Outcomes of Anatomic Versus Reverse Shoulder Arthroplasty for B2 & B3 Glenoids with an Intact Rotator Cuff: An Updated Systematic Review and Proportional Meta-Analysis

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INTRODUCTION:
Glenoid erosions have been shown to influence outcomes following shoulder arthroplasty. In particular, Walch type B2 and B3 glenoids pose significant challenges due to the severity of the glenoid deformity, retroversion and posterior subluxation. Currently, it is unclear whether anatomic total shoulder arthroplasty (ATSA) or reverse total shoulder arthroplasty (RTSA) produces better outcomes. The purpose of this systematic review was to examine the clinical and functional outcomes of anatomic and reverse shoulder arthroplasty in patients with B2 or B3 glenoids and preserved rotator cuff musculature.
METHODS:
A comprehensive literature search of MEDLINE, EMBASE, and COCHRANE library was performed from the database inception through November 12, 2023. Studies were eligible for inclusion if they reported postoperative outcome measures following primary ATSA or RTSA in patients with B2 or B3 glenoid morphology and intact rotator cuff musculature.
RESULTS:
There were 36 studies included in the final analysis. With regards to ATSA, eccentric reaming, posterior augmented glenoids and non-corrective reaming were the surgical techniques used, with eccentric reaming being the most common. The mean active range of motion (ROM) improvements for patients undergoing ATSA and RTSA were 44º and 46º in flexion, 29º and 24º in external rotation, and 55º and 54º in abduction, respectively. Regarding patient reported outcomes, ATSA and RTSA demonstrated similar improvements in ASES, Constant and VAS scores. The pooled complication rate for ATSA was 8% (95%CI, 4.7%-11.4%) and for RTSA was 4% (95%CI, 2.8%-6.9%). For revision rates, ATSA had a pooled rate of 5% (95%CI, 3.3%-7.0%) whereas RTSA had a revision rate of 2% (95%CI, 1.1%-3.8%). No significant differences were found between ATSA and RTSA for any other outcome.
DISCUSSION AND CONCLUSION: ATSA and RTSA effectively improved range of motion and patient-reported outcomes in patients with Walch B2 and B3 glenoids. However, ATSA had a 2x higher complication rate (8% vs 4%) and a 2x higher revision rate (5% versus 2%) as compared to RTSA. Based on the available evidence, both ATSA and RTSA are viable options in the surgical management of patients with B2 and B3 glenoids. However, ATSA may be associated with a slightly higher complication and revision rate.