

CASE REPORT

Emergency laparoscopic surgery on a patient who visited the emergency room with lower abdominal pain

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Abstract

Internal hernias account for fewer than 6% of all small intestinal obstructions; of these, hernias caused by defects in the sigmoid colon are particularly challenging to detect. Misdiagnosis may occur if non-surgical symptoms (such as rebound tenderness) are not observed in the emergency room. We report the case of a consent who visited the emergency room with recurrent non-specific lower abdominal pain. She exhibited an internal hernia that had triggered small intestinal ischemia between the mesosigmoid (mesentery) and ovary. A 36-year-old female patient visited the emergency room of our hospital with acute left-lower abdominal pain, nausea, and vomiting that occurred 1 h after meals. We found no palpable mass or enlarged organ. Abdominal computed tomography (CT) revealed segmental small bowel wall thickening with mesenteric congestion in the left-lower quadrant, and small bowel ischemia attributable to internal herniation or adhesion. In addition, a small amount of pelvic ascites and multiple liver cysts were observed. A surgeon was immediately consulted and emergency laparoscopic surgery was performed.

Keywords

Abdominal pain; Internal hernia; Small bowel ischemia; Adhesion band; Emergency center

1. Introduction

Internal hernias account for fewer than 6% of all small intestinal obstructions; of these, hernias caused by defects in the sigmoid colon are particularly challenging to detect [1, 2]. Typically, the only clinical symptom is non-specific pain; there are no clear clinical findings [3]. An internal hernia refers to a protrusion of internal organ(s) through a weak abdominal tissue wall (with a pre-existing foramen) or an abnormal peritoneum, or collapse of an organ into the retroperitoneum or through an abnormal opening of the peritoneum [4]. An abnormal hernial foramen may develop for various reasons, including adhesion caused by inflammation. Intra-abdominal adhesions are typically associated with surgery such as laparotomy, and especially with trauma. However, intra-abdominal adhesions are rare in patients who have not undergone laparotomy [5]. Consequently, misdiagnosis may occur if non-surgical symptoms (such as rebound tenderness) are not observed in the emergency room. We report a patient who visited the emergency room with repeated non-specific lower abdominal pain, and had an internal hernia that had triggered small intestinal ischemia between the mesosigmoid (mesentery) and ovary.

2. Case presentation

A 36-year-old female patient visited the emergency room of our hospital with strong left-lower abdominal pain, nausea, and vomiting that developed acutely 1 h after meals. She had no medical or surgical history, and had never been pregnant or experienced trauma. Her family and social history were unremarkable. She was 150 cm tall and weighed 46 kg. At the time of the hospital visit, her blood pressure was 130/80 mmHg, the pulse rate was 100 beats/min, and the body temperature was 36.9 °C. Upon admission, the patient complained of continuous abdominal pain but had no neurological symptoms. On examination, the abdomen was not swollen and there was no stiffness. Severe tenderness was detected in the left-lower abdomen but rebound pain was not reported. We found no palpable mass or enlarged organs. There were no remarkable findings during the early stages of the visit, except that the white blood cell count was slightly elevated at 12,110/ μ L (normal range: 4000~10,000/ μ L). Simple urine tests and abdominal imaging revealed no abnormalities. The patient was diagnosed with acute gastroenteritis, and painkillers and fluid treatment were administered. An abdominal ultrasound yielded no specific findings. COVID-19 and pregnancy tests were negative. Abdominal computed tomography (CT) was then performed. The veins were secured with thick catheters (over 20 G). The patient did not experience side-effects when given contrast

medium, and a consent form was prepared that referred to the possibility of side-effects after examination. CT revealed segmental small bowel wall thickening with mesenteric congestion in the left-lower quadrant, and small bowel ischemia attributable to internal herniation or an adhesion. A small amount of pelvic ascites and multiple liver cysts were observed. A surgeon was immediately consulted, and emergency laparoscopic surgery was performed. We had considered CT when the patient complained of continuous abdominal pain when visiting the emergency room. Surgery was performed after CT; also, we obtained an abdominal X-ray, as a routine test prior to surgery (Figs. 1,2). During surgery, an adhesive band was observed between the sigmoid colon mesentery and left ovary, and an approximately 50-cm-long segment of the small bowel was strangulated between these tissues (Fig. 3). After band lysis, the bowel color became normal and weak peristalsis was observed; therefore, surgery was terminated. The symptoms gradually improved, and after 5 days of follow-up observation the patient recovered without any specific findings and was discharged. Since that time, the patient has undergone regular follow-up at a surgical outpatient clinic with no further discomfort.

3. Discussion

When patients visit the emergency room with sudden and non-specific abdominal pain, the emergency doctor may have difficulty making a diagnosis if the patient's surgical history is unknown, as in the present case. In particular, if no clear symptom indicating a need for surgery is apparent, diagnosis can be very challenging. Moreover, if imaging is performed after the patient has been tested for an infection, such as COVID-19, diagnosis may be delayed until the results are obtained and the test may be time-consuming. For example, if a patient with fever or respiratory symptoms is tested for COVID-19 in the CT examination room, subsequent ventilation of the room is time-consuming, thereby delaying CT and diagnosis. We observed no improvement in the symptoms of our patient after fluid infusion and painkillers; the diagnosis was made after repeated physical tests.

Re-evaluation of related symptoms aids diagnosis. Of the various symptoms, vomiting may progress from the stomach contents to bilious or feculent emesis with longer-duration small intestinal obstruction. In addition, the associated pain generally progresses from intermittent to continuous when ischemia develops; somatic pain develops at later stages [6]. New symptoms that progress over time may aid diagnosis. In our case, we found an internal hernia, which is rarely detected in the emergency room. A small intestinal obstruction caused by an internal hernia is extremely rare and diagnosis is difficult because this condition lacks characteristic clinical findings; the symptoms overlap those of other pathological abdominal conditions [7].

Uncommon internal hernias may occur without any obvious cause in the large intestine, mesenteric membrane, or transverse colon and sigmoid colon intermembranes [8]. Our patient was a young woman with no history of surgery or pregnancy who complained of non-specific abdominal pain. We observed that the small intestine was not in the normal

position; instead, it was rolled into an abnormal foramen within the abdominal cavity by an adhesive band between the sigmoid colon mesentery and left ovary. This is typically caused by surgery or peritoneal damage after an accident; the poor fiber solubility triggers several inflammatory processes. In most cases, the patients have no surgical history and long-term adhesion of tissues (attributable to inflammation of unknown origin) is the etiology. The condition is rare and the mechanism remains unclear [9]. In general, non-traumatic adhesions are likely caused by local inflammation attributable to inflammatory bowel diseases such as Crohn's disease, or uterine or pelvic inflammatory disease in women [10, 11]. An intestinal obstruction causing organ ischemia that progresses to necrosis is a surgical emergency; extensive bowel resection is required. However, when strangulated sections of the small intestine are not necrotic, the adhesion site can be removed and further treatment depends on observation. To ensure accurate diagnosis, it is crucial to closely monitor the symptoms. In particular, repeated physical tests and imaging are very helpful to identify uncommon diseases in emergency room situations. Abdominal CT allows for highly accurate preoperative diagnosis of small intestinal obstructions and has thus become the standard approach for evaluating this condition, as well as internal hernias [1, 12]. Abdominal CT reveals small intestinal obstructions with a sensitivity of 94% and specificity of 96% [13]. Contrast abdominal CT detects looped intestinal obstructions suggestive of internal hernias, hernial foramina, and abnormal displacement of major vessels and structures surrounding the hernial foramen and sac. Rapid action based on such tests is needed to relieve ischemia in isolated regions of the small intestine and prevent necrosis; laparoscopic treatment is increasingly being reported [14]. Thus, in patients with no trauma or surgical history who complain of hemodynamically stable non-specific abdominal pain when visiting emergency medical centers, repeated physical examinations and abdominal CT should be performed to check for internal hernia of the small intestine.

4. Conclusion

In patients who visit the emergency medical center as the main cause of abdominal pain, even if they are hemodynamically stable and have no surgical history, if the pain score is high, it is necessary to determine the cause through imaging tests.

AVAILABILITY OF DATA AND MATERIALS

The data are contained within this article.

AUTHOR CONTRIBUTIONS

HJK—examined the patient, diagnosed the case; wrote the first version; approved the final version of the paper and edited it. HJC and SYJ—read the literature and participated in writing. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

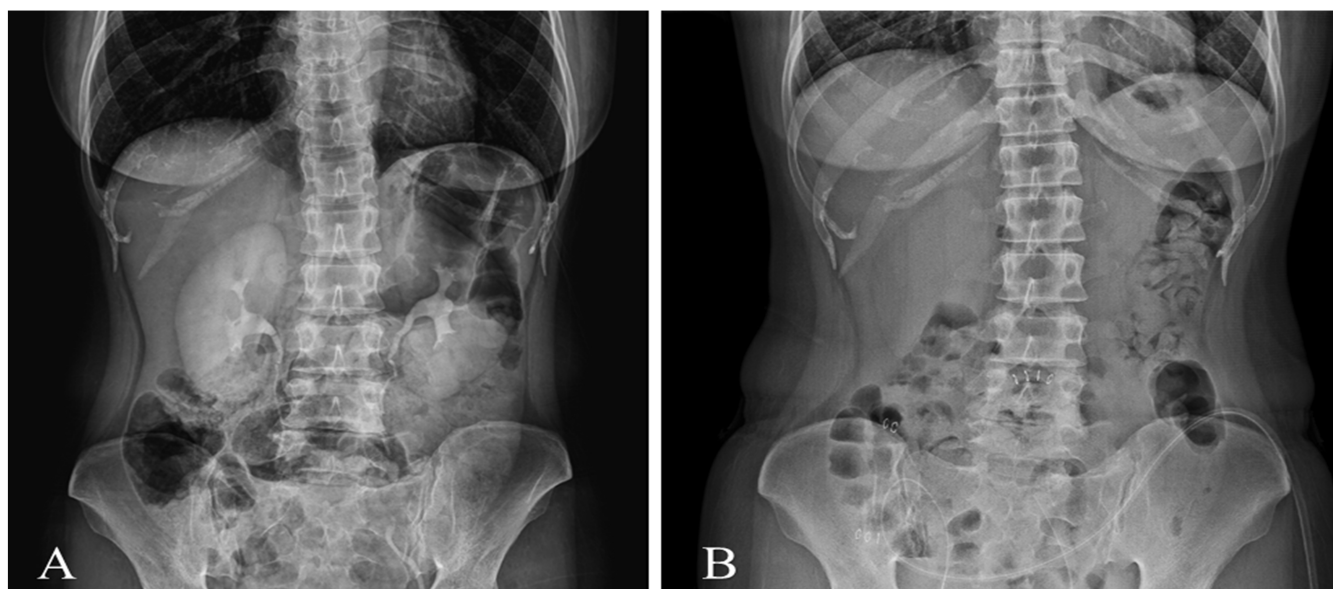


FIGURE 1. Simple abdominal radiography. (A) An internal hernia of the sigmoid colon was detected early during the visit to the emergency room. (B) After surgery, the adhesive band had been removed and the colon and small bowel returned to their original positions.

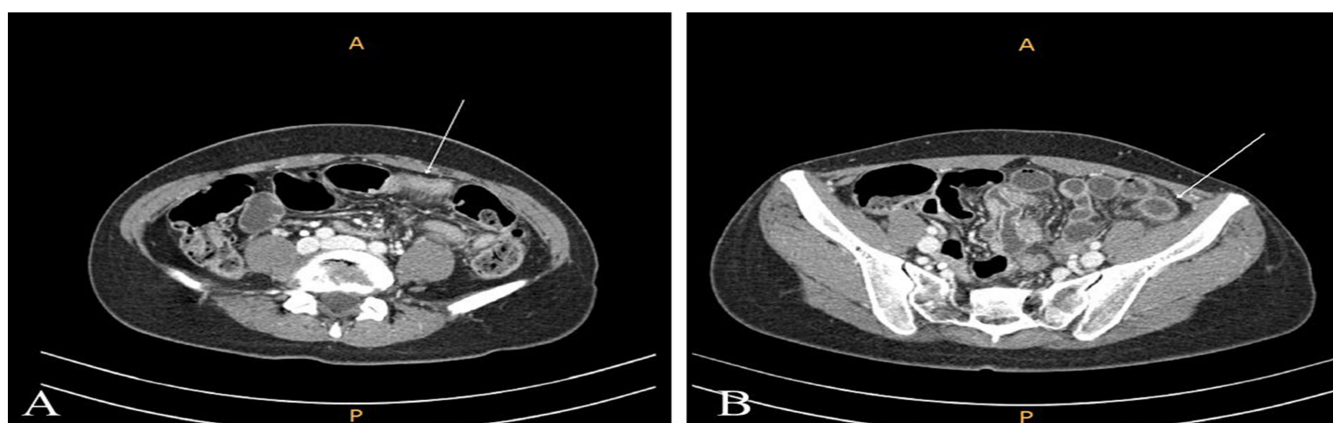


FIGURE 2. Abdominal computed tomography showing. (A) a hernia and (B) congestion and swelling of the small intestine.

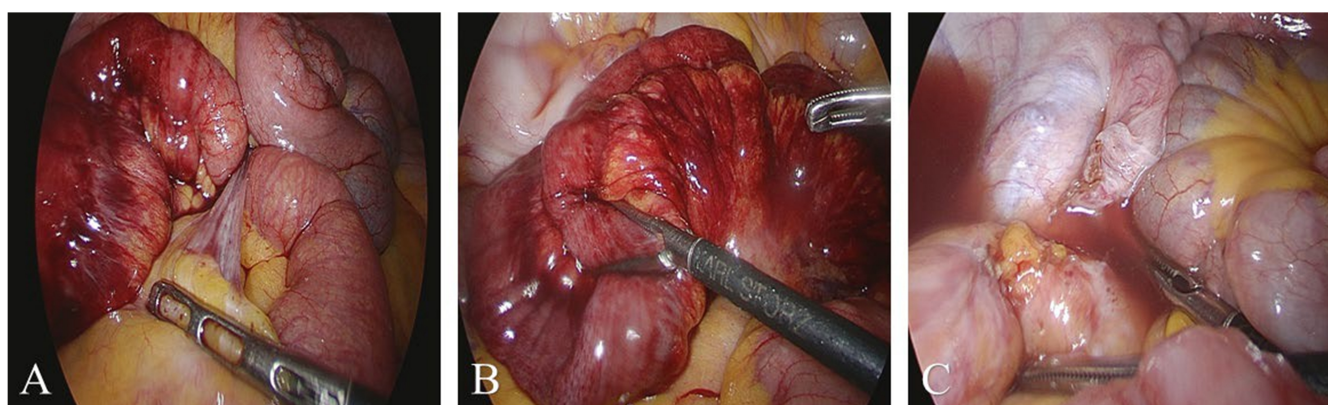


FIGURE 3. Images taken during laparoscopic surgery. (A) An adhesive band between the sigmoid colon mesentery and left ovary. (B) Congestion and swelling of the small intestine. (C) Strangulation of the small intestine between the adhesive band.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study protocol was approved by the Institutional Review Board of Soonchunhyang University Bucheon Hospital (IRB file no. 2022-06-007). Informed consent was obtained from the participant involved in the study.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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