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Case Report

Case report: acute appendicitis in a Spigelian hernia

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ABSTRACT

Spiegel's hernia is a rare condition, accounting for 0.12% to 2% of abdominal hernias. Spiegel's hernias are defined as a protrusion through a defect in the Spiegel fascia, which is located along the semilunar line. This line marks the transition zone between the lateral border of the rectus abdominis muscle and the aponeurotic insertions of the lateral abdominal muscles. A 70-year-old female patient presented with localized lower right abdominal pain lasting for 7 days, accompanied by a palpable mass within a defect in the abdominal wall. During surgical intervention, a Spiegel's hernia with acute appendicitis (complicated acute appendicitis) was identified inside the hernial sac. An appendectomy was performed, along with primary closure of the hernial defect. Spiegel's hernia is infrequently encountered, and the presence of acute appendicitis within the hernial sac is even more uncommon. Therefore, clinical findings should be correlated with imaging and laboratory studies to establish an accurate diagnosis.

Keywords: Spigelian hernia, Acute apendicitis, Abdominal wall hernia, Case report

INTRODUCTION

Spigelian hernia is a rare condition, accounting for 0.12% to 2% of all abdominal wall hernias and less than 1% of surgically treated hernias.[1,6] It is a type of ventral hernia located at the semilunar line, on the lateral edge of the rectus abdominis muscle.[1]

It develops through a defect in the aponeuroses of the internal oblique and transversus abdominis muscles without penetrating the external oblique aponeurosis.[1]

The semilunar line was first described by Adrian Van der Spiegel in the early 17th century, and the hernia was later defined by Joseph Klinkosch in 1764.[1]

This condition most commonly affects individuals between 50 and 70 years of age and shows a higher prevalence in women.[1,6] Surgical treatment is recommended due to the high risk of incarceration and strangulation, reported in up to one-third of cases.[1,6]

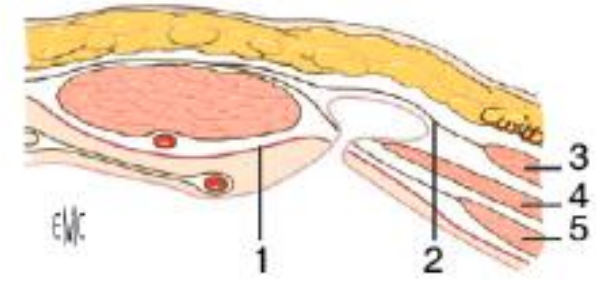

Figure 1: Anatomy of a Spigelian hernia.
*1. Transversalis fascia, 2. External oblique aponeurosis, 3. External oblique muscle, 4. Internal oblique muscle, 5. Transversus abdominis muscle

CASE REPORT

A 70-year-old female patient with no history of chronic degenerative diseases presented to the emergency department with a seven-day history of abdominal pain localized in the right iliac fossa, accompanied by nausea and constipation. Physical examination revealed signs of

dehydration, deep palpation tenderness in the right iliac fossa, and a palpable mass consistent with a wall defect and herniated content. There was no rebound tenderness or signs of peritoneal irritation. Laboratory studies showed leukocytosis and elevated acute phase reactants. A CT scan revealed a hernia defect approximately 2 cm in diameter with herniation of bowel loops (Figure 2).

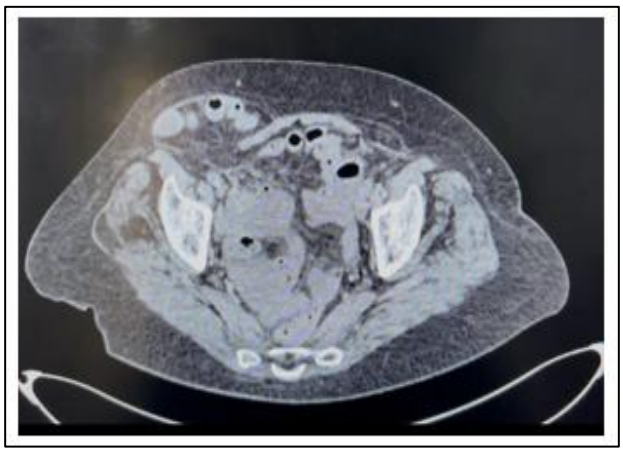

Figure 2: Non-contrast axial abdominal CT shows a herniary defect in the right Spigelian fascia containing intestinal loops.

Given these findings, surgical treatment was proposed to the patient and her family, which they accepted. An exploratory laparotomy was performed. An infraumbilical midline incision was made and dissection proceeded to the aponeurotic plane, revealing a right lateral Spigelian hernia. The anterior sheath of the rectus abdominis muscles was dissected, exposing a hernia sac approximately 10 cm in diameter and a defect of 2 cm (Figure 3). The hernia sac was opened to examine its contents, revealing purulent material. The hernia ring was further dissected to allow a systematic exploration of the abdominal cavity, revealing a necrotic cecal appendix at its middle and proximal third. The base of the appendix was dissected, and a Pouchet technique was performed on the appendiceal stump, followed by an uneventful appendectomy. Thorough abdominal lavage was performed, and a Penrose drain was placed into the pelvic cavity. Due to the intra-abdominal findings and high risk of contamination, mesh was not used in the hernia repair. Instead, a primary two-layer closure of the hernia defect was performed: the internal oblique aponeurosis was closed with continuous Vicryl suture, and the external oblique aponeurosis with continuous Prolene suture. The subcutaneous tissue was closed with Vicryl, and the skin with simple nylon sutures.

The patient remained hemodynamically unstable and required norepinephrine support at 2 mL per hour, though maintained spontaneous ventilation.

During the postoperative course, the patient's vital signs improved, and vasopressors were discontinued 24 hours after surgery. Oral intake was initiated 48 hours postoperatively with good tolerance. The drain output was scant and serous in nature at 72 hours, with vital signs within normal limits. The patient was discharged with the drain in place and wound care instructions, and was scheduled for outpatient follow-up on postoperative day 8, showing adequate recovery.

Histopathology reported gangrenous perforated acute appendicitis, acute peritonitis, and the hernia sac with acute inflammatory response, vascular congestion, hemorrhage, and fibrosis.

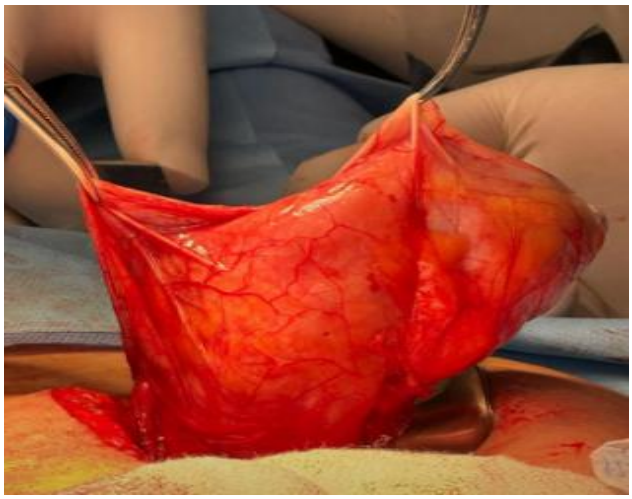

Figure 3: Spigelian hernia sac.

DISCUSSION

Spigelian hernias are ventrolateral abdominal wall hernias occurring through a defect in the Spigelian fascia along the semilunar line.[1,6] They account for a small proportion of abdominal wall hernias, ranging from 0.12% to 2%, and are more frequently diagnosed in elderly patients, particularly women.[1,6]

Anatomically, these hernias develop at the junction between the rectus abdominis muscle and the aponeuroses of the abdominal oblique muscles. Below the arcuate line, the posterior rectus sheath is absent, creating an area of weakness that explains the higher incidence of Spigelian hernias in this region.[1,6]

Several comorbid conditions that increase intra-abdominal pressure or weaken the abdominal wall fascia predispose individuals to Spigelian hernia formation. These include obesity, pregnancy, ascites, chronic obstructive pulmonary disease, connective tissue disorders such as Ehlers-Danlos syndrome, and advanced age.[1,6]

Clinical diagnosis is challenging due to the absence of specific signs and symptoms. Therefore, a combination of medical history, physical examination, and imaging is crucial for clinical diagnosis. This condition typically

presents as a small, unilateral, palpable, and mobile mass that becomes more evident with the Valsalva maneuver, usually located in the lower ventral abdomen, especially in patients with known risk factors for abdominal hernias. Therefore, imaging plays a crucial role in diagnosis, with computed tomography considered the modality of choice for identifying the hernia defect and its contents.[5]

Spigelian hernias are not suitable for conservative management because of their high risk of incarceration and strangulation, reported to be as high as 30%.[1,6] Surgical repair is therefore recommended once the diagnosis is established. In uncomplicated cases, mesh repair is safe and effective; however, in the presence of infection, bowel perforation, or contamination, primary repair without prosthetic material is advised.[1,6]

The presence of acute appendicitis within a Spigelian hernia sac is exceptionally rare, with only a limited number of cases described in the literature.[2,4,7] Most reported patients were women over 50 years of age who presented with right lower quadrant abdominal pain, leukocytosis, and elevated inflammatory markers, findings that are consistent with the present case.[2,4,7]

Surgical approaches and hernia repair techniques varied among cases, reflecting the rarity of this condition and the need for individualized management.[2,4,7] Other rare contents of Spigelian hernias, such as epiploic appendagitis, have also been reported.[8,9]

CONCLUSION

Spigelian hernia is a rare abdominal wall defect with nonspecific clinical presentation, and the occurrence of acute appendicitis within the hernia sac is even rarer. This unusual association complicates diagnosis and management. A high index of suspicion, thorough physical examination, and appropriate imaging studies are essential for timely diagnosis. Early surgical intervention remains the cornerstone of treatment to prevent severe complications.

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