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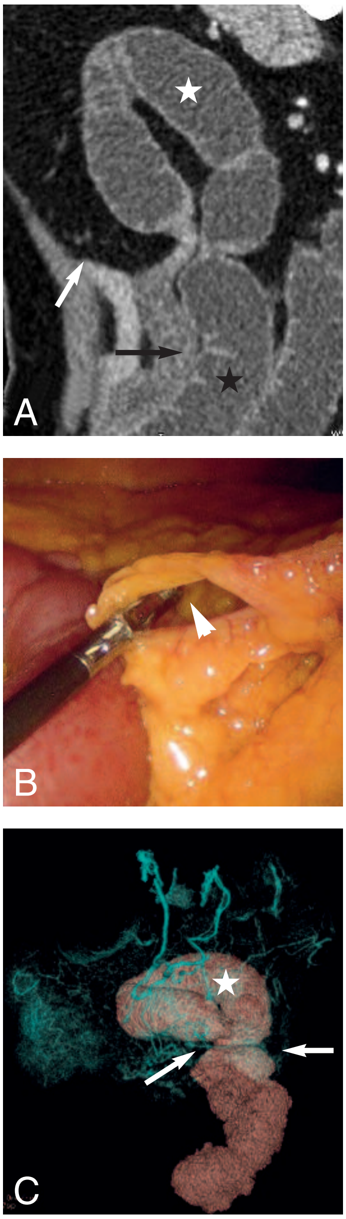
IMAGES IN CLINICAL RADIOLOGY



Closed loop small bowel occlusion through a congenital defect of the greater omentum

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An 80-year-old male was admitted with a 15-h history of persistent epigastric and peri umbilical pain. Pain had spontaneously appeared during night and awakened the patient. There was neither nausea nor vomiting. Physical examination revealed moderate epigastric and supraumbilical abdominal tenderness. The patient was without surgical antecedent.

Laboratory tests were normal. Abdominal ultrasound suspected small bowel sub-occlusion.

Contrast enhanced abdominal MDCT confirmed small bowel sub-occlusion with distension of small bowel loops in the epigastric area, left upper quadrant and left flank.

A transitional zone between dilated and collapsed loops was individualised in the infra-umbilical area.

During dynamic multiaxial MPR analysis around the point of constriction a typical close loop configuration (Fig. A) was recognised and the diagnosis of internal hernia was proposed.

The patient underwent laparatomy and the diagnosis of internal hernia was confirmed. The orifice consisted of a 2 cm congenital defect through the free edge of the greater omentum (Fig. B, white arrowhead).

The exact nature of the hernial orifice was retrospectively identified on abdominal MDCT through scrupulous analysis of the surrounding vessels which were recognised as little omental veins (Fig. C) (white arrows on A & C).

Comment

Internal hernias are defined by the protrusion of a viscus through a normal or abnormal peritoneal or mesenteric aperture within the confines of the peritoneal cavity.

Internal hernias are associated with a high mortality rate, exceeding 50% in some series.

The orifice can be either acquired, such as a postsurgical, traumatic or postinflammatory defect, or congenital, including both normal apertures, such as the foramen of Winslow and abnormal apertures arising from anomalies of internal rotation and peritoneal attachment.

The general incidence of internal hernias is increasing because of a number of relatively new surgical procedures, including liver transplantation and gastric bypass surgery. A significant increase in hernias is occurring in patients undergoing transmesenteric, transmesocolic, and retroanastomotic surgical procedures.

The occurrence of congenital internal hernias is rather rare. They are reported in 0.2%–0.9% of autopsies and in 0.5%–4.1% of cases of intestinal obstruction. The location and relative frequency of internal hernias are as follows: paraduodenal (53%), pericecal (13%), foramen of Winslow, (8%) transmesenteric and transmesocolic (8%), pelvic and supravesical (6), sigmoid mesocolon (6%), and transomental (1–4%).

There are two types of transomental hernias. Herniation into the lesser sac may occur through the gastrocolic ligament or through a free greater omentum. The latter is more common, and no sac is present. The hernial orifice is located in the periphery near the free edge and is usually a slitlike opening from 2 to 10 cm in diameter. The cause for omental defect has not been identified, but it has been suggested that most have a congenital origin, although inflammation, trauma, and vascular disorders may also cause omental perforations. Small bowel loops, the cecum, and the sigmoid colon are involved in this defect. The clinical and radiologic findings are almost identical to those of transmesenteric hernias.

Imaging studies often play an important role in the diagnosis of internal hernias because they are often difficult to identify clinically. CT has become the first-line imaging technique because of its availability, speed, and multiplanar reformatting capabilities.

CT has a high diagnostic accuracy not only in detecting small bowel occlusion but also in defining its severity and aetiology. The latter is determined by meticulous analysis of the transition zone between dilated and collapsed loops, allowing for the correct diagnosis of the cause of the obstruction in 73–95% of cases.

Closed loop obstruction is a specific type of obstruction (often found in internal hernias) in which two points along the course of a bowel are obstructed at a single location thus forming a closed loop. In this configuration, two successive dilated segments of bowel (the dilated afferent (black star) loop followed by the closed loop (white star)) are followed by a flattened segment (black arrow) (the efferent loop) and thus there are two adjacent points of narrowing in the small bowel.

This is the mechanical situation encountered in internal hernias and in most the orifice will be narrow and both points of constriction will be close. The recognition of the closed loop configuration, dynamic multiaxial MPR (Fig. A) around the point of constriction and a scrupulous analysis and identification of the vessels surrounding this point of constriction were the diagnostic key in the reported case.

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