

What is the Association Between Non-Tobacco Nicotine Dependence and Postoperative Complications in Total Hip Arthroplasty? A Large, Propensity-Matched Cohort Study

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INTRODUCTION:

Non-tobacco nicotine dependence (NTND) has become an increasing alternative to traditional tobacco use. However, limited data exists in NTND patients undergoing total hip arthroplasty (THA). The purpose of this study was to investigate differences in perioperative complications and rates of revision THA among patients with and without NTND undergoing THA.

METHODS: The TriNetX US Collaborative Network database was queried using ICD-10 and CPT codes to identify patients aged 18 and older undergoing primary THA between 2014 and 2024. Patients were divided into two cohorts depending on history of NTND. These cohorts were propensity-matched based on age, gender, race, ethnicity, body mass index, and various medical comorbidities. Rates of complications and revision THA were compared between cohorts.

RESULTS: A total of 99,496,579 patients aged 18 and older were identified, of which 192,826 underwent primary total hip arthroplasty (THA). A total of 174,071 patients remained after excluding for history of RA, FAI, posttraumatic OA, and hip dysplasia. After exclusions for tobacco use, 154,147 patients remained. The cohorts were then stratified into NTND and those without a preoperative diagnosis of nicotine dependence. After exclusions, 124,013 patients met inclusion criteria. Among these, 115,561 (93.2%) were non-nicotine users and 8,452 (6.8%) were NTND. After 1:1 propensity score matching, each cohort included 8,378 patients. Complications including myocardial infarction (MI), stroke, pneumonia, acute kidney injury (AKI), sepsis, emergency department (ED) visits, and rehospitalization were significantly higher at 90 days postoperatively in NTND patients ($p < 0.05$). At 1 year postoperatively in addition to these complications, the risk of postoperative deep vein thrombosis (DVT) (OR 1.251; $p = 0.0369$) and infection (OR 1.288; $p = 0.045$) became significantly higher in the NTND cohort. Rates of prosthetic joint infection (PJI) (OR 1.485; $p = 0.004$), revision THA (OR 1.868; $p = 0.002$), and death (OR 1.575; $p = 0.035$) were significantly elevated in NTND patients compared to their counterparts at 90 days, 1 year, and 5 years postoperatively.

DISCUSSION AND CONCLUSION: NTND patients have higher rates of PJI, revision THA, mortality and multiple postoperative complications including DVT, MI, stroke, pneumonia, AKI, sepsis, infection, ED visits, and rehospitalization. Providers should counsel NTND patients pre-operatively and consider screening patients undergoing THA prior to operative management.