

Case Report

Incarcerated spiegel hernia: laparoscopic intraperitoneal onlay mesh plus repair: a case report

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ABSTRACT

Spiegel hernia (SH) is a rare lateral ventral hernia. Due to its anatomic location, diagnosis can be challenging and often delayed. Incarceration rates are significantly high, increasing the risk of strangulation. Therefore, surgery is the primary treatment. We present the case of a 78-year-old female patient admitted to the emergency room for intestinal obstruction due to an incarcerated SH. The patient underwent exploratory laparoscopy with intraperitoneal onlay mesh (IPOM) plus repair.

Keywords: Spiegel's hernia, Laparoscopic surgery, IPOM plus, Case report

INTRODUCTION

Spiegel's hernia (SH) was first described by Josef Klinkosch in 1764, who named it after the anatomist Adriaan van der Spieghel, who had earlier described the semilunar line.¹⁻³

Anatomically, it is located in the transversalis fascia, between the semilunar line and the lateral edge of the rectus abdominis muscle.¹⁻⁵

The incidence of SH is low, ranging from 0.1% to 2% of all abdominal wall hernias.¹⁻⁵ It mainly affects the adult population (40-70 years old), with a female predominance.^{2,4,5} Additionally, SH can be associated with other types of hernias and is more frequently found on the left side of the abdomen.^{2,4,5}

Increased intra-abdominal pressure is a primary predisposing factor for SH. Aging and obesity also play a significant role in their formation.¹⁻³

Considering the high risk of incarceration, surgical repair is recommended for all Spigelian hernias.¹⁻⁴

CASE REPORT

A 78-year-old woman with a history of type 2 diabetes, hypertension, dyslipidemia, and diverticular disease, presented to the emergency department with left lower abdominal pain, nausea, vomiting, and obstipation for the last three days. She had no prior abdominal surgery.

Physical examination revealed a non-reducible lump and tenderness upon palpation of the left lower abdominal wall. A nasogastric tube was placed with biliary-enteric drainage. Laboratory tests revealed a slight increase in inflammatory parameters (leukocytosis 12,900 cells/ μ l with neutrophilia, and C-reactive protein 15.8 mg/l) and lactate dehydrogenase 308 IU/l.

A computed tomography scan showed a hernia in the left flank of the abdominal wall, 2.6 cm wide, with bowel content, and distension of the proximal loops of the small intestine, indicating an obstruction caused by an incarcerated SH.

The patient underwent exploratory laparoscopy, during which two 12 mm trocars were inserted one in the right

iliac fossa and one in the right flank along with a 5 mm trocar supraumbilically.

The incarcerated intestinal loop was reduced, exhibiting signs of quickly reversible ischemia.

The hernia sac and pre-peritoneal fat were excised, exposing the defect in the aponeurosis of Spiegel.

Herniorrhaphy was performed using a continuous suture with a 3/0 barbed thread, followed by the placement of a mesh coated with bioabsorbable film intraperitoneally (IPOM), which was fixed with two crowns of tackers.

The postoperative course was uneventful, with gradual reintroduction of diet and restoration of gastrointestinal function. The patient was discharged on the fourth postoperative day.

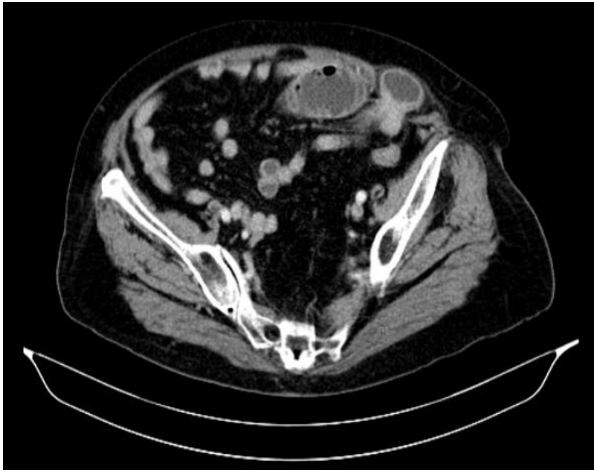


Figure 1: Computed tomography of incarcerated left SH with bowel content.

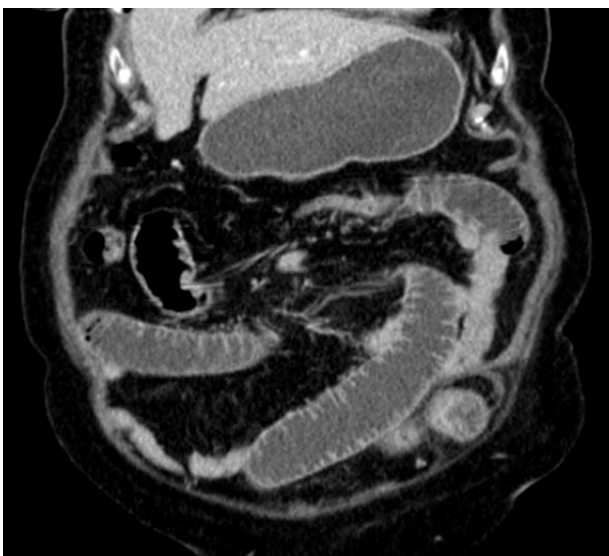


Figure 2: Computed tomography of incarcerated left SH with the external oblique aponeurosis intact and bowel distension.

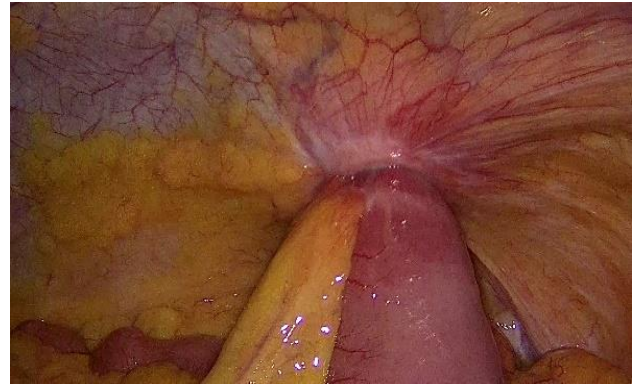


Figure 3: Exploratory laparoscopy revealing incarcerated left SH.



Figure 5: Incarcerated intestinal loop reduced with reversible ischemia.



Figure 5: SH after incarcerated intestinal loop was reduced.



Figure 6: Defect in Spigelian fascia with the external oblique aponeurosis intact.

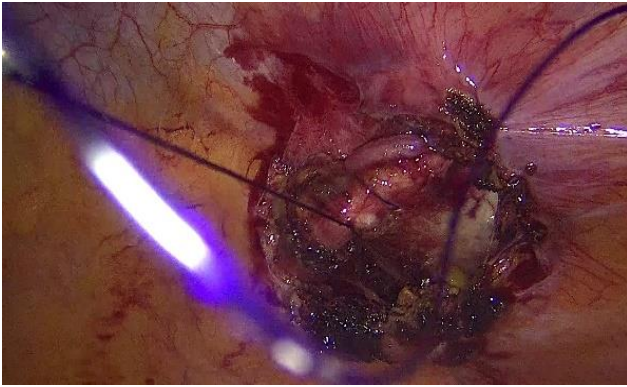


Figure 7: Herniorrhaphy with barbed thread.



Figure 8: Final placement of coated mesh intraperitoneally, fixed with tackers.

DISCUSSION

Most SH occur within the Spigelian belt, a 6 cm segment of the Spigelian fascia located between the arcuate line and the interspinous line. In this region, the fibers of the transversus abdominis and internal oblique aponeurosis are aligned in parallel, creating a natural area of weakness in the abdominal wall.^{1,2,4} The hernia sac is usually located in an intraparietal position, beneath the aponeurosis of the external oblique muscle.^{1,2,4,5}

Due to its anatomical location and often small size, diagnosis can be challenging, with symptoms that are often vague and a physical examination that may be difficult to interpret.^{1,2,4,5} If there is any doubt, ultrasonography or computed tomography is typically performed. If these imaging techniques are inconclusive, diagnostic laparoscopy is recommended.^{2,4,5}

SH typically presents with a small, narrow defect (0.5-2 cm) in the Spigelian fascia, with rigid edges. This makes the hernia prone to incarceration (up to 27%) and strangulation, leading to a higher risk of emergency surgery.¹⁻⁵

Neither open nor minimally invasive approaches are universally preferred. A mesh repair is generally recommended, regardless of the technique used, with at

least a 5 cm overlap.^{2,5} However, for small hernias, a direct suture can be safely performed. The need to close the defect prior to mesh application remains a subject of debate.²

Open repair offers particular advantages in small preperitoneal SH with no peritoneal sac or content, which can be difficult to detect by laparoscopy, as well as in very large hernias requiring substantial wall reconstruction.²

Laparoscopic techniques, such as IPOM, total extraperitoneal (TEP), and transabdominal preperitoneal (TAPP), all offer the advantages of minimally invasive surgery, including reduced morbidity, shorter hospital stays, and faster functional recovery.

TEP is the least documented approach, as it is more technically demanding, requires longer operative time, and is costlier. Additionally, it can only be performed if the hernia is located below the arcuate line.^{1,2,4,5}

In contrast to TEP, intra-abdominal approaches enable exploration of the entire abdominal wall and cavity. This allows the surgeon to identify and treat any associated hernias (which may be present in up to 50% of cases) and also to visualize the sac contents, assessing their viability in emergency situations with incarcerated hernias.^{1,2,5} The main disadvantage with IPOM is the potential risk of visceral adhesions, which may be minimized through the use of coated mesh.^{1,5} As for TAPP, one possible limitation is the potential difficulty in creating the peritoneal flap, because the peritoneum that covers the SH tends to be very thin, friable, and adherent to the aponeurosis.^{2,5}

CONCLUSION

SH are often difficult to diagnose due to their anatomical location, small hernia orifice, and nonspecific symptoms. Given the significant risk of incarceration, early detection and timely surgical intervention are crucial to prevent complications. SH can be managed with minimally invasive techniques, including in emergency settings.

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