

A giant inguinoscrotal hernia containing urinary bladder repaired with use of robotic-assisted laparoscopy: a case report

Piotr Kania, Paweł Marczuk, Jakub Biedrzycki

Department of Urology and Urological Oncology, St. John Paul II Mazovian Provincial Hospital in Siedlce, Siedlce, Poland

Citation: Kania P, Marczuk P, Biedrzycki J. A giant inguinoscrotal hernia containing urinary bladder repaired with use of robotic-assisted laparoscopy: a case report. Cent European J Urol. 2023; 76: 64-67.

Article history

Submitted: Oct. 12, 2022

Accepted: Nov. 20, 2022

Published online: Feb. 13, 2023

Corresponding author

Piotr Kania

St. John Paul II Mazovian

Provincial Hospital

Department of Urology

and Urological Oncology

26 Poniatowskiego Street

08-110 Siedlce, Poland

phone: +48 508 458 221

pkania@szpital.siedlce.pl

The aim of this report is to underline proper differential diagnosis of scrotal enlargement and to highlight feasibility of minimally invasive robotic-assisted treatment of giant urinary bladder containing inguinoscrotal hernia.

A 48-year-old patient was referred to the outpatient urology clinic with diagnosis of hydrocele. During the diagnostic procedures, it was confirmed that the scrotal enlargement is a giant inguinal hernia containing most of the urinary bladder. Robotic-assisted laparoscopic transabdominal preperitoneal hernia repair (TAPP) has been performed. The patient remains asymptomatic after 18 months of observation. Minimally invasive repair should always be considered due to better perioperative and postoperative outcomes.

Key Words: inguinoscrotal urinary bladder containing hernia ◊ robotic-assisted hernia repair ◊ differential diagnosis of sliding hernia

CASE PRESENTATION

A 48-year-old Caucasian male with no comorbidities was referred to the urology outpatient clinic with the initial diagnosis of right-sided giant hydrocele confirmed by scrotal ultrasonography revealing an anechoic space of about 300 ml in volume surrounding normal testicle. The patient presented with a bladder catheter inserted in the emergency department due to increased lower urinary tract symptoms (LUTS) and consequent acute urinary retention. A painless enlargement of the right scrotum reaching the groin region was observed by the patient for two years with no other gastrointestinal symptoms or abdominal pain. The initial plan was to evaluate LUTS after catheter removal and to refer the patient for elective

hydrocele surgery. The catheter was then removed and after adequate hydration, abdominal ultrasonography revealed normal kidneys, urinary bladder with smooth wall outline and volume of 150 ml and prostate volume of 25 ml. Uroflowmetry was performed at the same visit to safely release the patient home without catheter.

However, the flowmetry results totally completely changed the initial diagnosis and treatment plan. With a bladder volume before micturition of 150 ml, the voided volume was about 400 ml with maximal flow rate 22 ml/s and no residual volume. These findings led us to suspect an inguinal hernia containing the bladder. After more detailed anamnesis, the patient recalled that the scrotum was less filled after micturition. The diagnosis of inguinoscrotal hernia

containing almost the entire urinary bladder was confirmed in computed tomography (CT) and urethrocytography (Figure 1).

The decision to perform the surgery in the urology department was based on the significant risk of urinary bladder reconstruction. The patient was then qualified to laparoscopic robot-assisted transabdominal preperitoneal hernia repair (TAPP). The surgery was performed with use of daVinci® X system (Intuitive, Sunnyvale CA, USA) using a 30° endo-

scope, four arms and one laparoscopic assistant port in a standard radical prostatectomy setting. A 30° up endoscope application facilitates high and adequately wide opening of peritoneum to achieve long enough peritoneal flap (Figure 2). The hernia hiatus was uncovered with its medial aspect deeply to the Retzius space, posterior surface of pubic bone, Cooper ligament and pubic tubercle was exposed. The most laborious stage of the procedure was the precise preparation of a giant hernial sac, with special caution to spare seminal cord and bladder integrity. However, an active use of the fourth arm armed with Prograsp made it easier than in classic laparoscopy. After this, the hernia sac was repositioned into the abdominal cavity proximally (Figure 3). The watertightness of the bladder was confirmed. Hiatus was covered with use of 10x15 cm self-fixating mesh (ProGrip Covidien) (Figure 4). Peritoneal closure with a barbed



Figure 1. Preoperative urethrocytography.

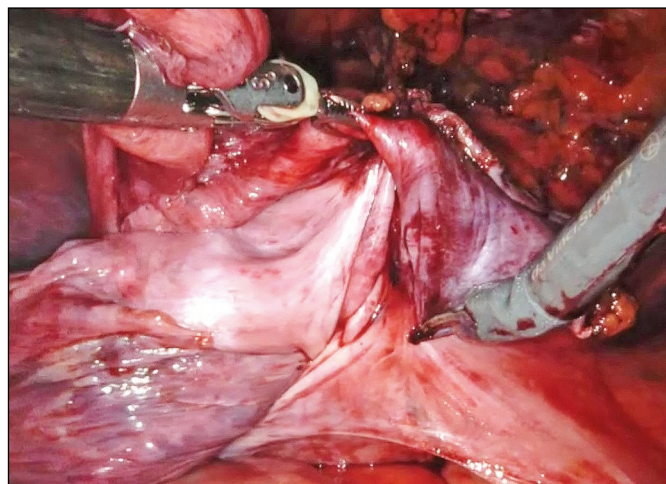


Figure 3. Interposition of the hernia sac.

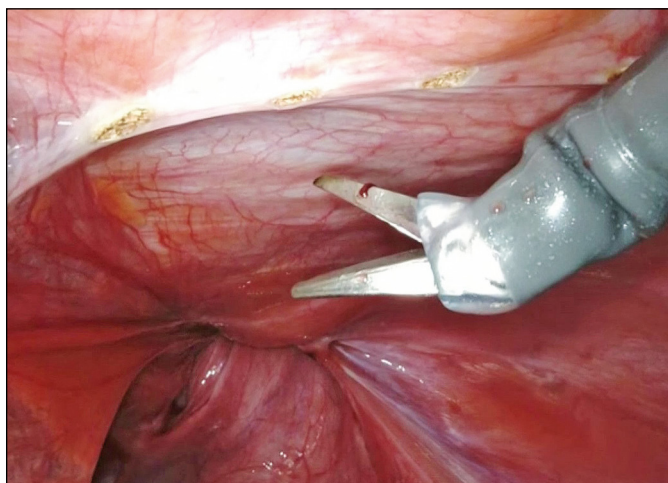


Figure 2. Peritoneal flap preparation.

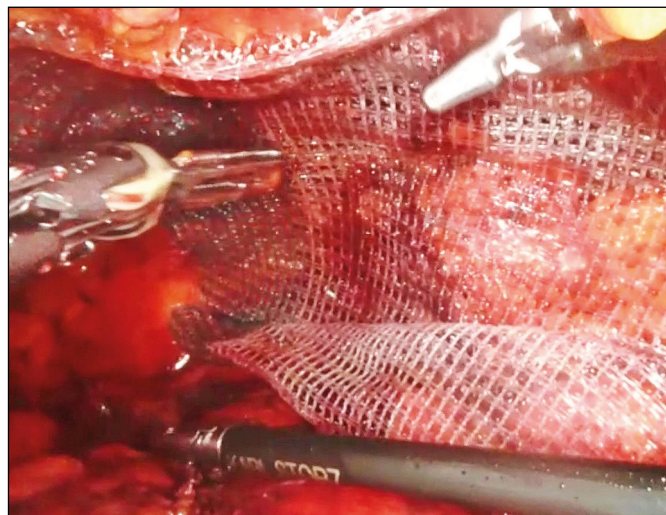


Figure 4. Mesh positioning.

suture finalised the procedure (Figure 5). The operation time was 180 minutes and the uneventful hospitalization lasted 6 days. Postoperative cystography showed an hourglass/dumbbell shape of the bladder with no leak of contrasted urine (Figure 6). In the early postoperative period, bladder obstruction was excluded. Post-voiding retention in subsequent measurements decreased to 50 ml. During the 18-month follow-up period, the patient did not report any pain, voiding symptoms or signs of urinary tract infection.

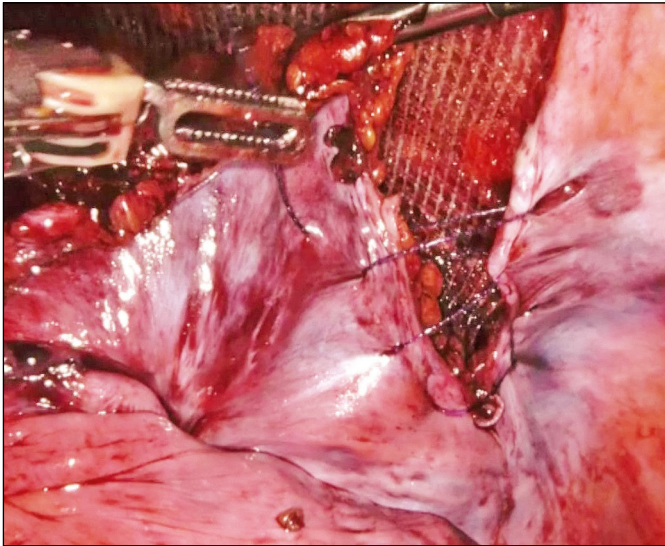


Figure 5. Peritonisation of the mesh.



Figure 6. Postoperative urethrocytography.

DISCUSSION

Inguinal hernia is a common pathological condition that affects 27% of men and 3% of women worldwide. Repair of inguinal hernia is one of the most common surgical procedures. Herniation of the urinary bladder is rare and is found in up to 4% of inguinal hernias [1].

Inguinal bladder hernia (IBH) risk factors include: male sex, obesity, weakness of pelvic muscles, age and bladder outlet obstruction [2].

IBH can be anatomically divided into: extraperitoneal, paraperitoneal or intraperitoneal with the majority of cases being extraperitoneal hernias [3]. Pathophysiology of IBH include pulling a portion or the whole bladder wall through the inguinal ring into the inguinal canal and scrotum with the sheath of peritoneum that forms hernia sac.

Symptoms of IBH include lower urinary tract symptoms (LUTS) such as urgency, frequency, nocturia or two-stage voiding, reducing of size of inguinal hernia after micturition and recurrent urinary tract infections. If ureters are involved in the hernia sac, one-sided or bilateral hydronephrosis with renal failure can be seen [4]. However, most of IBH, especially small ones, are asymptomatic and of those, only 5 to 10% of IBH are diagnosed preoperatively, 77% of cases are diagnosed intraoperatively and up to 16% of cases are diagnosed postoperatively due to surgical complications [5]. These data show the importance of proper differential diagnosis to avoid intraoperative complications including urinary bladder injury followed by massive haematuria, sepsis or fistula formation. If any doubts appear, one should not hesitate to perform CT, magnetic resonance imaging (MRI), cystoscopy and cystourethrography [6]. CT or MRI are helpful to evaluate the hernia size, position or composition, vascularisation and concomitant abnormalities. The most sensitive examination in IBH diagnosis is voiding cystourethrography – this study reveals ‘dumbbell’ or ‘dog’s ear’ shape of the urinary bladder [7].

Standard of care in patients presenting with IBH is operation including reposition of urinary bladder into abdominal cavity with simultaneous hernia repair. In some cases, bladder partial resection is recommended. These include: wall necrosis, large bladder diverticulum or narrow hernia neck.

The majority of authors described open IBH repair using Bassini or modified Lichtenstein technique. Our patient underwent laparoscopic transabdominal preperitoneal (TAPP) hernia repair using daVinci X system. This minimally invasive technique has lots of advantages including: improved visibility, lower estimated blood loss, reduced analgesia requirement,

faster postoperative recovery with shorter length of hospital stay, better cosmetics or reduced number of postoperative complications. It was proved in a systematic review and meta-analyses [8] that laparoscopic approach in hernia repair results in longer surgery time, but better results and lower complications rate when compared to open approach. Systematic review of literature performed in 2018 by Branchu et al. [9] revealed that 80% of patients presenting IBH were operated using an open approach. Only 3 authors described laparoscopic approach and only two cases of robotic repair of bladder herniation were presented so far.

In conclusion, IBH is an uncommon condition that requires proper preoperative diagnosis to prevent misleading and severe complications. As most cases are treated surgically by open approach, laparoscopic and robotic-assisted IBH repair should always be considered in experienced centres due to better perioperative and postoperative outcomes. According to authors' knowledge this is the third case of inguinal bladder hernia repair using robotic daVinci system described in the literature.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

References

1. Bisharat M, O'Donnell ME, Thompson T, et al. Complications of inguinoscrotal bladder hernias: A case series. *Hernia*. 2009; 13: 81-84.
2. Habib A. A rare case of inguinal hernia with complete bladder herniation. *Case Rep Surg*. 2017; 2017: 4658169.
3. Zajackowski T. Scrotal bladder hernia: Report of two cases. *Int Urol Nephrol*. 2007; 39: 479-484.
4. Helleman JN, Willemsen P, Vanderveken M, Cortvriend J, Van Erps P. Incarcerated vesico-inguinal hernia: A case report. *Acta Chir Belg*. 2009; 109: 815-817.
5. Yong L, Siaw MY, Yeoh AJL, Lee CEG. Inguinal bladder hernia: case report. *Open J Urol*. 2013; 3: 217-218.
6. Pasquale MD, Shabahang M, Evans SR. Obstructive uropathy secondary to massive inguinoscrotal bladder herniation. *J Urol*. 1993; 150: 1906-1908.
7. Mahadevappa B, Suresh SC, Natarajan K, Thomas J. Cystogram with dumbbell shaped urinary bladder in a sliding inguinal hernia. *J. Radiol Case Rep*. 2009; 3: 7-9.
8. Memon MA, Cooper NJ, Memon B, Memon MI, Abrams KR. Meta-analysis of randomised clinical trials comparing open and laparoscopic inguinal hernia repair. *Br J Surg*. 2003; 90: 1479-1492.
9. Branchu B, Renard Y, Larre S, Leon P. Diagnosis and treatment of inguinal hernia of the bladder: a systematic review of the past 10 years. *Turk J Urol*. 2018; 44: 384-388. ■