

Risk Factors Predicting Symptomatic Implant Removal Following Patella Fracture Fixation

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Purpose: Patella fracture fixation failure continues to be challenging for orthopaedic trauma surgeons. There are a variety of fixation strategies described in the literature for treating patella fractures, but a paucity of evidence regarding the superiority of one over the others. The purpose of this study was to evaluate risk factors leading to complications, specifically implant removal.

Methods: A retrospective review of surgically repaired patella fractures at a Level I trauma center was performed between 2012-2021. CPT code 27524 was used to identify patients. Exclusion criteria were periprosthetic fractures, <90 days of follow-up, genetic or metabolic bone disease, inadequate radiographic, clinical, or operative data, or complete patellectomy. The electronic medical record was accessed to collect basic demographic data, injury characteristics, medical history, social history, and surgical characteristics. Hardware removal was the primary outcome measured.

Results: A total of 302 fractures (57% male) with an average age of 46 years were included in this study. Average follow-up was 8 months. Symptomatic hardware removal occurred in 23 patients. Univariate analyses showed plate fixation ($P = 0.018$), tendon advancement ($P = 0.008$), and cerclage wire use ($P = 0.010$) were significantly associated of hardware removal. Regression analysis showed plate fixation (adjusted odds ratio [aOR] = 3.17 [1.02 to 9.85], $P = 0.046$) was associated with higher rates of hardware removal while tendon advancement (aOR = 0.127 [0.02 to 0.98], $P = 0.048$) was associated with lower rates of hardware removal. No difference in hardware removal with and without cerclage wires was found on regression analysis.

Conclusion: This study suggests plate fixation has a significant association with hardware removal. Patella tendon advancement may provide a protective mechanism against symptomatic hardware, leading to fewer return trips to the operating room.