

Intraperitoneal urinary bladder rupture diagnosed with ultrasound: An uncommon image

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ABSTRACT

We present a case of intraperitoneal bladder rupture after fall. The patient presented with lower abdominal pain, difficulty to void urine, and mild hematuria. Catheterization revealed blood-tinged urine. Ultrasound showed a well-defined defect in the dome of bladder with flow of saline through the defect into the peritoneum, on flushing the Foley's catheter. On laparotomy, a 5 cm × 5 cm defect was found in the bladder dome that was repaired.

INTRODUCTION

Bladder injuries (BIs) are rare. Extraperitoneal bladder ruptures (EPRs) are more common than intraperitoneal bladder ruptures (IPRs). The investigation of choice for BI is computed tomography (CT)-cystography.^[1,2] Ultrasound may be useful for triage or even diagnosis.^[3] Our patient presented with abdominal pain, difficulty to void urine, and mild hematuria. On ultrasound, there was a defect in the dome of bladder with flow of saline through the defect while infusing saline through a Foley's catheter, confirming IPR.

CASE REPORT

A 58-year-old male presented with lower abdominal pain, difficulty to void urine, and hematuria after a fall. On examination, there was mild distension and tenderness over the lower abdomen. There was no blood at the urethral meatus. On catheterization, about 700 ml of blood-tinged urine was drained. Investigations were within normal limits except serum creatinine which was 2.1 g/dl. Radiographs revealed no bony injury and no free gas in the abdomen. Ultrasound showed free fluid in the rectovesical pouch

with a Foley's bulb in the bladder. On infusing saline through the Foley's catheter, a well-defined defect in the dome of bladder with flow of saline through the defect into the peritoneum was visible, confirming the diagnosis of IPR [Figure 1]. On laparotomy, a 5 cm × 5 cm rent in the dome of bladder was identified and repaired. The postoperative period was uneventful.


DISCUSSION

BI occurs in 1.6% of patients with blunt trauma abdomen (BTA).^[1] Traumatic BI is 60% EPR, 30% IPR, and 10% combined.^[3] More than 80% of patients with BI have other associated organ injuries.^[4] BI in patients with BTA with full bladder is mostly IPR at the dome of bladder which is due to the sudden rise of intravesicular pressure.^[2]

Hematuria, suprapubic pain, and difficulty to void, all form the classic triad of BI.^[3] Urinary leak causes "reverse auto-dialysis," leading to "pseudo renal failure," presenting with rise in serum urea, creatinine, and potassium with fall in sodium concentration.^[2]

Retrograde urethrogram is indicated in suspected urethral injury. Ultrasound is the initial imaging modality for BI.

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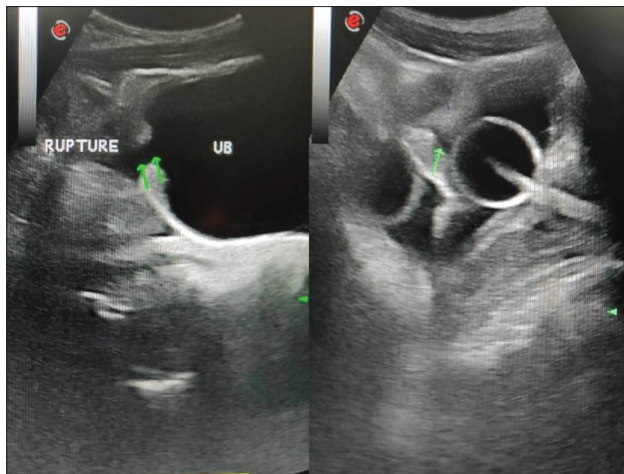


Figure 1: Ultrasound image (sagittal plane) – free fluid in the rectovesical pouch with rent in the dome of the urinary bladder (green arrow)

Ultrasound findings such as irregular posterior bladder wall, moderate amount of intraperitoneal free fluid, rent in bladder wall, and flow of fluid through the rent into the peritoneum while infusing saline through Foley’s catheter (as shown in our case) suggest IPR.^[3] BI may be evaluated by conventional-cystography or CT-cystography, with the latter having the additional benefit of evaluating pelvic fracture and other intra-abdominal injuries. In conventional-cystography, extravasation of contrast in a flame-type distribution suggests EPR. Contrast outlining the bowel or lining the paracolic gutters suggests IPR.^[3,5] “Sentinel clot sign,” in contrast-enhanced CT, showing

accumulated high attenuation and heterogeneous fluid near the site of BI has a sensibility of 84%.^[1,2] Open surgical repair is the standard treatment for IPR.^[4,5]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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