

One-Year Results of a Prospective Randomized Controlled Trial of Operative Versus Nonoperative Fixation of Minimally Displaced Lateral Compression Pelvis Fractures: Secondary Analysis of Previously Reported Short-Term Results

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Purpose: The primary analysis of this clinical trial suggested that surgical fixation provides a small average improvement in pain and functional outcome for up to 3 months after treatment of minimally displaced lateral compression (LC) pelvic fractures. The purpose of this secondary analysis is to determine if the early pain and function benefits of surgical fixation persist beyond the initial short-term period.

Methods: Patients ages 18 to 80 years with an LC pelvic ring injury consisting of a complete posterior fracture and <1 cm of displacement were approached for randomization at 2 centers. For patients refusing randomization, a separate observational cohort was recruited after patients selected their treatment (to minimize surgeon selection bias). 50 patients were treated nonoperatively and 44 with surgical fixation, with 67% of participants being randomized. 72% of the included fractures were displaced <5 mm and 67% were LC-1 patterns. Standard principles of reduction and fixation methods were applied to the surgical group, with most patients receiving a closed or percutaneous reduction (87%). The mean age was 44 years (standard deviation [SD] 18). The primary outcome was patient-reported pain using the 10-point Brief Pain Inventory (BPI). Functional outcome was measured using the 100-point Majeed pelvis score. Outcomes were analyzed using longitudinal Bayesian regression models, with non-informative priors, to compare the average treatment effect from 2 weeks post-injury to 1 year post-injury. In addition, we determined the probability of the average treatment effect exceeding the minimum clinically important difference (MCID) for each outcome.

Results: The average treatment effect of surgery sustained over the 52 weeks was a 0.9 point reduction in BPI score (95% credible interval: -1.7 to -0.2) and an 8% improvement in Majeed score (95% credible interval: 3 to 13%). These magnitudes of effect were sustained from the early 3-month period. Based on a 1.0-point MCID estimate for the BPI and a 10% MCID for the Majeed, the probability that the average 1-year surgical fixation benefit exceeds the clinically important threshold for pain and function is 41% and 21%, respectively.

Conclusion: These results suggest surgical fixation continues to provide a small average improvement in pain and functional outcome that is sustained past the early recovery, for up to 1 year. However, the probability of achieving a clinical important benefit must continue to be considered in the context of the costs and risks of surgery for each individual patient.