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Richter-type Spigelian hernia: A case report and review of the literature

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ABSTRACT

INTRODUCTION: Abdominal wall hernias through the arcuate line termed Spigelian hernias are uncommon. These hernias presenting as a Richter-type, with strangulation of part of the circumference of the bowel wall is very rare.

PRESENTATION OF CASE: We report a 27-year-old male patient who presented with a Richter-type Spigelian hernia.

LITERATURE REVIEW: A MEDLINE literature search of this rare entity yielded six publications presenting Richter-type Spigelian hernias. All of these articles and accompanying references were thoroughly reviewed. There was no gender or anatomical side predominance among the patients. All except our patient presented here were elderly. Pain was the most common symptom and was present in all patients. All patients underwent surgical repair and none reported recurrence of their hernia afterwards.

DISCUSSION AND CONCLUSION: Richter-type Spigelian hernia is rare and has been reported infrequently in the existing literature. Clinical diagnosis is challenging and CT scan is the diagnostic study of choice. Surgical repair is the definitive treatment and involves primary or mesh repair of the defect as appropriate. Necrotic bowel should be resected and we recommend biologic mesh repair in these cases if the defect is large.

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1. Introduction

Spigelian hernias are uncommon, comprising only 1–2% of all hernias presenting to the emergency department.¹ The cause of Spigelian hernias is generally thought to be multifactorial, involving both congenital and acquired factors. However, some reports suggest that up to 50% of Spigelian hernias occur in patients with history of prior abdominal surgery.²

The clinical diagnosis of Spigelian hernia is challenging because of the lack of specific clinical features³ and the wide differential for lower abdominal pain. Abdominal computed tomography (CT) establishes the diagnosis⁴ and laparoscopic or open surgical repair is the definitive treatment.^{5,6}

Richter hernia implies strangulation of only a part of the bowel wall circumference in a hernia sac. It is more common in women and usually involves a segment of distal ileum.⁴

Richter-type Spigelian hernias are extremely unusual, with very few reports in the literature. Here we document the case of a Richter-type Spigelian hernia in a young man and provide a

thorough review of the English-language literature regarding this entity.

2. Case Presentation

A 27-year-old male with a history of exploratory laparotomy for perforated appendicitis at age three, presented to the Emergency Department with sudden onset of left-sided acute abdominal pain for 6 hours and vomiting. On physical exam, he was tachycardic and had point tenderness with rebound in the left lower quadrant. His white blood cell count was 14,000 cells/ μ L blood.

CT of the abdomen and pelvis with intravenous and oral contrast revealed a small foci/pocket of air outside the muscular layers of abdominal wall in the left lateral lower abdominal area suggestive of a herniated distal small bowel loop protruding through the linea semilunaris, consistent with a Spigelian hernia (see Fig 1). Small bowel fat stranding was seen beneath the hernia defect.

The patient was given intravenous, broad-spectrum antibiotics and taken to the operating room emergently. Diagnostic laparoscopy under general anesthesia showed multiple adhesions between the small bowel loops and anterior abdominal wall, and a Spigelian hernia of the small intestine on the left side. The fascial defect was estimated to be about 1 cm in diameter. The herniated

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Fig. 1. Axial view shows a small foci of air outside the muscular layers of abdominal wall in the left lateral abdomen suggestive of a herniated small bowel loop protruding through the linea semilunaris and consistent with a Spigelian hernia.

bowel was mobilized with sharp dissection and reduced, and the Spigelian hernia defect was closed laparoscopically with sutures.

A mini mid-laparotomy incision was made to enable better inspection of the bowel and a Richter-type hernia was identified with small bowel strangulated only in a part of its circumference. This appeared to be amenable to a wedge resection, which was carried out using a GIA stapler. The residual caliber of the small bowel at this site was adequate after resection.

The patient's post-op course was uneventful and he was discharged a few days after surgery tolerating regular diet.

3. Literature review

A MEDLINE literature search was performed using the MeSH terms "Spigelian" and "Hernia" as well as the terms "Richter's" and "Richter". This yielded six publications of Richter-type Spigelian hernias, all of which were thoroughly reviewed. Additional articles concerning Spigelian and Richter hernias were identified via complete investigation of the references from the articles reviewed.

Of the articles generated from MEDLINE, all cases documenting Richter-type Spigelian hernias were selected and thoroughly reviewed ($N = 6$), see Table 1. In addition, several articles concerning

Spigelian hernias were selected for relevance and were reviewed completely.

There was no gender or anatomical side predominance among the patients. All except our patient presented here were elderly. The onset of pain was acute in most patients ($n = 5/6$). Pain was the most common symptom and was present in all patients. All patients underwent surgical repair and none reported recurrence of their hernia afterwards.

4. Discussion

Named after Adrian van der Spiegel, an anatomist from Brussels, Spigelian hernias occur secondary to a defect in the transversus abdominis muscle and rectus sheath aponeurosis, which allows abdominal contents to protrude through the linea semilunaris (less commonly known as the Spigelian line or belt). Most occur just below the umbilicus where the aponeurosis is widest and weakest. Spigelian hernia contents most often includes small intestine, but can also include cecum appendix, sigmoid colon or omentum.^{4,7}

The clinical diagnosis of Spigelian hernia is challenging since the symptoms can be variable and non-specific. Pain is the most common symptom and is usually more localized to that side of the abdomen. Abdominal CT scan with contrast is the best diagnostic test, although the hernia might be apparent on ultrasound (US) or clinical exam in some patients.⁴

Richter hernias occur most commonly in the femoral region (about 90%) and usually involve the terminal ileum.¹ The herniated portion of bowel can have vascular compromise, infarction and eventual perforation. Bowel obstruction is rare, however, because a portion of the bowel lumen remains patent. There has been a recent increase in reports of this type of herniation through a trocar site after laparoscopic surgery.^{1,8,9}

Immediate surgical repair for Spigelian hernias is recommended because of the high risk of incarceration, up to 24% of cases,² and low risk of recurrence.⁵ Risk of perforation is significantly increased if the herniation is Richter-type, as in the case described here. Suture repair with or without mesh fixation can be used depending on the size of the hernia.⁶ In a prospective, controlled trial, 22 patients with Spigelian hernia were randomized to either open or laparoscopic elective repair with mesh. The laparoscopic technique had lower morbidity and showed faster recovery.¹⁰

Richter-type Spigelian hernias are unique since they have a high risk of perforation, which may not present with generalized peritonitis. Suture repair should suffice if the defect is small. Large defects should be reinforced with mesh. Biologic mesh is appropriate if bowel resection is done for necrotic bowel.

Table 1
Summary of published cases reporting Richter-type Spigelian hernias.

Reference	Patient	Presentation	Side of hernia	Diagnosis	Treatment
Naylor, 1978 ¹¹				No radiographic demonstration of pathology	Wedge cecectomy and suture repair of defect
Hiller et al., 1994 ⁴	82/F	Acute RLQ pain and vomiting – 2 h	Right	US	Ileal resection and suture repair of defect
Raveenthiran et al., 2000 ¹²	75/F	Painful LLQ lump – 5 days	Left	Clinical and US	Ileal resection and suture repair of defect
Fischella et al., 2007 ⁵	78/F	Painful abdominal mass – 1 day	Right	CT scan	Partial cecectomy and appendectomy with suture repair of defect
Carr, 2007 ¹³	83/M	LLQ pain – 10 days	Left	Clinical and CT scan	Laparoscopic repair with peritoneal flap polypropylene mesh
Parambath et al., 2012 ¹	62/M	Acute RLQ pain and vomiting	Right	Clinical – acute appendicitis	Transverse RLQ incision, bowel reduction, suture repair
Foster et al., 2014 [current case]	27/M	Abdominal pain and vomiting – 6 h	Left	CT scan – confirmed hernia	Laparoscopic repair of defect, mini laparotomy and wedge resection of herniated small bowel

RLQ – right lower quadrant, LLQ – left lower quadrant.

5. Conclusion

This case presents the occurrence of a Richter-type Spigelian hernia, which has been rarely reported in the existing literature. Clinical diagnosis is challenging and CT scan is the diagnostic study of choice. Surgical repair is the definitive treatment and involves primary or mesh repair of the defect as appropriate. Necrotic bowel should be resected and we recommend biologic mesh repair in these cases if the defect is large.

Conflict of interest

DF, SN and LP declare no conflicts of interest.

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Ethical approval

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

Author contributions

SN and LP cared for the patient presented in this case report clinically, DF conducted the literature review and drafted the case

report manuscript. SN and LP edited the manuscript. SN, LP and DF approved of the final draft.

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