



Extraperitoneal bladder injury with extensive contrast extravasation – A case report¹

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ABSTRACT

Extraperitoneal bladder ruptures account for 70–90% of all bladder injuries. Management of uncomplicated extraperitoneal bladder ruptures may be treated conservatively with catheter drainage via foley or suprapubic tube. The extend of contrast extravasation at the time of cystogram does not typically affect therapy.

We presented a case of a 59-year-old male who sustained a traumatic extraperitoneal bladder rupture after falling off a horse. The patient had severe contrast extravasation into the extraperitoneal space. Conservative management was the treatment of choice.

The patient's bladder injury successfully healed after prolonged management with foley catheter decompression.

1. Introduction

Bladder injuries remain relatively uncommon due to the anatomic protection of the bony pelvic structures, occurring in 1.6% of blunt or penetrating abdominal injuries.¹ Patients with bladder injury can present with nonspecific symptoms such as suprapubic pain or inability to void. The most reliable indicator is gross hematuria.¹ The diagnosis of bladder rupture is made via retrograde cystogram as intravenous contrast study is not acceptable.² A dense, flame-shaped collection of contrast material in the pelvis is characteristic of extraperitoneal extravasation; while intraperitoneal extravasation is characterized by contrast outlining loops of bowel.³

The American Association for the Surgery of Trauma (AAST) classification of bladder injury includes: grade 1: contusion; grade 2: extraperitoneal laceration < 2cm; grade 3: extraperitoneal laceration > 2cm or intraperitoneal laceration < 2 cm; grade 4: intraperitoneal laceration > 2 cm; grade 5: intra/extraperitoneal laceration with involvement of bladder neck or ureteral orifice(s).

Intraperitoneal bladder ruptures account for 15–25% of the bladder injury cases. It can be associated with pelvic fracture but are more commonly caused by penetrating trauma or burst injuries at the bladder dome by direct blow to a distended bladder.¹ The surgical repair success

rate for intraperitoneal bladder ruptures is fairly high.⁴

Extraperitoneal bladder injuries account for 70–90% of the cases and usually associated with pelvic fracture. The pelvic ring's protective effects are lost in a pelvic fracture, causing most extraperitoneal bladder injuries to form at the anterolateral aspect of the bladder.¹ Management of uncomplicated extraperitoneal bladder ruptures may be treated conservatively with catheter drainage via foley or suprapubic tube. Complicated extraperitoneal bladder injuries require prompt surgical intervention (i.e. bladder neck injury, rectal/vaginal injury, open pelvic fracture, fracture require ORIF, bone fragments in bladder, laparotomy for other reasons, and inadequate bladder drainage due to significant hematuria). The extend of contrast extravasation at the time of cystogram does not typically affect therapy. Approximately 85% of all tears close within 10 days, and almost all close within three weeks.²

We present a case of a traumatic extraperitoneal bladder rupture with extensive contrast extravasation successfully treated with conservative management.

2. Case presentation

The patient was a healthy 59-year-old male who presented with lower abdominal pain and inability to void after falling off a horse. Upon

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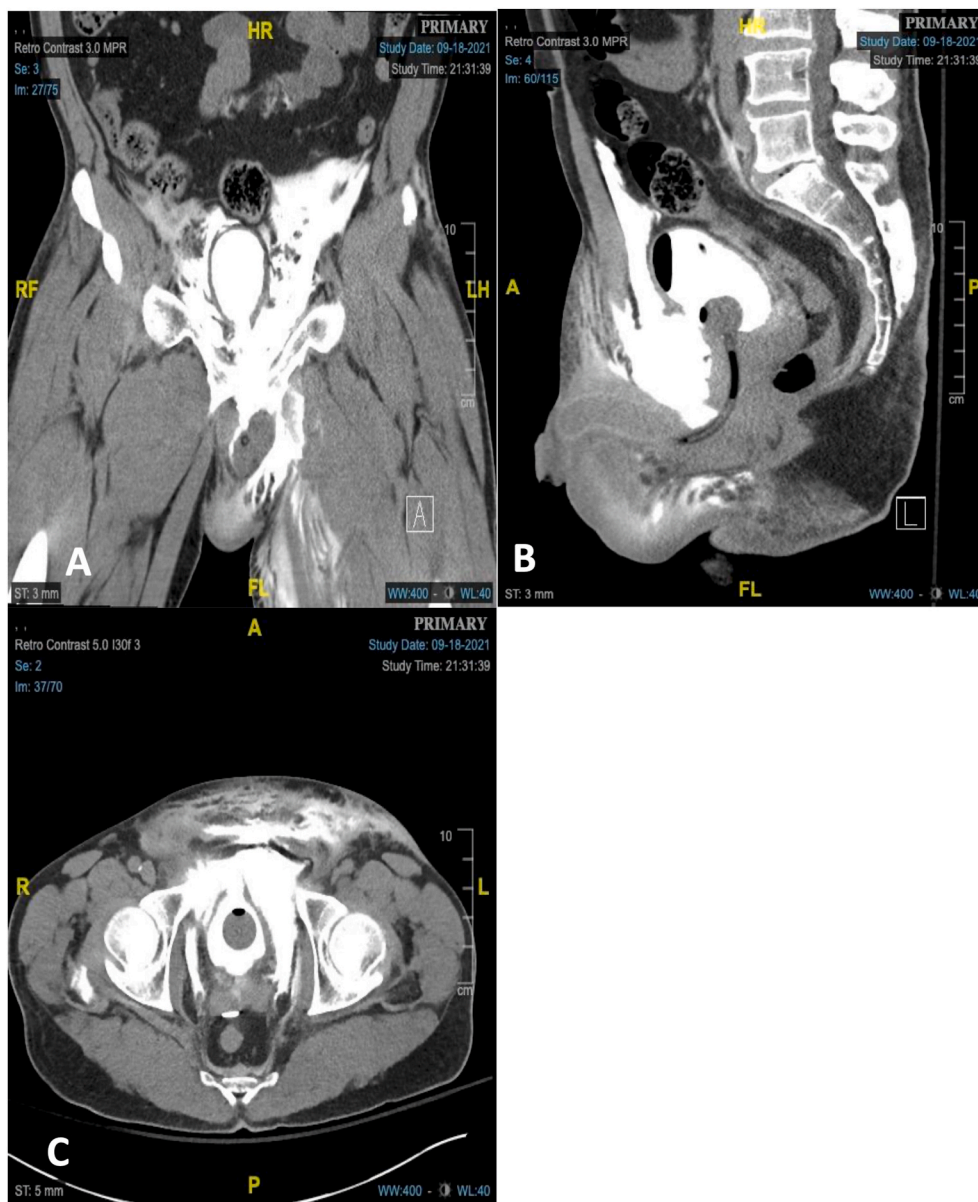
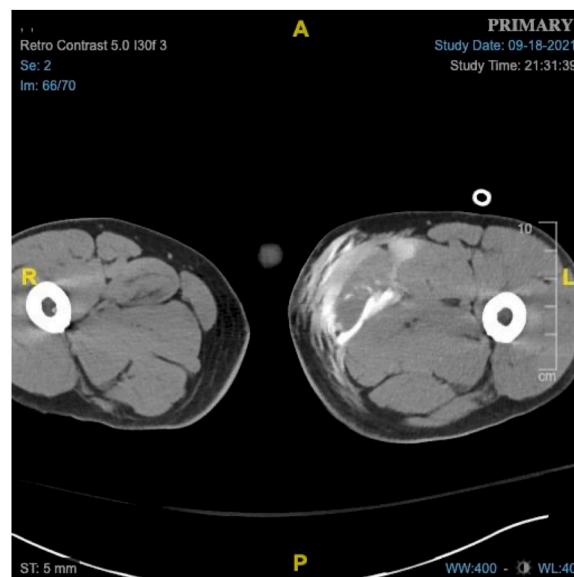


Fig. 1. A: oronal CT cystography showing an anterior bladder defect with contrast extravasation into the lt. Groin, retroperitoneum pelvic side walls and parapelvic regions. B: Sagittal CT cystography showing the lower anterior bladder wall defect. C: Axial CT cystography of lower anterior bladder wall defect with contrast extending into the subcutaneous abdominal tissue.

arrival, the patient was hemodynamically stable. T = 36.9 C, HR of 82 bpm, RR of 26 and BP of 157/98. On exam, his lungs were clear to auscultation bilaterally without tenderness. His blood work was significant for WBC of $13.3 \times 10^3/\text{mcl}$ and creatinine elevation of 1.9 mg/dL. He denied any gross hematuria and reported that he had not voided since the injury. At this time, urology was consulted and a 16 French coude catheter was placed resulting in a minimal output of 50 cc of light wine-colored urine. Urinalysis showed >20 RBC/HPF.

The patient underwent CT cystogram with retrograde filling of contrast, and there was an apparent defect at the anterior lower aspect of the urinary bladder, measuring 11×6 mm, with contrast extravasation involving the pelvic side walls and retroperitoneum, along the course of the ureters and parapelvic region (Fig. 1). In addition, contrast was seen to extend into the left scrotum and deep within the left medial thigh (Fig. 2). No intraperitoneal contrast was visualized. An acute anteroposterior compression type II pelvic ring fracture was indicated by a mildly widened pubic symphysis and a mildly widened left sacroiliac joint.

Based on the cystogram and patient's clinical stability, conservative management with foley decompression was chosen. The patient was



2 Fig. 2. Axial CT cystography with contrast into the subcutaneous medial thigh.

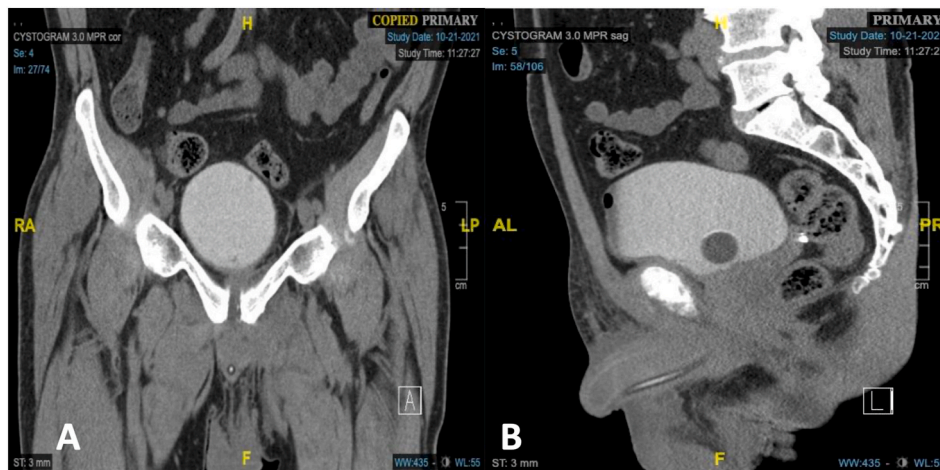


Fig. 3. A: Coronal and B: Sagittal CT cystography at four week follow up showing absence of anterior bladder wall defect.

placed on cefazolin for UTI prophylaxis. Orthopedic surgery was consulted for management of pubic symphysis diastases which was deemed nonoperative and could be managed conservatively by mobilization with physical therapy assistance and weight bearing as tolerated.

Serum creatinine normalized to 0.9 mg/dl on hospital day 5, and the patient was discharged on hospital day 7 with foley catheter and 5 days of oral antibiotics.

At the two weeks follow up, CT cystogram showed significant improvement of contrast extravasation, however, a small persistent leaked was noted at the anterior/medial aspects of the left pelvis. The pubic symphysis showed mild diastasis. Foley decompression was done for an additional two weeks and CT cystogram performed at 34 days post injury showed complete bladder healing (Fig. 3). A small amount of posttraumatic hemorrhage anterior to the symphysis pubis was identified which was expected due to the degree of injury. The foley catheter was removed and patient passed voiding trial. The patient did well at 2 months after foley removal with post void residual volume of <30 cc.

3. Conclusion

Conservative management for extensive extraperitoneal bladder

ruptures provide adequate treatment. The length of catheter decompression can vary depending on the extend of injury to the bladder wall. Here, we provided a case with extensive contrast extravasation that extended into the subcutaneous abdominal tissue, scrotum, and medial thigh. This case demonstrates that conservative management is still the optimal approach for treatment in cases with severe contrast extravasation.

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