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CASE REPORT

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Incarcerated obturator hernia complicated by lower limb venous thrombosis: a case report

Siqi Zhu[1], Guosong Zha[1], Weiqiang Gong[1] and Chunfa Cheng[1*]

Abstract

Introduction Obturator hernia is a rare type of abdominal wall hernia, predominantly seen in elderly women. It often presents with symptoms of intestinal obstruction, which require emergency medical attention. Computed tomography scanning is a crucial diagnostic tool for this condition.

Case presentation This article reports the case of an 80-year-old Chinese female patient with a left-sided incarcerated obturator hernia complicated by ipsilateral intermuscular venous thrombosis in the lower limb. Emergency laparoscopic exploration revealed the simultaneous presence of an ipsilateral inguinal and femoral hernia, along with a contralateral obturator and femoral hernia. After balancing treatment urgency with systemic risk control, the patient underwent the laparoscopic transabdominal preperitoneal repair to address the left-sided incarcerated obturator hernia, femoral hernia, and inguinal hernia. Postoperatively, the patient recovered well, with significant relief of left leg pain and no progression of the thrombosis.

Conclusion This case highlights the complexity of diagnosing and managing incarcerated obturator hernias. Successful management relies on vigilance for atypical symptoms, precise imaging evaluation, a multidisciplinary decision-making approach prioritizing emergencies and risk stratification, and the integration of minimally invasive techniques with damage control principles.

Keywords Obturator hernia, Lower extremity venous thrombosis, Laparoscopic repair, Anticoagulation therapy

Introduction

Obturator hernia is a rare type of abdominal wall hernia, accounting for less than 1% of all abdominal wall hernias [1].The disease is more common in elderly, thin, and multiparous women. Patients often seek medical attention owing to symptoms of intestinal obstruction such as abdominal pain, nausea, and vomiting [2].The Howship–Romberg sign is a characteristic manifestation, presenting as pain along the inner thigh that may radiate to the knee when the patient coughs, strains, or undergoes passive abduction or external rotation of the hip joint. However, this sign is only observed in some cases [3, 4]. The clinical presentation of this disease is often atypical, which can lead to delays in diagnosis and treatment. Elderly patients frequently have multiple underlying conditions, complicating perioperative management. Additionally, the high incidence of intestinal strangulation further exacerbates the risks. These interacting factors significantly increase the mortality risk for patients. It is reported that the overall mortality rate of obturator hernia is as high as 47.6% [5, 6].Although the impact of computed tomography (CT) scans on reducing complications and mortality in patients with obturator hernia remains controversial, they can improve diagnostic accuracy and assist surgeons in assessing intestinal viability preoperatively, thereby enabling better surgical planning [4, 5]. CT scans are particularly valuable in cases of diagnostic uncertainty.

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Case report

This is a case report of an 80-year-old Chinese woman who initially experienced intermittent pain from the inner left thigh to the knee two years ago. The pain often occurred during activity and could be relieved by lying down and resting. Three hours ago, following physical exertion, she suddenly experienced intensified pain accompanied by limited movement of the left limb. She reported no symptoms of abdominal pain, nausea, or vomiting.The patient has a history of constipation and bronchiectasis, with recent coughing but no sputum production, and denies any other chronic medical conditions. Her obstetric history indicates three previous vaginal deliveries. Owing to the prominent left lower limb pain, the emergency department colleagues initially performed a vascular ultrasound to rule out potential acute vascular embolism. The ultrasound results revealed thrombosis in the intermuscular veins of the left calf. Subsequently, the patient was referred to our department (Department of Vascular and Hernia Surgery). Physical examination: T 37.3 °C, P 90 bpm, R 18 bpm, BP 135/66 mmHg, BMI 18.7 kg/m^2.There was no significant swelling in the lower limbs. Owing to the patient's complaint of exacerbated pain in the inner left thigh upon moving the lower limb, the Homans sign test was discontinued. Further examination of the left thigh, left inguinal region, and perineal area revealed no palpable masses. The skin on the inner left thigh exhibited numbness. Abdominal palpation elicited tenderness in the lower left quadrant without rebound tenderness. After initially ruling out the possibility of pain caused by intermuscular venous thrombosis in the lower limb, the patient underwent an emergency abdominal CT scan. The CT images (Fig. 1) revealed a hernial sac located between the left obturator externus muscle and the pectineus muscle, containing small intestine, confirming the diagnosis of a left incarcerated obturator hernia.

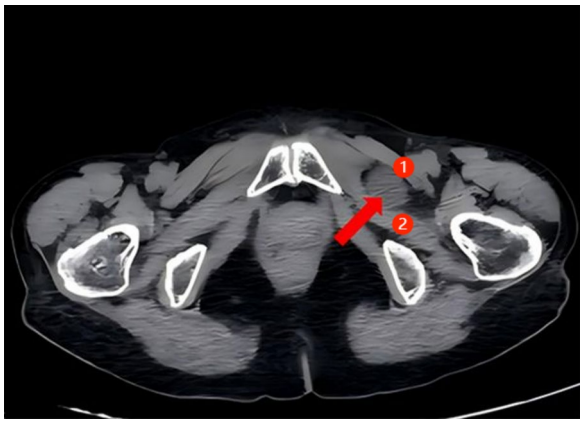

Fig. 1 ① pectineus and ② obturator externus. The axial computed tomography image shows the herniated contents located between the left pectineus muscle and the obturator externus muscle, as indicated by the arrow

Considering the preoperative presence of lower limb venous thrombosis and the risks of thrombus progression and pulmonary embolism during and after surgery, we discussed the option of placing a temporary inferior vena cava filter with the patient and their proxy. However, this option was ultimately not adopted by the patient. After fully informing the patient of the risks and obtaining informed consent, the patient underwent emergency laparoscopic exploration under general anesthesia.Laparoscopic examination confirmed a left obturator hernia with incarcerated small intestine. To our surprise, the patient also had an ipsilateral inguinal and femoral hernia, along with a contralateral obturator and femoral hernia (Fig. 2). We first reduced the incarcerated bowel laparoscopically and observed no signs of perforation or necrosis in the incarcerated segment. After informing the patient's proxy of the condition, and considering that prolonged anesthesia time for bilateral surgery would increase the risk of postoperative ventilation and thrombotic complications, we decided to manage the right-sided hernia at a later stage, with the informed consent of the patient's proxy. We then proceeded with laparoscopic transabdominal preperitoneal repair, placing a 15×10.4 cm monofilament polypropylene three-dimensional (3D) mesh to cover the myopectineal orifice area. The mesh was fixed, and the peritoneum was sutured. The total duration of the surgery was 80 min, and the patient's vital signs remained stable throughout the procedure.

Postoperatively, the patient experienced significant relief from left leg pain, and a follow-up lower limb vascular ultrasound showed no significant progression of the thrombosis. After a comprehensive assessment of thrombotic and bleeding risks, the patient was administered prophylactic anticoagulation therapy. The patient resumed oral intake on the second postoperative day and was discharged on the fifth postoperative day. A repeat lower limb venous ultrasound on the day of discharge revealed complete resolution of the thrombosis.

The patient was advised to avoid strenuous exercise and heavy physical labor postoperatively, with moderate daily activities recommended to promote intestinal function recovery and prevent lower limb venous thrombosis. Additionally, the use of a hernia belt for added protection was suggested. A diet rich in protein and dietary fiber was recommended to prevent constipation and reduce fluctuations in intra-abdominal pressure. Regular follow-up with the respiratory department was advised to manage coughing symptoms, and attention to incision cleanliness and healing was emphasized. The 1-year postoperative

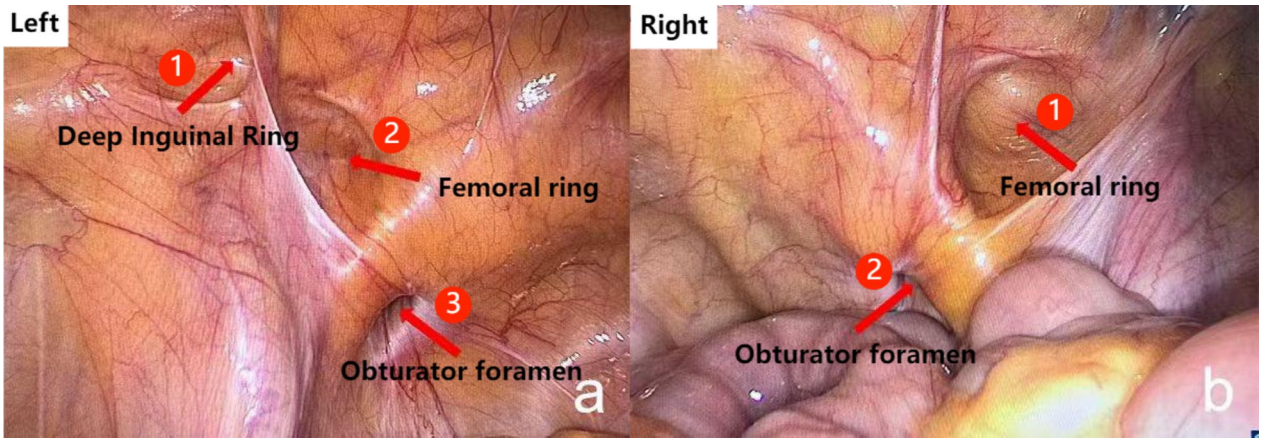

Fig. 2 **a** On the left side, the arrow indicates: ① left indirect inguinal hernia, ② left femoral hernia, and ③ left obturator hernia. **b** On the right side, the arrow indicates: ① right femoral hernia and ② right obturator hernia.

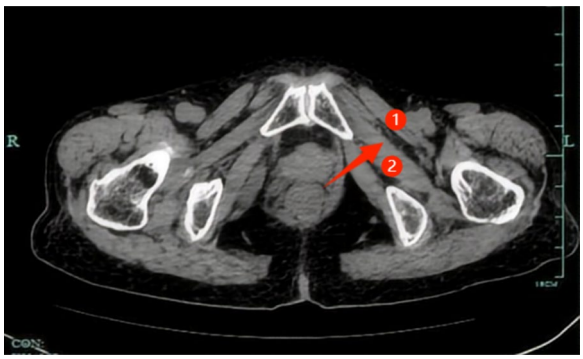

Fig. 3 ① pectineus and ② obturator externus. Arrow indicates that no herniation is observed in the intermuscular space between the left pectineus and obturator externus muscles

follow-up showed no recurrence of the hernia (Fig. 3), no lower limb pain, excellent wound healing, and full self-sufficiency in daily life, indicating an overall ideal recovery. The patient is also planning to undergo surgery for the right-sided hernia in the near future.

Discussion

Obturator hernia is a rare type of abdominal wall hernia, commonly seen in elderly, thin, and multiparous women. Patients often present to the emergency department with symptoms of intestinal obstruction [5]. Some patients may also present with Howship–Romberg sign owing to compression of the obturator nerve. However, most clinicians lack familiarity with this condition, often misdiagnosing it as common osteoarticular disorders in the elderly [7].CT scanning is a crucial tool for diagnosing obturator hernia, with a diagnostic accuracy rate of up to 90% [8]. Timely surgical intervention is essential to reduce the mortality rate associated with obturator hernia [2].

Laparoscopic surgery, particularly transabdominal preperitoneal repair, may offer significant advantages in the repair of obturator hernias. Laparoscopy provides a clearer field of view compared with traditional open surgery and allows for a comprehensive examination of the abdominal organs during emergency procedures, facilitating the assessment of potential intestinal injuries. Studies have shown that laparoscopic surgery for incarcerated obturator hernias is associated with lower recurrence rates and fewer postoperative complications compared with open surgery. Additionally, it is beneficial for detecting and repairing contralateral occult obturator hernias [9, 10]. Mesh placement is associated with lower postoperative recurrence rates [9], but its use should be determined based on the degree of surgical field contamination. The use of synthetic mesh is safe for CDC class I and II patients; for patients with intestinal necrosis and/or significant spillage of intestinal contents (CDC class III and IV), primary repair is recommended when the defect is small. When direct suturing is not feasible, biological mesh can be used [11]. In emergency surgery, if the incarcerated side meets the criteria for mesh placement, it is safe and feasible to concurrently perform laparoscopic tension-free repair for a contralateral nonincarcerated inguinal hernia. However, this recommendation is primarily based on patients without thrombotic complications [12].

For patients with muscular calf vein thrombosis (MCVT), advanced age, prolonged surgical duration, preoperative low hemoglobin levels, the use of pneumoperitoneum during surgery, and general anesthesia can all increase the risk of lower limb thrombus progression [13]. The treatment of MCVT remains controversial, and compared with the increasingly well-established treatment protocols for proximal deep

vein thrombosis (DVT) and pulmonary embolism (PE), there is significantly less evidence in the literature to support clinical decision-making for MCVT. In the case of obturator hernia, owing to the urgency of surgery, preoperative anticoagulation therapy is excluded as it may increase the potential risk of intraoperative bleeding [14]. Due to the lack of randomized clinical trial data across different clinical scenarios, there is ongoing debate in major guidelines regarding the use of inferior vena cava (IVC) filters [14–16]. The ACCP guidelines, in their most recent update, only mention that acute proximal DVT/PE with contraindications to anticoagulation is an indication for IVC filter placement. For asymptomatic MCVT, which has a lower thrombotic burden, and considering the inherent risks and complications associated with filter implantation [17], studies such as that by Yoon et al. [18] have shown that the use of IVC filters does not significantly reduce the incidence of pulmonary embolism (PE) and is associated with a complication rate of up to 10%. Therefore, the use of IVC filters in the treatment of MCVT requires careful evaluation and full consideration of patient preferences.

Conclusion

Obturator hernias predominantly affect elderly women and are often accompanied by underlying medical conditions. This case highlights the complexity of diagnosing and managing incarcerated obturator hernias, where clinical decision-making requires a balance between emergency intervention and systemic risk control. Successful management relies on three key aspects: first, vigilance for atypical symptoms and precise imaging evaluation; Second, a multidisciplinary, "emergency-first, risk-stratified" decision-making approach; Third, the integration of minimally invasive techniques with damage control principles. For patients with acute abdominal conditions complicated by venous thrombosis, clinicians must dynamically assess the "thrombosis-bleeding" risk window and tailor strategies to individual cases.

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Author contributions
SZ was the main contributor to manuscript writing, analyzed medical history, collected data, and conducted literature review; GZ collected case data, provided clinical guidance, and served as corresponding author; CC provided critical suggestions during the writing process; WG offered clinical guidance and participated in manuscript revision.

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Availability of data and materials
No additional data to disclose.

Declarations

Ethics approval and consent to participate
Ethical approval for this study was granted by the ethics committee of The First People's Hospital of Linping District.

Consent for publication
Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Competing interests
No competing interests to disclose.

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