



Paper #45

## **Manipulation under Anesthesia after Total Knee Arthroplasty: Incidence, Risk Factors and Revision Surgery**

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**Introduction:** The incidence of postoperative stiffness after total knee arthroplasty (TKA) requiring manipulation under anesthesia (MUA) is not well characterized in the current literature. The goal of the present study is to comprehensively analyze the need for MUA after TKA utilizing a national database as well as investigate risk factors for requiring MUA and the relative risk for subsequent revision after MUA.

**Methods:** Patients who underwent TKA were identified using the PearlDiver database including both patients with private-payer insurance (age < 65) and Medicare (age >65). The database was queried for TKA patients who underwent MUA within 6 months postoperatively. The cohort requiring MUA and those who did not were compared to determine risk factors for MUA. The need for revision TKA within the database time period (between 1 and 7 years postoperatively) was also assessed for each cohort. Relative risks (RR), 95% confidence intervals (CI) and chi square tests were calculated using SPSS.  $p < 0.05$  was considered significant.

**Results:** 141,016 unique TKA patients were identified from 2005-2011. The overall incidence of postoperative MUA was 4.24% within 6 months postoperatively. Of all assessed risk factors, age < 50 years (RR = 2.61, 95% CI [2.43-2.80],  $p < 0.0001$ ) and age 50 – 65 years (RR = 1.99, 95% CI [1.87-2.07],  $p < 0.0001$ ) were significant predictors of need for postoperative MUA. Among patients age < 65, smoking (RR = 1.43, 95% CI [1.28-1.59],  $p < 0.0001$ ) was a significant predictor of need for MUA. Gender, obesity, diabetes, sleep apnea, peripheral vascular disease, heart disease, and chronic kidney disease were not significantly associated with postoperative MUA. The relative risk of revision TKA in patients who required MUA compared to those patients who did not was significant (RR = 2.25, 95% CI [1.91-2.79],  $p < 0.0001$ ).

**Conclusion:** MUA after TKA is required in 4.2% of patients within 6 months postoperatively. Younger age appears to be the most significant risk factor for requiring MUA. Among patients under the age of 65, smoking is associated with an increased risk for requiring MUA. The consequences of MUA after TKA are substantial, as patients who require MUA within 6 months after TKA have a significantly increased risk of subsequent revision TKA.