

Complication Rates Following Removal of Hardware After Fracture Fixation: Is It Really Risk-Free?

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Purpose: Indications for removing orthopaedic hardware on an elective basis varies widely. Although viewed as a relatively benign procedure, there is a lack of data regarding overall complication rates after fracture fixation. The purpose of this study is to determine the overall short-term complication rate for elective removal of orthopaedic hardware after fracture fixation and to identify associated risk factors.

Methods: Adult patients indicated for elective hardware removal after fracture fixation between July 2012 and July 2016 were screened for inclusion. Inclusion criteria included patients with complete medical and radiographic records and at least 3-month follow-up. Exclusion criteria were those patients indicated for hardware removal for a diagnosis of malunion, nonunion, and/or infection. Data collected included patient age, gender, anatomic location of hardware removed, body mass index, ASA (American Society of Anesthesiologists) score, and comorbidities. Overall complications, as well as complications requiring revision surgery, were recorded. Statistical analysis included univariate and multivariate regression analysis.

Results: 391 patients (418 procedures) were included for analysis. Overall complication rates were 8.4%, with a 3.6% revision surgery rate. Univariate regression analysis revealed that patients who had liver disease were at significant risk for complication ($P = 0.001$) and revision surgery ($P = 0.036$). Multivariate regression analysis showed that: (1) patients who had liver disease were at significant risk of overall complication ($P = 0.001$) and revision surgery ($P = 0.039$) and (2) removal of hardware following fixation for a pilon had significantly increased risk for complication ($P = 0.012$), but not revision surgery.

Conclusion: Removal of hardware following fracture fixation is not a risk-free procedure. Patients with liver disease are at increased risk for complications, including increased risk for needing revision surgery following hardware removal. Patients having hardware removed following fixation for pilon fractures also are at increased risk for complication, although they may not require a return trip to the operating room. Finally, removal of pelvic hardware is associated with a higher return to the operating room.