

## Risk Factors for Peripheral Nerve Injury Following 112,310 Revision Total Hip Arthroplasties Using the National Inpatient Sample

Xiao T. Chen, MD<sup>1</sup>, Shane Korber, MD<sup>2</sup>, Kevin C. Liu, BS<sup>1</sup>, Brandon S. Gettleman, BS<sup>3</sup>, Shane Shahrestani, MS<sup>2</sup>, Nathanael D. Heckmann, MD<sup>2</sup>, Alexander B. Christ, MD<sup>4</sup>

<sup>1</sup>Department of Orthopaedic Surgery, Mayo Clinic, Rochester, Minnesota, <sup>2</sup>Department of Orthopaedic Surgery, Keck School of Medicine of University of Southern California, Los Angeles, California, <sup>3</sup>University of South Carolina School of Medicine, Columbia, South Carolina, <sup>4</sup>Department of Orthopaedic Surgery, University of California at Los Angeles, Los Angeles, California  
[brandon.gettleman63@gmail.com](mailto:brandon.gettleman63@gmail.com)

**Disclosures:** Xiao T. Chen (N), Shane Korber (N), Kevin C. Liu (N), Brandon S. Gettleman (N), Shane Shahrestani (3A: StrokeDx, Inc., 4: StrokeDx, Inc., 9: StrokeDx, Inc.), Nathanael D. Heckmann (1: Corin U.S.A.; 3B: Intellijoint Surgical, MicroPort Orthopedics, Corin U.S.A, Zimmer; 4: Intellijoint Surgical; 9: AAOS, AJRR, AAHKS), Alexander B. Christ (3B: Intellijoint Surgical, Smith & Nephew, 9: AAOS, Musculoskeletal Tumor Society, Orthopaedic Research Society)

**INTRODUCTION:** Peripheral nerve injury (PNI) following revision total hip arthroplasty (rTHA) can be a devastating complication. The aim of this study was to assess the frequency of and risk factors for postoperative PNI following rTHA.

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

**RESULTS SECTION:** The 2003-2015 NIS database identified 112,310 patients who underwent rTHA, 929 (0.83%) of whom sustained a PNI. Univariate analysis found that younger patients ( $p<0.0001$ ), females ( $p=0.025$ ), and those with a history of flexion contracture (0.65% vs 0.22%,  $p=0.005$ ), hip dislocation (24.0% vs 18.0%,  $p<0.001$ ), and spine conditions (4.8% vs 2.7%,  $p<0.001$ ) had significantly higher rates of PNI. In-hospital complications associated with PNI included postoperative hematoma (2.6% vs. 1.2%,  $p<0.0001$ ), postoperative seroma (0.75% vs. 0.30%,  $p=0.011$ ), superficial wound dehiscence (0.65% vs. 0.23%,  $p=0.008$ ), and postoperative anemia (36.1% vs. 32.0%,  $p=0.007$ ). Multivariate analysis demonstrated that a history of preexisting spine condition (aOR: 1.7, 95%-CI: 1.3-2.4,  $p<0.001$ ), prior dislocation (aOR 1.5, 95%-CI: 1.3-1.7  $p<0.001$ ), postoperative anemia (aOR 1.2; 95%-CI: 1.0-1.4,  $p=0.01$ ) and hematoma (aOR 2.1; 95%-CI: 1.4-3.2,  $p<0.001$ ) were associated with increased risk for PNI. Once confounders were accounted for, sex and medical comorbidities were no longer significant risk factors.

**DISCUSSION:** This study identified preexisting spine conditions, prior hip dislocation, and flexion contracture as risk factors for postoperative PNI following rTHA. Orthopedic surgeons may use this information to guide their discussion of PNI following rTHA, especially in high-risk patients.

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