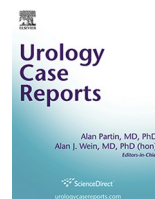




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Trauma and Reconstruction

Spontaneous Urinary Bladder Perforation: An Unusual Presentation of Diabetes Mellitus[☆]

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ABSTRACT

Spontaneous urinary bladder perforation is a rare event, which requires immediate medical attention due to its extremely high morbidity and mortality. We report a case of a 36-year-old man who presented with acute-onset abdominal pain without any inciting events. His glucose level at the time of presentation was 1107 mg/dL. On initial abdominal imaging, it was believed that he had a large pelvic mass likely originating from the bladder. On further workup at our hospital, it was discovered that he had an intraperitoneal perforation after which he underwent an exploratory laparotomy and a cystorrhaphy.

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Introduction

Spontaneous bladder perforation (SBP) is an extremely rare event with almost all of the cases reported having a history of previous bladder manipulation, lower urinary tract obstruction, pelvic radiotherapy or surgery, inflammation, and malignancy.¹ Other lesser causes reported include binge alcohol intake and tuberculosis cystitis.² Because of its rarity, SBP is often very low or is never on the differential leading to a very high mortality rate.

Case presentation

We report a case of a 36-year-old man with no known significant medical or surgical history who awoke in the early morning hours with abdominal pain, nausea, vomiting, and hematuria. The patient reported to his local emergency room where he denied history of trauma, dysuria, urinary urgency, urinary tract infection, urinary retention, urinary catheterization, extreme fluid, alcohol or coffee intake, pelvic surgery, radiotherapy, diagnosis of any malignancy, or recent tuberculosis exposure. On examination, his abdomen was distended, firm, minimally tender, and without guarding. Workup revealed a white blood cell count of 5.8 THO/ μ L, hemoglobin level of 8.8 g/dL, creatinine level of 5.2 mg/dL, potassium level of 7.1 mmol/L, and glucose level of 1107 mg/dL. He was

started on an insulin drip to control his glucose levels. A computed tomography (CT) scan of the abdomen and pelvis revealed a “bladder mass extending beyond the bladder wall and involving the peritoneum diffusely and a severely distended stomach with air and fluid” (Fig. 1). A nasogastric tube was placed for bowel decompression, and a urinary catheter was placed with gross hematuria output. The patient was believed to be obstructed secondary to a large pelvic mass, and on hospital day 3, after he was stabilized and his glucose levels were controlled, he was transferred to our hospital for further care.

On arrival to our institution, his abdomen was soft but distended and minimally tender without guarding. After review of his history, examination, and films, there were concerns for bladder perforation and hemoperitoneum. A cystogram with 150-mL Isovue contrast revealed a bladder perforation with no significant filling defect to account for the bladder mass that had been read on the CT scan (Fig. 2). A cystoscopy confirmed the presence of the bladder perforation and the absence of a bladder mass. A magnetic resonance imaging scan of the abdomen and pelvis confirmed the absence of an extravesical pelvic mass. The patient was subsequently taken for an exploratory laparotomy. Immediately on entering his peritoneal cavity, significant amount of blood and blood clots were encountered and removed. Dissection down to the bladder was carried out, and in the absence of adhesions and pelvic mass, we easily found the through and through bladder perforation site located at the posterior aspect of the dome of the bladder. It was approximately 1 cm in diameter. The bladder was examined without any intravesical abnormalities visualized. Edges of the perforation site were excised to rule out tumor, and the bladder was closed in a standard 2-layer fashion. The bowels were examined in their entirety and appeared

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Figure 1. Ct abdomen and pelvis.

within normal limits. The abdomen was completely inspected and palpated, and there was no evidence of a mass or metastatic disease.

Postoperatively, our patient's symptoms improved significantly. Pathology from the bladder perforation edges was benign with no tumor seen. Follow-up voiding cystourethrogram on postoperative day 14 revealed a well-healed bladder, and his Foley catheter was removed. He was discharged on insulin after his HgbA1c was found to be 9.0 DCCT%.

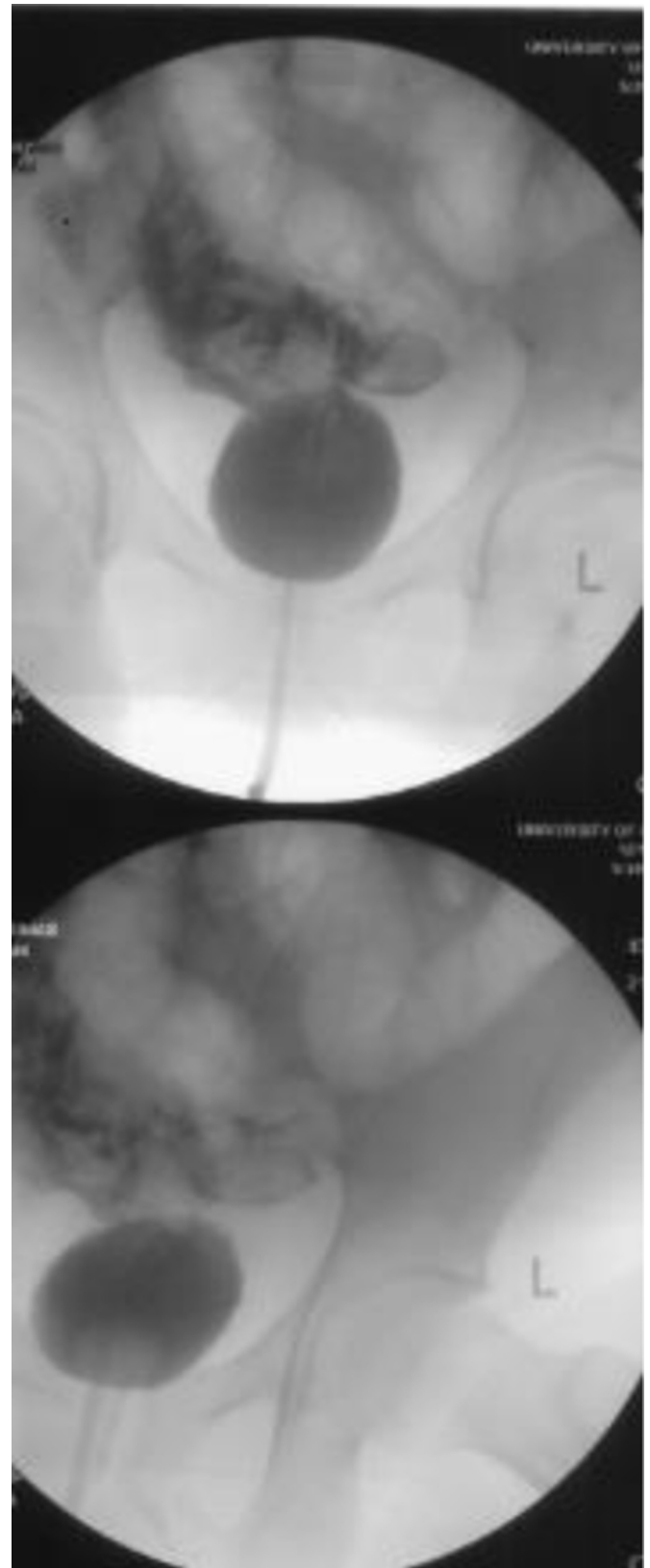


Figure 2. Intraoperative cystogram.

Discussion

SBP is an extremely rare and potentially fatal urologic emergency. Most cases reported in the literature included an underlying

etiology responsible for the rupture.¹ In contrast, our patient lacked any risk factors. To our knowledge, there have been no cases reported of SBP as the presentation of diabetes mellitus.

Patients experiencing SBP typically present with severe abdominal pain, tenderness, and guarding.³ Surprisingly, our patient's examination was inconsistent with peritonitis. Our decision to perform a cystogram first evolved after a thorough discussion on his presentation, history, and review of the outside-hospital CT scan raised suspicions for bladder perforation.

Prompt diagnosis of SBP is important in reducing the high morbidity and mortality associated with it. Once the diagnosis is made, immediate definitive repair is warranted. Although laparoscopic repair of SBP has been described in the literature,⁴ multiple factors led us to perform an open repair including length of time between presentation and the time to repair and anticipation of significant amount of scarring and inflammation.

Diabetic cystopathy can occur silently and early in the course of diabetes regardless of the severity of the disease.⁵ In the past, it has been classically described as impaired bladder sensation, increased cystometric capacity, decreased bladder contractility, impaired uroflow, and, in the later stages of the disease, increased residual urine volume. More recent studies have shown that detrusor

overactivity appears to be a more common symptom, occurring in up to 55% of patients with diabetic cystopathy. A thorough history and urodynamics are essential in making the diagnosis.

Overall, the prognosis of spontaneous bladder rupture is very poor with a mortality rate of up to 80%.⁴ Although the mortality is highest around the time of rupture, some patients have died months after their initial event. It is only by including rupture of the urinary bladder in the differential for patients presenting with an acute abdomen that morbidity and mortality can be reduced.

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