Outcomes of Revision Reverse Total Shoulder Arthroplasty after Failed Anatomic Total Shoulder Arthroplasty

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Introduction: Reverse total shoulder arthroplasty (RSA) is the mainstay of treatment after failed anatomic total shoulder arthroplasty. The purpose of this study was to demonstrate patient reported outcomes and re-revision rates after RSA performed for failed anatomic total shoulder arthroplasty with an average follow-up period of greater than 5 years.

Materials and Methods: Between 2002-2022, 267 shoulders underwent revision RSA after failed anatomic total shoulder arthroplasty. From this cohort, 188 shoulders (70.41%) had minimum 1-year clinical follow-up and were included in outcomes analysis. Outcomes including ASES score, simple shoulder test, stability score, VAS scale, and patient satisfaction were collected both preoperative and postoperatively. Range of motion measurements were recorded including forward flexion, abduction, external rotation, and internal rotation. Demographics and surgical factors including implant characteristics, use of bone graft, and indication for revision RSA were included. Shoulders that underwent re-revision were identified, and risk factors for re-revision were analyzed. Statistical analysis including student's t-test, Chi-square analysis, logistic regression, and multivariate stepwise regression was performed.

Results: The average age at revision RSA was 67.97 years, and average follow-up period was 61.72 months. Rotator cuff failure (37.45%) and glenoid component loosening (40.82%) were the most common indications for revision RSA. There were improvements in ASES scores at 1-year follow-up (preoperative 30.41 $\pm$ 16.64, postoperative 66.04 $\pm$ 24.93, $p<0.001$). All range of motion parameters improved from the preoperative period to 1-year follow-up, with forward elevation improving from 69.51° to 128.66° ($p<0.001$). Abduction improved from 64.01° to 118.80° ($p<0.001$). External rotation improved from 26.54° to 38.32° ($p=0.009$). Internal rotation, which was graded on a 0-8 scale, improved from 3.06 to 3.92 ($p=0.005$). 28 patients (10.49%) underwent re-revision at a mean time of 33.3 months. Glenoid baseplate failure was the most common reason for re-revision (n=14, 5.2%). Use of a larger, load sharing glenosphere was associated with a lower risk of baseplate failure requiring re-revision (2.4% vs. 6.2%, $p<0.001$).

Conclusions: Revision RSA after failed anatomic total shoulder arthroplasty demonstrates significant improvements in patient-reported outcomes and range of motion at an average follow-up period of greater than 5 years. Baseplate failure is the most common reason for re-revision. Use of larger, load sharing glenospheres leads to lower rates of baseplate failure in this population.