CASE REPORT

An exceptional case of internal transomental hernia: Correlation between CT and surgical findings

Un cas exceptionnel de hernie interne transomentale : apport du scanner et corrélations imagerie–chirurgie


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Introduction

Internal herniation is an unusual cause of intestinal obstruction and transomental hernia is very rare, accounting for 1 to 4% of all internal hernias [1]. We report an illustrative case observed in a 79-year-old woman and confirmed surgically. The diagnosis was suggested by the abdominal scan.

Case report

A 79-year-old woman with no surgical history was admitted for an acute abdominal syndrome, which had developed rapidly over 48 h. The physical examination noted a rigid right hypochondrium with no audible bowel sounds. The hernia orifices were normal. The white cell count (14700/mm³) and CRP (34 mg/L) were elevated. A plain X-ray of the abdomen was obtained in the upright position and showed distended small bowel loops in the right infrahepatic region with no visible air-fluid level. Mechanical small bowel obstruction was suspected and a computed tomography (CT) of the abdomen and pelvis was ordered with contrast injection. The CT scan confirmed small bowel obstruction showing a cluster of dilated loops in a high anterior position in the right paracolic gutter, displacing the ascending colon and the cecum posteriorly and medially. There were signs of intestinal and mesenteric ischemia with defective enhancement of the walls of the encapsulated loops and effusion between the loops (Figs. 1–3). The diagnosis of internal hernia by strangulation was suggested. Emergency laparotomy via a subumbilical midline incision was undertaken. The exploration disclosed two necrotic ilial loops in the right hypochondrium with no audible bowel sounds. The hernia orifices were normal. The white cell count (14700/mm³) and CRP (34 mg/L) were elevated. A plain X-ray of the abdomen was obtained in the upright position and showed distended small bowel loops in the right infrahepatic region with no visible air-fluid level. Mechanical small bowel obstruction was suspected and a computed tomography (CT) of the abdomen and pelvis was ordered with contrast injection. The CT scan confirmed small bowel obstruction showing a cluster of dilated loops in a high anterior position in the right paracolic gutter, displacing the ascending colon and the cecum posteriorly and medially. There were signs of intestinal and mesenteric ischemia with defective enhancement of the walls of the encapsulated loops and effusion between the loops (Figs. 1–3). The diagnosis of internal hernia by strangulation was suggested. Emergency laparotomy via a subumbilical midline incision was undertaken. The exploration disclosed two necrotic ilial loops in the right hypochondrium with no audible bowel sounds. The hernia orifices were normal. The white cell count (14700/mm³) and CRP (34 mg/L) were elevated. A plain X-ray of the abdomen was obtained in the upright position and showed distended small bowel loops in the right infrahepatic region

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Figure 1 Computed tomography scan, portal time injection, axial slice. Cluster of dilated small bowel loops in the right hypochondrium (white arrows). Note the signs of intestinomesenteric ischemia with defective enhancement of the walls of the small bowel loops and effusion between the loops (star). Displacement of the ascending colon medially (large black arrow).

Figure 2 Computed tomography scan, portal time injection, axial slice lower than in Fig. 1. The confluence of the mesenteric vessels is visualized in the lateral anterior paracolic region (star). Note the absence of omental fat between the incarcerated loops and the anterior abdominal wall (white arrows), unlike the left side (dotted line outlining the greater omentum). The incarcerated intestinomesenteric structures displace the cecum medially (large black arrow).

Discussion

Internal herniation occurs when a portion of the gut protrudes through an intraperitoneal orifice, but remains within the abdominal cavity. Intestinal obstruction can ensue, generally with an ischemic component by bowel strangulation. Internal hernia accounts for 0.2 to 4.1% of all causes of intestinal obstruction, depending on the series [1]. Two types can be distinguished: in the first type, the bowel loop herniates through a pre-existing orifice and becomes entrapped in a peritoneal sac; in the second type, the loop protrudes passes through an abnormal defect in the peritoneum, which at imaging produces an aspect similar to that observed for obstructions caused by adhesive bands. Transomental herniation is the rarest of the second type, accounting for 1 to 4% of all internal hernias [1]. Transomental hernias are generally reported in patients aged over 50 [2]. The inaugural sign can be an acute complication of the bowel obstruction, generally with volvulus and a variable degree of vascular strangulation. True transomental hernias correspond to the incarceration of small bowel loops in a defect of the greater omentum. The hernia orifice is generally peripheral, near the right free border of the greater omentum (star). The deep part of the defect cannot be seen. The greater omentum (star) was folded back to the left.

Figure 3 Sagittal oblique reconstruction showing the bird beak sign (white arrows), corresponding to the incarceration of the upstream and downstream loops within the intraperitoneal hernial stricture created by the descending portion of the greater omentum.

Figure 4 Operative view showing the necrotic small bowel loops (white arrows) incarcerated in the omental defect (dotted outline); the deep part of the defect cannot be seen. The greater omentum (star) was folded back to the left.
of the omentum, measuring about 2 to 10 cm. Much more exceptionally, the bowel herniates through the gastrocolic ligament into the omental bursa. Little is known about the original cause(s) of omental defects: congenital defects can be distinguished from traumatic injury, inflammatory conditions, or age-related zones of weakness or perforations. The incarceration generally involves a small bowel loop but can concern the cecum or a dolichosigmoid segment. Since there is no hernia sac, a long length of bowel can pass through the orifice [1,2].

Clinically, the patient presents an acute obstructive syndrome. Signs are generally not specific but abdominal pain and vomiting are constant. The plain abdominal x-ray shows air-fluid levels in the small bowel but otherwise contributes little to diagnosis. Multidetector computed tomography (MDCT) with contrast injection is currently the choice imaging technique for precise diagnosis [3,4]. Nevertheless, preoperative diagnosis of internal hernia is exceptional because of its rarity and the misleading imaging aspect. On the CT scan, a strangulated transomental herniation is seen as a closed-loop small bowel obstruction with a cluster of distended loops in an abnormal position in the right paracolic gutter. The characteristic feature is the medial and posterior displacement of the ascending colon or the cecum by the herniated loops. The omental fat is missing between the distended loops and abdominal wall. Multiplane reconstruction can be useful to visualize the mesenteric vessels passing through the omental defect. There may also be signs of bowel ischemia. It can be difficult to distinguish transomental or transmesenteric internal hernia from extrinsic mechanical volvulus resulting from a peritoneal band or intestinomesenteric adhesions. The definitive diagnosis is usually established intraoperatively. Surgical treatment is required, generally via midline laparotomy. Reduction of the hernia may be facilitated by enlarging the defect. In the event of intestinal necrosis, bowel resection is necessary.

The defect must be closed to prevent subsequent herniation. The small bowel and the omentum are then repositioned anatomically. A particularly remodelled descending portion of the omentum may have to be resected. The postoperative mortality for this type of internal hernia is about 30%, directly related to the degree of bowel ischemia and necrosis [5].

Although rare, transomental internal hernia produces a typical CT image, which can be readily recognized by the experienced radiologist based on careful analysis of the axial slices and multiplane reconstructions. The mechanism of the bowel obstruction can be suspected, prompting the surgeon to search for signs of severe ischemia or necrosis and undertake emergency surgery to reduce the risk of complications and postoperative mortality.

Conflict of interest
None.

References