

Plate Fixation versus Nonoperative Treatment for Displaced Midshaft Clavicular Fractures: A Multicenter Randomized Controlled Trial

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Purpose: Operative treatment for clavicular fractures is now more popular than ever, despite varying results of previous studies. The aim of this study was to compare plate fixation with nonoperative treatment for displaced, midshaft clavicular fractures in terms of nonunion, adverse events, and shoulder function.

Methods: In this multicenter, prospective, randomized controlled trial, patients between 18 and 60 years with a displaced, midshaft clavicular fracture were randomized between nonoperative treatment and open reduction with internal plate fixation. The primary outcome was nonunion at 1 year. Other outcomes were secondary operations, arm function as measured with the Constant shoulder score and DASH (Disabilities of the Arm, Shoulder and Hand) score, pain, cosmetic results, and general health status. Outcomes were recorded at 6 weeks, 3 months, and 1 year following trauma.

Results: 160 patients were randomized. The incidence of nonunion was significantly higher in the nonoperative group (2.4% vs 23.1%, $P < 0.0001$), as was the incidence of nonunion for which secondary plate fixation was performed (1.2% vs 12.9%, $P = 0.006$). The rate of secondary operations was 10.7% in the operative group and 15.7% in the nonoperative group ($P = 0.47$). An additional 16.7% of patients in the operative group underwent elective plate removal. 19% of patients in the operative group had persistent loss of sensation around the scar. Constant and DASH scores did not differ between groups at all time points.

Conclusion: Patients with a diaphyseal fracture of the clavicle displaced more than one shaft width can be advised that plate fixation improves the chances the bone will heal, but is more likely to lead to a second operation, and does not improve shoulder function or general symptoms and limitations compared with nonoperative treatment in a sling.