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Laparo-endoscopic technique of management of a rare case of incarcerated urinary bladder hernia in a female

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Abstract

Inguinoscrotal hernia containing the urinary bladder is a rare entity, found in 1%–5% of inguinal hernias. We herein present a rare case of a 60-year-old female status post open hysterectomy who presented to emergency department with painful groin swelling and contrast enhanced computerized tomography of abdomen showed features of incarcerated urinary bladder hernia. She underwent emergency laparo-endoscopic bilateral inguinal hernia mesh repair. After extensive literature search, we believe that this is the first case report of incarcerated urinary bladder hernia in a female with infra-umbilical scar who underwent emergency laparo-endoscopic bilateral inguinal hernia mesh repair.

Keywords:

Hernia in female, incarcerated inguinal hernia, inguinal bladder hernia, laparo-endoscopic technique, TAPP for bladder hernia, TEP for bladder hernia, urinary bladder hernia

Key messages

Inguinal bladder hernia in a female patient is very rare. Laparo-endoscopic technique for management of incarcerated urinary bladder (UB) hernia is safe and feasible in experienced hands. It is advisable to do diagnostic laparoscopy initially to assess the viability of UB and contralateral groin for occult hernias. Care has to be taken not to injure the UB during reduction.

Introduction

Inguinal bladder hernia (IBH) is a rare condition, occurring in 1%–5% of inguinal hernias (IH)[1] and was first described by Levine in 1951.[2] Most cases of IBH are asymptomatic and of those only 5%–10% are diagnosed preoperatively, 77% intraoperatively, and upto 16% are diagnosed postoperatively due to surgical complications.[3] The incidence may be as high as 10% in obese men over the age of 50 years[4] and is extremely rare in females.

We herein report a rare case of incarcerated IBH in a 60-year-old female who underwent emergency laparo-endoscopic bilateral IH mesh repair. After extensive literature search, we believe this is the first case report of an elderly female with incarcerated IBH with infra-umbilical scar undergoing emergency laparo-endoscopic bilateral mesh repair by a technique described by us.

Case Report

A 60-year-old female patient with body mass index of 30 kg/m^2 known case of diabetes mellitus, status post open hysterectomy through Pfannenstiel incision presented to the emergency department with swelling at right groin for 10 days, associated with pain, vomiting, and increased frequency of micturition for one day. On examination, she was tachycardic with tender irreducible

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swelling in the right groin and a clinical diagnosis of irreducible/obstructed IH was made [Figure 1A]. Contrast enhanced computerized tomography (CECT) of abdomen showed features of incarcerated right IBH [Figure 1B–D]. In view of incarceration, after an informed written consent, the patient was planned for emergency surgery under general anesthesia.

Foleys catheter (FC) was inserted and there was no decrease in the size of swelling after FC insertion. A 5 mm port was inserted at Palmer's point after achieving pneumo-peritoneum by closed technique using veress needle. Diagnostic laparoscopy revealed bilateral IH with IBH on the right [Figure 1E, F]. There were omental adhesions at the previous hysterectomy scar site. The abdomen was deflated and decision was taken to do a totally extraperitoneal (TEP) repair [Figure 1G, H]. The camera port (CP) was placed in the supraumbilical region (2 cm above the umbilicus) on the left side [Figure 1G]. The preperitoneal space was created using blunt telescopic dissection with a 30° telescope. The midline secondary ports (SP1 and SP2) were placed [Figure 1H]. Due to previous hysterectomy the lower abdomen was scarred. Careful dissection was carried out to define the space of Retzius. The UB was seen entering the defect medial to the inferior epigastric vessels, suggestive of a direct hernia [Figure 2A, B]. The UB was reduced meticulously with combination of gentle traction and external pressure [Figure 2C–F]. There were no signs of ischemia or necrosis on the wall of UB after reduction. The UB was distended with saline and methylene blue after reduction to rule out any inadvertent injury [Figure 2G, H]. Dissection was carried out lateral to the round ligament to define Bogros space [Figure 2I, J]. This distension also helped to identify the borders of UB and its relationship with the peritoneum. Peritoneum was incised away from the upper border of the distended UB using cold scissors [Figure 3A–C]. This helped to create more space and helped in repositioning of UB into the pelvis. The peritoneal attachments of the UB were divided and the UB was repositioned in the pelvis [Figure 3D, E]. The round ligament was divided close to peritoneal reflection [Figure 3F]. At this juncture, the 5 mm port which was placed at Palmer's point was opened to leave out the gas, thus the preperitoneal space was not hampered in spite of incising the peritoneum. Dissection was carried out on left side and the direct sac was reduced. Myopectineal orifice of Fruchaud was defined bilaterally. There was also no extravasation of methylene blue from the UB, confirming no injury [Figure 3G]. Two 12 cm × 17 cm medium weight polypropylene (PP) mesh were placed with overlap of 2 cm in the midline and fixed with tacks to Cooper's ligament and lateral border of rectus. The gas insufflator was now connected to the 5 mm port at Palmer's point and 5 mm telescope was introduced. The meshes were inspected through the large peritoneal rent [Figure 3H]. The 10 mm supraumbilical and 5 mm port (SP2) were

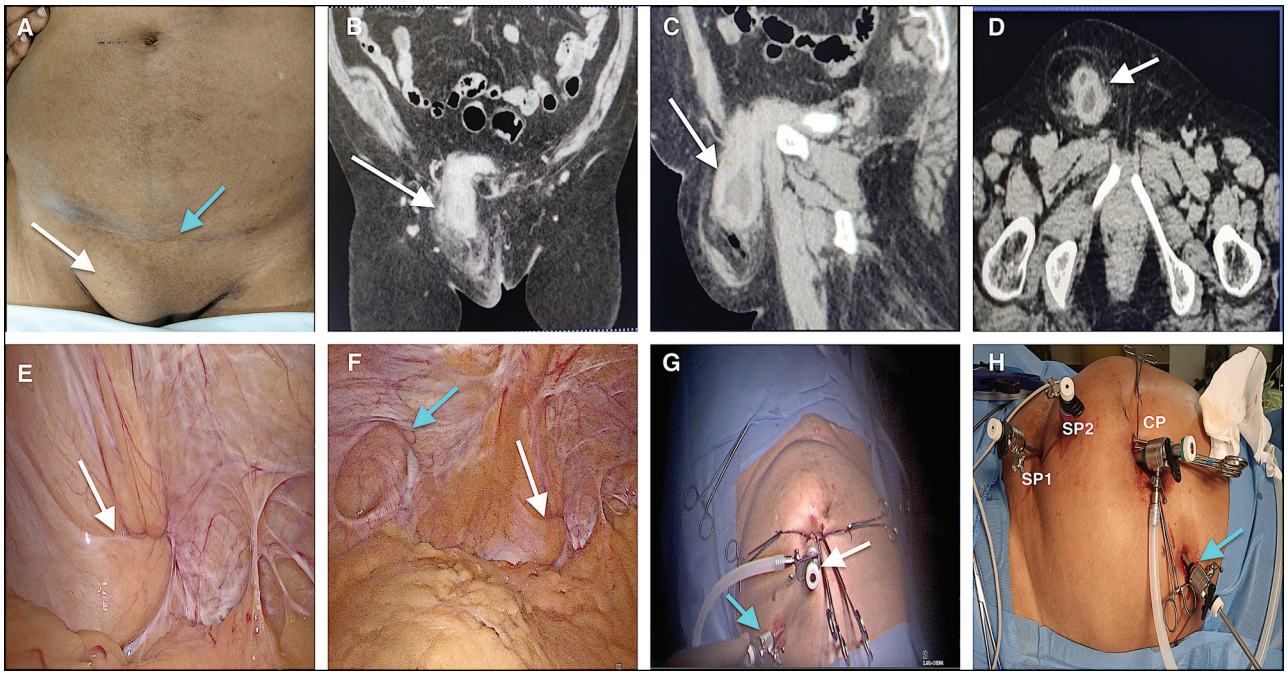

Figure 1: A: Irreducible tender swelling in right groin (white arrow: irreducible swelling, blue arrow: scar of hysterectomy). B–D: CECT abdomen showing right inguinal bladder hernia with irregular wall thickening and enhancement of herniated bladder with peri vesicle fat stranding-suggestive of incarcerated hernia (white arrow: herniated urinary bladder). E: Inguinal bladder hernia on right side (white arrow: urinary bladder). F: Left occult inguinal hernia with inguinal bladder hernia on right side (blue arrow: occult left inguinal hernial defect, white arrow: inguinal bladder hernia). G: CP placed for diagnostic laparoscopy and for TEP (blue arrow: 5 mm CP at Palmer's point for diagnostic laparoscopy, white arrow: Supraumbilical CP for TEP). H: Ports placed (blue arrow: 5 mm CP at Palmer's point for diagnostic laparoscopy, CP: extraperitoneal CP, SP1: first secondary port, SP2: second secondary port). CECT = contrast enhanced computerized tomography, CP = camera port, TEP = totally extraperitoneal

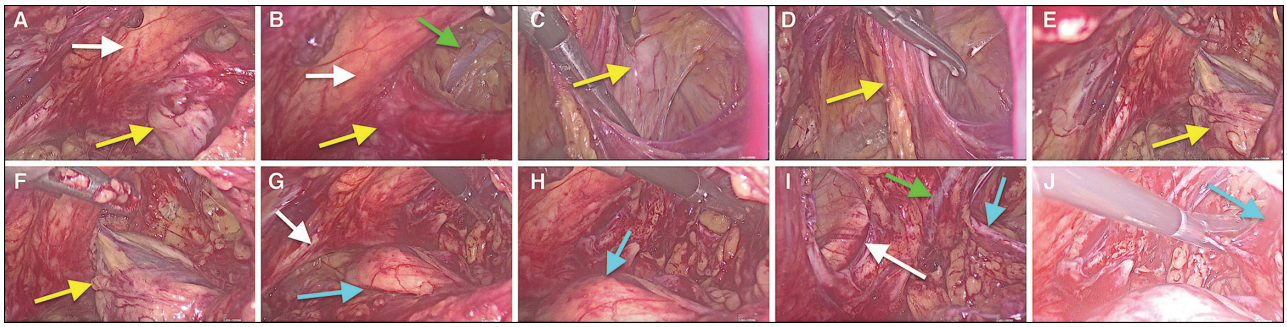

Figure 2: A, B: Urinary bladder entering the defect medial to the inferior epigastric vessels, suggestive of a direct hernia (white arrow: rectus muscle, yellow arrow: urinary bladder, green arrow: inferior epigastric vessel). C–F: Gentle reduction of urinary bladder from the direct hernial defect (yellow arrow: urinary bladder). G: Herniated urinary bladder reduced. No signs of ischemia noted (blue arrow: urinary bladder, white arrow: pubic bone). H: Distended urinary bladder with saline and methylene blue (blue arrow: distended urinary bladder). No extravasation seen. I: Complete reduction of urinary bladder from direct defect (white arrow: direct defect, green arrow: inferior epigastric vessels, blue arrow: round ligament). J: Dissection toward space of Bogros (blue arrow: space of Bogros)

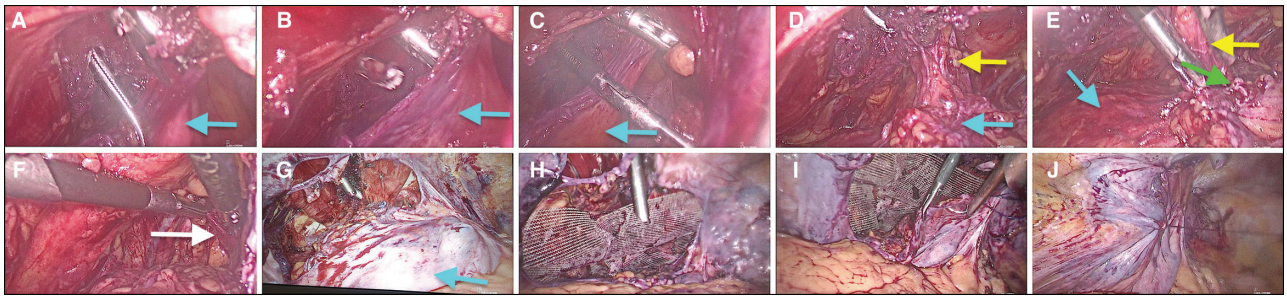

Figure 3: A–C: Peritoneum incised away from the upper border of the distended UB using cold scissors (blue arrow: distended urinary bladder). D, E: Peritoneal attachments of urinary bladder divided (blue arrow: urinary bladder yellow arrow: anterior attachments, green arrow: peritoneum). F: Round ligament division (white arrow: round ligament). G: Distended urinary bladder with methylene blue and saline showing no extravasation. H: Meshes were inspected through the large peritoneal rent with camera port at Palmers point. I: Peritoneal closure with 2-0 barbed sutures. J: Completed peritoneal closure

directed intra-peritoneally under vision. The incised peritoneum was approximated using 2-0 barbed sutures with CP at 5 mm Palmer's point [Figure 3I, J]. The total operative time was 95 min. The patient was started oral liquids 6 h after the procedure and was discharged on the first post-operative day (POD) on soft diet with FC *in situ*. FC was removed on seventh POD. At 1-year follow up, the patient is asymptomatic with no recurrence of hernia.

Video demonstrating this technique can be seen at YouTube with video titled "Novel Laparo-Endoscopic Technique for Management of Incarcerated Urinary Bladder Hernia in a Female".

Discussion

UB hernia in a female is rare and it presenting as incarceration is an extremely rare entity. UB herniation occurs as an acquired direct IH with bladder pulled into the defect, together with sheath of peritoneum which forms the sac.[5] The factors which contribute to the development of IBH are bladder outlet obstruction, weakness of pelvic musculature, decreased bladder tone, and obesity.[5] There are three types of UB herniation: para-peritoneal, intraperitoneal, and extraperitoneal with extraperitoneal being the commonest.[6] Symptomatic patients present with inguinal swelling, dysuria, hematuria, and urinary obstruction symptoms. The rarity in our case was the UB herniation with incarceration in an elderly female with no obvious obstructive urinary symptoms in the past. We presume the cause for IBH in this elderly female may be due to weakness of pelvic musculature.

In a systematic review of literature by Branchu *et al.*[7] involving 64 articles and 74 patients, 80% of IBH were operated by open approach. There are case reports of IBH being managed by laparoscopic transabdominal preperitoneal (TAPP) repair and was preferred compared to TEP approach. Valdivia Uría *et al.*[8] in their case report managed IBH by preperitoneal approach using three midline ports. The inguinal opening was closed by a 3.5 cm circular PP mesh and was fixed with several titanium hernia clips. Similarly, Charuzi *et al.*[9] also used a preperitoneal approach to repair a IBH laparoscopically; however, they did not report any specific operative details. Kania *et al.*[10] reported a case of inguinoscrotal hernia containing UB repaired with robotic assisted laparoscopic TAPP using four arms and one laparoscopic assistant port.

As per our department protocol, we perform TEP and enhanced view TEP (ETEP) even in irreducible inguinoscrotal and giant IH.[11] We would have gone ahead directly with TEP in this case, if the CECT scan had not shown features of incarceration. Doing a diagnostic laparoscopy initially also helped us to detect the contralateral occult hernial defect and also

the viability of UB. We thought of TEP after diagnostic laparoscopy as in our hands bilateral TEP is faster compared to bilateral TAPP. We have followed similar laparo-endoscopic technique in cases of obstructed/suspected strangulated IH, in which after content reduction by intraperitoneal approach, we have done TEP mesh repairs. Although TEP is a relative contraindication in patients with infra-umbilical scars according to International guidelines for groin hernia management,[12] we have good experience in performing TEP in patients with infra-umbilical scars. Distension of the UB with saline and methylene blue was routinely followed by us when we performed redo TAPP for recurrence following previous laparo-endoscopic repairs.[13] This distension helped in recognition of bladder wall during dissection of space of Retzius which will be fibrosed due to previous repair and PP mesh. This also helped to identify any inadvertent injury to UB.

Proponents of TAPP feel that the UB can be reduced under vision and also its easier to recognize any intraoperative injury to the bladder. In our case, although TAPP would have been an easier procedure compared to TEP, we thought of doing a laparo-endoscopic technique in this rare case with safety of the patient given prime importance. In our case, distension of the UB with saline and methylene blue helped to define the borders of the UB and also helped to incise the peritoneum away from the UB. This peritoneal incision after distension of the UB helped in creation of more space and also helped in reposition of the UB into the pelvis without any injury. After extensive literature search, to the best of our knowledge, we presume this is the first case report of incarcerated IBH in a female with infra-umbilical scar managed by laparo-endoscopic technique.

Conclusion

Emergency laparoscopic surgery in case of incarcerated UB hernia is safe and feasible in experienced hands. Laparo-endoscopic technique for management of incarcerated UB hernia is safe and reproducible. It is advisable to do diagnostic laparoscopy initially to assess the viability of UB and contralateral groin for occult hernias.

Author contributions

GKS: Concepts, design, definition of intellectual content, literature search, clinical studies, data analysis, manuscript editing, manuscript review, guarantor; ASJ: Literature search, clinical studies, data acquisition, data analysis, statistical analysis, manuscript preparation, manuscript editing, manuscript review, guarantor; MT: Manuscript preparation, manuscript editing, manuscript review, guarantor.

Ethical policy and institutional review board statement

This study was in accordance with the Helsinki Declaration of 1975 (2013 revision).

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Data availability statement

All data generated and/or analyzed during this study are included in this published article.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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