

Radial Head Replacement for Acute Fractures: A Study of Long-Term Outcomes

Thomas Carter, MBChB; Caroline D. Cristofaro, BS; Neil Ranjan Wickramasinghe, MBBS; Margaret M. McQueen, MD; Timothy O. White, MD, FRCS; Andrew David Duckworth, FRCS, MBChB, MSc, PhD
Edinburgh Orthopaedic Trauma, Edinburgh, United Kingdom

Purpose: The evidence for treatment of acute complex radial head fractures with radial head replacement (RHR) predominantly comprises short to midterm follow-up. The aim of this study was to report the long-term complications and patient-reported outcomes following RHR for acute complex fractures of the radial head.

Methods: We retrospectively identified from our single-center trauma database all skeletally mature patients over a 16-year period managed acutely for a complex fracture of the radial head with primary RHR. Electronic records were used to document postoperative complications, including prosthesis revision and removal. Patients were contacted to confirm complications and long-term patient-reported outcomes. The primary outcome measure was the QuickDASH (QD, an abbreviated version of the Disabilities of the Arm, Shoulder and Hand [DASH]). Secondary outcome measures included the Oxford Elbow Score (OES), EuroQol-5 Dimensions (EQ-5D), return to function, and treatment satisfaction.

Results: There were 119 patients with a mean age of 50 years (range, 16-94) and 63 (53%) were female. There were 102 fractures (85.7%) classified as Mason type III injuries (AO/OTA: 2R1 C2), with 28 injuries associated with a dislocation of the elbow (19 terrible triad injury) and 32 associated with a fracture of the proximal ulna. 11 patients had an isolated coronoid fracture and there were 3 Essex-Lopresti type injuries. Apart from 2 patients, all implants were uncemented, loose-fitting, monopolar prostheses, of which 86% (n = 102) were metallic and 14% were silastic (n = 17). 30 patients (25%) required revision surgery (n = 3) or prosthesis removal (n = 27) at a median interval of 7 months (range, 0-125), with 70% (21/30) of these occurring within the first year after implantation. 80% of patients (80/100; 19 deceased) were contacted at a mean of 12 years (range, 7.5-23.5). The median QD was 6.8 (interquartile range [IQR], 2.3-19.1), the median OES was 46 (IQR, 41-48) and the median EQ-5D was 0.8 (IQR, 0.4-1.0). Overall satisfaction was high with a median of 10 (IQR, 10-10). Median return to sport was 20 weeks (IQR, 12-30) and return to work was 6 weeks (IQR, 4-14). There was no significant difference in any outcome measure for those patients requiring revision or removal surgery (all P > 0.05).

Conclusion: This is the largest series in the literature documenting the long-term patient-reported outcomes after acute RHR. Despite a quarter of patients requiring further surgery, RHR is supported by positive long-term results for the treatment of complex radial head fractures. The peak incidence of prosthesis revision or removal occurs within the first year following implantation.