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## Margaret Lee M.D.

Advisor(s): Qais Naziri M.D.

Co-author(s):

## Association Between Chronic Obstructive Pulmonary Disease and Procedure-Related Complications in Primary Total Hip Arthroplasty Patients

Introduction: Total hip arthroplasty (THA) is a common surgical procedure that replaces the hip joint with a prosthetic implant to relieve pain and improve mobility. Chronic obstructive pulmonary disease (COPD) is a common chronic respiratory condition involving inflammation and limited ventilation. This study investigated the association between COPD and procedure-related complications (PRC) in patients undergoing primary THA.

Methods: This retrospective cohort study examined primary THA cases in the National Inpatient Sample (NIS) database between 2010 and 2021. Adult patients ( $\geq$ 18) were separated into two cohorts based on the presence or lack of a COPD diagnosis. The primary outcome, PRC, includes acute myocardial infarctions, pneumonia, sepsis, septicemia, septic shock, surgical site complications (e.g., bleeding and infection), pulmonary embolism, deep vein thrombosis, periprosthetic joint infection, and mechanical complications. Univariate analyses were performed to identify potential differences between the two cohorts. Multivariable regression analysis was then used to examine the relationship between COPD and procedure-related complications, with adjustments made for confounding variables such as basic demographics, baseline health status, and procedure characteristics.

Results: Of 819,733 THA procedure patients during the study period, 59,845 (7.3%) had a prior diagnosis of COPD, and 759,888 (92.7%) had no COPD diagnosis. The greatest percentage of patients in both cohorts had female gender, and were 60-69 years old. A majority of the procedures occurred in large, urban teaching, and private, non-profit hospitals. On adjusted multivariable regression, compared to those without COPD, those with COPD had 1.11 times higher (95% CI 1.08 to 1.15; p<0.001) odds of PRC.

Conclusion: Our findings suggest that patients with COPD have a higher risk of PRC following primary THA when compared to patients without COPD.