

# Bladder hernia complicated with cystolithiasis and bladder tumor: Two cases' analysis

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## Abstract

Inguinal hernia is frequent and reaches up to 8% of the population. It was reported that over 20 million inguinal hernia repairs are performed annually. The bladder may herniate in 1%–3% of the cases through the inguinal canal that can be responsible for various symptoms. The most specific is the classic “two-stage micturition.” However, the diagnosis usually remains unspecific, and a surgeon can fall in the trap of a “simple” inguinal hernia and cause accidental damages to an undiagnosed bladder hernia. Therefore, a clear diagnosis must be assessed based on clinical and radiological findings to avoid complications. In these two presented cases, the patients presented cystolithiasis complicating the bladder herniation. One of the patients also developed a bladder tumor which appeared to be urothelial carcinoma.

**Keywords:** Bladder hernia, bladder tumor, case report, cystolithiasis

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## INTRODUCTION

Inguinal bladder hernia is an uncommon entity, observed in 1%–3% of inguinal hernias.<sup>[1]</sup> The diagnosis is often not recognized before surgical repair; <7% are diagnosed preoperatively while 16% are diagnosed postoperatively.<sup>[2]</sup>

We report two cases of patients presented with cystolithiasis complicating the bladder herniation. One of them developed a bladder tumor which appeared to be urothelial carcinoma.

## CASE REPORTS

### Case 1

A 52-year-old man was referred to our department for right inguinal swelling and intermittent irritative lower urinary

tract symptoms (LUTSs) with dysuria. The condition had started 6 months ago. The patient had to squeeze his scrotum to complete urination.

Physical examination revealed a 7-cm painless, reducible right inguinal hernia extending into the right hemiscrotum. The volume of the prostate on the rectal examination was in normal ranges.

After ultrasound examination, we suspected a lithiasic bladder herniation, and X-ray imaging of the urinary tract demonstrated a round opacity in the right groin. A computed tomography (CT) scan showed that the right side of the bladder wall was herniated through the right inguinal canal into the right hemiscrotum and multiple lithiasis was found in the bladder [Figure 1].

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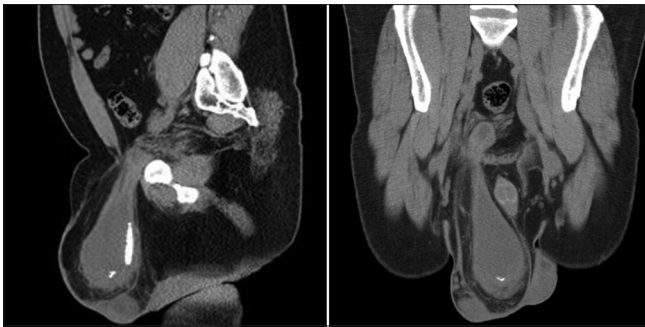


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**Figure 1:** The right side of the bladder wall herniating through the right inguinal canal into the right hemiscrotum with multiple bladder lithiasis

The patient underwent surgical exploration of the right groin under general anesthesia. The herniated bladder was dissected from the inguinal canal and from the hemiscrotum and therefore returned into its normal pelvic position. The inguinal floor was repaired using Lichtenstein hernioplasty with synthetic mesh. A cystoscopy was then performed while the stones were fragmented and removed. The postoperative course was uneventful. Soon after surgery, the urinary catheter was removed.

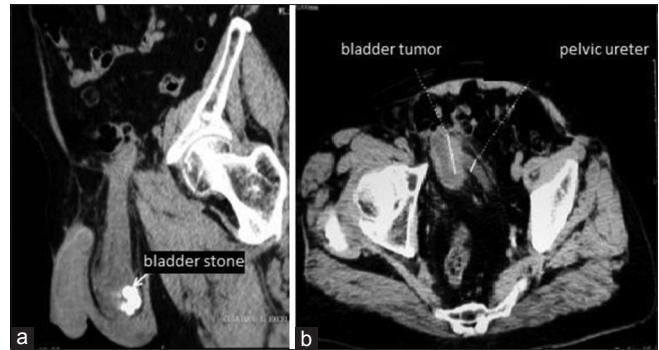
### Case 2

An 86-year-old man with a medical history of hypertension consulted for macroscopic hematuria associated with a scrotal swelling for 2 months. The patient was a heavy smoker at 35 pack-years. He also reported a two-stage micturition: a first normal stream followed by a weak stream, and he had to squeeze his scrotum to complete the urination.

On physical examination, the patient presented a right inguinal swelling extended to the scrotum and gradually increasing in size during a year. This swelling was measuring 5 cm. The digital rectal touch revealed a smooth and enlarged prostate.

We first performed an ultrasound that showed an inguinal hernia with a calcification. It also showed a left pelvic renal and ureteral dilatation. The cause of the obstruction was not found. A CT revealed that the bladder and the right ureter were herniated through the wall of the inguinal canal into the scrotum. The herniating part of the bladder contained multiple calculi [Figure 2a]. It also revealed a bladder tumor in the left wall near the urethral meatus and a homolateral renal dilatation [Figure 2b].

First, we decided to treat the inguinal hernia. The patient underwent a surgical exploration, which showed that the bladder was herniating through the right inguinal canal. After dissection, the bladder was put back to its normal position. Lichtenstein repairing technique using a polypropylene mesh was performed.



**Figure 2:** Bladder herniation through the wall of the inguinal canal into the scrotum with multiple stones (a) and with bladder tumor (b)

A cystoscopy was performed after surgical repair. Multiple bladder stones and a tumor located on the left wall of the bladder were observed. We first performed ballistic lithotripsy of the bladder lithiasis, and then, we performed a complete resection of the bladder tumor. Histopathological analysis of the tumor concluded to a low differentiated urothelial carcinoma.

### DISCUSSION

Despite the frequency of inguinal hernia among all hernias (80%–83%), the herniation of the bladder is a rare condition, which occurs only in 1%–3% of the cases.<sup>[1]</sup> Levine was the first to describe this type of hernia in 1951, defining it as a “scrotal cystocele.”<sup>[2]</sup>

Age is a real risk factor, and the incidence can reach 10% in elderly patients.<sup>[2]</sup> Other factors that may increase abdominal pressure such as obesity, protrusion of perivesical fat, pelvic mass, or previous hernia surgery can also contribute to developing the hernia. It can be also revealed by a complication, such as vesicoureteral reflux, bladder rupture, sepsis, cystolithiasis, unilateral and/or bilateral hydronephrosis, renal failure, and strangulation, which may cause ischemia and bladder infarction.<sup>[3]</sup> Both of our patients developed cystolithiasis in the herniated bladder, which required ballistic lithotripsy. The calculi are most likely the result of urine stasis in the herniated portion of the bladder.<sup>[2]</sup> Bladder tumors can develop on herniated bladder. Oruç *et al.* reported 13 cases of bladder inguinoscrotal hernia with malignancies out of 116 patients (11%).<sup>[2]</sup>

Due to the absence of clear and specific clinical presentation and a variety of complications, a surgeon must always have in mind this diagnosis when examining a patient with scrotum swelling associated with LUTS.<sup>[4]</sup>

Radiological examinations may be very helpful to find the correct diagnosis. Cystography is considered the gold

standard method,<sup>[2]</sup> but ultrasound and CT can provide useful information about the location and the content of the hernia.<sup>[1]</sup>

The rarity of this condition can be the cause of accidental damages to the bladder during surgical repair of a common inguinal hernia.<sup>[5]</sup> Gomella *et al.* reported a 38% rate of unrecognized bladder injury during surgery, and patients presented postoperative complications such as gross hematuria, sepsis, or fistula formation.<sup>[6]</sup> When bladder hernia is associated with lithiasis and eventually bladder tumor-like in our case, we highly recommend treating first the bladder hernia by mesh repair and then perform a cystoscopy with both a ballistic lithotripsy for bladder calculi and a transurethral resection of the tumor at the same time because it is difficult to access to the herniated part of the bladder.

We also recommend performing radiological examinations when bladder hernia is suspected.

## CONCLUSION

The challenge for the surgeon remains in the difficulty of the right diagnosis due to the lack of specific findings on examination. The diagnosis must be suspected, especially in elderly patients with a history of a two-stage micturition associated with LUTS, but clinical presentation may be unclear. If there is an associated condition such as bladder calculi or eventually a bladder tumor, it should be treated after surgical repair.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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