Negative Stress Examination Under Anesthesia Is Reliable in Predicting Union Without Displacement While Fully Weight Bearing

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Background/Purpose: The ideal method for determining pelvic ring stability following trauma is a controversial topic because static radiographs and CT scans may not accurately reflect the degree of displacement that occurred at the time of injury. Stress examination under anesthesia (EUA) has been advocated as a potential method for quantifying the degree of pelvic instability and disclosing occult injuries following trauma. The purpose of this analysis was to investigate the predictive value of a negative EUA (stable pelvis) for determining pelvic ring union without displacement while permitting full weight bearing during the healing process.

Methods: Over a 5-year period, closed pelvic ring injuries in skeletally mature patients that were deemed stable after EUA were identified. A negative EUA was defined as one that did not reach operative criteria as defined by Sagi et al and was treated without internal fixation. To be included in the analysis, patients must have been able to fully weight-bear bilaterally immediately post-EUA. Patient demographics, fracture classification, associated injuries, and postoperative weight-bearing status were recorded. Charts and radiographs were reviewed to determine union and displacement.

Results: 34 skeletally mature patients out of a total of 896 who underwent EUA had a negative examination (stable pelvis). Average age was 38 years (range, 16-76), and 19 patients (55.8%) were male. 22 patients (64.7%) had Young-Burgess lateral compression (LC)-1 injuries with complete sacral fractures, 4 patients (12%) had LC-2 injuries, and 8 patients (24%) had anterior posterior compression (APC)-1 injuries. Seven patients (21%) had associated extremity injuries requiring restricted weight bearing and were excluded from the final analysis; immediate full weight bearing was permitted in the remaining 27 patients. Patients were followed until clinical and radiographic union (average 8 months; range, 3-34). At final radiographic and clinical follow-up, no patients demonstrated worsening deformity or interval displacement from the time of admission and EUA. There were no instances of delayed operative fixation following negative EUA.

Conclusion: A negative pelvic EUA after trauma accurately predicts the ability to fully

weight-bear and achieve union without further displacement. No patient in our series required delayed pelvic ring fixation. Unless otherwise dictated by associated injuries, immediate weight bearing as tolerated appears safe in the setting of a negative EUA.

See pages 49 - 106 for financial disclosure information.