SHOULDER AND ELBOW

Short-stem uncemented primary reverse shoulder arthroplasty

CLINICAL AND RADIOLOGICAL OUTCOMES

S. A. Giuseffi,
P. Streubel,
J. Sperling,
J. Sanchez-Sotelo

From Department of Orthopedic Surgery, Mayo Clinic, Rochester, Minnesota, United States

Short uncemented humeral stems can preserve humeral bone stock and facilitate revision surgery but may be prone to malalignment or loosening, especially when used in reverse total shoulder replacement (TSR). We undertook a retrospective review of 44 patients with a mean age of 76 years (59 to 92) who underwent primary reverse TSR with a short uncemented humeral stem. There were 29 females. The indications for joint replacement included cuff tear associated arthropathy (33), avascular necrosis (six), post-traumatic arthritis (two), and inflammatory arthritis (three). At a mean follow-up of 27 months (24 to 40), pain was rated as mild or none in 43 shoulders (97.7%). The mean active elevation improved from 54° (SD 20°) to 142° (SD 25°) and the mean active external rotation from 14° (SD 13°) to 45° (SD 9°). The outcome, as assessed by the modified Neer score, was excellent in 27 (61.3%), satisfactory in 15 (34.1%), and unsatisfactory in two shoulders (4.5%). Stems were well-positioned, without evidence of significant valgus or varus malalignment in 42 TSRs (95.5%). There was no radiological evidence of loosening of the humeral stem in any patient; 13 TSRs (29.5%) had evidence of proximal humeral remodelling and scapular notching was noted in three (6.8%).

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Reverse total shoulder replacement (TSR) has become increasingly popular in the treatment of rotator cuff-related arthropathy, irreparable rotator cuff tears, selected proximal humeral fractures, and failed shoulder replacement.1-3 While early studies showed relatively high rates of complications,4,5 better outcomes have been reported with newer designs and improved surgical technique.6 Many new designs have, however, been introduced with little information regarding their performance. It is critical, in TSR surgery, to analyse the results of new designs with close surveillance and follow-up.

Although cemented fixation of the humeral component is the traditional gold-standard for TSR,7-12 improvements in design and fixation have led to increasing use of uncemented humeral components. These offer the potential advantages of reduced operating time and avoid the need to remove cement at subsequent revision. Components whose surface allows bony ingrowth proximally may also be easier to remove at the time of revision surgery. Satisfactory uncemented humeral fixation has been reported using an anatomical TSR.13 Preservation of bone has become a major goal in TSR surgery. Short cementless stems have been introduced in an effort to use less native host bone, while still allowing the use of modular heads in anatomical TSR or humeral bearings in reverse TSR, as the known design features of the implant suggest. However, malalignment of the component or suboptimal ingrowth of bone might be more common when using a short stem. The more constrained nature of reverse TSR designs with a short stem could lead to poor rates of bone ingrowth. Currently, there is no information about the early outcomes and rate of complications associated with uncemented reverse TSR using a short stem. Therefore, the goal of this study was to determine the safety and early complication rate of reverse TSR using an uncemented short humeral stem.

Patients and Methods

After obtaining ethical approval, a retrospective review was conducted of patients who underwent primary reverse TSR with a short (83 mm long) uncemented humeral stem (‘Mini’ stem, Biomet Comprehensive Reverse System, Warsaw, Indiana) by the two senior authors (JWS, JSS) between June 2008 and November 2011. Minimum clinical and radiological follow-up was two years.

Clinical records were reviewed for the demographics of the patients including the