

Have New Plate Designs Reduced the Rate of Hardware Removal Following Midshaft Clavicle Fracture Fixation?

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Purpose: Surgical fixation of displaced midshaft clavicle fractures has become the standard of care in recent years, based on evidence supporting its effectiveness. However, this practice presents challenges because of the complex S-shaped morphology of the clavicle and its subcutaneous location. Despite the introduction of anatomically pre-contoured plates, achieving an optimal implant-to-bone fit remains difficult, prompting the development of newer plate generations. The aim of this study was to compare the hardware removal rates of second-generation plates (SGP) with first-generation plates (FGP).

Methods: A retrospective comparative cohort study was conducted at a Level I trauma center. A total of 187 patients received FGP, and 67 received SGP, both positioned on the superior bone surface. All surgeries were performed by fellowship-trained surgeons, with patients followed for at least 1 year. Data were extracted from medical records and a picture archiving and communication system (PACS).

Results: The patients' demographics (age: 32.86 vs 33.14 years; gender: 16.85% male vs 14.92% female) and fracture type (AO/OTA) were similar between the two groups. The rate of implant removal (20.1% vs 20.9%) did not differ significantly between groups. Complications included nonunion (1.6% vs 1.7%, not statistically significant) and infection (3 cases in the FGP group, none in the SGP group).

Conclusion: Despite the high success rate of clavicle fixation procedures, the rate of superior clavicular plate removal remains significant, regardless of the implant design.