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The ileosigmoid knotting: a case report and review

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Abstract

Introduction: *Ileosigmoid knot or ileosigmoid knot (ISK), is an exceptional clinical entity, it is a surgical emergency characterized by strangulation of the small intestine forming a knot around the base of the sigmoid colon with risk of rapid necrosis of the small intestine and colon.*

Case report: *A 30-year-old patient with no previous history. Presented with occlusive syndrome and generalized abdominal pain. Clinical examination revealed a distended, tympanic abdomen with generalized abdominal tenderness.*

The patient underwent a PSA, which revealed the presence of hydroaerosic levels. Abdominal CT scan showed a mechanical gallbladder bowel obstruction on mesenteric volvulus, probably without signs of digestive distress. Biological tests were normal, apart from a hyperleukocytosisof 23410/mm3.

Emergency surgery was performed and the diagnosis of ileo-sigmoid node was made intraoperatively.

Discussion: *Through this case and a review of the literature, we will define the diagnostic, therapeutic and prognostic aspects of this rare clinical entity.*

Conclusion: *The ileo-sigmoid knot requires early preoperative diagnosis and prompt surgical management, to improve prognosis and reduce morbidity and mortality due to delayed diagnosis.*

Keyword: Ileosigmoid knot, abdominal CT scan, bowel obstruction, necrosis.

Introduction:

Ileosigmoid knot is a rare cause of acute abdomen. It is more commonly seen in parts of Africa, Asia and the Middle East, but less so in other parts of the world such as the UK, where reports are sporadic. Parker first described the condition in 1845, since when several new cases have been reported in different parts of the world, but the exact incidence is not known. This report presents a case of ISK in a 30-year-old patient (1).

Case report:

Patient aged 30, with no particular pathological history, had presented for 3 days with an occlusive syndrome of vomiting and cessation of matter and gas, evolving in a context of conservation of general condition.

On clinical examination, the patient had a blood pressure of 110/60 mmHg, a normal temperature, a heart rate of 84 bpm and a respiratory rate of 24 breaths/min with a fold of dehydration.

On abdominal examination, he had a distended, tympanic abdomen, with an empty rectal ampulla on rectal examination, with no palpable mass.

The unprepared abdomen showed hydroaericlevels in the intestine.

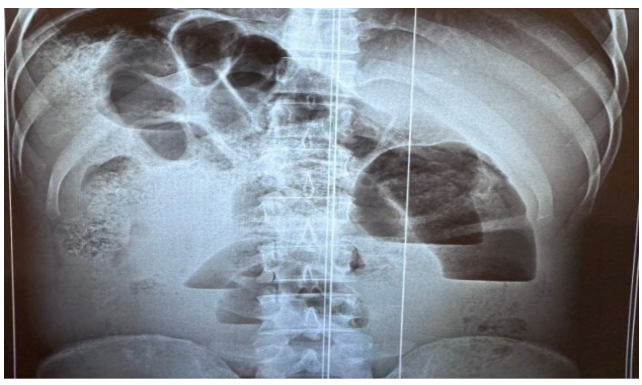

Fig1: Abdomen without preparation showing hydro -aeric levels

Abdominal CT scan showed a mechanical gallbladder bowel obstruction on mesenteric volvulus probably without signs of digestive distress.

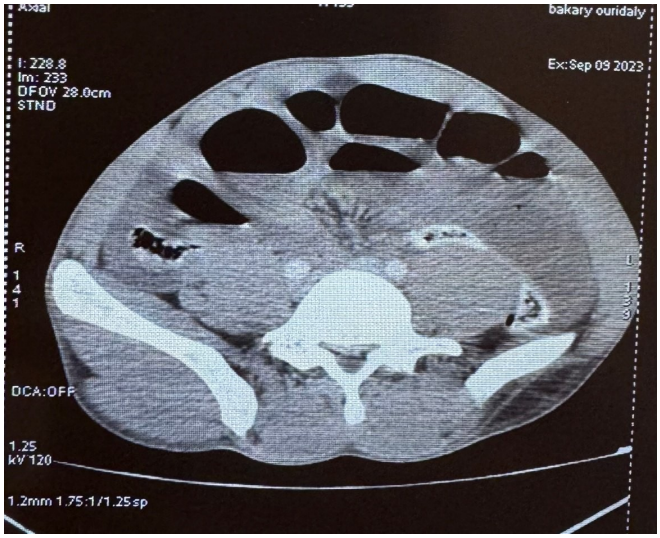

Fig2: Abdominal CT scan revealing a mechanical gallbladder bowel obstruction on mesenteric volvulus.

Biological profile: Hb:16.3g/dl, WBC:23410/mm, urea: 0.43 g/L, creatinine: 11.3 mg/L.

After conditioning of the patient's general condition by nasogastric tube aspiration and intravenous rehydration, it was decided to operate urgently, under general anaesthesia and endotracheal intubation. Preoperative prophylactic antibiotics were administered (amoxicillin/clavulanicacid). The patient was approached via median laparotomy, with exploration revealing a peritoneal effusion of necrotic fluid with the appearance of a type Ib ileo sigmoid node, with the small intestine making 2 counter clockwise turns around the meso-sigmoid, causing 4 cm of gallbladder distension with 2 m of gallbladder necrosis and sigmoid necrosis extending to the upper rectum.

The operation consisted of a segmental sigmoid resection removing the swollen sigmoid colon, with an ileo-caecal resection removing 2m of necrotic

small bowel, HARTMANN-type colostomy and double gun-barrel ileocolostomy

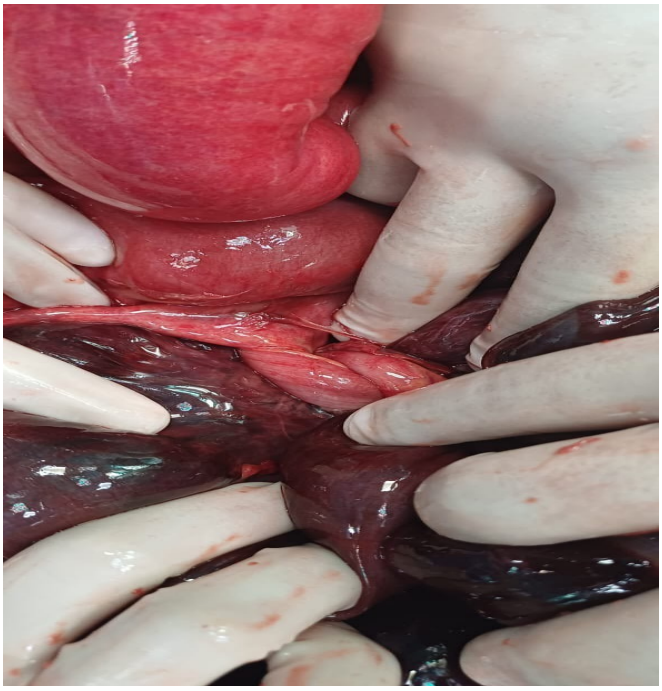

Fig3: the ileo-sigmoid knot (intraoperative image)

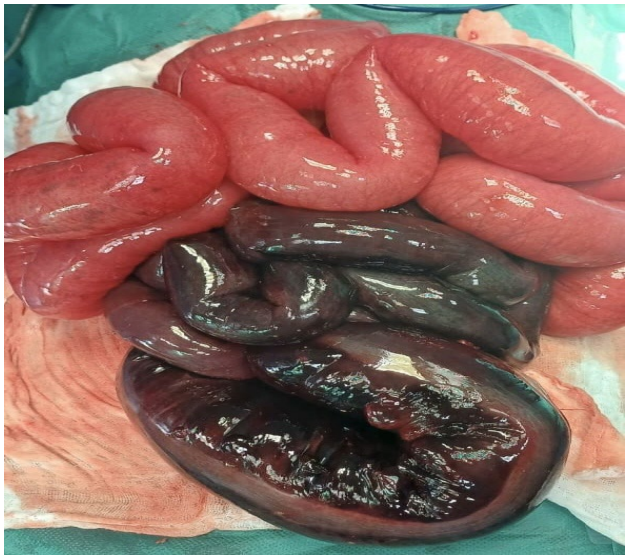

Fig4: gall necrosis (intraoperative image)

The post-operative course was straightforward, and the patient was discharged on the 3rd post-operative day.

Discussion:

The ileo-sigmoid volvulus, or ileo-sigmoid knot (ISN), is a "knot" created by a volvulusof the sigmoid colon and the small intestine, more particularly the ileum[2]. NIS is a rare entity, accounting for 7.6% of all sigmoid volvuli in France [3]. Several factors have been incriminated to explain this pathology: Atamanalp et al [4] have suggested anatomical predispositions, a small intestine that is hypermobile due to an excessively long meso, and a short root that can wind up at the foot of the sigmoid colon. A second factor is dietary: rapid replenishment of the jejunum in patients who eat a single meal a day is thought to promote twisting of the jejunum around the empty ileum, taking the sigmoid loop with it [5,6]. Alver et al [3] describe 4 types of NIS formation mechanism, depending on which active digestive segment is responsible for the torsion: in type I, the ileum is the active segment, wrapping around the passive sigmoid, type II results from the active sigmoid torsion attracting the passive small intestine, in the exceptional type III it is the ileo-caecal junction that wraps around the sigmoid loop, while in the indeterminate type IV it is not possible to differentiate the two segments. NIS leads to complex intestinal occlusion by double strangulation of the mesenteric vessels destined for the small intestine and sigmoid, resulting in rapid ischemic necrosis of both volvulated segments [6]. Preoperative diagnosis is difficult due to its rarity and clinicoradiological atypia, and is possible in less than 20% of cases [2, 8, 9].

The clinical occlusive syndrome is marked by acute abdominal pain that is initially localized, then permanent and generalized. A picture of hypovolemia is suggestive in 56% of cases [8-10]. The unprepared abdominal radiograph may occasionally show the characteristics of a double closed-loop occlusion with sigmoidal hydro-aeric levels in the right upper quadrant, and others of the greengel type that may be lateralized to the left [3, 5, 11],

more often it shows a sigmoidal volvulusor an isolated greengel occlusion.

Abdominopelvic CT confirms sigmoid and ileal occlusion, and in addition to signs of intestinal ischemia, looks for signs characteristic of NIS. The turn of the coil is larger than in an isolated sigmoid volvulus, bearing the superior and inferior mesenteric vessels [11], which may be explained by the fact that the two volvuli are superimposed [7]. According to Hashimoto et al. [12], the retention of material in the undistended proximal colon and the radial arrangement of the bowel loops are diagnostic factors.

Resection of the gangrenous bowel, restoration of continuity and the Hartmann procedure are adequate as most patients present in shock and may have contamination of the peritoneal cavity, as was the case in our patient. A primary large bowel anastomosis has also been performed and is acceptable in a stable patient without macroscopic contamination. In rare cases where there was no sigmoid gangrene, detorsion and sigmoidopexy have also been described [13].

Conclusion:

the ileo-sigmoid knot requires early preoperative diagnosis with prompt surgical management, to improve prognosis, reducing morbi-mortality due to delayed diagnosis.

The consent statement

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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