Int Surg 2013;**98:**409–411
DOI: 10.9738/INTSURG-D-13-00114.1

Case Report

Small Intestinal Strangulation Due to a Rare Type of Primary Internal Hernia

Makoto Takeda[1], Yoshinori Ohnuki[2], Takashi Uchiyama[2], Osamu Kubota[2], Kousuke Ohishi[2]

[1]*Second Department of Surgery, Hamamatsu University School of Medicine, Hamamatsu, Japan*

[2]*Department of Surgery, Kikugawa General Hospital, Kikugawa, Japan*

Internal hernias in which the gate is located in the paracolic gutter are rare. A 75-year-old man was admitted to our hospital with severe epigastric pain without past history of laparotomy and/or trauma. He was diagnosed with strangulation of the ileum by the findings of computed tomography, and the operation was performed. During laparotomy, the small intestine was found to be strangulated and to enter the retroperitoneum from the right paracolic gutter near the hepatic flexure. The patient was diagnosed with an internal hernia, which differed from a pericecal hernia in that the hernia gate was located along the paracolic gutter near the hepatic flexure far from the cecum. Hence, it was considered to be a rare type of internal hernia. We report the clinical presentation and imaging findings of this rare internal hernia.

Key words: Internal hernia – Paracolic gutter

An internal hernia is a rare condition defined as the protrusion of abdominal viscera into one of the fossae, foramina, recesses, or congenital defects within the abdominal and pelvic cavity. Internal hernias are generally classified into 6 types: paraduodenal, pericecal, foramen of Winslow, transmesenteric, pelvic and supravesical, and intersigmoid.[1–3]

A pericecal hernia is a typical form of internal hernia and can be divided into 4 types: superior ileocecal recess, inferior ileocecal recess, retrocecal recess, and paracolic sulcus.[2] Although our case displayed similar features to the paracolic sulcus type of pericecal hernia, it differed from a pericecal hernia in that the hernia gate was located along the right

Corresponding author: Makoto Takeda, MD, Second Department of Surgery, Hamamatsu University School of Medicine, 1-20-1 Handayama, Higashi-ku, Hamamatsu 431-3192, Japan.
Tel.: 81 53 435 2279; Fax: 81 53 435 2273; E-mail: takedamakoto1977@yahoo.co.jp

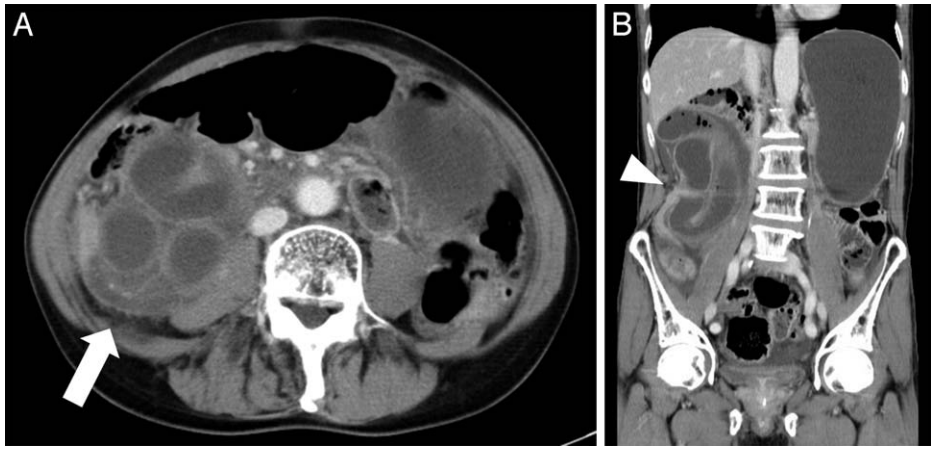

Fig. 1 (A) In an enhanced CT examination, it was found that a dilated region of the small intestine was gathered in the right upper abdomen, and weaker wall enhancement was also detected (horizontal image, arrow). (B) The undilated region of the small intestine extended into the dilated region (coronal image, arrowhead).

paracolic gutter near the hepatic flexure. We describe this case including its imaging features.

Case Report

A 75-year-old man, with no past history of laparotomy and/or trauma, presented with a chief complaint of epigastralgia. During a physical examination, tenderness, rebound tenderness, and muscle rigidity were detected in the right hypochondrium. Abdominal enhanced computed tomography (CT) demonstrated that a dilated portion of the small intestine occupied the cavity, which was surrounded by the third portion of the duodenum on the cranial side, the anterior renal fascia on the dorsal side, the mesentery of the ascending colon on

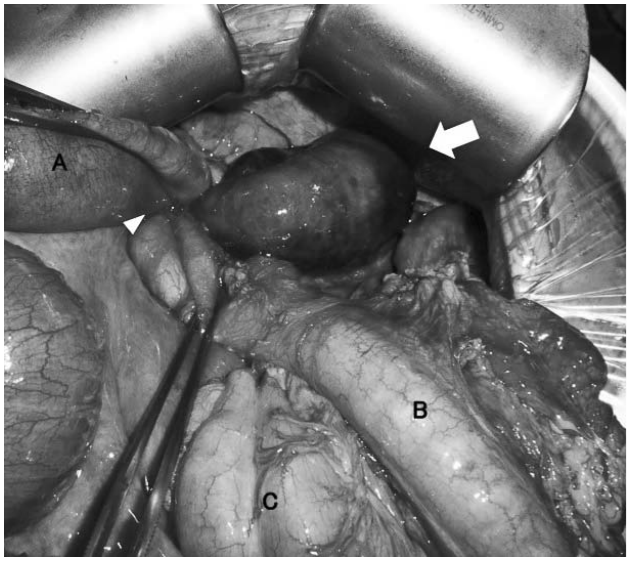

Fig. 2 (A) Dilated ileum. (B) Transverse colon. (C) Stomach. The hernia sac, which contained the necrotic region of the small intestine and was located in the dorsal cavity of the mesentery of the transverse colon, was opened (arrow). The small intestine passed into the hernia sac (arrowhead). The hernia gate was located along the right paracolic gutter near the hepatic flexure.

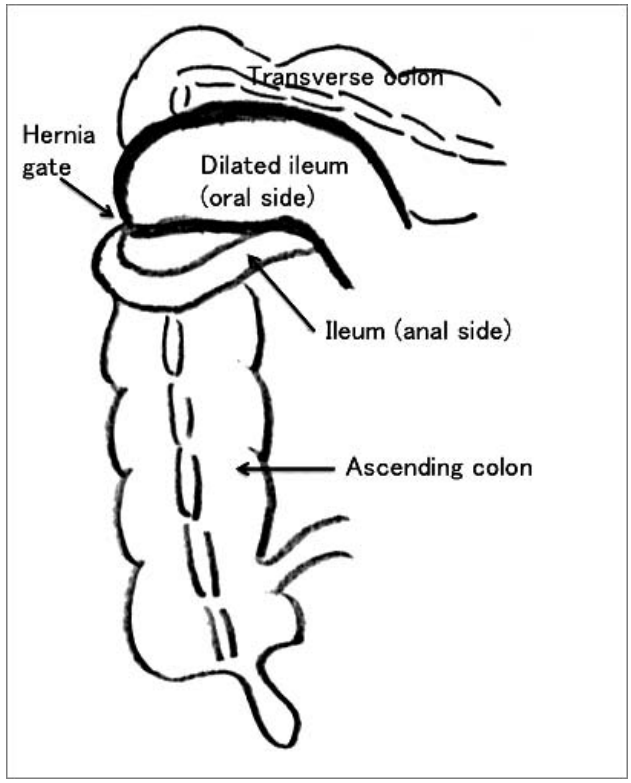

Fig. 3 Schema of the operation revealed the hernia gate was along right paracolic gutter near hepatic flexure.

the ventral side, and the mesentery of the transverse colon on the left side. The small intestine was dilated and displayed ascites. In addition, the wall enhancement in this region was weaker than in other areas (Fig. 1A and 1B). Strangulation of the small intestine was diagnosed clinically, and open laparotomy was performed. The small intestine was found to enter the retroperitoneum from the right paracolic gutter near the hepatic flexure, and a hernial sac located on the dorsal aspect of the mesentery of the transverse colon was pressing upon the third portion of the duodenum, extended into the retroperitoneal region. The hernia sac contained a strangulated portion of the small intestine (Figs. 2 and 3). Thus, the hernia gate was opened, and then the incarcerated small intestine was removed from the hernia sac and resected. The cecum and ascending colon were fixed in position, and no malrotation of the intestine was detected. The patient had an unremarkable postoperative course.

Discussion

Although the autopsy incidence of internal hernia (IH) has been reported to range from 0.2% to 0.9%,[4] IHs constitute up to 5.8% cases of small bowel obstruction.[5] IH is defined as the protrusion of an organ into pouches or openings in the peritoneum. In contrast, standard hernias protrude through defects in the retaining walls of the abdomen.[6] Clinically, IH can be asymptomatic or cause significant discomfort ranging from constant vague epigastric pain to intermittent colicky periumbilical pain.[5] As no specific symptoms are associated with the condition, it is rarely diagnosed preoperatively. However, CT has become the first-line imaging technique in patients with suspected IH because IHs are often difficult to identify clinically.[5] Our case was preoperatively diagnosed as strangulation of the ileum on CT examination. As the present IH was a rare type, we considered that it would be difficult to diagnose preoperatively. However, retrospectively, the amount of ileal dilation and the amount of ileum entering the hernial sac were regarded as clinically helpful CT features of this lesion. As one of the CT findings about pericecal hernia, it was reported that the dilation of small intestine loops with transitional zone to the cecum or edematous small bowel located lateral to the cecum.[7] The aforementioned findings involving our case can be helpful for the accurate preoperative diagnosis for IH.

The classification of internal abdominal herniations devised by Ghahremani[3] is well accepted. In this classification, internal abdominal herniations are divided into 6 types: paraduodenal hernias (which account for 50%–55% of internal abdominal hernias), hernias that pass through the foramen of Winslow (6%–10%), transmesenteric hernias (8%–10%), pericecal hernias (10%–15%), intersigmoid hernias (4%–8%), and paravesical hernias (<4%). Our case displayed similar features to pericecal hernia, which can be further categorized into 4 types: superior ileocecal recess, inferior ileocecal recess, retrocecal recess, and paracolic sulcus.[2] Although the present lesion resembled a paracolic sulcus, it differed from a pericecal hernia in that the hernia gate was located along the right paracolic gutter near the hepatic flexure. Therefore, it was considered to be a very rare type of internal hernia. Moreover, the patient did not have a past history of laparotomy nor was any malrotation of the intestine detected. In a histopathologic examination, the resected ileum displayed necrotic and hemorrhagic changes in each layer. In particular, strong edema together with congestion and hemorrhagic changes were detected in the submucosa suggesting the intermittent circulatory disturbances. So, we considered that acquired physical adhesion occurred in the right paracolic gutter resulting in the development of a fossa along the right paracolic gutter, which subsequently became a hernia gate, judging from the histopathologic findings.

When strangulation of the intestine is suspected, an internal hernia similar to that seen in our case should be considered.

References

1. Ghahremani GG. Internal abdominal hernias. *Surg Clin North Am* 1984;**64**(2):393–406
2. Rivkind AI, Shiloni E, Muggia-Sullam M. Paracecal hernia: a cause of internal obstruction. *Dis Colon Rectum* 1986;**29**(11):752–754
3. Ghahremani GG. Abdominal and pelvic hernias. In: Gore RM, Levine MS, eds. *Textbook of Gastrointestinal Radiology.* 2nd ed. Philadelphia, PA: Saunders, 2000:1993–2009
4. Aggarwal BK, Rajan S, Aggarwal A, Gothi R, Sharma R, Tandon V. CT diagnosis of Meckel diverticulum in a paracolic internal hernia. *Abdom Imaging* 2005:**30**(1):56–59
5. Martin LC, Merkle EM, Thompson WM. Review of internal hernias: radiographic and clinical findings. *AJR Am J Roentgenol* 2006;**186**(3):703–717
6. Steinke CR. Internal hernia, three additional case reports. *Arch Surg* 1932;**25**(5):909–925
7. Lu HC, Wang J, Tsang YM. Pericecal hernia: a report of two cases and survey of the literature. *Clin Radiol* 2002;**57**(XX):855–858