Anatomic Total Shoulder Arthroplasty for Glenohumeral Arthritis with Posterior Glenoid Bone Loss: Minimum 5-Year Clinical and Radiographic Outcomes Using a Posteriorly Augmented Glenoid Component

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INTRODUCTION: A number of techniques may be employed to treat posterior glenoid bone loss when performing anatomic total shoulder arthroplasty (aTSA), including the use of a posteriorly augmented glenoid component. The purpose of this study is to report the minimum 5-year clinical and radiographic outcomes of patients undergoing aTSA with the use of a posteriorly augmented, all-polyethylene, stepped glenoid component.

METHODS: Thirty-five shoulders underwent aTSA using a posteriorly augmented, all-polyethylene, stepped glenoid component for the treatment of posterior glenoid bone loss. Clinical outcomes included range of motion (ROM), Visual Analog Scale (VAS) pain, and patient-reported outcomes (PRO) scores. Radiographs (XR) and computed tomography (CT) scans were obtained pre- and postoperatively to measure glenoid morphology, retroversion, central peg osseous integration (CPOI), Lazarus scores, and Yian scores. Postoperative clinical outcomes, CPOI, and Lazarus scores were measured at 2- and 5-year follow up. Yian scores were measured via CT scan obtained at minimum 5-year follow-up. Kaplan-Meier survival analysis was calculated.

RESULTS: Two patients experienced prosthetic instability requiring revision, leaving 33 shoulders with an average follow up of 6.6 years. Average preoperative glenoid retroversion was 21.6˚. A significant improvement in pain, ROM, and PROs was noted between preoperative and minimum 5-year postoperative values. Additionally, VAS pain, American Shoulder and Elbow Surgeons (ASES), and Quick Disabilities of the Arm, Shoulder, and Hand (DASH) scores were noted to improve between minimum 2-year and 5-year follow up, however, no difference in ROM was noted between these timepoints. The average Lazarus and Yian scores at final follow up were 0.73 and 2.6, respectively. An increase in Lazarus score and decrease in CPOI was noted between 2- and 5-year follow up. Finally, a significant correlation was noted between VAS pain scores and both Lazarus and CPOI scores, however, no correlation was found between radiographic outcomes and PROs at final follow up.

DISCUSSION AND CONCLUSION: Mid-term results of posteriorly augmented, stepped glenoid components for the treatment of posterior glenoid bone loss in the setting of aTSA demonstrate sustained improvements in clinical outcomes with low rates of radiographic loosening. Continued improvement in pain and function, as well as a minor progression of radiographic osteolysis, may be expected between 2- and 5-year follow up. Additionally, the severity of radiographic loosening appears to be correlated with patient pain levels at greater than 5-years postoperatively.