

An Unusual Case of Internal Hernia Caused by Adhesion between the Sigmoid Colon and Salpingectomy Site

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Abstract Internal hernia, in which the bowel herniates through a congenital or acquired aperture in the peritoneal cavity, is one of the rarest causes of ileus. Postoperative adhesion is a common pathological phenomenon that may cause bowel obstruction by angulation or twisting. However, internal herniation through a colonic adhesion formed after gynecologic surgery is extremely rare. Here, we present a case of strangulated small bowel obstruction in a 51-year-old woman, due to internal hernia through the aperture created by adhesion of the sigmoid colon and a right salpingectomy site. The patient presented with abdominal pain and distension; she had a history of right salpingectomy for ectopic pregnancy 20 years earlier. While attempting conservative management, peritoneal irritation signs developed and emergency surgery was performed. During the operation, it was found that approximately 30 cm of the ileum had herniated through the aperture created by the adhesion. After reduction of the incarcerated small bowel, bowel resection with primary anastomosis and adhesiolysis was performed. Although preoperative diagnosis is difficult in unusual types of internal hernias, due to their rarity, a high degree of suspicion and prompt management is crucial for the prevention of morbidity and mortality.

Keywords: hernia, colon, adhesion, salpingectomy

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1. Introduction

Intestinal obstruction caused by internal hernia is very rare, with an incidence ranging from 0.2% to 0.9%. [1] Diverse types of internal hernia have been described, including paraduodenal, pericecal, transmesenteric, and transomental hernias, as well as hernias of the foramen of Winslow, sigmoid mesocolon, and broad ligament; they may occur through congenital or acquired apertures. [2,3] Post-operative adhesion is a main cause of small bowel obstruction, and adhesion bands may lead to internal herniation. [4] However, internal hernia through the aperture formed by colonic adhesion is extremely rare. Here, we present the case of a female patient with strangulated small bowel obstruction due to internal hernia through the aperture created by adhesion of the sigmoid colon and a right salpingectomy site.

2. Case Report

A 51-year-old woman presented to the emergency department with abdominal pain and distension lasting for 3 days. She had a history of right salpingectomy for ectopic pregnancy 20 years ago. Abdominal examination revealed mild distension and hyperactive bowel sounds, but peritoneal irritation signs were absent. Laboratory data

were unremarkable except for leukocytosis (11 000/mm³). Plain abdominal radiography showed a loop of dilated bowel without free air, and computed tomography revealed diffuse dilatation in the proximal- to mid-ileal loop with abrupt luminal narrowing at mid-ileum, without evidence of bowel ischemia (Figure 1).



Figure 1. Abdominopelvic CT image indicating diffuse dilatation in proximal- to mid-ileal loop with abrupt luminal narrowing (white arrow) at mid ileum

Based on the clinical impression of mechanical ileus due to postoperative adhesion, she was managed by intravenous hydration and placement of a nasogastric tube.

However, no improvement was seen during the patient's hospital stay; pain increased in intensity, and signs of peritoneal irritation became evident on the third hospital day. Thus, the patient underwent an exploratory laparotomy. During the operation, we found that approximately 30 cm of the ileum had herniated into the rectouterine pouch via an aperture created by adhesion of the sigmoid colon to the previous right salpingectomy site. Reduction of the incarcerated bowel proved impossible without performing dissection to enlarge the aperture, due to edematous and gangrenous changes of the herniated segment of the bowel (Figure 2).

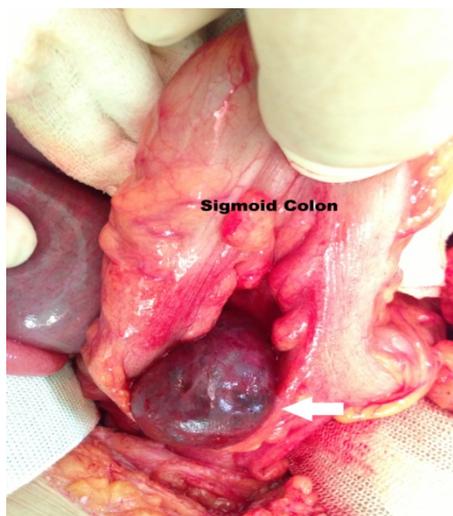


Figure 2. Operative findings: Strangulated small bowel (white arrow) is incarcerated by the aperture formed by adhesion between the sigmoid colon and the salpingectomy site

After dissection of the aperture, the small bowel was reduced (Figure 3) and resection with primary anastomosis was performed.

Subsequently, adhesiolysis was performed on the aperture, and it was treated with an anti-adhesive agent to prevent recurrence. The postoperative course was uneventful, and the patient was discharged on the seventh postoperative day.

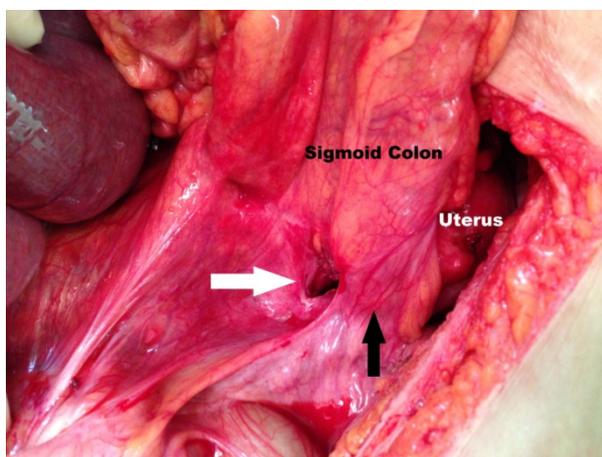


Figure 3. Operative findings: After reduction of the incarcerated bowel, the aperture (white arrow) created by adhesion of the sigmoid colon to the salpingectomy site (black arrow) is noted

3. Discussion

Internal hernia is the protrusion of a segment of the bowel through a congenital or acquired aperture. Among congenital internal hernias, paraduodenal hernia is the most common, followed by pericecal, foramen of Winslow, transmesenteric, transomental, sigmoid mesocolon hernias, and broad ligament hernia [2,3] Acquired internal hernia may occur through an aperture created after trauma, inflammation, or surgery such as bowel resection or roux-en-y anastomosis. [5,6] Internal hernia after surgery is generally associated with bowel reconstruction, and is rarely caused by post-operative fibrous bands or by adhesions forming unusual apertures. Although postoperative adhesions are considered pathological bonds created between bowel loops and other intraperitoneal organs, most patients have one or more adhesions in the peritoneal cavity following abdominopelvic surgery. [4] Thus, postoperative mechanical ileus caused by adhesion is one of the most common complications causing readmission, delayed hospitalization, economic costs, morbidity, and even mortality. [7] In cases of bowel surgery, bowel manipulation can lead to inflammation of the serosal surface resulting in fibrous bands or adhesions between bowel loops. [4] Dissection of soft tissues or ligaments may also cause adhesion of intraperitoneal organs such as the omentum, small bowel, or sigmoid colon at the operation site, forming an unusual aperture as in the present case.

Ectopic pregnancy is the implantation of a blastocyst outside the uterine cavity; the fallopian tube is the most common site. The mainstay of surgical treatment for ectopic pregnancy is therefore salpingectomy or salpingostomy, whether open or laparoscopic. [8] In the present case, the patient received a salpingectomy and the sigmoid colon adhered to the salpingectomy site, forming an unusual aperture. Aperture formation by a sigmoid colon adhesion is an extremely rare phenomenon, and as far as we can determine, this is the first case in the literature of internal hernia through the aperture created by such a sigmoid colon adhesion.

The symptoms of internal hernia vary, ranging from non-specific abdominal pain to obstruction-related symptoms, because the herniated bowel is usually reducible through the aperture. [2,3,5] However, if the herniated bowel is irreducible, resulting in incarceration and strangulation, peritoneal irritation signs as well as obstruction symptoms will be evident. In such patients, emergency operation is inevitable. Even though CT is the preferred imaging study for diagnosis of this condition and its findings may strongly suggest its presence, it is very difficult to make the diagnosis preoperatively because there are no established pathognomonic findings in such a rare condition. [1] Thus, suspicion is crucial in patients with operative history. When symptoms and signs progress despite conservative management, prompt surgical treatment should be performed to prevent morbidity and mortality. In the present case, we performed conservative management at first, presuming the patient's ileus to be caused by postoperative adhesion, but the lack of interval change in symptoms and evident peritoneal signs led us to perform emergency surgery. Early and prompt intervention could have avoided resection.

Surgical treatment of internal hernia consists of reduction of the small bowel herniation, which may be

followed by resection, or not, depending on bowel viability. Aperture site repair may also be performed to prevent recurrence, depending on the type of internal hernia. [2,3,5] In the present case, direct reduction of the incarcerated bowel was not possible. Further dissection to enlarge the aperture enabled us to reduce the bowel without injury, but subsequent bowel resection was mandatory due to strangulation. As previously noted, postoperative adhesion is a challenging problem for the surgeon. Therefore, many modalities have been suggested for the prevention of postoperative adhesion, including use of anti-adhesive agents. [9,10]; their use has become more common in the field of abdominopelvic surgery. [11] In our case, adhesiolysis between the adherent sigmoid colon and salpingectomy site was performed, instead of primary repair of the aperture, followed by application of an anti-adhesive agent.

4. Conclusions

Although internal hernia caused by colonic adhesion is an extremely rare type of internal hernia, and its preoperative diagnosis is difficult, a high degree of suspicion and prompt management are important for avoiding morbidity and mortality.

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