The Effect of Glenoid Morphology on Outcomes of Total Shoulder Inlay Arthroplasty: Prospective Comparison of Walch Type A And B Glenoids

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DISCLOSURES

LAV- Consultant CONMED

JWU- Royalties from Smith & Nephew Corporation, Consultant Med Shape Corporation, and Arthrosurface Corporation.

JEZ- Consultant Arthrosurface Corporation

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Total Shoulder Arthroplasty (TSA) has shown substantial clinical benefits in patients with advanced glenohumeral arthritis. Reproducible results have been reported in patients with symmetric glenoid wear patterns; however, there is no consensus on the treatment of abnormal glenoid morphology. With the introduction of a wider arthroplasty spectrum, new procedures emerged that may provide answers to existing treatment challenges.
The purpose of this study was to prospectively compare patient reported outcomes (PRO) and complications of Walch Type A versus Type B glenoids following the treatment with total shoulder inlay arthroplasty using non-spherical humeral head resurfacing and inlay glenoid replacement. We hypothesized that there would be no difference in outcomes between Type A and B.
Methods

The preoperative Walch glenoid classification was determined on axillary radiographs by three reviewers to arrive at a consensus. The primary endpoint was based on PRO analysis between Type A and B glenoids comparing the improvement from preoperative to last follow-up.
Methods

PRO endpoints included Pain visual analogue scale (VAS), the Western Ontario Osteoarthritis of the Shoulder Index (WOOS), Short Form 36 (SF 36), American Shoulder and Elbow Surgeons Standardized Shoulder assessment (ASES), the Constant Score, and patient satisfaction. Perioperative parameters were collected. Postoperative radiographs were examined for periprosthetic radiolucency, component tilt, or subsidence.
Results

Forty-three patients aged 64.7 years (range 41-81) (28 males, 15 females) with A1 (n=30.3%), A2 (n=24.2%) or B1 (n=21.3%), B2 (n=24.2%) glenoids were included in this study. The average follow-up was 36.2 months (range 15 - 74). Type A and B patients showed no statistically significant differences in procedure time (p=0.6) and intraoperative blood loss (p=0.9885).
Results

There were no transfusions required in either group. The mean improvement in PRO scores showed no statistically significant differences between the groups on Pain VAS (p=0.95), WOOS Total (p=0.63), SF-36 (p=0.22), ASES (p=0.35), Constant (p=0.77), and patient satisfaction (p=0.47). There were no intraoperative complications or revision procedure performed in either group during the follow-up period.
Improvement from baseline to last follow-up for all patients was highly significant for all PRO (p<0.001). The mean Pain VAS improved from 8.1 to 2.3; WOOS total score from 27.0 to 77.1; SF-36 from 58.1 to 77.3; ASES from 28.8 to 75.7, and the Constant from 30.1 to 75.1.
Satisfaction at final follow-up was 9/10 indicating they were very satisfied with their results. Starting with 3 months postoperatively, the median and average improvements on the ASES score were better than the definition of a substantial clinical benefit in total shoulder arthroplasty (ASES > 37.4 points improvement).
Radiographic comparison of first postoperative to last follow-up showed no evidence of implant failure due to tilt, subsidence, or periprosthetic radiolucency.
Discussion And Conclusion

Total shoulder inlay arthroplasty is a less invasive option for patients with glenohumeral osteoarthritis and shows reliable clinical results at an average follow-up of 36 months. We found no difference in outcomes between Walch type A or B glenoids. Our results indicate that the procedure provides reliable clinical benefits and does not increase risks or complications for Type B glenoids.
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