Combined anterior-posterior fixation of minimally displaced lateral compression type 1 pelvic ring injuries results in reduced length of hospital stay and improved discharge disposition: A multicenter propensity-matched analysis

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INTRODUCTION: Operative management of minimally displaced lateral compression type 1 (LC1) pelvic ring injuries is controversial. When operative fixation is selected the fixation construct chosen is often highly variable between treating surgeons. The purpose of this study was to compare outcomes of operative management of minimally displaced lateral compression type 1 (LC1) pelvic ring injuries with and without anterior pelvic ring fixation.

METHODS: A retrospective review of 8 level one trauma centers was performed to identify patients with minimally displaced LC1 injuries. The medical record was reviewed to determine patient/fracture characteristics, fixation constructs, hospital length of stay, discharge disposition, mortality, and independent ambulation status at latest follow-up. Propensity-matched analysis was performed to control for differences between groups. RESULTS:

1089 patients with LC1 injuries were identified, 450 of whom received surgical fixation and were included in the study. Anterior fixation was performed in 65.8% (n=296) including: retrograde rami screws (45.9%, n=136), antegrade rami screws (27.4%, n=81), plate osteosynthesis (10.1%, n=30), external fixation (8.4%, n=25), infix (3.7%, n=11), or a combined fixation (4.4%, n=13). Patients receiving anterior fixation were older, had a higher Charleston Comorbidity Index, a higher Beckman fracture score, were more likely to be injured in a ground level fall, less likely to be an independent ambulator, and more likely to have 100% rami fracture displacement (p<0.05). Before matching, anterior fixation was associated with fewer hospital days (7.0 vs. 8.0; p=0.02), more additional procedures (14.5% vs. 7.1%; p=0.02), and no observed difference in discharging to home (70.3% vs. 62.3%; p=0.08). After matching, 141 patients with anterior fixation and 141 without anterior fixation remained for analysis. All of these patients received screw fixation of the posterior ring. Post-match analysis demonstrated that patients with anterior fixation were more likely to have fewer days in the hospital (7.0 vs. 8.0, p=0.02) and to discharge home (81.5% vs. 63.1%; p=0.0005). There was no difference in additional procedures (12.1% vs. 7.8%; p=0.32) or independent ambulation at last follow-up (84.4% vs. 80.1%; p=0.34). DISCUSSION AND CONCLUSION:

On propensity-matched analysis of LC1 pelvic ring injuries treated surgically across 8 level one trauma centers, combined anterior-posterior fixation was associated with fewer days in the hospital and a greater likelihood of discharging home.