

Orthopedics



The exemplary team of physicians, caregivers and researchers at Baylor St. Luke's Medical Center continues to push the boundaries of what is possible in patient care through meaningful medical advancements and notable clinical achievements. This document highlights just a few of the stories that reflect our commitment to advanced services, innovative technology and forward-thinking care. Together, these accomplishments demonstrate how we remain at the forefront of medicine—bringing leading-edge solutions, improved outcomes and exceptional care to the patients and communities we serve.

Orthopedic surgical care at Baylor St. Luke's Medical Center. *A Message from Wilhelmina Barnhart Chair, Dr. Douglas Dirschl*

The Musculoskeletal Service Line at Baylor St. Luke's Medical Center is composed of dedicated medical and surgical specialists whose singular focus is treating patients with muscle, nerve, bone, and joint injuries or disorders through a highly collaborative approach. Our fundamental goal is to return people to their active lives as rapidly as possible. Orthopedic care at Baylor St. Luke's Medical Center is provided almost exclusively by physicians who are full-time faculty members at the Baylor College of Medicine's Joseph Barnhart Department of Orthopedic Surgery.

Below, you will find a few examples of the cutting-edge orthopedic surgical care provided in every area of orthopedic surgery at Baylor St. Luke's Medical Center. All efforts focus on individualized patient treatment through collaborative, multidisciplinary teams of experts utilizing innovative techniques and protocols that translate to improved patient outcomes.

A critical feature that distinguishes the orthopedic surgical services at Baylor St. Luke's Medical Center from others locally and nationally is our unrelenting

effort to improve through innovation and thoughtful incorporation of translational scientific discoveries, often by our own Baylor College of Medicine investigators within the Center for Skeletal Medicine and Biology as well as the Rolanette and Berdon Lawrence Bone Disease Program of Texas. Ongoing work related to the determination of the mechanisms of bone development, repair, and aging is just one example.

Orthopedic surgery faculty, as well as those within the Musculoskeletal Service Line at Baylor St. Luke's Medical Center, are national thought leaders who publish and lecture extensively, educating not only those in training but also their colleagues in practice around the world. They are the best, and they are here for you.

Sincerely,



Douglas Dirschl, MD
Wilhelmina Barnhart, Chair
Joseph Barnhart, Department of
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Orthopedic surgeons at Baylor St. Luke's Medical Center lead in same-day hip and knee replacements with fewer complications, better outcomes.

At Baylor St. Luke's Medical Center, our hip and knee arthroplasty experts are leading the shift toward same-day joint replacements, a trend driven by significant advances in surgical techniques, enhanced pain management protocols, and technological innovations. Most of our hip and knee replacement patients are enjoying the benefits of having their surgery done in an outpatient setting. By aligning innovative surgical techniques and technology with our patient's goals, our surgeons are getting patients back to their quality of life they led prior to being hindered by arthritis.

This dedication to patient-centered, evidence-based care has earned Baylor St. Luke's Medical Center advanced certification in hip and knee replacement from DNV, an independent, global assurance and risk

management organization that provides hospital and healthcare accreditations. The certification reflects the commitment of Baylor St. Luke's to the highest standards in orthopedic surgery, ensuring safety, quality, and outstanding outcomes for every patient.

Through minimally invasive approaches, including partial knee replacements and anterior-approach hip arthroplasty, patients experience accelerated recovery times and improved patient outcomes. Advanced navigation systems and robotic-assisted surgery platforms enable Baylor St. Luke's orthopedic surgeons team to achieve unprecedented precision in both primary arthroplasty and complex revision cases.

Surgeons at Baylor St. Luke's Medical Center offer minimally-invasive, endoscopic procedure with better outcomes for patients with upper extremity injuries and conditions.

Orthopedic surgeons at Baylor St. Luke's Medical Center offer relief to patients who suffer from neurogenic thoracic outlet syndrome (NTOS) with a minimally invasive surgical treatment that is performed endoscopically rather than through more traditional approaches.

NTOS is a painful condition resulting from compression of the nerves, arteries, and veins in the lower neck and upper chest area. Traditionally, NTOS has been treated with open surgery that entails large incisions, a harder recovery, and more complications. But Baylor St. Luke's orthopedic surgeons specialize in the unique endoscopic approach. The minimally invasive surgery offers patients a

quicker and safer recovery, with smaller incisions that are more aesthetically pleasing and have lower complications.

Baylor St. Luke's upper extremity specialists also possess extensive knowledge and expertise in comprehensive care for other upper extremity injuries and disorders. These include fracture fixation, shoulder and elbow joint replacement, shoulder arthroscopy for rotator cuff and labral injury, elbow arthroscopy, management of elbow ligament injury and instability, nerve injury and repair of peripheral nerves and the brachial plexus, and microsurgery.

Orthopedic Trauma Care

Baylor College of Medicine orthopedic trauma subspecialists are available 24 hours a day, seven days a week, 365 days a year, providing treatment for patients presenting to Baylor St. Luke's Medical Center, as well as other public and private facilities within the Texas Medical Center that lack this level of expertise. Our highly integrated, multidisciplinary

Fragility Fracture team at Baylor St. Luke's includes specialists in geriatrics, physical medicine and rehabilitation, and other subspecialties. These experts provide individualized care for fragility fracture patients, emphasizing minimally invasive fracture stabilization and post-operative mobilization as a means to avoid known complications and return individuals to their normal lives.

Orthopedic surgeons at Baylor St. Luke's Medical Center are recognized national experts in fracture-related infection.

Orthopedic surgeons at Baylor St. Luke's Medical Center take a comprehensive, multidisciplinary approach to treating fracture-related infection, bringing together orthopedic fracture surgeons, infectious disease specialists, vascular surgeons and plastic surgeons who collaborate to deliver optimal patient care.

Baylor St. Luke's orthopedic fracture surgeons employ a variety of treatment tactics, including the most innovative methods for antimicrobial delivery methods (such as controlled-release antibiotics) and phage therapy alongside surgical interventions

like hardware removal and debridement.

Our team takes on complex surgical cases that many other surgeons consider inoperable. Using a wide range of treatment options, from sophisticated bone transport and grafting techniques to Ilizarov external fixation (a surgical technique using a circular frame with pins or wires attached to the bone, enabling surgeons to gradually lengthen, reshape, or correct deformities in limbs by stimulating natural bone growth), allows our specialists to tailor treatment plans to each patient's specific needs.

Sports Surgery Specialists at Baylor St. Luke's Medical Center excel in complex reconstructive surgery of shoulders, elbows and knees.

Sports medicine experts at Baylor St. Luke's Medical Center are leaders in developing surgical techniques and performing complex reconstructive knee, shoulder, and elbow surgeries.

Performing high volumes of common sports procedures, Baylor St. Luke's sports medicine specialists are expert in anterior cruciate ligament (ACL) reconstructions, rotator cuff repairs, arthroscopic shoulder stabilizations, and sports injury repairs of the elbow. They also perform open shoulder surgeries, including anatomic total shoulder arthroplasties and reverse shoulder replacements.

Baylor St. Luke's surgeons offer special expertise on complex and revision surgeries, such as revision

ligament reconstructions in the knee, meniscus allograft transplants, bridge-enhanced ACL reconstruction (BEAR procedure), articular cartilage restorations, hip and knee arthroscopies, osteotomies of the knee, Latarjet and superior capsule reconstructions in the shoulder, ulnar collateral ligament (Tommy John) elbow surgeries, and revision shoulder arthroplasties.

Baylor St. Luke's sports medicine specialists are dedicated to developing and applying new technology in an effort to optimize patient/athlete outcomes with the goal of getting people back to a high level of activity. In the field of sports medicine, embracing innovative surgical techniques and implementing emerging trends in orthobiologics is crucial for enhancing athlete recovery and performance.

Researchers at Baylor St. Luke's Medical Center find higher risks of post-operative complications of wrist injuries in patients with non-tobacco nicotine dependence.

Patients with wrist injuries who have a non-tobacco dependence on nicotine show a significantly higher risk of postoperative complications, according to findings of a retrospective study by researchers at Baylor St. Luke's Medical Center.

A distal radius fracture is a common wrist injury where the radius bone breaks near the wrist joint. These fractures are common, usually resulting from breaking a fall with the hand. Treatment varies by age, activity level, and fracture characteristics. Although operative treatment can improve early recovery, it may be associated with complications.

One area that has been underexplored is the effect of non-tobacco nicotine dependence (NTND), which has increased through products like e-cigarettes, on post-operative recovery.

Baylor St. Luke's researchers sought to investigate the effect of NTND on complications following distal radius fracture open reduction and internal fixation (ORIF). A retrospective cohort study using the TriNetX

database categorized adult patients undergoing distal radius ORIF into NTND and non-NTND cohorts. Propensity score matching accounted for demographic and comorbidity differences. Outcomes assessed included 90-day complications (skin infection; sepsis, defined as systemic infection; wrist stiffness; wound disruption; deep vein thrombosis; acute kidney disease; stroke; myocardial infarction; pulmonary embolism; and chronic regional pain syndrome) and two-year complications (loosening of ORIF hardware, wrist stiffness, nonunion, nerve injury, and tendon injury).

Patients with NTND experienced higher rates of post-operative infection, loosening of ORIF hardware, and nonunion but a lower risk of wrist stiffness.

These findings suggest that NTND is an important risk factor and highlights the need for further research and targeted perioperative management strategies to mitigate risks in this population.

[Read more about the study](#)

Space medicine researchers at Baylor St. Luke's Medical Center further understanding of joint health risks for astronauts in long-term space flights.

Space flight missions greater than six months are associated with an increased risk of shoulder injury, especially rotator cuff tears, researchers at Baylor St. Luke's Medical Center have found.

Using The Lifetime Surveillance of Astronaut Health epidemiology database at National Aeronautics and Space Administration, Baylor St. Luke's researchers conducted a retrospective cohort study to assess the effect of space flight mission duration on the rate of shoulder injury among astronauts. Inclusion criteria were all astronauts who participated in space flight regardless of age or space flight mission time. Exclusion criteria were all injuries occurring greater than five years following return to Earth. Patient demographics were compared between injured and noninjured cohorts with stratification by shoulder pathology.

Shoulder injuries upon return to gravitational environments have the potential to negatively impact astronaut health and possibly jeopardize mission success, particularly as upper-extremity mobility is vital in the microgravity environment of space.

Specific aspects of space flight that increase risk remain understudied. These findings underscore the need for further research into the risks and preventive measures of long-term space missions on human health and functioning.

[Read more about the study](#)

Researchers at Baylor St. Luke's Medical Center find surgical management of pelvic fragility fractures may be superior to non-surgical option.

Baylor St. Luke's Medical Center researchers participated in a study comparing improvement in mobility of patients with posterior pelvic fragility fractures (PFF) who had surgery and those who opted for non-surgical management (NSM).

Non-surgical management of PFF can lead to prolonged disability, morbidity, and death. Yet surgical management of PFF, which has been reported to rapidly restore mobility, also has risks.

Baylor St. Luke's researchers studied a prospective, randomized controlled trial of SM versus NSM patients at academic and community trauma centers without significant cognitive impairment who were bedbound.

Despite challenges in patient enrollment in the study, consistent trends were observed to suggest that SM may be superior to NSM in patients with painful PFF.

[Learn more about the study](#)

Researchers at Baylor St. Luke's Medical Center study long-term space travel on the human spine.

With commercial and deep-space missions on the horizon, the need for in-orbit surgical capability has gained prominence as a safeguard for astronaut health.

Researchers at Baylor St. Luke's Medical Center recently conducted a narrative review of studies addressing the impact of microgravity environments in long-term space travel on the human spine. The review identified human, animal, and in vitro studies addressing spinal physiology, pathology, or surgical feasibility in actual or simulated microgravity.

Their findings showed that prolonged exposure to microgravity alters spinal biomechanics, increases disc herniation risk, and complicates perioperative care. Across study types, microgravity consistently produced spinal elongation, disc swelling, vertebral bone loss, and muscle atrophy, leading to elevated postflight spinal morbidity.

Although no spine operations have been reported in orbit, analog studies describe key intraoperative challenges,

including fluid containment, sterility, imaging, anesthesia, and hemodynamic control. Promising countermeasures encompass bisphosphonates, resistive exercise, robot-assisted instrumentation, and teleoperation. These data offer a generalizable framework for perioperative planning during long-duration missions.

The existing evidence uncovered by Baylor St. Luke's researchers clarifies physiological and logistic barriers to operative care. Targeted musculoskeletal countermeasures, coupled with tele-robotic and augmented-reality platforms, provide a realistic pathway to safe spine surgery during future long-duration missions.

This study underscores the necessity of further translational research and on-orbit validation before clinical deployment.

[Learn more about the study](#)