The Impact of Diabetic Neuropathy on Total Knee Arthroplasty Outcomes

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INTRODUCTION: The aim of this study was to investigate the impact of diabetic neuropathy on total knee arthroplasty (TKA) outcomes when compared with both non-diabetic and diabetic patients without neuropathy.

METHODS: This retrospective cohort study utilized the National Readmissions Database from 2016 to 2020. Patients undergoing primary total knee arthroplasty (TKA) were identified using ICD-10 codes, including those with diabetes and diabetic neuropathy. Regression models were employed to compare postoperative outcomes between non-diabetic to neuropathic patients and diabetic to neuropathic patients. Gamma regression assessed total charges and length of stay (LOS). Demographics and comorbidities, measured by the Elixhauser comorbidity index, were controlled for in the regression analysis.

RESULTS: This study included 2,210,548 patients undergoing TKA; 1,739,188 (78.7%) patients without diabetes, 415,640 (18.8%) patients with diabetes but without diabetic neuropathy, and 55,720 (2.5%) patients with diabetic neuropathy. When compared to patients without diabetes, patients with diabetic neuropathy had increased odds of medical (Odds ratio (OR) 1.86; p<0.001) and surgical (OR 1.5; p<0.001) complications, including joint infection (OR 1.81; p<0.001) and periprosthetic fracture (OR 1.93; p<0.001). When compared to patients with diabetes, but without neuropathy, patients with diabetic neuropathy again had significantly higher odds of joint infection (OR 1.62; p<0.001) and periprosthetic fracture (OR 2.36; p<0.001).

DISCUSSION AND CONCLUSION: This study found that diabetic neuropathy, when compared with both non-diabetic and diabetic patients without neuropathy, resulted in higher odds of medical and surgical complications following TKA. Specifically, diabetic neuropathy was associated with higher odds of joint infection and periprosthetic fracture. Orthopedic surgeons should be aware of the added surgical risk associated with diabetic neuropathy, outside of the impact of diabetes, overall.

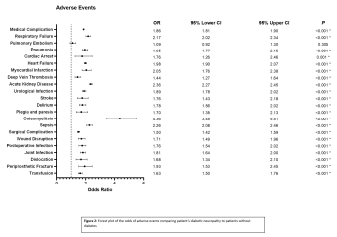

Figure 2: Forest plot of the odds of adverse events comparing patient's diabetic neuropathy to patients without diabetes.

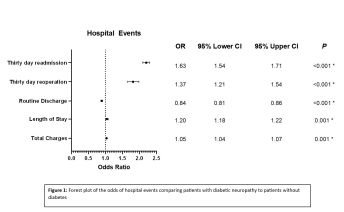

Figure 1: Forest plot of the odds of hospital events comparing patients with diabetic neuropathy to patients without diabetes.

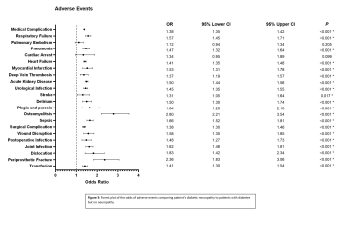

Figure 3: Forest plot of the odds of adverse events comparing patient's diabetic neuropathy to patients with diabetes but no neuropathy.