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Inguinal hernia containing prostate: A case report and review of literature

Ramy Elbaz, Abdelhamid Shahin, Israr Khan

ABSTRACT

Bladder herniation through the inguinal canal is a rare clinical entity. Moreover, prostate herniation has not been reported in the literature before, as it is a fixed extraperitoneal organ. We described a unique case of an 85-year-old man presenting with acute urinary retention and bilateral hydronephrosis secondary to herniation of the urinary bladder and prostate into the right inguinal canal. The patient was deemed unfit for surgical repair due to significant comorbidities and was successfully managed with long-term urethral catheterization. This case underscores the importance of maintaining a broad differential in elderly patients with atypical obstructive uropathy and highlights the role of imaging in diagnosis.

Keywords: Computed tomography, Hernia, Inguinal canal, Prostate herniation

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INTRODUCTION

Inguinal bladder hernias are observed in approximately 1–4% of inguinal hernias, predominantly in elderly males [1]. They are often asymptomatic or develop without specific symptoms that's why it is discovered in less than 10% of cases prior to an operation and less than 20% during surgical intervention, but symptoms generally include inguinal pain or swelling associated with voiding or storage lower urinary tract symptoms (LUTS) directly linked to the inguinal bladder hernia or antecedent of prostate hyperplasia [2]. Herniation of the prostate is exceedingly rare, and to the best of our knowledge, this is the first radiologically reported case of prostate herniation. When they are significant, these hernias can cause high pressure chronic retention, leading to hydronephrosis and renal impairment, which require prompt diagnosis and intervention. This work adheres to the updated Surgical CAse Report (SCARE) Guidelines 2018 [3].

CASE REPORT

An 85-year-old male (Figure 1) with a background of long-standing hypertension and type 2 diabetes mellitus presented to the emergency department with a 3-day history of lower abdominal distension, inability to pass urine, and general fatigue. There was no fever, hematuria, or flank pain. The patient was on tamsulosin for voiding and storage LUTS over the previous years with an irrelevant surgical history. It was the first time that he was assessed for this inguinal swelling. On examination, the patient was hemodynamically stable. The initial diagnosis was a large inguinal hernia containing bowel loops with chronic urine retention caused by benign prostatic hyperplasia (BPH). Abdominal examination revealed a distended bladder on palpation and percussion and a right-sided, soft, reducible inguinal swelling with gurgling sensation and audible intestinal sounds. There was no tenderness, signs of bowel obstruction or skin

changes. On digital rectal examination (DRE), there was fecal soiling, but we could not feel the prostate.

Investigations

Laboratory studies showed:

- Elevated serum creatinine: 2.1 mg/dL (baseline ~1.1), a picture of high pressure chronic retention
- Elevated blood urea
- Mild hyperkalemia
- We routinely do not order prostate specific antigen (PSA) in patients' emergency situations. However, the patient has an old PSA on our system of 4.3 ng/mL three years before

Bladder scan showed over 900 mL of retained urine. Non-contrast computed tomography (CT) abdomen and pelvis was performed, showing:

- Bilateral hydronephrosis (Figure 2)
- Rectum only in the true pelvis (green outline) (Figure 3) with herniation of the urinary bladder (yellow outline) and prostate (red outline) into the right inguinal canal with associated bowel loops (blue outline) (Figure 4A–C). The estimated prostate volume on CT scan using the length * width * height * 0.52 formula was 73 mL.

No evidence of ureteric calculi or external compression by lymphadenopathy or mass lesions.

Treatment

A 16 Fr Foley catheter was inserted, draining over 2 liters of clear urine and the patient was followed over the next 24 hours for urine volume and color, vital signs and blood tests with adequate oral fluid replacement. Fortunately, the case was not complicated by hematuria or pathological post-obstructive diuresis. He experienced symptomatic relief, and subsequent serum creatinine improved gradually over three days. Due to multiple comorbidities [The American Society of Anesthesiologists (ASA IV)], high frailty score, and anesthetic risk, surgical repair of the hernia was deemed inappropriate. A shared decision was made with the patient and family to proceed with conservative management, involving long-term catheter care and follow-up.

Outcome and follow-up

The management was ultimately successful since patient remained stable and was discharged home with a urethral catheter and community nursing support. A follow-up ultrasound after four weeks showed resolution of hydronephrosis. Renal function remained stable, and no further urinary complications were noted. He continued with routine urology and general surgery follow-up.

Figure 1: Large right inguinoscrotal hernia.

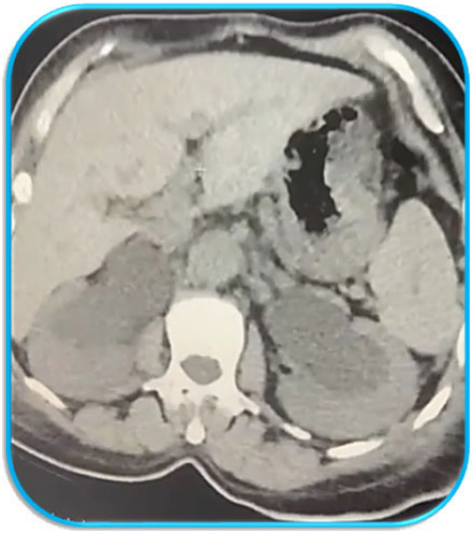

Figure 2: Spiral CT showing bilateral moderate hydroureteronephrosis.

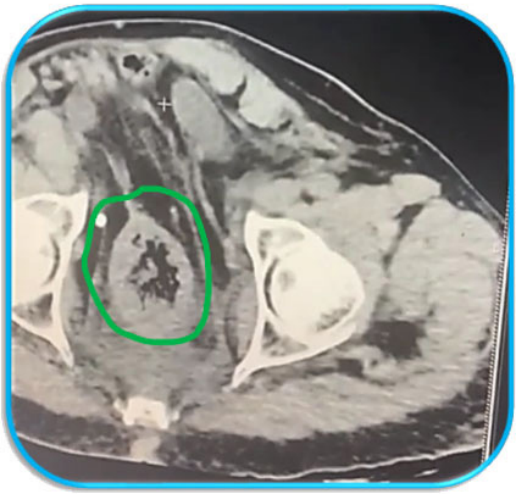

Figure 3: CT pelvis showing rectum only in the true pelvis with no bladder or prostate.

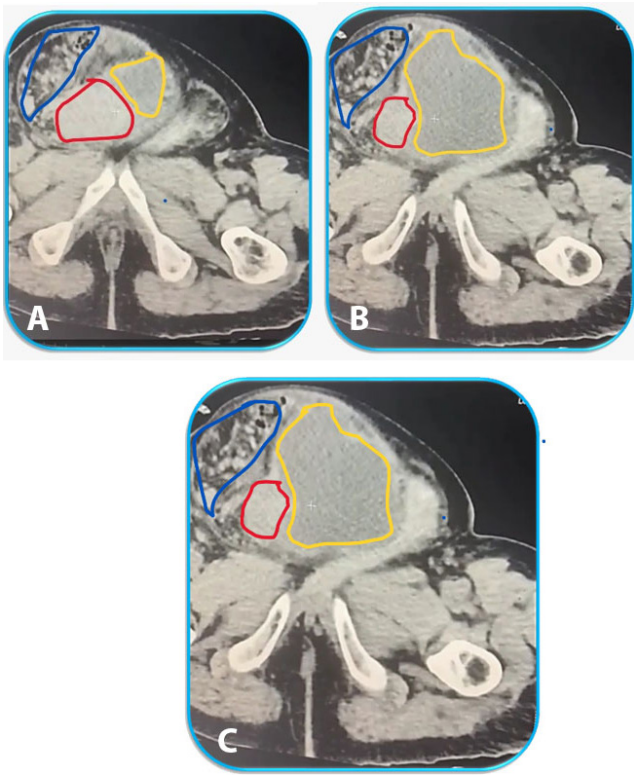

Figure 4: (A–C) CT pelvis showing bladder herniation (yellow outline), prostate herniation (red outline), and bowel herniation (blue outline) in right groin.

DISCUSSION

The first case of bladder hernia was reported by Felix Platter in 1550 and there have subsequently been a number of published case series [4]. Most bladder hernias occur through the inguinal and femoral canals [5, 6]. Most of the bladder hernias are extraperitoneal. However, minority of cases may be intraperitoneal [4, 7].

Prostate herniation is an extremely rare and underdiagnosed condition, often presented with non-specific urinary symptoms. The prostate is a fixed retroperitoneal organ. However, factors like old age with a very weak mesenchyme and musculature may contribute to such rare conditions. Of course, additional factors like bladder outlet obstruction and long-term history of straining play an important role [8]. Bladder outlet obstruction (BOO) leads to bladder distension. In combination with weakening of abdominal and bladder wall, the bladder slides through dilated inguinal ring [9].

The diagnosis is usually confirmed radiologically. Routine preoperative assessment of large inguinoscrotal hernias was recommended by some authors to avoid intraoperative injury of bladder [10, 11]. Some authors have suggested the presence of a bladder hernia should be considered when fluid is found in the groin on an ultrasonography (USS). However, Zajaczkowski et al. report that although USS is important for screening the upper urinary tract, it is poor at evaluating bladder containing scrotal hernias [4].

Alternative imaging techniques like CT scans and magnetic resonance imaging (MRI) can provide critical insights during preoperative planning for these patients. Both modalities are particularly helpful in assessing the size, location, and contents of the hernia sac, as well as detecting associated conditions such as hydronephrosis or strangulation [12–14]. Magnetic resonance imaging, in particular, has been noted by some researchers for its excellent soft tissue contrast, its ability to image in multiple planes, and its usefulness in performing dynamic studies during straining, making it valuable in distinguishing between different types of bladder hernias [14]. When CT or MRI is not accessible, combining a cystogram with flexible cystoscopy—whether before or during surgery—can offer important anatomical details [15]. Cystoscopy plays a vital role in evaluating the lower urinary tract, identifying the ureteric orifices, and detecting bladder abnormalities such as stones or tumors [4].

The most commonly reported surgical approach for managing bladder hernias is open repair. According to Bjurlin et al., an inguinal incision offers sufficient access to both the bladder and the hernial sac [7]. In contrast, Helleman et al. utilized the Bassini technique for hernia repair and advised against mesh placement when the surgical field is contaminated with urine [16]. Other researchers have advocated for a modified Lichtenstein technique, which involves reducing the hernia, performing tension-free hernioplasty, and then placing a mesh [17]. Meanwhile, Bisharat et al. recommended that if a bladder hernia is discovered incidentally during hernia surgery, the surgeon should either reduce the bladder back into the space of Retzius or perform selective resection of the herniated bladder segment, followed by a standard hernia repair [1]. In the presence of a large bladder diverticulum or associated tumor, they also suggest performing a diverticulectomy. Laparoscopy offers several benefits over the open approach, including better visualization, faster recovery, reduced need for analgesia, and superior cosmetic results. However, laparoscopic repair of bladder hernias remains rare, with only a few published cases [18].

In this case, the CT revealed both bladder and prostate—herniated through the inguinal canal—a combination not previously documented.

The herniated bladder and prostate may cause ureteric kinking, leading to bilateral hydronephrosis and acute kidney injury if left untreated. Conservative management, while it is not curative, can provide symptom relief in high-risk surgical candidates. In view of this patients' multiple co-morbidities, we were obliged to follow conservative treatment with an indwelling urethral catheter which for the sake of the patient's luck, it succeeded.

Clinical Pearls:

- A high index of suspicion is needed in elderly patients with unexplained obstructive uropathy and groin swelling.

- Imaging, particularly CT, is essential in diagnosing atypical causes of urinary retention [19].
- Long-term catheterization remains a feasible palliative approach when surgery is not an option.
- Herniated bladder can lead to bilateral hydronephrosis and acute kidney injury if not identified early [15, 20].

CONCLUSION

Always consider bladder herniation in elderly patients with urinary retention and inguinal masses.

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Author Contributions

Ramy Elbaz – Conception of the work, Design of the work, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Abdelhamid Shahin – Acquisition of data, Interpretation of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Israr Khan – Acquisition of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission
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Authors declare no conflict of interest.

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All relevant data are within the paper and its Supporting Information files.

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