

Patient-Reported Outcomes Comparison of Open Reduction and Internal Fixation Versus Reverse Total Shoulder Arthroplasty for the Treatment of 3 and 4-Part Proximal Humerus Fractures in Patients >55 Years Old

*Lukas Oren Foster, MD; Abrianna Robles, BS; Harin Bhavin Parikh, MD; Adam Gabriel Wright-Chisem, MD; Christian Blough, MD; Michael Stone, MD; Milton Thomas M. Little, MD
Cedars-Sinai Medical Center, Los Angeles, California, UNITED STATES*

Purpose: The purpose of this project was to compare functional and surgical outcomes between open reduction and internal fixation (ORIF) and reverse total shoulder arthroplasty (rTSA) for the treatment of 3 and 4-part proximal humerus fractures in patients greater than 55 years old.

Methods: This study was a single-site, retrospective review in which CPT codes were used to capture all patients who underwent ORIF or rTSA for a 3 or 4-part proximal humerus fracture from January 2018 to December 2021. To be included in the study, patients must have been 55 years or older at the time of injury and have sustained a 3 or 4-part proximal humerus fracture treated with ORIF or rTSA. The primary outcome was comparison of PROMIS (Patient-Reported Outcomes Measurement Information System) scores at all time points of follow-up from 6 weeks to 1 year. Secondary outcomes included visual analog scale (VAS) scores, range of motion (ROM), rates of revision surgery, hardware failure, and radiographic complication such as malunion or nonunion. We compared demographic variables of interest for the rTSA and ORIF surgery patients using t test for continuous variables and χ^2 tests, or Fisher exact tests where appropriate, for categorical variables. Two sample t tests were used to assess significance for PROMIS, VAS, and ROM outcomes.

Results: 106 patients met inclusion criteria. 52 patients underwent ORIF and 54 underwent rTSA. Patients who underwent ORIF were significantly younger than those who received rTSA with mean ages of 68 and 77 years, respectively. There was a significant difference between number of fracture parts between groups, with 3-part fractures more likely to receive ORIF and 4-part fractures more likely to receive rTSA. The ORIF group had significantly higher rate of malunion (13.5% vs 1.9%). There was no statistically significant difference in rates of reoperation between the 2 groups. ORIF patients had significantly better forward flexion (84° vs 69°) and external rotation (38° vs 20°) at 6 weeks, better abduction (90° vs 60°) at 12 weeks, and better external rotation (49° vs 23°) at 1 year postoperatively. There was no significant difference between treatment groups in PROMIS scores or VAS scores at any time point of follow-up.

Conclusion: This study suggests treatment of 3 and 4-part proximal humerus fractures in patients over 55 years old with either ORIF or rTSA provides similar outcomes with the exception of ORIF treatment providing better early shoulder abduction, forward flexion, and external rotation ROM.