Total Knee Arthroplasty Patients With History of Medical Noncompliance Have Higher Odds of Defined 90-Day Adverse Events

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INTRODUCTION:

Total knee arthroplasty (TKA) is a common elective surgery to treat end-stage osteoarthritis. To maximize success and minimize surgical risk, many hospitals have implemented perioperative pathways to optimization patient outcomes. Such pathways require a high amount of commitment and adherence from patients. The correlation of prior history of medical noncompliance on adverse outcomes following TKA has yet to be studied.

METHODS:

Adult patients undergoing primary TKA were identified from the large, multi-insurance, administrative 2010-2023 Q1 PearlDiver M170 database. Inclusion criteria included: age > 17 years, no infections, neoplastic, or traumatic diagnoses within 90 days preoperative, and being active in the database for at least 90 days postoperatively. Patient factors extracted included: age, sex, and Elixhauser Comorbidity Index (ECI).

From this study population, two sub-cohorts were created: 1) patients with a previously recorded history of noncompliance to medication or medical treatment and 2) patients without a history of such noncompliance. The two sub-cohorts were matched 1:4 based on age, sex, and ECI. The incidence of 90-day postoperative adverse events (specifically myocardial infarction [MI], sepsis, surgical site infection, deep vein thrombosis [DVT], cardiac arrest, pulmonary embolism [PE], acute kidney injury [AKI], pneumonia, wound dehiscence, urinary tract infection [UTI], hematoma, transfusion, emergency department visits [ED Visits], and readmissions) were abstracted and compared with multivariable logistic regression controlling for age, sex, and ECI. The 5-year rate of revision TKA was also compared using Kaplan-Meier analysis.

RESULTS:

Of the 1,089,735 TKA patients identified, a previous history of medical noncompliance was noted for 18,147 (1.7%). Noncompliant patients were significantly younger, more likely to be male, and had a higher comorbidity burden. After matching, there were 17,712 medically noncompliant patients and 70,627 control patients. The matched cohorts were statistically no longer different across the matched criteria.

On multivariable analysis after application of the Bonferroni correction, patients with a history of previous medical noncompliance had higher odds of MI (odds ratio [OR] 1.33), sepsis (OR 1.21), AKI (OR 1.26), wound dehiscence (OR 1.20) pneumonia (OR 1.18), ED visits (OR 1.50), and readmissions (OR 1.17) ($p < 0.001$ for all). Patients with a history of noncompliance had lower odds of transfusion (OR 0.65, $p < 0.001$) (Figure 1). There was no significant difference in survival to 5-year revision TKA between the matched cohorts.

DISCUSSION AND CONCLUSION:

TKA patients with a previous history of medical noncompliance had higher odds of a number of defined medical complications within 90 days after surgery compared to control patients. These results may help guide surgeons in advising patients during the preoperative process and can guide preparations to minimize the possibility or impact of such complications.

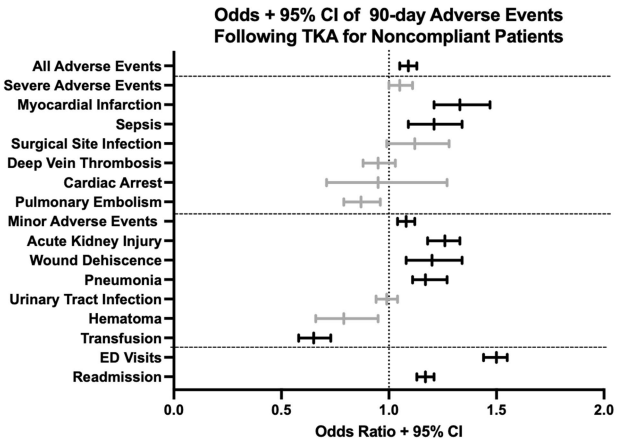

Figure 1: Forest plot of odds ratio and 95% confidence interval of adverse events within 90 days after TKA for patients with and without history of medical noncompliance.