Distal Peripheral Neuropathy after Open and Arthroscopic Shoulder Surgery: An Under-Recognized Complication

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HYPOTHESIS: Shoulder surgery places patients at risk for distal peripheral neuropathy (DPN) due to surgical positioning, upper extremity manipulation, dependent swelling, and sling immobilization. We hypothesized that DPN is a prevalent, yet often overlooked, complication following anatomic total shoulder arthroplasty (TSA), reverse shoulder arthroplasty (RSA), and arthroscopic rotator cuff repair (RCR).

METHODS: A retrospective case series was performed over a two-year period. Four fellowship-trained shoulder surgeons performed 57 TSA, 87 RSA, and 758 RCR. The primary outcome measure was the diagnosis of DPN, defined as carpal tunnel syndrome (CTS), cubital tunnel syndrome (CubTS), ulnar tunnel syndrome, and distal radial sensory neuropathy. The diagnosis of DPN was made based on subjective symptoms of numbness, tingling, and/or weakness in the appropriate nerve distribution with confirmatory physical examination and/or nerve conduction velocity studies. Patient demographics, workers compensation claims, onset of symptoms, duration of symptoms, resolution of symptoms, and treatment modalities were recorded. Mean follow-up was 21 months for TSA, 15 months for RSA, and 12 months for RCR. Descriptive statistics were calculated.

RESULTS: Post-operatively, 10.5% of TSA, 9.2% of RSA, and 3.4% of RCR patients were diagnosed with DPN. The incidence of DPN was significantly higher for shoulder arthroplasty (TSA/RSA) compared to RCR, but there was no difference between the types of arthroplasty. Patient age, sex, and workers compensation claim did not correlate with DPN. The most common form of neuropathy was CubTS/CTS for TSA, CubTS for RSA and CTS for RCR. After non-surgical treatment, complete symptom resolution occurred in 50% of TSA patients at a mean of 197 days, 50% of RSA patients at a mean of 255 days, and 65% of RCR patients at a mean of 129 days. However, 17% of TSA patients with DPN, 13% of RSA patients with DPN, and 12% of RCR patients with DPN required surgical treatment of their neuropathy. Eighty percent of the patients undergoing surgical decompression had complete resolution of symptoms.

DISCUSSION/CONCLUSION: Patients undergoing TSA, RSA, or RCR are at risk for postoperative DPN and should be counseled about DPN as a potential complication of surgery. While the majority of DPN resolves post-operatively, a subset of patients will require surgical decompression.

LEVEL OF EVIDENCE: Level IV.