

Δ Multiple Closed Reductions Prior to Definitive Fixation Are Detrimental to Patients with Distal Radius Fractures

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Purpose: This study aimed to determine if multiple failed closed reductions (CRs) prior to fixation of a distal radius fracture is associated with the odds of complication-related reoperation up to 2 years post fracture.

Methods: We identified all distal radius fracture patients aged 18 years or older between the 2003 and 2016 in Ontario, Canada from linked administrative databases. We used procedural and fee codes between 8 and 14 days of the fracture to determine which patients underwent primary outpatient surgical fixation as well as those who underwent initial CR(s) followed by secondary definitive fixation. We grouped patients according to the number of CRs they underwent prior to definitive fixation. We used intervention and diagnostic codes to identify reoperations within 2 years of fixation. We used multilevel multivariable logistic regression to compare the association between the number of CRs and reoperation while accounting for clustering at the surgeon level and adjusting for other relevant covariables. We performed an age-stratified analysis to determine if the association between the number of CRs and reoperation differed by patient age.

Results: We identified 5464 patients with distal radius fractures managed with outpatient fixation between 8 and 14 days of their fracture. A total of 1422 patients (26.0%) underwent primary surgical fixation (mean time to fixation 10.6 ± 2.0 days), while 3573 (65.4%) underwent secondary fixation following one failed CR (mean time to fixation 10.1 ± 2.2 days, time to CR 0.3 ± 1.2 days), and 469 (8.6%) underwent fixation following two failed CRs (mean time to fixation 10.8 ± 2.2 days, time to first CR 0.0 ± 0.1 days, time to second CR 4.7 ± 3.0 days). The CR groups had higher proportions of female patients compared to the primary group, and patients who underwent two failed CRs were more likely to be fixed with a plate (vs wires or pins). The unadjusted proportion of reoperations was significantly higher in the group that underwent two failed CRs (7.5%) compared to those who underwent primary fixation (4.4%), and fixation following one failed CR (4.9%). Following covariable adjustment, patients who underwent two failed CRs had a significantly higher odds of reoperation (odds ratio [OR] 1.72 [1.12-2.65]) compared to those who underwent primary fixation. This association appeared to worsen for patients over the age of 60 years (OR 3.93 [1.76-8.77]). We found no significant difference in the odds of reoperation between patients who underwent primary fixation versus secondary fixation following one failed CR.

Conclusion: We found that patients with distal radius fractures who undergo multiple CRs prior to definitive fixation have a significantly higher odds of reoperation compared to those who undergo primary fixation. This suggests that surgeons should offer fixation following a single failed CR rather than attempt multiple closed reductions. Prospective studies are required to confirm these findings.

Δ OTA Grant

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.