The Use of CPAP for Patients with OSA is Associated with Early Medical and Surgery-related Complications Following TKA: A National Database Study

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INTRODUCTION: Obstructive sleep apnea (OSA) has been shown to increase the risk of complications following total knee arthroplasty (TKA), although prior studies were limited by their ability to stratify OSA patients by disease severity. The objective of this study was to determine the effect size of the use of continuous positive airway pressure (CPAP), as a surrogate for active and more severe disease, on early medical and surgery-related complications following TKA among patients with OSA.

METHODS: Patients with OSA who underwent primary TKA between 2010 and 2019 were identified using a large national insurance database. Ninety-day incidence of various medical complications and one-year incidence of surgery-related complications as well as hospital utilization were evaluated for OSA patients who had used CPAP prior to TKA compared to those who did not. Propensity score matching was used to control for patient demographic factors and comorbidities as covariates.

RESULTS: Propensity score matching resulted in 16,990 OSA patients who had used CPAP within six months of primary TKA and 16,990 OSA patients who had not. Patients who had used CPAP were at increased 90-day risk of emergency department presentation (OR 1.57; $p<0.0001$), admission (OR 1.59; $p<0.001$), transfusion (OR 1.73; $p<0.0001$), pneumonia (OR 1.40; $p=0.0055$), stroke (OR 1.57; $p=0.0118$), myocardial infarction (OR 1.73; $p = 0.0123$), acute hemorrhagic anemia (OR 1.51; $p<0.0001$), acute renal failure (OR 1.85; $p<0.001$), and UTI (OR 1.83; $p<0.0001$) as well as one year risk of undergoing revision surgery (OR 1.4411; $p<0.0001$).

DISCUSSION AND CONCLUSION: Our findings suggest that OSA patients on CPAP undergoing TKA have increased rates of 90-day medical complications and revision surgery compared to OSA patients not recently using CPAP.