Revision of Reverse Total Shoulder to Reverse Total Shoulder: A Retrospective Cohort Analysis

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INTRODUCTION: When reverse TSA (RTSA) fails, the options for salvage or revision may be limited. There is limited literature available on outcomes of revision RTSA for a failed primary RTSA. This study evaluates a series of revision RTSA to better define the reliability of using RTSA as a salvage option for failed RTSA. This study reports on outcomes of revision RTSA for failed primary RTSA as assessed by range of motion (ROM) and patient reported outcomes (PROs).

METHODS: An institutional shoulder arthroplasty database was queried for revision RTSA for failed primary RTSA performed between 2004 and 2020. The primary outcomes were postoperative improvement in active forward elevation (AFE) and active external rotation (AER) at most recent clinic follow-up. Secondarily, we evaluated indications for revision RTSA, Patient-Reported Outcomes (PROs), need for reoperation, and complications. The PROs evaluated included the American Shoulder and Elbow Surgery (ASES) score, Single Assessment Numerical Evaluation of the shoulder (SANE), and Visual Analog Scale (VAS) for pain. Improvement in ROM and PROs was evaluated with two-sample t-tests.

RESULTS:

61 shoulders that met inclusion criteria were available at average follow-up of 16.7 months (range 1-126). The average age was 64.2 years (SD 10.1) at the time of index RTSA and 67.0 years (SD 9.5) at the time of revision RTSA, with an average interval of 32.7 months (SD 35.8) between surgeries.

The majority of shoulders, 47, (77.1%) had multiple indications for revision RTSA. The distribution of those indications was: painful RTSA in 42 (69%), unstable RTSA in 25, (40.1%), septic loosening/infection in 22 (36.1%), loose humeral component in 12 (19.7%), loose glenoid component in 12 (19.7%), and fracture in 6 (9.8%).

There were 17 shoulders (27.9%) that experienced postoperative complications, and of those, 11 (18.0% of the study population) underwent subsequent operations. Of the 11: 7 (11.4%) underwent another revision RTSA; 1 ORIF for proximal humerus fracture, 1 revision to hemiarthroplasty, 1 resection arthroplasty, and 1 OR for anterior dislocation.

There was significant improvement in AFE (p=0.002) [pre-op 79.5°, post-op 99.9°], though post-op AFE ranged from 0° to 170°. There was also slight improvement in degrees of AER (p=0.013) [pre-op 24.26°, post-op 31.86°], with post-op AER ranging from -10° to 80°. Of the 61 total shoulders, 42 (68.9%) achieved at final follow up, AFE at or above 90 degrees. There were significant improvements for mean ASES score (p=0.006) [pre-op 38.4, post-op 56.0], but there was not a significant improvement in SANE (p=0.10) [pre-op 34.02, post-op 41.9]. Notably, subjects experienced significant reduction in pain VAS score (p=0.008) [pre-op 6.1, post-op 3.25].

DISCUSSION AND CONCLUSION:

Worldwide the utilization of RTSA is approaching 65% of all shoulder arthroplasties performed. There will of course be failures. Revision RTSA for failed primary RTSA is a complex surgical procedure dealing with multiple factors that led to the index procedure failure. This study revealed that revision RTSA can provide not only significant pain relief in patients with failed RTSA, but also improved post-operative ROM, with 69% achieving AFE greater than 90 degrees. However, patients should be advised of the likelihood that they may not regain AFE to the degree they had following a primary arthroplasty. Patients should also be counseled regarding the significant potential for complications and further reoperations following revision RTSA. Despite this potential for complications and reoperation, revision RTSA is a valid option for patients who have a failed primary RTSA.