

### **Intra-Articular Distal Humerus Fractures: Clinical Results of Parallel Versus Orthogonal Plating**

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**Purpose:** Dual plating osteosynthesis is the standard treatment for OTA type 13-C distal humerus fractures. However, optimal plate position is debated. The purpose of this study is to evaluate dual plate positioning in such cases by comparing outcomes between patients plated in parallel (180°) and those plated orthogonally (90°) following open reduction and internal fixation (ORIF) of intra-articular distal humerus fractures.

**Methods:** A retrospective review of all OTA type 13-C intra-articular distal humerus fractures treated operatively by 3 different fellowship-trained orthopaedic trauma surgeons over a 5-year period was performed. In each case, patient demographics, injury information, and surgical management were recorded. Measured intraoperative outcomes included operative time and blood loss while postoperative outcomes included range of elbow motion, time to union of the distal humerus fracture, and development of complications (nonunion, infection, symptomatic hardware, and reoperation). Mayo Elbow Performance Index (MEPI) scores were also obtained for patients utilizing the functional information recorded in their latest clinical note. Data were analyzed using independent samples t tests, chi-squared tests, and Fisher's exact tests.

**Results:** Of the 111 eligible fractures treated during this time period, there were a total of 60 patients who met inclusion criteria. Mean follow-up among this cohort was 13.3 months. 44 patients (73.3%) had orthogonal dual plating, and 16 (26.6%) had parallel plating. Groups did not differ with respect to any demographic information, fracture type, or duration of follow-up. All fractures eventually went on to heal. 3 patients from the orthogonal cohort had hardware failure at the medial plate. Clinically, there were no significant differences in time to union, elbow arc of motion, or patient MEPI score. Further, there were no differences in complications. However, there was a higher incidence of prominent/mildly symptomatic hardware that did not require surgical removal among patients plated orthogonally ( $P = 0.04$ ).

**Conclusion:** Parallel and orthogonal plating following ORIF of distal humerus fractures with modern, contoured locking compression plates had similar outcomes in this study, although a higher rate of prominent hardware not requiring surgical removal was observed with orthogonal plating. Both techniques may be considered when deciding on dual plating technique for treating intra-articular distal humerus fractures.