Contralateral Lateral Stress Radiographs to Evaluate Stability of Minimally Displaced Lateral Compression Type 1 Pelvic Ring Injuries Are Equivalent to Ipsilateral Lateral Stress Radiographs

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Purpose: The lateral stress radiograph (LSR) to evaluate the stability of minimally displaced lateral compression type 1 (LC1) pelvic ring injuries consists of an anteroposterior pelvis radiograph taken in the lateral decubitus position in awake non-sedated patients with the injured side down. The LSR has been shown to correlate perfectly with an examination under anesthesia (EUA); however, lying on the injured side does result in patient discomfort. The purpose of this study was to determine if performing the LSR with the uninjured contralateral side down is as effective for detecting occult pelvic instability.

Methods: Patients with minimally displaced LC1 injuries with both an ipsilateral and contralateral LSR were identified. Radiographic magnification was corrected for by measuring the diameter of the femoral head on the coronal CT scout image and each subsequent radiograph. The amount of displacement of the pelvic ring was assessed on all images by measuring the distance between the radiographic teardrop landmark. Pelvic rings that displaced 10 mm or more were considered unstable. Matched pairs analysis was used to compare displacement between radiographs. The sensitivity and specificity of the contralateral LSR to detect instability was calculated.

Results: 21 patients were identified for analysis. Median age was 60 years (range, 20-94 years) and 14 (67%) were female. Injury mechanism included 5 (24%) low-energy ground level falls and the remainder included high-energy mechanisms. Eight patients had complete sacral fractures (40%). Pelvic ring displacement of 10 mm of more was seen in 13 patients (62%). There was no difference in displacement between ipsilateral and contralateral LSRs (mean difference –0.6 mm, 95% confidence interval –2.9 to 1.6 mm, $P = 0.5$). The sensitivity and specificity of the contralateral LSR to detect 10 mm or more of displacement was 100% and 100%.

Conclusion: Performing the LSR with the uninjured contralateral side down resulted in the same amount of displacement as with the injured ipsilateral side down and successfully identified all cases of occult instability in minimally displaced LC1 injuries. The contralateral LSR should be considered over the ipsilateral LSR to decrease patient discomfort.