

## **Functional Deficiencies following Reverse and Anatomic Total Shoulder Arthroplasty: Detecting True Differences**

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### **INTRODUCTION:**

While studies to date have not detected differences in patient-reported outcome scores for the treatment of osteoarthritis (OA) between anatomic and reverse total shoulder arthroplasty, the shortcomings of these instruments may limit their ability to detect true differences in postoperative outcomes. This study aims to provide a more comprehensive analysis of the influence of surgery type and indication on patient-reported functional tasks following total shoulder arthroplasty (TSA).

### **METHODS:**

A single-institution shoulder arthroplasty registry was queried for patients undergoing shoulder arthroplasty for OA, rotator cuff tear arthropathy (CTA), or irreparable rotator cuff tear (RCT) with a minimum of two-year follow up. SANE score, composite ASES score, and the ability to perform the specific tasks in the ASES questionnaire, were compared by indication and arthroplasty type. To comprehensively assess the effect of arthroplasty type (aTSA vs. rTSA) on the ability to perform specific tasks postoperatively, a multivariate ordinal regression with potential confounding variables was performed.

### **RESULTS:**

Four-hundred-ninety patients (243 males; 49.6%) with an average age of 67.6 (95% CI: 66.8-68.4) years were available for review. There was no difference in ASES (64.6 vs. 65.3;  $p=0.64$ ), SANE (77.0 vs. 80.9;  $p=0.21$ ), or VAS pain (0.7 vs. 0.8;  $p=0.4$ ) for rTSA versus aTSA for OA, respectively. In the setting of OA, multivariate analysis confirmed rTSA utilization as an independent predictor of worse back washing / strapping bra (OR=1.8;  $p=0.03$ ) and reaching 10 pounds above the shoulder (OR=1.8;  $p=0.05$ ) in treating OA. Patients treated for CTA or RCT had worse postoperative SANE ( $p=0.003$ ), satisfaction ( $p<0.001$ ), and VAS pain ( $p=0.02$ ) than rTSA for OA. Except for performing usual sport and washing behind the back, patients with CTA or RCT indications experienced greater difficulty with all tasks compared to patients with OA in the setting of treatment with rTSA ( $p<0.009$ ).

### **DISCUSSION AND CONCLUSION:**

This analysis provides a deeper understanding of functional outcomes following shoulder arthroplasty. While composite patient-reported scores indicate similar outcomes between rTSA and aTSA for the treatment of OA, nuanced assessment of functional tasks demonstrates notable differences in patients' ability to perform specific tasks, particularly those requiring behind-the-back dexterity or lifting objects above shoulder height.