalmologist. Dr. Parker earned his medical degree from The University of Oklahoma College of Medicine, and subsequently matched into the Orthopaedic Surgery Residency Program at The University of Texas at San Antonio.

Dr. Parker, along with his wife, Katie, and daughter, Elizabeth, will be moving to Providence, Rhode Island, where he will complete a fellowship in adult reconstruction at Brown University.



William Young, MD

William Young, MD was raised in Weatherford, Texas and played baseball at Weatherford College and Texas A&M-Corpus Christi before finishing his undergraduate studies at Texas A&M. While at Texas A&M he met his wife, Ewelina, and graduated summa cum laude with a degree in Biomedical Sciences. He then attended medical school at UT Southwestern before couples matching with his wife to The University of Texas at San Antonio. His wife is now a practicing pediatrician in San Antonio and they welcomed their son, Harrison, to the family this past year. While in residency, Dr. Young was honored as Outstanding Junior Resident and named Administrative Chief during his chief year. Next year, he will complete a fellowship in adult reconstruction at Brigham & Women's Hospital/Harvard Medical School in Boston. After fellowship, he will be starting practice at the Baylor Scott and White Hip Preservation Center in McKinney, Texas.

Orthopaedic Residents 2025-2026

PGY 5 2021 - 2026



Shane Bullock



Jordan Carter



Andrew Eck



Chimobi Emukah



Ahmed Makhani



John Parker



William Young

PGY 4 2022 - 2027



Doha Hussien



Zachary Jodoin



Casey McDonald



Mallory Ogburn



Kyle Paul



Elizaveta Reznichenko



Luke Verlinsky

PGY 3 2023 - 2028



Cameron Atkison



Brandon Driggs



Morgan Gable



Deshaun Holdipp



Mauricio Valdez



Abigail Wheeler



Tyler Williamson

PGY 2 2024 - 2029



Eric Cal



Coltin Gerhart



Victor Martinez



Jason McCartney



Katerina Papanikolaou



Abhi Rashiwala



Jordan Robbins

PGY 1 2025 - 2030



Kellie Hastings



Lauren Holladay



Claire Lancaster



Andrew Ni



Michael Rainey



Shawn Dripchak



Dean Slocum

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2027



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UT Health
San Antonio

OFFICIAL HEALTHCARE PARTNER OF UTSA ATHLETICS





Division Updates



Foot & Ankle Surgery

Mayo J. Galindo, Jr., MD

Our Foot and Ankle Division is currently staffed by Mayo J. Galindo, Jr., MD, as full-time faculty. Our residents are also outsourced in the private sector with Mark M. Casillas, MD.

As PGY 3's in their seven-week rotation, our residents are exposed to common foot and ankle problems and also to low energy trauma. Complex reconstructions have become the norm. Diabetic foot salvage challenges are also part of their experience. Dr. Casillas offers a wealth of experience in total ankle replacement surgery. Our residents are also exposed to ankle and hind foot arthroscopy, sports injuries, sports reconstruction and sports rehabilitation.

Shane Bullock, MD, who is now in his last year of residency training, will be doing a foot and ankle fellowship at the Campbell Clinic in Memphis, Tennessee. Once he has completed that fellowship, he will be joining the Foot and Ankle Division as part of our effort to build a more robust section.

In the past, we have hosted residents from a sister school in Monterrey, Mexico. We are hoping to continue that relationship. We continue to provide patient care for people from all walks of life and look forward to the coming years opportunities to fulfill our mission.



Hand Surgery

Brian W. Sager, MD

Led by Christina Brady, MD; Jason Coffman, MD; Ryan Rose, MD; and Brian Sager, MD, the Orthopaedic Hand Service continues to provide excellent care to the residents of San Antonio and Bexar County. Our division, however, would not be nearly as successful if it weren't for the outstanding efforts of our clinical and support team including our Nurse Practitioner and Physician Assistant providers: Chris Delallo, Brandon Del Bosque, Marc Deschaine, John Kodosky and Priscilla Ramos.

Dr. Rose, our Chief of Hand Surgery, continues to serve the community through his clinical work at the UT Health San Antonio Medical Arts and Research Center. In the last year, he has published clinical and practice-based research in both *The Journal of Hand Surgery* and *The Journal of Bone and Joint Surgery*. After five years of service as Residency Program Director, Dr. Rose will be handing over the reins of the Residency to Steve Gibbons, MD. This program is certainly in a better place because of his work and we thank him for his years of service!

Dr. Sager continues to serve the San Antonio community at his clinical locations at Metropolitan Methodist and UT Health Hill Country. In addition, he has recently opened a trauma clinic

at University Hospital. In this last year, Dr. Sager has begun serving on Patient and Public Education and Domestic Outreach Committees at the American Society for Surgery of the Hand. In addition, he continues his commitment to education, giving presentations at the Mid-America Orthopaedic Association and the American Academy of Orthopaedic Surgeons this year. He also has published clinical and practice-based research this past year.

In addition to their academic and clinical work, both Sager and Rose completed training and were among the first surgeons in the country to use and evaluate an implant arthroplasty for the thumb carpometacarpal joints. They have already noticed very promising results!

Dr. Coffman continues to provide outstanding care for patients of San Antonio at the UT Health Outpatient and Surgery Center at Kyle Seale Parkway. In addition, he will be assisting Dr. Gibbons as the Assistant Residency Program Director for the upcoming academic year!

As the upper extremity division continues to expand our footprint in the San Antonio community, our commitment to providing high-quality care to the residents of San Antonio, while simultaneously training the future of Orthopaedics, remains unwavering. On a more somber note, we will unfortunately be saying goodbye to Christina Brady, MD after seven years of service to the San Antonio community. She will be taking a position at the University of Michigan. We wish her the best of luck in her future endeavors and know she will do great things!



Adult Reconstruction

Frank A. Buttacavoli, MD

The adult reconstruction service continues to grow in size and reputation, while meeting the needs of the city of San Antonio and the surrounding region with high-quality outcomes and quality of life improvement for our patients.

Robotics and AI have become an integral part of patient care. The UT Health San Antonio Multispecialty and Research Hospital (MSRH) is equipped with the latest and greatest technologies to offer to our patients. We started taking care of patients at our hospital in late 2024, and the response from our patients has been remarkable. We expect MSRH to be the top spot for the region's future joint replacement needs. We have enjoyed multiple visiting surgeons to our hospital to shadow our surgeries.

We also continue our joint replacement growth at the county hospital and we appreciate the support of the University Health System.

Two new faculty joined us in the fall of 2025. Jacob Brennan, MD, one of our former residents, joined us following his fellowship at the University of Virginia, while Zachary Clarke,

MD joined us after completion of his fellowship at Anderson Clinic. My partner, Chance Moore, MD, is continuing to provide excellent care to the region, using the newest technologies, and his practice has grown tremendously in the last two years. Dr. Moore is the Director for Outpatient Arthroplasty at MSRH, seamlessly managing the pathway for our elective outpatient total joints.

Given the growth in volume and faculty, we plan to add a fellowship program through the Accreditation Council for Graduate Medical Education (ACGME) for the 2027 fellowship match. The service currently has three residents, and the new hospital has a chief resident that coordinates all the services at MSRH. We are eager to hire a fifth faculty for the division when the timing is right.

On the research front, we have multiple industry sponsored clinical trials evaluating one- and two-stage treatment of hip and knee prosthetic joint infections. We are a large referral center for complex periprosthetic issues and have a significant amount of pathology to evaluate these complex issues. Our two new faculty have been well trained and proven to be very skilled in helping our team with these complex patient problems.

The group was very prolific this year with many publications and poster presentations at the American Association of Hip and Knee Surgeons (AAHKS), the American Academy of Orthopaedic Surgeons (AAOS), Orthopaedic Summit, and Mid America meetings. The adult reconstruction team reported nine publications, four manuscripts under review, ten podium presentations and six posters. The hard work of the residents, medical students, and faculty has led to a prolific year for hip and knee research for our department. Our team received first place presentation at the Clinical Orthopaedic Society meeting in Florida. Our poster on malnutrition in GLP-1 users was labeled top 100 posters of the AAHKS 2025 meeting and later recognized as paper of the week by Javad Parvizi, MD and the International Consensus Meeting (ICM) website.



Personally, I had an incredible experience in Turkey as a delegate at the International Consensus Meeting on PJI. Dr. Parvizi is truly amazing and I don't know that these things are possible without his effort and love for improving the treatment of PJI. I have continued my work with the academy in my second term on the AAOS adult reconstruction evaluation committee.

The future is promising for joint replacement growth in our

department and our growing region of the country. We have also seen a growth in interest in the subspecialty within the residency. We have three current upper level residents continuing their education with joint replacement fellowships. Current chief residents, Will Young and Jack Parker, will be fellows at Harvard and Brown, respectively, in the fall.

The department is excited to continue to provide for future patients and resident education opportunities for life-changing, minimally-invasive anterior hip and robotic knee procedures. Come get your life back with the help of the UT Health San Antonio adult construction team!



Oncology

Joseph F. Alderete, MD

The Orthopaedic Oncology team continues to grow and flourish. Robert Quinn, MD, FAAOS, FAOA, and Joseph Alderete, MD continue to expand services to musculoskeletal oncology patients, with increasing regional, national and international reach and recognition.

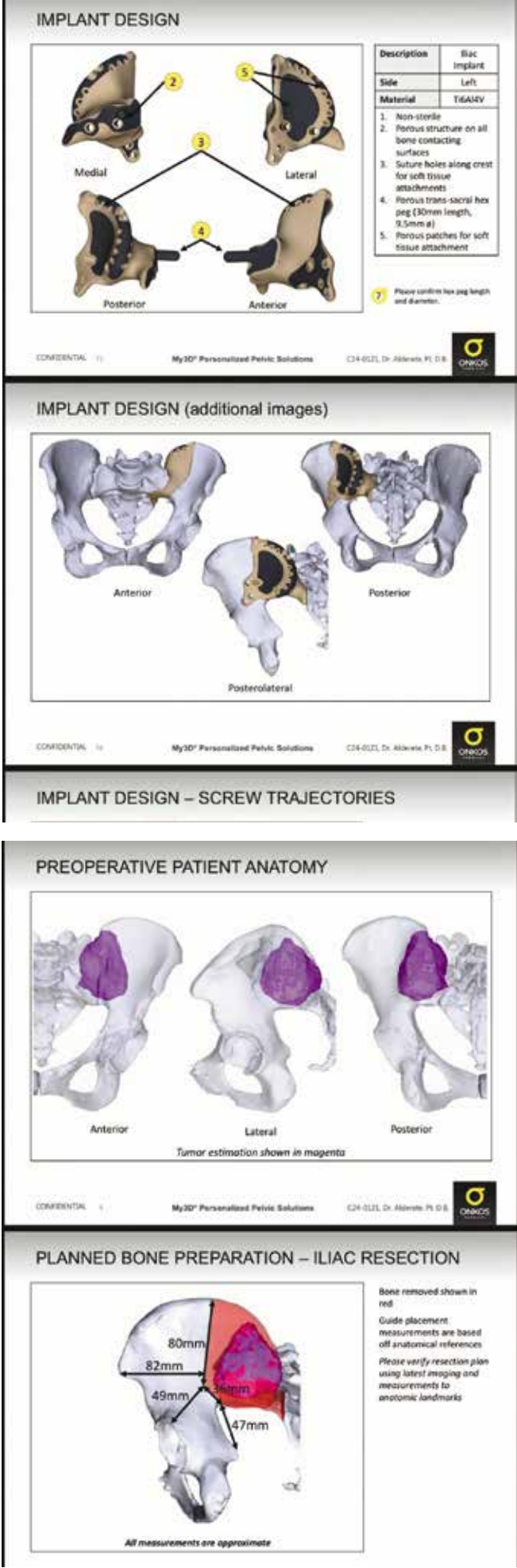
Dr. Quinn, Chairman of the Department of Orthopaedic Surgery, continues to lead through national organizational involvement, as well as by developing the surgical architecture and clinical footprint at the UT Health San Antonio Multispecialty and Research Hospital — our flagship surgical hospital. His leadership has positioned Orthopaedic Surgery as one of the leading services by case volume at the hospital.

We have deliberately shifted many of the less complex cases to MSRH to build surgical throughput, creating a multidisciplinary infrastructure capable of managing complex tumor cases. In doing so, we are teaching a new hospital how to effectively execute in a high-volume and complex environment with discipline, precision, and safety.

We look forward to the continued growth of this platform as a premier destination for musculoskeletal oncology patients across South Texas.

This year marks the one-year anniversary of MOSAIC, the UT Health San Antonio Department of Orthopaedic Surgery's Limb Optimization Program.

With the Ortho-Plastics section of Juan Berner, MD, Anton Fries, MD, and Oriana Haran, MD, as major contributing partners, Dr. Alderete and his team have established a comprehensive institute designed to maximize quality of life and functional outcomes for those dealing with limb- and life-threatening conditions.



The team has created a patient-centered, multidisciplinary pathway modeled on Dr. Alderete's prior experience with osseointegration (OI) as a foundational component of integrated limb preservation systems.

Osseointegration (OI) alone represents a transformative surgical advancement for the region, improving mobility and quality of life for patients living with limb loss. However, the program extends beyond surgery by integrating behavioral health, nutrition, physical therapy, occupational therapy and rehabilitation services into the forefront of San Antonio's civilian medicine — bringing a level of coordinated limb optimization historically more accessible within Department of Defense systems into civilian care.

Finally, to round out the experience and technical capability of this team, we bring precision sacro-pelvic and spino-thoracic resection and reconstruction. For a long time, pelvic tumor and trauma surgeons understood that we needed a better solution than autograft or flail constructs for hemi-pelvectomy and hemi-sacrectomy. While autograft reliably filled the defect, complications were high and outcomes were not optimal, and even the vascularized double-barrel auto-fibula approach did not consistently meet expectations.

One of the earliest teams in composite pelvic reconstruction was the Zimmer Biomet group, from which several tumor-specific collaborations evolved, including our current partnership with Onkos. Through this precision industry relationship, we now utilize computerized 3D design modeling of the tumor, vascular and neural anatomy, and projected bony resection, incorporating AI-driven iteration of movement and biomechanics and culminating in trabecular metal 3D printing that allows soft tissue ingrowth into the prosthesis. The integration of soft tissue growth and biologic ongrowth facilitates restoration toward biomechanical normal anatomy and behavior, enabling patients to achieve levels of function previously not deliverable. Similar capabilities in dynamic chest wall reconstruction further expand the reach of this elite team and our institutional and external partners. We look forward to the continued growth and impact of this platform in the coming year.

Figures 1–3: Type 1 internal hemi-pelvectomy for chondrosarcoma demonstrating precision resection and soft tissue ingrowth to the trabecular metal prosthesis, facilitating restoration of abductor power and pelvic leveling.



Orthopaedic Trauma

Thomas L. Hand, MD, FAAOS

It has been a productive and impactful year for the Orthopaedic Trauma Division at The University of Texas at San Antonio. Our clinical team includes four fellowship-trained orthopaedic trauma surgeons — Animesh Agarwal, MD; Thomas Hand, MD, FAAOS; Ravi Karia, MD; and Case Martin, MD — along with our fellow-

ship-trained shoulder and elbow surgeon Anil Dutta, MD. We continue to be supported by an exceptional group of advanced practice providers: Christopher DeLallo, MPAS, PA-C; Jennah Jorge, MPAS, PA-C; John Kodosky, DHSc, MPAS, PA-C; and Priscilla Gomez-Ramos, DMSc, MPAS, PA-C. Our division is further strengthened by Jennifer Aguilar, RN (research nurse) and Monica Ramirez, CPC (Surgical Care Coordinator), whose efforts are essential to the day-to-day success of our service.

This year we had some changes in our division's personnel. In December, we saw the retirement of our long-standing Orthopaedic Trauma Senior Administrative Assistant, Anna Conti. She has been with our department for 24 years. We are very grateful for the time, support, and dedication she has bestowed upon us for over the past two decades, and we wish her the best in her retirement. And, of course, in August, the departure of Boris Zelle, MD became official as he begins his new chapter at the University of Texas Medical Branch in Galveston, Texas.

Clinically, the Orthopaedic Trauma Division continues to manage some of the most complex and high-acuity musculoskeletal injuries in the region. Our team remains committed to delivering timely, high-quality care for patients with life- and limb-threatening conditions while maintaining strong surgical volume and productivity. Over the past year, we have continued to cultivate our presence throughout the San Antonio community. In addition to our longstanding presence at University Hospital, we provide trauma call coverage at multiple private institutions, including Main Methodist, Methodist Specialty & Transplant, Methodist Metropolitan, Mission Trail Baptist and Baptist Medical Center.

Education remains a central pillar of our mission. Medical students rotating through orthopaedics gain early exposure to trauma care, and orthopaedic residents complete multiple trauma rotations during their training. The trauma service continues to offer one of the most rigorous and rewarding experiences in the residency, with high operative volume, hands-on responsibility and exposure to complex decision-making that prepares residents for independent practice. Following the departure of Dr. Zelle, Dr. Hand has assumed the role of Fellowship Program Director, and the OTA-accredited Orthopaedic Trauma Fellowship continues to attract highly competitive applicants from across the country.

Our division also remains highly productive academically. Our Orthopaedic Trauma Research Collaboration Group has published numerous impactful manuscripts in high-impact journals over the past year, reflecting ongoing collaboration across disciplines and institutions. This work continues to enhance the national profile of The University of Texas at San Antonio in orthopaedic trauma research.

We are proud to celebrate the graduation of our most recent fellow, David Michaeli, MD, who has returned to his hometown of Atlanta, Georgia, where he has begun practice and is already thriving professionally. Our current fellow, Raja Ullah, MD, who joined us following completion of residency at the University of Oklahoma, has been an outstanding addition to the division and is excelling clinically, academically and educationally.

As we look ahead, the Orthopaedic Trauma Division remains committed to advancing patient care, education, and research while expanding our role within the community we serve. We are excited about the continued growth and future direction of the division.



Pediatrics

Sekinat K. McCormick, MD

The Pediatric Orthopaedic Division is pleased to share its annual update. Over the past year, the division has continued to flourish both clinically and academically, with faculty contributing meaningfully to patient care, education, scholarship and community engagement.

Sekinat McCormick, MD continues to engage medical and college students in the field of orthopaedics through initiatives supported by the Charles E. Cheever, Jr. Center for Medical Humanities and Ethics and its Community Engaged Learning program. She is also proud to have contributed to a publication in the March 2025 issue of the *Journal of the American Academy of Orthopaedic Surgeons*, alongside resident co-authors Zachary Jodoin, MD and Tyler Williamson, MD. This year, she further expanded her professional involvement by joining two Pediatric Orthopaedic Society of North America (POSNA) committees: the Sustainability Committee and the Public Education and Media Relations Committee. Clinically, she continues to grow her complex care practice through the multidisciplinary spasticity clinic, which is expanding its patient reach and collaborative specialty involvement.

Steven Gibbons, MD continues to work closely with orthopaedic residents as he prepares to assume the role of Residency Program Director. Alongside resident Casey McDonald, MD, he recently contributed to the field of pediatric orthopaedics with a publication in the *Journal of the Pediatric Orthopaedic Society of North America* describing a minimally invasive approach to the treatment of neonatal septic hip. He and his family are also excited to welcome their son, Matthew Gibbons, back to Texas. Matthew will be stationed in El Paso following his graduation from the United States Military Academy at West Point this May.

Kendall Anigian, MD continues to advance the pediatric scoliosis program in collaboration with the UT Health Spine Center. She remains actively involved in strengthening the pediatric orthopaedic service line at University Hospital, serving as the pediatric trauma liaison and as a member of the Pediatric Surgical Quality Improvement Committee. Outside of her clinical work, Dr. Anigian and her family joyfully welcomed their second son, Davis.

The division looks forward to continuing to contribute to the growth of the department while advancing resident education and excellence in pediatric orthopaedic care.



Podiatry

Lee C. Rogers, DPM, FFPM, RCPS

Education

The Division remains home to one of the oldest podiatry residencies in the United States (founded in 1972) and the first podiatry residency established in an academic medical center. The Podiatric Medicine and Surgery Residency (PMSR) is a three-year program approved by the Council on Podiatric Medical Education (CPME) and accepts three residents per year (nine total). The Division also supports a CPME-approved Amputation Prevention and Research Fellowship (founded in 1993) and a dedicated research fellowship year. In 2025, the Division graduated two residents and two clinical fellows and hosted approximately 50 visiting podiatric medical students from programs across the country for externship training.

Clinical Activities

Clinical care includes inpatient limb preservation services at University Hospital and outpatient services at the Texas Diabetes Institute (TDI) and UT Health San Antonio outpatient sites, including the Medical Arts and Research Center (MARC), UT Health at Kyle Seale Parkway (KSP), and UT Health Hill Country. In 2025, the Division completed 9,600 outpatient visits at MARC, KSP, and Hill Country and an estimated 7,000 visits at TDI. The Division continued as an admitting service at University Hospital with an average daily inpatient census of 20. Surgical volume reached 2,143 procedures, totaling 238,869 operative minutes (3,981 hours).

Research Activities

The Division maintained a robust clinical and translational research portfolio focused on diabetic foot ulceration, diabetic foot infection, osteomyelitis, and limb-threatening ischemia. In 2025, faculty published 23 articles in peer-reviewed journals and authored four book chapters. Residents and fellows presented 12 research abstracts at regional and national meetings. The Division was also recognized in a recent bibliometric analysis as the most productive organization worldwide in diabetic foot ulcer research over the past decade.

CME Programs and Academic Outreach

Faculty delivered 37 invited lectures in nine countries and were featured in national and local media outlets, including KSAT, Fox4, and the *San Antonio Express-News*.

The 2025 Diabetic Foot Update centered on the Charcot foot, a potentially devastating complication of diabetes that remains a leading cause of lower-extremity deformity and amputation. The conference featured a distinguished international keynote presentation by Georges Ha Van, AP-HP of Pitié-Salpêtrière Hospital, who delivered a moving and scholarly address entitled "The Life and Work of Professor Jean-Martin Charcot." Jean-Martin Charcot, widely regarded as the father of modern neurology, described and defined numerous neurologic diseases and syndromes that continue to shape medicine today, including the foot condition that bears his name.

The 2025 Lawrence B. Harkless Award in Diabet-



Faculty, planning committee, and staff in front of The Alamo at reception of the 2025 Diabetic Foot Update.

ic Foot Leadership was presented to Professor Edward Jude of Manchester, United Kingdom, in recognition of his enduring global contributions to diabetic foot care, research, and education. Dr. Jude presented his research on "Two Decades of Inflammatory Markers and Targeted Pharmacotherapies in the Charcot Foot."

Participants were welcomed to San Antonio with a memorable reception at the historic Alamo, setting the stage for an immersive and collaborative scientific program. The conference was organized by the multidisciplinary limb-salvage and diabetic foot faculty at The University of Texas at San Antonio, reaffirming the institution's leadership in advanced diabetic foot care and Charcot foot treatments.

The 2025 TexFix Conference built on The University of Texas at San Antonio's legacy external-fixation training by pairing high-yield didactics with hands-on dry-lab and cadaveric workshops, emphasizing practical fundamentals of lower-extremity external fixation mechanics and real-world frame application for complex foot and ankle pathology, especially in the setting of limb salvage. The program reinforced core biomechanical concepts, fixator components, safe zones for wire and pin placement, key surgical indications, and step-by-step techniques for constructing and applying frames in the foot and ankle, making it an especially effective team-based educational experience for surgeons across experience levels. The meeting also featured the Ilizarov Award of Excellence, which recognizes outstanding achievement in external fixation application or education. Christopher Bibbo, DO, DPM received the 2025 Ilizarov Award from The University of Texas at San Antonio for his work advancing the science and education of external fixation.

Honors and Leadership

Lee Rogers, DPM received a lifetime achievement award from *Podiatry Management* magazine. Arthur Tarricone, DPM, MPH received the Early Career Faculty Award from the Wound Healing Society. Lawrence Lavery, DPM was appointed as chair of the Foot Interest Group of the American Diabetes Association, and Robert Frykberg, DPM, MPH, FFPM served as a visiting professor at Harvard Medical School/BIDMC and

served as editor of the Standards of Care for Foot Care to the American Diabetes Association. Division faculty continued service in leadership roles for national and international organizations spanning podiatry, diabetes care, foot and ankle surgery and limb preservation.

Looking Ahead

In 2026, the Division’s priorities include continued growth in access and capacity across our outpatient footprint, strengthening residency and fellowship training, and advancing collaborative research and quality initiatives aimed at reducing preventable amputations throughout South Texas.



Shoulder & Elbow

Anil K. Dutta, MD

The Shoulder and Elbow Service has continued Dr. Charles A Rockwood’s legacy, remaining one of the most innovative and comprehensive shoulder and elbow centers in North America. The current full-time UT Health San Antonio shoulder and elbow faculty are Anil Dutta, MD; Ian Whitney, MD; Phil Jacobs, MD and Adam McNulty, MD.

The department has seen tremendous growth with the addition of our newest faculty, Dr. McNulty. He is a distinguished UT San Antonio graduate who has just completed a sports medicine and shoulder/elbow fellowship at the Hawkins clinic in Greenville, South Carolina. He has an interest in advanced shoulder reconstruction and replacement. He is also sports medicine trained and reinforces UT Health San Antonio’s role as the premiere sports medicine group in the region.

This year was also Dr. Matthew Morrey’s final year as a clinical adjunct faculty. He will step into a mentoring role to our current faculty and advise on research and new technology implementation. He will be retiring to his beloved Elbow Bend Ranch in La Grange as well as Rochester, Minnesota.

The Rockwood Shoulder Elbow Fellowship saw the graduation of Matt Glazier, DO after a tremendous year. He was an outstanding clinical and research fellow who will now be joining the San Antonio Orthopaedic Group and will continue as a colleague and friend to our program. He joins a series of successful graduates, including Eric Johnson, MD in Oklahoma; Tammam Hanna, MD, at Texas Tech (where he was awarded Faculty of the Year in 2025); Jongmin Kim, MD, at the University of Florida, Gainesville; and Vaibhav Kanawade, MD, who is affiliated with the new University of Texas Rio Grande Valley Orthopaedic program. We are excited to see these graduates spread their orthopaedic knowledge and skills around the country — the ultimate embodiment of Dr. Rockwood’s legacy.

Dr. Dutta is the current senior clinical surgeon and continues his work in shoulder and elbow reconstruction with an emphasis on elbow replacement, revision and design. He is working with the Hospital for Special Surgery in their development of a new total elbow system. He is also currently working with Zimmer Biomet on a new shoulder replacement revision design

and on humeral and clavicle market analysis studies as well. His academic work includes book chapters on elbow fusion and shoulder sepsis and publications on humeral fracture care.

Ian Whitney, MD, a graduate of our program, completed his fellowship with Dr. Rockwood’s longtime colleague and co-author, Rick Matsen, MD. He continues to grow his practice in both shoulder and elbow comprehensive care as well as in adult reconstruction and sports. Ian has developed unique strategies in the treatment of shoulder revision and is working with Stryker on both shoulder and elbow reconstruction design and techniques. He is at the forefront of virtual reality and navigation in shoulder arthroplasty and is a leader in the application of robotics in shoulder implantation. He remains an active participant in the care of college (The University of Texas at San Antonio) and high school sports as well.

Philip Jacobs, MD, both a Rockwood and Christian Gerber fellow, continues his leadership with shoulder surgery and sports medicine. He is one of the key members of the UTSA sports coverage team. He continues his investigative work with research on rotator cuff disease and arthroplasty with Hugo Giambini, PhD. Dr. Jacobs is also active in the sports medicine teaching program.



Spine

Christopher D. Chaput, MD

The University of Texas at San Antonio Spine Division continues to expand in both clinical volume and academic impact. Jeffrey Hills, MD and Christopher Chaput, MD serve as the division’s attending spine surgeons. Growth of the UT Health Spine Center has exceeded expectations and translated into increasing surgical volume and complexity at the UT Health San Antonio Multispecialty and Research Hospital (MSRH). In 2025 alone, more than 20 pedicle subtraction osteotomies were performed, underscoring the complexity of the spine cases now routinely managed at MSRH. This expanding case mix reflects the division’s growing role as a regional referral center for complex spine care.

Education remains a central priority. In the most recent fellowship match cycle, two orthopaedic residents matched into highly competitive spine fellowships: Andrew Eck (Washington University Spine Fellowship, St. Louis) and Chimobi Emukah (Houston Methodist Spine Surgery Fellowship). The division continues to participate in a multidisciplinary weekly spine conference with neurosurgery and interventional pain colleagues, supporting collaborative decision-making across a broad spectrum of spinal pathology. This year, Grant Hogue, MD of Boston Children’s Hospital returned as the 22nd Annual Laura B. Flawn Visiting Professor, presenting on early-onset scoliosis and engaging residents in case-based discussion. Dr. Hills also served as faculty for the annual UT Spine Course hosted by the Department of Neurosurgery.

Research productivity and national engagement continued

to advance in 2025. Dr. Hills delivered invited lectures and podium presentations at major national and international meetings, including the International Spinal Deformity Symposium, the Scoliosis Research Society (SRS) Annual Meeting and the Sagittal Alignment Think Tank. He presented invited grand rounds at multiple academic institutions. He was also invited to join the SRS Task Force on Transitional Anatomy. Dr. Chaput authored or co-authored peer-reviewed articles, including systematic reviews, clinical trials, and imaging-based investigations. Collectively, the division authored 16 peer-reviewed publications in 2025, including work published in *The Journal of Bone & Joint Surgery, Spine, The Spine Journal, and European Spine Journal*. Ongoing collaboration with Hugo Giambini, PhD at UT San Antonio continues to advance biomechanical simulations of pre- and postoperative deformity patients, with the objective of developing patient-specific alignment optimization strategies.

Looking ahead, the division anticipates continued growth. Plans are underway to recruit an additional spine surgeon, and initial steps have been taken toward establishing a spine fellowship. These efforts reflect a sustained commitment to advancing complex spine care, education, and clinically meaningful research at The University of Texas at San Antonio.



Sports Medicine

Thomas M. DeBerardino, MD

As a core piece of our Sports Medicine program, the relationship continues to strengthen with the San Antonio Spurs. Guy Nicolette, MD has completed two years as the head team physician and director of sports medicine. He continues to coordinate the large network of primary and specialty care here to support all the needs of the Spurs; this wouldn’t be possible without John Carollo, ATC doing outstanding work cultivating and activating this network to achieve true VIP level service for the entire organization while keeping clinical disruptions low. This relationship with the Spurs has also led to our division now covering the SA FC — our San Antonio professional soccer team. These professional team partnerships help set a foundation for working to translate all that we learn and do for professional athletes to increase the health and performance of the community we serve.

While the Spurs may be the most visible, our other Sports Medicine connections with UTSA Athletics, high school sports coverage, and the minor league San Antonio Missions are rounding out the Sports Medicine Division and UT Health San Antonio’s support and sports coverage all around our growing city.

We are in our fifth year caring for The University of Texas at San Antonio, whose football team continues to excel in the American Athletic Conference (AAC). UTSA Roadrunners made its sixth straight — and seventh overall — bowl appearance when it faced Florida International University at the First

Responder Bowl at the Gerald J. Ford Stadium in Dallas on Friday, Dec. 26. The UTSA Roadrunners secured their third straight bowl victory with a 20-57 score. Philip Jacobs, MD, David Heath, MD and Kenneth Nwosa, MD supported the team heading into and through game day.

Dr. DeBerardino is in his fourth year as the Sports Medicine Division Chief and is the Head Team Orthopaedic Surgeon for UTSA Athletics and the minor league San Antonio Missions baseball team. He also helps cover the Spurs as well. The division continues to be staffed by DeBerardino, Jacobs, Heath, and Kenneth-Nwosa, as well as Leah Brown, MD. Dr. DeBerardino continues his passion to teach both nationally and internationally with a recent trip through Dubai sharing innovative knee and joint restoration surgical techniques with surgeons from around the world at the inaugural Global Knee Innovation Summit.

Dr. Kenneth-Nwosa continues to serve as our Head Team Physician at UTSA Athletics. Dr. Kenneth-Nwosa was appointed to the American Athletic Conference Medical Advisory Committee for a two-year term. He will also help with game coverage with the San Antonio Spurs.

Dr. Jacobs is in his 20th year as Orthopaedic Surgeon for Taft High School. He also continues to serve as one of the Team Physicians for the UTSA Roadrunners. He will be the lead orthopaedic team physician for SA FC.

Dr. Heath completed his second year as a faculty member of the Sports Medicine Division. He serves as one of the Team Physicians for the UTSA Roadrunners and Brandeis High School this past year. Passionate about teaching, he joined the speaking faculty at the medical school and also plays an active role in training the residents in Sports Medicine. We are excited as his practice continues to grow.

Dr. McNulty returned from his Sports Medicine Fellowship at the Steadman Hawkins Clinic of the Carolinas. He has now completed his first year as one of our newest faculty member of the Sports Medicine Division. He brings another set of skilled hands to our division that will lead the charge in support of our department’s effort to be a premier destination for the full spectrum of shoulder care from trauma and instability to reverse shoulder arthroplasty.

Dr. Leah Brown made the move from Arizona to San Antonio to become a faculty member of our Sports Division and to be the lead orthopaedic surgeon for the San Antonio Spurs. She was also inducted into the Georgia Sports Hall of Fame in the Class of 2026.

Marie Charpentier, PT/ATC, continues to serve as the Director of Rehabilitation at UTSA Athletics. Marie leads our Commission on Accreditation of Athletic Training Education Accredited residency for ATCs pursuing additional education in rehab techniques for the past four years with continued success. This program continues to sponsor four residents per year. Marie is also a certified yoga instructor and teaches yoga classes for our athletes to assist with recovery and resilience. She is passionate about incorporating mind and body medicine into sports medicine.

Brian Benitez continues as the Head Football Athletic Trainer and Sam Hinojosa serves as the Associate Football Athletic Trainer. Under the leadership of Benitez, the growing team of ATs continues to work tirelessly to supervise medical care at UTSA Athletics and continue to provide world-class ATC services to all our student athletes.

The Division is also grateful to our other subspecialty providers across The University of Texas at San Antonio who keep our athletes healthy and give our Sports Division the deepest bench of amazing sports medicine physicians in the region. Summer Rolin, PsyD, and Sports Psychologist, currently appointed in the Rehab Med Department has also received a cross-appointment to Orthopaedics. She continues to work with UTSA Athletics and provides neuropsychological evaluation, concussion evaluation, and consultation with medical providers, trainers, and coaches.

Dr. DeBerardino, Dr. Nicolette, and Jesse DeLee, MD hosted the 53rd Annual UT Health Sports Medicine Symposium with the support of many of our UT Health Orthopaedic Faculty. The residents continue their educational sports medicine enrichment at multiple timepoints throughout their five years. The interns spend time with Dr. Jacobs. The second- and fourth-year residents now spend time with Dr. DeBerardino, Dr. Brown and Dr. Heath performing surgery and seeing clinic. This program continues to grow as we look forward to expanding our sideline coverage of local high school sports this next academic year and add two fellows via our Sports Medicine Fellowship over the next several years. Our Sports Medicine Team also provided The University of Texas at San Antonio's third summer school-required physicals with no cost to families providing exams to over 200 athletes.



Veterans Administration

Christina I. Brady, MD

San Antonio and Bexar County remain among the regions with the largest veteran populations in the United States, ranking among the top five counties nationwide for veteran residents. Within the past year alone, the South Texas VA has experienced an approximately 30% increase in new orthopaedic consults, underscoring the rising demand for comprehensive musculoskeletal care among our local veteran population.

Responding to Growing Demand: Expanding Access Through the IPU Model

In response to this increasing demand, the orthopaedic division, now led by Zachary Garza, MD has strategically expanded clinical capacity across the region. Orthopaedic services are delivered at Audie L. Murphy Memorial Veterans Hospital, Northwest VA Clinic, New Braunfels and Kerrville, improving geographic access for veterans throughout South Texas.

We have also implemented a targeted telehealth pathway designed to streamline surgical readiness for veterans who are

clinically optimized, reducing delays between evaluation and operative intervention.

The development of the Orthopaedic Integrated Practice Unit (IPU) has been particularly impactful. Through process redesign, multidisciplinary coordination and optimized triage, monthly new consult capacity has expanded from approximately 400 visits per month to more than 1,000 per month, more than doubling access. Over the past three years, the percentage of veterans evaluated within 28 days, a national VA access benchmark, has increased from 64% to 94%, reflecting measurable improvements in timely care delivery.

The IPU model integrates orthopaedic surgeons, advanced practice providers, Physical Medicine & Rehabilitation, and soon Family Medicine colleagues working collaboratively within the same clinical framework, allowing comprehensive evaluation and coordinated care planning during a single episode of care.

Our integrated model also includes expansion of on-site hand therapy and physical therapy services, increased availability of in-office procedures, and same-day injections when clinically indicated, including corticosteroid, platelet-rich plasma (PRP) and hyaluronic acid injections.

Notably, we remain the only facility in San Antonio offering ultrasound-guided trigger finger and carpal tunnel release in the outpatient setting, providing minimally invasive treatment options that facilitate earlier functional recovery and return to work for Veterans.

Faculty Leadership and Subspecialty Expertise

Under the leadership of Dr. Garza, the division's subspecialty faculty continue to advance both clinical excellence and resident education.

Faculty include:

- Zachary Garza, MD (Chief of Orthopaedic Surgery, Spine Surgery)
- Christina Brady, MD (Deputy Chief, Hand Surgery)
- Brandon Stein, MD — Hand Surgery
- Shumaila Sarfani, MD — Foot & Ankle Surgery
- Joseph Alderete, MD — Orthopaedic Oncology
- Siraj Sayeed, MD — Total Joint Reconstruction
- John Hinchey, MD — Shoulder & Elbow
- Dmitry Tudor, MD — Hand Surgery
- Brian Kantz, MD — Incoming Faculty, General Orthopaedic Surgery
- David Roberts, MD — General Orthopaedic Surgery

This breadth of subspecialty expertise ensures comprehensive, high-quality musculoskeletal care across the VA system.

As part of this continued growth and national leadership, Christina Brady, MD will transition to the University of Michigan at the end of the year while maintaining part-time service within the VA. She will continue advancing the VA National Joints Registry and expanding PROM integration nationwide.

Education and Innovation in Outcomes

This year's most significant advancement has been the integration of automated Patient-Reported Outcome Measures (PROMs) directly into the electronic medical record. These

tools capture functional status, pain, and quality-of-life data in real time, transforming routine clinic visits into measurable, outcomes-driven encounters. PROM integration informs both individual patient care and system-level quality improvement, allowing us to track recovery trajectories, benchmark performance, and identify opportunities for earlier intervention.

Building upon this infrastructure, we are actively advancing the VA Joints Registry, a scalable outcomes platform designed to support longitudinal data collection, comparative effectiveness analysis and national benchmarking within the VA system. The registry is currently expanding across VA sites within the state, and our PROM framework has already been adopted by multiple VA facilities nationally, reflecting its scalability and operational feasibility within the federal healthcare environment.

Expanding Impact: Addressing Social and Mental Health Needs

We have increasingly recognized that veteran health extends well beyond musculoskeletal pathology. A recent VA-based screening initiative demonstrated that approximately 30% of veterans screened positive for food insecurity, underscoring the profound impact of social determinants on overall health and recovery.

In 2025, two veterans died by suicide in the parking lot of the Audie L. Murphy Memorial VA Hospital. These tragic events deeply affected our community and reinforced the urgency of addressing mental health and social vulnerability within every clinical touchpoint.

Although we are musculoskeletal providers, we have observed firsthand how social stressors and mental health conditions significantly influence recovery, treatment adherence, pain perception and long-term functional outcomes.

In response, the Orthopaedic IPU has embedded routine screening for:

- Food insecurity
- Social determinants of health
- Mental health concerns

When unmet needs are identified, referrals to social work, mental health services, and community resources are initiated proactively, prior to the patient's orthopaedic appointment, ensuring coordinated, multidisciplinary support.

Orthopaedic care can serve as a gateway to broader health engagement. Our model reflects that responsibility.

Commitment to Education and Operational Resilience

Education remains central to the mission of the South Texas VA Division of Orthopaedic Surgery. The VA directly supports four orthopaedic residency positions, with three residents rotating on the VA service at any given time. As a high-volume service, residents serve as frontline providers of musculoskeletal care, evaluating patients in clinic, developing treatment plans, and participating in operative care under faculty supervision.

Recent Surgical Processing Department (SPD) capacity challenges temporarily affected surgical volume and aspects of the resident educational experience. We are pleased to report that the division is now fully operational. Elective and urgent cases are performed at the Audie Murphy VA campus, and out-

patient procedures are supported through our partnership with the Christus Santa Rosa Ambulatory Surgery Center, where the majority of outpatient surgical cases are performed. These enhancements have restored surgical throughput, minimized delays, and preserved a robust operative experience for trainees.

The clinical rotation remains multidisciplinary in nature, with orthopaedic, PM&R, and Family Medicine residents working collaboratively in clinic. The VA continues to provide a uniquely valuable environment for supervised surgical autonomy, entrusting residents with meaningful responsibility while maintaining structured oversight. This progressive autonomy prepares trainees for independent practice in a way that is increasingly difficult to replicate in modern healthcare systems.

To further strengthen this transition, we have implemented an end-of-rotation ABOS-style case defense for chief residents rotating off service. During this structured exercise, residents present and defend their own operative cases, reflect on clinical decision-making, and discuss outcomes. This process promotes ownership of patient care, accountability, and thoughtful preparation for independent practice and board certification.

Through resilience, collaboration, and innovation, the VA remains a critical training ground for the next generation of orthopaedic surgeons.

In the News

This article originally appeared in the UT Health San Antonio Newsroom, a digital publication of The University of Texas at San Antonio's academic health center, highlighting excellence in advanced academics, life-saving research and comprehensive clinical care.

By Steven Lee

UTSA and UT Health San Antonio complete merger to become The University of Texas at San Antonio

UTSA and The University of Texas Health Science Center at San Antonio (UT Health San Antonio) today merged to form The University of Texas at San Antonio (UT San Antonio), a premier global university that is deeply committed to making lives better for the communities it serves. As a merged institution, UT San Antonio now ranks as the third-largest public research university in Texas according to annual research expenditures, behind only Texas A&M University and the University of Texas at Austin.

UT San Antonio's comprehensive enterprise now includes approximately 40,000 students, 17,000 employees and more than \$486 million in annual research expenditures. Its growing endowment tops \$1.3 billion. The merger joins two Carnegie R1 "very high research activity" universities, an elite designation reserved for the top 5% of research institutions in United States, and represents the nation's largest integration of universities by total research dollars and endowment since 2013.

UT San Antonio will immediately deliver immense value to

students, researchers, alumni and partners, said President Taylor Eighmy. He envisions it will serve as an exemplar for The University of Texas System, the state of Texas and the nation.

“We intentionally grounded UT San Antonio in excellence — excellence in education, healthcare, transdisciplinary research and discovery — to form a model public research university that is nimble, creative and unlike any other,” said Eighmy. “With that spirit of excellence, we’ve combined two distinguished Tier One institutions to form a new world-class university that champions social mobility, improves health and powers discovery to amplify our collective strengths and create impact at scale.”



Taylor Eighmy, PhD

UT San Antonio’s breadth and scope

Building on the rich history of UTSA and UT Health San Antonio, UT San Antonio will advance knowledge through teaching and learning, groundbreaking research and scientific innovation, exceptional patient care and deep community engagement.

Spanning 15 colleges and schools across six campuses, UT San Antonio now offers more than 320 highly competitive undergraduate and graduate degrees and certificates, one of the most comprehensive academic portfolios in the state. UT San Antonio students have access to an education of the highest quality in disciplines ranging from science, engineering, business, education, humanities, social sciences, architecture and the arts to biomedical sciences, medicine, public health, dentistry, nursing and other allied health professions.

The university’s academic and research programs are ranked among the top 3% worldwide, according to the Center for University World Rankings. The institution is also in the top 12% of colleges and universities in the nation for social mobility, according to *The Wall Street Journal and College Pulse*. Additionally, its Executive MBA program is ranked third in the U.S. by *CEO Magazine*.

UT San Antonio includes UT San Antonio Health Science

Center, the region’s only academic health center and a globally leading health sciences institution, ranked in the top 2.4% of universities worldwide in the 2025 Center for World University Rankings, reaffirming its position as a global leader in biomedical discovery and innovation. UT San Antonio’s Health Science Center is ranked 84th out of 5,868 healthcare institutions around the world and 38th in the United States in the 2025 Nature Index of healthcare institutions for research output. This places the institution among the top 2% of healthcare institutes globally.

UT Health San Antonio, the clinical and patient-care enterprise of UT San Antonio, sees more than 2.5 million patient visits each year and brings together expertise across more than 200 medical and dental specialties and subspecialties — addressing everything from common conditions to complex diseases that disproportionately affect Texans. Through this work, the institution delivers life-changing impact for individuals and families across South Texas’ 38-county region.

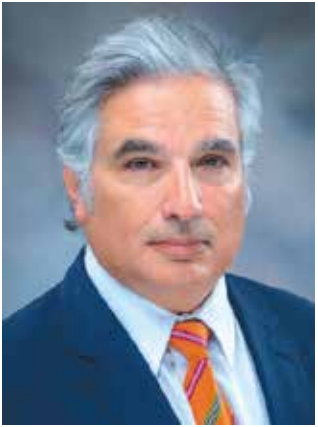
Each year, UT Health San Antonio educates and trains more than 1,015 residents, fellows, and trainees, creating a vital pipeline of skilled physicians to serve our communities. With a team of more than 1,400 physicians, medical providers, health professionals and researchers, the institution provides essential coverage and strengthens the healthcare workforce that supports the region’s major health care networks — including University Health and the Audie L. Murphy Memorial Veterans’ Hospital, part of the South Texas Veterans Health Care System (STVHCS).

These deeply-integrated partnerships not only elevate the quality of patient care today, but also ensure that the health needs of our rapidly growing region and state are met with innovation and expertise.

Building on its combined capabilities, UT San Antonio leaders envision rapid development of hands-on learning opportunities and new degree programs, much like the 2023 launch of a dual-degree program in medicine and artificial intelligence, which was the first program of its kind in the United States.

“Synergies of expertise that come together allow us to innovate. That’s going to be available now to students, to faculty, to scientists, to graduate students across the spectrum of this new university,” said Francisco G. Cigarroa, MD, who serves as senior executive vice president for health affairs and health system of UT San Antonio. “A discovery that happens here, that improves the quality of life, not only improves the quality of life for our children or for our loved ones, but that translates to the population at large and it’s going to have a global impact.”

Athletics remain key to



Francisco G. Cigarroa, MD

UT San Antonio’s vibrant culture. In all 17 NCAA Division I sports, student-athletes will continue to compete as UTSA in the American Athletic Conference. The school’s beloved mascot, Rowdy the Roadrunner, also remains central to UT San Antonio’s university spirit and growing footprint.

Growing Texas’ economy

UT San Antonio is projected to have a \$7 billion annual economic impact, energizing San Antonio’s \$44.1 billion healthcare and biosciences sector, the city’s largest industry.

The university will play a critical role in advancing regional prosperity by fostering excellence, building a culture of service and creating transformative opportunities that keep graduates in Texas, fulfilling its promise to provide talent for industry’s most in-demand, future-forward jobs.

Institutional data shows that more than 90% of UTSA’s alumni enter and remain in the Texas workforce, and UT San Antonio graduates and trains the majority of South Texas’ doctors, nurses, dentists, allied health providers and biomedical scientists.

Building on that momentum, Eighmy says that UT San Antonio has the potential to become “one of the most consequential and forward-thinking universities in the United States.”

Cigarroa added, “UT San Antonio is going to enrich that culture that makes San Antonio — the region that we live in — not only the best place to raise a family, but the best place to study and the best place to work. Education saves lives. For me, it’s the greatest public health initiative we can provide because we can transform one life that will change generations to come.”

An ambitious vision within reach

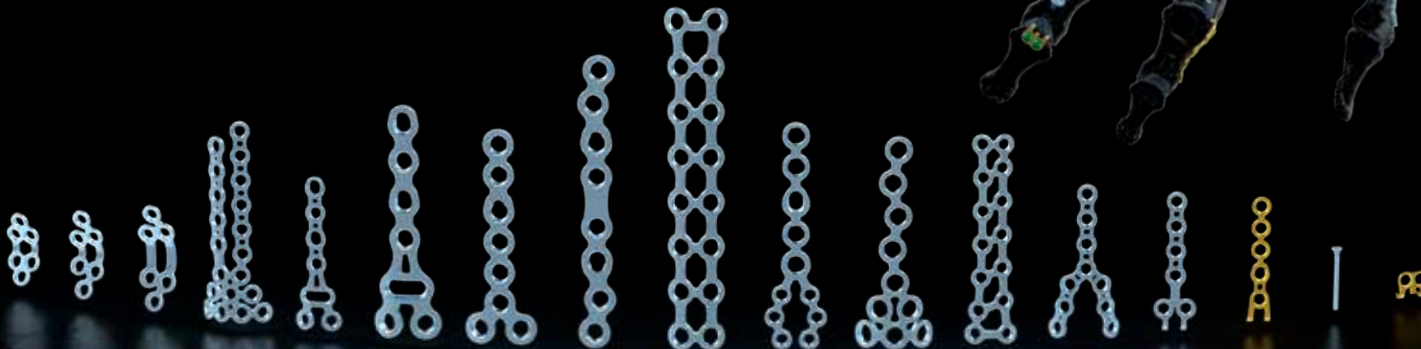
In addition to bringing about interdisciplinary synergies in research and educational opportunities for both students and faculty, today’s merger completion puts UT San Antonio on a very real path to becoming a premier institution with the characteristics of the elite members of the Association of American Universities.

“I cannot overstate the significance of what this new UT San Antonio will mean to Texas and the nation,” said UT System Board of Regents chairman Kevin Eltife. “This is and always will be about impact. It’s about bringing together two institutions that complement each other — one with academics, research, the arts, and athletics and another that has all that you could ask for to make patients’ lives better through health education, research and clinical care.” ■

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04

Research Updates

Research Division



Lawrence A. Lavery, DPM, Vice Chair of Research

Our research program is dynamic and growing. We have completed projects funded by the National Institute of Health, Department of Defense, medical societies and industry. We continue to develop novel projects to build on our successes, despite the concern over reductions and restrictions in federal funding.

We have a great foundation to build the department's research. We have a tremendous faculty, and that makes collaboration with industry a natural fit. Industry projects provide foundational support while we seek multi-year federal funding. We have a dozen industry research projects that are on-going or in the startup phase. As we grow, we will build research infrastructure around our clinical expertise, increase funding and increase publications.

Joe Alderete, MD, and his team bring a history of Department of Defense funding and innovative interventions for complex trauma, amputations,

nerve injuries and rehabilitation. His team has unique insights into the unmet needs and funding opportunities from the Department of Defense as well as a group of collaborators that are leading similar research programs at academic medical centers around the country. Vaida Glatt, PhD, is pioneering treatments for patients with complex non-unions and bone defects. Her work is being used by orthopaedic surgeons, while she continues to expand these innovations in animal models. In addition, we will start as a site for a National Institutes for the Humanities (NIHU) award to evaluate diabetic foot ulcers in collaboration with six other centers.

Jeffrey Hills, MD, is the Director of Orthopaedic Clinical Research, Arthur Tarricone DPM, MPH, is the Director of Podiatry Clinical Research, and Vaida Glatt, PhD, is the Director of Basic Science Research.

The Growing Strength of Orthoplastics at The University of Texas at San Antonio



Juan Berner Gómez, MD, DPhil; Oriana Haran, MD; Charles Fries, MD

The Department of Orthopaedics, in collaboration with the Department of Plastic and Reconstructive Surgery, continues to set new standards in orthopaedic trauma care, complex extremity reconstruction and limb salvage through its expanding Orthoplastics Division. With the addition of two full-time faculty members — Oriana Haran, MD; Juan Berner Gómez, MD, DPhil and Charles Fries, MD — the partnership between the two specialties has never been stronger.

This collaboration has fostered an integrated, team-based approach to musculoskeletal and soft-tissue reconstruction, leading to unprecedented clinical outcomes and establishing a new standard of care for patients with



complex trauma and limb defects. The Orthoplastics team, in less than one year, has now performed over 100 free flap reconstructions, an impressive milestone that reflects both the technical

excellence and multidisciplinary coordination driving the program's success.

Beyond reconstruction, the team plays a vital role in limb salvage and amputee care, working hand in hand with orthopaedic trauma, oncology, and rehabilitation services to restore form and function for patients facing some of the most challenging injuries. Their contributions have been instrumental in advancing patient outcomes and strengthening the department's reputation as a regional leader in comprehensive extremity care.

The University of Texas at San Antonio is truly fortunate to have such a talented and dedicated Orthoplastics team. Their innovation, collaboration, and patient-centered approach continue to elevate the standard of care across the institution and beyond.



Basic Science Division – A Year in Review



Vaida Glatt, PhD, Director of Basic Science Research

As Director of Basic Science Research in the Department of Orthopaedic Surgery at The University of Texas at San Antonio, and holder of the Dr. Robert and Dr. Louise Hutchinson Endowed Chair, I am pleased to share highlights from our division's research efforts over the past year. The Glatt Lab remains at the forefront of translational research in regenerative medicine, focused on developing innovative therapies for complex musculoskeletal injuries. Our multidisciplinary team, comprising post-doctoral fellows, visiting scientists, clinicians, residents, research assistants and medical students, continues to collaborate on clinically impactful research aimed at improving orthopaedic care and patient outcomes.

This year marks nine years since the development of the Biomimetic Hematoma (BH), an autologous scaffold designed to replicate the structure and biology of natural fracture hematoma while delivering targeted growth factors like rhBMP-2 to promote bone regeneration. Preclinical studies in both small and large animal models has shown that BH is the first autologous scaffold capable of efficiently delivering ultra-low doses of rhBMP-2 while supporting the body's intrinsic bone healing process. Our small animal findings have been published, and our large animal segmental defect study has been conditionally accepted by the *Journal of Orthopaedic Trauma*.

Clinically, we have now treated over 120 patients using BH in high-risk cases such as nonunions, delayed unions, large segmental defects, and complex posttraumatic ankle fusions, many of which had previously been considered for amputation. We are currently preparing three new manuscripts, a case report on periprosthetic tibial fracture nonunion in patient with multiple comorbidities with Joseph Alderete, MD (UT Health San Antonio), a series of 21 posttraumatic complex hindfoot and ankle fusions with bone loss, with Max Michalski, MD (Cedars-Sinai), and a multicenter report on 60 complex

cases with Dr. Stephen Quinlan (Paley Institute) and Dr. Kevin Tetsworth (Royal Brisbane Hospital, Australia). These emerging data suggest that BH may be the only clinically tested scaffold capable of delivering approximately 70% lower doses of rhBMP-2 while achieving consistent, robust bone regeneration. Importantly, BH has not been associated with intraoperative complications, inflammatory reactions, or wound issues. My company, VitaBone Medical Inc., is advancing through FDA regulatory review and is currently in the due diligence stage with an investor supporting commercialization efforts.

In 2024, I was awarded a Trauma Research and Combat Casualty Care Collaborative (TRC4/DoD) grant to explore BH's potential in volumetric muscle regeneration through delivery of myogenic molecules. Experimental work has been completed, and a manuscript is in preparation. The study demonstrated that BH, with and without added myogenic factors, effectively regenerated large muscle defects that otherwise would not heal, with treated muscles integrating seamlessly into surrounding tissue and closely resembling uninjured muscle. These results offer promising applications for both severe traumatic injuries and recovery enhancement in elite athletes. We are now preparing additional grant submissions to continue this work.

Our research division also continues to expand global partnerships in musculoskeletal science. We welcomed Fabio Rodrigues, MD, an orthopaedic surgeon from Brazil, as a visiting research fellow to initiate collaborative studies and prepare for clinical trials using my Reverse Dynamization technology, a method designed to accelerate bone regeneration. We also maintain active collaboration with Kevin Tetsworth, MD in Australia, a leader in limb reconstruction, on ongoing projects focused on advanced bone repair techniques.

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Podiatry Research



Arthur Tarricone, DPM, MPH, Director of Podiatry Research

Under the leadership of Arthur Tarricone, DPM, MPH and Lawrence Lavery, DPM, MPH the Division of Podiatry continues to lead in clinical research and academic excellence. Dr. Tarricone brings a specialized background in biostatistics and public health to the division, offering unique expertise in analyzing complex data and health disparities in nontraumatic amputations. His focus on interdisciplinary work bridges the gap between podiatric surgery, vascular outcomes, and population health.

Dr. Lavery is globally recognized as a preeminent expert in diabetic foot management and osteomyelitis. His extensive body of work includes pioneering research into risk factors for re-infection after treatment for bone infections and the development of evidence-based protocols for limb salvage. His leadership ensures the division remains at the forefront of treating the most complex infected diabetic foot complications.

Education and mentorship are central to the division's mission. Residents have actively contributed to research this year, submitting numerous abstracts and posters accepted at national conferences.

Key collaborations include:

A wound registry project with Boris Zelle, MD's Orthopaedics team and Solventum to develop high-detail clinical studies for patients with open traumatic or infectious wounds.

A study with the University Health Institute for Public Health analyzing disparities in outcomes for patients with diabetes who underwent an atraumatic lower extremity amputation from 2022–2024.

Ongoing trials address major podiatric issues:

BioStem: Evaluating the efficacy and safety of Vendaje, a thick structural tissue allograft, for non-healing, chronic diabetic foot ulcers.

Mirragen: An observational study on adjunctive treatment for diabetic foot ulcers with chronic osteomyelitis using bioabsorbable borate-based bioactive glass fiber.

Vivonics: An observational study evaluating the feasibility and performance of a near-infrared, layered optical imaging system for assessing wound tissue hemodynamics and monitoring healing.

Convatec: Evaluating the efficacy and safety of ConvaNiox, a two-part, multilayered, multimodal wound dressing, for healing hard-to-heal wounds.

The division also contributes to:

Kerecis registry: Collecting real-world data on the treatment of acute and chronic wounds using Kerecis fish skin grafts.

Diabetic Foot Consortium (DFC): NIH-supported, testing multiple biomarkers to identify DFUs with higher healing potential to drive personalized management decisions.

Key members of the team include Ruta Simanavicius (Clinical Trial Specialist) and Riana K. Andrews (Research Coordinator). They have made invaluable contributions to the division's research success. They play a vital role in drafting study protocols, ensuring research stays on track, and bringing teams together to keep momentum strong. Their ability to maintain professional and collegial relationships with investigators and external partners has helped foster a positive and productive research environment, making them a cornerstone of many ongoing efforts.

With strong leadership, collaborative momentum, and dedicated team members like Simanavicius and Andrews, the division continues advancing podiatric research, care and education.

Student Editors, Residents and Medical Students Research Highlights



Daanish Sheikh, MS4 and Andrew Madsen, MS2

Research continues to serve as a cornerstone of orthopaedic training, strengthening clinical insight while advancing patient care. Over the past year, residents and medical students have remained deeply engaged in scholarly activity, presenting impactful work at national meetings across multiple subspecialties. From perioperative optimization and infection risk stratification to implant biomechanics and multi-institutional outcomes research, these projects reflect both the breadth and sophistication of ongoing investigation within our department. The following highlights showcase several exemplary presentations from the 2025–2026 academic year, underscoring the continued commitment to academic excellence and innovation in orthopaedic surgery.

Clinical Orthopaedic Society / September 4, 2025

Third year medical student Daanish Sheikh presented at the Clinical Orthopaedic Society conference on behalf of Zachary Jodoin, MD, PGY 4; William H. Young, MD, PGY 5; Chance C. Moore, MD; and Frank Buttacavoli, MD. Their project titled, “Malnutrition is Common in Patients Utilizing Glucagon-Like Peptide-1 Agonists Prior to Total Joint Arthroplasty,” evaluated the nutritional status of patients taking GLP-1 receptor agonists prior to undergoing total joint arthroplasty and identified a concerning prevalence of preoperative malnutrition in this population. The project was awarded 1st Place Podium Presentation Award, recognizing its clinical relevance and impact on perioperative optimization strategies.

Society of Military Orthopaedic Surgeons Annual Meeting / December 2025

First year orthopaedic surgery resident Andrew Ni attended the Society of Military Orthopaedic Surgeons Annual Meeting and presented on behalf of Alexander Nguyen; Coltin Gerhart, PGY 2; Tyler Williamson, PGY

3; and Boris Zelle, MD. Their project, “Preoperative Steroid Injections and Periprosthetic Infection Risk in Ankle Arthroplasty,” examined the relationship between preoperative corticosteroid injections and the risk of periprosthetic joint infection following total ankle arthroplasty. With increasing utilization of ankle arthroplasty and ongoing debate surrounding perioperative injection timing, this work contributes important evidence regarding infection risk stratification and surgical planning. Their findings provide meaningful guidance for optimizing timing and counseling patients undergoing ankle replacement procedures.

American Shoulder and Elbow Surgeons Annual Meeting / October 2025

Robert Hartzler, MD, MS attended the attended American Shoulder and Elbow Surgeons Annual meeting and presented on behalf of Joseph DiCecco, BSA; Adam Maestas, BS; Axel Clement; Hugo Giambini, PhD; Matthew Glazier, DO; and Anil Dutta, MD. Their project, titled “A 10% Increase in Liner Constraint Significantly Affects Simulated Reverse Total Shoulder Range of Motion in Four of Six Planes in a Large Series of Clinically Planned Cases,” utilized advanced simulation across a large cohort of clinically planned reverse total shoulder arthroplasty cases. The authors demonstrated that even modest increases in liner constraint can significantly decrease range of motion in multiple planes. These findings highlight the importance of pre-operative planning and consequences of increasing linear constraint.

Clinical Orthopaedic Society 113th Annual Meeting / September 2025

Third year medical student Katie McBee attended the Clinical Orthopaedic Society 113th Annual meeting and presented their project on behalf of Alsaidi, A.; Gh-

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UT Orthopaedics International Trauma Elective: From Texas to the Alps



Schokolade, Käse und Orthopädische Chirurgie

Kyle Paul, MD

I am a current fourth-year resident here at the The University of Texas at San Antonio Department of Orthopaedic Surgery. Our program has a storied history in traumatology and orthopaedics, particularly of the upper extremity, and I look forward to the opportunity of carrying that legacy forward. Originally starting as a chemical engineer and biomedical engineer from Auburn University, I used my technical education as a foundation to progress to medical school at The University of Alabama at Birmingham. I completed a research fellowship in shoulder, elbow and knee surgery with the Department of Orthopaedic Surgery at The University of Alabama at Birmingham under the leadership of Brent Ponce, MD; Amit Momaya, MD and Eugene Brabston, MD before advancing to residency here in San Antonio.

Switzerland is the birthplace to some of the most important concepts in orthopaedics and has changed the theory for fracture management. To learn from the lineage of surgeons who proposed these concepts is an incredible opportunity, and I was very grateful to be selected for the Bonebridge orthopaedic and traumatology fellowship program.

The experience involved three rotations for two weeks a piece each — starting in Zurich at Stadtsptal Triemli, then on to Spital Interlaken in the Bernese Oberland, and finally at Kantonsspital Grabunden in Chur. Each location offered a unique experience in orthopaedics and traumatology, and the lineage of leadership was in each of their practices. At Triemli, I had the privilege to learn from Professor Christian Spross and his team, which included an operative visit from Professor Christian Gerber. I learned many new techniques for the management of upper extremity trauma. In Interlaken, Jonathan Spycher, MD — who, aside from traumatology, is a brilliant arthroplasty surgeon and has a fascinating life story — and his team were at the tip of the spear regarding mountain and paragliding accidents. This included base jumping, which we don't commonly see in San Antonio! Finally, Dr. Stillhard and his team of traumatologists and orthopaedic surgeons really drove home the concepts of the AO, having hosted fellows since the late 1970s beginning under Professors Martin Allgöwer and Thomas Rüedi. Here, I was involved in many large polytrauma cases that are flown in from all over the canton.

While there are many similarities between the Swiss and US operative systems, each case had at least one small unique difference. Whether it was details in the surgical approach, im-

plant choice, up to choice of operative intervention altogether — there was something to learn with each case. This experience has given me new tools in my toolbox. This is an invaluable thing to receive as a surgeon. Seeing new ways of thinking about orthopaedic injuries and fracture management increases knowledge of the subject, which in turn can lead to greater impact and success as a surgeon in the operative theater.



Orthopaedic Trauma and Daily Life in Winterthur, Switzerland

Elizaveta Reznichenko, MD

Since 1958, with the establishment of the AO and its dogma of orthopedic internal fixation techniques, Switzerland has been at the core of Orthopaedics, especially Orthopaedic Trauma. Zurich and Davos have been household names among the orthopaedic community, and I was fortunate to spend three weeks this fall at another staple of Swiss orthopaedic trauma: Kantonsspital Winterthur (KSW).

KSW was established in 1876 as one of Switzerland's first major healthcare institutions, known as the Einwohnerspital. Today, KSW is a level 1 trauma center with one of the largest orthopaedic trauma and general trauma surgery programs in Switzerland. However, contrary to our home, Level 1 — University Hospital, the population and mechanisms of injury are quite different. With lower speed limits and limited firearms, high-speed motor accidents and ballistic injuries are quite rare in the land of the beautiful Alps. Instead, bike-related and ski-related accidents are more common, as well as geriatric falls and other sports-related injuries. However, Swiss nationals are quite loyal to their home health system. During my time at KSW, I witnessed multiple transfers of patients who sustained injuries abroad (Morocco/Africa) and elected to be medically transported back to Switzerland to undergo care.

The trauma department at KSW, encompassing all contributory services (Orthopaedics, General Surgery, Plastic Surgery, Neurosurgery, Urology, etc.), is quite intertwined, meeting every morning as an entire Trauma department to review overnight consults, OR space, and distribution, and to discuss multidisciplinary cases together. I was rather impressed by such morning meetings, as they enabled open, clear communication among the senior surgeons in each subspecialty, generating immediate, higher-level plans.

The hospital itself and the “vibes” were more formal than I

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A new project is underway in collaboration with DePuy Synthes and Animesh Agarwal, MD at UT Health San Antonio to improve bone lengthening and reconstruction. The study focuses on refining distraction osteogenesis, a technique where bone is gradually stretched to stimulate new growth. While traditionally done using manually adjusted external frames, newer computer-controlled systems like the MaxFrame Autostrut™ allow for high-frequency, low-magnitude adjustments throughout the day. A large animal model will be used to compare these automated protocols with conventional methods and assess differences in bone regeneration. The goal is to determine whether more frequent, gentler adjustments lead to faster and higher-quality healing. Findings from this research may inform

future clinical strategies for limb lengthening and skeletal reconstruction following trauma or deformity.

Over the past year, the Glatt Lab has continued to contribute to the orthopaedic field through multiple peer-reviewed publications and presentations at national and international conferences. I was again invited to present at RegenMedSA in San Antonio and to deliver grand rounds and invited lectures at major meetings focused on bone and muscle regeneration. Our division remains committed to training the next generation of physician-scientists, offering The University of Texas at San Antonio medical students and residents immersive experiences in both basic and clinical research, data analysis, and manuscript development. ■

◀ *continued from page 27*

ali, A. PGY 4; Hafeez, H.; Lawand, J. MD; and Tyler, A MD/PHD. Their project, “Impact of Antidepressant Use on Complications Following Ankle Fracture Management: A Multi-Institutional 1:1 Propensity Matched Cohort Analysis,” was a multi-institutional propensity-matched analysis investigating whether preexisting antidepressant use is associated with post-

operative complications following ankle fracture treatment. By controlling for confounding variables, the study provides insight into the intersection of mental health, medication use and orthopaedic trauma outcomes. The findings contribute to a growing body of literature emphasizing the importance of holistic perioperative assessment and patient optimization. ■

◀ *continued from page 28*

am used to in our cowboy-esque, lively orthopedic OR pod, and everyone was required to change from clinic or hospital white scrubs to the OR green scrubs and freshly autoclaved OR clogs. This resulted in a wardrobe change about four to six times a day, since every time you left the OR, green scrubs and clogs had to come off, and white scrubs and sneakers went on. While I witnessed many efficient mechanisms in the Swiss system, this repeated changing of scrubs was definitely not one of them, and my feet and back definitely missed my OR cowboy boots. However, the Swiss were exceptionally friendly and welcoming, and even helped me learn the German names for the OR instruments.

Outside the hospital, I was fortunate to explore Zurich, only 25 minutes away from Winterthur by train. I was also in a frenzy and was able to visit Lucerne, Lausanne, Berne and Basel

and even spend a weekend in Milan, Italy. Needless to say, Swiss chocolate, public transportation, and the accessibility of travel are unbeatable.

I loved my time at KSW, Dr. Meier (the Orthopaedic Trauma Chief), and all the residents, fellows, and attendings. We got to discuss fracture management, anesthesia turnovers and hospital politics. While San Antonio and Winterthur are quite different and could be from different planets, it was reassuring to see the orthopedics itself was constant, for the most part, internationally, and that if you were to one day drop a Texan Orthopedic Surgeon at a Level I trauma hospital abroad, after a few days they would feel right at home, given that a fracture is a fracture, and as orthopedic surgeons, no matter if we are American or Swiss, we must fix it. ■

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*Demonstrated statistically superior time-to-fusion in a single-level TLIF PMA IDE study vs. local autograft.

†High-risk includes nicotine use, BMI ≥ 30 and/or Type 2 diabetes.

1. PearlMatrix Instructions For Use: Cerapedics. 2. Internal Data on File as of 9/9/24.

ML-1554-3



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ADULT
RECONSTRUCTION

Effects of Malnutrition On Perioperative Outcomes of Total Hip Arthroplasty: A Systematic Review And Meta-Analysis

Aziz, A., Bluhm, J. B., Williamson, T. K., Atkison, C., Eck, A., Moore, C., & Buttacavoli, F. A. (Jun 2025).

Background: Malnutrition can play a significant role in wound healing, immune response, and conditioning. The purpose of this review is to characterize definitions of malnutrition in total hip arthroplasty (THA) and analyze its effects on postoperative outcomes.

Methods: A systematic search was conducted using iterations of the key terms “total hip arthroplasty” and “malnutrition.” Human studies describing malnutrition in patients undergoing primary THA for either traumatic or elective indications were included. Using the SPSS meta-analysis binary and continuous model function, the mean effect size estimate (MSE) or Cohen’s d (Cd) statistic with 95% confidence interval was reported.

Results: This search yielded a total of 555 studies, of which 9 articles comprising 495,657 patients undergoing primary THA were included, characterizing 16,895 patients (3.4%) as malnourished. Studies characterized malnutrition as albumin <3.5 g/dL (n = 7) and total lymphocyte count <1500 (n = 1). Malnutrition was associated with an increased rate of nonhome discharge (MSE = 0.81, [0.55-1.07]) and likelihood of readmission (MSE = 0.86, [0.75-0.97]). Malnutrition at the time of surgery was also associated with increased rates of any complication (MSE = 1.01, [0.46-1.57]), wound complications (MSE = 1.04, [0.72-1.36]), pulmonary complications (MSE = 1.54, [1.29-1.78]), need for transfusion (MSE = 0.75, [0.54-0.96]), periprosthetic fracture (MSE = 0.65, [0.47-0.82]), reoperation (MSE = 0.72, [0.58-0.86]), and perioperative mortality (MSE = 2.05, [1.76-2.33]).

Conclusions: Malnutrition was found to have significant associations with complications and disposition following THA. The findings from this meta-analysis provide support for further investigation into perioperative nutritional supplementation strategies for surgeons to optimize at-risk patients prior to THA.

Safety of Administering Cefazolin in Beta-Lactam Allergic Patients Undergoing Elective Orthopaedic Procedures. J Arthroplasty

Clarke, Z., Koonce, R., Dayton, M. R., Hogan, C., & Jeffres, M. (May 2025).

Background: Cefazolin is the preferred antibiotic for surgical site infection (SSI) prophylaxis in total joint arthroplasty due to its superior efficacy. However, patients labeled as allergic to beta-lactams often receive alternative antibiotics, increasing SSI risk. Despite historical concerns of cross-reactivity between penicillins and cephalosporins, recent data indicate a much lower risk, particularly for cefazolin.

Methods: This study evaluated the safety of a quality improvement protocol recommending cefazolin for SSI prophylaxis in patients labeled as beta-lactam allergic, excluding those who had documented cefazolin allergy. A retrospective review of 521 elective orthopaedic surgeries was conducted to identify hypersensitivity reactions (HSRs) following protocol implementation. Immediate HSRs were categorized as probable or possible based on perioperative clinical signs and responses to treatment.

Results: Among the 521 patients, including 209 who had severe beta-lactam allergy histories, no probable HSRs were observed. There were 24 patients (5%) who experienced possible intraoperative HSRs, with 14 ruled out as cefazolin-related due to tolerance of subsequent doses. No patients required epinephrine or experienced severe hypersensitivity, and none were re-labeled as cefazolin-allergic.

Conclusions: This study demonstrates the safety of cefazolin administration for SSI prophylaxis in beta-lactam-allergic patients, even those who had severe allergic histories. Previous studies corroborate the safety and efficacy of cefazolin compared to alternative antibiotics, supporting its use as the standard of care. The findings emphasize the safety of cefazolin for orthopaedic SSI prevention in beta-lactam-allergic patients, aligning with antimicrobial stewardship principles and reducing reliance on less effective alternatives.

Patient Preoperative Optimization: How to do it and How to Be Paid for the Work_2024 AAHKS Annual Meeting Symposium

Clarke, Z. H., Springer, B. D., Sporer, S. M., Ast, M. P., Chen, A. F., & Fricka, K. B. (Apr 2025).

Background: Preoperative optimization has become an essential component of the orthopaedic surgeon's workflow, especially as outpatient total joint arthroplasty (TJA) becomes more common in ambulatory surgery centers. Surgeons must identify

and address modifiable patient risk factors, optimize surgical outcomes, and navigate reimbursement processes for these critical services.

Methods: This review outlines key aspects of preoperative optimization, including medical evaluations for anemia, glycemic control, smoking cessation, and the management of comorbidities like rheumatoid arthritis, obstructive sleep apnea, and peripheral vascular disease. Nutritional and obesity management, the perioperative use of glucagon-like peptide-1 agonists, and the decision-making process for inpatient versus outpatient surgery are also explored. Strategies for optimizing these factors and standardized protocols for risk stratification and patient selection are emphasized. In addition, the introduction of Principal Care Management codes is discussed as a pathway for surgeons to receive reimbursement for preoperative planning efforts.

Results: Addressing modifiable risk factors reduces perioperative complications and improves outcomes. For example, tight glycemic control decreases the risk of periprosthetic joint infection, while smoking cessation enhances wound healing. Nutritional interventions, including addressing malnutrition and vitamin D deficiency, reduce complications. Obesity management strategies prioritize patient-centered approaches without strict body mass index cutoffs. Outpatient TJA has shown safety and feasibility and provided careful patient selection, facility readiness, and surgical efficiency. The Principle Care Management billing offers an opportunity for compensation for complex preoperative care.

Conclusions: Preoperative optimization is crucial for minimizing risks and improving outcomes in TJA, particularly as outpatient procedures become more prevalent. Surgeons play a pivotal role in managing patient factors, collaborating with consultants, and implementing standardized protocols. Embracing Principal Care Management codes acknowledges the extensive planning involved in optimizing safety and surgical outcomes, ensuring proper compensation while maintaining high standards of care.

Comparative Analysis of Frailty Indices on Complication Risk Following Septic Revision Total Hip and Knee Arthroplasty

Grimmett, H., Sayyed, A., Koltenyuk, V., Areti, A., Chmait, H. R., Gupta, N., Gray, M., Young, W., Williamson, T. K., Moore, C., & Buttacavoli, F. A. (Oct 2025).

Background: Frailty is an established risk factor for adverse outcomes following total joint arthroplasty, including higher rates of prosthetic joint infection (PJI), reoperation rates, and readmission, which may be greater in the setting of revision. The purpose of this study is to compare the association of frailty indices with mortality and complications following septic revision arthroplasty.

Methods: A query from The American College of Surgeons National Surgical Quality Improvement Program (NSQIP) was performed for adult patients undergoing revision total knee or

hip arthroplasty between 2015 and 2020, which records perioperative data (30 days postoperatively) for over 700 centers nationwide. PJI cases without revision arthroplasty were excluded. The RAI-rev and mFI-5 frailty scores were calculated for each patient. Outcomes included major complications, mortality, non-home discharge (NHD), DVT, readmission within 30 days, wound complications, pulmonary complications, cardiac complications, and postoperative infection. T-test and binary logistic regression assessed associations with frailty scores and outcomes. Predictability was evaluated through multivariate regression analysis, and its discriminative accuracy was measured using receiver operating curve (ROC) analysis and C-statistics.

Results: A total of 4395 patients were included (median age: 66 [IQR 59-73]). Within the cohort, 46.44% were female and 38.02% exhibited NHD. RAI-rev demonstrated increased association compared to mFI-5 with mortality (OR: 1.20 vs 1.10, CI: 95%) and NHD (OR: 1.15 vs 1.05, CI: 95%). RAI-Rev demonstrated significantly superior discriminatory accuracy when compared to mFI-5 for NHD (Cs: 0.670 vs 0.602, P < 0.001) and mortality (Cs: 0.795 vs 0.574, P < 0.001).

Conclusions: Frailty may have a distinct association with mortality and NHD following septic rTJA, especially when assessed by the revised Risk Analysis Index. This understanding is important to educate the patient and their family and provide insight into the necessary resources and surveillance needed to manage frail patients undergoing septic revision total joint arthroplasty.

A Spontaneous Tear of The Medial Collateral Ligament While Batting: Results of Nonoperative Treatment—A Case Report. J Shoulder Elbow Surg

Hanna, T., DeLee, J., & Morrey, B. (Jan 2025). <https://doi.org/10.1016/j.jse.2024.11.040>

Medial (and ulnar) collateral ligament (MCL and UCL) injuries were first reported in the literature in 1946 in Javelin throwers; however, since the publication of that article, these injuries were reported more commonly in throwing athletes, especially in baseball pitchers of all levels, and the procedure performed on pitcher Tommy John in 1974 by Dr Frank Jobe became so popular after its success to the point where the term “Tommy John’s epidemic” was coined, and there has been a 10-fold increase in the procedure in the last decade (25% of major league pitchers underwent the surgery).

The injury usually affects the anterior bundle of the MCL, and it is most common in pitchers, as a result of overuse injury. It is a rare injury in batters, and in the literature there is only 1 case report that we are aware of, of a hitter who presented with a UCL rupture of his nondominant arm after a single swing that was treated with reconstruction.

Malnutrition is Common in Patients Utilizing Glucagon-Like Peptide-1 Agonists Prior to Total Joint Arthroplasty

Jodoin, Z., Young, W. H., Sheikh, D., Pena, B., Moore, C. C., & Buttacavoli, F. (Oct 2025).

Background: The rising prevalence of obesity and the increased use of glucagon-like-peptide-1 (GLP-1) receptor agonists for weight loss and diabetes has led to more patients qualifying for elective total joint arthroplasty (TJA). While these medications promote weight reduction, they may predispose patients to nutritional deficiencies. This study aims to evaluate the preoperative nutritional status of GLP-1 users undergoing TJA compared to nonusers.

Methods: A retrospective chart review was conducted at a high-volume center on patients who underwent elective primary TJA between January 1 and May 1, 2025. Patients were included if they had complete preoperative nutritional labs. Nutritional markers included hemoglobin, albumin, total protein, prealbumin, calcium, alkaline phosphatase, and 25-hydroxy vitamin D. Malnutrition was defined as ≥ 1 laboratory deficiency; severe malnutrition as ≥ 2 deficiencies. GLP-1 use, indication, and duration were recorded. Statistical analyses included t-tests, chi-square tests, and odds ratio calculations.

Results: A total of 165 patients met inclusion criteria, with 29 (17.6%) actively using GLP-1 receptor agonists. The cohorts were matched for comorbidities. GLP-1 users had higher rates of malnutrition (38% vs 8.8%, $P < .001$; odds ratio = 6.2), severe malnutrition (17.2% vs 2.9%, $P = .009$; odds ratio = 6.88), and lower albumin ($P < .001$), prealbumin ($P = .003$), and total protein ($P = .024$) levels compared to controls.

Conclusions: GLP-1 agonist use is associated with significantly higher rates of preoperative nutritional deficiencies in patients undergoing elective TJA. Given the high risk of malnutrition in this growing patient population, targeted nutritional screening and optimization should be considered standard practice in the preoperative evaluation of GLP-1 users.

Diabetic Neuropathy is a Strong Risk Factor for Poor Orthopaedic Outcomes Following Total Knee Arthroplasty

Kotzur, T., Barnes, M., Peterson, B., Jodoin, Z., Buttacavoli, F., & Moore, C. (Nov 2025).

Background: The aim of this study was to investigate the impact of diabetic peripheral neuropathy (DPN) on total knee arthroplasty (TKA) outcomes when compared with both nondiabetic and diabetic patients who did not have neuropathy (DM).

Methods: This retrospective cohort study utilized a global clinical research network, comprising data collected between 2005 and 2022. Patients undergoing TKA were identified using international classification of diseases, 10th revision and Current Procedural Terminology codes. Patients were stratified based

on diabetes status and the presence of diabetic neuropathy. Orthopaedic complications were assessed over a 2-year period postoperatively, while medical and hospital complications were evaluated within 90 days. Propensity score matching (1:1) was performed to control for baseline covariates, including age, sex, body mass index, Charlson Comorbidity Index, and hemoglobin A1c where applicable. Postmatching logistic regression was used to calculate risk ratios (RRs) with 95% confidence intervals. Statistical analyses were conducted with significance set at $P < 0.05$.

Results: This study included 318,851 patients who underwent TKA: 227,597 (71.4%) patients who did not have diabetes, 68,694 (21.5%) patients who had diabetes, but did not have diabetic neuropathy, and 22,560 (7.1%) patients who had diabetic neuropathy. When compared to patients who had DM, after matching for hemoglobin A1c levels, patients who had DPN had a higher risk of postoperative joint infection (RR 1.69, $P < 0.001$), periprosthetic fracture (RR 1.64, $P < 0.001$), and revision surgery (RR 1.49, $P < 0.001$) within two years of surgery. Compared to nondiabetic patients, those who had DPN again had significantly higher risks of 2-year orthopaedic complications.

Conclusions: This study found that diabetic neuropathy, when compared with both nondiabetic and diabetic patients who did not have neuropathy, resulted in higher odds of medical and surgical complications following TKA. Specifically, diabetic neuropathy was associated with higher odds of joint infection, periprosthetic fracture, and revision surgery. Orthopaedic surgeons should be aware of the added surgical risk associated with diabetic neuropathy, outside of the impact of diabetes, overall.

Biomechanical Evaluation of the Effect of Varying Humeral Implant Length in Total Elbow Replacement: A Finite Element Analysis

Low, J., Pareatumbee, P., Yew, A., Tay, K., Howe, T. S., Thoreson, A., An, K. N., Morrey, B. F., & Koh, J. S. B. (Jul 2025).

Background: Total elbow arthroplasty (TEA) is increasingly used for expanding indications but complications like aseptic loosening and periprosthetic fractures persist. Our objective is to examine the biomechanical behavior of the total elbow implant in response to varying implant lengths by investigating the stresses and the stress shielding effect in the bone-implant assembly using finite element (FE) modeling.

Methods: A fourth-generation synthetic humerus sawbone and its corresponding digital model were used in this study. Total elbow implants are laser scanned to obtain the 3D implant models. FE models of 2-mm cemented bone-prosthesis assemblies of different implant lengths were generated. While fixing the mid-humerus, a compressive load of 400 N was applied at the distal humerus at varying flexion angles of 60°, 90°, and 150° to represent activities of daily living. A validated intact model was used to compare the experimental and computational strains.

The von Mises stress, a scalar quantity that represents the state of stress the object is in, was then evaluated and compared in all intact and implanted models.

Results: Longer humeral implants demonstrated larger areas of reduced peak stress, despite similar maximum cortical stress locations and magnitude. Cortical bone stress was observed to be lower along the implant insertion length. Maximum implant stress was also consistently higher in the 8-in implant for all loading conditions. Significant stress shielding was observed in all implants, with maximum $\% \Delta$ stress consistently falling within the 15%-20% region of humerus length from the distal end.

Discussion: Longer implants displayed larger stress-shielding areas, emphasizing the potential for shorter prostheses to preserve more bone stock and limit stress shielding.

Does Testosterone Replacement Therapy Increase Risk of Thrombosis After Total Hip or Knee Arthroplasty?

Ni, A., Cal, E., Martinez, V., Gerhart, C. R., Moore, C. C., & Buttacavoli, F. (Nov 2025).

Background: Testosterone is a prothrombotic hormone, but the effect of exogenous testosterone on venous thromboembolic events (VTEs) following total joint arthroplasty (TJA) remains unclear. This study investigated the association between testosterone replacement therapy (TRT) and postoperative risk of VTE following primary total hip arthroplasty (THA) and total knee arthroplasty (TKA).

Methods: We conducted a retrospective, matched cohort study using a national registry to identify primary THA or primary TKA patients from the years 2005 to 2025. Patients were stratified by TRT within three months of the TJA. There were 640,219 patients who had a THA (265,477) or a TKA (374,742) that were included. There were 1,469 THA (0.6%) and 2,032 (0.5%) TKA patients who were prescribed testosterone within three months before or after their TJA. A matched cohort was created after balancing demographics and comorbidities. Primary outcomes were DVT or pulmonary embolism (PE) within three months after their TJA. Measures of association models were used to calculate odds ratios (ORs).

Results: We found a statistically significant increase in the rate of PE in TKA patients on TRT compared to those who were not (OR = 1.45; 95% confidence interval (CI), 1.04 to 2.02; $P = 0.029$). Rates of DVT in TKA patients on TRT were similar to those not on TRT (OR = 1.27; 95% CI, 0.98 to 1.65; $P = 0.073$). Similarly, there were no statistically significant differences in rates of PE (OR = 1.35; 95% CI, 0.88 to 2.05; $P = 0.166$) or DVT (OR = 1.26; 95% CI, 0.89 to 1.77; $P = 0.192$) between THA patients regarding TRT.

Conclusions: TRT was associated with a statistically significant increased rate of PE following TKA but not for DVT. Similarly, no significant difference was observed between TRT

and VTE following THA. As the overlap between arthroplasty patients and patients on TRT increases, orthopaedic surgeons should be aware of the risks associated with TRT.

Simultaneous or Staged Bilateral Total Hip Arthroplasty: An Analysis of 82,897 Patients

Peng, L., Peterson, B., Singh, A., Kotzur, T., Lundquist, K., Moore, C., & Buttacavoli, F. (Oct 2025).

Introduction: Total hip arthroplasty (THA) is one of the most common orthopaedic procedures. Although unilateral THA is routine, there is limited guidance on managing patients who require bilateral arthroplasty. This study aims to compare the outcomes of simultaneous versus staged bilateral THA.

Methods: This was a cohort retrospective study drawing data from the National Readmissions Database, years 2016 to 2020. Patients undergoing bilateral THA were identified using International Classification of Diseases, 10th Revision, Clinical Modification/Procedure Coding System (ICD-10) codes. For staged procedures, outcomes for each surgery were combined for appropriate comparison with simultaneous surgeries. Propensity score matching was performed to balance patient demographics, socioeconomic status, and comorbidities, between the two groups. Multivariate regression was performed to assess outcomes between groups. Multivariate regression analyses were conducted on the matched cohorts to assess postoperative outcomes, 90-day readmission, and 90-day revision surgery rates.

Results: A total of 82,897 patients, 71,560 (86.3%) undergoing staged bilateral and 11,337 (13.7%) undergoing simultaneous bilateral THA, were included. After successful matching, those undergoing staged bilateral THA had increased medical (odds ratio [OR], 1.26; $P < 0.001$), but reduced surgical complications (OR, 0.66; $P < 0.001$), particularly reduced need for blood transfusions (OR, 0.38; $P < 0.001$). Those undergoing the staged procedure also had reduced odds of revision surgery (OR, 0.85; $P = 0.001$) but increased odds of readmission (OR, 1.14; $P < 0.001$), routine discharge (OR, 1.20; $P < 0.001$), longer lengths of stay (OR, 1.09; $P < 0.001$), and greater total charges (OR, 1.20; $P < 0.001$).

Conclusion: When compared with simultaneous THA, staged THA was associated with reduced surgical complications, particularly transfusions, but greater medical complications. Although associated with reduced revision surgeries and resulted in better discharge disposition, staged bilateral THA required more days in the hospital and were more expensive. This suggests that both simultaneous and staged bilateral THA are viable options. Surgeons should consider individual patient risks and preferences when planning bilateral THA.

Morrey Award 2024: If I Replace These Bushings, How Long Will They Last? An Analysis of 58 Isolated Coonrad-Morrey Bushing Exchanges With 21-Year Average Follow-Up

Weir, T. B., Hart, C. M., Yu, K. E., Nieboer, M. J., Morrey, B. F., O'Driscoll, S. W., Sanchez-Sotelo, J., & Morrey, M. E. (Jun 2025).

Background: Reports of bushing exchange (BE) with retention of all other components (isolated BE) after Coonrad-Morrey total elbow arthroplasty (TEA) are limited to small case series. The purpose of this study was to determine the survival of isolated BE after primary or revision TEA. Secondary aims were to determine the survival of the humeral and ulnar stems, the risk factors for failure, and the complications and outcomes after 1 or more BEs.

Methods: Our Total Joint Registry database was queried to identify all elbows that underwent revision of a primary or revision Coonrad-Morrey TEA between 1981 and 2021. After excluding reoperations for infection, cancer, or inadequate records, 43 patients with 58 isolated BEs with retention of both the humeral and ulnar components were included. The mean age at the time of the initial TEA was 51 ± 12 years and 63% were female. A single BE was performed in 31 patients, while 12 had a revision BE. The mean follow-up was 21 years (range, 7-35 years).

Results: The median time to the first isolated BE was significantly longer than the time to revision BE (11.0 vs. 7.6 years; P = .036). Following the first isolated BE, Kaplan-Meier survivorship free of revision BE was 95% at 2 years, 87% at 5 years, 78% at 10 years, and 60% at 15 and 20 years. A “triceps on” approach during the index TEA was a risk factor (hazard ratio [HR], 27.0) for requiring a revision BE. The survivorship free of any revision was 78% at 5 years, 63% at 10 years, and 49% at 15 and 20 years. A “triceps on” approach during the index TEA (HR, 5.4) and post-traumatic arthritis or osteoarthritis (HR, 2.8) were risk factors for any revision. The overall survival of the humeral and ulnar stems was 73% at 20 years following the index TEA. The overall revision (28%) and complication (19%) rates, Mayo Elbow Performance Score (85 points), pain (1.5 points), and arc of motion (110°) were similar for single and multiple BEs.

Conclusions: While isolated BE is a relatively rare procedure, it should be considered in patients with substantial bushing wear and stable implants. Patients may experience relatively high revision and complication rates following isolated BE, but more than half retain their bushings and implants at long-term follow-up. Surgical and patient factors may increase the risk of revision following isolated BE, but patients can expect good clinical outcomes.

BASIC SCIENCE

Orthopaedic Practice Setting Opinions: Heat Maps for a Hot Topic

Jodoin, Z. N., Sheikh, D., Gable, M., Williamson, T., Shin, S., & Rose, R. (Oct–Dec 2025).

Background: Selecting an orthopaedic surgery practice setting is a career-altering decision, yet guidance is often anecdotal. Despite existing resources, no consolidated data compare surgeon experiences across practice models. This study surveys orthopaedic surgeons across Texas and California, to quantify perceived strengths and weaknesses of academic, private, hospital-employed, and privademic practice environments.

Methods: An anonymous survey was distributed through professional networks and organizations between May 2024 and May 2025. Respondents identified their current and prior practice settings, subspecialties, and employment ZIP codes. They rated each practice setting in categories including autonomy, salary, ancillary income opportunities, education, research, administrative burden, reputation, community respect, and work-life balance. Responses were aggregated into a heatmap, with subgroup analysis conducted based on employment history and location.

Results: A total of 100 orthopaedic surgeons responded 45% academic, 30% private, 16% hospital-employed, and 8% privademic. Subspecialty distribution was balanced. Academic surgeons rated research opportunities, professional reputation, and continued education highly (p < 0.001), and ancillary income was rated poorly (p < 0.001). Private practitioners valued autonomy, salary, and ancillary income (p < 0.001), but rated research opportunities and continued education poorly (p < 0.001). Hospital-employed surgeons had no categories rated highly. Privademic surgeons had favorable views on autonomy, salary, and income opportunities (p < 0.001), and no categories were rated poorly. Regional comparison showed California surgeons perceived lower academic autonomy (p = 0.048) and work-life balance (p = 0.037), along with less favorable views on salary and income (p = 0.007).

Conclusions: This survey highlights distinct tradeoffs across orthopaedic practice models and locations. Academic models offer professional and educational benefits but are limited in financial upside, whereas private and privademic settings offer enhanced autonomy and compensation. California surgeons reported less favorable perceptions, especially with compensation, highlighting potential regional influences on employment satisfaction. These findings may inform future decisions in orthopaedic career planning and workforce policy.

HAND AND PLASTIC SURGERY

Comparing Fixation Techniques in Metacarpal Fractures: Intramedullary Screw Versus Open Reduction Internal Fixation With Plate and Screw Construct

Lundquist, K. F., Jodoin, Z. N., McDonald, C. D., Bethiel, J., & Rose, R. (Dec 2025).

Purpose: The purpose of this study is to compare intramedullary headless screw (IMN) versus plate and screw fixation (open reduction internal fixation [ORIF]) in metacarpal (MC) fractures, specifically looking at implant cost, operating room time, outcomes, and complications. We hypothesize that IMN will provide at least equivalent outcomes and complication rates compared with ORIF while simultaneously decreasing operating room time and lowering overall costs.

Methods: Patients with MC fractures treated surgically at a single, level-one, trauma center between January 2018 and December 2022 were identified. Eighty-five patients and 108 fractures were included. Records were retrospectively reviewed for demographic information, injury data, surgical details, and follow-up information.

Results: The average age of included patients was 32.4 years. The leading causes of injury included altercations, falls, and motor vehicle collisions. Tourniquet time was an average of 79.9 minutes in the ORIF group and 37.6 minutes in the IMN group. Average cost of the implant and time to union were similar in both the groups. IMN fixation had faster time to motion and time to full range of motion. Complications, including revision surgery rates, wound infections, implant complications, and non/mal unions, were collected. Nine patients underwent revision surgery, eight in the ORIF group and one in the IMN group. Two superficial wound infections were noted in the ORIF group. One implant complication was observed in the ORIF group, as defined by implant breakage after the patient punched a wall. Three implant removals were noted, all in the ORIF group.

Conclusion: In our experience, the use of an intramedullary screw for fixation of MC fractures is a reliable and safe method of fixation. The use of this procedure provides patients with quicker return to motion, faster time to full range of motion, and similar time to union with fewer complications. Furthermore, it resulted in decreased tourniquet time resulting in decreased overall cost.

Outcomes in Dorsal Spanning Plates for the Management of Distal Radius Fractures

Makhani, A. A., Mufti, Y., Qiu, A., Ulmer, C. J., & Rose, R. A. (May 2025).

Purpose: To evaluate the outcomes of complex articular and periarticular distal radius fractures in isolated and polytraumatic injuries after management with dorsal spanning plates (DSP).

Methods: We retrospectively reviewed 33 patients who underwent fixation with a dorsal spanning plate at a Level I trauma center between 2018 and 2023. Patient demographic information, comorbidities, fracture types, implant choices, postoperative complications, postremoval range of motion, and follow-up were analyzed. Within this sample, we also performed a subgroup analysis of polytrauma patients compared with patients experiencing from isolated fractures. Fracture type and morphology were classified with the Osteosynthesefragen (AO) Foundation and the Orthopaedic Trauma Association (OTA) system.

Results: Of the 33 patients in our sample population, most patients were male [27 (81.8%)], and 15 (45.5%) experienced polytraumatic injuries. Partial articular fractures involving the scaphoid fossa (n = 6) and complete articular multi-fragmentary fractures extending into the diaphysis (n = 5) were most common. The average time between DSP hardware insertion and removal was 138.64 days, and that from removal to last follow-up was 167.4 days. Immediately after removal, average range of motion (ROM) was 36° flexion and 34.8° extension. We found no relationship between time to removal and postoperative ROM. There was no significant difference in postoperative ROM between polytrauma and nonpolytrauma patients. Two cases (6.1%) resulted in infection, and two (6.1%) required reoperation for secondary tenolysis secondary to that at time of removal. There were no instances of hardware failure or peri-hardware fracture.

Conclusions: DSPs treat high-energy distal radius fractures well in isolated fracture and polytrauma patients. The absence of hardware failure and the comparatively low rate of infections and reoperations make these internal bridge plates useful. DSPs also may allow for earlier return to function with the ability for immediate weight bearing and temporary internal fixation for complex fracture types.

Thorn in the Flesh: Pantoaea Agglomerans as a Rare Cause of Pyogenic Flexor Tenosynovitis

McDonald, C. D., Fitch, B. L., Prabhakar, G., Sager, B. W., Hand, E. O., & Hand, T. L. (Mar/Apr 2025).

Pyogenic flexor tenosynovitis (FTS) is a deep infection of the hand which typically presents after trauma such as penetrating injury, or laceration to the volar surface of the hand. Although skin flora such as Staphylococcus aureus are responsible for

the vast majority of cases, more uncommon presentations with gram negative rods are also reported. Pantoea agglomerans is a rare gram-negative bacteria which has never been described as an etiology for FTS in the past. This study provides the case of a 29-year-old male who presented to our emergency department with FTS caused by P. agglomerans, as well as a review of relevant literature surrounding the management of Pantoea infections. This case report summarizes possible antibiotic management which was effective in other orthopedic and non-orthopedic patients, as well as highlighting clinical features of Pantoea subspecies. This report highlights the importance of considering environmental agents such as Pantoea spp. as etiological agents of infection with trauma sustained from plant material.

Carpometacarpal Osteoarthritis is Associated With an Increased Risk of Carpal Tunnel Syndrome

Peterson VanderWeele, B., Peng, L., Fitch, B., Kotzur, T., Ogburn, M., Rose, R., & Brady, C. (Jan 2026).

Purpose: Carpometacarpal (CMC) osteoarthritis (OA) of the thumb finger is the most common joint OA in the upper extremity to require surgery. This study aims to assess the impact of CMC OA on the management of carpal tunnel syndrome (CTS) as well as outcomes following carpal tunnel release (CTR) surgery.

Methods: This retrospective matched cohort study used data from the TriNetX Research Network. Patients without CTS and with an ambulatory visit between 2017 and 2018 were identified; using International Classification of Diseases (ICD)-10 codes, those with CMC OA were matched to a control cohort of those without it, and they were followed for 5 years to assess the development of CTS. Patients with CTS and CMC OA were then matched to a control cohort of patients with CTS and no diagnosis of CMC OA. Progression to therapy within three years was assessed; interventions were identified using Current Procedural Terminology (CPT) codes. Subanalysis of a secondarily matched cohort of patients undergoing CTR, with and without CMC OA, assessed 2-year postoperative outcomes.

Results: A total of 31,075 patients were matched, and those with CMC OA were more likely to develop CTS. Of patients with CTS, those with CMC OA were more likely to receive corticosteroid injection and operative management than those without CMC OA. Secondary analysis of matched cohorts of 15,431 patients who underwent CTR demonstrated those with CMC OA had higher odds of postoperative opioid prescription, postoperative infection, postoperative EMG, and repeat CTR within one year than the cohort without CMC OA.

Conclusions: Patients with CMC OA were more likely to develop CTS, receive corticosteroid injections, and undergo CTR. Among patients who underwent CTR, patients with CMC OA were more likely to have worse outcomes.

The Association Between Distal Screw and Articular Subsidence in the Open Treatment of Intra-articular Distal Radius Fractures

Ulmer, C. J., Verlinsky, L., Agarwal, R., Hum, R., Sequeira, S., Armstrong, C. A., Driggs, B. L., Sanghavi, K. K., Giladi, A. M., & Rose, R. A. (May 2025).

Purpose: This study investigated the association between volar plate screw position and postoperative radiographic outcomes in the open treatment of comminuted intra-articular distal radius fractures (DRFs). We hypothesized that increased distance from distal screws to subchondral bone is associated with early loss of reduction and articular subsidence.

Methods: We performed a two-center retrospective review over 10 years (2013–2023) for Arbeitsgemeinschaft für Osteosynthesefragen (AO) type C3 DRF treated with open reduction and volar locking plate fixation. We measured the distance from the distal screw to the subchondral bone (STSB), ulnar variance (UV), and volar tilt (VT) on initial postfixation and 6-week postoperative nonstandardized wrist radiographs, as well as second metacarpal cortical percentage (2MCP) on initial radiographs. Plate positioning was categorized using the Soong classification, and instability was graded using the Lafontaine criteria. Immediate after surgery and 6-week follow-up radiographic measurements were compared. Multivariable logistic regression models were used to evaluate factors associated with loss of UV and VT.

Results: Initially, 540 patients were identified, with 178 remaining after exclusion. We found a statistically significant difference in median STSB distance between the immediate postoperative period (2.8 mm) and the 6-week follow-up (2.0 mm). A significant difference between immediate and 6-week postoperative UV was also present. After adjusting for appropriate covariates (age, initial 2MCP, and Lafontaine’s criteria for instability), patients with initial STSB >3 mm had increased odds of an increase in UV >2 mm compared to patients with <3 mm STSB. Bone density (2MCP), perioperative Soong classification, and instability were not associated with UV change.

Conclusions: In this two-center retrospective cohort of comminuted intra-articular DRFs, we found that placing the distal row of screws greater than 3mm from subchondral bone was associated with increased odds of worsening UV.

ORTHOPAEDIC ONCOLOGY

Optimizing Below Knee Amputation Osteotomy Length: A Ratio-Based Approach

Cognetti, D. J., DeFoor, M. T., Arave, M., Alderete, J. F., & Mills, G. (Dec 2025).

Objective: To introduce a novel below knee amputation (BKA) ratio and evaluate its potential for tailoring residual tibia length for patients of varying height and sex.

Design: Retrospective, radiographic review.

Setting: Level I Trauma Center.

Patient Selection Criteria: Full-length tibia radiographs in skeletally mature patients, without fracture or osseous abnormality.

Outcome Measures and Comparisons: Demographic information (age, sex, height), tibial length, and BKA ratio [calculated utilizing a standard, 12-cm osteotomy (from the medial plateau) (12 cm/tibial length)] were recorded for each patient. The mean BKA ratio from the population was then utilized as a reference standard to evaluate the variation in residual tibia length. Mean values were compared using independent t-tests.

Results: In this cohort of 100 patients (50 males, 50 females), mean age was 35.4 ± 18.5 years, with a mean height of 169 ± 9 cm. Mean tibia length was 39.5 ± 2.2 cm for males and 36.5 ± 2.2 cm for females, a difference of 2.9 cm (P < 0.0005), with a nearly 6-cm difference between the means of the shortest and longest tibia quartiles for both males and females. Based on a 12-cm osteotomy, the mean BKA ratio was 0.32 ± 0.02 (0.31 ± 0.02 for males and 0.33 ± 0.02 for females, P < 0.0001). Utilizing this ratio as a reference standard, residual limb lengths varied by 2.9 and 3.3 cm between the shortest and longest tibia for males and females, respectively.

Conclusions: A one-size fits all approach to BKA length predisposes individuals of varying height and sex to substantial variability in the relative length of their residual limb. This pilot study suggests that current practice standards regarding BKA length may be oversimplified. Further investigation is required to determine the clinical relevance of these differences regarding energy expenditure and prosthetic fit and ultimately for determining an ideal BKA ratio.

ORTHOPAEDIC TRAUMA

Temporal and Regional Trends of Fractures in the United States: A Review of the Global Burden of Disease Database

Gupta, N., Patel, H., Kasmenn, M., Ricken, R. T., Anderson, M., Turnow, M., Manes, T., Reznichenko, E., Williamson, T. K., & Karia, R. (Apr 2025).

Background: Musculoskeletal diseases, including bone fractures, are a significant contributor to global disability. Understanding temporal and regional trends in bone fractures is crucial for effective healthcare planning and resource allocation. We sought to analyze recent epidemiological trends of different types of fractures in the United States and determine correlations and associations between fracture trends and potential influencing demographic factors (i.e. age, sex, regional-specific).

Methods: Data from the Global Burden of Disease Database were analyzed to examine fracture incidence, prevalence, and years lived with disability (YLDs). Statistical analyses were conducted to determine temporal trends and sex-based differences.

Results: The analysis revealed significant increases in hip fractures and decreases in pelvic fractures over time. Fractures of the patella, tibia, fibula, and ankle remain prevalent across all regions and sexes, with notable variations.

Conclusions: These findings underscore the importance of targeted interventions and resource allocation to address the burden of fractures on public health. Despite limitations, this study provides critical insights into fracture epidemiology, guiding future prevention and management strategies.

Geriatric Hip Fracture with Proximal Upper Extremity Fracture Increases Morbidity and Mortality

Jodoin, Z., Kotzur, T., Singh, A., Paul, K., Martin, C., Karia, R., & Hand, T. (Mar 2025).

Objectives: This study investigates differences in medical, surgical, and hospital-related outcomes within 30 days between patients sustaining a hip fracture with and without concomitant upper extremity fracture. Further subgroup analysis based on fracture location was also completed.

Design: Retrospective review.

Setting: National Readmissions Database.

Patient Selection Criteria: International Classification of Diseases, 10th Revision codes were used to identify patients with geriatric hip fracture with and without a concomitant upper extremity fracture. Patients were subclassified as having a shoulder girdle, humerus, forearm, or hand fracture.

Outcomes: Demographics, complications, cost, and in-house mortality were recorded. Validated logistic and linear regression models were used to determine significance and odds ratios.

Results: 367,007 patients sustained a hip fracture, and 19,852 had a concomitant upper extremity fracture. Aggregate data for hip fracture with any upper extremity fracture showed an increased risk of mortality, length of hospital stay, cost, and medical and surgical complications ($P < 0.001$). There was a 41% increase in mortality across all upper extremity fractures, a 77%–83% increase in in-hospital mortality with a concomitant proximal upper extremity fracture (humerus and shoulder), and no significant change in mortality in the forearm and hand subgroup ($P < 0.001$). Concomitant shoulder and humerus fractures had an increased risk of all-cause medical and medical complication ($P < 0.001$).

Conclusions: This study reported an increased risk of mortality, complications, and cost of geriatric hip fractures with concomitant upper extremity fracture. Subgroup analysis demonstrated that these effects were most pronounced in proximal—versus more distal—upper extremity fractures. Surgeons should be aware of these increased risks for prognostic and patient education purposes and, with future research, may consider alternate interventions, to include surgery on the concomitant proximal upper extremity injury aimed at producing a functional and weight-bearing upper extremity to help optimize postoperative recovery.

Paediatric Ballistic Fracture Patients: Who Has Poor Follow-Up and Why?

Jodoin, Z., Sheikh, D., Atkinson, C., Vo, L. U., Moreira, A., Brady, C., & Zelle, B. (Jun 2025).

Purpose: Firearm-related injuries in children and adolescents have increased over the past decade. The standard of care for ballistic fractures in children is complex, resulting in a burden of healthcare follow-up that many families find challenging. Consistent follow-up is crucial, especially in orthopaedic trauma and firearm cases, to prevent complications. This study aims to identify demographic and clinical variables associated with loss to follow-up (LTFU) in paediatric patients with ballistic fractures.

Methods: This is a retrospective registry study at a Level I trauma centre for patients aged zero to 21 who presented with a ballistic-induced fracture. Patients with isolated skull, facial, or rib fractures were excluded. Follow-up was dichotomized at the median number of follow-up days for analysis. Logistic regression analysis was used to identify predictors of LTFU.

Results: The study included 144 patients with a median age of 18 years. The majority were male (89%) and White (72%). Most patients had government insurance (44%) or were unin-

sured (33%). The mechanism of injury was primarily assault (71%). Operative intervention occurred in 55% of cases. Key factors increasing follow-up adherence included male sex ($p=0.011$), higher injury severity scores ($p=0.009$), requiring operative intervention ($p<0.001$), air transportation ($p<0.001$), or injury at a private residence ($p=0.040$). Uninsured status ($p=0.007$), opioid use ($p=0.047$), and greater distance from the hospital ($p=0.002$) were associated with low follow-up.

Conclusions: This study identifies key factors influencing follow-up adherence in pediatric patients with ballistic fractures. Identifying these factors allows for tailoring future interventions to improve follow-up adherence for this vulnerable population.

Nail Plafond Angle: A Novel Technique to Evaluate for Intraoperative Coronal Malalignment in Tibia Fractures

Jodoin, Z., Koslosky, E., Williamson, T., Karia, R., & Hand, T. (Feb 2025).

Objective: Orthopedic management of distal tibia fractures presents a difficult challenge with high rates of malignment. Intramedullary nailing demonstrates coronal malalignment rates of 5% to 30%. This malignment has been associated with decreased satisfaction with outcomes. This stresses the importance of obtaining appropriate intraoperative nail alignment. This article helps address the rate of coronal plane malreduction during intramedullary nailing of distal tibial shaft fractures. This novel fluoroscopic technique analyzes the intraoperative angle between the distal end of the tibial nail and the tibial plafond [the nail plafond angle (NPA)].

Materials and Methods: Retrospective review study of 100 subjects with distal tibia fractures at a single level 1 trauma center. Coronal nail alignment was measured on intraoperative fluoroscopic films utilizing the NPA. This measurement was then compared with full-length film alignment postoperatively analyzing for overall malreduction and correlation between the measurements. All measurements were completed by at least 2 orthopedic trained physicians.

Results: Coronal alignment was compared, and there was a strong correlation between the measured varus and valgus angulation using the intraoperative technique and the full-length postoperative films ($R = 0.74$). The overall coronal malalignment while utilizing the NPA technique was 8% (8/100 patients).

Discussion: The overall malalignment utilizing the NPA intraoperatively was 8%, which is substantially lower than the generally accepted literature malreduction rate of distal tibia fractures treated with intramedullary fixation. This novel technique could be added to the armamentarium of tools to assist in preventing the malreduction of distal tibia shaft fractures.

Diabetic Neuropathy is an Independent Risk Factor for Poor Orthopaedic Outcomes After Operatively Treated Ankle Fractures

Kotzur, T., Peterson, B., Peng, L., Atkinson, C., Singh, A., Bullock, T., Karia, R., & Martin, C. (Dec 2025).

Objectives: To investigate the impact of diabetic neuropathy on operative bimalleolar or trimalleolar ankle fracture outcomes when compared with both patients who are nondiabetic and patients who are diabetic without neuropathy.

Design: Retrospective comparative study.

Setting: TriNetX research network, a global health-collaborative clinical research platform comprising deidentified electronic health records from health care organizations across the United States.

Patient Selection Criteria: The TriNetX research network was queried for all patients with an operative bimalleolar or trimalleolar ankle fracture (OTA/AO 44) from 2005 to 2022. From this population, subgroups were formed based on diabetes status and the presence of diabetic neuropathy.

Outcome Measures and Comparisons: Patients with diabetic neuropathy were compared with both patients who are nondiabetic and patients with diabetes. Propensity score matching (1:1) was performed to match patients based on demographics and comorbidities across groups, including severity of diabetes by A1C. After matching, logistic regression was performed to calculate risk ratios and assess differences in postoperative medical and surgical complications between patients who are neuropathic and patients who are nondiabetic, and between patients who are neuropathic and patients who are diabetic.

Results: Included were 115,162 patients with ankle fracture; 94,111 (81.7%) patients without diabetes, 13,741 (12%) patients with diabetes but without diabetic neuropathy, and 7310 (6.3%) patients with diabetic neuropathy. When compared with patients without diabetes, patients with diabetic neuropathy had increased risk of 2-year malunion/nonunion (RR 1.79; $P < 0.001$), implant infection (RR 2.12; $P < 0.001$), and amputation (RR 8.01; $P < 0.001$). When compared with patients with diabetes, but without neuropathy, patients with diabetic neuropathy again had significantly higher odds of implant failure (RR 2.00; $P < 0.001$), malunion/nonunion (RR 2.35; $P < 0.001$), and infection (RR 2.25; $P < 0.001$).

Conclusions: This study found that patients with diabetic neuropathy had higher odds of postoperative complications, such as malunion/nonunion, infection, and amputation, after surgical fixation of ankle fractures than patients who are nondiabetic and patients who are diabetic without neuropathy.

Biomimetic Hematoma Enables Healing in a Recalcitrant Nonunion With Chronic Osteomyelitis and 20 Prior Surgeries: A Case Report

Maestas, A., Glatt, V., & Agarwal, A. (Jul 2025).

Case: A 49-year-old male smoker with no comorbidities presented with a tibial plafond fracture treated operatively. Complications resulted to an infected nonunion, requiring 20 surgeries over 3 years. Examination revealed a malaligned hypertrophic nonunion with osteomyelitis requiring extensive reconstruction. Deformity was corrected with a Taylor Spatial Frame, followed by the implantation of a biomimetic hematoma scaffold delivering recombinant human bone morphogenetic protein-2 (rhBMP-2) into the debrided defect, alongside Cerement G to control infection. At 6 months, the patient achieved complete bony union without recurrence of infection, allowing Taylor Spatial Frame removal.

Conclusion: The biomimetic hematoma enabled successful healing using a low-dose rhBMP-2, highlighting its potential for treatment-resistant nonunions.

Intertrochanteric Femur Fractures: How to Avoid Pitfalls

McDonald, C. D., Kandemir, U., & Agarwal, A. (2026).

Orthopaedic surgeons often treat patients with intertrochanteric femur fractures. These fractures usually result from a low-impact injury in the elderly population, with the goal of prompt surgical intervention usually within 24 to 48 hours. There are two common implants used in the management of such injuries: a cephalomedullary nail or a sliding hip screw. However, there are pitfalls that need to be avoided to ensure a successful outcome. Several tips and techniques can be used to avoid these pitfalls during intertrochanteric femur fracture fixation with a cephalomedullary nail.

Linear and Area Coverage With Closed Incision Negative Pressure Therapy Management: International Multidisciplinary Consensus Recommendations

Singh, D., Alton, T., Alvand, A., Barbosa de Toledo, P. R., Chatterjee, A., Dillavou, E., Djohan, R., Gomez Ortega, A. V., Pieri, A., Sumpio, B., Willy, C., Zelle, B., & Cooper, H. J. (Jun 2025).

Closed incision negative pressure therapy (ciNPT) with foam dressings has received broad recognition for its ability to support incision healing for a variety of surgical procedures. Over time, these dressings have evolved to include linear and ‘area’ shapes to better conform to different incision types and sur-

face geometries. To address new studies on these configurations and provide guidance for dressing selection, an international, multidisciplinary panel of experts was convened. The panel reviewed recent publications on ciNPT with reticulated open cell foam (ROCF) dressings, shared their cases and experiences and engaged in roundtable discussions on benefits, drawbacks and technical challenges. Topics were ranked by importance and refined into potential consensus statements. These were shared for anonymous feedback, requiring 80% agreement for consensus. This manuscript establishes 12 consensus statements regarding risk factors supporting the use of ciNPT, conditions supporting preference of linear or area ciNPT dressings and tips for practical application of ciNPT with ROCF dressings. While this consensus panel expands on previous publications to aid clinicians' decision-making, further research is needed to refine recommendations and identify the strengths and limitations of ciNPT. Continued multidisciplinary collaboration will ensure ciNPT remains vital for improving surgical outcomes and patient care.

Accuracy of Preoperative Planning
Helical Blade Length during Treatment
of Intertrochanteric Hip Fractures with
Trochanteric Fixation Nail System

Starcher, N. J., DeGenova, D. T., Glazier, M. T., Miller, K. B., Spencer, P., Mehta, V., Blair, N., Faherty, M., & Taylor, B. C. (Mar 2025).

Intertrochanteric hip fractures are commonly treated with cephalomedullary nailing. One time-consuming aspect of the procedure is intraoperatively measuring the helical blade length. This investigation sought to determine if preoperative imaging can be reliably used to predict helical blade length and therefore reduce operative time accurately. This was a single-center, single-surgeon retrospective chart review. All subjects were operated on by the senior author at a single urban level-1 trauma center. Each patient underwent cephalomedullary nailing using a helical blade. The medical records were reviewed for demographic, imaging, and operative data. Two raters preoperatively recorded head element length, subsequently estimated helical blade implant sizes, and actual implant length used intraoperatively. In total, 134 patients were analyzed. The results demonstrated that radiographs ($R^2 = 0.337$, $p < 0.001$) and computed tomography (CT) imaging ($R^2 \geq 0.435$, $p < 0.001$) could not reliably predict helical blade length, and that radiographs were more accurate than CT scans in predicting actual implant size ($p < 0.001$). Preoperative imaging modalities predicted the exact size only 23.8% of the time using radiographs and 17.2% of the time using CT. Preoperative helical blade implant size was estimated accurately 24% of the time. However, raters were successful in estimating the length of the helical blade within three sizes. We demonstrate that preoperative imaging modalities are unable to accurately predict helical blade length.

Is the ‘Fix-and-Replace’ Method
Associated with Higher Early
Perioperative Risk than Isolated Internal
Fixation for Acetabular Fractures in Frail
Patients?

Williamson, T. K., Verlinsky, L., Vo, L. U., Karia, R., & Martin, C. (Dec 2025).

Objectives: To examine the impact of frailty on 30-day outcomes of ORIF alone or ORIF+THA (fix-and-replace) for the treatment of acetabular fractures.

Design: Retrospective Cohort

Setting: 700 hospitals in the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) database

Patient Selection Criteria: Included were patients aged 60 years or older undergoing ORIF+/-THA for OTA/AO type 62 A-C fractures from 2015-2020

Outcome Measures and Comparisons: Preoperative frailty was assessed by the revised Risk Analysis Index (Not frail: <21 , pre-frail: 21-30, frail: 31-40, severely frail: >40) and the 5-Item Modified Frailty Index (mFI-5) factor. All outcome measures were in-hospital or within 30 days postoperatively, including the ‘favorable outcome’, defined as: no readmission, length of stay $<$ cohort median, and no major complication or death.

Results: There were 585 patients included [ORIF (88%): mean age - 70.5 ± 14.2 , sex - 41.4% female; ORIF+THA (12%): mean age - 77.0 ± 13.4 ; sex - 65.7% female]. Frail patients ($n=353$, 65.5%) were more likely to experience a complication (OR: 3.31, CI: [1.83-5.96]) and mortality (3.7% vs. 0.0%). ORIF+THA had higher association with postoperative transfusion (OR: 2.70, CI: [1.63-4.48]) but lower association with length of stay >3 days (OR: 0.41, CI: [0.24-0.72]) and non-home discharge (OR: 0.52, CI: [0.27-0.98]) than ORIF. Pre-Frail and Frail patients undergoing ORIF+THA were more likely to achieve favorable outcomes than those non-frail or severely frail (OR: 9.69, [3.40-27.57]).

Conclusions: Surgical intervention for acetabular fractures carried a 30-day complication risk of 12-19% for frail patients. Frailty had similar predictability to age for early morbidity following surgery to treat acetabular fractures. Open reduction and internal fixation with the addition of an acute total hip arthroplasty was associated with a higher rate of blood transfusion and shorter hospital length of stay in frail patients with acetabular fractures.

PEDIATRICS

Minimally Invasive Irrigation of Neonatal
Septic Arthritis Using 18-Gauge Needle
Portals

McDonald C, Gibbons S. J Pediatr Soc North Am. 2025 Oct 6;13:100276. doi: 10.1016/j.jposna.2025.100276. PMID: 41216587; PMCID: PMC12597302.

Septic arthritis in neonates requires prompt management to prevent joint destruction, long-term disability, and rapid sepsis progression. Traditional open surgical drainage can pose risks in neonates with small joint spaces. We describe a technique using two 18-gauge needles as irrigation and drainage portals for the minimally invasive treatment of neonatal septic arthritis of the hip. Under sterile conditions and radiographic guidance, two 18-gauge needles can be inserted percutaneously into the affected hip joint. Arthrogram dye is used to confirm joint placement. Saline is then instilled through one needle while effluent is drained through the other, achieving joint washout without open arthrotomy, which is confirmed by flushing out the arthrogram dye. This technique provides a safe, effective, and less invasive alternative for joint irrigation in neonates, especially where standard arthroscopic or open approaches carry higher morbidity.

Native American Representation and
Diversity Initiatives Within Orthopaedic
Surgery: An Update and Road Map to
Success. J Am Acad Orthop Surg

Jodoin Z, Williamson T, Poon S, McCormick S. J Am Acad Orthop Surg. 2025 Mar 15;33(6):e312-e318. doi: 10.5435/JAAOS-D-24-00873. Epub 2024 Dec 27. PMID: 40052870.

Orthopaedic surgery lags behind other specialties in terms of diversity. This lack of representation is especially evident within the Native American population. Native American/Alaskan Natives represent approximately 2.9% of the overall US population but comprise just 0.4% of orthopaedic surgeons within the United States. Currently, no Native American-specific orthopaedic inclusion or recruitment programs exist. There are a multitude of programs that exist to recruit Native American applicants into health care. These include pipeline programs and scholarships from the Indian Health Service (IHS), mentorship programs from a multitude of Native American medical societies, and IHS recruitment programs targeted at Native American preferential hiring. Dozens of grants and national diversification programs that are not specific to Native Americans are also available. Programs such as the AAOS IDEA Grant, Nth Dimensions, and The Perry Initiative have been successful in diversifying the orthopaedic surgery pipeline. This review highlights the paucity of Native American representation with-

in orthopaedics and identifies current programs and resources for Native Americans. This article serves as a guide for Native Americans pursuing a career in orthopaedic surgery, as well as inspiration for future programs directed at increasing Native American representation.

PODIATRY

Midfoot Charcot Surgical Algorithm to
Restore the Tripod Foot Configuration

Pehde, C. E., Alikhani-Koopaei, A., & Phan, H. (Jul 2025).

The surgical reconstruction of complex midfoot Charcot deformities is a challenge. Fracture dislocation patterns are multi-planar making it difficult to achieve anatomic reduction and radiographic parameters are difficult to adhere. Alternatively, the tripod foot configuration can help guide deformity correction to achieve a plantigrade foot. This requires multiple surgical steps and using a surgical algorithm as a guide can be useful.

The Dialysis Foot- The Impact of
Presenting Estimated Glomerular
Filtration Rate on Clinical Outcomes in
Patients Hospitalized with Diabetic Foot
Infections

Tarricone, A., Coye, T. L., Gee, A., Najafi, B., Siah, M. C., & Lavery, L. A. (May 2025).

To evaluate the association between presenting estimated glomerular filtration rate (eGFR) and clinical outcomes in patients hospitalized with diabetic foot infections. This retrospective cohort study included 344 patients with moderate to severe diabetic foot infections. Patients were categorized into three groups based on presenting estimated eGFR: $eGFR \geq 60$ ($eGFR >60$ mL/min), $eGFR 30-60$ ($eGFR 30-60$ mL/min) and $eGFR <30$ ($eGFR <30$ mL/min). Outcomes assessed included wound healing, time to heal, re-infection, amputation, mortality and re-hospitalization for infection. Compared with patients with $eGFR <30$, patients with $eGFR \geq 60$ had significantly lower rates of retinopathy, peripheral arterial disease and use of beta blockers or calcium channel blockers. Glycated haemoglobin levels were inversely related to eGFR, decreasing as eGFR severity increased. Haemoglobin levels were significantly lower, and inflammatory markers (ESR and CRP) were significantly higher in patients with $eGFR <30$. There were no significant differences among eGFR groups in rates of wound healing, time to heal, re-infection or amputation. However, mortality increased with decreasing eGFR (1.9% in $eGFR \geq 60$ vs. 3.2% in $eGFR 30-60$ vs. 8.1% in $eGFR <30$; $p=0.04$). Similarly, re-hospitalization for infection at a different site also increased with decreasing eGFR (20.5% in $eGFR \geq 60$ vs. 28.1% in $eGFR$

30–60 vs. 48.4% in eGFR <30; $p < 0.01$). In diabetic foot infections, presenting eGFR severity did not affect rates of wound healing, time to heal, re-infection or amputation. However, decreasing eGFR was associated with increased mortality and re-hospitalization for infection at a different site. In this study, presenting eGFR was not a predictive value for wound healing or time until healing, however was associated with rehospitalization and overall mortality this diabetic foot population.

Diabetes-Related Extremity Amputation Depression and Distress (DREADD): A Multimethod Study

Brooks, L. M., Brooks, B. M., Arp, A. S., Dove, C. R., Rogers, L. C., Michel, R., Clinton, V., Labovitz, J., Brooks, B. M., & Armstrong, D. G. (Mar 2025).

Of the roughly 38 million people diagnosed with type 2 diabetes mellitus in the United States, up to 34% will develop a diabetic foot ulcer at some point, up to 75% of those who develop an ulcer will experience recurrent ulcers, and approximately 18% of patients with a diabetic foot ulcer will undergo lower-limb amputation. The aim of this study was to determine whether depressive symptoms change after a minor, nontraumatic amputation. We conducted a multimethod study consisting of semi-structured interviews ($n = 12$) and a retrospective cohort ($n = 20$) of patients with type 2 diabetes mellitus who underwent a nontraumatic, minor amputation of a single toe (partial or total) or partial ray resection. Patient Health Questionnaire-9 (PHQ-9) scores were noted before and after surgery within 30 days of each other. The Wilcoxon matched pairs signed rank test was used to determine differences in the PHQ-9 scores before amputation and after amputation. Of the 20 patients in the retrospective cohort, 90% (18 of 20) had higher PHQ-9 scores within 30 days of amputation. Mean PHQ-9 scores were 3.65 and 12.35 before and after amputation, respectively (a difference of 8.7; $P = .0001$). Diabetes-related extremity amputation depression and distress is a potentially dangerous complication of diabetes mellitus. Nontraumatic amputations can be a traumatic experience for patients. Surgeons should screen their patients with type 2 diabetes mellitus before and after any (minor or major) nontraumatic amputation and make the appropriate referral, if necessary. Sufficient evidence exists in the literature to warrant the inclusion of psychiatrists and other mental health clinicians in multidisciplinary limb preservation teams.

Limb Preservation With Cellular, Acellular And Matrix-Like Products (Camps)

Cole, W., Abdo, R., Chatman, B., Couch, A., Davis, D., Lullove, E., Methodius-Rayford, W., Rogers, L., Snyder, R., Wu, S., Feraru, L., Kim, P., Lázaro Martínez, J. L., & McGuire, J. (Nov 2025).

Limb preservation represents a commitment to restoring function, independence and quality of life for patients at risk of amputation. As the chair of this consensus panel, I am pleased to present this document to the medical community. It was de-

veloped to advance the science and practice of limb preservation through the informed application of cellular, acellular and matrix-like products (CAMPs). This consensus document is the result of a collaborative, interdisciplinary effort among key opinion leaders, aimed at meeting the increasing demand for updated, practical and evidence-informed guidance on the use of CAMPs. The discussions were rooted in clinical experience and bolstered by emerging data, all while maintaining a shared understanding of the complexities inherent in limb preservation. Successfully preserving a threatened limb requires more than selecting the right CAMP; it necessitates thorough patient assessment, interdisciplinary collaboration and a commitment to ongoing reassessment and optimisation.

Healing Of Diabetic Neuropathic Foot Ulcers Receiving Standard Treatment in Randomised Controlled Trials: A Random Effects Meta-Analysis

Coye, T. L., Bargas Ochoa, M., Zulbaran-Rojas, A., Martinez Leal, B., Quattas, A., Tarricone, A., Chung, J., Najafi, B., & Lavery, L. A. (Mar 2025).

This meta-analysis aimed to systematically assess and synthesise healing rates within a 12- to 24-week treatment period among patients with diabetic foot ulcers receiving standard-of-care interventions in randomised controlled trials. This meta-analysis included 32 randomised controlled trials conducted between 1996 and 2023, with sample sizes ranging from 9 to 169 patients. A random-effects model was applied to estimate pooled healing and infection rates. Heterogeneity was quantified using the I² statistic, and publication bias was assessed using Egger's test. The results revealed a pooled healing rate of 33.15% with a 95% confidence interval (CI) of 31.18%–35.11% and an average healing time of approximately 50.14 days (standard deviation: 31.10 days). The infection proportion was determined to be 17.4% (95% CI: 12.2%–22.5%). Subgroup analysis indicated marginally higher healing rates in the ‘Saline Gauze’ group compared to the ‘Alginate’ group, although the latter exhibited a reduced infection proportion. Sensitivity analysis affirmed the robustness of these findings whereas Egger's test suggested the presence of potential publication bias concerning the healing outcomes. The standard-of-care interventions for diabetic foot ulcers demonstrate limited effectiveness, with only about one-third of patients achieving wound closure. The significant heterogeneity and publication bias observed necessitate a cautious interpretation of these results. The findings highlight the need for advanced wound care strategies and personalised treatment plans to improve outcomes in diabetic foot ulcers management. Future research should focus on conducting high-quality, well-reported randomised controlled trials to better understand effective treatments for DFUs.

Bromelain-Based Debridement Versus Collagenase Ointment Debridement of Venous Leg Ulcers: Post Hoc Analysis of the Chronex Trial

Dove, C. R., Snyder, R. J., Zarbiv, K. D., Levy, Y. K., Haviv, A., Klinger, E., Shoham, Y., & Sigal, F. 2025).

Background: A randomized controlled trial reported that bromelain-based enzymatic debridement (BBD) more effectively debrided and granulated venous leg ulcers (VLUs) compared with placebo (gel vehicle, hydrogel) and nonsurgical standard of care (including collagenase ointment [CO]).

Objective: To assess the efficacy of BBD vs CO-based enzymatic debridement in VLUs during the ChronEx trial.

Materials and Methods: The Wilcoxon exact test was used to compare the proportion of wounds in each group that achieved complete debridement and granulation at 2 weeks. Kaplan-Meier analysis was used to compare median times to complete debridement and granulation between groups.

Results: Forty-six patients with 46 wounds were treated with BBD, and 8 were treated with CO. Twenty-nine wounds treated with BBD (63%; 95% CI, 48–77) were completely debrided within 2 weeks compared with none treated with CO ($P = .001$). Twenty-three wounds treated with BBD (50%; 95% CI, 35–65) achieved complete granulation by 2 weeks compared with none with CO ($P = .015$). The estimated median time to complete debridement and complete granulation, respectively, in the BBD group vs the CO group, respectively, were 9 days vs not achieved ($P = .023$), and 11 days vs not achieved ($P = .014$). The groups had comparable safety and pain profiles.

Conclusion: BBD appears to be more effective and faster than CO in achieving complete debridement and granulation of VLUs as part of wound bed preparation.

Advanced Wound Therapies

Frykberg, R. G., & Speight, J. H. (Oct 2025).

Silver dressings at 30–40 ppm can treat clinically infected wounds, but should generally be avoided for uninfected wounds. Negative pressure wound therapy may be effectively used for foot ulcers, provided there is proper debridement and protection for exposed vital structures. Hyperbaric oxygen has shown inconsistent but potentially promising results for managing diabetic ulcers, but additional research is needed. Topical oxygen therapy is showing significant promise as an emerging wound therapy, with multiple varieties of devices on the market. There are a variety of skin substitutes that have shown positive results for wound healing, particularly including bio-engineered skin substitutes.

The Trial Design of the Concurrent Optical and Magnetic Stimulation (Coms) Therapy Study for Refractory Diabetic Foot Ulcers (Mavericks): A Multicenter, Randomized, Sham-Controlled, Double-Blind Investigational Device Exemption Clinical Study

Galiano, R. D., Li, R. A., Lantis, J. C., Oropallo, A., Ulloa, J., Iafrazi, M., Lavery, L. A., O’Connell, J., & Nouvong, A. (Aug 2025).

Background: Diabetic foot ulcers (DFUs) are a major clinical challenge, particularly among patients with refractory ulcers, that often lead to severe complications such as infection, amputation, and high mortality. Innovations supported by strong clinical evidence have the potential to improve healing outcomes, enhance quality of life, and reduce the economic burden on individuals and health care systems.

Objective: To describe the design of the concurrent optical and magnetic stimulation (COMS) therapy Investigational Device Exemption (IDE) study for refractory DFUs (MAVERICKS) trial.

Materials and Methods: The MAVERICKS trial is a pivotal, multicenter, randomized, sham-controlled, double-blind study designed to evaluate the efficacy and safety of COMS therapy as an adjunct to standard of care for hard-to-heal DFUs. What differentiates MAVERICKS is its extended screening phase, ensuring the inclusion of truly refractory ulcers, thus addressing a critical gap in previous DFU research. With an expected enrollment of 224 patients across diverse clinical settings, the trial incorporates robust methodologies to eliminate bias, and comprehensive inclusion and exclusion criteria to ensure data integrity. The study’s primary outcome measure, time to complete wound closure, as well as secondary end points including wound area reduction and time to amputation, will provide credible insights into the therapeutic potential of COMS.

Conclusion: The MAVERICKS trial is particularly significant for investigating a novel, accessible, and cost-effective approach to advance DFU treatment. This trial sets a high standard in DFU research and seeks to provide reliable evidence to improve patient outcomes and guide future clinical practice. Upon trial completion, the authors look forward to sharing the findings and outcome analysis with wound care stakeholders. The study is registered under ClinicalTrials.gov identifier NCT05758545, effective March 7, 2023.

Management of Diabetic Wounds: Expert Panel Consensus Statement

Hsia, H. C., Eriksson, E., Gurtner, G. C., Veves, A., Hamdy, O., Margolis, D. J., Armstrong, D. G., Lavery, L. A., Grice, E. A., Schultz, G., Conte, M. S., Kirsner, R. S., Attinger, C. E., Steinberg, J. S., Evans, K. K., Weir, D., Kim, P. J., Orgill, D. P., Liechty, K. W., & Rubin, J. P. (Aug 2025).

Significance: The Wound Healing Foundation recognized the need for consensus-based unbiased recommendations for the treatment of wounds. Consensus statements on the treatment of chronic wounds and acute wounds have been developed and published previously. The current publication on diabetic wounds represents the next step in this process. Diabetic wounds constitute a major problem. Population-based and meta-analytic studies indicate that the presence of foot wounds in patients with diabetes increases their mortality risk by more

than twofold. The management of diabetic wounds requires consistent and evidence-driven intervention to achieve optimal clinical outcomes. This consensus statement provides the clinician with the necessary foundational approaches to the causes, diagnosis, and therapeutic management of diabetic wounds. Presented in a structured format, this is a useful guide for clinicians and learners in all patient care settings.

Recent Advances: Continuous glucose monitoring and other new tools have facilitated better diabetes management and the management of associated wounds. Diabetic limb salvage should focus on achieving and optimizing function for the patient with diabetes rather than preserving limb tissue at all costs.

Critical Issues: Successful management of diabetic wounds requires a multidisciplinary approach encompassing comprehensive assessment, timely intervention, and collaborative care by the wound clinician with providers who can address critical aspects to achieve healing, including careful management of blood glucose levels, optimization of off-loading and physical therapy, assessment and treatment of limb ischemia, control and prevention of wound infection, and optimal pain management.

Future Directions: Emerging treatments offer hope and promise, but the heterogeneity of diabetic wounds poses a challenge to performing good studies, which will be necessary to advance new treatments for diabetic wounds.

IVUS Improves Outcomes with SUPERA Stents for the Treatment of Superficial Femoral-Popliteal Artery Disease

Krishnan, P., Sharma, R., Avadhani, S., Tarricone, A., Gee, A., Farhan, S., Kamran, H., Kini, A., & Sharma, S. (Apr 2025).

Background: Nitinol interwoven bare metal stents represent an advancement in stent technology; however, nominal deployment remains an area of focus. Intravascular ultrasound (IVUS) has been shown to improve outcomes in both the coronary and peripheral vasculature by providing the operator with greater vessel detail; however, the use of adjunctive IVUS with nitinol bare metal stents has not been widely studied. This studies aims to determine the effect of IVUS when used adjunctively with nitinol interwoven bare metal stents in the management of femoropopliteal lesions.

Design: Retrospective study.

Methods: This study included a cohort of 200 consecutive patients with peripheral artery disease. All patients were treated with ≥ 1 Supera bare metal stent, and 91 received adjunctive IVUS imaging prior to stent deployment. Deployment conditions of nominal, compressed, and elongated were measured, and the primary clinical outcomes included target lesion reintervention, amputation, and mortality. This study also showed that 8.3 number needed to treat (NNT) patients must be treated with IVUS to avoid an additional revascularization event.

Results: The patients who received IVUS had a significantly greater number of nominally deployed stents ($p < 0.001$). Pa-

tients who had IVUS imaging also had significantly lower reintervention rates compared with those who did not receive IVUS imaging ($p = 0.047$).

Conclusion: The IVUS and angiography decreases clinically-driven target lesion reintervention and increases nominal deployment compared with angiography alone in femoropopliteal lesions treated with interwoven bare metal nitinol stents.

Clinical Impact: Endovascular surgones may consider the adjunctive use of IVUS when using the Supera stent for the treatment of infra inguinal superficial femoral artery lesions. The adjunct use of IVUS may lead to improved sizing, vessel prep, deployment, and ultimately reduction in CD-TLR.

Drug Eluting Stents as a Management for Patients with Below the Knee Peripheral Artery Disease: A Systematic Review and Meta-Analysis

Krishnan, P., Tarricone, A., Gee, A., Lee, D. W., Mehta, J., Lavery, L. A., & Sharma, S. (Jul 2025).

Purpose: The purpose of this study was to compare the effectiveness and safety of drug eluting stents with percutaneous transluminal angioplasty and bare-metal stents in below the knee peripheral artery disease. Methods: The systematic review was registered in Research Registry. A literature search was performed across four databases: PubMed, Medline/Embase, Cochrane Review, and Web of Science for eligible comparative studies. The primary outcomes examined were mortality, major amputation (above the ankle), minor amputation (below the ankle), and clinically driven target lesion revascularization (CD-TLR). A random effects model was used when pooling outcomes to account for heterogeneity.

Main Findings: A total of 7 studies were included in this systematic review and meta-analysis. All subjects were treated for below the knee lesions and CLTI was confirmed as Rutherford ≥ 4 in 669/955 (70.0%). Among the studies, 572 were treated with a drug eluting stents and 477 treated with non-DES modalities. Pooled analysis showed that DES significantly reduced minor amputations and CD-TLR, O.R = 0.56 [0.32, 0.96], and O.R = 0.38 [0.25, 0.60], respectively. In subgroup analysis, paclitaxel eluting stents were not associated with either survival or major amputation. Everolimus/sirolimus eluting stent use was associated with reduced CD-TLR, O.R = 0.36 [0.21, 0.61].

Conclusion: This study suggests that Drug-Eluting Stents (DES), irrespective of type, provide protection against minor amputations and CD-TLR. However, they do not seem to have a significant impact on overall survival rates or the risk of major amputations.

The Infected Diabetic Foot: Incidence and Risk Factors for Dehiscence After Surgery for Diabetic Foot Infections

Lavery, L. A., Reyes, M. C., Najafi, B., Coye, T. L., Chung, J., Siah, M. C., & Tarricone, A. N. (Jan/Feb 2025).

Our objective was to assess the incidence, risk factors and clinical outcomes of dehiscence after foot surgery in diabetic patients. We used pooled patient-level data from two randomised clinical trials with 240 diabetic patients who required foot surgery for infections. Most patients ($n = 180$, 75.0%) had surgical wound closure. We defined dehiscence surgical wounds (DSW) when the surgical site was not completely epithelialized with no drainage after sutures/staples were removed with a 2-week validation of healing. We evaluated the time to heal, re-infection, re-ulceration, hospital admissions and amputations. Moderate and severe infection was based on criteria of the International Working Group on the Diabetic Foot. We used χ^2 and t-test and Mann–Whitney U for comparison of clinical events, with α of < 0.05 . DSW occurred in 137 (76.1%) patients. DSW patients were more likely to have hypertension (62.8% vs. 81.8%, $p = 0.01$), high ESR (59.1 ± 37.9 vs. 75.9 ± 37.6 , $p = 0.01$), low toe brachial indices (0.8 ± 0.2) (0.7 ± 0.2 , $p = 0.005$), toe brachial indices < 0.6 (16.7% vs. 40.9%, $p = 0.008$), and low skin perfusion pressure measurements (dorsal medial 71.0 ± 29.4 vs. 59.3 ± 23.3 , $p = 0.01$, and plantar medial 81.8 ± 24.9 vs. 72.2 ± 20.4 , $p = 0.02$). During 12-month follow-up, DSW patients were 12.9 times more likely to have re-infection (0% vs. 12.4%, $p = 0.02$) and 6.8 times more likely to require amputation (2.3% vs. 13.9%, $p = 0.04$). The median healing time (28, 22.5–35.0 vs. 114.0, 69.0; 365, $p = 0.001$), and median length of hospitalisation were longer in DSW patients (12.0, 9.01–9.0 vs. 15.0, 11.0–24.0, $p = 0.04$). There was a high incidence of DSW, associated with poor clinical outcomes.

The Infected Diabetic Foot: Risk Factors for Re-Infection After Treatment for Diabetic Foot Osteomyelitis

Lavery, L. A., Reyes, M. C., Najafi, B., Coye, T. L., Sideman, M., Siah, M. C., & Tarricone, A. N. (Jan/Feb 2025).

Our objective was to evaluate risk factors for re-infection in patients after treatment for diabetic foot osteomyelitis (OM). We used pooled patient level data from two RTCs that evaluated patients with diabetic foot infections. We evaluated 171 patients with OM. OM was confirmed with bone culture or histopathology. Data from the 12-month follow-up were used to determine clinical outcomes. Re-infection occurred in 47 (27.5%) patients. Risk factors for re-infection were Toe Brachial Index < 0.40 (25.7% vs. 9.8%, $p = 0.02$), skin perfusion pressure < 40 mmHg (6.3% vs. 5.9%, $p = 0.04$), wound healing (55.3% vs. 75.0%, $p = 0.01$), time to heal (156.0, 69.5–365 vs. 91.5, 38.8–365, $p = 0.001$), and history of MI (14.9% vs. 3.2%, $p = 0.005$). During 12-month follow-up, patients with re-infections were 198.8 times more likely to require a foot related hospitalisation (81.8% vs. 0.0%, $p = 0.001$), 10.4 times more likely have an all-cause hospitalisation (70.2% vs. 18.5%, $p = 0.001$) and 9.4 times more likely to need an amputation (36.2% vs. 5.6%, $p = 0.001$). Patients with re-infection had a significantly longer median length of hospitalisation (20.0, 13.5–34.5 vs. 14.0, 10.0–22.0, $p = 0.003$) and median length of antibiotic du-

ration (55.0, 35.0–87.0 vs. 46.0, 22.8–68.0, $p = 0.03$). Patients with re-infection are less likely to heal and have more foot-related hospitalizations and amputations.

Randomized Controlled Trial to Compare Amnioexcel Human Amniotic Allograft in Weekly Versus Biweekly Treatment of Diabetic Foot Ulcers

Lavery, L. A., Suludere, M. A., Raspovic, K., Crisologo, P. A., Johnson, M. J., & Tarricone, A. N. (Jan 2025).

Our objective was to compare clinical outcomes in diabetic foot ulcers (DFU) treated with AmnioExcel® applied weekly (AMX1) or biweekly (AMX2) over a 12-week evaluation period. This randomized clinical trial evaluated 40 people with UT 1A and 1D DFUs > 30 days but less than 6 months duration and age > 21 years. We excluded patients with untreated osteomyelitis, gangrene, widespread malignancy, or active substance abuse. Patients received amniotic tissue either once a week or every other week. We used a 3D measurement device (inSight, eKare, Fairfax, Virginia)”. There was no difference in the incidence of healing (AMX1 30.0% vs AMX2 50.0%, $p = 0.20$), time to heal (69.3 ± 30.3 vs 45.8 ± 25.6 days, $p = 0.15$), or incidence of infection (AMX1 35.0% vs AMX2 25.0%, $p = 0.49$). The mean wound area reduction was 0.18 ± 0.48 cm² per week for AMX1 and 0.15 ± 0.63 cm² week for AMX2 ($p = 0.42$). When we compared wound healing trajectories in healers and non-healers. There were no differences in the mean wound area reduction for healers (0.26 ± 0.40 cm² per week) and non-healers (0.14 ± 0.52 cm² per week, $p = 0.20$). Our results suggested there is no difference in the incidence of healing, time to heal or incidence of infection based on weekly or biweekly application of amniotic tissue.

The Infected Diabetic Foot: Bacteraemia and Endocarditis Complicating Moderate and Severe Foot Infections

Reyes, M. C., Tarricone, A. N., Sideman, M. J., Siah, M. C., Najafi, B., Peters, E. J. G., & Lavery, L. A. (May 2025).

To identify the incidence of blood stream infections (BSIs) and endocarditis in patients with diabetic foot infections (DFIs), risk factors and clinical outcomes. A post hoc analysis of 280 patients using pooled patient level data from three RTCs. Blood cultures were drawn at time of admission for DFI. Deep intra-operative cultures were obtained from infected foot wounds. Data from the 12-month follow-up were used to determine clinical outcomes. 77.1% ($N = 216$) had blood cultures of which 15.7% ($n = 34$) had BSI. One patient (3.3%) had endocarditis. Risk factors for BSI included Charcot Neuroarthropathy history (20.6% vs. 7.1%, $p = 0.03$), low systolic blood pressure (128.3 ± 21.0 vs. 140.8 ± 22.2 $p = 0.003$), low diastolic blood pressure (71.6 ± 9.4 vs. 79.3 ± 11.5 $p < 0.001$), leucocytosis > 12 000 (55.9% vs. 29.1%, $p = 0.002$) and elevated C-reactive protein (CRP) (26.8 ± 31.2 vs. 12.0 ± 19.6 , $p < 0.001$). During the

index hospitalization, BSI patients had longer median hospitalizations (14.0, 11.3–18.0 vs. 12.0, 9.0–16.0, $p=0.04$). At 12-months, BSI patients were more likely to be admitted to the hospital (all cause hospital admissions 35.3% vs. 18.6%, $p=0.03$). There was no difference in re-infection (20.6% vs. 32.9%, $p=0.21$), foot-specific hospitalizations (17.6% vs. 22.5%, $p=0.65$), wounds healing (64.7% vs. 67.5%, $p=0.88$), time to heal (221.0, 74.0–365 vs. 109.5, 46.8–365, $p=0.16$) or antibiotic duration (46.0, 39.3–76.5 vs. 45.0, 22.3–67.0, $p=0.09$). The most common BSI pathogens were *Staphylococcus aureus* (79.4%) and *Streptococcus* spp. (50.0%) species. BSI is common in DFIs. Patients have longer hospitalizations and were more likely to be hospitalized after their initial discharge.

Deep Venous Arterialization in the Acute Setting for Embolic Complication After Endovascular Procedure

Rodriguez, A. P., Solano, A., Babool, S. K., Zhang, S. M., Lavery, L. A., & Siah, M. C. (Mar 2025).

We report a case of a patient that developed acute limb ischemia secondary to atherectomy related embolization that was rescued with a deep venous arterialization (DVA) procedure. For patients with critical limb-threatening ischemia, deep vein arterialization is a viable and crucial intervention for non-surgical candidates who present with wounds or rest pain. This case report underscores DVA's efficacy in addressing severe presentations even in the case of acute ischemia.

SHOULDER AND ELBOW

Revision Olecranon Fixation: Is Tension Band Wiring the Solution? A Case Series and Review of the Literature

Appleton, M. C., Jakkaraju, S. K., Appleton, P. C., & Dutta, A. K. (May 2025).

Background: The optimal revision construct for failed olecranon fracture fixation is controversial. Here, we aim to review existing revision techniques and describe tension band wiring as a surgical option for these challenging scenarios and to evaluate its clinical and radiographic outcomes.

Methods: This retrospective case series was performed at an urban, university-based, level-1 trauma center. Patients aged 18 to 65 years who underwent revision fixation of their olecranon fracture using tension band wiring were included. The study data were collected through a retrospective chart review and

review of the existing radiographic studies. Primary outcome measure was mechanical failure. Secondary outcome measures included nonunion, malunion, medical, and surgical complications. Functional outcome was determined by range of motion and restoration of extensor mechanism strength.

Results: A total of five patients were included in this study. Causes for revision were acute implant failure ($n = 2$), aseptic nonunion ($n = 1$), and infected nonunion ($n = 2$). All patients eventually achieved bony union after revision. Two patients required an additional surgery because of Kirschner wire migration ($n = 1$) and symptomatic implant ($n = 1$). Average flexion was 126° (range 110 to 135) and average extension was 18° (range 5 to 30). All patients experienced restoration of extensor mechanism with full strength and returned to their previous working status. No other mechanical failures, surgical complications, or medical complications occurred.

Conclusions: Early results of revision open reduction and internal fixation for failed olecranon fracture fixation using tension band wiring demonstrated favorable outcomes and low complication rates. This technique may be used for revision of failed olecranon fixation.

Risk Factors for Greater Tuberosity Nonunion Following Reverse Total Shoulder Arthroplasty for Proximal Humerus Fractures: A Systematic Review And Meta-Analysis

Bluhm, J. B., Aziz, A., Martinez, V. H., Williamson, T. K., Checketts, J. X., & Dutta, A. (Apr 2025).

Background: Greater tuberosity nonunion following reverse total shoulder arthroplasty (rTSA) for proximal humerus fracture is known to be associated with poor outcomes. However, it is unknown which factors place patients at risk for not healing their tuberosity repair after rTSA. The purpose of this review is to identify and characterize the predictors of greater tuberosity nonunion (GTNU) following rTSA for proximal humerus fractures.

Methods: A systematic search was conducted using key terms “tuberosity healing reverse” and “tuberosity nonunion arthroplasty” in databases of English language articles published before April 2024. Human studies describing risk factors associated with development of GTNU following rTSA for fracture in either retrospective or prospective studies were included. Articles were excluded if they were not able to assess risk factors for GTNU. Data synthesis summarized outcome measures and study designs appropriately in the results. Using SPSS meta-analysis binary and continuous model function, the mean effect size estimate (MESE) with 95% confidence interval were reported for significant factors.

Results: This search yielded a total of 129 studies and, after exclusion criteria were assessed, 21 articles comprising 1164 patients with proximal humerus fractures were included in the review. These studies included 429 fractures developing tu-

berosity nonunions after rTSA. Methodological quality varied from low to high. There were 23 factors assessed in the included studies. There were no statistically significant patient-specific risk factors for GTNU, including age, gender, dominant side and Type 2 diabetes (all $P > .3$). A 4-part fracture was found to be a risk factor (MESE = 1.24, [0.09-2.39]; $P = .03$) compared to the 3-part, while all other injury-specific risk factors were found to be nonsignificant. The use of autograft (MESE = -1.49, [-2.57]-[-0.42]); $P = .006$) was a significantly protective surgical-specific factor, while the use of a fracture stem vs. a conventional stem and the glenosphere size were not deemed significant risk factors (both $P > .2$). The majority of studies were of low-quality, with only 10.0% (3/30) of the included studies conveying Level I or Level II evidence.

Conclusions: The use of autograft resected from the fractured humeral head and incidence of a 4-part fracture were the most significant factors involved in greater tuberosity nonhealing, while certain demographic and injury-specific factors were not found to be statistically significant. Future studies are warranted to use a prospective study design, identify greater tuberosity nonunion-specific risk factors, and implement evidence-based prevention strategies.

Lisfranc Fixation Utilizing Dorsomedial Plating Technique

Iandoli, J. L., DeGenova, D. T., Perugini, A. J., Hill, Z. P., Glazier, M. T., & Taylor, B. C. (Mar 2025).

Ideal treatment for Lisfranc injuries is often debated, but ultimately the 2 main pillars of surgical intervention consist of open reduction and internal fixation versus arthrodesis. When adhering to the principles of rigid fixation and anatomic reduction, both interventions yield similar results and patient satisfaction. The purpose of this article and associated video is to simplify operative intervention of this complex injury pattern into a reliable biomechanically stable plating technique using a dorsomedial approach that results in good patient outcomes and is largely joint sparing. The cohort used for this technique guide consists of 31 patients with at least 12-month follow-up. Notable results include mean operative room time of 81 minutes, median time to union 198 days, and 1 non-union. Complications included 4 superficial infections and 1 deep infection, 7 patients with broken hardware, 1 non-union, and 15 patients elected to have hardware removed although not necessary for this technique.

SPINE

Appropriate Use Criteria for Neoplastic Compression Fractures

Cho, C. H., Hills, J. M., Anderson, P. A., Annaswamy, T. M., Cassidy, R. C., Craig, C. M., DeMicco, R. C., Easa, J. E., Kreiner, D. S., Mazanec, D. J., O'Toole, J. E., Rappard, G., Ravinsky, R. A., Schoenfeld, A. J., Shin, J. H., Whitcomb, G. L., & Reitman, C. A. (Jul 2025).

Background Context: Clinical outcomes are directly related to patient selection and treatment indications for improved quality of life. With emphasis on quality and value, it is essential that treatment recommendations are optimized.

Purpose: The purpose of the North American Spine Society (NASS) Appropriate Use Criteria (AUC) is to determine the appropriate (ie, reasonable) multidisciplinary treatment recommendations for patients with metastatic neoplastic vertebral fractures across a spectrum of more common clinical scenarios.

Study Design: A Modified Delphi process.

Patient Sample: Systematic Review.

Outcome Measures: Final rating for cervical fusion recommendation as either “Appropriate,” “Uncertain,” or “Rarely Appropriate” based on the median final rating among the raters.

Appropriate Use Criteria for Osteoporotic Compression Fractures

Cho, C., Hills, J., Anderson, P., Annaswamy, T., Cassidy, R. C., Craig, C., DeMicco, R., Easa, J., Kreiner, S., Mazanec, D., O'Toole, J., Rappard, G., Ravinsky, R., Schoenfeld, A., Shin, J., Whitcomb, G., & Reitman, C. (Mar 2025).

Background Context: There is a lack of consensus regarding optimal indications for treatment of patients with osteoporotic vertebral fractures. An opportunity exists to improve outcomes if these indications can be clarified.

Purpose: The purpose of the North American Spine Society (NASS) Appropriate Use Criteria (AUC) was to determine the appropriate (ie, reasonable) multidisciplinary treatment recommendations for patients with osteoporotic vertebral fractures across a spectrum of more common clinical scenarios.

Study Design: A Modified Delphi process.

Patient Sample: Modified consensus based guideline.

Outcome Measures: Final rating for treatment recommendations as either “Appropriate,” “Uncertain,” or “Rarely Appropriate” based on the median final rating among the raters.

The T4-L1-Hip Axis Objectifies the Roussouly Classification Using Continuous Measures

Hills, J., Molina, C., Lenke, L. G., Sardar, Z. M., Le Huec, J. C., Hasegawa, K., Wong, H. K., Dennis Hey, H. W., Diebo, B. G., Pallotta, N. A., & Kelly, M. P. (Jun 2025).

Background: The Roussouly classification is a popular system for the categorization of spinal alignment, although the categorization of continuous measures may compromise efforts toward a precision-medicine approach to sagittal alignment in spine surgery. Vertebral-pelvic angles provide continuous measures of sagittal alignment without the risk of misclassification.

Methods: We performed a cross-sectional study of asymptomatic adult volunteers with normal spines (no evidence of disc degeneration or scoliosis). Full-spine radiographs were obtained, and radiographic parameters were collected, including pelvic incidence (PI), sacral slope, lumbar lordosis, the apex of lordosis, the L1-pelvic angle (L1PA), and the T4-pelvic angle (T4PA). All spines were classified as Roussouly Type 1, 2, 3, or 4 on the basis of sacral slope and the apex of lumbar lordosis. Associations between the L1PA and PI, the L1PA and T4PA, and the T4-L1PA mismatch and PI were assessed for the whole cohort and when stratified by Roussouly type. A multinomial logistic regression model was fit to estimate Roussouly type based on PI, the L1PA, and the T4PA. Agreement (weighted κ), accuracy, and area under the receiver operating characteristic curve (1 type versus the rest) were computed. A subanalysis assessed potential variations in the relationships when Roussouly Type-3 spines were further classified as Type 3A (anteverted) versus Type 3.

Results: The 320 included volunteers had a median age of 37 years (interquartile range [IQR], 27 to 47 years), and 193 (60%) were female. By self-reported race or ethnicity, the highest percentage of patients were Caucasian (White, 38%) or East Asian (36%), followed by Arabo-Bèrbère (16%). Spines were classified as Roussouly Type 1 in 18 (6%) of the volunteers, as Type 2 in 63 (20%), as Type 3 in 161 (50%), and as Type 4 in 78 (24%). The L1PA was strongly associated with PI across Roussouly types (weakest in Roussouly Type-1 spines). A multinomial logistic regression model estimating Roussouly type by PI, the L1PA, and the T4PA showed strong agreement (weighted κ , 0.84), excellent discrimination, and overall accuracy of 0.82.

Conclusions: The T4-L1-Hip axis is conceptually aligned with the description of spinal shapes in the Roussouly classification but with the advantage of utilizing continuous measures of spinal alignment. Goals of surgical realignment incorporating the T4-L1-Hip axis will be comparable with alignment planning using the Roussouly classification but with improved accuracy and precision.

Automated Radiographic Metrics for Diagnosing Lumbar Spine Instability: A Cross-Sectional Observational Study

Hipp, J. A., Reitman, C. A., Buser, Z., Chaput, C. D., Ghogawala, Z., & Grieco, T. F. (Apr 2025).

Background: The concept of spinal instability has been the subject of research since the 1940s and is commonly used in clinical practice to decide on patient treatment. This is despite the lack of an adequately validated diagnostic test for instability. Our goal is to describe automated tests to detect segmental translational and vertical instabilities that can be obtained from lumbar flexion-extension radiographs. We also assess the prevalence of these instabilities in different patient populations.

Methods: Using fully automated methods: (I) flexion-extension studies of asymptomatic volunteers were analyzed to understand the performance of instability metrics in that population; (II) 7,621 lumbar spine flexion-extension from multiple clinical studies were analyzed to document the prevalence of sagittal plane translational and vertical instabilities, corrected for the amount of intervertebral rotation, across different patient populations.

Results: Translational or vertical motion abnormalities were rare (<4% of levels) in the asymptomatic population, and the magnitude of translational motion was associated with radiographic disc degeneration ($P<0.0001$). Sagittal plane translational instabilities were uncommon (<4% of treatment levels) in lumbar disc arthroplasty and biologic disc treatment patients. They were more common (11% to 16% of treatment levels) in lumbar stenosis, lumbar fusion, and dynamic stabilization patients. A higher prevalence of vertical instabilities (27% to 48% of treatment levels) was seen in patients treated for lumbar stenosis and those selected for fusion or dynamic stabilization than those enrolled in disc arthroplasty studies or studies investigating biologics for disc disease treatment (6% to 11% of treatment levels).

Conclusions: New and fully automated approaches to detecting abnormal sagittal plane intervertebral motion may lead to enhanced and standardized diagnosis of lumbar spine instability. Further clinical research is imperative to verify prevalences and validate the efficacy of these metrics in diagnosis and treatment algorithms. If supported by additional research, these metrics may help determine, for example, which lumbar spinal stenosis patients require fusion in addition to decompression surgery.

Validation and Clinical Application of The $\Delta c2$ Pelvic Angle - $\Delta c2$ Tilt = Δ pelvic Tilt Equation for Predicting Pelvic Tilt in Spinal Deformity Surgery

Joseph, K., Bui, T., Yahanda, A. T., Yakdan, S., Vogl, S., Ruiz Cardozo, M., Galla, J. T., Leatherman, Z., Poulin, N. D., Chakladar, S., Brehm, S., Benedict, B., Gupta, M., Pallotta, N., Hills, J., Kelly, M. P., Greenberg, J. K., Neuman, B. J., Ray, W. Z., & Molina, C. A. (Jun 2025).

Objective: Notably, studies have established a consistent link between global sagittal alignment and pelvic tilt (PT) using C2 tilt (C2T) and C2 pelvic angle (C2PA), described by the following equation: $C2PA = PT + C2T$. The present study aimed to validate the proposed relationship (predicted $\Delta PT = \Delta C2PA - \Delta C2T$) based on the assumption that patients aim to maintain a neutral C2T. Additionally, this study sought to evaluate the accuracy of intraoperative C2PA measurements for predicting postoperative PT.

Methods: The medical records of patients > 21 years of age undergoing spinal fusion were retrospectively reviewed. Inclusion criteria were spinal instrumentation and fusion extending to the sacrum with upper instrumented vertebrae at or above L3. Patients without complete preoperative and 6-week postoperative anteroposterior and lateral scoliosis radiographs were excluded. Patients were stratified into short (fusion at or below T10) and long thoracolumbar fusions. Pre- and postoperative measurements included the C2–7 Cobb angle (CA), C6–T4 CA, T5–12 CA, T4 pelvic angle, L1 pelvic angle, pelvic incidence, and lumbar lordosis. A subset of patients with intraoperative radiographs visualizing a visible C2 vertebral body and bilateral femoral heads were analyzed for intraoperative prediction accuracy. $\Delta C2PA$ was defined as postoperative C2PA – preoperative C2PA, and predicted $\Delta C2T$ was defined as $0 - \text{preoperative C2T}$. The mean absolute error (MAE) was calculated as the mean absolute difference between the predicted and actual postoperative PT values.

Results: In total, 298 patients (mean age 65.4 ± 11.4 years, 71.8% female) met the inclusion criteria; 126 (42.3%) underwent short thoracolumbar fusions, and 172 (57.7%) underwent long thoracolumbar fusions. Preoperatively aligned patients had a mean postoperative C2T of $-2.43^\circ \pm 2.48^\circ$, and preoperatively malaligned patients had a mean postoperative C2T of $0.72^\circ \pm 5.32^\circ$. The equation demonstrated excellent accuracy in the full cohort, with an MAE of 3.56° and an R2 value of 0.77. Of the total cohort, 69 patients (23.2%) met criteria for intraoperative measurements. Intraoperatively, the equation retained clinical utility (MAE = 5.75° , R2 = 0.576) and maintained high accuracy across stratified analyses by fusion length (MAE in long fusion = 5.89° , R2 = 0.595; MAE in short fusion = 5.31° , R2 = 0.603).

Conclusions: This study validates the equation (predicted $\Delta PT = \Delta C2PA - \Delta C2T$) as a reliable tool for predicting PT in spinal deformity surgery. The equation’s dual functionality as a preoperative planning tool and intraoperative predictive guide underscores its clinical utility.

Mechanical Failures as Predicted by Achieving Local vs Global T4-L1 Hip Axis Goals: A Single Center Experience

Joseph, K., Bui, T. T., Yahanda, A. T., Gupta, V. P., Vogl, S., Yakdan, S., Galla, J. T., Ruiz-Cardozo, M. A., Barot, K., Chakladar, S., Poulin, N. D., Challagundla, A., Ng, J., Krishnan,

A., Brehm, S. N., Benedict, B., Clohisy, J. C., Jr., Pallotta, N., Gupta, M. C., Neuman, B. J., Hills, J., Kelly, M. P., Hafez, D., Greenberg, J. K., Ray, W. Z., & Molina, C. A. (Jul 2025).

Objective: To evaluate the predictive value of T4-L1 Hip Axis Error (HAE) and L1PA Error (L1PAE) on mechanical failure following adult spinal deformity (ASD) surgery, and to assess how error directionality and fusion length influence outcomes.

Summary of Background Data: The T4-L1 Hip Axis is a novel framework for defining normative sagittal alignment by aligning thoracic and lumbar curvatures relative to the pelvis. Prior studies suggest that deviation from this axis may contribute to mechanical complications following ASD surgery. However, the impact of directionality, construct length, and specific risk factors remains underexplored.

Methods: A retrospective review was conducted on 271 ASD patients who underwent fusion from L2 or above to the pelvis between 2016-2024. T4PA and L1PA were measured from six-week postoperative standing radiographs. Alignment errors (HAE, L1PAE) were calculated based on target threshold derived from prior normative studies. Multivariate logistic regression identified predictors of mechanical failures. Subgroup analyses were stratified by fusion length and error direction

Results: HAE was a significant predictor of mechanical failure (OR=1.20 per $^\circ$, $P<0.001$), whereas L1PAE was not. HAE remained predictive regardless of whether patients achieved L1PA targets. In short fusions, both signed and absolute value of HAE were associated with mechanical failure. Positive HAE (anterior T4 alignment) conferred the highest risk. Higher BMI and short constructs were independent predictors of increased HAE.

Conclusion: HAE is a robust, direction-sensitive predictor of mechanical failure in ASD surgery. Its predictive power surpasses L1PAE and remains significant in both long and short segment fusions. HAE Should be routinely measured and minimized intraoperatively to reduce postoperative mechanical complications.

Conflating Disability, Frailty, and Multimorbidity in Adult Spinal Deformity Patients: Seeking a Continuous Measure of Vulnerability

Kelly, M. P., Lovecchio, F. C., Klineberg, E. O., Smith, J. S., Line, B., Gum, J. L., Protopsaltis, T. S., Hamilton, D. K., Soroceanu, A., Eastlack, R., Nunley, P., Kebaish, K. M., Lenke, L. G., Hostin, R. A., Jr., Gupta, M. C., Kim, H. J., Mundis, G. M., Ames, C. P., Hills, J., Shaffrey, C. I., Passias, P. G., Schwab, F. J., Lafage, V., Lafage, R., & Bess, S. (Sep 2025).

Objective: To examine the degree of overlap between disability, multimorbidity, and frailty in a cohort of ASD patients.

Summary of Background Data: Frailty is a popular topic in spine research, as it is a reported risk factor for poor outcomes. Disability, multimorbidity, and frailty can coexist, sometimes causing or exacerbating one another. It is important to distinguish these conditions for perioperative optimization and to guide research initiatives.

Methods: A multicenter registry of ASD patients was queried for baseline data regarding frailty, as measured by the Edmonton Frail Scale, disability, as measured by the Oswestry Disability Index, and multimorbidity, as measured by the Charlson comorbidity index. The relationships between these measures and both chronological and biological age (PhenoAge) were explored. Exploratory factor analysis (EFA) examined areas of overlap between these diagnoses.

Results: There were 861 patients contributing data, mostly female (68%), most undergoing primary surgery at a median age of 66 years [interquartile range (55.1–71.6)], with 6% classified as “Frail.” Chronological and PhenoAge showed weak to moderate associations with disability and frailty, though PhenoAge was stronger. There was no evidence of distinct clusters, rather a continuity of condition severity. EFA found overlap between subjective and objective measures of disability, function, and frailty.

Conclusions: Frailty was rare (6%) in this multicenter cohort of patients. Conflation of disability and frailty is a real risk due to overlap in measures of both conditions. Disability and frailty do not form discrete categories but rather exist along a continuum, underscoring the need to abandon categorical labels in favor of continuous measures for both clinical assessment and research settings.

The Economic Burden of Diabetes in Spinal Fusion Surgery: A Systematic Review And Meta-Analysis

Mariscal, G., Sasso, R. C., O’Toole, J. E., Chaput, C. D., Steinmetz, M. P., Arnold, P. M., Witiw, C. D., Jacobs, W. B., & Harrop, J. S. (Jan 2025).

Purpose: This study aimed at comparing the costs of spinal fusion surgery between patients with and without diabetes.

Method: Following PRISMA guidelines, a systematic search of four databases was conducted. A meta-analysis was performed on comparative studies examining diabetic versus non-diabetic adults undergoing cervical/lumbar fusion in terms of cost. Heterogeneity was assessed using the I2 test. Standardized mean differences (SMD) and odds ratios (OR) with 95% confidence intervals (CI) were calculated using a random-effects model in the presence of heterogeneity.

Result: Twenty-two studies were included in this meta-analysis. Standardized costs were significantly higher in the diabetic group (SMD 0.02, 95% CI 0.01 to 0.03, p<0.05). The excess cost per diabetic patient undergoing spinal fusion surgery was estimated to be \$2,492 (95% CI: \$1,620 to \$3,363). The length

of stay (LOS) was significantly longer in the diabetes group (MD 0.42, 95% CI 0.24 to 0.60, p<0.001). No significant difference was observed in intensive care unit admission between the groups (OR 4.15, 95% CI 0.55 to 31.40, p>0.05). Reoperation showed no significant differences between the groups (OR 1.14, 95% CI 0.96 to 1.35, p>0.05). However, 30-day and 90-day readmissions were significantly higher in the diabetes group: (OR 1.42, 95% CI 1.24 to 1.62, p<0.05) and (OR 1.39, 95% CI 1.15 to 1.68, p<0.001), respectively. Non-routine or non-home discharge was also significantly higher in the diabetes group (OR 1.89, 95% CI 1.67 to 2.13, p<0.001).

Conclusion: Patients with diabetes undergoing spinal fusion surgery had increased costs, prolonged LOS, increased 30-day/90-day readmission rates, and more frequent non-routine discharges.

Titanium-Coated Polyetheretherketone Cages Versus Uncoated Polyetheretherketone Cages for Lumbar Spinal Fusion: A Systematic Review and Meta-Analysis

Mariscal, G., Vyas, P. S., Cheng, B. C., Arts, J. J., Hoelen, T. C. A., Xu, C., & Chaput, C. D. (Jun 2025).

Objective: A systematic review and meta-analysis of comparative studies was performed to compare the fusion rates, functional outcomes, and complications between Titanium-Coated Polyetheretherketone (TiPEEK) and polyetheretherketone (PEEK) cages.

Methods: Four databases were systematically searched according to PRISMA. Adult patients who underwent one- or two-level lumbar fusion with TiPEEK or PEEK cages were included in the study. Studies that reported radiographic fusion and functional or complication outcomes were also included. Study quality was assessed using the Cochrane Risk of Bias tool and MINORS criteria. The meta-analysis was performed using Review Manager 5.4. Heterogeneity was assessed using I2, and random effects were used to analyze the heterogeneity.

Results: 8 studies (n = 670) were analyzed. TiPEEK showed a significantly higher overall fusion rate (OR 1.83, 95% CI: 1.18-2.83). TiPEEK cages presented significantly higher fusion rates at 6 months (OR 2.52, 95% CI: 1.11 to 5.72), but there were no significant differences at 12 months (OR 1.33, 95% CI: 0.65 to 2.73). No differences were observed in the global ODI (SMD -0.04, 95% CI: -0.15-0.06). There were no significant differences regarding overall subsidence (OR 0.72, 95% CI: 0.48 to 1.07), screw complications (OR 1.25, 95% CI: 0.30-5.27) or reoperations (OR 0.61, 95% CI: 0.11-3.37).

Conclusions: The results from this study suggest that TiPEEK cages may demonstrate earlier fusion as compared to PEEK cages, particularly at 6 months. However, the functional outcomes and safety profiles were comparable.

Adverse Impact of Obesity on Lumbar Spine Fusion, Patient-Reported Outcomes and Costs: A Systematic Review and Meta-Analysis

O’Toole, J. E., Sasso, R. C., Harrop, J. S., Mariscal, G., Chaput, C. D., Arnold, P. M., Witiw, C. D., Jacobs, W. B., & Steinmetz, M. P. (May 2025).

Purpose: The objective of this study is to determine the impact of obesity on three key lumbar spinal surgery outcomes: the incidence of spinal nonunion, patient-reported outcome measures (PROMs), and the associated health care costs.

Summary of Background Data: Obesity is a well-recognized risk factor in various medical fields, notably impacting outcomes in orthopedics and traumatology. While there is substantial documentation of the complications associated with obesity in general surgical procedures, the relationship between obesity and spinal surgery outcomes remains less clear. The inconsistency in the evidence presents a significant gap in our understanding of how obesity influences the results of spinal surgeries, particularly in terms of nonunion rates, patient-reported outcomes, and the associated health care costs.

Methods: A systematic search was conducted in PubMed, EMBASE, Scopus, and the Cochrane Library following the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. Studies comparing patients with or without obesity with lumbar spinal fusion were included. Comparative studies (cohort and case-control) were included. For dichotomous variables such as spinal nonunion, analysis was conducted using odds ratios (OR); for continuous variables such as PROMs [Oswestry Disability Index (ODI), Visual Analogue Scale (VAS), and 12/36-Item Short Form Survey (SF-12/36), and costs, analyses were performed using mean differences (MD) or standardized mean differences (SMD)].

Results: Fifteen studies with a pool of 61341 patients were included. Obesity (BMI≥30) was significantly associated with a higher nonunion frequency (OR 2.10, 95% CI: 1.23–3.60, P<0.01). The ODI was significantly worse in the obesity group (MD 6.29, 95% CI: 4.71–7.88, P<0.001). Greater pain was measured by the VAS back pain (MD 0.95, 95% CI: 0.17–1.73, P<0.05) and VAS leg pain (MD 0.94, 95% CI: 0.68–1.20, P<0.001) scales for lumbar surgery patients with obesity. The SF-12/36 showed significantly worse outcomes in patients with obesity (SMD -0.46, 95% CI: -0.82 to -0.09, P=0.01). Hospitalization costs were significantly higher in patients with obesity (SMD 0.09, 95% CI: 0.05–0.12, P<0.001).

Conclusions: This meta-analysis suggests that obesity is significantly associated with higher nonunion rates, poorer patient-reported outcome measures, including Oswestry Disability Index, Visual Analogue Scale, and 36-Item Short Form Survey, and higher hospitalization costs following lumbar spinal fusion.

Alignment Goals in Adult Spinal Deformity Surgery

Pizones, J., Hills, J., Kelly, M. P., Alavi, F., Nuñez-Pereira, S., Smith, J. S., Sardar, Z. M., Lenke, L. G., Lewis, S. J., & Pellisé, F. (Jul 2025).

Objectives: Adult spinal deformity (ASD) surgery has progressively transitioned from mean regional alignment targets to individualized segmental alignment goals, and from health-related quality of life (HRQL) alignment goals to the prevention of mechanical complications.

Methods: Narrative review discussing sagittal alignment concepts and goals in ASD surgery.

Results: Traditional metrics for measuring sagittal spinal alignment such as pelvic incidence - lumbar lordosis (PI-LL), thoracic kyphosis, and sagittal vertical axis (SVA) may lack the specificity necessary for individualized alignment planning. Compensatory pelvic retroversion and knee flexion are critical determinants of maintaining the upright position. Research has been conflicting as to whether postoperative sagittal alignment is associated with improvements in HRQOL’s. However, this may reflect a lack of sensitivity in the traditional alignment targets and PROM’s measures, rather than a true lack of relationship between sagittal alignment and functional outcomes. Recent studies show that sagittal parameters have a limited impact on HRQL scores in non-operated patients, but significantly impact post-operative HRQOL measures and mechanical complications in patients treated with spinal fusion. Latest evidence suggests that compensatory mechanisms need to be eliminated and the ideal shape needs to be restored with surgery, to reduce postoperative mechanical complications. Multiple alignment strategies are proposed for that purpose.

Conclusions: While best evidence shows an improvement in ASD alignment strategies over the last decade, mechanical failures and reoperations are still a cause for concern. This narrative review analyzes the strengths and weaknesses of the different alignment strategies and identifies the main areas of debate.

Adverse Impact of Diabetes on Spine Fusion and Patient-Reported Outcomes: A Systematic Review and Meta-Analysis

Steinmetz, M. P., O’Toole, J. E., Harrop, J. S., Mariscal, G., Chaput, C. D., Arnold, P. M., Jacobs, W. B., Witiw, C. D., & Sasso, R. C. (May 2025).

Purpose: This meta-analysis aimed to provide a comprehensive evaluation of the impact of diabetes on spinal surgery outcomes.

Background: Diabetes mellitus is believed to be associated with an increased risk of adverse events during spinal surgery. With the increasing prevalence of diabetes and the increasing number of degenerative spinal procedures, understanding post-surgical expectations and optimal care is essential.

Materials and Methods: Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, a systematic search was conducted across PubMed, EMBASE, Scopus, and the Cochrane Library, selecting studies comparing diabetes and those without diabetes who underwent spine fusion surgeries. Eighteen studies with 118,617 patients were included. The outcomes of interest were the risk of the incidence of spinal pseudoarthrosis and PROMs, including Visual Analog Scale (VAS), Oswestry Disability Index (ODI), EQ-5D, and SF-12/36 score. Odds ratios (OR) were calculated for dichotomous variables, mean differences (MD) for continuous variables, and standard mean differences (SMD) for continuous variables not sharing the same scale or units. Random effects were used if there was evidence of statistical heterogeneity.

Results: Eighteen studies, comprising 118,617 patients, were included in the final analysis. Diabetes patients had a higher incidence of pseudoarthrosis at the lumbar spine (OR: 1.13, 95% CI: 1.02 to 1.25, $P < 0.05$). Patients with diabetes also reported increased VAS back/neck pain scores (SMD: 0.21, 95% CI: 0.14 to 0.28, $P < 0.001$) and worse ODI outcomes (MD: 3.96, 95% CI: 3.10 to 4.82, $P < 0.001$), EQ-5D (MD: -0.06, 95% CI: -0.08 to -0.03, $P < 0.001$) and SF-12/36 scores (SMD: -2.70, 95% CI: -4.99 to -0.41, $P < 0.05$).

Conclusion: Patients with diabetes who underwent spinal surgery had a higher incidence of pseudoarthrosis and worse functional outcomes compared with nondiabetic patients. These findings underscore the need for targeted clinical management and preventive strategies for patients with diabetes undergoing these procedures.

SPORTS MEDICINE

Identifying Risk Zones for Neurovascular Injury in Pediatric All-Inside Arthroscopic Lateral Meniscal Repair

Houston, A., McDonald, C., Eck, A., Kotzur, T., Momtaz, D., Heath, D., Hogue, G. D., & DeBerardino, T. (Mar 2025).

Background: All-inside techniques for meniscal repairs offer comparable outcomes and healing rates with reduced operative time and fewer incisions; however, iatrogenic neurovascular injuries during arthroscopic meniscal repairs are a significant concern.

Purpose: To identify the zones of risk and incidence of injury concerning the common peroneal nerve (CPN) and popliteal artery in relation to the popliteal tendon (PT) from the antero-lateral (AL) and anteromedial (AM) portals during a simulated all-inside technique in the pediatric population.

Study Design: Descriptive laboratory study.

Methods: Using axial knee magnetic resonance imaging scans of 124 patients, the all-inside technique was simulated by drawing direct lines from the AM and AL portals to the medial and lateral borders of the PT. If the line came into contact with the CPN, a risk of projected iatrogenic CPN injury was found. Measurements were then recorded to assess and define “risk zones.” A similar simulation was performed in relation to the popliteal artery to assess distance to projected iatrogenic injury.

Results: The risk of CPN injury was significantly higher when using the AL portal (45%) compared with the AM portal (19%) when simulating repair at the lateral edge of the PT ($P < .001$). Similarly, there was a significantly higher risk of peroneal nerve injury when using the AM portal (29%) compared with the AL portal (8.9%) when simulating repair from the medial edge of the PT ($P < .001$). The risk of injury when repairing the body of the lateral meniscus through the AM portal extended 2.20 ± 0.98 mm laterally from the lateral edge of the PT and 3.14 ± 1.92 mm medially from the medial edge of the PT. The risk of injury when repairing the body of the lateral meniscus through the AL portal extended 2.58 ± 1.31 mm lateral to the lateral edge of the PT and 2.02 ± 1.61 mm medial to the medial edge of the PT.

Conclusion: The authors found that the AM portal was safer for repairing the body of the lateral meniscus while simulating repair at the lateral edge of the PT, while the AL portal was safer for repairing the lateral meniscus while simulating repair from the medial edge of the PT.

Rotator Cuff Tendon Strain Distribution Changes From the Superior to the Inferior Tendon Attachments with Increasing Shoulder Abduction

Hoshikawa, K., Prado, M., Mura, N., Yuri, T., Jacobs, P. M., & Giambini, H. (Aug 2025).

Supraspinatus (SSP), infraspinatus (ISP), and subscapularis (SSC) muscles from the rotator cuff (RC) are comprised of anatomical subregions based on muscle fiber alignment and tendon attachments. Previous studies have shown mechanical interactions between the SSP and ISP tendons, with abduction angle influencing these interactions. However, changes in strain distribution originating from the RC muscle subregions, including the SSC, due to differences in abduction angle have not been investigated. Therefore, this study aimed to determine the strain distribution in intact RC cadaveric shoulders with loading from the SSP, ISP, and SSC muscles and their subregions at different abduction angles. Surface strains in the bursal side of the SSP, ISP and SSC tendons of eight fresh frozen cadaveric intact shoulders were obtained by applying tension on these muscles and on their subregions at 25° and 45° glenohumeral abduction using an MTS system. When the SSP muscle or anterior region was loaded, no significant strain differences were observed within the footprint regions at 45° abduction. However, when the posterior region was loaded, strains concentrated on the middle facet as the abduction angle increased. Significantly higher strains were also observed in the inferior portion of the

footprint with increasing abduction angle when the ISP or SSC muscles, or their subregions, were loaded. The differences in strain distribution patterns observed between the anterior and posterior regions of the SSP muscle highlight the importance of addressing each region and tendon separately when managing RC tears and repairs.

Relationships between PROMIS and Legacy Patient-Reported Outcome Measure (PROM) Scores in the MARS Cohort at 10-Year Follow-up

Pennings, J. S., Huston, L. J., Haas, A. K., Allen, C. R., Cooper, D. E., DeBerardino, T. M., Dunn, W. R., Lantz, B. A., Spindler, K. P., Stuart, M. J., Albright, J. P., Amendola, A., Annunziata, C. C., Arciero, R. A., Bach, B. R., Baker, C. L., Bartolozzi, A. R., Baumgarten, K. M., Berg, J. H., Bernas, G. A., Brockmeier, S. F., Brophy, R. H., Bush-Joseph, C. A., Butler V, J. B., Carey, J. L., Carpenter, J. E., Cole, B. J., Cooper, J. M., Cox, C. L., Creighton, R. A., David, T. S., Flanigan, D. C., Frederick, R. W., Ganley, T. J., Garofoli, E. A., Gatt, C. J., Gecha, S. R., Giffin, J. R., Hame, S. L., Hannafin, J. A., Harner, C. D., Harris, N. L., Hechtman, K. S., Hershman, E. B., Hoellrich, R. G., Johnson, D. C., Johnson, T. S., Jones, M. H., Kaeding, C. C., Kamath, G. V., Klootwyk, T. E., Levy, B. A., Ma, C. B., Maiers, G. P., Marx, R. G., Matava, M. J., Mathien, G. M., McAllister, D. R., McCarty, E. C., McCormack, R. G., Miller, B. S., Nissen, C. W., O'Neill, D. F., Owens, B. D., Parker, R. D., Purnell, M. L., Ramappa, A. J., Rauh, M. A., Rettig, A. C., Sekiya, J. K., Shea, K. G., Sherman, O. H., Slauterbeck, J. R., Smith, M. V., Spang, J. T., Svoboda, S. J., Taft, T. N., Tenuta, J. J., Tingstad, E. M., Vidal, A. F., Viskontas, D. G., White, R. A., Williams, J. S., Wolcott, M. L., Wolf, B. R., York, J. J., & Wright, R. W. (May 2025).

Background: Patient-reported outcome measures (PROMs) are used to evaluate the impact of musculoskeletal conditions and their treatment on patients’ quality of life, but they have limitations, such as high responder burden and floor and ceiling effects. The Patient-Reported Outcomes Measurement Information System (PROMIS) was developed to address these issues but needs to be further evaluated in comparison with legacy PROMs. The goals of this study were to evaluate the floor and ceiling effects of, the correlations between, and the predictive ability of PROMIS scores compared with traditional legacy measures at 10-year follow-up in a cohort who underwent revision anterior cruciate ligament (ACL) reconstruction.

Methods: A total of 203 patients (88.7% White; 51.7% female) who underwent revision ACL reconstruction completed the PROMIS via computer adaptive tests as well as legacy PROMs at the cross-sectional, 10-year follow-up of the longitudinal MARS cohort study (MARS cohort n = 1,234). Floor and ceiling effects and Spearman rho correlations between PROMIS and legacy measures are reported. Linear regression with quadratic terms were used to develop and evaluate conversion equations to predict legacy scores from the PROMIS.

Results: No floor or ceiling effects were reported for the PROMIS Physical Function (PF) domain, whereas a floor effect was found for 37.9% of the participants for the PROMIS Pain Interference (PI) domain, and a ceiling effect was found for 34.0% of the participants for the PROMIS Physical Mobility (PM) domain. PROMIS domains correlated moderately with the International Knee Documentation Committee total subjective score (absolute value of rho [$|\rho|$] = 0.68 to 0.74), fairly to moderately with the Knee injury and Osteoarthritis Outcome Score and Western Ontario and McMaster Universities Osteoarthritis Index scores ($|\rho|$ = 0.52 to 0.67), and fairly with the Marx Activity Rating Scale ($|\rho|$ = 0.35 to 0.44). None of the legacy-measure scores were accurately predicted by the PROMIS scores.

Conclusions: The PROMIS PF domain has value in assessing patients 10 years after revision ACL reconstruction. Because of floor and ceiling effects, using the PI and PM domains may not allow for precision when measuring long-term changes in pain and mobility. Although the PROMIS measures correlated with the legacy measures, with effect sizes ranging from fair to moderate, the legacy scores were not accurately predicted by the PROMIS. The results suggest that knee-specific legacy measures should not be eliminated from long-term follow-up when the goal is to capture the specific knee-related information that they provide.



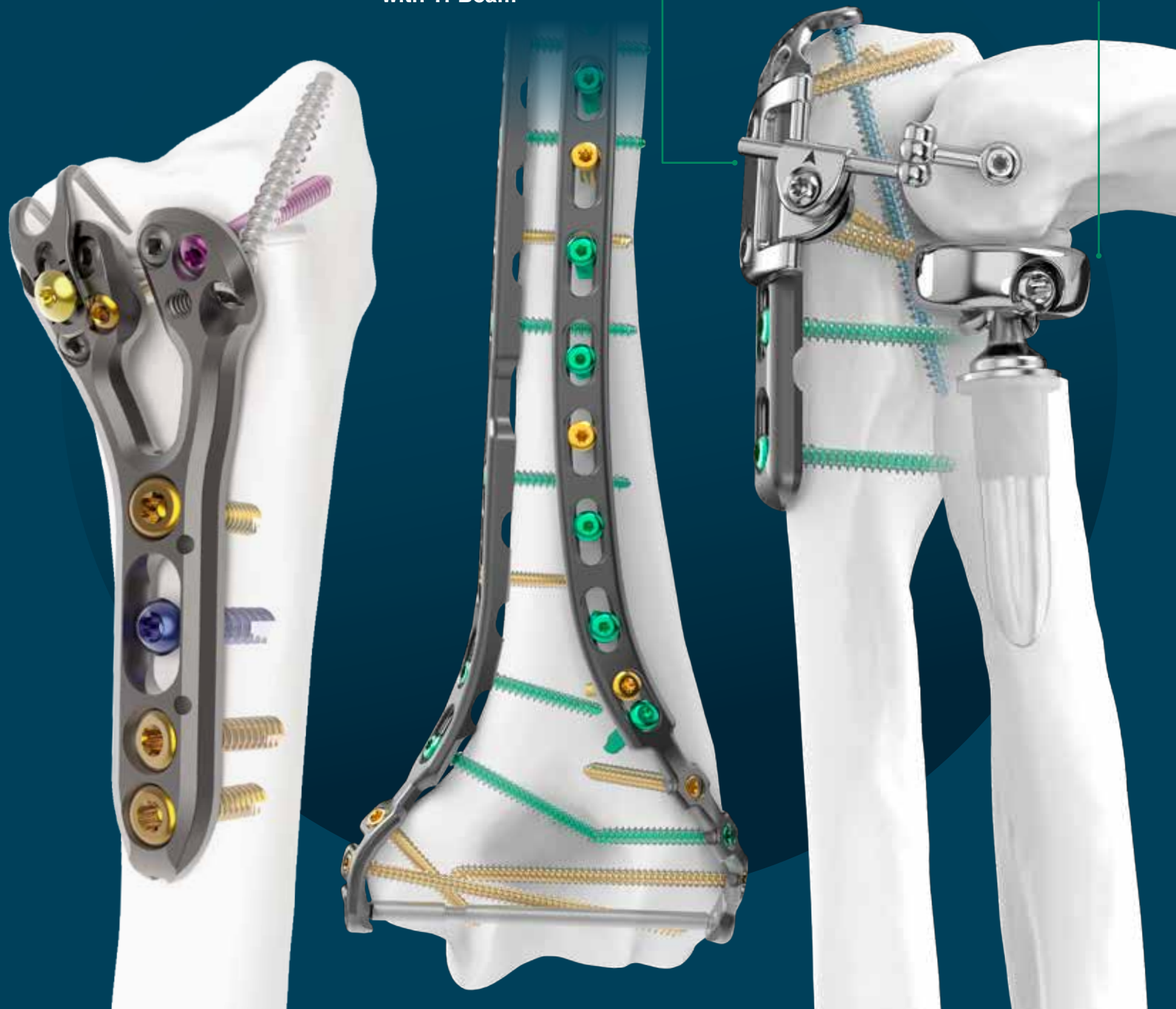
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05

Alumni

Alamo Orthopaedic Society



Animesh Agarwal, MD, FAOA, FAAOS, Alamo Orthopaedic Society President/Treasurer

It is my honor to serve as the President/Treasurer of our alumni organization, the Alamo Orthopaedic Society. The society currently has approximately 110 active members but continues to decline. This is still only a fraction of the more than 300 that have graduated from this program. We have had seven American Academy of Orthopaedic Surgeons presidents Presidents that have been affiliated with our program, which is an amazing achievement [Hinchey (1971), Rockwood (1984), Morrey (1994), Heckman (1998), Teuscher (2015), Williams (2016), Guy (2021)]. I urge many of you that may have let your membership expire to renew and re-engage with the society and the department. Although you will always be an alumnus of the program, dues help to cover expenses for the AAOS reception as well as the biennial meeting. Additionally, we continue to provide *Rockwood and Green's Fractures in Adults* texts to the new residents each



The Fish Room at Meril's.

year. Anna Conti continues to serve as the administrator for the society despite her recent retirement from the department, please update your email for her to aosalumni@outlook.com Please contact me at agarwal@uthscsa.edu or Anna for more information.

We are planning our 2026 Alamo Orthopaedic Society Biennial Meeting for the weekend of April 24-26th once again at the incredible JW Marriott Resort. We hope that you will be attending. We will be honoring Dr. Fred Corley since he recently retired.

We just held our AAOS annual reception in New Orleans at Meril's in the "Fish Room" on March 5, 2026. We had an excellent turnout this year. Everyone enjoyed the food (and alcohol). Next year, the AOS reception will be held in conjunction with AAOS in Las Vegas in March. Actual details to follow in the fall. We were fortunate to have Danny Guy and Gerry Williams (two of our alumni that have served as AAOS Presidents) attend. Gerry's sport coat lining would have brought a smile to Dr. Rockwood's face. Steve McCollam and Kurt Kitziger were both in awe. Five of our graduating chief residents were able to attend which gave Dr. Sager a chance to photobomb them. In addition, many other alumni were able to attend and reunite with fellow classmates.

The Alamo Orthopaedic Society was established in 1972 by Dr. Charles Rockwood, Jr. as the official alumni association for the Department of Orthopaedics at UT Health Science Center at San Antonio (now The University of Texas at San Antonio). The establishment of Orthopaedics at UT Health Science Center at San Antonio pre-dated the actual opening of the school by two years when Dr. Rockwood was recruited to establish an orthopaedic program in 1966.



2



- 1. Bob and Stephanie Quinn, Zibin Zhao, Maggie Gray, Gina Lesko, Jason Gray, Lindsey Gomez, Greg Gomez.
- 2. Chimobi Emukah, William Young, Andrew Eck, Animesh Agarwal, Brian Sager (photobomb), Jack Parker, Sunny Makhani.
- 3. Steve McCollam, Danny Guy, Gerry Williams, Kurt Kitziger.
- 4. Karis Edeen, Richie Edeen, Vaida Glatt, Mark Foreman.

3



4



Surgery Alumni by Class

Class of 1971

Robert D. Bilderback
Michael V. Galo
Thomas R. Reid
Robert G. Stone
Hilario Trevino

Class of 1972

Juan J. Capello
Gary N. Pamplin
Vernon L. Ryan
James M. Steel
Joe W. Tippet
Richard P. Wilson

Class of 1973

Edward D. Campbell, Jr.
Ralph D. Cash
Warren W. Kendall
John T. Phillips
Rafael V. Urrutia, Jr.
Charles M. Younger

Class of 1974

John R. Anderson
George N. Armstrong, Jr.
John E. Blattman
William A. Graham
William H. Matthews
Richard W. Williamson, Jr.

Class of 1975

James W. Adams
Jesse C. DeLee
John A. Genung
Glenn C. Terry

Class of 1976

Billy E. Allison
Robert K. Blair
Jack W. Crosland, III
Ray M. Fitzgerald
John A. Richards

Class of 1977

C. Robert Boone
Phillip R. Craven
Donald R. Davis
Jerold N. Friesen
Raymond S. Gruby
James E. Keever

Class of 1978

William M. Allen, Jr.
Kenneth P. Butters
Fred G. Corley, Jr.
Donald C. Jones
Randy J. Pollet
Archie K. Whittemore

Class of 1979

Ray A. Fambrough
Howard G. Miller
C. Bart Norton
William E. Sanders
Wilburn A. Smith, Jr.
R. Fred Torstrick

Class of 1980

Michael B. Clendenin
Charles E. Lewis
Peter L. J. McGanity
Wayne L. McLemore
James B. Stiehl
John "Jack" M. Thomas, Jr.

Class of 1981

Thomas O. Clanton
Gary H. Jackson
Allen S. Kent
Robert B. Kimmel
Michael R. McLean
Loddie F. Roeder

Class of 1982

Jonathan P. Bacon
Steven C. Dickhaut
Donald W. Floyd
James L. Griffin
Walter M. Knight
Joe B. Wilkinson

Class of 1983

George S. Edwards, Jr.
James B. Giles
Alan G. Lewis
Edward C. Liu
Mark B. Riley
Elizabeth A. Szalay

Class of 1984

Stephen E. Earle
Gary P. Goodfried
Theodore T. Peters
G. Steven White

Class of 1985

Carey C. Alkire
Hal S. Crane
Ralph J. Curtis, Jr.
Michael L. McCarty
Robert E. Mitchell
David R. Schmidt

Class of 1986

Eric C. Carlson
Jeffrey T. DeHaan
Phillip M. Graehl
Michael J. Hanley
Scott H. Kitchel
Matthew C. Reckmeyer

Class of 1987

Jon T. Abbott
Daniel K. Guy
Stephen M. McCollam
Daniel G. Nelson
Jacob F. Patterson
Rex E. Wilcox

Class of 1988

Ples L. Kujawa
James M. Odor
John C. Pearce
Pat A. Peters
Ronald E. Talbert
Donald R. Watson

Class of 1989

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Jimmy H. Conway
Daniel E. Cooper
Stewart M. Dean
Gerald R. Williams

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Daniel F. Craviotto, Jr.
Kerry M. Donegan
Kurt J. Kitziger
Michael A. Wirth

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Frank J. Garcia
Carolyn M. Hyde
David E. Nonweiler
James O. Sanders
John C. Sparks, Jr.
Daniel C. Valdez

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Robert L. Burke
N. Thomas Carstens
Mark S. Failingner
Manuel E. Molina
Keith J. Odegard
Barry L. Veazey

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Praveen K. Reddy
Francisco J. Rodriguez, Jr.
Mark J. Rosen

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Mario A. Bustamante-Montes, Jr.
Kathryn A. Caulfield
Robert W. Dennis
Eduardo Gomez
Dean N. Walker

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Christopher K. Hersh
John W.P. Horan
Todd C. Johnson
James M. Lovelace
Tommy L. McMillion
Joseph O. Muscat

Class of 1996

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Robert E. Carlson
Jon M. Goodnight
Randall R. Hardison
Sanjay Misra

Class of 1997

Animesh Agarwal
Theresa L. Colosi
James P. Flanagan
Dale A. Funk
Miguel A. Hernandez, III
Philip M. Jacobs
Ian S. Kovach

Class of 1998

Neil B. Callister
Mark A. Foreman
Melinda D. Garcia
Matthew P. Simonich
Steven J. Wilson
Robert S. Wolf

Class of 1999

Andrea J. Barrett
G. Troy Birk
David J. Clare
Jeffery V. Meincke-Reza
Brian E. Schulze
Thomas C. Young

Class of 2000

Eric A. Eifler
R. Thane Morgan
John Q. Smith
Robert A. Ward
George N. Zoys

Class of 2001

Lance R. Farnworth
John D. Foote
Gary A. Go
Joseph J. Iero
Keith W. Lawson
Charles F. Mess
Jeffrey R. Schlimmer

Class of 2002

David M. Burt
P. Douglas deHoll
Patrick J. Miller
Alexander S. Rowland
Gregory W. Smith

Class of 2003

Jorge E. Casas-Ganem
William H. Hadnott, III
David A. Hester
Keith R. Johnson
R. Bradley Ray
J. David Schillen
Vudhi V. Slabisak

Class of 2004

Armin Afsar-Keshmiri
Gordon R. Bozarth
Mitchell W. Larsen
James M. Mahalek
Jeffrey B. Phelps
Stacé S. Rust

Class of 2005

Brett C. Anderson
Daniel L. Boyd
Ramon A.C. Esteban
Geoffrey M. Millican
Brian T. Rose
Ian C. Weber

Class of 2006

Matthew S. Grunkemeyer
Brandon R. Horne
Hank L. Hutchinson
Russell C. McKissick

Class of 2007

Doug S. Clouse
Gregory D. Gordon, Jr.
Florian G. Huber
William K. Koeck
Edwin C. Newman, III
Erik V. Nott

Class of 2008

Brent M. Adcox
Stephanie H. Alford
Cody N. Anderson
Jerome M. Benavides
Emeka O. Ofobike, Jr.
Anup A. Shah
Eric M. Stehly

Class of 2009

Jamey W. Burrow
John Paul S. Elton
Ravi A. Karia
Abilio A. Reis
Patrick W. Sander
Brandon A. Tinkler

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Arthur L. Strahan
Ryan B. Thomas
Hussein W. Turki
J. Carr Vineyard
Joshua T. Woody

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Michael E. Johnson
Farbod Malek
Guy E. Reyes, Jr.
Brandon M. Seifert
Michael S. Vrana

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John W. Hinchey
Jason P. Richards
Jay M. Stanley
Zachary S. Stinson
Darin D. Tessier

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R. Zachary Garza
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Aaron M. O’Brien
David M. Rowley
Ian J. Whitney

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Robert G.W. Girling, V
Vishwas B. Patil
Jeremy S. Somerson
Marion M. Swall
Michael A. Weathers

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Ben S. Francisco
Nicholas E. Gerken
Todd C. Pitts
Gurpreet Singh
Danilo M. Volpini

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Richard E. Edeen
Jason R. Gray
Brandon D. Mennear
Evan M. Tavakoli
Zibin Zhao

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Christina I. Brady
Gregory V. Gomez
Brett M. Hall
Christopher G. Larkins
Gina R. Lesko

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Hanna E. Mendez
Chance C. Moore
Jason Thompson
Antonio J. Webb

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Brock T. Kitchen
Kenneth S. Mensch
Alexander V. Nguyen
Nikhil Shelke

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Ryan C. Egbert
Andrew J. Haus
Isaac S. Kim
Case W. Martin
James C. Ryan

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Joel I. Edionwe
Jordan E. Handcox
Dietrich W. Kayser
Riikka E. Koso
Trevor J. Wait

Class of 2023
Jason Goodrum
David Heath
Galen Mills
Liliana Ogden
Gus Jamie Strauss
Adam Ward

Class of 2024
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Jacob Brennan
Adam McNulty
Gautham Prabhakar
Clinton Ulmer
Meagan Womack

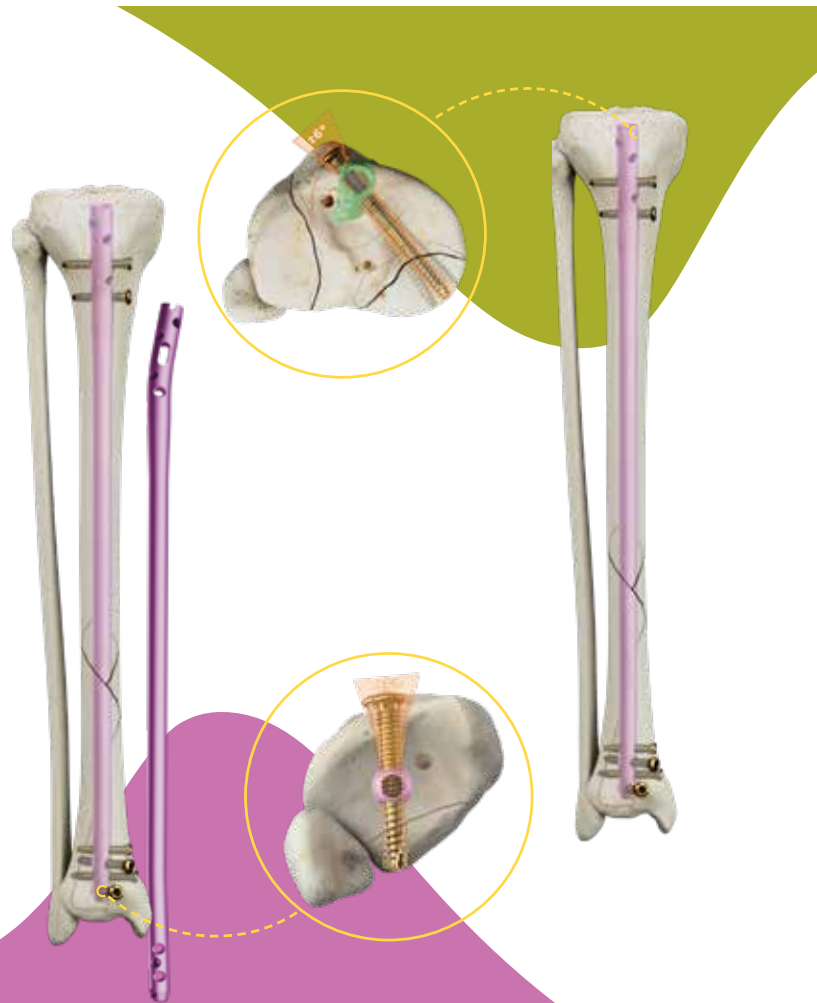
Class of 2025
Annat Houston
Stephanie Jones
Ezekial Koslosky
Kathleen Lundquist
Sam Ornell
Loc-Uyen Vo

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Carter Jordan
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Celebrating Fred Corley, MD

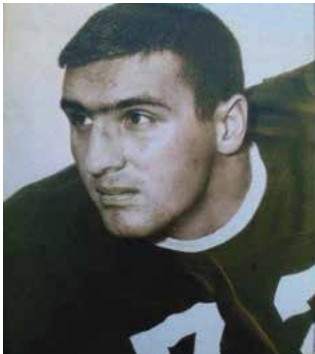
by Anil K. Dutta, MD

“If you want to be a great writer, you just have to read.” This quote was buried in the homework I was given when I sat down to “interview” Fred for information I could use to provide this reflection on the career of Fred Corley, MD. The weight of the readings he provided me was only surpassed by the diversity of subject matters contained within. The same must be said of the weight and diversity of Dr. Corley the man — it is a study of an unreproducible life which represents the eternal core of The University of Texas Health Science Center at San Antonio orthopaedic program (now The University of Texas at San Antonio, also called UT San Antonio). For a time, I held the endowed Fred Corley professorship, and during that tenure I could not imagine an eponymous title that carried more good karma and positive affirmation in the orthopaedic world. The man who held strong and held it all together locally was equally the re-



vered ambassador who sent missionaries to far way outposts and academic citadels alike. The remarkable impact Fred has made can only be calculated one unique physician at a time, each indebted to him in a singular and personal way. If there is a unifying narrative for this institution, it is the Fred Corley story.

That story begins in Mississippi and is as Faulknerian as any of the great writer’s novels. Faulkner’s mythical Yoknapatawpha County was an effort to explore his “own little postage stamp of native soil.” Fred’s life and career is rooted in this same soil: deep, personal, and eternal. Fred was born in Yazoo City, Mississippi and was raised alongside his sister Mary Helen. He was a stellar student and class leader at Yazoo City High school. He then joined Mississippi State University (MSU), although he was recruited to play football at Alabama by Bear Bryant. Fred was a standout defensive



tackle at MSU and was Academic All SEC twice. He attended Mississippi State in the crucible of the civil rights movement. In this catalytic setting, he was also vice-president of his class and was tasked with helping the school integrate at the apex of tensions in the state. This included being a classmate and friend to the first African American student at MSU, Richard Holmes, who fittingly went on to become a respected physician. It is no coincidence that the moral equation to fight for human dignity and justice was written into the very first chapter of Fred’s education. It is no coincidence that he never relinquished that commitment. He is still a treasured alumnus at Mississippi State, where he also holds an academic endowment in his name.

Alexis de Tocqueville’s quote, “America is great, because America is good” was referenced by Fred in a speech he delivered to the Texas Orthopaedic Association. This embedded American sensibility is woven into Fred’s medical journey. He attended medical school at the University of Mississippi in Jackson. That iconic era saw the acceleration of the both the civil rights movement and the Vietnam war. In this turbulent time the wind of fate blew him westward. Fred landed in Dallas and his Texas roots were planted as a general surgery intern at UT Southwestern. After internship, Fred joined ▶

◀ the Air Force. Fred Corley and duty are inseparable travelers on the path of life. As such, he was deployed to Da Nang, Vietnam. He provided care to soldiers and civilians alike, and he was nominated for the Air Force Cross for action under fire. He represented the best ideals of American internationalism in Vietnam as he has throughout his career. Service reflects the Corley challenge to meet the world with your authentic and cultivated self.

After serving in Vietnam, Fred returned to Texas again on the persistent Lone Star wind. He completed his Air Force service in Austin, TX for a year. It is this serendipity that led him to San Antonio where he joined the nascent Department of Orthopaedics at UT San Antonio as a resident. He remains the exemplar of the UT San Antonio resident. He is famous for declaring his status as a perennial “PGY ad infinitum,” his reminder to reject complacency at any stage of learning. As great epochs turn, he was in San Antonio in a period that included overlap with Charles Rockwood, David Green, Bernard Morrey, Kaye Wilkins, and Jesse DeLee. All were criti-



cal in forging the San Antonio orthopaedic school and all were products of contemporary service in the Air Force or Army. However, this unique collection of leaders would be left wanting if not for Fred’s galvanizing energy. Fred’s return to the department was the imperative of a family in need of its anointed child. This was not a foretold conclusion. Fred had left San Antonio to attend the first bastion of southern academic institutions, the University of Virginia, where he completed a Hand and Upper Extremity Fel-

lowship. He then completed a second fellowship at Princess Margaret Rose Hospital in Edinburgh, Scotland. When he returned from Scotland, Fred journeyed back to his Mississippi roots and joined private practice in the very home of William Faulkner; Oxford, Mississippi. He practiced classical small town orthopaedic surgery with its attendant literary appeal. The story would have diverged here as Fred would become a member of the Ole Miss community. But unlike the circular southern novel, that idyllic conclusion did not sustain itself. The west wind blew again to return Fred to his orthopaedic home and complete the full revolution of fate and circumstance. Dr. Rockwood’s call to duty summoned and Fred responded. The rest is history as Dr. Corley became the living bedrock and cornerstone of UT San Antonio orthopaedic surgery and the spiritual catalyst of the great San Antonio orthopaedic legacy.

Fred’s daily habits and rigors are his first and last gift to his colleagues. His daily commitment to the patient, education of physicians, and a faith in humanity is the unifying

continued on page 72 ►



A memorial and celebration of Lorence “Larry” Trick, MD on behalf of Ravi Karia, MD

The University of Texas at San Antonio Department of Orthopaedics and the entire San Antonio orthopaedics community lost a legend this year with the passing of Lorence “Larry” Trick — a surgeon, mentor and leader whose impact continues to shape our profession.

Dr. Trick was the standard-bearer in our community for hip and knee reconstruction, helping define excellence in orthopaedic care in San Antonio for more than three decades. While his active clinical career spanned that time, his influence extended far beyond continuing more than fifteen years after his retirement through the principles, habits, and standards he instilled in those he trained. His legacy lives on daily in operating rooms across our city.

Early in his career, Dr. Trick worked alongside John Hinchey, MD, widely recognized as the first major force in orthopaedics in San Antonio and a towering figure whose name remains deeply respected in our community. Dr. Trick always remained deeply committed to education, mentoring residents, teaching practicing surgeons and influencing orthopaedic training long before formally joining the university faculty later in his career. His decorated military service, including his role as Chief of Orthopaedic Services in the United States Air Force, further reflected a life defined by discipline, service and leadership.

When Dr. Trick joined UT San Antonio, his approach to operative teaching was deliberate and generous. He operated three days a week, always reserving one day to perform the entire case himself, allowing us to observe what excellence looked like from start to finish. On the other two days, he guided us through the operation step by step while remaining present for every moment, offering direction and reassurance, while allowing us to learn hands-on. Early in the rotation, he discussed each detail of the procedure with precision and intention. As our understanding grew, it became a point of pride for us when those technical discussions gave way to conversations about life, leadership, and perspective. In this way, he was not only an exceptional surgeon, but an extraor-



dinary surgical assist.

When Dr. Trick joined the faculty, he also brought with him something enduring — a principles-based approach to knee and hip reconstruction. His teachings emphasized thoughtful planning, meticulous execution and honest evaluation of outcomes. Even as the field has advanced to include robotics, new implant designs, and evolving surgical approaches, the fundamentals he taught remain as relevant today as ever. His message was clear: while

techniques and technology may change, appropriate treatment plans for appropriate patients, respect for tissue, and well-positioned, well-aligned implants are timeless.

For Dr. Karia, Dr. Trick was a defining mentor during his training and early career. His lessons extended far beyond hip replacement. He taught soft-tissue handling, suturing technique, dissection, and algorithm-based decision making. He emphasized efficiency in the operating room, infection control, and the belief that every aspect of surgery must make sense. Everyone in the room mattered. Leadership was exercised without excess words — calm command during chaos, clarity under pressure.

He taught us how to get through impossibly busy days: how to organize, how to stay present, how to keep moving forward without losing focus. He believed that the team should always see you working by setting the tone through action. His stance on not breaking for lunch (which I too have adopted) reflected his larger philosophy: protect your focus, never stop moving, and manage the patients expertly and efficiently.

What further made Dr. Trick exceptional was that his mentorship extended beyond the operating room. He taught lessons about professional balance and personal life — how to work relentlessly during the early and prime years of one’s career, and how to slow down thoughtfully and with purpose later, aging with intention and grace. We all knew what he loved outside the hos-

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◀ *continued from page 70*

force which brought the department together and anchored its evolution into producing numerous AAOS presidents and authorities in their specialties. He created the UT San Antonio upper extremity and hand division in parallel with Dr. Rockwood’s creation of the shoulder service and David Green’s development of the Hand Fellowship. Fred was the critical link who stewarded the most complex, emergent, and underserved patients in the region. He guarded the inner keeps of the hospital with tireless days and call nights. His life perspectives became the core philosophical beliefs of the department and of the residency. He is famous for asking “what do you do in the meantimes of your life?” His admonition is to not lose sight of the fact that it is in those precious meantimes that your true aspirations are confirmed. It is a testament that being consistently good is the true delivery of greatness. It is no coincidence that the American Orthopaedic fracture text and the EMS guidelines were produced here at UT San Antonio. The department set itself at the forefront of the care of trauma. Fred was the conscience of that effort.

He was awarded the faculty of the year in 1998 and 2003 and was awarded the Presidential Clinical Excellence Award in 2005. He has been a leader in the American Society for Surgery of the Hand and the Texas Orthopaedic Association. He has published multiple book chapters and peer reviewed papers at the national and international level. Not only did he manage the upper extremity/ Red service, he was dually assigned to the orthopaedic trauma service and was also a part of the shoulder and elbow fellowship. He was critical in making UT San Antonio and University Health the regional trauma center for a large

portion of South Texas. Even after he retired from surgery, he continued to work at the Texas Diabetes Institute orthopaedic clinic, proving that orthopaedics is not just about surgery but about taking care of people. He served the most wanting patients to the end of his practice, just as he did from its inception. He remains a pillar of his local community and has served as a mentor for the San Antonio ISD and his local church. He meets regularly with his fellow surgical colleagues for bible study and is a stalwart of the San Antonio Orthopaedic Society.

“What would Corley do?” Every resident and graduate of this orthopaedic training program owes a debt of gratitude to Fred Corley, MD. He continues to make us all better surgeons and better people as we ask ourselves daily in the OR and in our lives the following question: “What would Corley do?” This very simple question is a powerful refrain, indeed it is a clarion call to achieve and deliver excellence to one another, to our profession, and most importantly to those we serve. It is universal and an unspoken call to duty, marked in the West Point motto to “do the harder right over the easier wrong.” Fred’s example of daily work, daily renewal, and lifelong learning is the substance of the fertile “meantime”. It is the principle of surgical repetition and discipline. It is the principle of being a complete and holistic physician, a renaissance thinker, a student of life, and only then an orthopaedic surgeon. Fred Corley is not enshrined in the history of UT San Antonio as an icon alone, he is a perpetual living force predicted by Faulkner’s own acceptance speech of the Nobel Prize. “I decline to accept the end of man. I believe man will not merely endure; he will prevail.” ■

◀ *continued from page 71*

pital: the outdoors, shooting sports, traveling the scenic route, good barbecue and his Spurs. He made time for the things that mattered, and in doing so, showed us how a full life in surgery could look.

Dr. Karia reflects, “I attended his funeral services, and they were perfectly reflective of who he was. A meaningful mix of personal and professional relationships. Photographs capturing the many chapters of his life. An informal gathering that felt genuine, unpretentious, and deeply human — he passed in a way that was unmistakably his own. I know what Dr. Trick meant to me. I know how his influence continues to guide my

approach to surgery, leadership and daily work. And I know I am far from alone in that feeling. Dr. Trick’s legacy is not confined to titles or accomplishments, but lives in principles, habits, standards, and the surgeons who still hear his voice guiding them. He will be deeply missed and always remembered.”

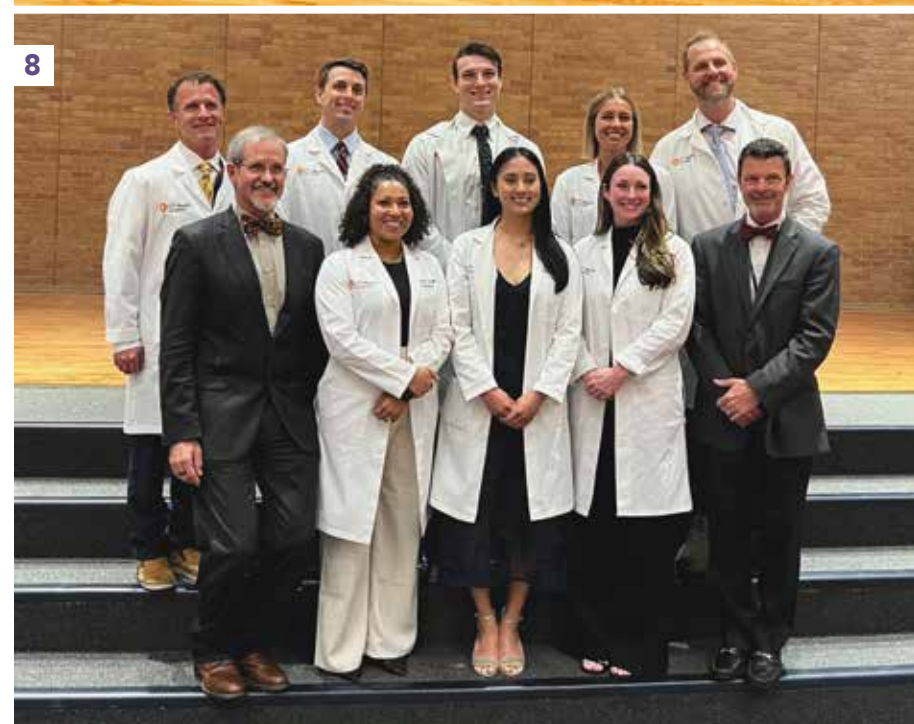
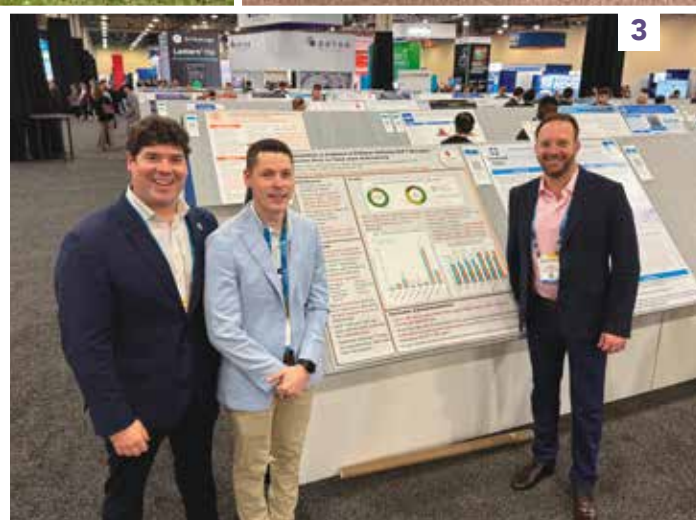
On behalf of the UT San Antonio Department of Orthopaedics, we remember and honor Dr. Lorence “Larry” Trick — a surgeon, teacher and mentor whose influence shaped our department and the San Antonio orthopaedic community. His lessons endure in the way we operate, teach and lead, and his legacy will continue through those he trained. ■



Ortho Illustrated



1. 2025 Turkey Bowl.
2. Dr. Zelle's farewell as he transitions roles to UTMB Galveston. He will be missed.
3. Dr. Moore, Dr. Zach Jodoin, and Dr. Buttacavoli sharing their research at AAHKS.
4. Graduating class of 2025 taking a final photo in the UT Health Science Center San Antonio green-space.
5. Elya, Claire, and Lauren practicing casting before the year starts.



6. Graduation ceremony 2025.
7. Ice Skating at the Pearl 2025.
8. Graduating class of 2025.
9. Katerina Papanikolaou and Victor Martinez learning about TKA with Strkyer.
10. Kyle Paul, Dr. Lundquist, Dr. Buttacavoli, and Jack Parker at AAHKS.
11. Dr. DeBerardino educating the residents on how to perform arthroscopy.





1. Kyle Paul, Zach Jodoin, and Jordan Carter at the Skeletal Dynamics Course in Dallas.
2. Andrew Ni practicing his k-wiring technique.
3. Orientation pickleball with Dr. Rose, Dr. Gibbons, Dr. Coffman, and Dr. Chaput.
4. Luke Verlinsky, Casey McDonald, and Zach Jodoin at the TOA Battle of the Bones.
5. Maurico Valdez and his wife, Kina Valdez, receiving the Orthopaedic Junior of the Year award.
6. Pickleball 2025 intern welcome event.



7. Will Young and Luke Verlinsky at AO advanced.
8. Residency team celebrating a great year at OTA Annual Meeting.
9. Pickleball intern welcome event 2025.
10. Zach Jodoin, John Parker, Dr. Buttacavoli, Will Young, Kyle Paul, and Dr. Brennan at AAHS.
11. Dr. Buttacavoli educating Dr. Williamson, Dr. Jodoin, and Dr. Young at the Zimmer DA Hip Course.
12. Zach Jodoin and Tyler Williamson at the Zimmer Adult Recon course learning about Direct Anterior THA.



1. Annual Dr. Whitney Upper Extremity Stryker cadaver event.
2. Claire Lancaster, Kellie Hastings, and Lauren Holliday working hard a cadavar lab.
3. Zach Jodoin educating Shawn Dripchak and Abhi Rashiwala on TKA.
4. Zimmer Trauma and Pelvis course with Dr. Vo, Dr. Verlinsky, and Dr. Reznichenko, along with their trust Zimmer reps.



5. Elizaveta Reznichenko and Dr. Christoph Meier, head of orthopaedic trauma, taking a photo outside the Switzerland OR.
6. Dr. Clarke, Dr. Buttacavoli, and their beautiful children at the Daddy Daughter Dance.
7. Casey McDonald practicing his external fixation skills at the Battle of the Bones.
8. Class of 2030 at the J&J Houston orthopaedic bootcamp.
9. Dr. Buttacavoli educating on DA Total Hips at the Zimmer Course.
10. Dr. Karia and Dr. David Michaeli, our 2024-2025 trauma Fellow, taking a photo on his last trauma shift.

Visiting Professors



Philip A. Deffer, Sr., MD, Endowed Lectureship

James Blair, MD, grew up in rural Connecticut before earning his bachelor's degree at the University of Maryland and medical degree at Drexel University College of Medicine. Confronted by the events of Sept. 11, 2001, while living in the Washington, DC area, Dr. Blair accepted the Health Professions Scholarship and joined the Army, entering medical school.

He completed his orthopaedic surgery residency at Brooke Army Medical Center in San Antonio, Texas, during the second surge of the Global War on Terrorism, before furthering his training in orthopaedic trauma at the Florida Orthopaedic Institute in Tampa, Florida. During his active-duty time in the Army, Dr. Blair deployed to Afghanistan and Syria and was awarded the Bronze Star Medal in 2015. He was also part of the teaching faculty at William Beaumont Army Medical Center and Texas Tech University Health Sciences Center in El Paso, Texas.

After completing his military obligation in the spring of 2020, at the rank of Lieutenant Colonel, he began his civilian career as the Director of Orthopaedic Trauma at the Medical College of Georgia at Augusta University. In 2023, he transitioned to the role of Co-Director of the Limb Salvage Center and Reconstruction Center at Grady Memorial Hospital in Atlanta, Georgia, in affiliation with Emory University. He also currently serves as the Co-Director of the Emory at Grady Orthopaedic Trauma Fellowship.

His hobbies include competing in ultramarathons and obstacle course races, as well as spending time with his wife, young daughter and son, and dog, Sierra.



Laura B. Flawn, MD, Endowed Professorship in Diseases of the Spine and Spine Trauma

Grant Hogue, MD maintains an active clinical practice specializing in spine and trauma surgery at Boston Children's Hospital. His research has spanned a broad range of topics within pediatric orthopaedics, with a current focus on health equity and disparities in the diagnosis and treatment of pediatric conditions. He is the former Chair of the Pediatric Orthopaedic Society of North America (POSNA) Hip and Lower Extremity Quality, Safety, and Value Committee and currently serves on the Scoliosis Research Society (SRS) Policy and Bylaws Committee. Dr. Hogue is also deeply involved with the Pediatric

Spine Study Group, with particular interest in the long-term outcomes of patients who have "graduated" from growth-friendly spine surgery. In addition to his clinical and research work, Dr. Hogue has a strong record of academic contributions supporting the advancement of pediatric orthopaedic care. He is the author of the scoliosis and kyphosis chapter in *Orthopaedic Surgery Essentials: Spine*, the congenital scoliosis chapter in the upcoming edition of *The Growing Spine*, and four chapters in the forthcoming edition of the *AAOS Resident Review* textbook.



Rockwood Endowed Orthopaedic Lectureship Residency Graduation

James Ficke, MD, is the Robert A. Robinson Professor and Chair of the Department of Orthopaedic Surgery at Johns Hopkins School of Medicine.

He has specialty training and active clinical practice in Orthopaedic Trauma and Foot/Ankle reconstruction.

He served 30 years in the US Army and has received the Society of Military Orthopaedic Surgeons' Colonel Brian Allgood Memorial Leadership Award, and The Surgeon General's Major General Lewis Aspey Mologne Award for excellence in health-care leadership. In 2018, he received the Johns Hopkins Award for Advancement of Women in Science and Medicine and is an active member of the Ruth Jackson Orthopaedic Society. In 2024, he was recognized by the Ruth Jackson Orthopaedic Society with the annual "He For She" award.

Currently, Dr. Ficke serves as Government Steering Committee Chair with the Orthopaedic Research and Education Foundation. He volunteers as Director for Team Red White & Blue, a veteran service organization of over 200,000 members; the Baltimore Area Council Boy Scout Board, and the Johns Hopkins Medical Board. In 2024, he accepted a 10-year term as Director for the American Board of Orthopaedic Surgeons.

Endowments

Orthopaedics



The Fred G. Corley, MD, Chair in Orthopaedics, #57700223 This endowment was established in July 2004. Ravi Karia, MD, was appointed holder of this prestigious endowment on Dec. 1, 2020. This endowment was established to honor Dr. Corley who is one of our most respected long-term faculty. He has special expertise in surgery of the upper extremities, especially in management of trauma of the elbow, wrist and hand. He serves as a role

model for medical students and residents and has been the chief of the hand services at this institution for over two decades. The purpose of this endowment is to support the Distinguished Professorship and establish a permanent education resource for training residents and medical students in surgery of the hand, shoulder and elbow.

John J. Hinchey, MD, and Kathryn Hinchey Chair in Orthopaedics, #57700024 Quasi, #57700444 are held by Robert H. Quinn, MD, These endowments were established in 1992 to honor Dr. Hinchey for his tremendous contributions to Orthopaedics and to the total medical community during his many years of Orthopaedic practice in San Antonio. Dr. Hinchey died on March 3, 2000; Mrs. Kathryn Hinchey died in Dec. 2011. The purpose of the endowment is to establish an endowed position in the Department of Orthopaedics to support clinical and basic research.



Charles A. Rockwood, Jr., MD, Chair in Orthopaedics, #57700058 and Charles A. Rockwood, Jr., MD, Chair in Orthopaedics Quasi, #57700574

Anil K. Dutta, MD, was appointed to this prestigious endowment on Dec. 1, 2020. These endowments were established in 2003 to honor Dr. Rockwood who is recognized internationally for his contributions to Orthopaedic Surgery. Dr. Charles A. Rockwood, Jr., Emeritus, Department of Orthopaedics at The University of Texas at San Antonio died on Feb. 1, 2022; his name, inventions and textbooks will persist for decades to come. The endowments were created to support research and education specializing in shoulder disorders in the Department of Orthopaedics at The University of Texas at San Antonio. These endowments were previously held by Michael A. Wirth, MD, who retired on June 30, 2019.



President's Council/Dielmann Chair in Pediatric Orthopaedic Surgery, #57700241 Sekinat K. McCormick, MD, was appointed holder of this prestigious endowment on Oct. 1, 2021. This endowment was established in 2005 to honor Henry B. and Edna Smith Dielmann. Mrs. Dielmann, a community philanthropist died in 2002 and left a generous portion of her estate to The University of Texas at San Antonio. She was the widow of Henry B. Dielmann, a prominent San Antonio attorney, three-time member of the Texas House of Representatives and former Dean of St. Mary's University Law School in San Antonio. This endow-

ment was created to provide pediatric orthopaedic training and programs to medical students and residents at The University of Texas at San Antonio as well as specialty training to countries with limited resources.



Erwin Orthopaedic Sarcoma Research Endowment in Honor of Dr. Rajiv Rajani, #57700616

This quasi endowment was received from the Erwin Family Foundation in honor of Rajiv Rajani, MD. Funds distributed from the endowment will support research, visiting professors and work focused on treatment options for bone and soft tissue sarcomas, under the direction of the department chair in accordance with the Regents' Rules and Regulations.



Frances And Blackstone Dilworth Professorship In Orthopaedic Oncology, #57700639

Joseph F. Alderete Jr., MD, FAOA, was appointed holder of this prestigious endowment on June 1, 2024. Funds distributed from the endowment will support the professorship in accordance with the Regents' Rules and Regulations and applicable policies pertaining to endowed academic positions. As additional funds are received, the endowment will be elevated to the highest level for which it qualifies.



Kaye E. Wilkins, DVM, MD, Orthopaedic Professorship, #57700675

Steven D. Gibbons, MD, was appointed holder of this prestigious endowment on April 1, 2024. The endowment was created to honor the legacy of Wilkins by supporting the musculoskeletal care of children. Funds distributed from the endowment will

support the professorship in accordance with the Board of Regents' Rules and Regulations and applicable policies pertaining to endowed academic positions. Distributions may also support residents within the school. The endowment is currently unfilled.



Steve and Mary Anne Lynch Professorship in Medicine, #57700706

Kenneth O. Kenneth-Nwosa, MD, was appointed holder of this prestigious endowment on Aug. 1, 2023, for a five-year term. The endowment was created to support a promising rising-star faculty member dedicated to excellence in patient care, teaching

and mentoring students and residents with a special interest in orthopaedics and other clinical specialties at UT San Antonio. Funds distributed from the endowment will support the professorship in accordance with the Regents' Rules and Regulations and applicable policies pertaining to endowed academic positions.



Dr. Robert and Dr. Louise Hutchinson Endowment Fund for Basic Research in Orthopaedic Surgery, #57700729

Vaida Glatt, PhD, was appointed holder of this prestigious endowment on Sept. 1, 2024. This miscellaneous endowment was created from their charitable trust fund in September 2022. Funds distributed from

the endowment will be used for basic research in orthopaedic surgery.

Orthopaedics supporting honorary lectureships



The Charles A. Rockwood Jr., MD, Endowed Lecture Series, #57700233,

was established in November 2004. We appreciate Dr. Rockwood's recognition of orthopaedic residents as they graduate from our residency program. Charles A. Rockwood Jr., MD, emeritus in the Department of Orthopaedics at UT San Antonio, died

Feb. 1, 2022; his name, innovations and textbooks will persist for decades to come. This endowment was created to defray all or part of the expenses associated with the annual orthopaedic resident graduation, including costs to invite a distinguished guest lecturer and support the grand rounds lecture, evening lecture and graduation. A holder is not required.



The Philip A. Deffer Sr., MD, Lecture Series, #57700070,

was established in 1994. Deffer was a retired brigadier general, associate professor in the Department of Orthopaedics and Rehabilitation at the Health Science Center, and director of the Orthopaedic Clinics at the University Health Center-Downtown from 1982 to

2003. Deffer died Oct. 26, 2006. The purpose of this endowment is to defray expenses associated with inviting a distinguished guest speaker to the annual educational lecture to interact, share experiences and offer insights with our residents and medical students. A holder is not required.



The Laura B. Flawn, MD, Endowed Distinguished Professorship in Diseases of the Spine and Spine Trauma, #57700189,

was established in 2002. Christopher Chaput, MD, was appointed to this prestigious endowment effective Jan. 1, 2019. Flawn received high praise for her surgical skill and contributions to

the advancement of spine surgery before and after her death on Oct. 20, 2001. She was active in the Scoliosis Research Society and pioneered practices and procedures that improved the treatment of scoliosis. The purpose of this endowment is to support the distinguished professorship and host the annual Laura B. Flawn, MD, Lecture. The lecture benefits medical students, residents and faculty at UT San Antonio. It is funded by Dr. and Mrs. Peter Flawn, Dr. John P. Howe III and Ms. Tyrrell Flawn.

Podiatry



Louis T. Bogy, DPM, Professorship in Podiatric Medicine and Surgery, #57700098

Lee C. Rogers, DPM, FFPM, RCPS, was appointed to this prestigious endowment on Aug. 1, 2022. The professorship was established in 1998 to honor Louis T. Bogy, chairman emeritus of the podiatry residency training program at UT

San Antonio. Bogy was instrumental in establishing the residency training program, which began in 1972 with one resident. More than 100 residents have graduated since 1972. Bogy died Feb. 9, 2004. The first faculty member supported by this professorship was Lawrence Harkless, DPM, from 1999 to 2007. This endowment was created to support the professorship, research and resident education in the area of diabetic foot care.



Lee J. Sanders, MD, Professorship in Lower Extremity Amputation Prevention, #57700196

Collin E. Pehde, DPM, was appointed holder of this prestigious endowment on Aug. 1, 2023, for a five-year term. The professorship was established in 2003 to honor Lee J. Sanders, DPM, chief of podiatry service, acute care,

and specialty services at the Veterans Affairs Medical Center in Lebanon, Pennsylvania. Sanders is one of the foremost leaders in the prevention of lower-extremity amputation in patients with diabetes. The purpose of the professorship is to support a faculty member in the podiatry division of the orthopaedic department and to support podiatric research and education in amputation prevention and other podiatric needs deemed appropriate by the chair of orthopaedics.



The Lawrence B. Harkless DPM, Endowed Program Fund in Podiatry, #57700476.

Endowment was created March 26, 2014 with a \$10,000 gift from G. Javier Cavazos, Jr., DPM, received in November 2007 to support an endowment for the Orthopaedics Department, Podiatry Division in the Long School of Medicine.

Future plans will be to use this endowment for podiatry faculty research, travel and miscellaneous expenses to support the academic mission of the Program Fund in Podiatry.

ENDOWMENTS ARE SUPPORTED THROUGH THE OFFICE OF DEVELOPMENT
Interested in Giving? To make a gift to any of our prestigious endowments, please contact:

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