TITLE

A Unique Convertible Hybrid Glenoid Component in Anatomic Shoulder Arthroplasty: 5-7 Year Outcome Data

INTRODUCTION

Aseptic loosening of cemented, all-polyethylene glenoid components remains a major cause of failure of total shoulder arthroplasty (TSA). Hybrid glenoid components (with central metal or titanium pegs) have provided excellent short- and medium-term results related to glenoid component stability[1-3] with a recent study of 713 shoulders showing only 0.6% of TSAs with glenoid-related complications at a mean follow-up of 4.3 years[1]. Postoperative rotator cuff tear was the most common complication of this study, and cuff dysfunction and failure after TSA has been reported to be responsible for over 28% of TSA revisions[4]. Conversion of TSA to reverse shoulder arthroplasty (RSA), whether due to aseptic failure of all-polyethylene glenoid components or due to rotator cuff failure, can be made more challenging by glenoid component loosening and glenoid bone loss because of loosening or implant extraction. A unique convertible hybrid glenoid component has been designed which provides the benefit of glenoid fixation afforded by the hybrid design and which is also able to be converted to RSA without extraction of the central trabecular titanium peg as this central peg serves as the foundation for the glenoid baseplate and glenosphere. This report represents a minimum five-year follow study on this unique convertible hybrid glenoid component.

METHODS

This study was designed as a retrospective case series of prospectively recorded data. All patients with primary osteoarthritis treated with anatomic TSA utilizing a convertible hybrid glenoid component and having >5 years follow up were reviewed. Patients with previous shoulder surgeries, rotator cuff tears, a history of proximal humerus or glenoid fracture, or a history of septic arthritis were excluded. Preoperative and postoperative range of motion, radiographic parameters, and complications were reviewed. Postoperative patient reported outcomes were collected >5 years from surgery. Postoperative imaging was assessed for glenoid radiolucent lines and evidence of aseptic glenoid component loosening. Survivorship of the central trabecular titanium glenoid peg (whether as the original glenoid component or having been converted to RSA utilizing this central peg as the foundation of the glenoid base plate and glenosphere) was the primary outcome.

RESULTS

Ninety-four (94) patients met inclusion criteria with an average follow up of 5.98 years (range, 5-7 years). Four patients (4.3%) required reoperation: three (3.2%) had traumatic postoperative rotator cuff tears who underwent successful conversion to reverse TSA at an average of 43.1 months (range, 9-70 months) after index TSA, and one (1.1%) patient underwent removal of the glenoid component due to deep infection. All 3 conversions to RSA utilized the well-fixed central trabecular titanium peg as the foundation for the glenoid base plate and glenosphere, and the average time of revision surgery of TSA to RSA was 109 minutes (range 92-134 minutes)[5]. Central glenoid peg survivorship was 98.9%. There were notable clinical improvements observed in visual analog pain score, active forward elevation, and ASES scores. 96.4% of patients reported being “very satisfied” or “satisfied” with their clinical outcome.

DISCUSSION

This study represents the first mid-term clinical and radiographic report of a unique convertible hybrid glenoid component which provides the benefit of glenoid fixation afforded by the hybrid design and which is also able to be converted to RSA without extraction of the central trabecular titanium peg which serves as the foundation for the glenoid baseplate and glenosphere. The central trabecular titanium peg remains stable and well-fixed with survivorship of 98.9% at a minimum 5-year follow-up (average 5.98 years). When conversion to RSA is necessary due to rotator cuff failure, rather than extraction of the central glenoid peg with the potential of iatrogenic bone loss required with other hybrid glenoid designs, the central trabecular titanium peg is successfully used as a foundation for the glenoid base plate and glenosphere. Further longitudinal and large, comparative investigations with long-term results are required to validate these favorable mid-term results.

REFERENCES

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