UROGENITAL TRAUMA

Predicting Urethral Injury from Pelvic Fracture Patterns in Male Patients with Blunt Trauma

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J Urol. 2007; 177: 571-5

Purpose: Precise definition of pelvic fracture location may enable prediction of which subjects are at risk for urethral injury and understanding of the pathophysiological mechanism of injury. We determined the specific anterior pelvic injury locations associated with urethral injury.
Materials and Methods: We completed a retrospective, nested case-control study of 119 male patients evaluated at a single large level 1 trauma center between January 1, 1997 and July 15, 2003. We performed detailed measurements of the location, displacement and direction of force of each anterior pelvic fracture from computerized tomography and pelvic radiographs. Multiple logistic regression was used to determine associations between specific fracture locations and urethral injury after controlling for age, injury mechanism, injury severity and direction of force.
Results: Urethral injury was present in 25 patients and all had anterior pelvic fracture (inclusive of pubic symphysis diastasis). There were no urethral injuries in patients with fractures isolated to the acetabulum. Pelvic fractures that were independently associated with urethral injury from multiple regression analysis included displaced fractures of the inferomedial pubic bone, OR 6.4 (95% CI 1.6 to 24.9), and symphysis pubis diastasis, OR 11.8 (95% CI 4.0 to 34.5). Each millimeter of symphysis pubis diastasis or inferomedial pubic bone fracture displacement was associated with an approximately 10% increased risk of urethral injury.
Conclusions: The location and displacement of anterior pelvic fractures in males predict risk of urethral injury and may be valuable in determining when evaluation of the urethra is appropriate.

Editorial Comment

This study adds to the body of literature that demonstrates that urethral injury associated with pelvic fracture, typically occurs when the anterior pelvic arch is disrupted that results in symphysis diastasis and displaced pubic rami fractures. The biomechanics of urethral injury as originally described by Turner-Warwick felt that the disruption was prostatomembranous, with the prostate displaced from the fixed urogenital diaphragm. Over time, however, it has been recognized that many injuries are rather to the bulbo-membranous junction, and not at the prostate level. Prior to this study the most commonly sited paper was by Koraitim (ref. 10 in article) where the highest odds ratios for urethral injury were with straddle injury and SI fracture. A paper correlating fracture by the Young-Burgess or Tile classification and urethral injury would have been nice.

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Accuracy of Trauma Ultrasound in Major Pelvic Injury

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J Trauma. 2006; 61: 1453-7

Background: Trauma ultrasound (US) utilizing the focused assessment with sonography in trauma (FAST) is often performed to detect traumatic free peritoneal fluid (FPF). Yet its accuracy is unclear in certain trauma subgroups such as those with major pelvic fractures whose emergent diagnostic and therapeutic needs are unique. We hypothesized that in patients with major pelvic injury (MPI) trauma ultrasound would perform with lower accuracy than has previously been reported.
Methods: Retrospective analysis of adult trauma patients with pelvic fractures seen at an urban Level I emergency department and trauma center. Patients were identified from the institutional trauma registry and ultrasound database from 1999 to 2003. All patients aged > 16 years with MPI (Tile classification A2, all type B and C pelvic fractures, and type C acetabular fractures determined by a blinded orthopedic traumatologist) and who had a trauma US performed during the initial emergency department evaluation were included. All ultrasounds were performed by emergency physicians or surgeons using the four-quadrant FAST evaluation. Results of US were compared with one of three reference standards: abdominal/pelvic computed tomography, diagnostic peritoneal tap, or exploratory laparotomy. Two-by-two tables were constructed for diagnostic indices.
Results: In all, 96 patients were eligible; 9 were excluded for indeterminate ultrasound results. Of the remaining 87 patients, the pelvic fracture types were distributed as follows: 9% type A2, 72% type B, 16% type C, and 3% type C acetabular fractures. Overall US sensitivity for detection of FPF was 80.8%, specificity was 86.9%, positive predictive value was 72.4%, and negative predictive value was 91.4%. Categorization of sensitivity according to pelvic ring fracture type is as follows: type A2 fractures: sensitivity and specificity, 75.0%; type B fractures: sensitivity, 73.3%, specificity, 85.1%; and type C fractures (pelvis and acetabulum): sensitivity and specificity, 100%. Of the true-positive US results, blood was the FPF in 16 of 21 (76%) and urine from intraperitoneal bladder rupture in 4 in 21 (19%) patients.
Conclusion: US in the initial evaluation of traumatic peritoneal fluid in major pelvic injury patients has lower sensitivity and specificity than previously reported for blunt trauma patients. Additionally, uroperitoneum comprises a substantial proportion of traumatic free peritoneal fluid in patients with MPI.

Editorial Comment
The true value of FAST is in the evaluation for blood in the pericardial sac, hepatorenal fossa, splenorenal fossa, and the pelvis. One limitation of FAST is its inability to distinguish between a urine leak and blood. Overall, FAST is a quick and easy way to determine the source of bleeding in an unstable patient — from the chest, the abdomen or the pelvis.

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PATHOLOGY

Spindle Cell Lesions of the Adult Prostate

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Mod Pathol. 2007; 20: 148-58

Prostatic spindle cell lesions are diagnostically challenging and encompass a broad array of benign and malignant processes. A subset of these lesions arises only within the prostate and generally represents entities