

Radial Head Replacement for Complex Unstable Fractures of the Radial Head

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Purpose: The optimal treatment for unstable radial head fractures needs to balance the risks of radial head excision (eg, instability), the potential complications of open reduction and internal fixation (ORIF) (eg, nonunion), and the possible complications associated with a radial head prosthesis. It is acknowledged that further data are needed to document the longer-term outcome for radial head replacement, in particular the rate and risk factors associated with further surgery for removal and/or revision. The aim of our study was to determine (1) the frequency of revision or removal following radial head replacement (primary outcome) for acute complex unstable radial head fractures, (2) the risk factors for prosthesis revision or removal, and (3) the functional outcome (secondary outcomes) after radial head replacement.

Methods: We identified from our prospective trauma database 119 patients over a 15-year period who were managed acutely for an unstable complex fracture of the radial head with primary radial head replacement. Demographic data, fracture classification, management, complications, subsequent surgeries and range of movement at final follow-up were recorded following retrospective clinical record review. The primary outcome measure was failure of the radial head replacement, defined by revision or removal of the prosthesis for any cause.

Results: There were 105 (88%) patients in the study cohort with a mean age of 50 years (range, 16-93) and 54% (n = 57) were female. There were 95 (90%) radial head fractures and 96% were a Mason type 3 or 4 injury. There were 98 associated injuries in 70 patients (67%). All implants were uncemented monopolar prostheses, with 86% metallic and 14% silastic. At a mean of 1.1 years (range, 0.3-5.5 years) after surgery, the mean Broberg and Morrey score was 80 (range, 40-99). The mean elbow flexion arc was 112° (range, 10°-140°; SD, 25°), and the mean forearm rotation arc was 156° (range, 0°-180°; SD, 38°). At a mean of 6.7 years following injury (range, 1.8-17.8) 29 (28%) patients had undergone revision (n = 3) or removal (n = 26) of the prosthesis. Independent risk factors of prosthesis removal or revision were silastic implant type ($P = 0.004$) and younger age ($P = 0.002$).

Conclusions: This is the largest series in the literature documenting the outcome following acute radial head replacement for complex unstable fractures of the radial head. We have demonstrated a high rate of removal or revision following radial head replacement, with lower age and silastic implants independent risk factors. Younger patients should be counseled regarding the increased risk of requiring further surgery following radial head replacement. Future work should focus on the long-term patient-reported outcome following these injuries.

- The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an "off label" use). For full information, refer to page 600.