Assessing the Impact of Neuropathic Bladder on Total Hip Arthroplasty Outcomes: A Matched Cohort Analysis

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INTRODUCTION: Total hip arthroplasty (THA) is a widely performed procedure that improves mobility and quality of life in patients with end-stage hip disease. However, THA patients with neuropathic bladder may be at increased risk of postoperative complications. This study aims to evaluate the impact of neuropathic bladder on primary THA outcomes.

METHODS:
This retrospective cohort study utilized the TriNetX Research Network to analyze a total of 193,988 patients aged 18 years and older who underwent primary THA between January 1, 2003, and January 1, 2024, using relevant Current Procedural Terminology, International Classification of Diseases, 9th Revision codes, and International Classification of Diseases, 10th Revision codes. Patients were categorized into two cohorts: those with neuropathic bladder conditions prior to THA (NB) and those without neuropathic bladder conditions prior to THA (no-NB). Propensity score matching was performed, resulting in 1,482 patients in each cohort. Rates of postoperative outcomes at 30 days, 90 days, 1 year, and 5 years were compared.

RESULTS:
Within 30 days post-THA, patients in the NB cohort demonstrated significantly higher risks of complications, including urinary tract infection, pneumonia, periprosthetic joint infection (PJI), lower extremity deep vein thrombosis, and transfusion compared to patients in the no-NB cohort (p <0.01). Similar trends persisted at the 90-day mark, with an additional increased risk of pulmonary embolism and acute renal failure in the NB cohort (p <0.01). Furthermore, the NB cohort faced increased risks of PJI over a 1-year period (risk ratio (RR): 1.766; 95% confidence intervals (CI): 1.311, 2.379) and revision arthroplasty over a 5-year period (RR: 2.639; CI: 1.811, 3.846) compared to the no-NB cohort.

DISCUSSION AND CONCLUSION:
Patients with neuropathic bladder undergoing THA face significantly elevated risks of postoperative complications, highlighting the need for tailored perioperative management strategies of neuropathic bladder to mitigate these risks and improve THA outcomes.

Patient Demographic Characteristics (After Match)			
	NB (1482)	no-NB (1482)	
Characteristic	n (Mean or %)	n (Mean or %)	p
Age at Index	68.3 ± 12.7	68.6 ± 12.4	0.532
Sex			
Male	487 (32.9%)	492 (33.2%)	0.845
Female	947 (63.9%)	944 (63.7%)	0.909
Race and Ethnicity			
Hispanic or Latino	33 (2.2%)	31 (2.1%)	0.800
Asian	43 (2.9%)	32 (2.8%)	0.912
Black or African American	108 (7.3%)	93 (6.3%)	0.273
White	1164 (78.5%)	1178 (79.5%)	0.528
Other Race	28 (1.9%)	24 (1.6%)	0.576
Diagnosis			
Tobacco Use	79 (5.3%)	78 (5.3%)	0.935
Diabetes Mellitus	386 (26.0%)	380 (25.6%)	0.801
BMI			
At Most 19.9 kg / m³	47 (3.2%)	43 (2.9%)	0.669
20–29 kg / m³	173 (11.7%)	163 (11.0%)	0.562
30–39 kg / m³	259 (17.5%)	257 (17.3%)	0.923
At Least 40 kg / m³	107 (7.2%)	101 (6.8%)	0.666

Risk ratios of postoperative complications between NB and no-NB cohorts