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Transverse mesocolic hernia with intestinal obstruction a rare cause of acute abdomen in adults: A case report

Zhang C *et al.* Transverse mesocolic hernia with intestinal obstruction

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Abstract

BACKGROUND

Internal hernia is a rare cause of acute abdomen and intestinal obstruction in adults. Internal abdominal hernias include paraduodenal, perigastric, foramen of Winslow, intersigmoid, and post-anastomotic hernias and can be congenital or acquired. Internal hernias occur in 1%-2% of patients, and transmesocolic hernias are extremely rare. This report presents a patient with a transverse mesocolic hernia with a preoperative diagnosis of small intestinal obstruction.

CASE SUMMARY

A 45-year-old Chinese woman was admitted to the hospital with middle and upper abdominal pain for 2 d, abdominal distension, and vomiting. After abdominal computed tomography, she was diagnosed with an internal abdominal hernia complicated by small intestinal obstruction and underwent emergency laparoscopic surgery. The patient recovered well and was discharged six days postoperatively.

CONCLUSION

Transmesocolic hernias must be considered in adult patients with signs and symptoms of intestinal obstruction, even without a history of abdominal trauma or surgery.

Key Words: Internal hernia; Transmesocolic hernias; Abdominal computed tomography; Small bowel obstruction; Laparoscopic surgery; Case report

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Core Tip: Transverse mesocolic hernia with intestinal obstruction a rare cause of acute abdomen in adults, this case emphasizes the importance of considering a diagnosis of transmesocolic hernia in adult patients with intestinal obstruction, even in the absence of a history of abdominal trauma or surgery, intraoperative images and video included with this case report highlight the surgical procedures required to treat these rare hernias.

INTRODUCTION

Transmesenteric hernias are extremely rare. Approximately 0.6%-5.8% of all small intestinal obstructions are due to internal abdominal hernias^[1], and transmesocolic hernias account for approximately 5%-10% of all internal abdominal hernias^[2]. The overall mortality rate of strangulated small intestinal obstruction is over 50%. In adults, transmesocolic hernias are usually caused by previous abdominal surgery, abdominal trauma, or intraperitoneal inflammation. It is extremely rare for a patient with no history of abdominal surgery to develop a transmesocolic hernia^[3]. This report presents the case of a patient with a transmesocolic hernia accompanied by an incarcerated small intestine.

CASE PRESENTATION

Chief complaints

Middle and upper abdominal pain for 2 d.

History of present illness

A 45-year-old Chinese woman with no history of abdominal surgery was admitted to the hospital with middle and upper abdominal pain for 2 d, abdominal distension, and vomiting.

Physical examination

Upon admission, her blood pressure was 137/82 mmHg, heart rate was 87 beats/min, and body temperature was 36.7 °C. A physical examination of the abdomen revealed tenderness in the middle and upper abdomen without rebound pain.

Laboratory examinations

Upon admission, laboratory assessments revealed a white blood cell count of $10.6 \times 10^9/L$ (NEUT%, 84.4%); haemoglobin concentration of 121 g/L; platelet count of $10.6 \times 10^9/L$; C-reactive protein of 15 mg/dL; sodium of 134 mmol/L; potassium of 3.7 mmol/L; aspartate aminotransferase of 39 U/L; alanine aminotransferase of 51 U/L; alkaline phosphatase of 86 U/L; lactate dehydrogenase of 195 U/L; blood urea nitrogen of 5.97 mmol/L; and creatinine of 62 $\mu\text{mol/L}$.

Imaging examinations

Abdominal computed tomography (CT) revealed local intestinal dilation in the abdominal cavity, thickening of the intestinal tube wall, an abnormal location and disordered arrangement of the small intestine, and partial thickening and oedema of the intestinal wall and mesangium above the transverse colon near the hepatoduodenal ligament and gallbladder (Figure 1).

FINAL DIAGNOSIS

An internal abdominal hernia with small intestinal obstruction was suspected.

TREATMENT

The patient underwent emergency laparoscopic surgical exploration. Intraoperatively, the small intestine was discovered to be herniated from the mesocolon defect below the transverse colon to the lower part of the liver and gallbladder and was trapped by an adhesive band between the liver and duodenum. The entrapment intestinal obstruction involved a trapped small intestine and mesocolon, a loosened adhesive band, and the entrapment of the small intestine because of the mesocolon defect below the transverse colon. The defect area of the transverse mesocolon was approximately 25 cm². The blood flow within the small intestine recovered well, and no intestinal resection or anastomosis was required (Figure 2). The small intestinal obstruction in this patient was closely related to adhesive tape entrapment. An intraoperative evaluation revealed that the mesocolic defect in this patient was large and that the possibility of recurrence of small intestinal obstruction was minimal, so the decision was made not to repair the mesocolic defect during the operation.

OUTCOME AND FOLLOW-UP

¹ The patient was discharged on postoperative day 6 with a favourable outpatient follow-up at six months postoperatively (Figure 3).

DISCUSSION

An internal abdominal hernia involves the protrusion of an abdominal organ through a normal or abnormal mesentery or peritoneal pore^[4]. Internal hernias may occur because of trauma, surgical procedures, or other reasons related to congenital peritoneal defects. Internal hernias with unique clinical and imaging features are classified according to their anatomical regions: ² Paraduodenal (left or right) (53%), foramen of Winslow (8%), cecum (13%), sigmoid colon (6%), intestinal membrane (8%), interventricular (1%-4%), and anastomotic, bladder, and pelvic (6%) hernias^[5]. Transmesenteric hernias are difficult to diagnose preoperatively and typically require the removal of the affected intestinal area during surgery^[6]. Few mesocolic hernias have been reported. Congenital mesocolic hernias have three types. ⁴ The first two are the right and left types, comprising

25% and 75% of all cases, respectively. The third type is extremely rare and known as a transverse mesocolic hernia^[7].

Congenital mesocolic defects are extremely rare, and previous studies have proposed theories regarding their congenital causes. Because mesenteric perforations and associated hernias are often found in infants with closed intestinal segments, they may be related to prenatal intestinal ischaemic accidents. In adults, mesenteric defects are caused mostly by previous gastrointestinal surgery, abdominal trauma, or intraperitoneal inflammation^[8,9]. The presentation of a transverse mesocolic hernia in an adult with no history of trauma or prior abdominal surgery, as in this report, is rare.

A clear preoperative diagnosis is difficult in most patients with internal abdominal hernias because they have no obvious symptoms or signs. These hernias manifest mostly as abdominal pain, abdominal distension, and vomiting and cannot be distinguished from other acute abdominal diseases. Abdominal CT is a useful auxiliary diagnostic technique. In the patient presented in this report, CT revealed local intestinal dilation in the abdominal cavity, intestinal tube wall thickening, an abnormal location and disordered arrangement of the small intestine, intestinal wall thickening, oedema, and mesangium above the transverse colon near the hepatoduodenal ligament and gallbladder. The small intestine is not typically located in this region. Therefore, this patient underwent an emergency laparoscopic operation to investigate an intraperitoneal hernia with small intestinal obstruction. For intraperitoneal hernias with mesocolic defects, most surgeons will choose to close the defect^[10]. However, the small intestinal obstruction was closely related to adhesive tape entrapment in this patient. An intraoperative evaluation revealed that the mesocolic defect in this patient was large, and the possibility of recurrence of small intestinal obstruction was minimal, so a decision was made not to repair the mesocolic defect during the operation.

Transmesocolic hernias, especially transverse mesocolic hernias, are rare. Most previous reports of mesocolic hernias are case reports and involve open surgery. The surgical images provided in this report reflect the incarceration caused by the internal abdominal hernia. The patient had no history of abdominal trauma or surgery, and the

laparoscopic emergency operation was successful. The surgical pictures and videos (Supplementary material) provided in this report highlight the incarceration of the internal abdominal hernia, allowing readers to gain a better understanding of this condition and the required surgical treatment.

CONCLUSION

² In conclusion, the preoperative diagnosis of intestinal obstruction caused by internal hernias, especially mesocolic hernias, remains difficult. Therefore, considering the possibility of transmesocolic hernias in adult patients with signs and symptoms of intestinal obstruction is important, even when the patient has no history of abdominal trauma or surgery.

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Figure Legends

Figure 1 Abdominal computed tomography findings. A: Transverse view; B: Sagittal view. The small intestine was locally dilated in the abdominal cavity, and the intestinal tube wall was thickened. Above the transverse colon, the small intestine and mesangium were partially thickened, and edema of the tube wall was found around the gallbladder.

Figure 2 Intraoperative findings. A: The yellow dotted line shows herniation into the incarcerated small intestine. The black arrow shows the hepatoduodenal adhesions; B: The blue dotted line shows the transverse mesocolic defect.

Figure 3 Timeline.

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