

**Treatment of Pelvic Ring Injuries with Associated Bladder Rupture**

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**Purpose:** Traumatic bladder ruptures are associated with pelvic ring injuries. However, the optimal pelvic ring fixation for these injuries remains controversial as surgeons weigh stability benefits of internal fixation against risk of infection. The purpose of this study was to describe treatment of these injuries and resultant outcomes.

**Methods:** Pelvic ring injuries with associated bladder ruptures were identified from a trauma registry at a Level I trauma center from 2014 to 2020. Patient demographics, injury mechanism, fracture characteristics, and treatment algorithms were retrospectively retrieved. Using Fisher's exact test, associations between injury treatment and outcomes were determined.

**Results:** From 639 patients with pelvic ring injuries treated operatively, 34 (5.3%) had an associated bladder rupture. Average age was 41 years (range, 21-80; 32% female), 91% had additional injuries, and 74% were treated in the ICU. 59% of patients underwent a cystogram, and 23 patients (68%) had bladder extravasation seen on CT. The most common pelvic ring injury was lateral compression (56%), and 26 bladder injuries (76%) were intraperitoneal. All patients received IV antibiotics for an average of 2.5 days (range, 1-21). Only 1 patient had a suprapubic catheter placed. Bladder repairs were performed in 24 patients (71%), 10 of those simultaneous with pelvic ring fixation (8 extraperitoneal, 2 intraperitoneal). For the 14 patients with bladder injury performed prior to pelvic fixation, all had undergone initial exploratory laparotomy and on average had pelvic fixation 2.2 days later (range, 2-7). 10 bladder injuries were treated nonoperatively with prolonged Foley catheterization. For anterior pelvic ring fixation, 8 patients had open reduction and internal fixation (ORIF), 12 percutaneous screws, and 14 with external fixation. There were 3 deep infections (9%) and 1 (3%) superficial external fixator pin site infection. The deep infections occurred in 1 patient treated with external fixation and 2 patients treated with percutaneous screws. No infections occurred in the ORIF group. Deep infection was associated with nonoperative management of bladder rupture ( $P = 0.02$ ) and non-simultaneous fixation of pelvis with bladder repair ( $P = 0.05$ ).

**Conclusion:** Patients with combined pelvic ring and bladder ruptures injuries benefit from coordinated care. Deep infection may be decreased with bladder repair at time of pelvic fixation. ORIF of the anterior pelvic ring is safe in setting of bladder rupture. Most important may be the open surgical irrigation and debridement of the pelvic ring fracture prior to fixation in the setting of a bladder rupture.