Abstract

Reverse Total Shoulder Arthroplasty Compares to Anatomic Total Shoulder Arthroplasty for Primary Glenohumeral Osteoarthritis at 2 and 5 Years: A Propensity Matched Cohort Analysis

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Introduction

Anatomic total shoulder arthroplasty (TSA) and reverse total shoulder arthroplasty (RSA) are both effective treatment options for primary glenohumeral osteoarthritis (GHOA). While TSA has been the historical gold standard treatment for GHOA, the increased failure rates especially in the setting of glenoid bone loss, glenoid deformity and rotator cuff dysfunction have led surgeons to consider increasing utilization of RSA. When comparing TSA to RSA performed for GHOA, studies have demonstrated excellent outcomes, comparable complication rates and patient satisfaction; however, one recent study demonstrated higher patient satisfaction, better outcomes and lower revision rates with RSA at mid-term follow-up. The purpose of this study was to compare the early and mid-term clinical outcomes of TSA versus RSA performed for primary GHOA.

Methods

A retrospective review of prospectively collected data was performed. Patients were included if they received primary RSA or TSA for GHOA. Both cohorts underwent propensity matching in a 1:1 ratio based on age, sex and Walch classification of glenoid morphology. Complications, revisions, functional and patient-reported outcome scores were obtained at two and five years post-operatively with greater than 75% overall follow-up.

Results

After propensity matching the RSA and TSA cohorts by age, sex and Walch classification, there were 65 patients in each cohort. There were no significant differences in baseline patient factors or comorbidities and no significant differences in preoperative Walch classification of glenoid morphology. At 2 years, patient-reported outcome scores were not significantly different between RSA and TSA which was maintained at 5 years and greater than 95% of patients met MCID in both groups. At 2 years, the TSA group had statistically significantly better internal rotation compared to the RSA group (5.3 vs 3.2, $p<0.001$); however, at 5 years this difference was not maintained (4.7 vs 4.0, $p=.129$). The revision rate was higher for TSA (n=3) at 5 years compared to RSA (n=0), and there was no statistically significant difference in complication rate between RSA (n=4) and TSA (n=3).

Conclusion

This study demonstrates that both RSA and TSA may be performed for primary GHOA with excellent clinical results at both early and mid-term follow-up. Importantly, in both groups the majority of patients met minimal clinically important difference in patient-reported outcome measures. Range of motion is similar between the two groups with TSA demonstrating higher internal rotation early; however, this difference was not maintained at mid-term follow-up, and both RSA and TSA demonstrated comparable internal rotation. Overall complication rates were similar at midterm follow-up, though with different complication profile. Revision rates are higher in the TSA group at five years when compared to the RSA group. Longer term studies are needed to further elucidate the survivorship, revision rates and complications when comparing RSA and TSA for primary GHOA.