

Reverse Total Shoulder Arthroplasty in Patients Under 60: A Mid-term Analysis of Outcomes and Survivorship

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INTRODUCTION: Each year, the incidence of reverse total shoulder arthroplasty (RSA) is on the rise. This growth largely stems from expanding indications for RSA. While the procedure has been shown to consistently deliver positive outcomes in older populations, such as improved range of motion (ROM) and reduced pain with rare occurrences of revision surgery, its application in patients under 60 years of age introduces distinct challenges. As RSA becomes increasingly common in younger patients, it is essential to compare their outcomes to an older cohort to balance the advantages of early intervention against potential complications and the long-term durability of implants.

METHODS: A retrospective analysis was conducted on a total of 220 patients who underwent primary RSA with a minimum of 2 years of clinical follow-up. The procedures in this study were performed by 7 different surgeons at a single institution. These patients were subsequently categorized into a group under 60 years of age and over 60. Demographic and baseline variables were extracted from electronic medical records. Pre-operative and post-operative outcomes of ROM and strength were recorded. Patient reported outcomes (PROs) were obtained via phone call.

RESULTS: The group under 60 consisted of 50 patients with a mean age of 56.9 ± 4.6 years and a mean postoperative follow up of 4.9 ± 2.7 years. The group over 60 comprised of 170 patients with an average age of 71.2 ± 6.0 years and an average follow up of 4.5 ± 2.1 years. Alone, patients in both groups demonstrated significant improvement in all functional markers, including active ROM and strength in forward elevation (FE), external rotation (ER), and internal rotation (IR). When compared to patients over 60 years of age, the under 60 cohort had a statistically higher postoperative FE ROM (<60: 44° ± 25° vs >60: 39° ± 12°, p=0.048) and IR ROM (<60: sacrum vs >60: L5, p=0.035). Other values did not have a statistical difference. Of the 50 patients in the under 60 cohort, 6 patients experienced 6 complications (12.0%), with all resulting in revision at an average of 1.7 years after initial RSA. In the 170 patients over the age of 70, 6 patients had 6 complications (3.5%), with all having revision surgery. The under 60 cohort had a significantly lower implant survival rate, with a rate of 94.0% at 2-years, 85.9% at 5-years, and 85.8% at 10 years compared to 97.6% at 2-years, 96.7% at 5-years, and 94.9% at 10-years in the over 60 cohort (p=0.021).

DISCUSSION AND CONCLUSION:

Our study finds RSA to be both safe and effective in patients at or under 60 years of age when compared to a cohort over 60 years old. Yet, the complication rate in patients under 60 is over 3 times higher than the over 60 cohort. An early intervention yields important considerations: younger individuals often have heightened postoperative expectations due to increased demand for arm usage. Our under 60 cohort is likely more active in sports, work, or otherwise higher risk activities when compared to an older population. As the trend towards increasing utilization of RSA continues, we emphasize the importance of careful patient selection to ensure optimal outcomes.

Figure 1 Implant Survival Following Reverse Total Shoulder Arthroplasty

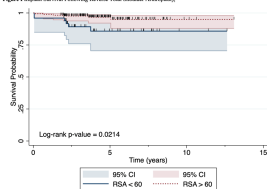


Table I: Comparison of Demographics		
Characteristic	Under age 60	Over age 60
Sex	20 male; 30 female	64 male; 106 female
Age (years)	56.9 ± 4.6	71.2 ± 6.0
Follow-up (years)	4.9 ± 2.7	4.5 ± 2.1
Body Mass Index (kg/m²)	31.8 ± 8.4	30.6 ± 6.9
AHA Physical Status	2.0 ± 0.5	2.7 ± 0.6
Charlson Comorbidity Index	2.0 ± 2.1	5.1 ± 2.2

Note: AHA, American Society of Anesthesiology

Table II: Comparison of Functional Outcomes		
Functional Outcome	Under age 60	Over age 60
External Rotation	30° ± 23°	30° ± 20°
Postoperative	40° ± 25°	39° ± 12°
Forward Elevation	90° ± 20°	90° ± 40°
Postoperative	132° ± 33°	138° ± 20°
Internal Rotation	Sacrum	L5
Postoperative	L5	L5
Strength ER	4/5	4/5
Postoperative	4/5	4/5
Strength FE	4/5	4/5
Postoperative	5/5	5/5
Strength IR	4/5	4/5
Postoperative	5/5	5/5

Note: ER, external rotation; FE, forward elevation; IR, internal rotation

Table III: Comparison of Patient Reported Outcomes		
Patient Reported Outcome	Under 60 Score	Over 60 Score
Visual Analog Scale	2.2 ± 3.0	1.7 ± 2.3
AASEL score	78.9 ± 10.8	75.9 ± 22.1
SANE score	74.9 ± 10.8	81.5 ± 17.8
Single Shoulder Test	8.0 ± 3.3	7.7 ± 3.3

Note: AASEL, American Shoulder and Elbow Surgeons; SANE, Single Assessment Numerical Evaluation