A Prospective Clinical Trial Comparing Operative versus Nonoperative Fixation of Minimally Displaced Lateral Compression Pelvic Fractures

*Gerard Slobogean, MD; **Greg E. Gaski, MD**; Jason W. Nascone, MD; Marcus F. Sciadini, MD; Roman Natoli, MD; Theodore T. Manson, MD; Christopher T. LeBrun, MD; Todd O. McKinley, MD; Walter W. Virkus, MD; Anthony T. Sorkin, MD; Krista M. Brown, MS; Andrea Lynn Howe, BS; Joshua Rudnicki, BS; Blessing Enobun; Nathan N. O'Hara; Jeff Gill, PhD; Robert V. O'Toole, MD*
University of Maryland & Indiana University, Baltimore, MD, United States

Purpose: The purpose of this trial was to compare the early pain and functional outcomes of operative fixation versus nonoperative management for lateral compression (LC) pelvic fractures.

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 regression models to compare the average treatment effect from 96 hours postinjury to 2, 6, and 12 weeks postinjury. A Bayesian analysis with noninformative priors was used to determine the probability of the average treatment effect exceeding the minimum clinically important difference (MCID) for the pain outcome. Analyzes of the 63 randomized patients and the entire patient cohort obtained similar results; therefore, the data from all 94 patients are presented for simplicity.

Results: The unadjusted average treatment effect of surgery sustained over the 12 weeks was a 0.9-point reduction in BPI score (SD 0.2) and a 7.7-point improvement in Majeed score (standard error [SE] 2.8). Point estimates showed differences between treatment groups at each follow-up for the pain and functional outcomes. Based on a 1.0-point MCID estimate for the BPI, there is a 32% probability the average 3-month treatment benefit from surgical fixation exceeds the clinically important threshold for pain improvement.

Conclusion: These results suggest surgical fixation provides a small average improvement in pain and functional outcome for up to 3 months. However, the probability of achieving a clinically important benefit must be balanced with the costs and risks of surgery for each individual patient.

See the meeting app for complete listing of authors' disclosure information.