

Risk Factors for Peripheral Nerve Injury Following 132,960 Revision Total Knee Arthroplasties Using the National Inpatient Sample

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INTRODUCTION: Peripheral nerve injury (PNI) following revision total knee arthroplasty (rTKA) is a potentially devastating injury for patients. The aim of this study is to assess the frequency of this postoperative complication and identify any preoperative risk factors.

METHODS: Patients who underwent rTKA from 2003-2015 were identified using the National Inpatient Sample (NIS). Patient demographics, medical history, surgical details, hospital characteristics, and in-hospital complications were compared between patients who sustained a PNI following rTKA and those who did not. Univariate testing and multivariate logistic regression were performed to identify risk factors for the development of PNI after rTKA.

RESULTS SECTION: The 2003-2015 NIS database identified 132,960 patients who underwent rTKA, 737 (0.56%) of whom sustained a postoperative PNI. On univariate analysis, those with a PNI were more likely to have a history of peripheral vascular disorder (4.1% vs. 2.4%, $p=0.002$), previous hardware removal (0.41% vs 0.09%, $p=0.006$), and a spine condition (4.5% vs 2.6%, $p=0.001$). After adjusting for confounders, patients with a past medical history of a spine condition without valgus deformity (aOR: 1.7, 95%-CI: 1.2-2.4, $p=0.003$) and postoperative anemia (aOR: 1.3, 95%-CI: 1.1-1.5, $p=0.004$) had higher risk of PNI following rTKA. Intraoperative periprosthetic fracture (aOR: 1.3, 0.78-2.2, $p=0.308$), rheumatoid arthritis (aOR: 1.0, 95%-CI: 0.68-1.6, $p=0.865$), history of knee dislocation (aOR: 1.1, 95%-CI: 0.85-1.5, $p=0.412$), and patient sex and age were not significantly associated with higher risk for PNI.

DISCUSSION: This study found a 0.56% incidence of PNI following rTKA, and patients with preexisting spine conditions or postoperative anemia were at an increased risk for this complication. Orthopedic surgeons may use the results of this study to appropriately counsel patients on the potential for a PNI following rTKA.

SIGNIFICANCE/ CLINICAL RELEVANCE: Arthroplasty surgeons should be mindful of preoperative risk factors that may make high-risk patients more susceptible to postoperative PNI following rTKA.