

## Management and Outcomes of Distal Third Ulnar Shaft Fractures

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**Background:** Fractures of the distal one third of the ulnar shaft can lead to significant morbidity if appropriate healing or alignment is not achieved. Evidence regarding clinical and radiographic outcomes of these fractures, and therefore guidance on management, are quite limited. While prior investigations into the entire ulnar diaphysis suggest fracture stability is the cornerstone of management strategy, no study to date has focused exclusively on the distal third shaft. Therefore, the objective of the current study is to evaluate outcomes of all patients who were treated for a distal third ulnar shaft fracture at a single level 1 trauma center over the past 7 years.

**Methods:** After institutional review board approval was obtained, a retrospective database was designed using CPT codes to identify all operatively treated ulnar shaft fractures over a 7-year period. To identify nonoperative ulnar shaft fractures, the charts of all patients who had received a forearm radiograph in the orthopaedic hand clinic were reviewed. A distal third ulnar shaft fracture defined as a fracture within one-third, from the distal head of the ulna, the distance of the full length of ulna shaft and then compiled into one database. Inclusion criteria were skeletally mature patients >18 years old and the presence of an isolated distal third ulnar shaft fracture. Medical records and radiographs were reviewed for physical exam findings, mechanism of injury, return-to-work status, patient demographics, complications, and injury specifics (displacement, open vs. closed, angulation, as documented in clinic and surgical notes). Frequencies and means were calculated for the data to quantify and understand the efficacy of provided treatment with respect to clinical and radiographic success or failure.

**Results:** Fifty-six patients met inclusion criteria; forty-four were managed nonoperatively and 12 underwent surgical intervention. Patients who were treated operatively had significantly greater displacement on injury radiographs. Most patients treated nonoperatively had bridging callous on 3 of 4 cortices by their last follow up visit, while nearly all of patients treated operatively did. There was no significant difference between the two cohorts in VAS pain scores as reported at most recent follow up visits. There was a trend towards more complications in the operative group. Four nonunions (9.1%) occurred in the nonoperative cohort. There were no nonunions in the operative group. There were no identified factors in a logistic regression that were statistically significant predictors of nonunion.

**Conclusion:** Fractures of the distal third of the ulnar diaphysis have low rates of nonunion whether managed with or without surgery and both treatment modalities result in equivalent pain scores. For patients wishing to avoid surgery, nonoperative management can be trialed when fracture displacement is not excessive, if they are appropriately counseled that later conversion to surgery, is a possibility.