

Appendix Constrictor Ring: A Rare Cause of Intestinal Obstruction

Anillo constrictor apendicular: una rara causa de oclusión intestinal

Bowel obstruction caused by chronic or acute inflammation of the caecal appendix is an extremely rare cause of intestinal obstruction with few cases described in literature.¹ Acute appendicitis is a clinical entity that presents with typical characteristics in young patients. However, in older patients the symptoms and laboratory tests can be non-specific.² The diagnosis is difficult to suspect in situations where there is also an abnormal positioning of the caecal appendix with respect to the terminal ileum, which in turn creates a loop.¹ In these situations, the clinical presentation is compatible with acute bowel obstruction, behaving like an internal paracaecal hernia. Unlike the paracaecal hernias described by Olivo Valverde et al.,³ in this case there was no peritoneal recess or "pocket" in the form of a sack trapping the bowel loops, but a fibrous band from the tip of the appendix to the ileocolic mesentery.

In the literature, the few cases described presented as a bowel obstruction indistinguishable from other causes, especially in older people. Imaging studies are therefore necessary for diagnosis, and in particular computed tomography (CT) is the test of choice since it provides the most amount of information,⁴ but often the final diagnosis is confirmed at surgery.

We report the case of a 66-year-old woman with no relevant medical history who presented to the Emergency Department with diffuse abdominal pain of 12-h duration, more intense in the right lower quadrant, accompanied by nausea and vomiting, without constipation or fever. She had a good general condition, with haemodynamic stability and a discreetly distended, tympanic abdomen without signs of peritonitis and decreased bowel sounds. In the blood sample leukocytosis was not observed (leukocytes $9.7 \times 10^3/\mu\text{l}$) and the

other parameters were normal (haemoglobin 14.9 g/dl, platelets $234 \times 10^3/\mu\text{l}$), except for a CRP of 15.1 and a pH of 7.529. An abdominal CT was performed, which showed distension of small bowel loops with faecaloid content, a significant amount of free liquid, and an image of swirling loops of small bowel lateral to the right colon with stretching of the mesenteric vessels which was consistent with the diagnosis of an internal hernia with signs of intestinal obstruction (Fig. 1).

A midline laparotomy was performed. On intraoperative examination, distended loops of small bowel from the jejunum to the distal ileum was observed, and a constricting ring around the ileocaecal valve created by a phlegmonous appendicitis was found, obstructing an oedematous loop of small bowel with signs of ischaemia (Fig. 2). Adhesiolysis and an appendectomy were performed.

After surgery, the patient recovered favourably and was discharged eight days after operation. A urinary tract infection was the only complication. The final pathology report was acute appendicitis in the phlegmonous phase.

The first case of intestinal obstruction due to acute appendicitis was described by Lucius Hotchkiss in New York,⁵ but it was Fobes Hawks who divided the causes of intestinal obstruction into mechanical and septic appendicitis or a combination of both.⁶ Reviewing the literature, this obstruction can be classified into four types: adynamic, mechanical (without strangulation), mechanical strangulation and mesenteric ischaemic obstruction.⁷

Among the mechanical causes, the vast majority are due to the formation of appendicular abscess that compresses the loops of small bowel, and postoperative adhesions that occur years after treatment.⁷ There are only ten cases reported in

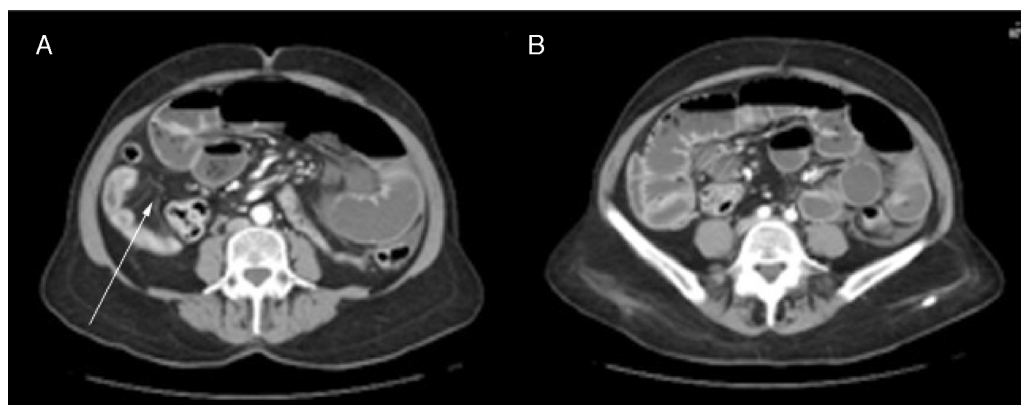


Fig. 1 – Abdominal CT. (A) Image of a collapsed intestinal loop corresponding to internal hernia and (B) image showing oedematous dilated bowel loops and airfluid levels.

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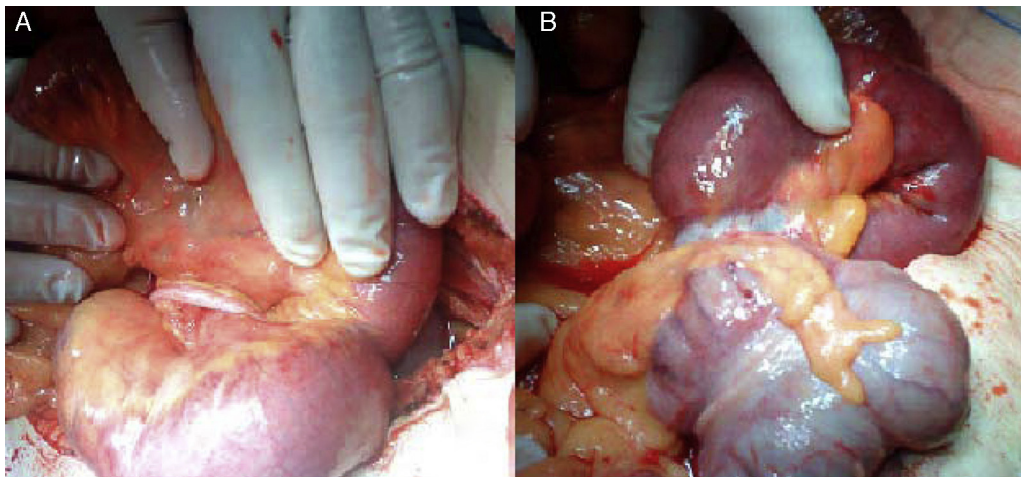


Fig. 2 – (A) Attachment of the appendix to the mesentery causing a loop in the appendix and (B) when the appendix is resected, the constricting band can be observed.

literature similar to ours reviewed by O'Donnell et al.,⁸ i.e., a loop obstruction caused by the loop of the appendix attached to the mesentery, in the context of acute appendicitis.

There are two basic situations where the appendix may cause a mechanical obstruction¹:

- Appendicular tip attached to the mesentery surrounding an ileal loop, producing compression of its lumen.
- Appendicular tip attached to the intestinal serosa, producing the obstruction by direct compression or torsion of a loop.

The insidious development of appendicular symptoms in an elderly patient is responsible for the delay in diagnosis and treatment of this illness, increasing morbidity and mortality²; in young patients the incidence is almost nonexistent, and there is only one case reported in literature⁷ of a woman of 24 years of age, because acute appendicitis has a much faster clinical presentation that facilitates early diagnosis and surgical treatment. An imaging test is essential for diagnosis in elderly patients, such as an abdominal CT,⁴ but in many of the cases described in the literature the final diagnosis is intraoperative. Current criteria recommend that for any suspicion of intestinal obstruction without improvement in the first 12–24 h and with no clear aetiology, an abdominal CT should be performed.^{1,9}

The laparoscopic approach is possible if there is an experienced laparoscopic surgeon and, in our case, an exploratory laparoscopy could have been used given the clinical–radiological discrepancy.

Since the 1990s, laparoscopy has seen an exponential growth and, in the case of intestinal obstruction, it is accepted that laparoscopic treatment may be a successful procedure in most cases involving the small bowel.^{9,10}

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