

Comparison of Unicompartmental versus Total Knee Arthroplasty in Patients who Smoke: A Database Analysis from 2013 to 2023

Aritra Chakraborty, BS¹, Anthony Travlos, BS¹, Nicholas Brown, MD²

¹Stritch School of Medicine, Loyola University Chicago, Maywood, Illinois, U.S.A

²Department of Orthopaedic Surgery and Rehabilitation, Loyola University Medical Center

Introduction: Patients who smoke may face unique risks when undergoing joint arthroplasty due to smoking's detrimental effects on tissue oxygenation, inflammation, and vascular function. While unicompartmental knee arthroplasty (UKA) may offer benefits such as faster recovery, its safety profile in populations that smoke remains unclear. This study compared postoperative complication rates between UKA and total knee arthroplasty (TKA) in patients who smoke.

Methods: A retrospective cross-sectional analysis was conducted using a large national database. Patients who smoke and were undergoing UKA or TKA were identified with Current Procedural Terminology (CPT) codes. 43,018 patients met inclusion criteria (UKA: 1,373 [3.2%], TKA: 41,645 [96.8%]), mean age 61.2 years; mean BMI 33.1; 43.8% male. A composite outcome of "Any Complication" included superficial infection, deep incisional, organ/space surgical-site infection (SSI), wound disruption, sepsis, pulmonary embolism (PE), deep-vein thrombosis (DVT), 30-day readmission, and 30-day reoperation. Multivariable logistic regressions evaluated associations between procedure type and outcomes, adjusting for age, sex, BMI, hypertension, diabetes, chronic heart failure (CHF), chronic obstructive pulmonary disease (COPD), and renal failure.

Results: TKA was associated with increased adjusted odds of DVT ($P = 0.036$) while composite complication risk, infectious complications, wound disruption, PE, and reoperation were similar; sepsis was rare. Independent predictors of increased complication risk included male sex, higher BMI, hypertension, diabetes, CHF, and COPD.

Conclusion: Among patients who smoke, TKA is associated with increased risk of DVT than UKA on univariate and multivariable analyses, although residual confounding and selection bias may affect this association.

Figure 1. Forest plot depicting adjusted odds ratios (OR) and 95% confidence intervals (CI) for postoperative complications in patients who smoke undergoing TKA versus UKA.

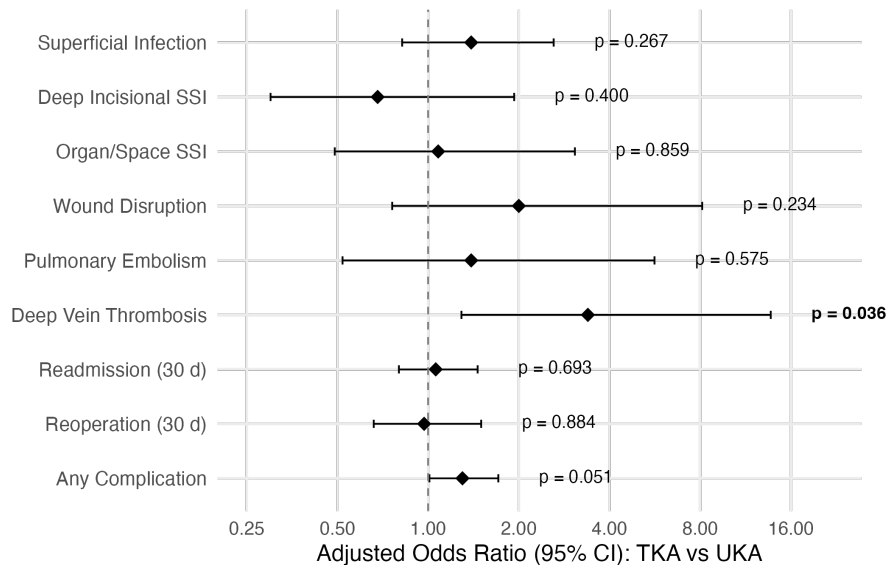


Figure 2. Bar plot depicting adjusted odds ratios (OR) and 95% confidence intervals (CI) for postoperative complications in patients who smoke undergoing TKA versus UKA.

