Strangulated Small Bowel Obstruction Secondary to a Transmesosigmoid Hernia

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Abstract Internal hernias are an infrequent cause of small bowel obstruction with transmesosigmoid herniation being very rare, especially in patients with no history of abdominal surgery or trauma. Early surgical intervention is important in acute presentation to reduce the high morbidity and mortality rates associated with this disease.

Keywords Transmesosigmoid hernia · Internal hernia · Strangulated hernia

Case Report

Internal hernias are an infrequent cause of small bowel obstruction and are estimated to account for 1–6 % of all cases, with transmesosigmoid hernias constituting 6 % of all internal hernias [1]. Previously, paraduodenal hernias were regarded as the most common type of internal hernia; however, it has recently been reported that transmesenteric hernias are increasing in incidence [2]. Although transmesenteric hernias are increasing in incidence, transmesosigmoid herniation is very rare, especially in patients with no history of abdominal surgery or trauma [3].

A 42-year-old man presented acutely with a 2-day history of central abdominal pain, abdominal distension, vomiting, and absolute constipation. He had no previous history of abdominal surgery. Physical examination revealed dry tongue, feeble pulse rate 110/min, blood pressure 80/

60 mmHg, respiratory rate 32/min, and decreased urine output 20 ml/h. Abdominal examination revealed distension, no tenderness; bowel sounds were absent and digital rectal examination was normal. Laboratory investigations revealed a leucocytosis of 11.4×10^9 g/dl, and arterial blood gas analysis showed metabolic acidosis. Plain abdominal radiography demonstrated dilated small bowel loops with multiple air fluid levels. The patient was resuscitated with intravenous fluids, central line placed. A nasogastric tube was inserted and, after stabilizing, decision was made to perform an emergency exploratory laparotomy with the possibility of bowel gangrene or closed-loop obstruction causing septic shock.

An abdominal midline incision was made, revealing an abnormal defect, about 2 cm $\times$ 3.5 cm in size, in the sigmoid mesocolon with about 25 cm of incarcerated small intestine, located approximately 50 cm proximal to the ileocecal junction. Both proximal and distal bowels were dilated and edematous (Fig. 1). After manual reduction of the hernia, mesenteric defect repaired, the necrosed part of the small intestine was resected, and double-barrel ileostomy was created. The patient had an uneventful recovery in post-operative period. After 2 months stoma was closed. No evidence of recurrence has been seen on follow-up examinations.

Congenital internal hernias of the sigmoid mesentery are divided into three categories: intersigmoid, intramesosigmoid, and transmesosigmoid [4]. Transmesosigmoid hernias occur when a loop of small bowel passes through a defect in the sigmoid mesentery. This type of hernia involves the two layers of the mesentery and does not have a hernial sac. The underlying embryology of this defect has not been fully elucidated; however, there are several theories as to how these defects arise. It has been suggested that the mesenteric defect is due to partial regression of the dorsal mesentery or due to inadequate vascularization of the enlarging mesentery

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Fig. 1 **a** Transmesosigmoid hernia before reduction, demonstrating strangulated necrosed small bowel herniating through sigmoid mesocolon demarcated with line of demarcation, **b** reduction of transmesosigmoid hernia and **c** defect in sigmoid mesentery

during fetal development [5]. Alternatively the mesentery can be torn following abdominal trauma [6].

In cases of transmesosigmoid hernias, patients tend to present acutely with abdominal pain and signs of small bowel obstruction [7, 8]. However, making a preoperative diagnosis of an internal hernia can be difficult. Radiological investigations such as CT of the abdomen or a small bowel contrast study can be invaluable [9].

The management of internal hernias requires reduction of the hernia and repair of the defect by either a laparoscopic or open approach. In these cases, patients presented with septic shock with provisional diagnosis of bowel gangrene or closed-loop obstruction which needed exploratory laparotomy. Considering general and bowel condition of the patient, stoma was made. This case highlights a rare cause of intestinal obstruction in a patient with no previous abdominal surgery. In cases of small bowel obstruction without previous abdominal surgery, a congenital internal hernia should be considered. Prompt diagnosis and intervention enabling active management are paramount.

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