Case Report

Strangulated obstruction caused by a transomental hernia

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Abstract

We herein report a rare case of a strangulated obstruction of the small intestine caused by a transomental hernia. A 66-year-old male was brought from another hospital by ambulance due to strangulated small bowel obstruction. He had no history of surgery. He had an acute onset of abdominal pain with nausea, vomiting and abdominal distension. Other symptoms were tachycardia, low blood pressure, abdominal tenderness in physical examinations, inflammatory changes, and metabolic acidosis in the blood analysis. Abdominal computed tomography showed a marked dilatation of the small intestine, which was poorly enhanced with massive ascites. In addition, no mesenteric vascular occlusion but the radial distribution of the mesentery anterior to the transverse colon was observed. A diagnosis of strangulated obstruction was made, and emergency surgery was performed. Intraoperatively, massive bloody ascites were observed and the small intestine was incarcerated through a hiatus of the greater omentum with necrosis. We performed an open incision of the hiatus to release the incarceration and then resected the necrotic portion. The postoperative course was favorable and the patient was discharged on hospital day 10. This case emphasizes the importance of internal hernias, including considering a transomental hernia as a potential cause of an interstinal obstruction in patients without a history of surgery.
（Key words: transomental hernia, strangulated obstruction, internal hernia）

Introduction

We often deal with bowel obstruction in daily medical treatment, but an internal hernia is relatively rare condition. In particular, a transomental hernia, which is formed by incarceration through an abnormal hiatus of the greater omentum, is extremely rare. We herein report the case of a strangulated obstruction caused by a transomental hernia.

Case report

A 66-year-old male was admitted to the emergency room from another hospital with upper abdominal pain, nausea, vomiting and abdominal distension which persisted from the morning with occasional relief, due to the suspicion of strangulated obstruction. The abdominal pain had been present for 18 hours. He had previously had a gastric ulcer and bilateral ureteral lithiasis, but had no history of abdominal surgery.

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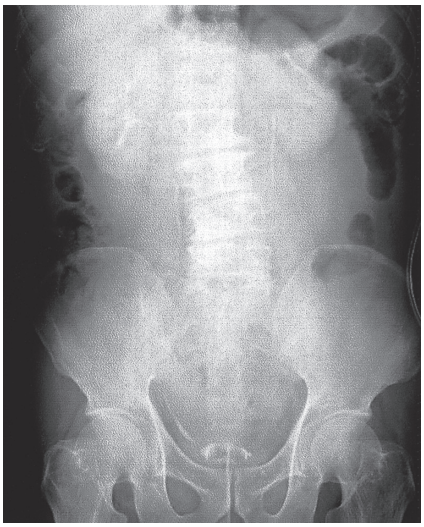

Fig. 1
An abdominal X-ray demonstrated the dilated small bowel loops and gasless abdomen in the center. Intestinal gas shadows were observed to move toward the bilateral and upper side.

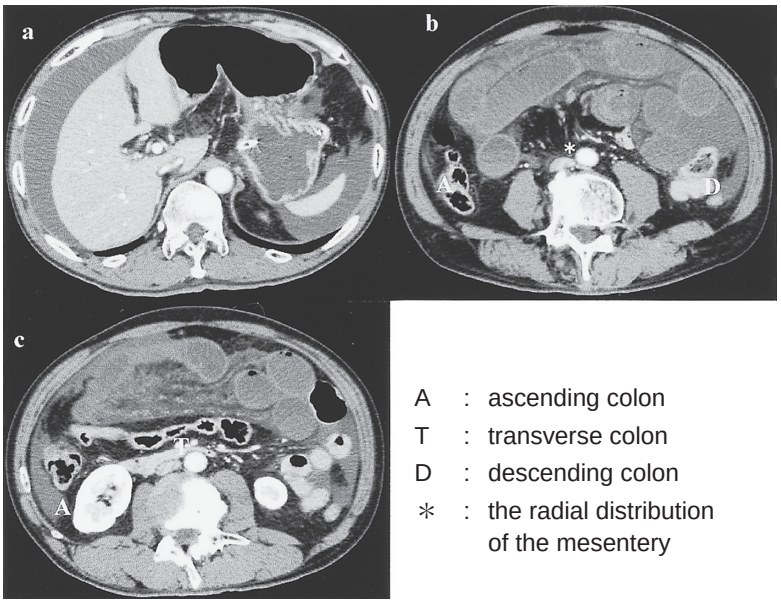

Fig. 2
Contrast-enhanced CT showed massive ascites (a) and marked dilatation of the small intestine which was poorly enhanced and located over the ascending, transverse and descending colon (b) (c). That revealed the radial distribution of the mesentery which appears to represent mesenteric convergence. (b).

His family history was not significant. On physical examination, he was mentally alert and afebrile. His blood pressure was 110/72 mmHg and his pulse was 130 beats per min because he was dehydrated. His extremities were cold and clammy. His abdomen was distended with tenderness around the upper abdominal area but no rebound tenderness and no guarding (he had already received analgesics). Laboratory investigations showed a white blood cell count of 17570/mm^3, a red blood cell count of $513 \times 10^4/mm^3$ and a hemoglobin level of 16.7 g/dl. The serum chemistry tests were as follows : CRP 1.78 mg/dl, CPK 156 mU/ml, BUN 21 mg/d, Cre 1.22 mg/dl, TP 4.2 g/dl, Alb 2.2 g/dl. These results revealed his extremely dehydrated state. In addition, the blood gas tests revealed metabolic acidosis (pH 7.397, PO_2 99.0, PCO_2 34.3, BE –3.2). An abdominal X-ray demonstrated a dilatation of the stomach, dilated small bowel loops, and gasless abdomen in the center. Intestinal gas shadows were observed near the bilateral and upper side (Fig. 1). Abdominal computed tomography (CT) showed massive ascites and marked dilatation of the small intestine, which was poorly enhanced and located over the ascending, transverse and descending colon. No mesenteric vascular occlusions were observed, but CT revealed the radial distribution of the mesentery that is the convergence of the crowed and engorged mesenteric vessels. (Fig. 2a, b, c). The presence of bloody ascites was confirmed by a paracentesis. A diagnosis of strangulated ileus was made and an emergency operation was thus performed.

We thereafter performed a laparotomy under general anesthesia. Intraoperatively, about 2500 ml of massive bloody ascites and a dilated small intestine, which was edematous and dark red, were observed. A 200-cm portion of the small intestine at about 160 cm distal from the Treitz ligament was incarcerated through an abnormal hiatus of the greater omentum with necrosis (Fig. 3). We performed an open incision of the hiatus of the omentum to release the incarceration and then resected the necrotic portion. The pathological findings revealed hemorrhagic necrosis. The postoperative course was favorable and the patient was discharged on hospital day 10.

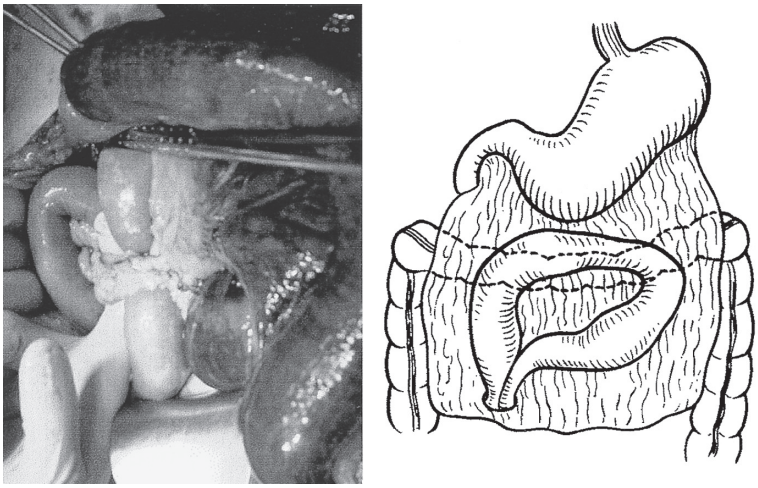

Fig. 3
Intraoperatively, massive bloody ascites and a dilated small intestine, which was edematous and dark red, were observed. The small intestine was incarcerated through an abnormal hiatus of the greater omentum with necrosis.

Discussion

An internal hernia was defined by Steinke[1] in 1932 as the protrusion of a viscus segment through the fossa, fovea and foramen that are unusually large in the peritoneal cavity. Of all intestinal obstructions, 0.7～4.1% are caused by internal hernia[2)3)]. Transomental hernia is one of the rarest types of internal abdominal hernias, accounting for 1～8.9% of internal hernias[4)5)]. Various causes of the omental defect have been suggested. These include a congenital or acquired origin, such as trauma, inflammation and atrophy of old age[1)6)]. In this case, there was no history of surgery or trauma and no atrophy of the omentum intraoperatively, so its etiology is unknown.

Yamaguchi[8)] classified the transomental hernia as Type A, B, and C (Fig. 4). According to Tsuchida et al[9)] who analyzed 188 cases of transomental hernia in Japan, males accounted for 104 more cases than females. The reported age range was from 4 to 95 years. Type B was not detected. Type A was slightly more than Type C and the elderly patient dominated Type A. This case was Type A.

Patients with a transomental hernia usually have vague symptoms of bowel obstruction, which become worse as strangulation and gangrene ensue. Therefore, it takes a long time to diagnose ileus[6)]. It is said that this factor is also of particular importance in elderly patients[7)]. Tsuchida et al[9)] reported that 73 of 188 cases (38.8%) had to undergo a bowel resection due to a delay in diagnosis and the decision to perform surgery, which is a relatively high ratio. In Japan, only 6.9% of all cases could be diagnosed preoperatively, but an increased preoperative diagnosis is now expected in the future, according to reports in the literature, due to recent advances in diagnostic modalities such as CT[10)11)12)13)14)]. The characteristic findings on CT are the radial distribution of the mesentery which represents the convergence of the mesenteric vessels and the localized small intestine over the colon[10)11)12)13)14)]. Retrospectively, the CT in

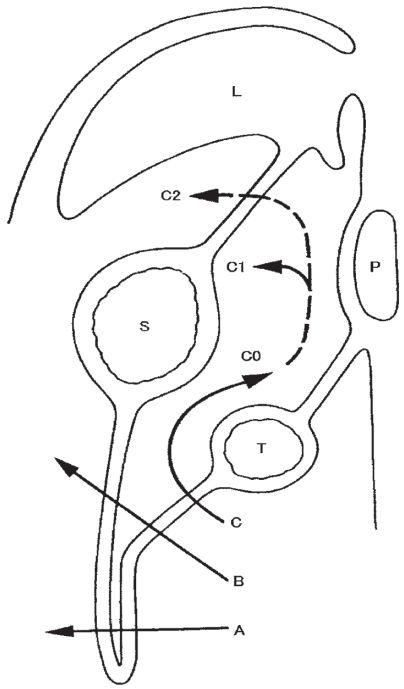

Fig. 4
Types of transomental hernia according to the classifications of Yamaguchi[8)] (The picture is quoted from the reference 8))

Type A : PC → GM → PC
Type B : PC → OB → PC
Type C : PC → OB (C0)
→ OB → WP → PC (C1)
→ OB → LO → PC (C2)

L : Liver
S : Stomach
T : Transverse colon
P : Pancreas

PC : Peritoneal cavity
GM : Greater omentum
OB : Omental bursa
WP : Winslow's pouch
LO : Lesser omentum

this case showed the dilated small intestine with the radial distribution of the mesentery located over the ascending, transverse and descending colon（Fig. 2b, c）. We could diagnose strangulated obstruction but could not define a transomental hernia because of a lack of knowledge about the characteristic findings of such a hernia on CT. Internal hernias, including transomental hernias, can be diagnosed using abdominal CT by confirming the anatomic relationships of the organs. A resection of the intestine may be avoided with an early diagnosis. However, we must pay careful attention, as it has been reported that the characteristic findings of CT are not always present[15].

In the literature, laparoscopy appears to be effective for diagnosing acute abdomen which is often difficult to diagnose by preoperative examinations for diagnostic confirmation and treatment planning[9)16)17)], and laparoscopic surgery with small wounds decreases adhesion formation which can lead to ileus after operation. In addition, it would be possible to immediately conduct a laparotomy if a strangulated obstruction with necrosis was observed. However, in this case, it was difficult to perform the laparoscopic procedure because of the massive ascites and the extremely dilatated intestine.

Transomental hernia is a rare condition that is difficult to diagnose preoperatively, but it may be easily diagnosed by characteristic findings on CT if it is kept in mind as a probable diagnosis. As a result, it may now be possible to diagnose and treat this condition earlier than had previously been the case.

References

1）Steinke CR : Internal hernia : Three additional case reports. Arch Surg 25 : 909-925, 1932
2）Onda M, Takasaki H, Furukawa K et al. : Nationwide Investigation of 21,899 Cases of Intestinal Obstruction. Nihon Fukubu kyukyu Igaku 20 : 629-636, 2000（in Japanese）
3）Jimmy C.M. Li, David W. Chu et al. : Small-bowel Intestinal Obstruction Caused by an Unusual Internal Hernia. Asian Journal of Surg 28 : 62-64, 2005
4）Stewart JOR : Transepiploic hernia. Brit J Surg 49 : 649-652, 1962
5）Junji AMANO : Diagnosis and treatment of internal hernia. Surgery MOOK, Kanehara & Co., Tokyo 52 : 85-96, 1989（in Japanese）
6）Hull, J. D. : Transomental hernia. Am. Surg, 42 : 278-284, 1976
7）Watt, P. C. H. : Transomental hernia causing intestinal obstruction in elderly patient. Postgrad. Med. J. 59 : 790, 1983
8）Yamaguchi T. : A case of incarceration of sigmoid colon into hiatus of greater omentum. Rinsho Geka 33 : 1041-1045, 1978（in Japanese）
9）Tsuchida K, Yoneyama K, Sasaki K et al. : A Case of Strangulated Obstruction Caused by Transomental Hernia : Useful to Use Laparoscopy for Diagnosis – With Reference to the Literature on Previously Reported Cases –. Jpn J Gastroenterol Surg 37 : 440-445, 2004（in Japanese）
10）Uehara K, Hasegawa H, Ogiso S et al. : A case of transepiploic hernia successfully diagnosed preoperatively. Nihonrinshogeka 60（7）: 1930-1933, 1999（in Japanese）
11）Takada T, Yoshida H, Tsukada M et al. : A Case of Transomental Hernia in A 95-Year-old Woman. Jpn J Gastroenterol Surg 34 : 244-248, 2001（in Japanese）
12）Nakashima Y, Tachibana M, Yamaguchi E et al. : A case of transomental hernia diagnosed preoperatively by abdominal CT scan. Nihonrinshogeka 67（10）: 2490-2493, 2006（in Japanese）
13）Takagi Y, Yasuda K, Nakada T et al. : A case of strangulated transomental hernia diagnosed preopera-

tively. Am J Gastroenterol 91(8): 1659-60, 1996
14) Delabrousse E, Couvreur M, Saguet O et al. : Strangulated transomental hernia : CT findings. Abdom Imaging 26(1): 86-88, 2001
15) Ochiai H, Chi-Horng Shih, Hattori H et al. : A case of trans-omental hernia. Shokakigeka 24 : 1705-1707, 2001 (in Japanese)
16) Naoto Fukuda, Akihiko Tachibana, Shigeru Sakai et al : Effect of Laparoscopy on Acute Abdomen Difficult to Diagnose Preoperatively. Nihon Fukubu kyukyu Igaku 21(3): 549-553, 2001 (in Japanese)
17) Morikawa T, Wada Y, Sakata N et al. : A case of transepiploic hernia repaired by laparoscopic surgery. Nihonrinshogeka 67 : 1423-1427, 2006 (in Japanese)

大網裂孔ヘルニアによる絞扼性イレウスの１例

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小西　文雄

要　約

症例は66歳男性。特記すべき既往歴や開腹歴はなし。2006年10月某日，早朝より嘔気，嘔吐伴う上腹部痛出現。近医で加療され一旦帰宅したが，夕方より再び症状増悪し他院受診。腹部膨満，腹膜刺激症状，血圧低下，頻脈，白血球上昇，アシドーシス認め当院に紹介となった。腹部造影 CT では著明な腹水貯留とともに造影効果の乏しい拡張した小腸を認めた。腸間膜動静脈は異常なかったが，横行結腸上に向かって腸間膜の集束像がみられ絞扼性イレウスと診断，同日緊急手術となった。開腹時腹腔内に2500ml の血性腹水を認めた。Treitz 靱帯から160㎝，回腸末端から90㎝の小腸が大網裂孔に嵌入絞扼され，約200㎝にわたり壊死していた。裂孔部を開放し小腸切除術を施行した。術後経過は良好であった。

自治医科大学附属さいたま医療センター　一般消化器外科