

## Dual Mini-Fragment Plate Fixation for Neer Type-II and V Distal Clavicle Fractures

*Michael James Chen MD; Brett Peter Salazar BS; Julius A Bishop MD; Michael J Gardner MD*

Stanford, Palo Alto, CA, United States

**Purpose:** Contemporary methods for fixation of distal clavicle fractures have high reoperation rates for symptomatic implant removal. The authors describe their preferred technique and case series of patients with Neer Type-II and V distal clavicle fractures treated with dual mini-fragment plates using interdigitating screws placed into the distal segment.

**Methods:** An anterosuperior approach to the distal clavicle is performed, followed by reduction and provisional fixation of the fracture. When able, interfragmentary compression is obtained with a lag screw for Type-II patterns with an oblique fracture line and Type-V patterns with a large inferior fragment attached to the coracoclavicular ligaments. A 2.4-mm T or Y-shaped plate is applied to the superior surface of the distal clavicle with multiple locking screws placed into the distal fragment. A supplemental 2.0, 2.4, or 2.7-mm straight plate is cut to the appropriate length and contoured to the anterior surface. As many anterior to posterior screws as possible are placed into the distal fragment, "interdigitating" in an orthogonal fashion with the locking screws of the superior plate. Patients are allowed immediate use of the extremity for activities of daily living with a weight-lifting restriction. Restrictions are removed at 6 weeks post-surgery.

**Results:** Seven patients with distal clavicle fractures treated with dual mini-fragment plates were identified. Average age was 42 years. Average body mass index was 24.1. Five patients had Type-II fractures and 2 had Type-V fractures. All patients achieved union without loss of reduction or fixation. Average QuickDASH (an abbreviated version of the Disabilities of the Arm, Shoulder and Hand [DASH] questionnaire) score was 6.25. One patient underwent elective implant removal. There were no infections or wound problems. Average follow-up was 33 weeks.

**Conclusion:** Dual mini-fragment plates contoured to the anatomy of individual patients create a sound construct and offer the advantage of being lower profile compared with contemporary techniques. Interlocking screws in the distal fragment enhance stability to maintain reduction to healing.

