Journal of Shoulder and Elbow Surgery

Early Clinical and Radiographic Outcomes of Anatomic Total Shoulder Arthroplasty with a Bi-convex Posterior Augmented Glenoid for Patients with Posterior Glenoid Erosion: Minimum 2-Year Follow-Up

Grant E. Garrigues, MD, Ryan J. Quigley, MD, PhD, Peter S. Johnston, MD, Edwin Spencer, MD, Gilles Walch, MD, Lionel Neyton, MD, James Kelly, MD, Mark Schrumpf, MD, Robert Gillespie, MD, Benjamin K. Sears, MD, Armand Hatzidakis, MD, Brian Lau, MD, the PerFORM Investigators

Abstract

Background

Glenoid bone loss in anatomic total shoulder arthroplasty (aTSA) remains a controversial and challenging clinical problem. Previous studies have shown high rates of glenoid loosening for aTSA in shoulders with retroversion, posterior bone loss, and posterior humeral head subluxation. This study is the first to present minimum two-year follow-up data of an all-polyethylene, biconvex augmented anatomic glenoid component for correction of glenoid retroversion and posterior humeral head subluxation.

Methods

This study is a multi-center, retrospective review of prospectively collected data on consecutive patients from 7 global clinical sites. All patients underwent aTSA using the biconvex posterior augmented glenoid (PAG). Inclusion criteria were: Preoperative computed tomography (CT) scan, minimum 2-years since surgery, pre and minimum 2-year postoperative range of motion exam and PROMs. Glenoid classification, glenoid retroversion, and posterior humeral head subluxation were measured from preoperative CT and XR, and postoperative XR. Statistical comparisons between pre- and postoperative values were performed with a paired t-test.

Results

86 of 110 consecutive patients during the study period (78% follow-up) met the inclusion criteria and were included in our analysis. Mean follow-up was 35 ± 10 months with a mean age of 68 ± 8 (range 48 to 85) years. Range of motion statistically improved in all planes from pre- to postop. VAS improved from 5.2 preop to 0.7 postop, SANE from 43.2 to 89.5, Constant from 41.8 to 76.9, and ASES from 49.8 to 86.7 (all $p < 0.0001$). Mean glenoid retroversion improved from 19.3° to 7.4° ($p <0.0001$). Posterior subluxation improved from 69.1% to 53.5% and posterior decentering improved from 5.8% to -3.0% ($p<0.0001$). There was one patient with both a prosthetic joint infection and radiographic glenoid loosening that required revision. 79/86 had a Lazarus score of 0 (no radiolucency seen about peg or keel) at final follow-up.

Conclusions

This study shows that at minimum 2-year follow-up, a posterior-augmented all-polyethylene glenoid can correct glenoid retroversion and posterior humeral head subluxation. Clinically, there was significant improvement in both ROM and PROMs.

February 10, 2022