TPM Vol. 32, No. S3, 2025
ISSN: 1972-6325
https://www.tpmap.org/

Open Access

LAPAROSCOPIC TRANSABDOMINAL PREPERITONEAL REPAIR OF LEFT SUPRAVESICAL HERNIA: A DETAILED CASE REPORT AND REVIEW OF LITERATURE

DR. ANUSUYA C[1], PROF. DR. MUTHUKUMARAN G[2] , DR.E. RAJESH[3]
[1]POSTGRADUATE, DEPARTMENT OF GENERAL SURGERY, SAVEETHA MEDICAL COLLEGE AND HOSPITAL, THANDALAM, TAMIL NADU, INDIA
[2]PROFESSOR, DEPARTMENT OF GENERAL SURGERY, SAVEETHA MEDICAL COLLEGE AND HOSPITAL, THANDALAM, TAMIL NADU, INDIA
[3] READER DEPARTMENT OF ORAL & MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY, SREE BALAJI DENTAL COLLEGE & HOSPITAL, CHENNAI, INDIA

Abstract

Background: Supravesical hernia is a rare subtype of pelvic hernia occurring through a defect in the supravesical fossa, bordered by the medial and median umbilical ligaments above the urinary bladder. These hernias account for less than 4% of all hernias and often pose a diagnostic challenge due to their nonspecific clinical presentation, ranging from asymptomatic groin swelling to bowel obstruction or urinary disturbances.

Case Presentation: We present a case of a 49-year-old male with a two-year history of left groin swelling and intermittent episodes of upper abdominal discomfort. Physical examination revealed a 5*4 cm globular swelling in the left groin, extending to the root of the scrotum, reducible, with a positive cough impulse and smooth surface. Ultrasonography revealed a 1 cm defect in the left inguinal region with bladder herniation. The patient underwent successful laparoscopic transabdominal preperitoneal (TAPP) repair under general anesthesia. Intraoperative findings included two direct hernias on the left side with the urinary bladder as the hernia content. A composite mesh was placed and secured with tackers. Postoperative recovery was uneventful, and the patient was discharged with significant symptomatic improvement.

Discussion: Supravesical hernias are classified as internal or external based on their anatomical location. They may involve the bladder, leading to urinary symptoms or complications. Early diagnosis is essential, and imaging studies such as ultrasonography and computed tomography (CT) play a vital role. The TAPP approach offers advantages such as superior visualisation, precise dissection, and effective mesh placement.

Conclusion: This case underscores the importance of considering supravesical hernias in the differential diagnosis of groin swelling and demonstrates the efficacy of laparoscopic TAPP repair in managing such cases. Early surgical intervention is crucial to prevent complications.

Keywords: Supravesical hernia, urinary bladder herniation, laparoscopic transabdominal preperitoneal repair (TAPP), direct inguinal hernia, groin swelling, mesh repair.

INTRODUCTION:

Supravesical hernias (SH) are exceedingly rare hernias through the supravesical fossa (the space bounded by the median and medial umbilical ligaments above the bladder) [4]. They are classified as internal or external based on their sac's location [4]. Internal SH remain confined to the pelvis (often causing small-bowel obstruction) [2,10], whereas external SH protrude through the anterior abdominal wall into the inguinal canal, mimicking a direct inguinal hernia [5]. Overall, supravesical hernias represent a tiny fraction of abdominal wall hernias [1] and their nonspecific presentation (from groin swelling to bowel obstruction or urinary symptoms) makes diagnosis challenging [1,5]. This report presents a rare case of a left supravesical hernia containing bladder, highlighting its clinical features, imaging, and successful

laparoscopic transabdominal preperitoneal (TAPP) repair. The aim is to increase awareness of this entity and demonstrate the value of laparoscopy in management [3,12].

Case Presentation:

A 49-year-old male presented with a two-year history of left groin swelling, which was insidious in onset and gradually progressive to attain the current size, aggravated during coughing and heavy weight lifting, reduced manually by himself. He reported intermittent left upper abdominal pain aggravated by bending two days before admission, which had since subsided. There were no associated symptoms of fever, nausea, vomiting, abdominal distension, or changes in bowel habits or bladder habits.

Clinical Examination

General Examination:

The patient was conscious, oriented, alert and afebrile. Vital signs were stable: pulse rate - 68 bpm, regular, normal volume, blood pressure 120/80 mmHg at left arm in sitting posture, oxygen saturation 98% on room air.

Regional Examination:

INSPECTION- Left Inguinal region - standing posture:

- A solitary swelling was situated in the left Inguinal region
- Swelling is extending from 6 cm away from anterior superior iliac spine along Inguinal canal towards scrotum
- It is a globular shape of approximately 5*4 cm
- Skin over the swelling- normal
- No redness, edema, dilated vein, scars or pigmentation
- Expansile cough impulse - present
- No visible peristalsis over the swelling
- Scrotum appears normal

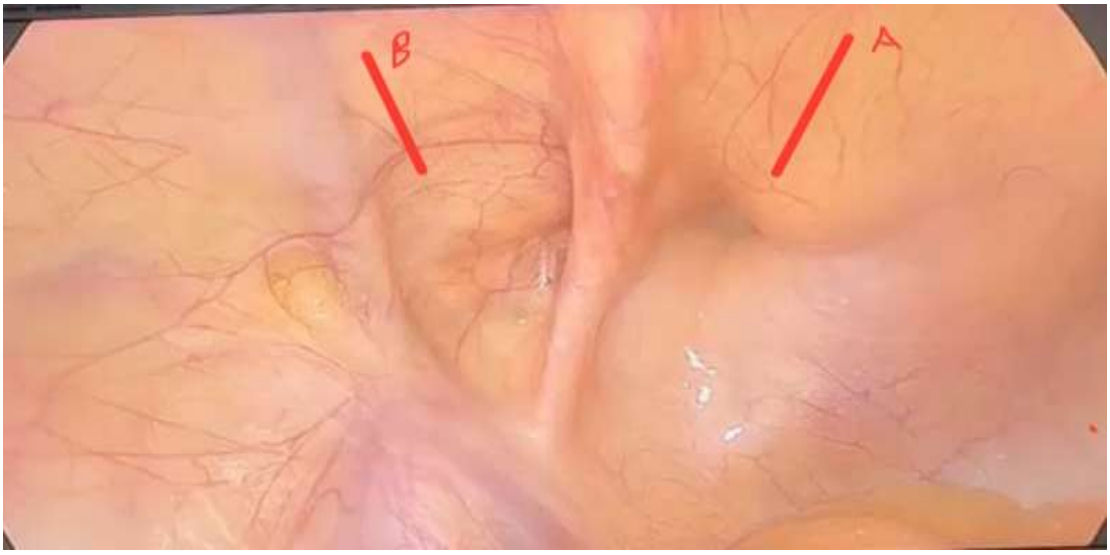
PALPATION

- No local rise of temperature
- Non-tender
- Globular shape of 5*4 cm
- Extending 6 cm away from anterior superior iliac spine to scrotum
- Smooth surface
- Soft and elastic in consistency
- Medial to pubic tubercle
- Reducibility- completely reducible
- Ziemann's test- Impulse felt on middle finger

In Ziemann's "three-finger" test, placing the middle finger over the superficial inguinal ring and eliciting a cough impulse indicates a direct inguinal hernia . In this patient the impulse was felt on the middle finger, supporting a direct defect . Similarly, the deep ring occlusion test was negative (occluding the deep ring did not prevent the bulge), further ruling out an indirect hernia. These exam findings (cough impulse positive, swelling medial to the pubic tubercle, and

positive middle-finger impulse) together pointed toward a direct or supravesical hernia, which was confirmed at surgery.

- Deep ring occlusion test - Swelling did not appear



- Palpable expansile impulse on coughing over the external ring

Systemic Examination:

Cardiovascular, respiratory, and central nervous system examinations revealed no abnormalities.

Investigations:

Laboratory Tests: Baseline investigations were within normal limits.

Imaging: Ultrasonography revealed a 1 cm defect in the left inguinal region with the urinary bladder herniating through it.

Surgical Management:

The patient underwent a transabdominal preperitoneal (TAPP) repair under general anesthesia.

Surgical Procedure:

Pneumoperitoneum was created using a Veress needle.

A 10 mm suprapubic camera port and two 5 mm working ports were placed under direct vision.

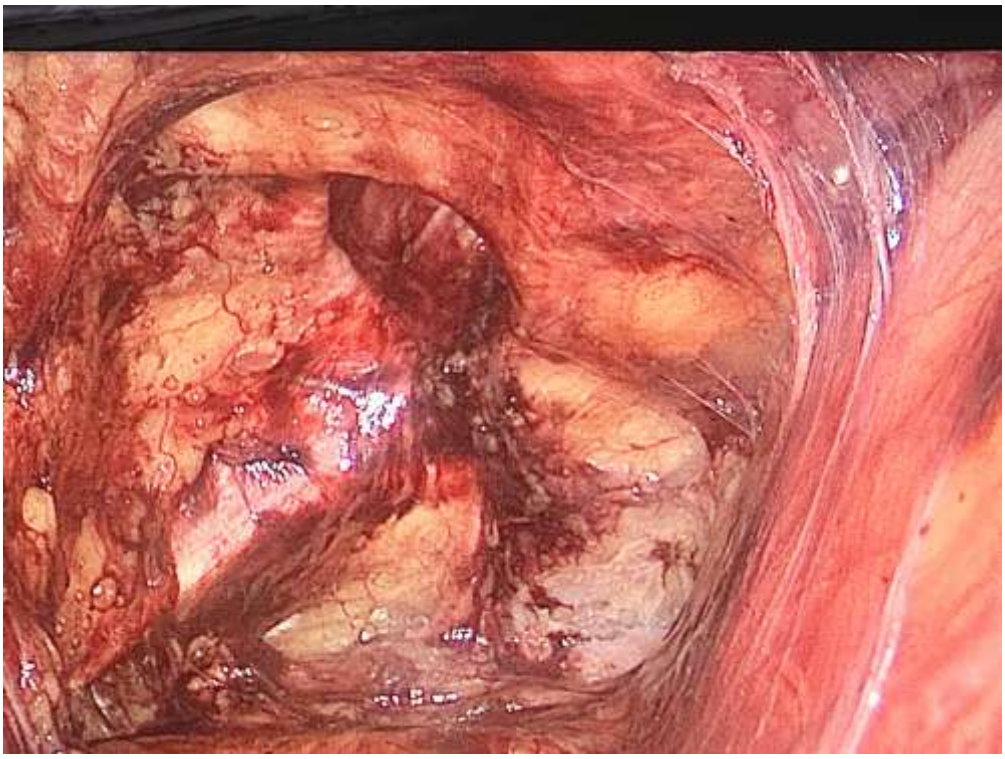
The abdominal cavity was visualized, and two direct hernias were identified. One of these defects corresponded to the Left supravesical hernia (the one containing bladder) (Figure -1 -A) , while the other was a separate Left direct inguinal defect containing only preperitoneal fat. (Figure -1-B)

Figure -1

Figure -1- A - Left supravesical hernia (the one containing bladder)

Figure - 1 -B - Left direct inguinal defect containing only preperitoneal fat.

A peritoneal incision was made 5 mm above the defect, extending from the anterior superior iliac spine to the median umbilical ligament.



The hernia sacs were dissected, partially reduced, and the distal sac was resected. (Figure -2)

Figure -2 - Hernia sacs were dissected, partially reduced, and the distal sac was resected.

A composite mesh was laid over the defect and secured with tackers to the pubic tubercle, Coopers ligament, and areas medial and lateral to the inferior epigastric vessels.

A composite mesh (with an anti-adhesive coating on one side) was used in the preperitoneal space to minimize any risk of bowel adhesions. Composite meshes are designed with a visceral (non-adhesive) surface so they can safely contact intra-abdominal organs while the peritoneum heals [6]. In TAPP repair, even with peritoneal closure, part of the mesh may be exposed to the abdomen until mesothelial re-growth occurs. Using a composite (dual-surface) mesh therefore provides a barrier against adhesions on the intra-abdominal side [7]. This strategy is recommended in laparoscopic hernia repairs when there is potential mesh contact with intestines [7].

The peritoneum was approximated with tackers. (Figure -3)

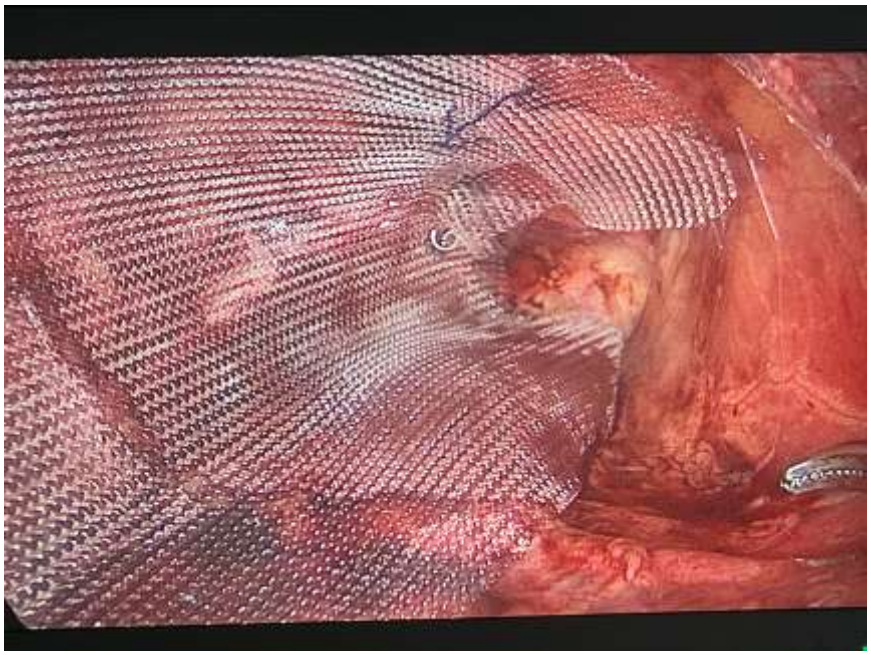


Figure-3 - Composite mesh was laid over the defect and secured with tackers to the pubic tubercle, Coopers ligament, and areas medial and lateral to the inferior epigastric vessels.

The peritoneal flap was re-approximated over the meshes using continuous sutures with 2-0 absorbable barb polydioxanone. (Figure -4).

Figure-4- The peritoneal flap was re-approximated over the meshes using continuous sutures with 2-0 absorbable barb polydioxanone

Pneumperitoneum reversed.

Intraoperative Findings:

Intraoperatively, two distinct left-sided hernia orifices were identified. One of these defects corresponded to the Left supravesical hernia (the one containing bladder), while the other was a separate Left direct inguinal defect containing only preperitoneal fat. In other words, the urinary bladder formed the content of one sac (the supravesical defect), and the second sac was an independent direct hernia. This supravesical defect lay medial to the pubic tubercle (characteristic of direct-type hernias), explaining why it was initially described as a "direct" hernia.

Postoperative Course:

The patient's recovery was uneventful. He demonstrated significant symptomatic improvement and was discharged on postoperative day 3 with advice for follow-up.

DISCUSSION:

Anatomy and incidence:

Supravesical hernias occur through the supravesical fossa between the remnants of the fetal urachus (median umbilical ligament) and medial umbilical ligaments [4,5]. They are extremely rare; one systematic review found only 38 reported cases in the literature [1]. In that series, 78.1% were internal SH and 21.9% were external SH [1]. External SH may be underrecognized – they often mimic a direct inguinal hernia and are not included in standard hernia classifications [5]. Clinicians should be alert to the possibility of SH when a groin hernia has unusual features (e.g., urinary symptoms or a diverticular "neck" tightened by the umbilical ligaments) [4].

Clinical and radiologic diagnosis:

Because supravesical hernias lack pathognomonic signs, imaging is important. CT or ultrasound can reveal a hernia sac containing bladder (as in this case) or loops of bowel located supravesically [8,9]. On physical exam, the location of the bulge (medial to the pubic tubercle) and special tests help classify the hernia. Supravesical hernias should be distinguished from more common groin hernias (indirect/direct inguinal or femoral) or other pelvic hernias (e.g., obturator) [8,10].

Repair techniques and outcomes:

Open repair has been the traditional approach for SH, especially in urgent cases with obstruction. In the systematic review, 76.3% of cases underwent open herniorrhaphy versus 21.1% managed laparoscopically [1]. Mesh was used in only 14% of reported repairs, and bowel resection was required in 21.1% due to strangulation [1,11,12]. Laparoscopic repair (TAPP or totally extraperitoneal) is increasingly reported and offers advantages of magnified visualization, precise dissection of the pelvis, and tension-free mesh placement [2,3]. One series noted that when early diagnosis is made and the patient is stable, laparoscopic reduction and closure of the defect can be achieved successfully [2,11]. In our case, the TAPP approach allowed safe bladder reduction and secure mesh coverage of the defect with minimal morbidity. Although there is no large trial data for SH, the literature suggests that minimally invasive repair is feasible with low recurrence if the hernia orifice is adequately covered or closed [3,12]. Long-term outcomes appear favorable, but more cases are needed to compare approaches formally [1].

CONCLUSION:

Supravesical hernias, though rare, should be part of the differential diagnosis in patients with groin swelling and urinary symptoms. Accurate diagnosis and timely surgical intervention are crucial. The TAPP approach provides a safe and effective method for managing these hernias, offering favorable outcomes and faster recovery times [3,12].

REFERENCES:

1. Katsaros I, Routsi E, Papapanou M, et al. Supravesical hernias: a systematic review of the literature. ANZ J Surg. 2020;90(11):2187–2192. doi:10.1111/ans.16252.

2. Gorgun E, Onur E, Baca B, et al. Laparoscopic repair of an internal supravesical hernia: a rare hernia causing small bowel obstruction. Surg Endosc. 2003 Apr;17(4):659. doi:10.1007/s00464-002-4259-5.

3. Fujimoto G, Deguchi T, Shirai J. Transabdominal preperitoneal repair for an external supravesical hernia with an incarcerated ovary: a case report. Cureus. 2024;16(5):e60111. doi:10.7759/cureus.60111.

4. Skandalakis JE, Gray SW, Burns WB, et al. Internal and external supravesical hernia. Am Surg. 1976;42(2):142–146. PMID:1247255.

5. Amato G, Romano G, Erdas E, et al. External hernia of the supravesical fossa: rare or simply misidentified? Int J Surg. 2017;41:119–126. doi:10.1016/j.ijsu.2017.03.075.

6. Agresta F, Marzetti A, Vigna S, et al. Repair of primary and incisional hernias using composite mesh fixed with absorbable tackers: preliminary experience of a laparoscopic approach. Updates Surg. 2017;69(4):493–497. doi:10.1007/s13304-017-0444-x. PMC5686236.

7. International Endohernia Society Guidelines: comparative outcomes with composite vs standard mesh in laparoscopic ventral/incisional hernia repair. Updates Surg. 2014-2015; see Colon et al., Jenkins et al.

8. Baba Y, Bell D. Supravesical hernia. Radiopaedia.org Reference Article. Accessed 2025. doi:10.53347/rID-85414.

9. Panthi A, Thapaliya I, Khadka L, et al. The role of computed tomography in acute bowel obstruction due to a supravesical hernia: a case report from Nepal. Ann Med Surg (Lond). 2024;86:4268-4273. doi:10.1097/MS9.0000000000002222.

10. Cisse, M., et al. (2009). Internal supravesical hernia as a rare cause of intestinal obstruction: A case report. Journal of Medical Case Reports.

11. Mehran, A., Szomstein, S., & Rosenthal, R. (2004). Laparoscopic repair of an internal strangulated supravesical hernia. Surgical Endoscopy, 18(3), 554.

12. Alkhaldi, A., et al. (2023). A case of bowel obstruction due to a rare supra-vesical hernia. International Journal of Surgery Case Reports.