No Difference in 10-Year Survivorship of Reverse Total Shoulder Arthroplasty Versus Hemiarthroplasty for Proximal Humeral Fracture

Rachel Ranson, DO*; Philip M. Parel, BS; Jeffrey Y. Wang, BS; Amil Raj Agarwal, BA; Theodore Quan, MD; Zachary R. Zimmer, MD; Edward G. McFarland, MD; Umasuthan Srikumaran, MD*

Purpose: For patients with operative proximal humerus fractures (PHFs) that are not amenable to open reduction and internal fixation, shoulder arthroplasty is indicated. Historically, hemiarthroplasty (HA) was the preferred choice, but the increasing utilization of reverse total shoulder arthroplasty (RTSA) has led to improved patient outcomes, comparatively. However, there is a paucity of literature that assesses the long-term implant survivorship between HA and RTSA. Therefore, the purpose of this study was to (1) compare the 10-year survivorship of HA and RTSA for the operative management of PHF and (2) identify differences in their revision etiologies.

Methods: Patients who underwent primary RTSA and HA for PHF were identified using the national administrative claims database. RTSA patients were propensity-score matched by age, gender, and Charlson Comorbidity Index (CCI) to the HA cohort in a 1:4 ratio. The 10-year cumulative incidence rate for all-cause revision and individual indications for revision (periprosthetic joint infection [PJI], dislocation/instability, mechanical loosening, periprosthetic fracture [PPF], and stiffness) was determined using Kaplan-Meier survival analysis. Hazard ratios (HRs) and corresponding 95% confidence intervals (CIs) for all-cause revision and the separate indications were conducted using Cox proportional hazard modeling.

Results: 9847 patients undergoing RTSA and 3626 patients undergoing HA for PHF were included in this study. The matched 10-year cumulative incidence of all-cause revision for RTSA was 4.3% and HA was 5.2%. There was no significant difference in the risk of 10-year all-cause revision (HR: 0.83; P = 0.143) between the cohorts. However, RTSA patients were less likely to undergo revision for mechanical loosening (HR: 0.58; P<0.001) than HA patients.

Conclusion: This study reveals comparable 10-year implant survivorship between RTSA and HA for PHF. While both procedures demonstrate similar overall revision rates, the lower risk of mechanical loosening in RTSA suggests its potential advantage, especially for higher-risk patients and younger patient populations, where avoidance of revision surgery is of particular importance.