

## Outcomes of Isolated Ulnar Diaphyseal Fractures

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**Purpose:** The primary aim of this study was to report outcomes and management-related complications following an isolated fracture of the ulnar diaphysis. The secondary aim was to identify patient, injury, and management-related factors associated with nonunion.

**Methods:** Over an 8-year period (2010-2018), 225 consecutive adult patients with an isolated ulnar shaft fracture were retrospectively identified from a trauma database. The median age was 43 years (range, 19-97) and 62% (n = 140/225) were male. 53% of the patients had 1 or more medical comorbidities. There were 28 fractures (12%) of the proximal-third of the diaphysis, 66 (29%) of the middle-third, and 131 (58%) of the distal-third. The majority were OTA type A fractures (n = 204/225, 91%). There were 57 (25%) patients managed operatively (<3 weeks post-injury), 2 (1%) managed with delayed fixation (3-6 weeks post-injury), and 166 (74%) managed nonoperatively. The primary short-term outcome was complications.

**Results:** The median follow-up was 4 months (range, 0.6-26). Complications following operative management included ulnar nerve injury (n = 1/57, 2%), superficial infection (n = 1/57, 2%), and deep infection (n = 1/57, 2%). Complications following nonoperative management included dermatitis (n = 2/166, 1%) and superficial infection (n = 1/166, 0.6%). Nonunion occurred in 12% of patients overall (n = 26/225). The following factors were associated with nonunion on univariate analysis: age  $\geq 65$  years (P = 0.009), female gender (P = 0.008), an increased number of comorbidities (P = 0.031), fractures of middle-third of the diaphysis (P = 0.015), and OTA type B2 fractures (P = 0.047). Although the nonunion rate was lower following primary operative management (n = 4/57, 7%) compared with nonoperative management (n = 21/166, 13%), this was not statistically significant (P = 0.333).

**Conclusion:** The majority of patients with an isolated ulnar diaphyseal fracture unite. Management-related complications are rare. Patients at risk of nonunion—based upon demographics, medical background or fracture characteristics—may benefit from targeted surgical fixation in order to reduce the rate of this complication.