CASE REPORT

Obstructive uropathy from complete bladder and bilateral ureteral incarceration within an inguinal hernia

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SUMMARY

A 59-year-old man with a medical history of hypertension, gout and obesity presented to the hospital with a chief complaint of worsening scrotal oedema. The patient endorsed associated symptoms of decreased force of stream on urination, stranguria and hesitancy with slight dysuria. Physical exam showed an effaced umbilicus and phallus with a hidden scrotum estimated to be 30×20×30 cm in size. Imaging and lab findings led to a diagnosis of total bladder herniation within an incarcerated right inguinal hernia. Surgical repair of the inguinal hernia and replacement of the bladder and ureters led to a resolution of urinary symptoms with no evidence of vesicoureteral reflux or urinary retention.

BACKGROUND

This is an exceedingly rare complication of an inguinal hernia. To the best of our knowledge, very few cases of total bladder herniation exist in the literature. It is important to characterise the presentation and diagnosis of herniated bladders because timely diagnosis stands to prevent the development of future sequelae including acute or chronic renal failure due to postrenal obstruction. This also underscores the importance of timely surgical management of an inguinal hernia as soon as patients become symptomatic. This is due to the possibility of complications such as incarceration leading to herniation of other structures and resultant physiological distress.

CASE PRESENTATION

A 59-year-old man with a medical history of hypertension, gout and obesity presented to the hospital with a chief complaint of worsening scrotal oedema. The patient endorsed associated symptoms of decreased force of stream on urination, stranguria and hesitancy with slight dysuria.

Of note, the patient had presented to the office previously with less significant scrotal oedema and bilateral pedal oedema. Symptoms at this time included polyuria, nocturia and urge incontinence, but did not include dysuria. The patient was diagnosed with a urinary tract infection, and was subsequently treated with ciprofloxacin and told to return, but he was lost to follow-up at this time. Additionally, imaging from 3 years prior was reviewed at this visit and showed mild right hydronephrosis and hydroureter, due to distal right

ureteral incarceration within an inguinal hernia (figure 1).

The patient has no significant family history of any medical conditions. Social history is significant for eight caffeinated drinks daily, but the patient denied smoking, alcohol use or illicit drug use.

Physical exam in the hospital was performed with a Foley catheter in place. Significant findings included an effaced umbilicus and phallus with a hidden scrotum estimated to be 30×20×30 cm in size.

INVESTIGATIONS

Laboratory findings showed serum creatinine of 18 mg/dL and potassium of 6.0 mg/dL. CT without contrast showed total bladder herniation into the scrotum within an incarcerated right inguinal hernia, pulling on the ureters, and moderate to massive bilateral hydronephrosis. No kidney stones were noted on CT (figures 2–4).

TREATMENT

The patient was taken to the operating room for repair and reduction of the incarcerated inguinal hernia as well as reduction of his bladder and ureters into proper anatomical position. The Bassini technique was used in the hernia repair. This

Figure 1 Initial coronal reconstruction of CT with contrast from 3 years prior showing dilated right proximal ureter and bladder beginning to herniate through the inguinal canal.

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Figure 2 Coronal non-contrast CT reconstruction at the time of presentation showing dilated right and left ureters, both herniating along with the bladder into the scrotum.

technique was preferred to the Lichtenstein mesh repair technique for its lower rates of postoperative pain and infection, and the surgeons had decided that mesh was not needed to repair the fascial defect. During the procedure, the hernia was identified as a direct inguinal hernia containing the right ureter and bladder. Of note, the left ureter could not be visualised during surgical repair. The testicle was left in the scrotum and was not injured, and it was not removed from the scrotal sac. The hernia sac was left intact in the scrotal cavity to avoid further injury to the testicle.

OUTCOME AND FOLLOW-UP

One month postsurgery, the patient was found to have no significant bladder retention and no evidence of vesicoureteral reflux (figure 5). At this time, the patient had been lost to follow-up.

Two years later, the patient presented to the emergency room with a case of acute pancreatitis. At the time of admission, the patient had a complete lack of urinary symptoms. Labs suggested

Figure 3 Axial non-contrast CT reconstruction at the time of presentation showing the dilated right proximal and distal ureters and bladder herniating, now in the scrotum.

Figure 4 Sagittal non-contrast CT reconstruction at the time of presentation showing the dilated right ureter tethering and herniating along with the bladder into the scrotum.

mild renal insufficiency likely due to a prerenal cause, and CT imaging showed lack of renal calculi or hydronephrosis, as well as resolution of his prior right inguinal hernia. This is significant due to its demonstration of a long-term success of surgical treatment for his initial chief complaint.

DISCUSSION

Herniation of the bladder is a rare complication of an inguinal hernia, as bladder involvement is estimated to occur in 1%–4%

Figure 5 Postoperative cystogram in prone position showing restoration of normal anatomy.

of cases of inguinal hernias. It is estimated that less than 7% of cases are diagnosed prior to surgery.¹ Total bladder herniation leading to obstructive uropathy and renal failure is extraordinarily uncommon. Classic symptoms include polyuria, dysuria and nocturia.^{2,3} Not all cases have been associated with scrotal swelling, but this has been reported in the literature.⁴

Other published cases have shown similar presentations, including bilateral hydronephrosis and elevated serum creatinine.³ They also demonstrated the distortion of anatomy that such herniations can cause, including inability to isolate certain structures during surgical management. Other methods of hernia repair have been used, including the use of Kugel mesh.⁵

Due to the potential complications of unrecognised or delayed repair of inguinal bladder herniation, it is vital to have a high index of suspicion if the above-mentioned symptoms are noted. The possible sequelae are demonstrated by this patient, as the

hernia had been present for some time as noted by CT imaging prior to presentation, with obstructive nephropathy just 3 years later. This case shows that some cases, although few, show a complete resolution of symptoms and a return to premorbid renal function.⁶

Contributors LHH was the lead author of this project, having reviewed the case in its entirety and performed the literature review used in the Discussion section. SMS reviewed the case in its entirety and contributed significantly to the writing of the manuscript. DKH provided the case mentioned here, as well as served in an advisory role for this project.

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Learning points

- ▶ Timely diagnosis and treatment of a symptomatic inguinal hernia is vital to the prevention of potentially significant sequelae that can involve multiple organ systems.
- ▶ Symptoms of dysuria, polyuria and pedal or scrotal oedema in the context of a known inguinal hernia should raise suspicion for urinary tract herniation due to incarceration.
- ▶ Surgical repair can greatly improve or even resolve a patient's symptoms. The resultant improvement in quality of life cannot be understated.

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