Outcomes of Reverse Total Shoulder Arthroplasty in Patients Aged 50 and Younger: A Case Control Study

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INTRODUCTION: When approved by the FDA first in 2003, reverse total shoulder arthroplasty (RTSA) was initially indicated for the treatment of t of rotator cuff tear arthropathy and suggested to be used in patients only over the age of 70 years old. Since that time RTSA has proven to be utilized regardless of age in patients who have shoulder conditions with complex rotator cuff problems or bony deformities best treated by RTSA.RTSA however remains an unclear choice for younger patients due to questionable long-term durability considering workload and activity levels, high functionality, and expectations of this group of patients.

The purpose of the study was to report patient characteristics, assess clinical, radiographic outcomes and patient satisfaction as well as to discuss complications, reoperations and implant survival following RTSA in patients aged 50 and younger. The aim of the study is to compare clinical outcomes of patients aged 50 and younger who underwent RTSA, to a matched group of those aged 65 or older at the time of same surgery We hypothesized that the results in patients aged 50 or younger are going to be at least comparable to outcomes noted among a matched comparison group.

METHODS: This is an IRB-approved retrospective study. Between 2004 and 2021, 1239 primary reverse total shoulder arthroplasty procedures were performed at our institution by a single experienced surgeon. A cohort of 38 patients was identified using inclusion criteria which consisted of having undergone a primary RTSA procedure, age at surgery less than or equal to 50 years old, and a minimum of two years of follow-up. Patients included in this study were matched 2:1 with a cohort who underwent RTSA at a minimum age of 65 years old. Patients were matched for procedure indication, gender, and glenoid morphology. Patient demographics were collected before surgery. Plain radiographs were obtained preoperatively, as well as postoperatively at ten days, one year and two years of follow up. Glenoid morphology using the Walch classification was determined with a preoperative CT scan. Humeral and glenoid component loosening as well as scapular notching were determined upon review of postoperative plain radiographs. All clinical data was collected before surgery and at most recent follow-up. Patient reported outcome measures (PROMs) were collected using surveys distributed at patient appointments. Range of motion (ROM) values were recorded in degrees using a hand held goniometer. Postoperative complications, such as nerve injuries, periprosthetic infections, fractures, component revisions, and shoulder instability were documented.

RESULTS: In the below 50 group there was 1 case of revision and survival was 97% at 61 months (range 51 to 69 months), whereas the over 65 group had one revision and survival of 98% (range 46 to 58 months). Walch classifications A1 and A2 were the two most prevalent types in both cohorts - 28.12% (n = 9) and 21.88% (n = 7) in the ≤50 group and 18.18% (n = 8) and 40.91% (n = 18) in the ≥65 respectively. The main diagnosis in the ≤50 group and the ≥65 group was osteroarthritis with significant bone loss in 53% and 70% respectively. The ≤50 group experienced an overall complication rate of 7.9% (n = 3), while the ≥65 group demonstrated a complication rate of 2.5% (n = 2). Additionally, 12 (32%) of the ≤50 group and 11 (14%) of the ≥65 group demonstrated postoperative notching. Patients in both groups had significant improvement in range of motion from preoperative to postoperative measures and compared to each other. The magnitude of improvement from preoperatively to postoperatively for both groups and in comparison to each other was the same for the VAS for pain, satisfaction and all of the PROM's.

DISCUSSION AND CONCLUSION: The study shows that clinical outcomes of patients aged 50 and younger who underwent RTSA are comparable to those of a matched cohort with similar diagnosis at the age of 65 and over. RTSA proves to be a safe and effective procedure for those aged 50 and younger but longer term studies are needed to determine the long term survival and function in patients in this age group.