

Internal Herniation with Fatal Outcome : Herniation Through an Unusual Apertura between Epiploic Appendices and Greater Omentum

H. Kulacoglu, H. Tumer, R. Aktimur, A. Kusdemir

Ataturk Teaching and Research Hospital, Ankara, Turkey.

Key words. Internal hernia ; intestinal obstruction ; bowel strangulation.

Abstract. Internal hernia is an unusual cause of intestinal obstruction. Herniation related to epiploic appendix is a very rare entity. We herein report a case of internal herniation due to an adhesion between epiploic appendixes and the greater omentum. A 71-year-old woman complaining of abdominal pain and intermittent nausea was operated on with the pre-operative diagnosis of intestinal obstruction. Three epiploic appendixes of the left side of the transverse colon and the corresponding part of the greater omentum had created a tunnel and a loop of small bowel 25 cm in length was strangulated. No resection was required after relieving the strangulation. However, the patient died due to massive myocardial infarction in the postoperative period. Internal herniation must be included in the differential diagnosis of patients with acute abdomen or intestinal obstruction. A high index of suspicion with prompt surgical intervention may be the key to the reduction of morbidity and mortality.

Introduction

Internal herniation is an unusual cause of intestinal obstruction. Herniation of the intestine may be through a normal anatomical apertura or an abnormal structure. The incidence of internal hernia among acute intestinal obstruction in the adult population has been reported as about 3% (1).

Epiploic appendixes are anatomic entities along the antimesenteric teniae coli. These structures may become torsioned and become inflamed. There are many reports on epiploic appendagitis in the literature. However, internal herniation related to epiploic appendix is a very rare entity (2, 3).

We herein report an interesting case of internal herniation due to an adhesion between epiploic appendixes and the greater omentum.

Case report

A 71-year-old woman complaining of abdominal pain and intermittent nausea was seen at the emergency department. According to the records she had first come to the department three days previously with the same complaint, and was sent home with a prescription for nonspecific dyspepsia. Her discomfort continued and she suffered more severe pain and vomiting after meals. However, she passed flatus occasionally. The patient had a history of chronic obstructive lung disease and hyper-

tension. Blood gas analysis showed severe hypoxia (pO_2 : 50.6 mmHg, saturation : 86.9%). Physical examination revealed epigastric tenderness at deep palpation with no rebound. Bowel sounds were present and abdominal distention was not remarkable. No rise in white blood cell count was seen and the patient was afebrile. The first plain abdominal X-ray revealed only one intestinal gas appearance at the left upper quadrant. However, as the findings in the patient's abdominal examination became worse, another X-ray was taken after a four-hour interval. It showed several air-fluid levels of small bowel located in the umbilical region and the left upper quadrant gas shadow was consistent (Fig. 1). Meanwhile, white blood cell count rose to 15400. Therefore, a laparotomy was decided.

At laparotomy, through a midline incision, she was found to have an internal herniation. Three epiploic appendixes of the left side of the transverse colon and the corresponding part of the greater omentum had created a tunnel and a loop of small bowel 25 cm in length, approximately 100 cm distal to the duodenojejunal flexure, was strangulated (Fig. 2). After relieving the strangulation and applying warm compresses, the colour of the bowel segment returned to normal. No resection was performed. The attachments between epiploic appendixes and the omentum were cut and the operation was ended.

In the early postoperative hours, the patient's blood pressure was stable at 95-107 mm Hg systolic and 65-73 mm Hg diastolic, with a pulse rate of 93-102/minute.

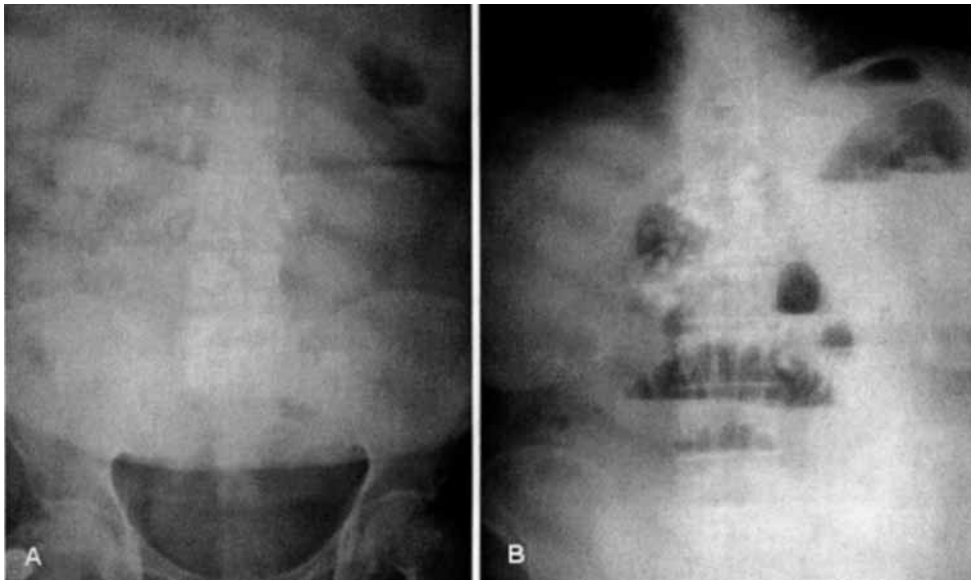


Fig. 1

The first plain abdominal X-ray was not diagnostic (A). The second X-ray taken after a four-hour interval showed small bowel obstruction signs ; air-fluid levels at the periumbilical region (B).

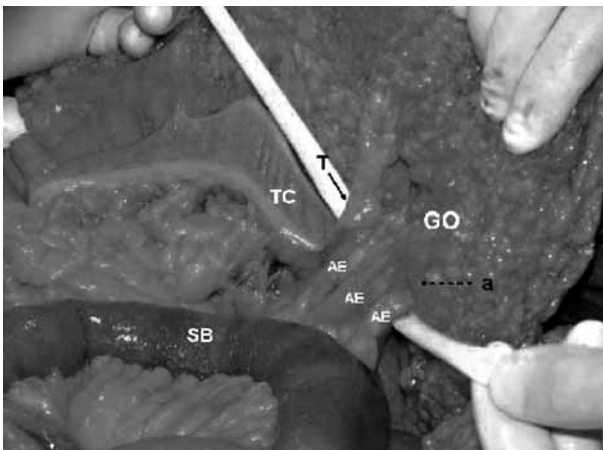


Fig. 2

Intra-operative findings. After relieving the herniation, oedematous small bowel loop is released and its colour partly changed (SB). A penrose drain is inserted through the tunnel (black arrow). The attachments between the greater omentum (GO) and three epiploic appendices (EA) are seen (a : dotted arrow). Transverse colon is completely normal (TC).

However, blood gas analysis still showed hypoxia. At the 4th postoperative hour she complained of an acute chest pain. Electrocardiography taken in the Intensive Care Unit revealed a massive inferior-right myocardial infarctus. Despite vigorous medical support the patient developed cardio-pulmonary arrest within one hour. She did not respond to cardiac resuscitation and died at the 6th postoperative hour.

Discussion

Internal hernia is a much rarer cause of acute intestinal obstruction than external hernias or postoperative intra-abdominal adhesions. It is the possible diagnosis when a patient with no history of laparotomy develops intestinal obstruction. The most common type of intestinal hernia is paramesocolic, formerly known as a paraduodenal hernia. Paramesocolic hernias are congenital and represent nearly half of the published cases (4). Patients are usually asymptomatic and the diagnosis is commonly made in the fourth decade.

Transmesenteric and transomental hernia cases have been reported as other causes of internal hernia (5, 6). There have also been some case reports in the literature involving the foramen of Winslow, the falciform ligaments, gastrocolic and gastrohepatic omenta (7-9). Transomental hernias mostly occur on the right side of the greater omentum. The origin of the omental defect may be congenital or acquired (6). On the other hand, epiploic appendix of the colon as the cause of internal herniation is an extremely rare source of herniation. Puppala and colleagues, in 1981, reported a single case due to an adhesion between epiploic appendix and abdominal wall secondary to epiploic appendagitis (2). Six years later, Krijgsman reported a very interesting case of internal herniation through a defect in an epiploica of the sigmoid colon (3). The patient had 30 cm of strangulated jejunum and recovered after resection and primary anastomosis.

In the present case, which is the third case in the literature to our knowledge, the abnormal apertura causing

herniation is a tunnel between epiploic appendixes of the transverse colon and the greater omentum. The patient had no history of abdominal trauma. The pathology did not seem to be an inflammatory adhesion; epiploic appendixes and omentum were normal in appearance. However, because of the patient's age it was hard to say that the tunnel was congenital in origin.

The main problem in the management of internal herniation is delay in diagnosis. This may cause bowel gangrene and increase the mortality rate to as high as 30% (10). Only in few cases can the correct diagnosis be made pre-operatively. Although some authors suggest that plain abdominal X-rays may be useful, the typical radiological signs of intestinal obstruction may be found in a later phase of the disease (5). Recently, computed tomography (CT) has gained a key role in the diagnosis of internal herniations following its increased use in acute abdomen (6). Nevertheless, CT could not be used in the present case due to a temporary technical problem in our centre. Conventional radiography indicated a small bowel obstruction with air-fluid levels in a late phase. However, no resection was required for bowel gangrene. Even though the surgical procedure was limited and short in time, the patient died due to myocardial infarction.

We believe that the delay in diagnosis contributed to the fatal outcome in the present case. For this reason, internal hernia must be included in the differential diagnosis of patients with acute abdomen or intestinal obstruction. A high index of suspicion may be the key in cases with an equivocal clinical picture, especially if the patient is elderly and has no history of abdominal surgery. The only way to reduce morbidity and mortality is prompt surgical intervention.

References

1. OZENC A., OZDEMIR A., COSKUN T. Internal hernia in adults. *Int Surg*, 1998, **83** : 167-70.
2. PUPPALA A. R., MUSTAFA S. G., MOORMAN R. H., HOWARD C. H. Small bowel obstruction due to disease of epiploic appendage. *Am J Gastro-enterol*, 1981, **75** : 382-3.
3. KRIJGSMAN B. Internal herniation through a colonic epiploca. *Surgery*, 1997, **122** : 643.
4. MORAN J. M., SALAS J., SANJUAN S., AMAYA J. L. Paramesocolic hernias : consequences of delayed diagnosis : report of three new cases. *J Pediatr Surg*, 2004, **39** : 112-6.
5. FUJITA A., TAKAYA J., TAKADA K. *et al.* Transmesenteric hernia : report of two patients with diagnostic emphasis on plain abdominal X-ray findings. *Eur J Pediatr*, 2003, **162** : 147-9.
6. DELABROUSSE E., COUVREUR M., SAGUET O., HEYD B., BRUNELLE S., KASTLER B. Strangulated transomentental hernia : CT findings. *Abdom Imaging*, 2001, **26** : 86-8.
7. CHUNG C. C., LEUNG K. L., LAU W. Y., LI A. K. Spontaneous internal herniation through the foramen of Winslow : a case report. *Can J Surg*, 1997, **40** : 64-5.
8. JAMIESON N. V. The "falciform ligament window". An unusual site for an internal hernia causing small bowel obstruction. *J R Coll Surg Edinb*, 1987, **32** : 374-5.
9. CHATTAPADHYAY T. K., SARATHY V. V., IYER K. S. Internal herniation through gastrocolic and gastrohepatic omenta. *Jpn J Surg*, 1982, **12** : 453-5.
10. NEWSOM B. D., KUKORA J. S. Congenital and acquired internal hernias : unusual causes of small bowel obstruction. *Am J Surg*, 1986, **152** : 279-85.

Dr. H. Kulacoglu
Bahcelievler, 1.cadde, 109/5
06490, Ankara, Turkey
Fax : + 90 312 417 04 06
E-mail : hakankulacoglu@superonline.com
hakan@kulacoglu.com.tr