

# Late Bladder Necrosis due to Inguinal Hernia, Presented as Intestinal Obstruction: A Case Report

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## Abstract

Inguinal bladder hernias are a rare condition, representing only 0.5-3% of inguinal hernia. The vast majority of the cases are diagnosed inadvertently intraoperatively. We report the case of a 71-year-old patient with a history of right inguinal hernia who showed symptoms of incarcerated inguinal hernia, but diagnosed with a strangulated bladder hernia intraoperatively. This case presents an interesting development of a bladder hernia that required two surgical procedures with partial resection due to late necrosis.

**Keywords:** acute abdomen, bladder hernia, bladder necrosis, inguinal hernia

## INTRODUCTION

To this day, inguinal hernia repairs are among the most prevalent procedures done by general surgeons all around the world, with an estimated number of 800.000 surgical repairs done annually in the United States alone (1). Among the possible contents found inside a hernial sac, the bladder

in an uncommon organ, with inguinal bladder hernias comprising only 0.5-3% of all inguinal hernias (2), and with an incidence that reaches up to 10% of all inguinal hernias found in patients over 50 years old (3). However, only 77% of those hernias are correctly diagnosed intraoperatively (4), and are commonly associated with iatrogenic bladder injuries

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(5). This report aims to present a rather uncommon surgical diagnosis and development, and also to raise awareness to the possibility of inguinal bladder hernias during the repair of the abdominal wall hernias in general.

### CASE REPORT

A 71-year-old male with a history of coronary artery disease –recent acute myocardial infarction and angioplasty– presented to the emergency department with acute abdominal pain, inability to pass stool or flatus, abdominal distension, and urinary retention. On physical examination, the abdomen was distended, and an irreducible right inguinal hernia was noted.

The patient underwent an emergency exploratory inguinoscopy, which revealed the herniation of viable small bowel and urinary bladder. During dissection, an inadvertent cystostomy occurred, exposing necrotic bladder mucosa (Fig. 1), although the serosal and muscular layers remained viable. The bladder was repaired using a two-layer suture technique. Postoperatively, the patient was discharged on the seventh day with a bladder catheter in place, which was maintained for 18 days.

During follow-up patient presented mild dysuria and urinary urgency with total regression of those findings after oral antibiotics and also showed a control Computed Tomography (CT) scan showing only a postoperative status with no complications.

On postoperative day 41, the patient returned to the emergency department with symptoms of fatigue, dysuria, and foul-smelling urine. A CT scan with intravenous, rectal, and oral contrast was performed, raising suspicion for an enterovesical fistula (Fig. 2). The patient was subsequently taken to the operating room for cystoscopy and cystography, which revealed necrosis of the right lateral bladder wall and dome, along with the presence of an extraperitoneal fistula.

Given these findings, the patient underwent a partial cystectomy, which involved resection of the right lateral bladder wall and dome, resulting in a residual bladder capacity of approximately 100 mL. A cystostomy was performed, and the cavity was drained. Postoperatively, the patient showed no signs of hematuria or fecaluria. Both the drainage tube

and cystostomy were removed on postoperative day 19, and the patient was discharged after a 49-day hospital stay due to clinical developments, without the need for a urinary catheter. The patient is now followed up monthly and has not experienced surgical complications such as hematuria or urinary urgency.

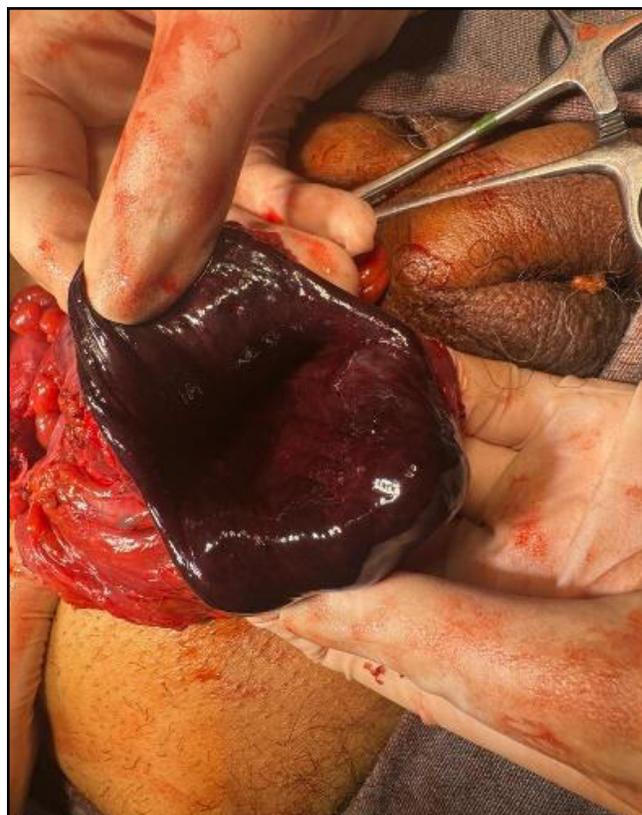


Figure 1. Necrosis of the bladder mucosa



Figure 2. Triple contrast CT scan of patient

## DISCUSSION

The incidence of urinary bladder herniation is rare, but several risk factors can be associated with this diagnosis including male gender, obesity, age over 50 years old and bladder outlet obstruction as seen in benign prostatic hyperplasia (5).

The majority of diagnoses are made intraoperatively, with only 7% detected preoperatively (6). However, this trend has been shifting due to the increased frequency of preoperative imaging. Most preoperative diagnoses occur in patients presenting with lower urinary tract symptoms (LUTS), particularly voiding symptoms such as pollakiuria. Additionally, many patients exhibit Mery's sign, characterized by the sensation and visible reduction of an inguinal mass after urination. When these symptoms are present, thorough investigation is essential, with cystography being considered the gold standard diagnostic tool (7). However, CT scans are also commonly used due to their availability and also have high sensitivity (7). Ultrasound and magnetic resonance imaging (MRI) may also be employed, particularly in patients with compromised renal function. In the present case, the patient exhibited acute obstructive abdominal symptoms, prompting urgent surgical intervention without prior imaging.

Potential complications include incomplete bladder emptying, recurrent urinary tract infections, ureterolithiasis, vesicoureteral reflux, rupture, strangulation, or necrosis; such risks make the surgical treatment of bladder inguinal hernias a preferable option (8).

Castro-Rosas *et al.* (9) demonstrated that bladder reduction through the hernial defect, followed by Lichtenstein hernioplasty yields excellent outcomes when there is no inadvertent cystotomy and the bladder shows no signs of compromise. Additionally, there are reports of bladder herniation repairs performed via trans-abdominal preperitoneal (TAPP), following the same principle of bladder reduction, with favorable outcomes. In cases of unintended bladder injury, cystorrhaphy is recommended if the outer layers remain intact. Bladder resection is reserved for instances of necrosis, complex perforations, herniation involving bladder diverticulum, and can be considered in cases where the bladder neck is significantly narrowed (less

than 0.5 cm in its largest diameter) (10). In the case presented, the serosal and muscular layers were viable, leading to the decision to perform cystorrhaphy and Lichtenstein hernioplasty, however, as patient persisted with symptoms and bladder necrosis was found in cystoscopy, a partial resection of the bladder was ultimately performed. Although the outcome was favorable in this scenery, it is important to highlight that a reduced bladder capacity can lead to an impact on patient's life quality and should be assessed during follow-up visits.

Postoperative follow-up for bladder herniation is highly variable in the literature. Some professionals advocate for cystoscopy to assess bladder healing and rule out further complications, while others rely solely on physical examination and symptom monitoring; the latter method was chosen in this case.

There is no consensus regarding the optimal duration of postoperative follow-up, highlighting the need for further studies to establish guidelines for the long-term management of these cases. Despite these variations in approach, no cases of mortality related to bladder herniation have been reported in the literature.

## CONCLUSION

Bladder hernias present non-specific symptoms, making the diagnosis frequently intraoperatively, however, cystography or CT can be performed in male patients over 50 years old presenting obstructive or irritative urinary signs.

The treatment for bladder hernias typically involves bladder reduction to the retropubic space and repair of inguinal hernia. A partial cystectomy can be performed when there are signs of necrosis.

Even though bladder hernias are considered a rare diagnosis, it is crucial for surgeons to be aware of the possibility of finding the bladder in the hernial sac, given that hernia repairs are among the most commonly performed surgical procedures worldwide.

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