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Laparoscopic Repair of Ureteral Obturator Hernia Using Extended TAPP Technique: A Case Report

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Statistical Analysis C
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Manuscript Preparation E
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Patient: Female, 79-year-old
Final Diagnosis: Obturator hernia
Symptoms: Flank pain
Clinical Procedure: —
Specialty: Surgery

Objective: Rare disease

Background: Obturator hernias are very rare and mostly affect elderly women. Among these, obturator hernia with ureteral entrapment is exceptionally rare. Diagnosis and surgical treatment can be very difficult and is usually performed by an open surgical technique. Here we present the first published case of a ureteral obturator hernia where a laparoscopic extended transabdominal preperitoneal patch technique (TAPP) was performed for hernia repair.

Case Report: In this case, a 79-year-old woman was referred to the emergency department because of right-sided flank pain that had been present for weeks with pain exacerbation since the previous evening. Imaging of the urinary tract showed distal herniation of the ureter into the right obturator canal. Laparoscopic hernioplasty with mobilization of the bladder, release of the right ureter from the obturator hernia, and simultaneous treatment of an additionally incidentally discovered femoral hernia by mesh implantation using an extended TAPP technique was performed. In addition to the primary hernia repair, careful dissection and protection of the ureter during surgery ensured optimal preservation of its function. This approach ensured protection of the ureter from further adhesions, with precise mesh positioning and fixation, preventing any damage to surrounding structures, including the intestine. The patient was discharged on the third day after surgery without any wound infections, dysesthesia, or bladder dysfunction.

Conclusions: By presenting this case report we hope to increase the awareness of rare hernias such as obturator hernias. Physicians should make accurate diagnosis based on physical examination, laboratory investigations, and imaging. The patient's uneventful recovery and lack of postoperative complications underscore the benefits of laparoscopic approaches even in rare cases, offering reduced morbidity and quicker recovery compared to traditional open surgery.

Keywords: Case Reports • Hernia, Femoral • Hernia, Inguinal • Laparoscopy • Surgical Procedures, Operative

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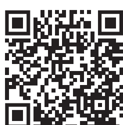

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Introduction

Obturator hernias are very rare, accounting for approximately 0.07% of all hernias [1]. It is also called the 'little old lady's' hernia as they mostly affect thin, elderly, and multiparous women due to the loss of preperitoneal fat in the obturator canal and to a wide pelvis. The obturator foramen is formed by the ramification of the ischium and the pubic bone. Generally, open surgical approaches are used for obturator hernia repair, including abdominal, retropubic, obturator, and inguinal approaches [2]. In emergency situations involving intestinal herniation, a median laparotomy is the most commonly performed procedure. Nowadays, the laparoscopic approach for obturator hernia repair is gaining more significance [3]. However, for the minimally-invasive repair, a high degree of surgical expertise is necessary, as it is technically more challenging. A group from London recently published a video vignette in which an elderly woman presented with a strangulated obturator hernia. An emergency laparoscopy was performed, and the hernia was repaired using the transabdominal preperitoneal approach; an additional mini-laparotomy was necessary for the resection of ischemic bowel [4].

Moreover, ureteral herniation is also a very rare condition that is most commonly found incidentally on imaging [5]. Generally, the ureter herniates through the inguinal canal, femoral ring, diaphragm, or obturator canal. Among these, obturator hernia with ureteral entrapment is exceptionally rare, with only 4 reported cases found in our literature review [6-9]. The present case report presents the first documented case of a ureteral obturator hernia where a laparoscopic extended transabdominal preperitoneal patch technique (TAPP) was performed for hernia repair. We aim to demonstrate the importance of minimally-invasive techniques, not only in standard hernia surgeries but also in challenging cases.

Case Report

A 79-year-old, slim German woman was referred due to right-sided flank pain that had been present for weeks, worsening the previous evening. She described motion- and position-dependent pain previously attributed to lumbar spine syndrome. She denied dysuria, urgency, hematuria, frequent urination, stool irregularities, fever, or chills. Her medical history included type II diabetes, liver and kidney cysts, COPD, and asymptomatic cholecystolithiasis, but no prior abdominal surgeries. Physical examination revealed pain in the right lower and middle abdomen without peritonism, and no detectable hernias or abdominal wall protrusions. Furthermore, no bulging or tenderness was found in the kidney areas. Laboratory tests showed mild leukocytosis (12.8 Gpt/l) and CRP (18 mg/l), but normal blood count, electrolytes, renal parameters, transaminases, and

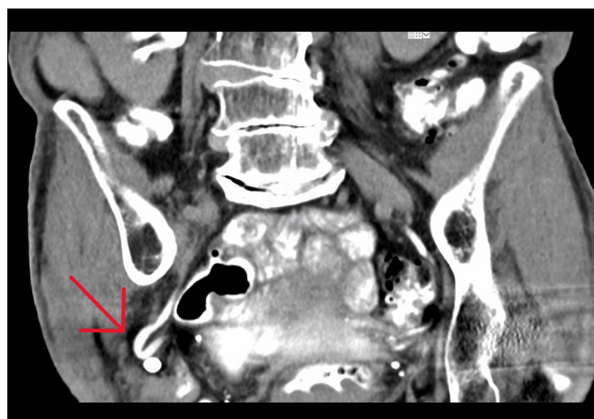

Figure 1. CT scan shows herniation of the right ureter into the right obturator canal and consequent kinking of the ureter (red arrow).

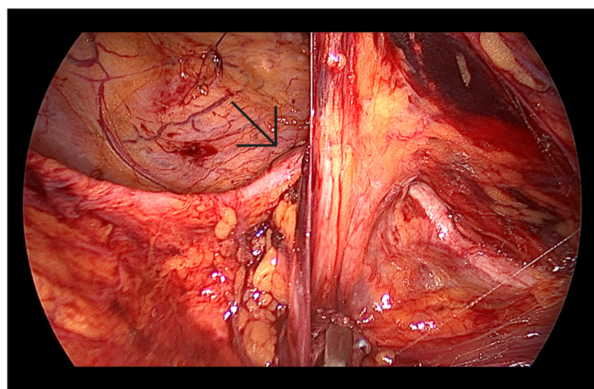

Figure 2. Herniation of the right ureter (black arrow) into the obturator canal.

urine status. Abdominal ultrasound showed grade I urinary retention in the right kidney. A computed tomography (CT) scan initially suggested a right-sided urinary bladder diverticulum in the area of an obturator hernia. However, late imaging of the urinary tract revealed distal ureteral herniation into the right obturator canal, with kinking of the ureter causing grade I hydronephrosis (**Figure 1**). The patient was hospitalized and treated with painkillers. As follow-up laboratory tests still showed normal kidney function and intestinal functions remained intact, no immediate intervention was required. The pain subsided and she was discharged after 3 days.

In a second step, the patient underwent elective surgery 2 weeks later. Upon readmission, she presented in good condition with normal kidney parameters. For surgery, she was placed on her back, and after making a paraumbilical incision, a 10-mm trocar was inserted. Two other working ports were placed right (10-mm trocar) and left (5-mm trocar) paramedian. A urinary catheter was inserted and the bladder was partially filled with NaCl during the operation. The first step was incision of the peritoneum from the anterior superior iliac spine

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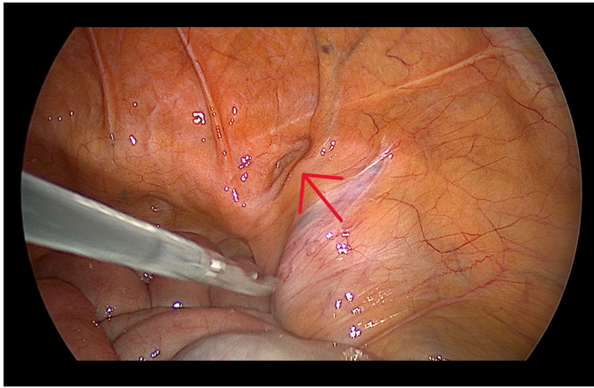

Figure 3. Incidentally detected femoral hernia (red arrow).

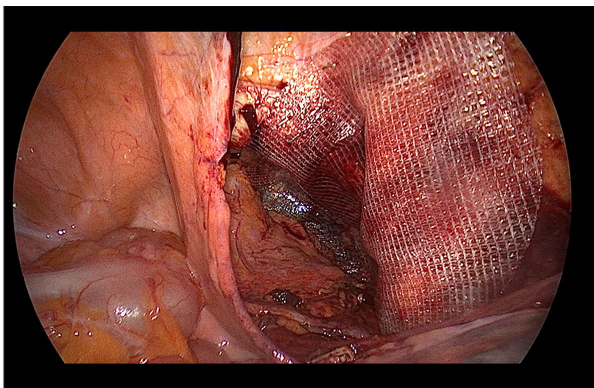

Figure 4. Mesh to cover the obturator foramen and femoral hernia.

to the epigastric vessels. Laparoscopically the ureter was followed from the iliac vessels down, where it herniated into the obturator foramen (**Figure 2**). The dissection of the right ureter was done precisely until it could be released out of the obturator hernia. Next, the ureter was carefully followed to the bladder trigone. After ureterolysis, there was sufficient adipose tissue in the pelvis to protect the ureter from adhesion and direct contact with the mesh. In addition, a femoral hernia was discovered incidentally (**Figure 3**). Finally, a ProGrip Mesh® (10×15 cm) was inserted and placed much more caudally than it would be placed for inguinal hernia repair; therefore, it overlapped the obturator hernia as well as the femoral hernia (**Figure 4**). Additional fixation of the self-adhesive mesh, which directs its hooks ventrally toward the hernia side, was not necessary. Subsequently, the peritoneum was sutured with a one-way running absorbable suture using Polysorb 3/0 to prevent adhesions to the intestine.

The postoperative period was uneventful. The patient was discharged on the third day after surgery with normal laboratory test results and in good condition. She remained well without any wound infection, dysesthesia, or bladder dysfunction during subsequent outpatient follow-up.

Discussion

Due to unspecific symptoms and in most of cases lack of a palpable protrusion, diagnosing an obturator hernia is difficult. Moreover, the cause has not yet been defined. It usually occurs in slender, elderly women. Therefore, the main susceptibility factors are suggested to be piriformis atrophy and acquired or congenital defects of pelvic wall fascia. Usually, the main symptom is small bowel obstruction. However, in rare cases, as in our patient, the ureter is entrapped in the obturator foramen. Thus, diagnosis of this condition is essential to avoid damage of the kidneys or even the necessity of nephrostomy. Computed tomography plays an important role for diagnosis of obturator hernia and helps evaluating the condition of the kidneys if the ureter is compressed or obstructed. However, if the patient is in good condition with only grade I hydronephrosis and no remarkable deterioration of laboratory kidney parameters, elective surgery can be done. In our literature review only 4 reported cases of ureteral obturator hernia were found [6-9]. Hong et al reported a case of ureter obturator hernia in which a laparoscopic approach was used, but in contrast to our case, they did hernioplasty of the obturator hernia without using a mesh by continuously sealing the pelvic peritoneum with a 3-0 barbed thread behind the ureter [6]. Izzo et al performed a median navel-pubic laparotomy and placed a polypropylene mesh to reinforce the obturator foramen [7]. In these reported cases, the surgeons waited until kidney function was restored and then finally did elective surgery, as in our patient. Generally, the abdominal approach using a low median laparotomy is the most common method. Especially in an emergency setting due to small bowel obstruction or kidney failure, this approach is a good option that we recommend. However, with laparoscopic or even robotic approaches, minimally-invasive techniques should also be considered [10]. Minimally-invasive repair results in less postoperative pain, fewer surgical complications such as wound infections, and shorter hospital stays. Zhang et al recently published a study comparing patients with incarcerated obturator hernias who underwent open versus laparoscopic surgery. The laparoscopic group experienced less intraoperative blood loss, a shorter postoperative hospital stay, and fewer postoperative complications compared to the open surgery group. These findings align with those reported in previous literature, which reached similar conclusions [11]. While the laparoscopic approach, including TAPP, offers several advantages for obturator hernia surgery, there are notable limitations. One key limitation is the significant technical expertise required for successful execution. Surgeons must be well-trained in advanced laparoscopic techniques, as the complexity of the procedure, particularly in a confined area like the obturator canal, requires precision and experience. Inadequate skill in laparoscopic dissection, tissue handling, or mesh placement could lead to complications, such as insufficient mesh fixation or

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injury to adjacent structures. Furthermore, its application in patients with extensive adhesions or challenging anatomies may be difficult. Despite these challenges, TAPP can be an effective option for management of obturator hernias.

Conclusions

This case is unique as it represents, to the best of our knowledge, the first documented instance of hernioplasty for a ureteral obturator hernia using laparoscopic mobilization of the bladder, release of the ureter from the hernia, and simultaneous treatment of an incidentally detected femoral hernia through mesh implantation via an extended laparoscopic TAPP technique. The case demonstrates that minimally-invasive techniques can offer significant benefits, such as reduced postoperative complications, shorter recovery times, and improved cosmetic outcomes, even in complex and rare diagnoses. However, it is important to acknowledge the limitations, including the technical expertise required for successful execution of the TAPP approach, which may not be feasible in all surgical settings. Despite these challenges, this case reinforces the potential of laparoscopic surgery to enhance patient outcomes, providing an alternative to traditional open techniques in managing difficult hernia cases.

Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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