

W. Price Le Clercq
L2
LSU Health Sciences Center, New Orleans, LA

Vinod Dasa
LSUHSC, Department of Orthopaedics

“The Relationship Between Increased Mechanical Tension and Scar Cosmesis After Total Knee Arthroplasty”

The methods and techniques for performing a total knee arthroplasty (TKA) have drastically improved since it was first implemented into treating patients with advanced knee osteoarthritis in 1968. Through years of collaboration and practice, the reliability of the procedure has become rudimentary for enhancing patients quality of life through decreasing time patients experience pain, limited mobility and range of motion due to local swelling and inflammation, and other adverse effects post operatively. While the procedure itself has become standardized, more research is needed into which factors influence the dermatologic outcomes of the operation. This aesthetic aspect of the closure and healing process is important for patient satisfaction, especially in younger patients as well as the African American patient population. Research suggests a potential link between increased mechanical tension in high-tension anatomical sites, BMI, and pro-inflammatory markers and their contributions to worse dermatologic and scar outcomes.

This study seeks to determine whether higher mechanical tension — approximated by BMI and early postoperative range of motion (ROM) — is associated with poorer scar appearance after total knee arthroplasty. Uncovering this relationship could reveal modifiable risk factors to enhance postoperative cosmetic outcomes and boost overall patient satisfaction, therefore limiting lasting psychological impacts of having a major operation such as a TKA.

As it pertains to study methods, we will conduct a single-center prospective cohort study using patients undergoing primary TKA. Patient’s age, sex, race, Charlson comorbidity index, surgical closure technique, history of keloid or hypertrophic scarring, tobacco use, and diabetes status will serve as bulk of information needed per case. Patients undergoing repairs for a previous TKA or patients receiving bilateral TKAs were not included. Data will be collected for patient’s BMI and postoperative knee ROM, including both active and passive flexion and extension, at postoperative day 30, three months, and six months. Time intervals greater than 6 months were not chosen because it was determined that losing patients to follow up would have continued to increase and thus have a significant impact on results. The primary outcome will be scar appearance assessed using the SCAR scale, which is a validated patient-reported outcome measure designed to evaluate scar symptoms and cosmesis. Secondary outcomes will include observer-rated scar assessments, presence of wound complications, scar-related symptoms, and overall patients satisfaction.