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Concurrent strangulated obturator hernia and femoral hernia repair via TAPP approach: A case report

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Abstract

An obturator hernia is a rare pelvic hernia with high mortality. Early diagnosis and treatment are essential to reduce postoperative complications. The treatment of choice for obturator hernias is surgery. In an emergency, laparotomy to resolve herniated viscera and complications is often the choice. However, some researchers have shown the feasibility of laparoscopy. The laparoscopic approach has several benefits over the open approach, including reduced postoperative pain, early mobilization, shorter length of stay, and lower postoperative morbidity rates. We report the case of an 81-year-old woman with a right-side obstructed obturator hernia. The patient was hospitalized with an acute onset of inner thigh pain and bowel obstruction. The obturator hernia was diagnosed preoperatively by an abdominopelvic CT scan with the image of protrusion of an ileal loop in the right obturator foramen. The patient was treated by an emergency laparoscopy. The right obturator hernia and a concurrent right femoral hernia were confirmed during the operation. The hernia defect was repaired with a mesh large enough to cover all hernia foramen. The patient recovered without any complications. Emergency laparoscopic repair for obstructed obturator hernia was safe and effective.

Keywords

Strangulated obturator, femoral, hernia, TAPP, transabdominal preperitoneal repair

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Introduction

Obturator hernia (OH) occurs when an abdominal organ protrudes through a foramen in the obturator membrane, subsequently passing into the obturator canal.[1,2] Most obturator hernias contain the small bowel but can also contain the large bowel, fallopian tube, oromentum.[3] This disease was first reported by Pierre Roland Arnaud de Ronsil in 1724 at the Royal Academy of Sciences in Paris, although Le Marie documented it in 1718.[1,4,5]

OH is a relatively rare but important form of pelvic hernia, accounting for 0.05%–1.4% of all hernias.[1–3] But among all hernias, the death rate of this is the highest (13%–40%). It can be up to 70% if there is a delay in diagnosis and treatment, especially in difficult cases, in patients with bowel obstruction due to strangulated hernia.[3,6–8] OH can be unilateral or bilateral, or concurrent with another type of hernia, mainly a femoral hernia.[9]

OHs are common in thin patients, who have many children, and are 6–9 times more common in women than in men.[1,3,4,6] Patients often present clinically with acute intestinal obstruction, accounting for 0.4% of patients with intestinal obstruction due to mechanical causes.[3,6–8]

Most patients admitted to the hospital with hernia have complications such as strangulation or incarceration, causing mechanical bowel obstruction. Therefore, these cases require emergency surgery. The surgical strategy shows the advantage of laparoscopic surgery versus laparotomy due to its advantages. The laparoscopic approach is also the optimal option for this disease.[1,10]

Our findings indicate the feasibility and efficacy of laparoscopic repair in obstructed OH.

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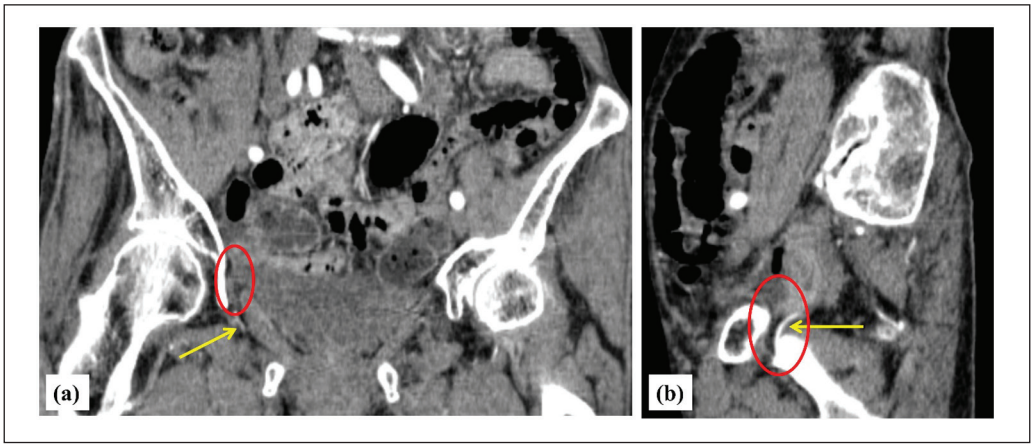

Figure 1. In the contrast-enhanced computed tomography, the red circle was hernia content, and the yellow arrow was the obturator artery. (a) A coronal view, and (b) A sagittal view showing a herniated viscera passing through the obturator hole.

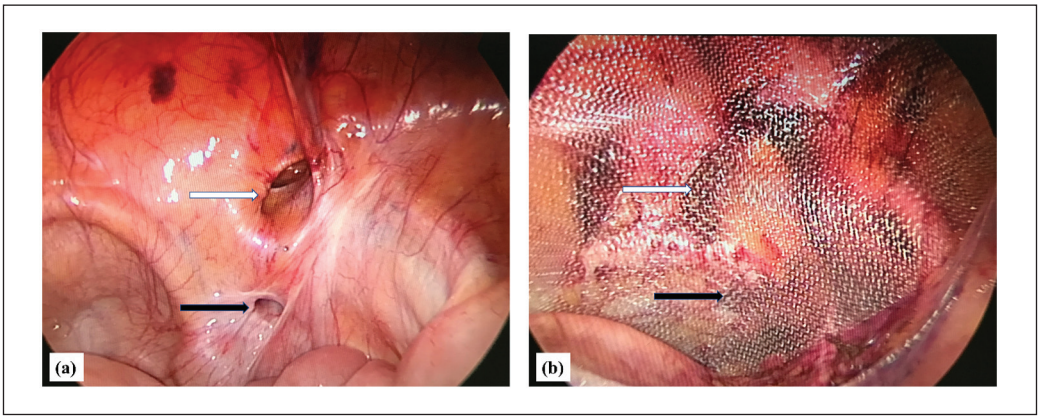

Figure 2. (a) The intraoperative image showed foramen of femoral and obturator hernias. (b) Image of covering mesh placement of two hernia holes. The white arrow revealed a femoral hernia hole and the black arrow showed an obturator hernia hole.

Case presentation

An 81-year-old woman presented with an acute onset of inner thigh pain spreading to the right knee. She described generalized pain and fever for 8 h before hospitalization. Following that, she had diffused abdominal distension without vomiting. She reported a history of atrial fibrillation, moderate 2/4 mitral regurgitation, and no other remarkable diseases. She was a slender patient with a BMI of 16.7 kg/m^2, without previous abdominal operation, and multiparous with eight children.

At the emergency department, the patient was diagnosed with suspected arterial thromboembolism of the right lower extremity and/or hip, concurrent knee arthritis, and an unknown reason for bowel obstruction. Physical examination revealed tenderness to palpation without rigidity and guarding. A local examination noted no bugle or pain in the inguinal region. However, the Howship–Romberg sign was recorded.

Initial abdominal X-ray showed dilated small bowel loops with multiple air-fluid levels. An abdominal ultrasound revealed dilated small bowel loops with increased peristalsis images, a thick enteric structure, and a cystic shape adjacent to the obturator foramen, unrelated to the femoral and inguinal canals. The blood count, doppler ultrasound of lower extremities, and hip and knee X-ray revealed no abnormality.

An emergent abdominopelvic CT scan with the contrast material was indicated, showing a protrusion of an ileal loop in the right obturator foramen (Figure 1). A right-side obstructed OH was diagnosed, and the patient was transferred to the operating room for an emergent surgery with a laparoscopic approach. The right OH and a concurrent right femoral hernia were confirmed without any hernia content during the operation (Figure 2). The other abdominal structures were also inspected, but nothing unusual was discovered. No lesions were seen in the small bowel loops. We decided to perform a transabdominal preperitoneal (TAPP) repair procedure with a 10 × 15 cm polypropylene mesh covering two holes of hernias with a minimum hernia margin of at least 3 cm (Figure 2). The operation was uncomplicated. In the postoperative period, the patient had a good recovery, no

complications were noted, and she was discharged from the hospital on the fifth postoperative day.

At the follow-up appointment 1 month postoperative and 1 year later, the patient was almost completely recovered and adapted to her daily activities. No inguinal discomfort and no abnormalities were discovered.

Discussion

Early, accurate detection and diagnosis reduce the risk of severe complications and death. The most widely used and practical imaging in detecting this disease is CT scan; the gold standard in diagnosis.[1]

About 10% of patients have symptoms of strangulation or incarceration, which causes bowel obstruction. Therefore, the diagnosis of OH is often complicated and ambiguous. The clinical symptoms and physical signs are frequently obscure, and the diagnosis is sometimes delayed until intraoperative diagnosis for bowel obstruction.[3,9] There are four "classic" characteristics of an OH, according to previous authors: (a) a palpable mass in the groin when the patient is supine, and the thigh is flexed, adducted, and rotated laterally; (b) intestinal obstruction; (c) previous episodes of bowel obstruction that resolved spontaneously; and (d) the Howship–Romberg sign.[9,11] In a systematic review of 74 studies, the signs of OH include bowel obstruction (93.8%), abdominal pain (84.8%), vomiting (75.7%), nausea (43.5%), and fever (12.8%). The Howship–Romberg sign was present in more than half of the patients (56.2%) one, consisting of ipsilateral medial thigh and hip pain exacerbated by adduction and medial rotation of the thigh and relieved by thigh flexion.[1,9] Hip osteoarthritis is common in older patients, and the Howship–Romberg sign is often confused with this inflammatory condition. These patients are often referred to the wrong specialty, such as musculoskeletal doctors, orthopedic surgeons, and neurologists, delaying the diagnosis of OH.[11] In our case, the patient presented with the Howship–Romberg sign, and dilated small bowel loops on radiographs and reversed peristalsis on ultrasound suggest the setting of early bowel obstruction with 8 h of abdominal pain.

The utility of ultrasound for diagnosing OH has been limited, especially in cases with intestinal obstruction. Still, a few researchers indicated that ultrasound was helpful for the early detection of the entity and can be employed for recognizing incarcerated OH.[12] It depends on the operator's experience, and in our institute, the ultrasound provided valuable data to orient the diagnosis. Therefore, ultrasound can be a useful method for early detection of OH. Abdominal and pelvic computed tomography is the most sensitive and specific image in detecting OH. It plays an essential role in the preoperative diagnosis and early treatment of OH with an accuracy of 80%–100%.[1,8,9,13] With such diagnostic value of a CT scan, the critical role of a CT scan in obturator hernia is indisputable. The study of Igari et al. showed that all cases of OH were diagnosed preoperatively by CT scan.[8] Diab et al. found that proving the benefit of preoperative CT on mortality was impossible. However, the author recorded two cases of delay in the appointment of CT scan due to suspicion of lower extremity disease, leading to increased mortality and length of hospital stay.[14] Additionally, CT can improve preoperative planning, decrease the need for bowel resection, and lower mortality and the risk of postoperative complications. Moreover, the degree of contrast effect on CT can allow us to assess the viability of the incarcerated intestine. The image of the bowel herniating through the obturator foramen and lying between the pectineus muscle anteriorly and the obturator externus muscle posteriorly is diagnostic.[13,15] In our patient, the protrusion of the bowel through the obturator foramen was observed on CT, and the definitive diagnosis of OH was constituted (Figure 1).

OHs are more common in women, with 97.7% of hernia cases by gender.[1] Holm et al. found that 1% inguinal hernia and 2% femoral hernia coexist in cases of OH surgery.[2] Femoral hernia is also common in female patients, with 21%–30% of femoral hernia repair in women and only 1% in men.[16] The obturator and femoral hernias also commonly cause strangulation. Therefore, a thin female patient admitted to the hospital with hernia symptoms should immediately consider an obturator or femoral hernia for timely diagnosis and treatment.[16]

Early diagnosis and management are essential.[3,9] The management of an OH is through surgery.[15,17] In the literature, there are several access routes and repair techniques that have been reported.[1,4] But there are no standard recommendations for treatment, and there is no optimal treatment because OHs are rare. HerniaSurge Group's international guidelines for managing inguinal hernias do not describe OH repair.[2] Inguinal or femoral hernia repair can be meshed or non-mesh. However, the Cochrane database still shows that mesh repair results in less hernia recurrence, early return to complete daily living activities, and shorter operative time.[16] With the above advantages, we choose the option of surgical mesh repair for a femoral hernia. In the case of ipsilateral OHs, although in some similar cases, the mesh material is not used because of the risk of infection.[7,17] However, the use of mesh in our case is not contraindicated.

The operative approaches include transabdominal, inguinal, retropubic, laparoscopic, and extraperitoneal approaches. Each approach has advantages and disadvantages of its own.[13] The basic principle is to reduce the hernia sac contents, excision the sac, and then repair the abdominal wall defects.[8] Regarding operative approaches, intraperitoneal and extraperitoneal approaches have proven to be effective in treating OH. Intraperitoneal approaches include laparotomy and laparoscopy, such as the TAPP. In contrast, extraperitoneal methods include trans-inguinal and totally extraperitoneal approaches (TEP).[1] The main advantage of the intraperitoneal approach is the ability to examine intra-abdominal organs due to the wide surgical field, easier manipulation, assessment, and resolution of strangulated

hernia causing bowel obstruction.[1,11,15] The laparotomy through a low midline incision is preferred in an emergency. However, several researchers have demonstrated the feasibility of laparoscopic techniques for treating incarcerated OH.[4,7,11,15] The laparoscopic approach has many benefits over the open approach, including reduced postoperative pain, early mobilization, shorter length of stay, and lower postoperative morbidity rates. The laparoscopic approach appears to be the optimum treatment strategy for OH patients, particularly in institutes with extensive experience in advanced laparoscopic surgery. Another advantage of the laparoscopic approach is the ability to examine the entire groin area and detect other potentially occult groin or abdominal wall hernias. Therefore, it can identify and simultaneously repair these hernias (such as the femoral hernia in this case).[1,2,4,10,16]

If the patient's condition and the surgeons' skill and experience allow it, diagnostic laparoscopy may be performed during OH surgery to lessen the number of laparotomies and midline incisions.[2] The advantages of laparoscopic surgery are to reduce postoperative pain, postoperative intestinal adhesions, and complications related to respiratory and cardiovascular.[14] That means in cases where the onset of symptoms was short, the bowel loop was not dilated much, the laparoscopic approach would be convenient in observing and evaluating the status of the peritoneum, bowel loops, OH, or even the detection and management of the other types of groin and abdominal wall hernias. However, the laparoscopic approach will no longer be appropriate in cases of late arrival, severe bowel obstruction, distended abdomen, bowel necrosis, or peritonitis. It is reasonable to choose open surgery to resolve the bowel obstruction and the cause later. Individualization in treating OHs associated with bowel obstruction is necessary to reduce severe complications and patient mortality. Diab et al. showed a significant difference between the onset of symptoms for survivors and non-survivors.[14]

Mesh repair is preferred to prevent the recurrence if no contraindications are present. In the case of a concurrent groin hernia, it is preferable to use a large mesh to cover all hernia orifices during the same surgical operation.[7,15] Our patient was admitted to the hospital with a right-side obstructed OH in the early stage of bowel obstruction. Therefore, we decided to perform an intraperitoneal approach (TAPP) to examine the viability of obstructed bowel and other problems. And we detected a concurrent ipsilateral femoral hernia. Thus, we used a single piece of polypropylene mesh to cover the obturator and femoral hernia orifices.

Conclusion

An OH is extremely rare, but it is considered one of the pelvic hernia types with the highest mortality rate. The diagnosis and surgical management of the OH are frequently delayed because of vague symptoms, medical history, delayed presentation, older age, and comorbidities. Early physical examination, CT scan, and surgery are needed to resolve this hernia.

Laparotomy has historically been the most popular surgical procedure. However, given that those OHs typically affect people with low physiological reserves, an argument could be made for switching from open to laparoscopic repairs. According to the research, the laparoscopic approach can manage incarcerated OH.

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Authors' contributions

Minh Thao Nguyen: Data collection, conception design of the article, draft, and approval of the final version. Van Quy Nguyen: Conception and design of the article, revisions, and approval of the final version.

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Informed consent

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