Increased Risk For Perioperative Complications Following Total Knee Arthroplasty Among Patients With Previous Venous Thromboembolic Event

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Total knee arthroplasty (TKA) can be complicated by venous thromboembolic events (VTE), defined as the occurrence of deep vein thrombosis (DVT) and/or pulmonary embolism (PE). Such events have been associated with preexisting conditions such as age and BMI. The correlation of prior history of VTE on developing VTE following TKA is less certain. The present study aimed to quantify the association of VTE history on postoperative adverse events following TKA. METHODS:

Adult patients undergoing primary TKA were identified from the large, multi-insurance, administrative 2010-2022 Q4 PearlDiver M165 database. Inclusion criteria included: age > 17 years, no infections, neoplastic, or traumatic diagnoses within 90 days preoperative, and active in the database for 90 days postoperative. Patient factors extracted included: age, sex, and Elixhauser Comorbidity Index (ECI), and history of VTE.

Those with versus without history of VTE were matched 1:4 based on age, sex, and ECI, and the incidence of 90-day postoperative adverse events were assessed (specifically VTE, PE, DVT, sepsis, cardiac arrest, myocardial infarction, surgical site infection [SSI], pneumonia, hematoma, urinary tract infection [UTI], acute kidney injury [AKI], wound dehiscence, and transfusion). Rates of these adverse events were compared with multivariable logistic regression controlling for age, sex, and ECI. The 5-year rate of TKA revisions was also compared using multivariable logistic regression.

RESULTS: A total of 1,089,239 TKA were identified meeting the study criteria, of which preoperative VTE was noted for 28,217 (2.6 %). Those with a history of VTE were on average younger, more likely to be male, and had a higher comorbidity burden than non-VTE patients. After matching, the number of TKA patients without history of VTE was 108,015 (80.0%), while the number of patients with history of VTE was 27,075 (20.0%).

On multivariable analysis, patients with history of VTE had markedly elevated independent odds of postoperative VTE (odds ratio [OR] 134.83, p < 0.0001), PE (OR 131.36, p < 0.0001), and DVT (OR 93.42, p < 0.0001). In addition, this group was found to be of independently greater odds of sepsis (OR 7.36), cardiac arrest (OR 5.39), myocardial infarction (OR 4.05), SSI (OR 3.61), pneumonia (OR 6.37), hematoma (OR 5.08), UTI (OR 3.58), AKI (OR 3.55), wound dehiscence (OR 2.44), and transfusion (OR 2.25), as well as aggregated adverse outcome groupings (p < 0.0001 for all) (Figure 1). Nonetheless, there were not differences in five-year revisions rates for those with versus without preoperative history of VTE.

DISCUSSION AND CONCLUSION:

While risk factors for VTE following TKA have been described, the present study found history of prior VTE was associated with dramatically elevated risks of postoperative VTE (in addition to multiple other adverse outcomes). These markedly elevated odds of VTE/adverse outcomes need to be considered when planning TKA for patients with history of VTE with patient counseling, surveillance monitoring, and patient regard to care algorithms. Odds + 95% CI of Adverse Events Within 90 Days



Figure 1: Forest plot of odds ratio and 95% confidence interval of risk of adverse events within 90 days after TKA for patients with and without history of VTE