

## **Avoiding the Barber's Chair: Emergency Department Stress Radiographs of Lateral Compression Type 1 Pelvic Ring Injuries**

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**Purpose:** Occult instability of lateral compression type 1 (LC1) pelvis injuries (OTA 61B1.1 & 61B2.1) can be determined based upon a fluoroscopic stress examination under anesthesia (EUA). We hypothesized that these injuries, similar to fractures of the extremities, could be stressed radiographically for stability in the Emergency Department (ED). Our primary objective was to determine if ED stress examination on LC1 pelvic fractures could be performed safely, accurately, and tolerated by patients in order to avoid unnecessary anesthetic risk and operating room charges.

**Methods:** A prospective, consecutive series of LC1 pelvic injuries were stressed in the radiology suite adjacent to the emergency department over 1.5 years. The stress examination series included a 40° inlet view of the pelvis without stress followed by a maximal medial directed force applied over the greater trochanters to achieve internal rotation (IR) stress. An external rotation (ER) stress was completed by pushing externally on the iliac wings. Pelvic fractures that stressed positive, defined as >10 mm of rami overlap on IR stress, were indicated for surgery. Repeat stress examination in the operating room was performed to compare the 2 techniques. Pelvis injuries that stressed negative were allowed to weight-bear and followed with clinical evaluation and subsequent radiographs.

**Results:** 67 LC1 injuries were captured with a mean age of 58 years (range, 18-94). All patients tolerated ED stress examination without the need for general anesthetic or hemodynamic compromise. There were 53 (79%) pelvises that stressed negative and were allowed to weight-bear. Two (3%) of these patients failed to mobilize and were converted to surgery. Of the 14 patients who stressed positive, 8 (57%) underwent operating room EUA (OREUA). There was no statistically significant difference between displacement of the pelvis in the ED stress examination compared to the OREUA ( $P = 0.97$ ). The mean difference between ED stress and OREUA was 1.75 mm of displacement ( $\sigma = 1.4$  mm).

**Conclusion:** ED stress exam of LC1 pelvic injuries is a safe and reliable method to determine pelvic ring stability. There was a low rate of stable ED stresses converted to surgery and both cases were due to lack of mobilization rather than fracture displacement. The measured displacement of these injuries on the ED examination is similar to the displacement under general anesthesia. Given the accuracy and safety of ED pelvic stress radiographs, there are several reasons to consider this algorithm. This protocol may allow patients to avoid an unnecessary anesthetic, as well as negate the substantial financial impact of a trip to the operating room. Also worth consideration is the opportunity to avoid the barber's chair phenomenon (if you're in the seat, you WILL get your hair cut). Wide-scale adoption of this streamlined protocol may substantially diminish expenditure, anesthetic, and potential operations for patients suffering an LC1 pelvic ring injury.