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Endoscopic management of a spontaneous rectus sheath hematoma causing bladder perforation

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ABSTRACT

Rarely pelvic hemorrhage events can lead to bladder perforation. We present a 48-year-old female who developed a spontaneous rectal sheath hematoma which perforated her bladder. Her case was monitored with serial MRI imaging and managed with two endoscopic clot resections which demonstrated new epithelialization of the bladder wall across the hematoma point of entry. We conclude that the bladder has an impressive potential to heal and select cases of symptomatic invasive bladder hematomas may be monitored with serial imaging and managed endoscopically.

1. Introduction

Classic mechanisms of bladder perforation include traumatic and iatrogenic injuries. There are rare reports of bladder perforation due to vascular events causing pressure necrosis on the bladder wall. Hemorrhagic bladder injuries can be life-threatening with sources such as placenta percreta and pelvic hematomas arising from retroperitoneal or anterior abdominal wall vessels. In the unstable patient, emergent arterial embolization or open surgical repair of the bladder may be required. The case presented here is unique because of its delayed presentation (a bladder mass two months after development of a pelvic hematoma) and its management with serial imaging and endoscopic resection.

2. Case presentation

Our patient was a 48-year-old female, with a history of remote Roux-en-Y gastric bypass, well-controlled Crohn's disease, rheumatoid arthritis, and atrial fibrillation on anticoagulation, who became critically ill with septic ascending cholangitis. Her initial management at an outside hospital consisted of a laparoscopic cholecystectomy and endoscopic retrograde cholangiopancreatography (ERCP) after which she was admitted to the intensive care unit. Her hospital course was further complicated by acute tubular necrosis requiring temporary dialysis, atrial fibrillation with rapid ventricular response, and a spontaneous rectus sheath hematoma while on intravenous heparin. Despite cessation of anticoagulation, she continued to require blood transfusions, thus she underwent embolization of her right inferior epigastric artery. At some point, the hematoma perforated the right lateral wall of her bladder. This bladder injury was not initially recognized, though during her initial hospitalization she had gross hematuria in addition to pain and leaking around her foley catheter likely secondary to hematoma induced bladder spasms. Months later she had persistent lower urinary tract symptoms including urgency/frequency, dysuria, and gross hematuria. Cystoscopy was performed and showed a large friable right sided bladder mass. A biopsy was performed, showing necrotic debris and rare reactive urothelium. She was then referred to our institution. Magnetic resonance urography (MRU) was performed to characterize the mass and rule out additional pathology of the genitourinary tract. The initial MRU, three months after the hemorrhage event, showed that the hematoma had decreased in size from 15cm to 10cm but was now perforating through the right lateral wall of her bladder (Fig. 1). She underwent transurethral resection (TUR), confirming a large, smooth, homogeneous bladder mass protruding from the right lateral wall. Resection was carried out to the level of the bladder mucosa with further clot visualized extending through a defect in the bladder wall, which resembled a bladder diverticulum. The pathology of the resected tissue showed a hematoma and was negative for malignancy. After this procedure she had worsening symptoms of urgency and terminal voiding pain. Repeat MRU was performed 8 weeks later (and showed further extrusion of the hematoma within the bladder lumen (Fig. 1). We discussed several options with the patient including trial of an indwelling catheter, repeat endoscopic resection, versus possible open surgery with partial cystectomy. The patient elected to repeat TUR

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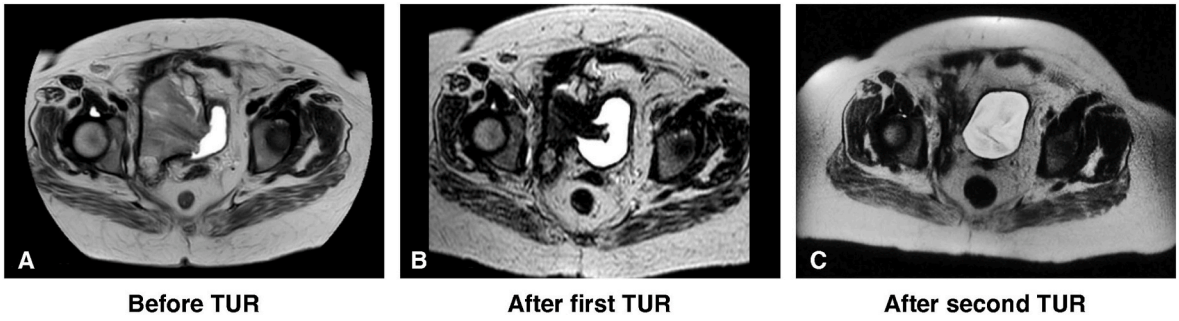

Fig. 1. Serial cross-sectional MR imaging of bladder hematoma.
A: Before first endoscopic resection (3 months after initial hemorrhage). B: 2 months after first TUR (5 months after initial hemorrhage). C: 3 months after second TUR (8 months after initial hemorrhage). (TUR: transurethral resection).

which again revealed a large, organized hematoma protruding from a 4 cm bladder wall cavity. Extensive resection was carried out, this time entering the right lateral wall cavity. After identifying and amputating the base of the hematoma stalk, we visualized completely healed epithelium. After this definitive evacuation of clot she had complete resolution of her irritative voiding symptoms. MRU 13 weeks after the second TUR confirmed all the hematoma had been evacuated and her bladder had a sacculation of the right lateral bladder wall, bordering the residual area of hematoma measuring 3.7 cm (Fig. 1).

Two years from initial injury, she had another episode of gross hematuria associated with a UTI. CT urogram demonstrated thickening of the right lateral bladder and tethering to the pelvic sidewall. Cystoscopy confirmed a persistent right lateral diverticulum with well healed epithelium.

3. Discussion

There are six published cases of hematomas invading through the bladder wall.[1–5] All patients were females, over 50 years of age, anticoagulated, and most presented with the bladder perforation in the acute setting. The two primary hemorrhagic sources included retroperitoneal hematomas (following intravenous femoral access) and rectus sheath hematomas (after subcutaneous injection of anticoagulants injuring epigastric vessels).[1–5] Management approaches included embolization, foley catheter decompression, and open bladder repair. Presenting symptoms include acute abdominal pain and gross hematuria. These extravesical vascular injuries are believed to cause pressure necrosis of the bladder wall. Decompensation in these patients can occur quickly, and once a hematoma spreads into the bladder it loses the benefit of tamponade and can lead to hemorrhagic shock. As with our patient, three cases required urgent embolization of the bleeding vessels.[2,5] One hemodynamically unstable patient underwent emergent exploratory laparotomy to control bleeding from a large rectus sheath hematoma, at which time the bladder injury was discovered and repaired.[4] Another case required open bladder repair after a retroperitoneal bladder perforation developed into an intraperitoneal injury.[1] The remaining cases were successfully managed conservatively with an indwelling catheter for bladder decompression as their only intervention for the bladder injury.

A unique aspect of this case was the delayed presentation. It is possible that bladder perforation was not initially recognized since she was anuric and on dialysis. She started making urine 10 days after her acute hemorrhage event. This anuric period without blood clot exposure to urokinase may have limited lysis of the hematoma and promoted tamponade.

Her delayed presentation three months after hemorrhage allowed for successful management with serial imaging and endoscopic resection of the intraluminal clot. In hindsight, endoscopic intervention was clearly an efficacious therapy strategy as the bladder had healed completely, however there was uncertainty about the best management strategy when initially presenting to our institution. Because of this uncertainty we chose to share the management and outcomes of this case.

4. Conclusion

We propose that select cases of bladder perforation with symptomatic bladder hematomas, in the hemodynamically stable patient, may be safely monitored with serial imaging. With time the bladder can heal, and endoscopic management can be utilized for symptom control. Urologists should have a low threshold to perform a cystogram if an acute perforation is suspected.

Disclosures

The authors have no disclosures.

Consent

The patient provided written consent for publication of their medical details.

Declaration of competing interest

The authors of this case report have no conflicts of interest regarding the publication of this article.

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