

## **Does Implant Cost Influence Patient-reported Outcomes after Reverse Total Shoulder Arthroplasty? A Retrospective Cohort Analysis of 123 Patients**

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**INTRODUCTION:** Healthcare in the United States is moving towards implementing more high value care delivery strategies. In healthcare, value is defined as the ratio of the change in patient-reported outcome (PRO) scores to the cost of care delivered. Reverse total shoulder arthroplasty (RTSA) is a commonly performed orthopaedic procedure with a variety of implants and variable costs. The purpose of this study was to determine if there is a relationship between the cost of implants for TSA and the change in one-year postoperative PROs.

**METHODS:** A patient-reported outcome measure (PROM) database was assessed for all primary RTSA procedures performed from 2018-2022. Any patient that was missing PROs at any time point was excluded. In addition, patients who underwent revision surgery or any other shoulder surgery during the first year postoperatively were excluded. Implant cost was extracted from the institution's chargemaster database. The PROMs used in this study consisted of American Shoulder and Elbow Surgeons (ASES) score and the Single Assessment Numeric Evaluation (SANE). Patients were also assessed with distribution-based ASES and SANE minimum clinically significant difference (MCID) scores. Spearman correlations and independent t-tests were used in analysis.

**RESULTS:** A total of 123 RTSA patients were included. The average age was  $72.0 \pm 7.5$  years old, with most patients being female ( $n=70$ , 57.0%). The average BMI was  $31.4 \pm 6.1$ . Approximately half the patients were former smokers ( $n=65$ , 52.9%). All procedures were performed in an outpatient hospital setting. The MCID for ASES was +11.3 and was +13.3 for SANE, with ( $n=92$ , 74.8%) attaining the ASES MCID and ( $n=106$ , 86.2%) attaining the SANE MCID. The average cost of implants was  $\$9,115 \pm 2,288$ . The average one-year change in ASES was  $+23.8 \pm 22.6$ ,  $p=0.007$ . Average one-year improvement in SANE was  $+43.2 \pm 26.6$ . Change in ASES scores were not correlated with the cost of implants ( $r=0.05$ ,  $p=1.00$ ), while SANE scores were found to be weakly negatively correlated with implant costs ( $r=-0.27$ ,  $p=0.018$ ). There was no difference in implant cost for patients who met the ASES MCID or the SANE MCID and those who did not ( $p=0.468$ ,  $p=0.072$ , respectively).

### **DISCUSSION AND CONCLUSION:**

In primary RTSA procedures, there was no correlation between PROs and the cost of implants, however, SANE scores may decrease with increased implant costs. No difference found in the attainment of MCID by implant cost. Surgeons should be conscious of implant selection as more costly implants do not appear to positively influence patients' RTSA outcomes.