

## **Clinical Outcomes of Revision to Anatomic Total Shoulder Arthroplasty**

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### **INTRODUCTION:**

Anatomic total shoulder arthroplasty (aTSA) remains the gold-standard for restoring shoulder function and relieving pain from end-stage glenohumeral arthritis. However, in the setting of failed hemiarthroplasty or aTSA, the appropriate utilization of revision to an anatomic versus reverse TSA remains unknown. This study aims to assess the outcomes of revision to aTSA.

### **METHODS:**

Following local institutional review board approval, all revision shoulder arthroplasty cases at a single institution by one of five fellowship-trained shoulder and elbow surgeons were reviewed. All presumed aseptic revision cases where the revision construct was an aTSA were included in this analysis. Attempts were made to contact each case for enrollment in the institution's shoulder registry and ascertain any cases requiring revision surgery. Patient-reported outcome measures: American Shoulder and Elbow Surgeons (ASES) score, single assessment numeric evaluation (SANE), VAS for pain, patient satisfaction and a validated scale of patient-reported shoulder range-of-motion were collected.

### **RESULTS:**

A total 28 cases underwent revision to aTSA at this institution between December, 2004 and December, 2019. These patients had an average age of 53.4 years (range: 23-66), 16 (57%) were male, and 14 (50%) were revised from a hemiarthroplasty while the remainder were revised from an aTSA. Seven (25%) cases required a return to the operating room at a mean 1.8 years. Three of these cases had been revised from hemiarthroplasty. Causes for return to the operating room included: glenoid loosening (1), infection (1), rotator cuff failure (3), and persistent pain of non-specific etiology (2). Ultimately, 6 (21%; 6/28) were subsequently revised to reverse TSA at a mean of 2 years (range: 1 month-5.7 years) postoperatively. Patients requiring re-operation were older (58.8 versus 51.4 years;  $p=0.06$ ). Of the patients managed with lesser tuberosity osteotomy, the return to the operating room was 7.1% (1/14) compared to 42.9% (6/14) for the remainder of the cohort ( $p=0.08$ ). Of the 21 patients with retained aTSA, 15 (71%) provided clinical follow-up at an average of 4 years (range: 1-8). These patients had a mean ASES score of 70.2 (range: 41-94), VAS pain score of 2.8 (range: 0-6), SANE score of 52.1% (range: 14-92), and satisfaction of 73% (range: 1-100).

### **DISCUSSION AND CONCLUSION:**

The outcomes of revision shoulder arthroplasty to an aTSA construct are varied. While in the appropriately indicated young patient high-quality results can be achieved, there is a high revision rate and highly variable patient-reported outcomes. Surgeons should be selective when recommending revision to an aTSA. Further study is needed to better predict successful outcomes in this patient population.