

A Case of an Intramesosigmoid Hernia

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Abstract

We report an extremely rare case of an intramesosigmoid hernia with small bowel herniation in a defect on the right (medial) leaf of the mesosigmoid. A 46-year-old man was admitted to the hospital complaining of lower abdominal pain, nausea, and vomiting for 6 days. He had undergone an operation for a right inguinal hernia and an appendectomy during childhood. An abdominal X-ray film obtained at admission showed small bowel gas with niveau formation which was diagnosed as small-bowel obstruction. A decompression tube was immediately inserted, and the symptoms subsided. Enterography revealed two strictures separated by approximately 10 cm. However, the contrast medium flowed smoothly through the anal side of the strictures. After the decompression tube was removed, small-bowel obstruction recurred, and laparotomy was performed on the 18th day after admission. During the operation, small bowel herniation with a 4 × 3-cm defect was found on the right leaf of the mesosigmoid, and intramesosigmoid hernia was finally determined to be the cause of the small-bowel obstruction. The resection of the incarcerated part was necessary because a large amount of scar tissue was present on the surface. The postoperative course was uneventful, and no recurrence was observed after discharge. A review of this case indicated that the diagnosis might have been successfully obtained with enterography. Although we did not choose laparoscopic surgery, this surgical modality may also be an appropriate treatment for this disease.

(J Nippon Med Sch 2009; 76: 13–18)

Key words: intramesosigmoid hernia, internal hernia, small-bowel obstruction

Introduction

Internal hernias are protrusions into pouches or openings in the visceral peritoneum, in contrast to hernias that protrude through defects in the retaining walls of the abdomen. Janin et al.¹ have

reported that in a series of 3,189 patients with acute intestinal obstruction, 57 patients (1.78%) had internal hernias, excluding those with internal hernias created by a previous laparotomy. Moreover, internal hernias involving the sigmoid mesocolon are an extremely rare type of internal hernia². We report a case of intramesosigmoid hernia with small

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bowel herniation in a defect of the right (medial) leaf of the mesosigmoid.

Case Report



Fig. 1 An abdominal X-ray film obtained at admission showed small intestinal gas with niveau formation which was diagnosed as a developing intestinal obstruction.

A 46-year-old man was admitted to the hospital complaining of lower abdominal pain, nausea, and vomiting for 6 days. He had undergone an operation for a right inguinal hernia at 3 years of age and an appendectomy at 6 years. Examination at admission showed a body temperature of 36.2°C, a blood pressure of 128/82 mmHg, and a heart rate of 64 bpm. An abdominal X-ray film showed small intestinal gas with niveau formation which was diagnosed as a developing intestinal obstruction (**Fig. 1**). The laboratory findings at the time of admission indicated a slight elevation of the C-reactive protein level, hypochloremia, and dehydration (**Table 1**). Abdominal computed tomography (CT) showed an obstruction of the small intestine in the lower left quadrant with proximal dilatation (**Fig. 2**). A decompression tube was inserted, and the symptoms had subsided 5 days after admission. Enterography revealed 2 strictures separated by approximately 10 cm; however, contrast medium smoothly flowed through the

Table 1 Laboratory findings on the admission

WBC	8,600 / μ L	GOT	23 IU/L	TP	7.7 g/dL
RBC	554 / μ L	GPT	11 IU/L	Alb	5.0 g/dL
Hb	18.3 g/dL	LDH	433 IU/L	CRP	1.14 mg/dL
Ht	51.1 %	AMY	66 IU/L		
Plt	37.1×10^4 / μ L	CPK	64 IU/L		
		BUN	46.5 mg/dL		
		CRE	1.43 mg/dL		
		Na	134 mEq/L		
		K	4.3 mEq/L		
		Cl	86 mEq/L		

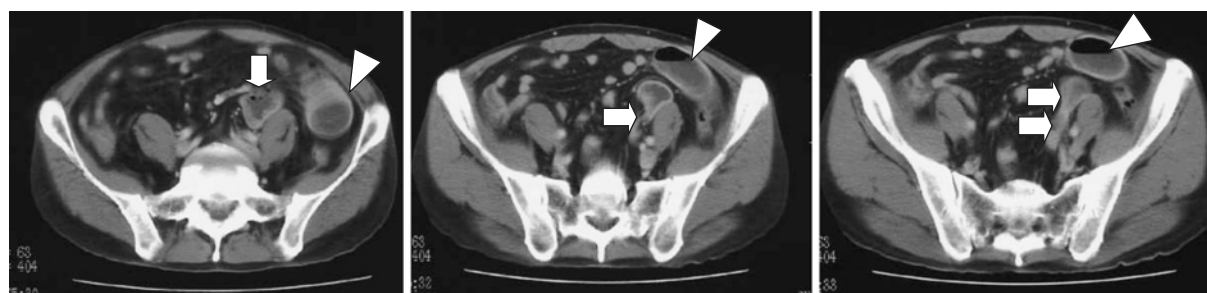


Fig. 2 Abdominal CT showed an obstruction of the small intestine in the left lower quadrant (**arrow**) and dilatation of the oral side (**arrow head**).

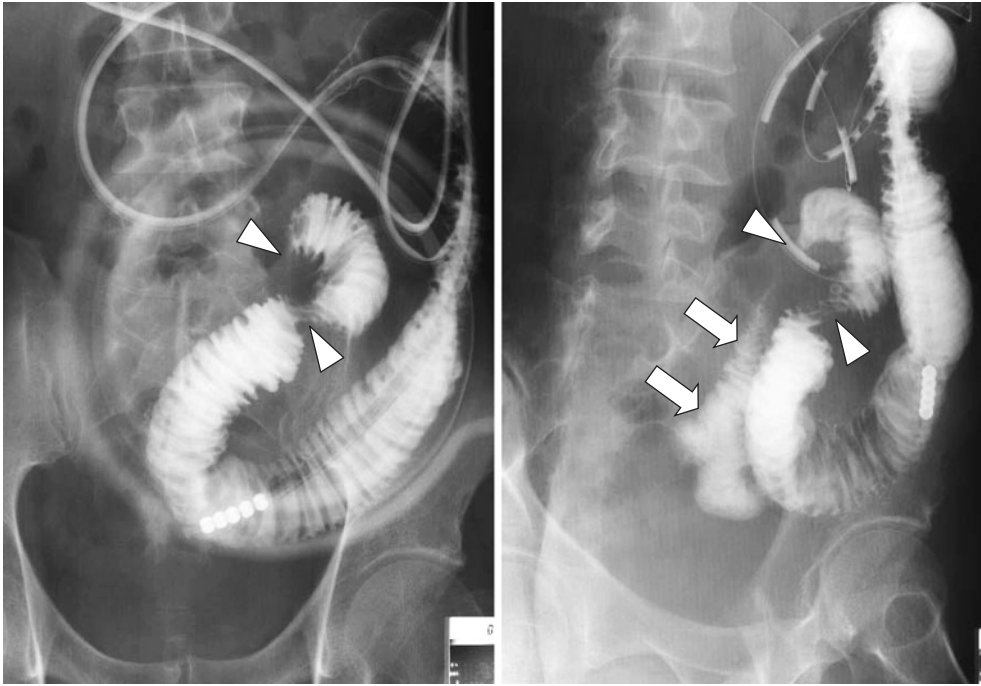


Fig. 3 Enterography revealed two strictures separated by 10 cm (**arrow head**). However, the contrast medium smoothly flowed through the stricture to the anal side (**arrow**).

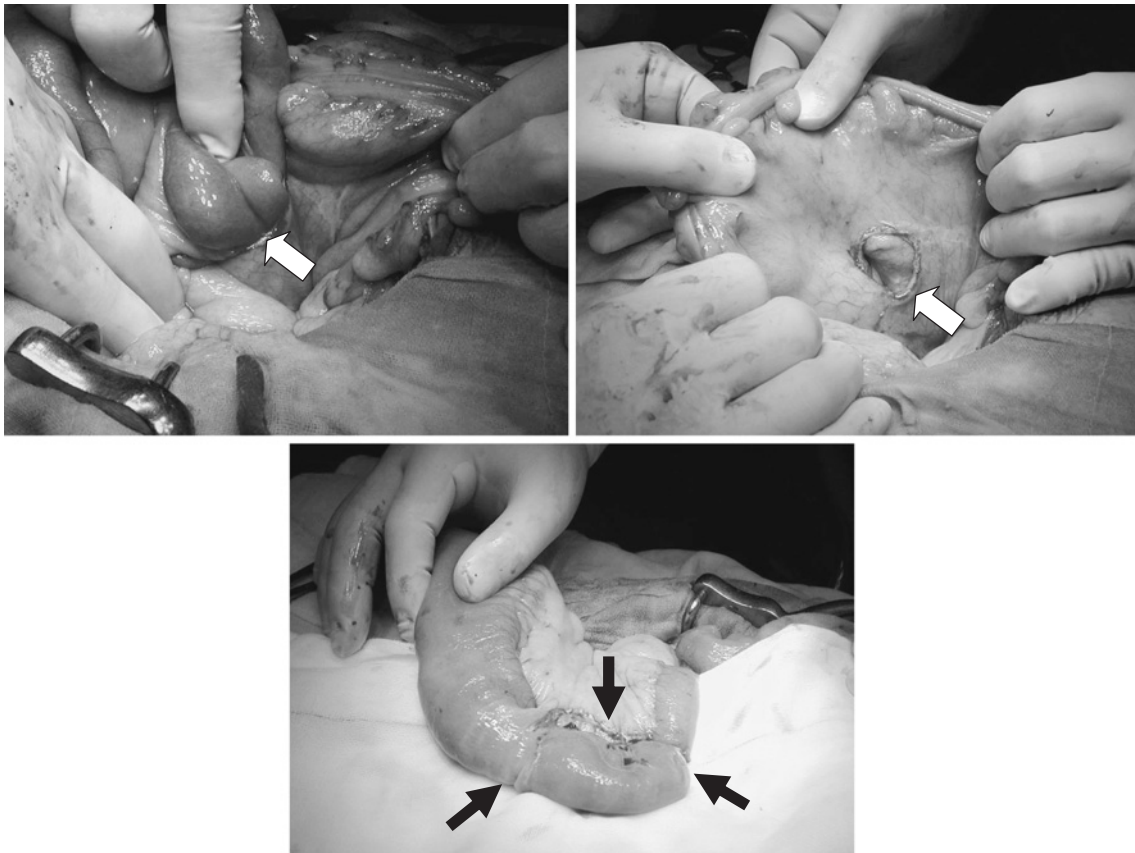


Fig. 4 Intraoperative view. A small bowel herniation with a 4×3-cm defect on the right lobe of the mesosigmoid was found (**white arrow**). The hernia was reduced, and the defect in the mesosigmoid was closed. The incarcerated part of the small intestine was viable; however, scar tissue on the surface was marked (**black arrow**). The incarcerated part was resected.

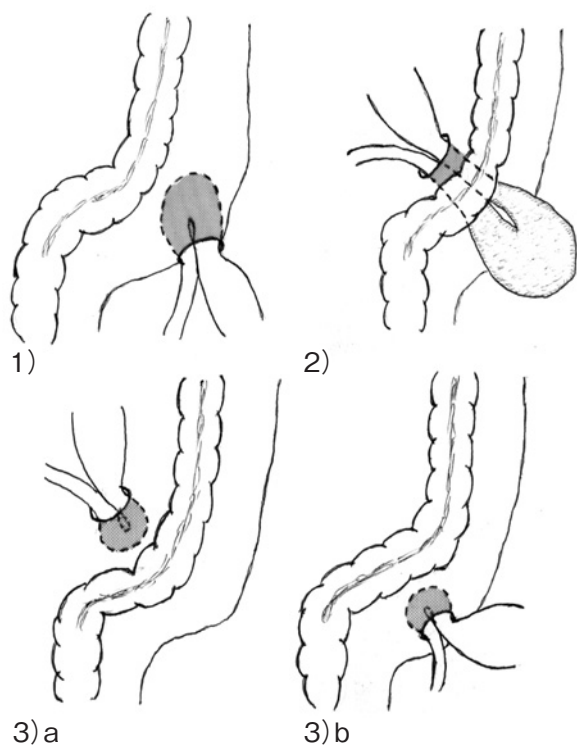


Fig. 5 Subtypes of internal hernias involving the mesosigmoid⁷

- 1): Intersigmoid hernia: Herniation into the intersigmoid fossa, which is a congenital fossa situated at the attachment of the lateral aspect of the mesosigmoid.
- 2): Transmesosigmoid hernia: Herniation arises through a defect of the mesosigmoid. No hernial sac is present.
- 3): Intramesosigmoid hernia: The hernia orifice is found in the 3)a: medial (right) or 3)b: lateral (left) surface of the mesosigmoid. The hernial sac lies within the mesosigmoid itself. The present case conformed to type 3)a.

stricture lesions to the anal side (**Fig. 3**). After the decompression tube was removed, regular meals were restarted. However, small-bowel obstruction immediately recurred, and we concluded that intestinal adhesion was the cause. A laparotomy was performed on the 18th day, which was 24 days since the onset of symptoms. During the operation, small bowel herniation with a 4 × 3-cm defect was found on the right (medial) leaf of the mesosigmoid, and an intramesosigmoid hernia was finally determined to be the cause of small-bowel obstruction (**Fig. 4**). The herniated small intestine was returned, and the defect in the mesosigmoid was closed. The incarcerated part of the small intestine was viable

but had a large amount of scar tissue on its surface. Because the incarcerated segment was at risk for postoperative stricture, it was resected, and partial enterectomy was performed. The postoperative course was uneventful, and no recurrence was observed after discharge.

Discussion

The incidence of internal hernias ranges from 0.6% to 5.8% of all small-bowel obstructions, according to a review by Newsom et al.³ A nationwide study of 21,899 cases of intestinal obstruction in Japan showed an incidence of internal hernia of 0.7%.⁴ On the other hand, Hansmann et al.² have reported that hernias involving the mesosigmoid account for only about 6% of all internal hernias. Therefore, the current patient had an extremely uncommon cause of an internal hernia, which occurred in a defect of the mesosigmoid.

The etiology of internal hernias occurring in a defect of the intestinal mesentery is unknown. Both congenital and acquired bases for these defects have been considered¹. Because the present patient had no history of trauma and no post operative adhesions due to the appendectomy near the defect of the mesosigmoid, the acquired basis can be ruled out. The incidence of internal hernia at autopsy is 0.2% to 2%^{5,6}; most hernias are asymptomatic⁶. Janin et al.¹ have reported that 17% of patients with mesenteric hernia have intermittent severe abdominal pain, occasionally associated with vomiting and constipation, which resolves spontaneously. The present patient did not have such symptoms. Benson et al.⁷ have classified internal hernias involving the mesosigmoid into 3 types: 1) intersigmoid, 2) transmesosigmoid, and 3) intramesosigmoid (**Fig. 5**). The present case was an intramesosigmoid hernia, in which the hernia orifice is on the medial surface of the mesosigmoid and the hernial sac lies within the mesosigmoid itself.

Preoperative diagnosis of an internal hernia is difficult⁶. Some recent reports describe the preoperative diagnosis of lesions involving the mesosigmoid⁸⁻¹⁰. Yang et al.⁸ have reported a case of a transmesosigmoid hernia which arose through a

Table 2 Summary of the reported cases of internal hernias involving the mesosigmoid in Japan (1942–2007)

	Intersigmoid	Transmesosigmoid	Intramesosigmoid
Total cases	34	30	47
Average day from onset to operation	8.4*	1.8*	11.7*
Bowel resection rate (%)	6/28* (21.4%)	14/26* (53.8%)	4/47 (8.5%)
Open laparotomy	32	30	41
Laparoscopic surgery	2	0	6

*: Only accountable numbers, on reference to the abstracts or papers, are shown.

defect of the mesosigmoid and which showed medial displacement of the sigmoid colon and a bird-beak sign of the afferent and efferent loops at the hernial ring on CT. Enterography is also a useful tool for the preoperative diagnosis of an intramesosigmoid hernia^{9,10}. On enterography the incarcerated part of the small bowel appears as a loop-shaped section with stenosis on the oral and anal sides. In the present case, CT revealed a small-bowel obstruction; however, the exact origin could not be found. On the other hand, enterography in the present case revealed a loop-shaped small intestine as mentioned above. We now believe that preoperative diagnosis of an intramesosigmoid hernia could have been made in the present case on the basis of those findings.

A summary of the reported cases of internal hernias involving the mesosigmoid in Japan is shown in **Table 2**. The mean interval from the onset of symptom to the operation is longest for intramesosigmoid hernias, and rate of enterectomy is highest for transmesosigmoid hernias. This may be explained by the fact that incarceration caused by a transmesosigmoid hernia would be accompanied by disruption of the blood, whereas such disruption would be rare with an intramesosigmoid hernia. Laparoscopic surgery, including laparoscopy-assisted surgery, was reported to be performed in 6 cases of intramesosigmoid hernias^{9,10} (**Table 2**). Laparoscopy is a useful tool for observing the location of the lesion¹¹ and allows minimally invasive surgical treatment. Because the present patient had been treated several years earlier, laparoscopic surgery

was not performed because the surgical team had insufficient experience with laparoscopic surgery for small-bowel obstruction of unknown origin. However, cases of small-bowel obstruction in which good bowel decompression has been achieved and the obstruction site has been identified are good candidates for laparoscopic treatment¹².

In summary, an extremely rare case of intramesosigmoid hernia with small bowel herniation in a defect on the right (medial) leaf of the mesosigmoid has been presented. The preoperative diagnosis of an intramesosigmoid hernia is difficult. A review of this case indicates that the diagnosis might have been successfully made with enterography. Moreover, minimally invasive surgery, such as laparoscopic surgery, may be beneficial for the treatment of intramesosigmoid hernia.

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(Received, September 10, 2008)

(Accepted, October 14, 2008)