Obstructive Uropathy and Sepsis Caused by an Inguinoscrotal Bladder Hernia: A Case Report

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ABSTRACT

Introduction: Inguinoscrotal bladder hernia is a very rare pathology, occurring in up to 4% of all inguinal hernias in the general population. We present a case of an inguinoscrotal bladder hernia causing obstructive uropathy and sepsis.

Case Presentation: A 59-year-old obese man presented with left-sided flank and abdominal pain that radiated to his left groin. On initial clinical examination, there was no evidence of an inguinal hernia. A computed tomography scan revealed a left inguinoscrotal bladder hernia with associated left-sided upper tract urinary obstruction. Two days later, his clinical course deteriorated and he developed sepsis of urinary origin. The patient underwent multiple procedures, including left ureteral stent placement, left percutaneous nephrostomy tube placement, and left inguinal herniorrhaphy. As of this writing, he remains with a left nephrostomy tube in place because of persistence of left hydroureteronephrosis, but he is doing well clinically.

Discussion: We highlight the fact that in cases where there is upper urinary tract obstruction and sepsis, it is prudent to first stabilize the patient via decompression of the upper urinary tract and antibiotics before herniorrhaphy. This report illustrates a unique case of this interesting pathology, as well as the multiple complications and pitfalls that may arise from it.

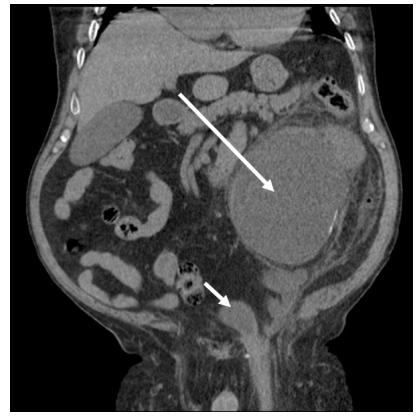

Figure 1. Computed tomography scan of the abdomen and pelvis. The short arrow indicates the left inguinal hernia involving the bladder. The long arrow indicates the associated severe left-sided hydroureteronephrosis.

INTRODUCTION

Inguinoscrotal bladder hernia is an unusual pathology that occurs in up to 4% of all inguinal hernias seen in the general population.[1] We report the rare case of a large left inguinoscrotal bladder hernia causing severe left-sided hydroureteronephrosis and sepsis of urinary origin.

CASE PRESENTATION

Presenting Concerns

A 59-year-old obese man presented to the Emergency Department with 1 day of left-sided flank and abdominal pain radiating to his left groin. He denied any noticeable bulge or mass in his groin. He did report subjective fevers, nausea, dysuria, and an episode of transient gross hematuria the day before presentation. He denied any urinary retention or difficulty emptying his bladder. There was no appreciable inguinal hernia on initial evaluation.

Abdominal examination revealed mild left abdominal tenderness with no evidence of an acute abdomen. He also had mild left flank tenderness. His urinalysis was positive for microscopic hematuria, pyuria, leukocyte esterase, and nitrite. His blood tests revealed an elevated creatinine of 1.63 mg/dL (baseline creatinine approximately 0.8 mg/dL) but were otherwise unremarkable. A computed tomography (CT) scan of the abdomen/pelvis revealed a left inguinal hernia involving the bladder with associated severe left-sided hydroureteronephrosis (Figure 1). To complicate matters, the patient was also noted to have remote, well-healed bilateral pubic rami fractures. A physical examination shortly after the CT scan failed to reveal any obvious inguinal hernia.

Therapeutic Intervention and Treatment

We consulted the general surgery team. They were unsure as to whether or not the left-sided ureteral obstruction was caused by the bladder hernia or caused by scarring and adhesions from the old pubic rami fractures. The decision was made to hold off on hernia repair at that time and to proceed with further imaging to better delineate the patient's anatomy and to identify the point of obstruction after his creatinine improved. A Foley catheter was placed for maximal drainage, broad-spectrum intravenous antibiotic therapy was initiated, intravenous fluids were given, and the patient was admitted to the hospital for observation.

Initially, the patient's hospital course was stable and he was doing well clinically with conservative measures. Two days after admission, the patient rapidly decompensated overnight and developed altered mental status and respiratory distress that required intubation. His creatinine had uptrended to 2.85 mg/dL despite intravenous hydration and Foley decompression.

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His blood and urine cultures revealed methicillin-sensitive *Staphylococcus aureus*. On examination, he now had an obvious left inguinal hernia that was reducible and not incarcerated. The decision was made to take the patient to the operating room for decompression of his left upper urinary tract. Per recommendations from the general surgery team, the inguinal hernia repair was to take place on an elective basis after the patient was stabilized. He was thus taken to the operating room for cystoscopy, left retrograde pyelogram, and left ureteral stent placement. Intraoperatively, the patient was noted to have a very distorted anatomy of the trigone with the right ureteral orifice positioned at the expected location of the left ureteral orifice. The left ureteral orifice was very deviated to the left. A left retrograde pyelogram revealed severe left hydroureteronephrosis associated with significant tortuosity. A left ureteral stent was successfully placed.

The following day, the patient remained in critical condition and was noted to have further creatinine elevation to 3.73 mg/dL. A repeat CT scan revealed that the proximal coil of the stent was in good position, but the distal aspect had retracted back into the ureter. The decision was made to place a left nephrostomy tube.

The patient's creatinine level and overall clinical picture improved during the next several days. Unfortunately, despite the use of sequential compression devices and subcutaneous heparin, the patient developed a right lower extremity deep vein thrombosis and right arm basilic vein thrombus, which ultimately required inferior vena cava filter placement and extended his hospitalization. Of note, the patient's left inguinal hernia became more prominent throughout the hospitalization.

Two weeks after stent placement, the patient's hernia became incarcerated, and he was taken to the operating room for left inguinal hernia repair. Intraoperatively, he was noted to have a large left indirect inguinal hernia containing a large amount of incarcerated bladder. The hernia was successfully reduced and repaired with a polypropylene plug mesh and onlay patch. The patient's remaining hospital course was unremarkable, and he was discharged home 5 days after hernia repair with a left nephrostomy tube in place. His creatinine was 0.84 mg/dL at the time of discharge.

Approximately three weeks after discharge, the patient underwent left ureteroscopy with retrieval of the previously retained left ureteral stent. On cystoscopy, it was noted that his ureteral orifices were now in orthotopic position. He was noted to have persistence of severe left hydronephrosis on retrograde pyelography. Because his creatinine was normal and he was not having any flank pain, his nephrostomy tube was capped at the end of the operation. His creatinine remained normal, and he did not develop any flank pain during the next few days.

The plan was then to perform an antegrade nephrostogram in anticipation of removal of the nephrostomy tube. Two days after the ureteroscopy procedure, the patient underwent left antegrade nephrostogram. Upon uncapping the nephrostomy tube, there was drainage of 600 mL of pus. The nephrostogram also revealed severe left-sided hydroureteronephrosis. The decision was made to exchange the nephrostomy tube and leave it uncapped. The patient was also placed on a course of antibiotics.

The patient remained stable and did not develop any evidence of sepsis. Approximately six and a half weeks later, a repeat left nephrostogram revealed moderate left hydroureteronephrosis that was improved since the previous nephrostogram but still present. The decision was made to leave the nephrostomy tube in place and again leave it uncapped. Of note, the patient's creatinine subsequently remained within normal limits and the patient denied any flank pain or urinary complaints.

Follow-up and Outcomes

As of this writing, the patient remains with a left nephrostomy tube in place because of the persistence of his left hydroureteronephrosis. He is doing well clinically with no evidence of sepsis, and his kidney function has been optimized. The patient will undergo interval antegrade nephrostograms every four to six weeks. After he demonstrates significant improvement of his left-sided hydroureteronephrosis, his left nephrostomy tube will be capped and eventually removed. Figure 2 presents a timeline of the case.

DISCUSSION

Inguinoscrotal bladder hernia is indeed a rare pathology. Signs and symptoms of bladder involvement may include gross hematuria, frequency, nocturia, groin bulge, and a 2-stage micturition cycle in which the patient voids normally and then compresses the groin to further empty the bladder.[1-5] It is important to note, however, that the patient may be completely asymptomatic from a genitourinary standpoint. Bladder association in inguinal hernias is often not detected before herniorrhaphy.[5,6] In patients undergoing inguinal hernia repair, less than 7% of bladder hernia cases are diagnosed preoperatively.[6] Thus, it is important to maintain a high degree of suspicion in high-risk patients with inguinal hernias. High-risk groups include obese men with urologic symptoms, men with prior inguinal hernia repairs, and men older than age 50 years.[7] In these patient populations, some authors recommend performing a CT scan before inguinal hernia repair to evaluate the contents of the hernia.[7] This will help to avoid any intraoperative pitfalls such as a bladder injury. Although bladder hernias occur in only 1% to 4% of all inguinal hernias in the general population, incidence approaches 10% in men older than age 50 years.[5] The standard treatment for inguinoscrotal bladder hernia is herniorrhaphy.[5] Bladder resection should be undertaken only in cases with tumor in the herniated bladder, bladder wall necrosis, a tight hernia neck, or a herniated bladder diverticulum.[3,8]

Upper tract urinary obstruction may also be a consequence of bladder herniation. Neulander et al[1] reported a case of a 69-year-old man who presented on an elective outpatient basis with a large left inguinoscrotal bladder hernia leading to severe left hydronephrosis, as well as mild right hydronephrosis. The patient was also noted to have obstructive lower urinary tract symptoms. The authors opted out of immediately decompressing the left upper urinary tract (ie, placement of a ureteral stent or nephrostomy tube)

because the creatinine was normal and the hernia was promptly repaired. At a 4-month follow-up, the authors noted that the patient's urinary symptoms had improved significantly, and he was able to empty his bladder well without a post-void residual. However, he was noted to have persistence of severe left-sided hydronephrosis on imaging, but no further procedures were pursued because he was clinically well.[1]

In our case, given the patient's critical condition, both the urology and general surgery teams agreed that it was most prudent to proceed with immediate decompression of the left upper urinary tract, resuscitation, and stabilization before undertaking repair of the hernia.

In retrospect, our patient would have certainly benefited from initial hernia repair at the time of presentation. At the time of the initial general surgery consult, however, there was no appreciable hernia on examination, and the possibility remained that the left-sided ureteral obstruction was caused by adhesions from the prior pubic rami fractures. Because our patient was clinically stable with adequate urine output via the Foley catheter, it was thought that he could initially be managed conservatively until further imaging was obtained to help identify the point of obstruction. Unfortunately, he rapidly decompensated. Given his septic picture, immediate decompression of his left upper urinary tract became the priority instead of herniorrhaphy.

We could have saved the patient an additional procedure by first proceeding with left nephrostomy tube placement, as opposed to first placing a left ureteral stent. Given the patient's complicated anatomy and extreme ureteral tortuosity, the chance of running into complications with ureteral stent placement was high. Nevertheless, our aim was to maximize patient comfort and to avoid the burden of a nephrostomy bag. Even though we noted good stent placement intraoperatively with appropriate proximal and distal coils and a proper stent length, the stent unfortunately retracted once the ureter straightened out slightly.

Lastly, it is unclear whether the patient's right lower extremity deep vein thrombosis could have been avoided. He was given sequential compression devices and was also placed on subcutaneous heparin at the time of admission. The subcutaneous heparin was held at times in the periprocedural and postprocedural periods to minimize clinically significant gross hematuria.

In conclusion, inguinoscrotal bladder hernia is an uncommon entity that may go unrecognized when a patient presents with a reducible inguinal hernia. A high degree of suspicion should be maintained in those patients with inguinal hernias who are at high risk for bladder herniation. CT scans will probably provide the most comprehensive information regarding a patient's anatomy in this population. In cases where there is upper urinary tract obstruction and sepsis, it is prudent to first stabilize the patient via decompression of the upper urinary tract and antibiotics before herniorrhaphy. Furthermore, we recommend considering nephrostomy tube placement over ureteral stents in cases where there is a bladder hernia in the setting of upper urinary tract obstruction with significant hydroureteronephrosis

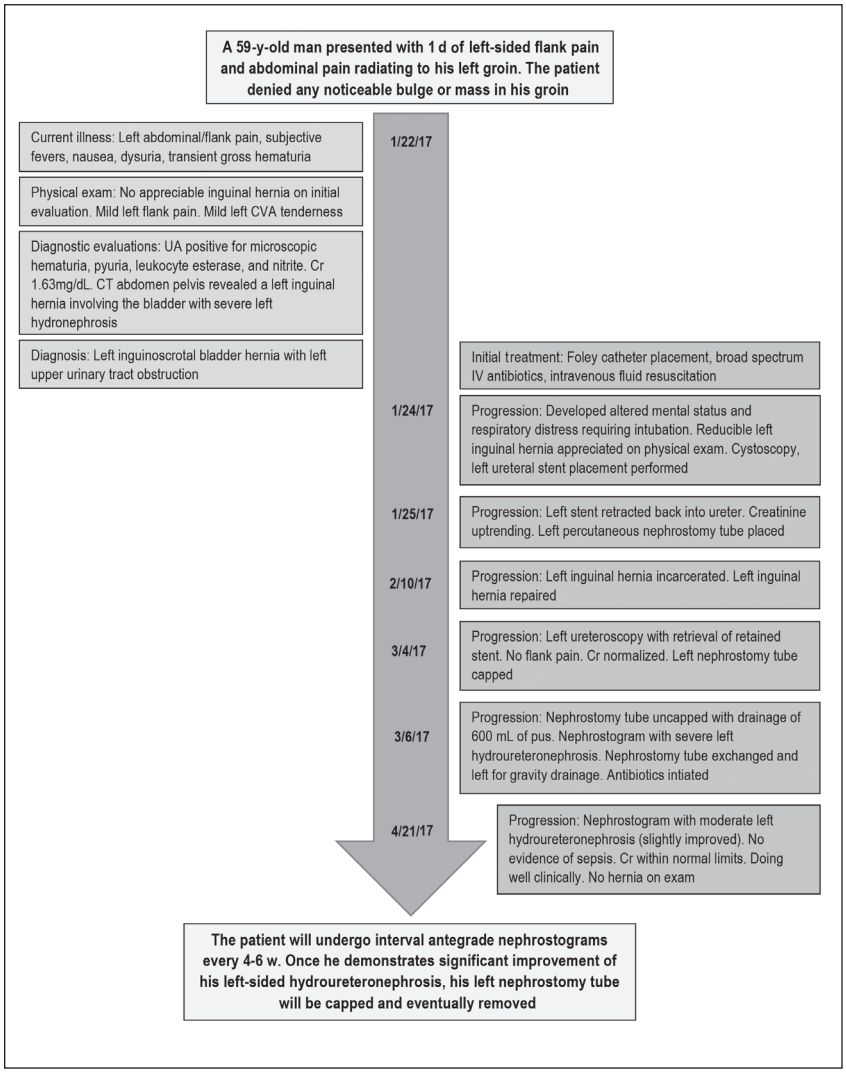

Figure 2. Timeline of the case. Dates are month, day, year.

Cr = creatinine; CT = computed tomography; CVA = costovertebral angle; exam = examination; IV = intravenous; UA = urinalysis.

and a tortuous ureter. As long as the hernia is not incarcerated, it may be repaired on an elective basis. ❖

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

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A Numerous Train of Diseases

Inasmuch as the structure of the human frame has been so set together by Nature, that it is unable, from the continuous flux of particles, to remain unchanged; whilst, from the action of external causes, it is subjected to influences beyond its own: And since, for these reasons, a numerous train of disease has pressed upon the earth since the beginning of time; so without doubt the necessity of investigations into the Art of Healing has exercised the wit of mankind for many ages.

— Thomas Sydenham, 1624-1689, English physician known as "The English Hippocrates"