

Does Perioperative Upper Respiratory Infection Drive Outcomes in Total Knee Arthroplasty?

Brandon Crowley, Miles Hollimon, Brett Russell Levine

INTRODUCTION:

Perioperative optimization in Total Knee Arthroplasty (TKA) is important to maximize outcomes. Previous studies reported increased medical complications after TKA in the setting of COVID-19, but were limited in scope and pathogens assessed. We hypothesized there would be increased, but similar, medical and surgical complications after TKA in COVID-19 and Influenza patient cohorts.

METHODS:

Patients undergoing primary TKA from January 2010 to April 2023 with perioperative Upper Respiratory Infection (URI) within 90 days pre- or post-op were identified using the PearlDiver database. Logistic regression was utilized to compare groups in terms of medical and surgical complications. Primary outcomes assessed were medical complications (Deep Venous Thrombosis [DVT], Pulmonary Embolus [PE], Myocardial Infarction [MI], Stroke, Renal Failure, Urinary Tract Infection [UTI], Heart Failure) and surgical complications (Anemia, Loosening, Seroma, Hematoma, Surgical Site Infection [SSI], Stiffness, and Revision).

RESULTS:

We identified 1,767,470 records; 17,257 had perioperative COVID-19, and 5,027 had perioperative Influenza infection. Postoperative COVID-19 was associated with PE (OR 1.54 [95% Confidence Interval (CI) 1.14-2.13]), Renal Failure (OR 1.28 [95% CI 1.07-1.52]), and superficial SSI (OR 2.19 [95% CI 1.01-5.72]) compared to Influenza. Preoperative COVID-19 was associated with MI (OR 2.34 [95% CI 1.15-5.67]) and superficial infection (OR 2.81 [95% CI 1.13-9.39]), but lower rates of UTI (OR 0.72 [95% CI 0.59-0.89]), Anemia (OR 0.69 [95% CI 0.60-0.81]), and Revision (OR 0.63 [95% CI 0.46-0.88]) compared to Influenza. Postoperative infection with either virus was associated with DVT, PE, Stroke, MI, UTI, Renal Failure, Heart Failure, Anemia, Revision, Infection, and Hematoma. Preoperative infection with either pathogen was associated with MI, Renal Failure, Heart Failure, and superficial SSI, but decreased rates of Anemia and Revision.

DISCUSSION AND CONCLUSION: Perioperative URI with Influenza or COVID-19 is associated with increased medical and surgical complications in TKA, suggesting a shared causative pathway not unique to COVID-19. Further study is warranted to elucidate this mechanism and mitigate its effect.