

Radial Head Replacements for Elbow Trauma: Functional Outcomes and Complications

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Purpose: Radial head replacement is a common treatment for complex radial head and neck fractures, but there is a dearth of information about clinical outcomes. Our purpose was to review our experience with radial head arthroplasty for the treatment of complex elbow injuries.

Methods: 72 patients were identified in the trauma database of a large urban academic medical center. Data collected included: age, injury pattern, and operation type. Follow-up data included clinical elbow range of motion (ROM), pronation, and supination at 3 months, 6 months, and 12 months postoperative, and ROM at final follow-up. The following complications were recorded: development of heterotopic ossification and contracture, infection, posttraumatic arthritic changes, and reoperations for hardware removal or revision and contracture release. Subjects were grouped by severity of injury: those with isolated radial head fractures and those with associated fracture-dislocations. Data were analyzed using an independent t test.

Results: The average age of patients was 52.5 years. Mean length of follow-up was 12 months (range, 6-54 months). 26% had isolated radial head fractures and 74% had fractures with an associated elbow dislocation. At final follow-up, patients with a fracture-dislocation experienced an insignificant reduction in arc of elbow ROM compared to those with isolated fractures ($P = 0.865$). However, supination diminution was statistically significant between the fracture dislocation group ($67.13^\circ \pm 17.791^\circ$) and the isolated fracture group ($76.00^\circ \pm 7.368$) at final follow-up ($P = 0.012$) with a mean difference of 8.875° . Heterotopic ossification was the most common adverse finding, occurring in 23% of cases, 25% of isolated fractures and 23% of fracture dislocations. 5% of patients underwent removal of their radial head prosthetic due to infection or heterotopic bone formation. 83% of patients regained functional range of motion (30° - 130°). There were no other significant differences in complication rate, need for contracture release surgery, incidence of removal of hardware, or posttraumatic arthritic change on the capitellar side.

Conclusion: Radial head arthroplasty is a reliable procedure in both simple and complex radial head trauma with good clinical results. When treated with arthroplasty, radial head injuries function well and lead to good results. When performed for a radial head fracture in association with elbow dislocation, patients experience decreased supination motion. However, there is no difference in arc of elbow flexion, nor are there significant differences in complication rates.

Motion at Final Follow Up

