

# Massive Vesical Hernias and Its Management: Case Series and Literature Review

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## Abstract

**Background:** Bladder hernias are infrequent and should be treated by the urologist, or an experienced surgeon. An inguinoscrotal hernia of the bladder should be suspected in male patients with voiding symptoms and a fluctuant mass in the scrotum that changes its volume during urination. The most common characteristics found on the series were patients with advanced age, sedentary, and overweight. **Case Presentation:** We present a case series of 4 patients with inguinoscrotal herniation of the bladder, the surgical management, and outcome. **Conclusion:** The surgical technique used was inguinal plasty with Lichtenstein technique and either laparoscopic or open surgery mesh-plug placement. None had surgical complications, and none had recurrence at their follow-up.

## Keywords

Inguinal Plasty, Bladder Herniation, Lichtenstein Technique, Functional Urology

## 1. Introduction

Inguinoscrotal herniation of the bladder is defined as the protrusion of the urinary bladder into the inguinal canal with extension to the scrotum [1]. Anatomic classification of bladder herniations includes paraperitoneal, intraperitoneal, and extraperitoneal [2]. Bladder herniation represents 0.5% - 5% of reported inguinal hernias and is considered a rare condition, and scrotal affection of the hernia represents a small fraction of bladder hernias [2]-[7]. Bladder hernias tend to occur in older individuals (63.5 years) and have longer symptomatic periods (5.3

years) [8]. It is usually diagnosed due to urinary symptoms or imaging, with most of these hernias asymptomatic [9] and the gold standard being cystography [10] [11]. Symptoms described in the literature range from double-phase urination (the patient passes more urine after initial voiding application pressure on the hernia) to nocturia, frequency, urgency, and hematuria. However, massive cystoceles are rare, and less than 35 cases have been published in the literature [2]-[7]. In this case series, we present four patients with inguinoscrotal herniation of the bladder with its surgical management, risk factors description, and clinical evolution. They all had a favorable outcome, and there were no complications or recurrence at their follow-up. The objective is to recognize the signs and symptoms that typically present in inguinoscrotal herniations of the bladder as it is uncommon and can have life-threatening complications.

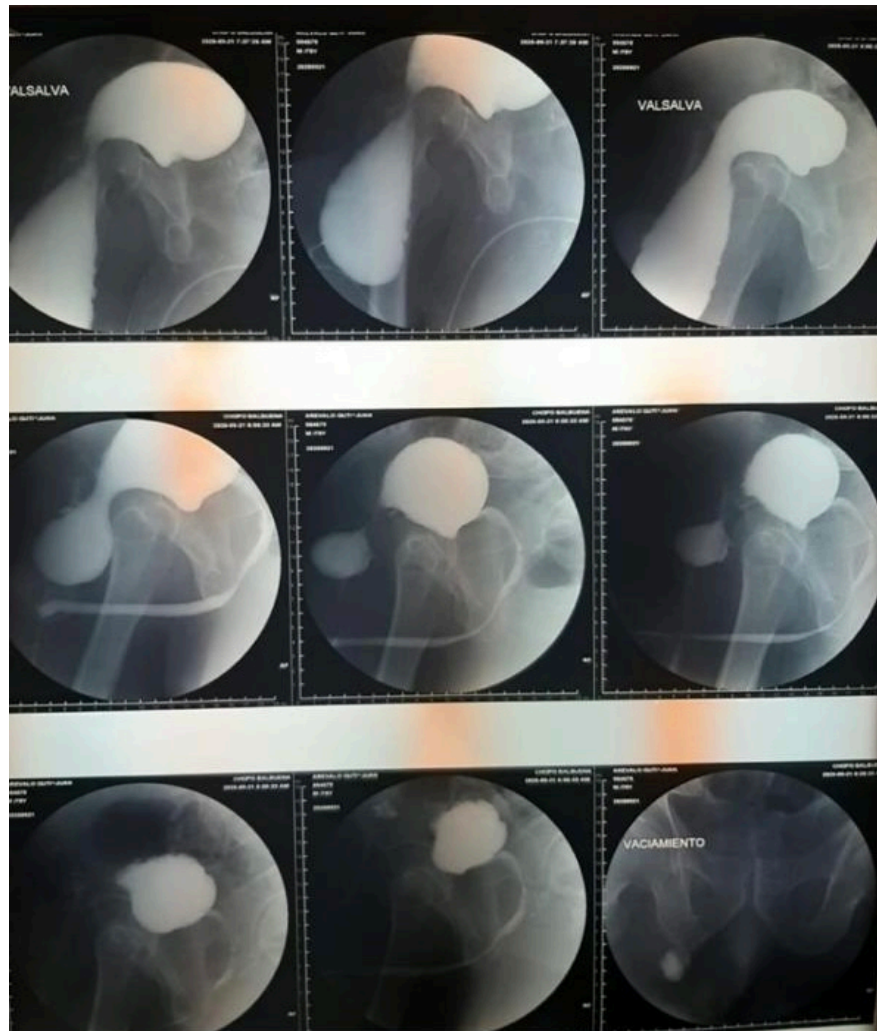
## 2. Case Report

### 2.1. Case 1

A 69-year-old man with no family or personal, relevant history presents to the office with a one-year history of a growing mass in the right inguinoscrotal region, non-tender and auto-reducible. Pain presented three months ago elicited with abdominal effort. He refers that the mass volume diminishes during urination. There are no neurologic, pulmonary, or cardiac abnormalities on physical examination. The abdomen was soft and non-tender. On inguinoscrotal examination, the right scrotum has increased volume with dimensions of a palpable mass of 8 × 10 cm (Figure 1). It is reducible by pressure and protrudes with the Valsalva maneuver. Cystography reports a deforming bladder that slides into the inguinoscrotal region with a residual urine volume of 45 mL (Figure 2). Diagnosis



**Figure 1.** Genitals of the patient with a bulge on his right scrotum.



**Figure 2.** Cystography with a full bladder during Valsalva maneuver showing a sliding hernia to the groin.

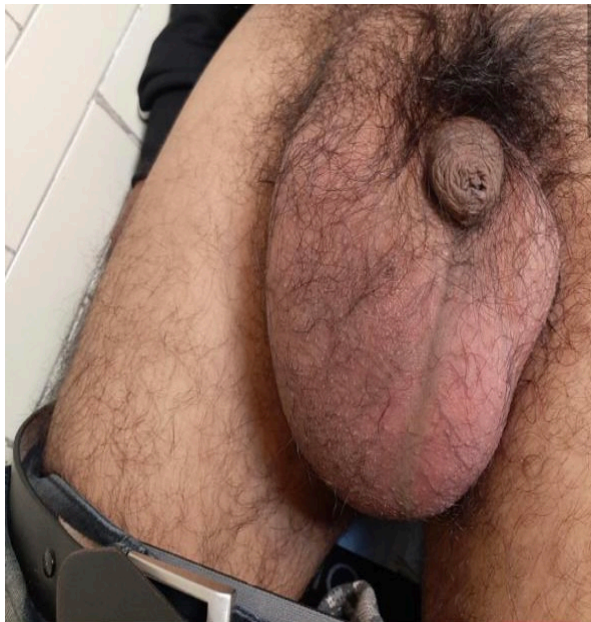
of inguinoscrotal hernia of the bladder is made. Open surgical technique of right inguinal plasty is performed, with manual reduction of the bladder through the defect, without any signs of strangulation, the bladder is repositioned. Polypropylene mesh-plug placement is performed with the Lichtenstein technique for herniorrhaphy. He is discharged the day after surgery without any immediate complications.

## 2.2. Case 2

A 77-year-old male patient from Mexico City with a history of controlled systemic arterial hypertension and insulin-controlled type 2 diabetes mellitus presents to the office with symptoms that started three years ago. He refers to dysuria, tenesmus, and frequency and increased volume in the right scrotum, which has progressed with a moderately intense stabbing type of pain aggravated with cough and decreases after urination. Neurological examination is without alterations, and pulmonary examination is unremarkable. On physical examination,

the abdomen is soft and non-tender. An increase in volume is observed in the right scrotal region with a 7 × 8 cm mobile mass, reducible and protruding to the Valsalva maneuver (**Figure 3**). A pelvic ultrasound is performed and reports a prostate of 58 cc, with intravesical protrusion of 17 mm and residual urine of 43%. Subsequently, a cystography is performed and reports a bladder deformation that slides through the inguinal canal into the scrotum, with a residual urine volume of 21 mL (**Figure 4**).

A massive right inguinoscrotal hernia of the bladder was diagnosed, and surgery was performed on November 24<sup>th</sup>, 2020. Inguinal plasty with mesh-plug and Lichtenstein repair technique is performed without further complications, and the patient was discharged 48 hours after surgery.



**Figure 3.** Expanded scrotum of the patient before urination.



**Figure 4.** Cystography of the patient with a significant portion of the bladder herniated before urination.

### 2.3. Case 3

A 44-year-old male patient from Mexico City with no significant family or personal history presents to the office. The patient began five months ago with increased volume in the right inguinal region that descends to the ipsilateral scrotal pouch with mild, intermittent, oppressive pain that decreases upon urination. The patient reports the need to urinate in a sitting position and press the scrotal region to finish urination. On physical examination, the patient is oriented without any neurological alterations, the pulmonary examination is normal with rhythmic cardiac sounds without murmurs or pathological sounds, the abdomen is depressible to palpation with no pain, and an increase in volume is observed in the right inguinoscrotal region with pain to reduction and protrusion to the Valsalva maneuver (**Figure 5**). Cystography reports that the right inferolateral portion of the bladder protrudes through the inguinal canal into the right scrotum (**Figure 6**). Massive inguinoscrotal herniation of the bladder is diagnosed. Surgery is performed. Right inguinal plasty is completed, the bladder is repositioned into the retropubic space, and two polypropylene meshes are placed with the Lichtenstein technique. The patient was discharged and had a follow-up of 3 months; he had no complications.

### 2.4. Case 4

83-year-old masculine is referred to the Urology department by his primary care physician because of a bulge in the left inguinal region; the patient has a history of 29 years smoking a with 4-pack-a-year rate, discontinued at age 45, hypertension



**Figure 5.** Genitals before surgery with a palpable mass in the right scrotum.





**Figure 6.** Right herniation of the bladder on cystography during the elimination phase.

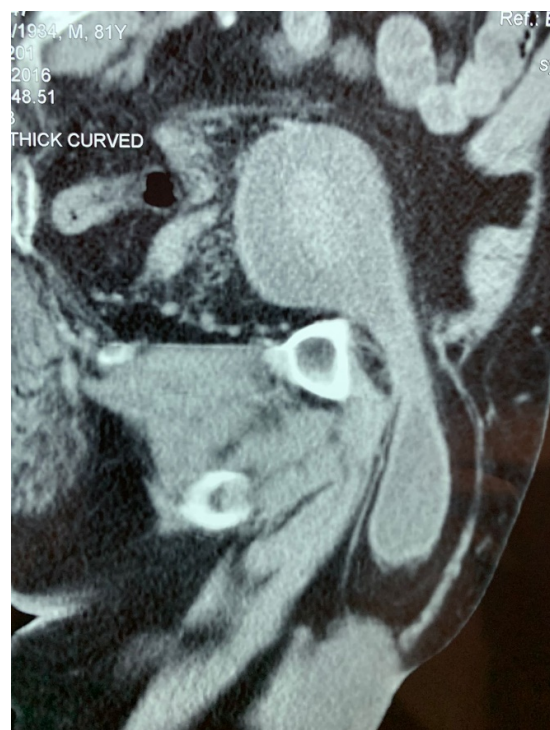
diagnosed eight years ago in actual treatment and well-controlled and hypercholesterolemia in therapy with atorvastatin. He had a transurethral prostatectomy resection in 2004 and coronary catheterism due to an acute myocardial infarction in 2017. One year ago, the patient started with lower urinary symptoms (IPSS: 13). He was treated with tamsulosin daily. He noticed a progressively growing mass in the left inguinal region, which was diminished by urination. He denies hematuria, dysuria, or weight loss. He is orientated and cooperative on physical examination with no neurologic alterations, the cardiopulmonary examination is unremarkable, and the abdomen is soft and non-tender. A painless bulge on the left inguinal region is reducible and aggravated by the Valsalva maneuver. He is asymptomatic. Cystography reports herniation of the left lateral portion of the bladder into the inguinoscrotal region (**Figure 7**). CT scan was also performed because there were cystic findings during renal ultrasonography and reported herniation of the left anterolateral portion of the bladder into the ipsilateral inguinal canal (**Figure 8**). Laparoscopic surgery with tension-free mesh repair was performed. The next day he was discharged and had a 3-month follow-up without any immediate or late complications.

### 3. Discussion

Bladder herniation is a rare condition. Wakely *et al.* found an incidence of 75 in 5000 cases of inguinal hernias. The bladder is present in 14% of inguinal hernias in the general population and at least in 10% of cases of patients over 50 years [12] [13]. On the other hand, one of the first available descriptions of bladder



**Figure 7.** Cystography with a massive left sliding hernia of the bladder during the elimination phase.



**Figure 8.** CT scan of the patient shows herniation of the bladder anteriorly to the pelvic bone in the left scrotum.

hernias was made by Levin in 1951, where he reported 32 cases [14]. Such condition was found in patients over 50 years, and it was more frequent on the right side in 3 of our 4 cases, while bilateral herniation was exceptional. This condition usually presents asymptomatic and is found incidentally during surgery [12] [13]. All anatomic parts of the hernia can be herniated except the trigone [12].

Bladder hernia etiology is variable and has many risk factors. It has been determined that outflow obstruction of the urinary tract (prostatic hyperplasia, prostatitis, sclerosis of the bladder neck, or urethral stenosis) causes muscular tone impairment in the bladder, thus debilitating support structures. This is the most important common cause in elderly and obese patients [13] [14]. 3 (75%) cases were associated with lower urinary tract symptoms (LUTS) in our case series. Most bladder hernias are extraperitoneal, paraperitoneal, and less frequent are intraperitoneal subsequently [14]. In our case series, all were extraperitoneal bladder hernias. Clinical findings vary with a broad spectrum of symptoms from asymptomatic to incapacitating pain, and non-specific symptomatology like urinary frequency, dysuria, nocturia, and hematuria [14] [15]. There were 2 (50%) patients with lower urinary tract symptoms.

Clinical findings and imaging studies can diagnose; the gold standard has been retrograde cystography since Levine reported the first cases [12] [15]. Cystoscopy is fundamental to evaluate the urethra, prostate, the neck of the bladder, bladder mucosa, and ureteral orifices. Imaging studies diagnosed this case series of bladder herniations; 100% had retrograde cystography, and 25% had a CT scan.

Treatment should always be surgical repair and inversion back to the retro-pubic space in the abdomen [14]. Massive inguinoscrotal herniation has some surgical limitations and is more challenging to treat because of the pelvic muscle and abdominal muscle dysfunction that caused weakness. In some cases where there is urethra compromise, a surgical incision in the bladder can facilitate catheter placement to dissect the bladder and identify the urethra to place drainage for 7 to 14 days [14]. All the cases were uncomplicated hernias, and all of them were repaired by the Lichtenstein technique. Resection of the everted portion can be made depending on the size, location, and width of the neck of the bladder; advantages of reduction instead of resection include contamination, preservation of bladder capacity, and reduced urethral injury [14]. The absolute indication for resection of a massive inguinoscrotal hernia is the presence of a tumor in some portion of the hernia, inflammation, necrosis of the bladder, or diverticulum of the herniated part of the bladder. A relative indication of the incision is a narrow neck of the bladder, less than 0.5 cm in its maximum diameter [14] [15].

Possible complications related to bladder hernias are vesicoureteral reflux, bladder torsion, strangulation of the bladder, gangrene, empyema, lithiasis, infarction, perforation of the viscera, hydronephrosis, pyonephrosis, renal failure, and bladder carcinoma [13] [14]. There were no early or late complications in the cases reported in this study.



Risk factors for bladder herniation include men, obesity, age > 50, and previous inguinal herniation [13] [15]. 3 out of 4 were older than 50 years (75%) none were obese or had a history of inguinal herniation (0%). Half presented LUTS (50%). None had associated complications.

#### **4. Conclusion**

Herniation of the bladder is rare and is even rarer to have a sliding inguinoscrotal hernia; bladder hernias are commonly diagnosed at the time of an inguinal herniorrhaphy. Inguinoscrotal hernias are diagnosed clinically with the presence of a bulge in the scrotum that can be reduced and is diminished by urination. Cystography and CT scans are used as diagnostic tools to evaluate the extension and composition of the hernia. Herniorrhaphy with free tension-mesh placement by the Lichtenstein technique is still the gold standard treatment for this condition. It has a good outcome for the majority of the patients, as seen in this case series.

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#### **Ethical Considerations**

This article complies with the requirements of the Declaration of Helsinki since care was taken to protect the health of the population in all aspects during the protocol.

No procedure was performed that should be considered harmful and unnecessary for the patient during the protocol; on the contrary, the improvement of her health status was always sought. The procedures were carried out to comply with the regulations of the General Health Law regarding health research, complying with the corresponding articles.

The patients signed an informed consent agreement to publish their cases anonymously.

#### **Conflicts of Interest**

The authors declare no conflicts of interest regarding the publication of this paper.

#### **References**

- [1] Thompson Jr., J.E., Taylor, J.B., Nazarian, N. and Bennion, R.S. (1986) Massive Inguinal Scrotal Bladder Hernias: A Review of the Literature with 2 New Cases. *Journal of Urology*, **136**, 1299-1301. [https://doi.org/10.1016/S0022-5347\(17\)45321-3](https://doi.org/10.1016/S0022-5347(17)45321-3)

- [2] Gomella, L.G. (1985) The Surgical Implications of Herniation of the Urinary Bladder. *Archives of Surgery*, **120**, 964-967. <https://doi.org/10.1001/archsurg.1985.01390320084018>
- [3] Laniewski, P.J., Watters, G.R. and Tomlinson, P. (1996) Herniation of the Bladder Trigone into an Inguinal Hernia Causing Acute Urinary Obstruction and Acute Renal Failure. *Journal of Urology*, **156**, 1438-1439. [https://doi.org/10.1016/S0022-5347\(01\)65613-1](https://doi.org/10.1016/S0022-5347(01)65613-1)
- [4] Karaman, Z.C., Saray, A., Dorak, C. and Tamac, N.I. (1993) Ultrasonographic Diagnosis of Massive Bladder Hernia. *Journal of Clinical Ultrasound*, **21**, 534-536. <https://doi.org/10.1002/jcu.1870210812>
- [5] Vindlacheruvu, R.R., Zayyan, K., Burgess, N.A., Wharton, S.B. and Dunn, D.C. (1996) Extensive Bladder Infarction in a Strangulated Inguinal Hernia. *British Journal of Urology*, **77**, 926-927. <https://doi.org/10.1046/j.1464-410X.1996.07035.x>
- [6] Casas, J.D., Mariscal, A. and Barluenga, E. (1998) Scrotal Cystocele: US and CT Findings in Two Cases. *Computerized Medical Imaging and Graphics*, **22**, 53-56. [https://doi.org/10.1016/S0895-6111\(98\)00007-X](https://doi.org/10.1016/S0895-6111(98)00007-X)
- [7] Papatheofani, V., Beaumont, K. and Nuessler, N.C. (2020) Inguinal Hernia with Complete Urinary Bladder Herniation: A Case Report and Review of the Literature. *Journal of Surgical Case Reports*, **2020**, Article No. rjz321. <https://doi.org/10.1093/jscr/rjz321>
- [8] Komorowski, A., Moran-Rodriguez, J., Kazi, R. and Wysocki, W.M. (2012) Sliding Inguinalhernias. *International Journal of Surgery*, **10**, 206-208. <https://doi.org/10.1016/j.ijssu.2012.03.002>
- [9] Frenkel, A., Roy-Shapira, A., Shelef, I., Shaked, G., Brotfain, E., Koyfman, L., et al. (2015) Inguinal Herniation of the Urinary Bladder Presenting as Recurrent Urinary Retention. *Case Reports in Surgery*, **2015**, Article ID: 531021. <https://doi.org/10.1155/2015/531021>
- [10] Andaç, N., Baltacıoğlu, F., Tüney, D., Çimşit, N.Ç., Ekinci, G. and Biren, T. (2002) Inguinoscrotal Bladder Herniation. *Clinical Imaging*, **26**, 347-348. [https://doi.org/10.1016/S0899-7071\(02\)00447-3](https://doi.org/10.1016/S0899-7071(02)00447-3)
- [11] Bisharat, M., O'Donnell, M.E., Thompson, T., MacKenzie, N., Kirkpatrick, D., Spence, R.A.J. and Lee, J. (2008) Complications of Inguinoscrotal Bladder Hernias: A Case Series. *Hernia*, **13**, 81-84. <https://doi.org/10.1007/s10029-008-0389-6>
- [12] Soloway, H., Portney, F. and Kaplan, A. (1960) Hernia of the Bladder. *The Journal of Urology*, **84**, 539-543. [https://doi.org/10.1016/S0022-5347\(17\)65588-5](https://doi.org/10.1016/S0022-5347(17)65588-5)
- [13] Catalino, O. (1997) US Evaluation of Inguinoscrotal Bladder Hernias: Report of Three Cases. *Clinical Imaging*, **21**, 126-128. [https://doi.org/10.1016/S0899-7071\(96\)00018-6](https://doi.org/10.1016/S0899-7071(96)00018-6)
- [14] Zajaczkowski, T. (2007) Scrotal Bladder Hernia: Report of Two Cases. *International Urology and Nephrology*, **39**, 479-484. <https://doi.org/10.1007/s11255-006-9028-2>
- [15] Oruç, M.T., Akbulut, Z., Özozan, Ö. and Coşkun, F. (2004) Urological Findings in Inguinal Hernias: A Case Report and Review of the Literature. *Hernia*, **8**, 76-79. <https://doi.org/10.1007/s10029-003-0157-6>