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An inguinal bladder diverticulum: case report of a rare finding in a recurrent inguinal hernia

We report a rare case of recurrent right inguinal hernia with bladder diverticulum incarcerated in a 63 years old male. Patient complained of painful swelling in inguinoscrotal region associated with urinary discomfort. Preoperatively diagnosis was made possible by ultrasound and urography imaging. Surgical treatment was achieved, by infra-umbilical incision, a reduction of the herniated and fixed diverticulum followed by a mesh repair of the wall defect. Patient was discharged five days after surgery and became free of symptomatology soon after surgical procedure. Bladder diverticulum involvement in a direct inguinal hernia is rare finding and define a potential pitfall for surgeon if not diagnosed pre-operatively. There are no other cases of incarcerated bladder diverticulum incarcerated in a recurrent inguinal hernia described in Literature.

KEY WORDS: Bladder diverticulum, Bladder hernia, Inguinal hernia

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Il dott. Simone Manfredelli ed il dott. Andrea Zitelli sono gli autori del manoscritto; il dott. Stefano Pontone ed i professori Angelo Forte ed Alberto Angelici hanno supervisionato la stesura dello stesso; nell'ambito della gestione clinica del paziente trattato presso il nostro reparto hanno inoltre collaborato la dott.ssa Maria Marcantonio ed il dott. Amedeo Nargi. Tutti gli autori afferiscono al Dipartimento di Scienze Chirurgiche del Policlinico Umberto I di Roma - Università Sapienza di Roma.

Introduction

Surgical treatment of inguinal hernias represents common surgical procedures. Low abdominal wall defects, both inborn and acquired, strongly increase hernia development risks. Inguinal hernias are mainly composed by a peritoneal sac which could contain abdominal viscera within the inguinal canal due to lateral or medial inguinal fossae breaches. Extraperitoneal viscera are rare findings in this context, these organs cannot be within the sac and are mostly due to traction by the sac itself. Incidence of a bladder diverticulum involved in a hernia ranges between 1% to 4%^{1,2}. Male gender, heavy weight, age higher than 50 years and Urological Tract obstructions as in benign prostatic hyperplasia (BPH), bladder lithiasis, hydronephrosis and vesicourethral reflux show an increased risk in bladder hernia development.

Case report

A 63 year-old male was referred to our surgical department suffering from a long-standing right recurrent direct inguinal hernia (R3 type) ³. First hernia repair was in 1996 with an inguinal hernioplasty according to Trabucco's technique ⁴ with Polypropylene mesh insertion and plug placement. New symptoms have arisen

after fifteen years from first hernia repair. Patient complained of inguinoscrotal swelling which showed daily volume variability specially related to urination habit (decreased mass volume after bladder emptying), local pain with scrotal and right thigh radiation, episodic nocturia. Physical examination revealed local mass as in inguinal hernia. Rectal exploration and subsequent trans-anal ultrasound were negative for a prostatic hypertrophy (13 cc). Routine blood exams were normally and PSA levels were within the range. Patient underwent Abdominal US with positive find of a hypo-anechoic area located in inguinoscrotal region (4.14 x 2.62 cm) enlarged during bladder replenishment and connected through a narrow duct (Fig. 1). Cystography resulted positive for a wide right inguinal bladder diverticulum with a low bulging emptying (Fig. 2). The patient underwent surgery with an umbilicus-pubic incision through fascia and abdominal muscles until the bladder plane. Following dissection of anterior bladder wall allowed the sight of inguinal canal and diverticulum which was detached from adjacent components (Fig. 3). Intraoperative findings demonstrated no evidence of necrosis in the involved bladder segment. The bladder was then repositioned in its normal pelvic position without resection, and wall defect was repaired by Marlex Mesh fixation. Postoperative period was uneventful. Patient was discharged five days after surgery without complications.

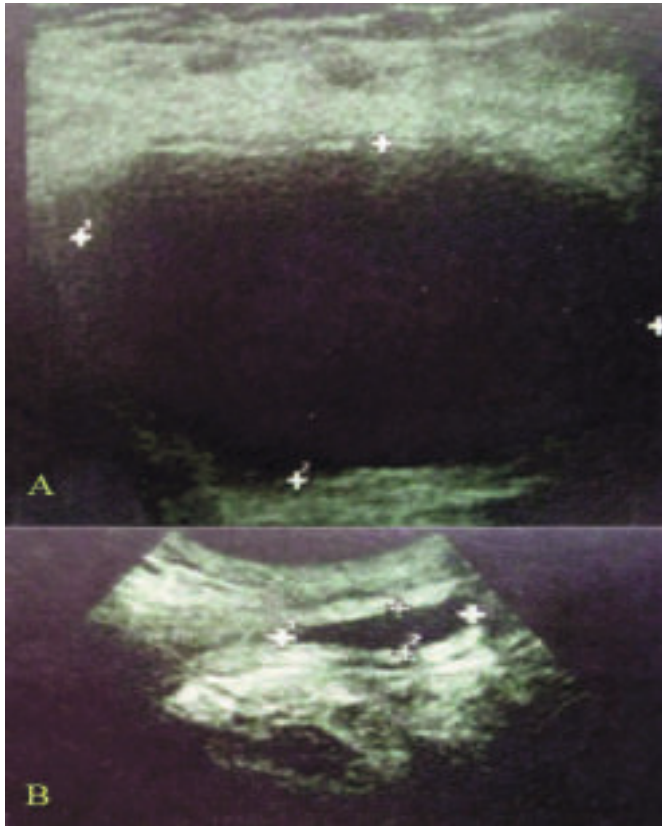


Fig. 1: US image of right groin during diverticulum filling: linear diameter n.1 is 4.14 cm, linear diameter n.2 is 2.62 cm (A); US image in post-diuresis: linear diameter n.1 is 3.71 cm, linear diameter n. 2 is 1.10 cm (B).



Fig. 2: Cystography image in coronal plane with positive find of a right lower bladder diverticulum (A). Cystography imaging in sagittal plane showing bladder and diverticulum filling (B) and after emptying, with visible lower residual fluid in groin region (C).

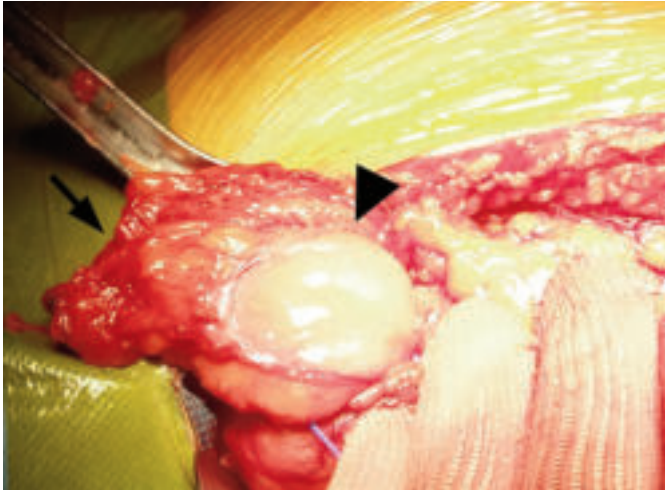


Fig. 3: Intraoperative image of bladder diverticulum (arrow head) and perivesical fat tissue (arrow).

Discussion

Bladder diverticulum involvement in a direct inguinal hernia is rare finding. Inguinal canal wall weakness, increased abdominal pressure, urinary tract abnormalities carry an higher risk of disease development. Inguinoscrotal bladder hernia can be subdivided into the paraperitoneal, intraperitoneal, and extraperitoneal type by parietal peritoneum relationship^{5,6}. Bladder herniation could locate in both sides, though right side seems to be more involved; a direct hernia and the paraperitoneal type have higher incidence than others types⁵⁻⁷. In our case, the bladder was herniated directly without being covered by the peritoneum, thus being classified as the extraperitoneal type. Disease is usually asymptomatic and found incidentally during evaluation prior or at the time of surgery. However symptoms when are reported can be nonspecific: groin pain and swelling (mainly in the morning) followed by urinary discomfort are the most common; episodic nocturia, weak urinary stream and pain after sexual intercourse could be present. Importance of preoperative diagnosis is a debated subject, although has been underlined to prevent bladder injury, it seems that less than 7% of bladder hernias are diagnosed before surgical procedure, 16% are diagnosed postoperatively owing to complications, and the remaining cases are diagnosed perioperatively². Surgical risks following bladder injury are represented by hematuria, sepsis, urine leakage and fistula. Ureters injuries are possible in high diverticulum location and in congenital or acquired ureters displacement, during physiological testicle and deferent duct descent towards the scrotum⁸. Preoperative diagnosis could be achieved by cystography (dumbbell-shaped bladder), intravenous pyelography (signs of lateral displacement of one or both ureters, asymmetrical bladder, and incomplete visualiza-

tion of the bladder base)^{5,6}. Computed tomography scan (CT), or ultrasonography (US) imaging are commonly used and retain high sensibility in defining any anatomical deformity or potential complications such as bladder or bowel infarction^{9,10}. Even if not directly identified by imaging, incarcerated bladder diverticulum should be considered in differential diagnosis when fluid collection became during positive groin US.

Conclusions

Urinary tract involvement in inguinal hernia define a rare event and a potential pitfall for surgeons. Often symptoms are not clearly collected and analyzed leading to unrecognized bladder or ureters role in the hernia structures. Preoperative diagnosis is hardly achieved: US, CT and Urography are reported having better sensibility. Surgical treatment represent the gold standard, with removing of the primary urinary obstruction, if present, as the first step followed by defect repair.

Riassunto

La riparazione chirurgica delle ernie inguinali è uno degli interventi chirurgici più frequentemente praticati. Generalmente l'ernia inguinale è dovuta all'impegno del canale inguinale da parte del sacco erniario contenente visceri addominali ricoperti dal peritoneo. Il coinvolgimento nell'ernia di organi extraperitoneali è raro, in particolare l'incidenza di un diverticolo vescicale nel canale inguinale viene riportata tra l'1 ed il 4%. Sesso maschile, obesità, età superiore ai 50 anni e patologie ostruttive delle vie urinarie sono fattori di rischio coinvolti nello sviluppo di un'ernia vescicale. Presentiamo il caso di un uomo di 63 anni giunto alla nostra osservazione per un'ernia inguinale destra recidiva con disturbi urinari aspecifici. All'ecotomografia della parete addominale effettuata nel pre-operatorio ci siamo resi conto che le dimensioni della tumefazione inguinale risultavano ridotte dopo la minzione. Sulla base di tale reperto abbiamo approfondito il caso con una cistografia che ci ha permesso di constatare la presenza di un diverticolo vescicale che impegnava il canale inguinale. Il coinvolgimento della vescica nell'ernia inguinale è un evento raro e spesso paucisintomatico che però bisogna sempre considerare nel percorso clinico-diagnostico che precede il trattamento chirurgico dell'ernia al fine di programmare un intervento sicuro e scevro da complicitanze.

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