Clinical and Radiographic Outcomes of Revision to Reverse Shoulder Arthroplasty with an Augmented Baseplate in the Setting of Glenoid Bone Loss

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INTRODUCTION: In the setting of revision shoulder arthroplasty, glenoid deformity and bone loss is commonly confronted, especially in the setting of glenoid component loosening and osteolysis. Failing to address this in the setting of revision arthroplasty can result in over-medialization of the joint line, compromise glenoid baseplate fixation, or result in significant variation in baseplate inclination or version. A 17% glenoid baseplate mechanical failure rate has been shown in patients that underwent a revision to reverse (RSA) with a nonaugmented baseplate; baseplate failures occurred early, with 12.3% revision rate at 1 year. No prior work has evaluated the clinical and radiographic outcomes of baseplate augments to address bone loss in the setting of revision to RSA The purpose of this study is to assess early clinical and radiographic outcomes of an augmented baseplate in revision to RSA.

METHODS: This was a retrospective cohort study that reviewed all patients who underwent a revision to RSA with an augmented baseplate (half- or full-wedge) from a single manufacturer between 2017 and 2021 with minimum 1 year follow up. Radiographic and clinical outcomes were assessed. Outcome measures collected included range of motion, American Shoulder and Elbow Surgeon (ASES) score, Single Alpha Numeric Evaluation (SANE) score, and Visual Analog Pain Score (VAS).

RESULTS: Revision to RSA with a baseplate augment was performed in 25 patients (12 half-wedge and 13 full-wedge). Mean age at time of surgery was 68.2 ± 8.9 years and 15 patients (60%) were male. Mean follow up was 2.4 ± 1.2 years. Fifteen patients underwent anatomic total shoulder arthroplasty (aTSA) to RSA, 8 patients underwent hemiarthroplasty to RSA, and 2 patients underwent revision RSA to RSA. There was statistically significant improvement in mean forward elevation (97.6 to 146.0, $p < 0.001$) and external rotation (26.6 to 40.5, $p = 0.002$) as well as ASES (36.5 to 73.5, $p < 0.001$), SANE (30.1 to 70.0, $p < 0.001$), and VAS (6.2 to 2.4, $p < 0.001$) scores. Intraoperative complications included two greater tuberosity fractures (8%). Postoperatively, one patient had radiographic evidence of baseplate failure and underwent subsequent revision to hemiarthroplasty (4%). Two cases were revised for instability (8%). There were two periprosthetic humerus fractures after falls (8%), of which one underwent open reduction internal fixation (ORIF). There were no acromial stress fractures in this cohort. There were no subsequent reoperations for infection.

DISCUSSION AND CONCLUSION: In the setting of glenoid bone loss and revision arthroplasty to RSA, baseplate full and half-wedge off the shelf augments appear to provide favorable short-term clinical and radiographic outcomes with a low rate of baseplate failure (4%) at mean 2.4 year follow up.