

Spontaneous Extraperitoneal Bladder Rupture in a 46-Year-Old Woman: An Unusual Presentation

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Abstract

Spontaneous bladder rupture is a rare and potentially life-threatening condition, usually occurring intraperitoneally and in association with an underlying bladder or systemic disorder. We report a 46-year-old woman with no significant medical history who presented with sudden hypogastric pain and acute urinary retention. Computed tomography urography demonstrated a defect in the anterior bladder wall with extravasation of contrast medium, consistent with extraperitoneal bladder rupture. Surgical exploration revealed an approximately 4-cm irregular and ragged perforation of the anterior bladder wall. The defect was repaired without tension using a two-layer suture technique. Histopathological examination of the rupture margins showed no malignancy. Follow-up cystography at two weeks demonstrated an intact bladder without contrast extravasation. No underlying predisposing condition was identified. Spontaneous extraperitoneal bladder rupture is exceptionally uncommon. This case emphasizes the importance of considering bladder rupture in patients with acute hypogastric pain and urinary retention, even in the absence of trauma or an obvious predisposing factor.

Categories: Urology

Keywords: acute urinary retention, bladder perforation, extraperitoneal bladder rupture, spontaneous bladder rupture, urological emergency

Introduction

Spontaneous rupture of the urinary bladder is an uncommon and potentially life-threatening condition. Unlike traumatic bladder rupture, which is frequently extraperitoneal and associated with pelvic fracture, spontaneous rupture is predominantly intraperitoneal and usually involves the bladder dome. Several predisposing factors have been described, including bladder tumors, infection or cystitis, lower urinary tract obstruction, bladder diverticula, neurogenic bladder, diabetes, pelvic radiotherapy, pregnancy, and acute alcohol intoxication [1-4].

We report an unusual case of spontaneous extraperitoneal bladder rupture in a 46-year-old woman with no history of trauma, pelvic surgery, urological instrumentation, or known predisposing disease.

Case Presentation

A 46-year-old woman with no significant past medical history presented to the emergency department with sudden-onset hypogastric pain associated with acute urinary retention. She had no history of recent abdominal or pelvic trauma, pelvic surgery, urological procedures, or relevant medication use. There was also no known history of bladder disease, recurrent urinary tract infections, pelvic radiotherapy, or neurological disorders.

On admission, the patient was hemodynamically stable. Physical examination revealed hypogastric distension without abdominal guarding or rebound tenderness. Digital rectal examination showed an empty rectal ampulla. The remainder of the physical examination was unremarkable. Emergency computed tomography (CT) urography revealed a defect in the anterior bladder wall with extravasation of contrast medium on delayed urinary-phase images, findings consistent with an extraperitoneal bladder rupture (Figure 1).

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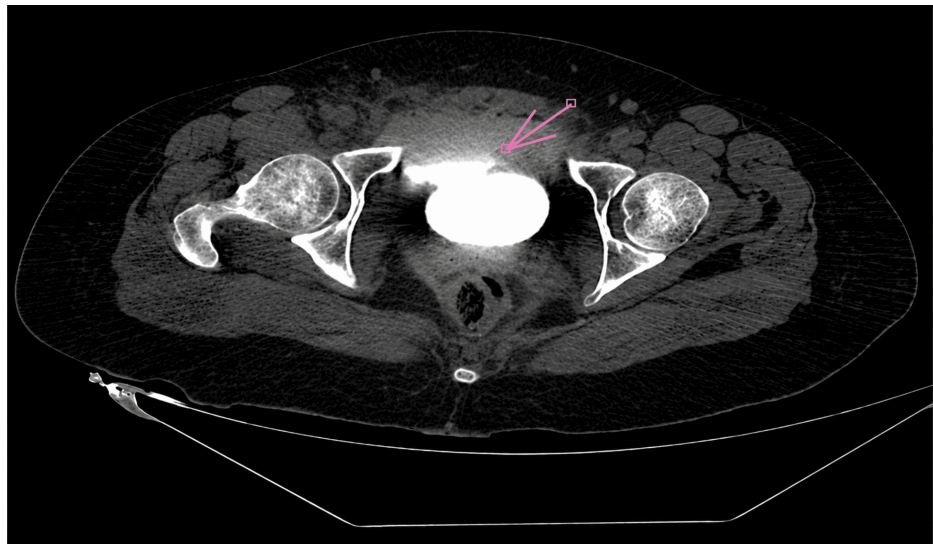


FIGURE 1: Computed tomography urography showing a defect in the anterior bladder wall with extravasation of contrast medium on delayed urinary-phase imaging (arrow), consistent with extraperitoneal bladder rupture.

Given the relatively large size and unusual morphology of the bladder defect, surgical exploration was performed. A lower midline laparotomy revealed an irregular and ragged approximately 4-cm perforation involving the anterior bladder wall (Figure 2). The bladder defect was repaired primarily without tension using a two-layer closure technique (Figure 3). A Foley urinary catheter was left in place to ensure prolonged bladder drainage, and a suction drain was placed in the Retzius space.

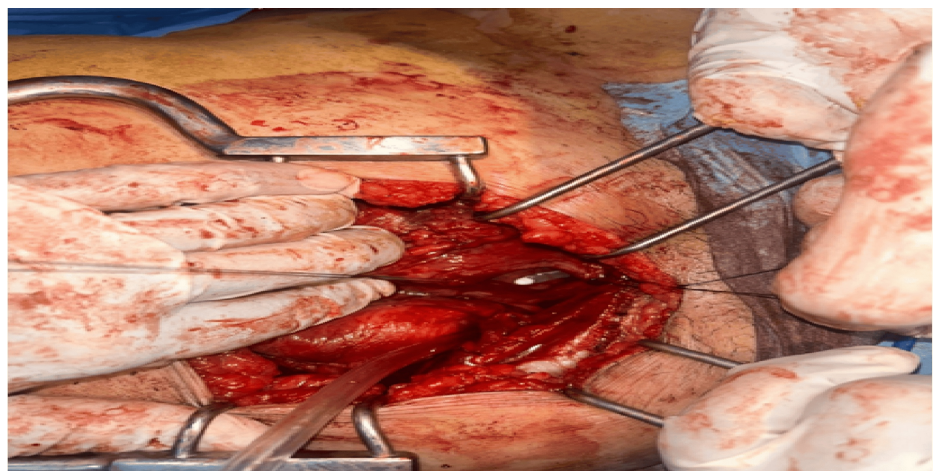


FIGURE 2: Irregular and ragged approximately 4-cm perforation of the anterior bladder wall.

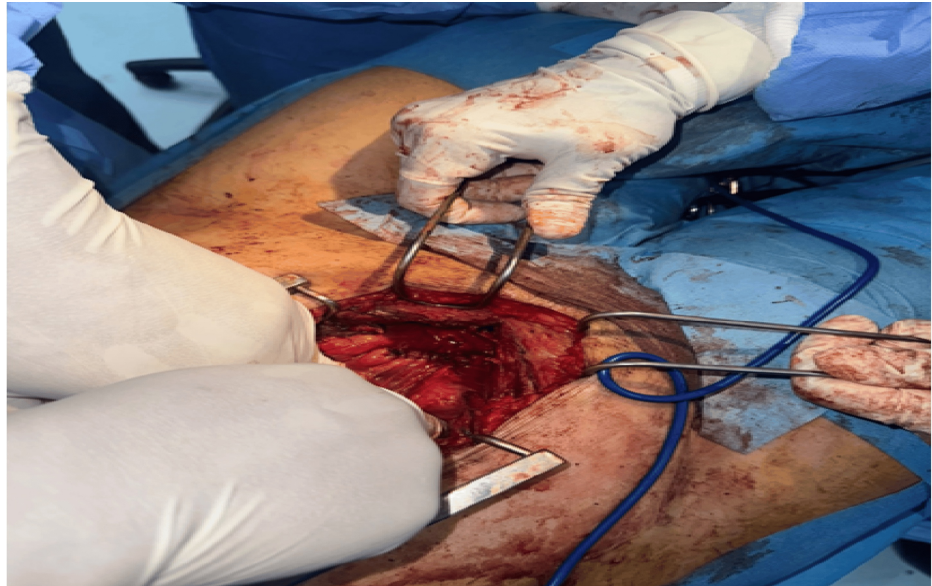


FIGURE 3: Intraoperative view of surgical repair of the bladder defect by suture.

The postoperative course was uneventful. Histopathological examination of tissue samples obtained from the margins of the bladder rupture showed no evidence of malignancy. Follow-up cystography performed two weeks after surgery demonstrated complete healing of the bladder wall, with no evidence of contrast extravasation. The urinary catheter was subsequently removed.

Discussion

In a systematic review by Reddy et al. involving 351 patients from 278 publications, spontaneous bladder ruptures were predominantly intraperitoneal and most commonly involved the bladder dome [1]. The clinical presentation can be nonspecific, potentially leading to a delay in diagnosis. Abdominal or suprapubic pain, oliguria or anuria, and hematuria are frequently reported; however, the complete clinical triad is not consistently present [1,2].

Reported predisposing factors include bladder malignancies, urinary tract infections or inflammation, lower urinary tract obstruction, bladder diverticulosis, neurogenic bladder, diabetes mellitus, pelvic radiotherapy, pregnancy, and bladder distension associated with excessive alcohol consumption [1-4]. However, in some patients, no underlying cause can be identified.

The main distinctive feature of our case was the spontaneous extraperitoneal location of the bladder rupture. Extraperitoneal bladder injuries are classically associated with trauma, particularly pelvic fractures, whereas spontaneous bladder ruptures are more commonly intraperitoneal [1,2]. Spontaneous extraperitoneal bladder rupture is therefore a rare presentation, although several cases have previously been reported in the literature [5].

Our patient had no history of trauma, pelvic surgery, urological instrumentation, or other known predisposing factors. Histopathological examination of the rupture margins showed no evidence of malignancy. The available clinical and pathological evaluation therefore failed to identify an underlying etiology. An increase in intravesical pressure in the setting of acute urinary retention may have contributed to the rupture; however, a causal relationship cannot be established based on this observation alone.

Imaging plays a crucial role in establishing the diagnosis. Retrograde cystography has traditionally been considered the reference standard for confirming bladder rupture and determining whether the injury is intraperitoneal or extraperitoneal. CT cystography can also demonstrate the bladder wall defect and extravasation of contrast material [1,2]. In our case, emergency CT urography allowed the visualization of the bladder defect and establishment of the diagnosis before surgical intervention.

Management depends on the location and extent of the rupture, the patient's clinical condition, and the presence of complications. Some uncomplicated extraperitoneal bladder ruptures can be managed conservatively with bladder drainage alone, whereas large, complicated, or persistent injuries may require surgical repair [1,2]. In our case, the large size and irregular appearance of the bladder defect prompted surgical exploration and repair. The postoperative course was uneventful, and follow-up cystography

showed no contrast extravasation, confirming successful healing.

This case highlights the importance of considering spontaneous bladder rupture even in the absence of trauma or an obvious predisposing factor. Acute hypogastric pain associated with urinary retention or other unusual urinary symptoms should raise suspicion for this diagnosis and prompt timely appropriate imaging to facilitate early and adequate management.

Conclusions

Spontaneous extraperitoneal bladder rupture is an exceptionally rare clinical presentation. A high index of suspicion and appropriate urinary tract imaging are essential for early diagnosis. In selected patients with a large or irregular bladder defect, surgical repair may provide definitive treatment with favorable outcomes.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Ahmed Sid'A Ahmed, Anouar El Moudane, Debe Salem Hemdellah, Ali Barki

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Critical review of the manuscript for important intellectual content: Ahmed Sid'A Ahmed, Anouar El Moudane, Ali Barki

Supervision: Ahmed Sid'A Ahmed, Ali Barki

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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