

Patient Outcomes Following Transolecranon Fracture-Dislocations

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Background/Purpose: Transolecranon fracture-dislocation occurs after a high-energy traumatic injury to the elbow. By definition, these fractures occur with a complex fracture through the olecranon that is accompanied with anterior translation of the forearm relative to the humerus. In the past, there have been only small case series describing this injury pattern. Based on current case series, patient outcomes after transolecranon fracture-dislocation are associated with low rates of reoperation and reasonable function. However, given the small size of these series, it is unknown how well patients actually recover from this injury. The purpose of this investigation is to describe fracture characteristics and assess patient outcome following transolecranon fracture-dislocations.

Methods: Patients with combined fracture-dislocations of the proximal radius and ulna (OTA 21 and all subgroups) from January 2005 through December 2014 were identified in our prospectively collected orthopaedic trauma registry. All radiographs were reviewed to identify patients with transolecranon fracture-dislocations that were treated at a single Level I trauma center. Patients were excluded if they died during their initial hospital course, had incomplete radiographs, or were skeletally immature. Medical records were reviewed for demographic data including age, gender, and mechanism of injury. Fracture pattern, associated fractures around the elbow, and soft-tissue injury were assessed on preoperative imaging and from the operative report. At final follow-up, range of motion (ROM), additional surgical procedures, and any complications were recorded. Final ROM was recorded after additional procedures to improve motion (capsular release, heterotopic ossification [HO] excision, etc). Radiographs at final follow-up were assessed for presence of HO and presence of joint degeneration using the Broberg and Morrey classification.

Results: During this period, there were 671 proximal radius and ulna fractures treated at our facility. 59 patients were identified as having a transolecranon fracture-dislocation. Four patients died during their hospital course and 17 patients had less than 1-year follow-up. The remaining 38 patients had a mean follow-up of 23 months (range, 12-117 months). There were 58% male patients with a mean age of 44 years (range, 19-77 years). The most common mechanism was motor vehicle accident (42%), followed by fall from height (24%) and ground level fall (13%). 14 patients had open injuries, with 3 Type 1 open fractures, 4 Type 2 open fractures, 5 Type 3A open fractures, 1 Type 3B open fracture, and 1 Type 3C open fracture. Nine patients had an associated radial head fracture, 27 patients had associated coronoid fracture, 5 patients had associated ligamentous injury, and 9 patients had associated distal humerus fracture. Mean time to radiographic union was 16 weeks (range, 7-48 weeks). At final follow-up, mean extension was 19° (range, 0-80) and mean flexion was 122° (range, 45-145) for a mean arc of motion of 102° (range, 0-130). Overall, 21 patients had a second operation whereas only 6 patients had isolated plate removal. Ten patients had nerve palsy (10 ulnar, 1 radial, and 1 median) and all underwent repeat surgery for nerve decompression. Five patients (13%) developed infection and required surgical ir-

rigation and debridement with a course of antibiotics. 23 patients developed HO, and 8 patients underwent HO excision. 17 patients developed radiographic arthrosis with the majority (14/17) having Grade 2 or 3 changes. Ultimately, two patients underwent elbow arthrodesis, one patient developed an ankylosed elbow, and one patient underwent total elbow arthroplasty.

Conclusion: Transolecranon fracture-dislocation is a devastating injury with high rates of postoperative complications. Additionally, we observed high rates of HO and posttraumatic arthrosis in our patient cohort. Based on our series, patients should be counseled on the possibility of restricted motion, additional surgery, and overall poor prognosis that occurs after these injuries.