

Comparison of Mini-Fragment to Precontoured Plate Fixation for Diaphyseal Clavicle Fractures

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Purpose: Multiple surgical options exist for diaphyseal clavicle fractures including dual mini-fragment (MF) or precontoured (PC) anatomic plate fixation. This is a comparison of clinical outcomes of MF versus PC plates (anterior and superior) for surgical fixation of diaphyseal clavicle fractures. We hypothesize MF fixation will be an effective method of treating diaphyseal clavicle fractures in comparison to PC plates.

Methods: A retrospective review of all diaphyseal clavicle fractures treated with surgical stabilization at a Level-I trauma center between 2015 and 2019 was performed. Minimum 6-month follow-up was required for enrollment. Primary outcome measure was revision surgery rates, for symptomatic hardware, failure of fixation, or infection. Secondly we evaluated clinical and radiographic outcomes. A 2-sample t test was used to analyze the data. $P < 0.05$ was considered significant.

Results: 142 total diaphyseal clavicle fractures were included (MF: 50 and PC: 92). There were no significant differences in the age of patients ($P = 0.830$), sex ($P = 0.773$), presence of bilateral injuries ($P = 0.515$), mechanism of injury ($P = 0.815$), or employment status ($P = 0.302$). There were no significant differences in follow-up duration between cohorts (MF: 7.7 months and PC: 8.5 months; $P = 0.447$). There were no significant differences in postoperative complications including deep infection (MF 0%, PC 1%; $P = 0.463$), hardware removal for pain (MF 6.3%, PC 14.1%; $P = 0.060$), or failure of fixation (MF 6.3%, PC 4.3%; $P = 0.921$). There were no differences in clinical forward flexion ($P = 0.367$) or abduction ($P = 0.333$) range of motion at final follow-up.

Conclusion: Our study reports no significant difference in clinical outcomes for surgical stabilization with mini-fragment versus precontoured plates for diaphyseal clavicle fractures. This study suggests mini-fragment fixation is an effective surgical construct for stabilization of diaphyseal clavicle fractures.