

Comparison of Reverse Shoulder Arthroplasty and Total Shoulder Arthroplasty for Patients with Inflammatory Arthritis

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ABSTRACT

Introduction: Pathology of the glenohumeral joint is common in patients with inflammatory arthritis, and reverse shoulder arthroplasty (RSA) and anatomic shoulder arthroplasty (TSA) are both indicated for patients with this condition who require shoulder arthroplasty. Current literature indicates RSA is an effective treatment for solving glenoid bone erosion and rotator cuff insufficiency, two complications that commonly present as a result of inflammatory arthritis. However, acromion fractures and scapular spine stress fractures following RSA is common, especially in patients with inflammatory arthritis. Currently, no existing studies to our knowledge have directly compared the efficacy of RSA to TSA in patients with inflammatory arthritis. This study aims to investigate whether RSA or TSA may be superior in the treatment of patients with glenohumeral inflammatory arthritis.

Methods: A retrospective review of 86 patients with a history of inflammatory arthritis who were treated with RSA (n = 43) and primary TSA (n = 43) with a minimum of 2-year follow-up was performed. American Shoulder and Elbow Surgeons (ASES) scores, Simple Shoulder Test (SST) scores, Visual Analogue Score (VAS) for pain and function, active range of motion, patient self-rating of upper extremity normality (SANE), and patient self-rating of shoulder instability were collected preoperatively and at 2 years postoperatively. Indications for surgery, revision and complication rates were also reported.

Results: The study cohort consisted of an average age of 72.1 years (range, 31-92 years) and follow-up of 51.6 months (range, 22-159 months). Preoperative comparisons showed that patients treated with TSA were significantly younger ($p < 0.001$) and had a higher BMI ($p = 0.0458$). There were no differences between the two cohorts in preoperative stages of humeral head wear ($p=0.470$) and glenoid wear ($p=0.293$). Radiographic classification between the groups was different, with patients treated with RSA having more Ascending and Destructive shoulders ($p=0.002$). Those treated with RSA had a higher pre-operative active internal rotation ($p = 0.0458$) and those treated with TSA had a higher active elevation ($p = 0.002$). All cohorts demonstrated improvements in PROMs and ranges of motion; however, those treated with TSA demonstrated a greater post-operative final SST score ($p < 0.001$), VAS function ($p = 0.0347$), active elevation ($p = 0.0331$), active external rotation ($p < 0.001$), active internal rotation ($p = 0.005$), and SANE ($p = 0.0161$). Comparison of changes in outcome demonstrated that TSA patients had greater improvement in SST ($p = 0.009$), ASES score ($p = 0.0218$), VAS pain ($p = 0.0470$), active external rotation ($p = 0.01$), active internal rotation ($p < 0.001$), and SANE ($p = 0.0467$) (**Table 4**). Analysis of complication rates demonstrated no statistical difference between cohorts. There were four postoperative acromion fractures in the RSA group, and one in the TSA group. Analysis of revision rates demonstrated a higher percentage of revisions in those treated with TSA that were not statistically significant ($p = .6168$).

Conclusion: TSA led to improved recovery and ability to perform activities of daily living as suggested by the higher SST, VAS function and ASES scores. Patient satisfaction was also greater in those treated with TSA. However, there were more revisions the TSA group as well and longer-term studies are indicated to better determine whether TSA is superior to RSA in treatment of inflammatory arthritis of the shoulder.