

## Does Reverse Total Shoulder Arthroplasty for Proximal Humerus Fracture Portend Poorer Outcomes Than for Elective Indications?

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**Purpose:** The number of reverse total shoulder arthroplasties (RTSAs) performed annually has increased as indications have expanded beyond rotator cuff arthropathy to include treatment of complex proximal humerus fractures. No studies exist comparing clinical, functional, and radiographic outcomes of RTSA for acute fracture versus degenerative conditions. This study was designed to investigate this comparison. We hypothesized RTSA for acute fracture would result in worse clinical outcomes compared to elective RTSA.

**Methods:** A prospectively collected database was queried for patients undergoing RTSA between 2007 and 2016. Patients were sorted based on indication for RTSA: treatment of acute proximal humerus fracture versus “elective” degenerative conditions of the shoulder. Baseline demographics, surgical data, intra- and perioperative complications, as well as clinical, functional, and radiographic outcomes were collected. Proximal humerus fractures were classified according to the OTA/AO Fracture and Dislocation Compendium. Collected functional outcomes included the Constant Score, Simple Shoulder Test (SST), American Shoulder and Elbow Surgeons (ASES) Score, University of California Los Angeles (UCLA) Score, and the Shoulder Pain and Disability Index (SPADI). Only patients with minimum 2 years follow-up were included. Outcomes were compared between the Fracture and Elective groups.

**Results:** 1984 patients met inclusion criteria (1876 in the Elective group and 108 in the Fracture group). The Fracture group consisted of six 11A (6%), 37 11B (34%), and 65 11C (60%) proximal humerus fractures. The Fracture group was older, female-dominant, and less likely to have had prior ipsilateral shoulder surgery ( $P < 0.001$ ). RTSA for fracture was associated with a longer hospital stay (mean 3.7 vs 2.6 days,  $P < 0.001$ ) and greater intraoperative blood loss (mean 298 vs 234 mL,  $P < 0.001$ ). The overall incidence of postoperative adverse events was 7.1% in the Elective group versus 4.6% in Fracture group ( $P = 0.437$ ). Functional outcomes did not differ beyond 1 year, or at mean final follow-up greater than 40 months.

**Conclusion:** Despite differences in patient demographics, the outcome and complication profiles are similar amongst patients undergoing RTSA for acute proximal humerus fracture versus those indicated for treatment of degenerative conditions of the shoulder. Functional outcomes after RTSA for acute fracture and elective indications are not significantly different at 1-year follow-up.