




A Busted Sac: A Case of Spontaneous Bladder Rupture Secondary to Acute Urinary Retention in a Healthy Middle-Aged Male

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Abstract

Spontaneous bladder rupture is a relatively rare medical emergency that can be easily misdiagnosed. Although spontaneous bladder rupture is more common in those with previously diagnosed bladder conditions, this phenomenon may also occur in patients with an otherwise insignificant past medical history. Early diagnosis and treatment are critical to avoid fatal complications. Here, we present a 49-year-old male with insignificant past medical history who was diagnosed with spontaneous bladder rupture after the attempted placement of a Foley catheter.

Keywords

bladder rupture, urology, bladder

Introduction

The most common cause of bladder rupture by far is trauma to the abdomen.¹ This occurs when a blunt or penetrating injury, such as a motor vehicle accident or gunshot wound, to the lower abdominal wall, causes the dome of the bladder to rupture, resulting in leakage of urine into the abdominal cavity.² Spontaneous bladder rupture is a much rarer phenomenon, occurring in only 1 out of 126 000 people.³ It is even rarer in patients who do not have predisposing factors, such as bladder cancers, neurogenic bladder, and exposure to radiation.¹

It is believed that the cause behind spontaneous bladder rupture involves over-distension combined with a weakness in the bladder wall.¹ Hence, pathologies that predispose patients to over-filling of the bladder in the setting of an already-weakened bladder wall may increase the risk of bladder rupture. Such pathologies may include long-term urinary retention in benign prostatic hyperplasia, urethral stricture, female pelvic organ prolapse, inflammation, and malignancy.³ However, in some cases, bladder rupture can occur in patients with no significant history of bladder pathology. Here, we present the case of a middle-aged male patient who suffered spontaneous bladder rupture after a 3-day period of urinary retention.

Case Presentation

A 49-year-old African American male with no known significant past medical history presented with suprapubic pain and inability to pass urine for a duration of 3 days. He also endorsed one episode of gross hematuria. He denied fever, change in bowel habits, or any other urinary symptoms. His medication history was not significant.

On presentation, vital signs were unremarkable except for tachycardia of 111 beats/minute. Physical examination showed a middle-aged man in acute distress due to pain. On physical examination, the patient's abdomen was distended. Generalized abdominal tenderness, guarding, and rebound tenderness were elicited on palpation. A digital rectal

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Figure 1. Computed tomography abdomen/pelvis showing tip of Foley (yellow arrow) above the dome and intraperitoneal contrast (white arrow).



Figure 2. Urinary bladder opacifies normally without evidence of leak 3-week after discharge.

examination showed an enlarged, smooth-surfaced prostate with no palpable nodules. Cardiovascular and pulmonary examinations were unremarkable.

Initial laboratory findings showed serum creatinine of 8.3 mg/dL (baseline unknown; reference range 0.5–1.2 mg/dL), and normal electrolytes. Urinalysis showed pyuria, hematuria, and leukocyte esterase. Attempted passage of Foley catheter

yielded about 4 L of blood-tinged urine. Bladder ultrasound suggested that the catheter tip was located superior to the dome of the bladder. This was confirmed by contrast computed tomography (CT) of the abdomen and pelvis which showed the intraperitoneal extravasation of contrast (Figure 1). A diagnosis of spontaneous bladder rupture was made, and an urgent urology consult was placed. Emergent exploratory laparotomy confirmed a very large posterior bladder wall defect extending into the bladder dome. The defect was surgically repaired. The patient had an uneventful postoperative recovery period. Serum creatinine gradually normalized to 0.6 mg/dL, and he was discharged with a Foley catheter in place. On follow-up visit, the patient remained stable and had no complaints. Cystography was performed and showed no evidence of a leak (Figure 2).

Discussion

Spontaneous rupture of the bladder (SRUB) is an uncommon cause of abdominal pain. As stated earlier, it is even less common in patients like ours with none of the known risk factors such as a tumor, pregnancy-related causes, pelvic radiotherapy, and history of bladder surgery or bladder diverticulum. Affected patients present with nonspecific symptoms, which often results in misdiagnosis or delayed treatment. Abdominal pain suggestive of peritonitis with urinary symptoms, such as oliguria and difficulty with urination, should raise suspicion of bladder rupture, especially in patients with a history of bladder disease.⁴

It is important to note that our patient had an elevated creatinine level of 8.3 mg/dL. Differentials for this kidney injury in

this setting include postrenal azotemia, which we presume our patient had. Another possible differential for azotemia described in the literature in the setting of spontaneous bladder rupture is “pseudo-renal failure” which has resulted in several cases of bladder rupture being incorrectly diagnosed as acute kidney injury (AKI).⁴ The mechanism behind azotemia is thought to involve the phenomenon of “reverse auto-dialysis” of the peritoneum. Essentially, as toxic products in the urine, such as urea and creatinine, leak into the abdomen from the ruptured bladder, they are absorbed in higher rates than normal, contributing to elevated serum levels that may be falsely attributed to renal failure. To avoid misdiagnosis, it is important to obtain peritoneal fluid analysis which will show urea and creatinine levels that are significantly higher than those in the blood.⁴ We believe that our patient likely had postrenal AKI, considering the findings of enlarged prostate and the dramatic improvement in his renal function just after the placement of Foley catheter.

Urinary bladder rupture has the potential to be fatal if not treated in a timely manner. Hence, early diagnosis and rapid intervention is crucial. Traditionally, surgery has been recommended for intraperitoneal bladder rupture, whereas more conservative management with an indwelling urethral catheter is shown to be effective in most cases of extraperitoneal bladder rupture.¹ If not treated promptly, serious complications such as bacteremia and septic shock can result.⁵ Although CT abdomen and pelvis can clinch the diagnosis, CT cystography may be the best preoperative noninvasive examination tool for both diagnosis and evaluation.

Conclusion

There should be a high index of suspicion for spontaneous bladder rupture in patients with an acute abdomen who have an associated urinary bladder condition. Rapid diagnosis and treatment is crucial to avoid negative outcomes. In this case, a middle-aged male who presented with suprapubic pain and oliguria was found to have a spontaneous intraperitoneal bladder rupture which was successfully repaired with surgery. Although our patient had insignificant past medical history for predisposing factors for bladder rupture, his 3-day history of inability to pass urine could have possibly weakened the walls of his bladder and together with the trauma related to Foley placement resulted in the rupture.

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Ethical Approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed Consent

Informed consent for patient information to be published in this article was verbally obtained.

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