

Increased Pelvic Asymmetry Following Pelvic Ring Fixation of Lateral Compression Injuries When Compared to Anterior-Posterior Compression Injuries

James D. Brodell, Jr., MD; Hashim Shaikh; James D. Brodell, Jr., MD; Urvi Patel, MD; Matthew Coon, DO; Sandeep P. Soin, MD

Purpose: The purpose of our study is to determine if there exists any difference in the quality of fracture reduction when comparing severity of initial injury patterns in pelvic ring injuries. We hypothesized that lateral compression (LC) type injuries would be more prone to malreduction relative to anterior-posterior compression (APC) type injuries.

Methods: We performed a retrospective chart review for all patients who presented with surgical pelvic ring injuries. Inclusion criteria consisted of patients greater than 18 years of age, those who underwent surgical treatment for traumatic pelvic ring disruption between 2011 and 2021, and those with available preoperative and postoperative plain films. Demographic characteristics, mechanism of injury, and the Young-Burgess classification of injury were recorded. Pelvic ring displacement was measured at the time of injury and was compared with the immediate postoperative period. Measurements were made on AP pelvis radiographss according to the Keshishyan method. Preoperative and postoperative pelvic ring displacement was then analyzed using bivariate independent t-test analysis. Statistical significance was set at $P < 0.05$.

Results: 284 patients met the inclusion and exclusion criteria. The average age was 45.4 ± 19.0 years. 31.1% (88) of patients were obese, 66.2% (188) of patients were males, 21.4% (61) of patients were active smokers, and 31.3% (89) were former smokers at time of injury. LC type injuries were significantly more displaced than APC type injuries on initial presentation (16.3 ± 13 mm vs 13.2 ± 11 mm respectively, $P = 0.02$). LC injuries had significantly more postoperative asymmetry than APC injuries (8.3 ± 9 mm vs 5.2 ± 5 mm respectively, $P = 0.001$). Interestingly, there was no difference in the amount of reduction (postoperative – preoperative displacement) between patients with APC and LC injuries (-9.6 ± 12.2 mm vs -8.2 ± 14.0 , $P = 0.53$).

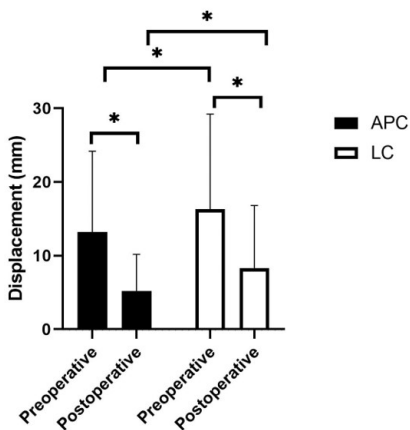


Figure 1. Preoperative and Postoperative Displacement of APC vs LC pelvic Injury. * Denotes $p < 0.01$.

Conclusion: We found significantly greater residual pelvic asymmetry postoperatively in LC type pelvic ring injuries compared to APC type pelvic ring injuries. We also found significantly greater residual pelvic asymmetry among all LC subtype injuries relative to APC subtype injuries. Current fixation methods may be less able to address pelvic asymmetry in LC-type injuries. These results may be useful in surgical planning as well as patient outcomes counseling.

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