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Case Report

A Rare Primary Inferior Lumbar Hernia Treated by Transperitoneal Laparoscopy: Case Report and Literature Review

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ABSTRACT

Background: Lumbar hernias are rare defects of the posterior abdominal wall, accounting for less than 2% of all abdominal hernias, with fewer than 400 cases reported in the literature. They arise through anatomical weak points—either the superior (Grynfelt-Lesshaft) or inferior (Petit) lumbar triangles-and often present a surgical challenge due to the limited availability of healthy tissue for reconstruction. Advances in minimally invasive surgery have made laparoscopic repair, through either a transperitoneal or extraperitoneal approach, an increasingly preferred option.

Case Presentation: We report the case of a 56-year-old man with diabetes who presented with a painful, reducible swelling in the left lumbar region. He had no history of trauma, prior surgery or bowel obstruction. Physical examination revealed a soft, non-inflammatory mass. Abdominal CT scan demonstrated a left lumbar hernia measuring 38 × 81 mm, with a 26-mm neck and containing only fat. Given the symptomatic presentation and favorable anatomy, a transperitoneal laparoscopic repair was performed. After mobilization of the descending colon from the abdominal wall, the defect was identified and closed with sutures. A 15 × 20-cm mesh was placed to reinforce the repair and secured using 5-mm absorbable laparoscopic tacks. The postoperative course was uneventful and the patient was discharged on postoperative day three without complications.

Conclusion: This case illustrates the safety and effectiveness of the transperitoneal laparoscopic approach for primary lumbar hernia repair. Laparoscopy provides excellent anatomical visualization, allows secure mesh placement and is associated with reduced postoperative pain, shorter hospital stay and rapid recovery. As demonstrated in this patient, minimally invasive repair represents a valuable option for the management of both primary and acquired lumbar hernias.

Keywords: Lumbar hernia; Inferior lumbar triangle; Laparoscopic repair; Transperitoneal approach; Abdominal wall hernia; Rare hernia

Introduction

Lumbar hernias are rare defects of the posterior abdominal wall, accounting for less than 1-2% of all abdominal wall hernias[1]. The first description of a lumbar hernia was reported by Barbette in 1672[2]. These hernias occur when intra-abdominal, intraperitoneal or retroperitoneal contents protrude through an area of weakness in the posterior abdominal wall.

Anatomically, lumbar hernias are classified according to the location of the defect: superior (Grynfeltt–Lesshaft triangle) or inferior (Petit's triangle). They may be congenital or acquired, the latter being more common[3].

Diagnosis is often suggested clinically but is best confirmed

by computed tomography (CT), which allows precise assessment of the defect and helps differentiate it from other masses. Surgical repair is the treatment of choice. However, repair can be challenging due to the limited local tissue for reinforcement and the proximity of bony structures. Both open and laparoscopic techniques have been described, including transabdominal and extraperitoneal approaches.

Herein, we report a case of a spontaneous inferior lumbar hernia successfully treated by a transperitoneal laparoscopic approach.

Case Report

A 56-year-old man with a medical history of diabetes presented with a gradually enlarging left lumbar swelling associated with effort-related pain. He had no gastrointestinal symptoms, no signs of bowel obstruction and no history of trauma or prior surgery in the lumbar region.

Physical examination revealed a soft, reducible left lumbar mass without inflammatory signs **(Figures 1 and 2)**.

Figures 1 and 2: a soft, reducible left lumbar mass without inflammatory signs, measured 80 mm

A contrast-enhanced abdominal CT scan demonstrated a 38 × 81 mm left lumbar hernia containing adipose tissue. The hernia neck measured 26 mm and no visceral content was noted **(Figures 3 and 4)**.

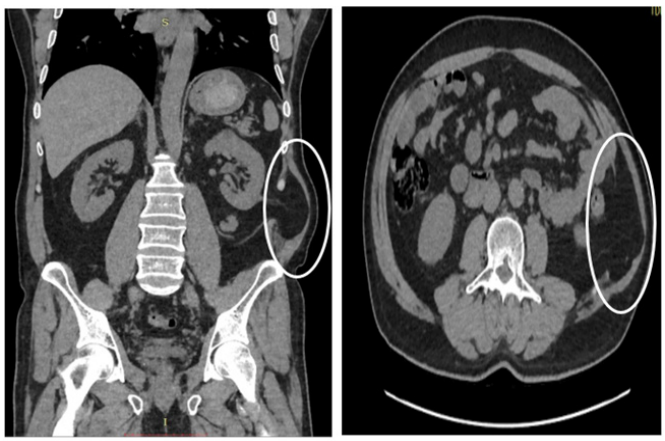


Figure 3: (Computed tomography scan coronal view)

Figure 4: (Computed tomography scan axial view).

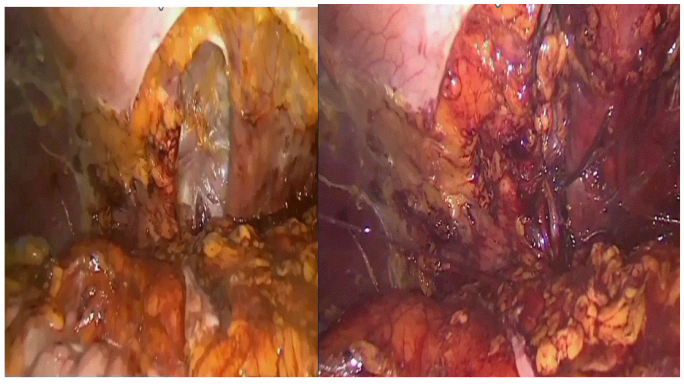
Figures 3, 4: A contrast-enhanced abdominal CT scan demonstrated a 38 × 81 mm left lumbar hernia containing adipose tissue. The hernia neck measured 26 mm and no visceral content was noted.

Given the reducibility of the hernia and the patient's symptoms, a laparoscopic transperitoneal repair was planned. The patient was positioned in a semi-lateral decubitus position. Three trocars were placed: subxiphoid, periumbilical and suprapubic. The descending colon was carefully mobilized off the lateral abdominal wall due to its proximity to the defect **(Figure 5)**.

Figure 5: Trocars placement.

The hernia orifice was clearly identified and closed with non-absorbable sutures. A 15 × 20 cm prosthetic mesh was positioned to reinforce the defect and secured using 5 mm absorbable laparoscopic tacks **(Figures 6-10)**.

Figure 6: Intra operative view of the lumbar hernia. The hernia orifice was clearly identified



Figures 7,8: The hernia orifice was identified and closed with non-absorbable sutures

Figure 10: A 15 × 20 cm prosthetic mesh was positioned to reinforce the defect and secured using 5 mm absorbable laparoscopic tacks

The postoperative course was uneventful. The patient was discharged on postoperative day 3. At six-month follow-up, he remained asymptomatic with no evidence of recurrence (**Figure 11**).

Figures 10, 11: The result after 6 months of follow-up with no recurrence

Discussion

Lumbar hernias are an uncommon form of abdominal wall defect, representing less than 1–2% of all abdominal wall hernias[4]. They tend to occur more frequently in men and are reported predominantly on the left side, although the reasons for this lateral predominance remain unclear[3]. Anatomically, the posterior abdominal wall contains two areas of natural weakness that predispose to herniation. The superior lumbar triangle (Grynfeltt-Lesshaft triangle) is bounded superiorly by the 12th rib, medially by the quadratus lumborum muscle and laterally by the posterior border of the internal oblique muscle. Its floor is formed by the transversalis fascia, while the roof consists of the external oblique muscle. The inferior lumbar triangle (Petit's triangle), by contrast, is defined anteriorly by the external oblique muscle, posteriorly by the latissimus dorsi muscle and inferiorly by the iliac crest. Weakness within either of these anatomical triangles may allow retroperitoneal or intraperitoneal contents to protrude, giving rise to a lumbar hernia. Understanding the structural boundaries and intrinsic vulnerabilities of these regions is essential for accurate diagnosis and for planning the most appropriate surgical approach.

Etiology

Lumbar hernias may be congenital, representing about 20% of cases or acquired, accounting for nearly 80% of all presentations[5]. Acquired lumbar hernias are further classified as either primary or secondary. Primary (spontaneous) hernias develop without any preceding trauma or surgery and are often associated with factors such as aging, chronic increases in intra-abdominal pressure, chronic cough, heavy lifting, obesity or extreme thinness. In contrast, secondary hernias arise as a consequence of trauma, previous surgical procedures—particularly iliac crest bone graft harvesting-local infections or muscle atrophy. In the present case, the patient exhibited none of the predisposing events or surgical history typically associated with secondary hernias, supporting the diagnosis of a primary spontaneous lumbar hernia.

Clinical presentation

Patients with lumbar hernias may present with nonspecific or subtle symptoms, which often contribute to delayed diagnosis and misinterpretation. The most frequent clinical finding is a soft, posterolateral swelling in the lumbar region that may increase with coughing or straining and may or may not be reducible. Some patients report vague, intermittent lower back or flank pain due to traction on surrounding tissues. Although incarceration or strangulation is considered uncommon, several authors have documented these complications, emphasizing the importance of early detection and appropriate management[1,2]. Because their presentation may resemble more common conditions-including lipomas, abscesses or soft-tissue tumours-lumbar hernias require a high index of suspicion for accurate diagnosis[3]. In our case, the patient presented with a well-defined swelling located in the inferior lumbar triangle on the left side, progressively enlarging over one year.

Diagnosis

Although the diagnosis may be suggested clinically, CT scan remains the gold standard imaging modality. It provides detailed information regarding the size of the defect, content of the hernia sac and helps exclude differential diagnoses such as lipoma, rhabdomyoma, hematoma or sarcoma[6].

In our case, the CT scan demonstrated a well-defined posterolateral defect located in the inferior lumbar triangle on the left side, with protrusion of preperitoneal fat into the subcutaneous tissues. The hernia sac contained no bowel loops and there were no signs of incarceration or inflammatory changes. The detailed CT findings confirmed the diagnosis of a primary lumbar hernia and guided the surgical strategy by clearly illustrating the dimensions of the defect and its relationship to adjacent muscular structures.

Management

Due to the potential risk of complications-most notably incarceration-surgical repair is generally recommended for both primary and secondary lumbar hernias[7]. The main objective of the intervention is to restore the integrity of the abdominal wall, reinforce the weakened anatomical zone and minimize the likelihood of recurrence. However, repair of lumbar hernias can be technically demanding because of several anatomical constraints. The defect lies between rigid osseous boundaries, namely the 12th rib superiorly and the iliac crest inferiorly, which limit surgical exposure and restrict the placement of

fixation points. Additionally, the musculature in this region is often attenuated or anatomically deficient, reducing the quality of the available tissue for primary closure. Achieving sufficient mesh overlap is another critical challenge, as the confined space and proximity to neurovascular structures require careful dissection and precise positioning[8].

A variety of operative strategies have been described, ranging from direct tissue approximation and the use of rotational muscle flaps to the more widely adopted mesh-based tension-free repairs[9-11]. Both open and laparoscopic approaches have demonstrated favourable outcomes, yet no standardized technique has been universally endorsed, largely because of the rarity of lumbar hernias and the consequent lack of large comparative studies[7]. As a result, the choice of surgical method is often individualized, taking into account the size and location of the defect, the condition of surrounding tissues and the surgeon's expertise.

In our case, the hernia was repaired using an laparoscopic approach with placement of a prosthetic mesh, allowing for secure reinforcement of the defect and an uneventful postoperative recovery.

Laparoscopic repair

In recent years, laparoscopic repair has gained significant popularity in the management of lumbar hernias, with both the transabdominal preperitoneal (TAPP) and totally extraperitoneal (TEP) approaches demonstrating promising outcomes[12]. These minimally invasive techniques offer several advantages over traditional open repair. The laparoscopic view provides superior visualization of the anatomical structures, particularly the boundaries of the lumbar triangles and the extent of the muscular defect, which facilitates precise dissection and safer manipulation of surrounding tissues. Because laparoscopic repair requires only minimal dissection, it reduces trauma to the abdominal wall and lowers the risk of postoperative morbidity.

Another major benefit is the ability to achieve optimal mesh placement with generous overlap, ensuring secure coverage of the defect and reducing the likelihood of recurrence. The minimally invasive nature of these techniques is also associated with less postoperative pain, a lower incidence of surgical site infections and hematomas and reduced need for postoperative analgesia[13-15]. Additionally, patients typically experience a shorter hospital stay and can resume normal activities more quickly compared to those undergoing open surgery, making laparoscopy an attractive option whenever feasible.

In our patient, the transperitoneal laparoscopic approach allowed safe mobilization of the descending colon, clear visualization of the defect and secure mesh placement. The postoperative outcome was excellent, with no recurrence at 6 months.

Conclusion

Lumbar hernias are rare and can be easily overlooked due to their subtle presentation. Early surgical repair is recommended to prevent complications such as incarceration or strangulation. The proximity of bony landmarks and the weakness of the posterior abdominal musculature make repair technically challenging.

Laparoscopic lumbar hernia repair is a safe and effective approach offering superior visualization, reduced postoperative pain and faster recovery. Although no standardized surgical technique exists due to the rarity of this condition, laparoscopic transperitoneal repair represents a valuable and increasingly preferred minimally invasive option.

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