

Type IIB Ileosigmoid knotting: a case report

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Submitted: 2 August 2017 Accepted: 10 October 2017 Published: 15 February 2018

Ileosigmoid knotting is a rare cause of acute intestinal obstruction. It is more common in Africans and Asians than in white populations and it is more prevalent in males than in females with a ratio of 14:1. It is classified into four types (I, II, III and IV) with further extra two subtypes of A and B where type A is the most common presentation.

Preoperative diagnosis is a challenge to the frontline doctors in the accidents and emergency departments; especially with limited diagnostic tools. Ultrasonography may be misleading in most of the cases due to the similarity of the disease with other causes of acute abdomen, especially acute appendicitis.

Clinical presentation of an unprecedented intestinal obstruction with constant upper to mid-abdominal quadrant pain associated with mild to moderate abdominal distension contrary to the severe abdominal distension in sigmoid volvulus are the hallmarks that can help the surgical team to reach an accurate and early diagnosis preoperatively to avoid the devastating ischemia and gangrene in case of delay.

Emergency laparotomy with possible resection and primary anastomosis in type I or resection and exteriorization with ileostomy or colostomy in the other types is recommended.

Keywords: ileosigmoid knotting, intestinal obstruction, South Sudan

INTRODUCTION

Type II ileosigmoid knotting is a variant of the rare ileosigmoid knotting that causes an acute intestinal obstruction. It was first described in the early literature as double volvulus with type I being rare especially in the western world. The first reported cases were documented in Uganda by Burkitt in 1953; then Shepherd reported a further 92 cases of type I ileosigmoid volvulus over a period of 17 years, 6 cases of which were patients seen by him personally^[1].

Ekehorn^[2] and Faltin^[3] tried separately to classify the knot according to the bowel involved and the arrangement of the loops but Alver^[4] later developed the current classification of types I, II, III and IV. Type I, and II were further subdivided into A and B according to the direction of the knot whether it is clockwise or anticlockwise^[4].

The typical or type I ileosigmoid knotting is when loops of ileum wrap around the base of a redundant sigmoid colon to form a “knot” but in type II the redundant sigmoid is the active part that wraps around loops of ileum^[4,6].

The condition may progress rapidly within hours to form ischemia and gangrene which may lead to generalized peritonitis^[4,6,7]; hence early diagnosis and operative management are important to avoid these complications.

Sound clinical diagnosis supported by plain erect abdominal X-ray and an ultrasonography scan are the main diagnostic tools in resource limited settings, but a CT scan is the gold standard diagnostic tool in the developed world^[1,3,4,5,6,7,8].

In this case that we are reporting we focus on the clinical and radiological presentation of type II ileosigmoid volvulus.

CASE REPORT

S.K. was a 33-year old man who presented on June 3rd 2016 to the Accidents and Emergency Department of Juba Teaching Hospital. He had a 2-day history of constipation, abdominal distension and progressive abdominal pain mainly in the right upper abdominal quadrant and the epigastric region. The pain was associated with nausea and raised body temperature for one day but there was no vomiting reported.

The patient had no other concurrent diseases and had insignificant past medical or surgical history. He denied having similar bouts of abdominal distension or pain.

On examination, the patient was fully conscious and in fair general condition, he was not pale, jaundiced or cyanosed. He was dehydrated; there was no lymphadenopathy or lower limbs oedema.



Figure 1: Intraoperative photographs of the ileal loops and the sigmoid knotting around the gangrenous part. (Credit Tiberio Okori)

Abdominal examinations showed moderate abdominal distension with severe tenderness in the periumbilical and right lumbar region. There were no palpable masses and there were decreased bowel sounds and the rectum was empty.

Laboratory investigations showed a normal complete blood count apart from a slight leucocytosis (total white blood cell count: 12,400/cu mm). Abdominal ultrasonography concentrated on the appendix and images suggestive of an acute appendicitis were reported.

Based on the history and the clinical presentation and the physical examinations, a diagnosis of sigmoid volvulus with possible gangrene of the involved sigmoid colon was made. The possibility of a generalized peritonitis secondary to a gangrenous and perforated appendix was considered.

The patient was resuscitated with 2 litres of normal saline while investigations were being done. He was given tramadol injection of a 100 mg stat to control pain and 500 mg/100ml of metronidazole was infused and the patient was operated on 2 hours later from review time.

Laparotomy showed a gangrenous ileal loops with the sigmoid colon twisted twice anticlockwise around the ileal loops (see Figure 1), and approximately 500 ml of haemorrhagic fluid in the peritoneal cavity and pelvis was suctioned out.

The sigmoid was normal in appearance and was loaded with faecal material. It was released and left in situ. The gangrenous ileal loops were resected (120 cm) up to about 35 cm from ileo-caecal junction. An ileostomy was made in the right upper abdominal quadrant.

Initially the ileostomy functioned for one day, but on the second postoperative day, it became oedematous and changed colour from bright red to dark red. With digital examination of the stoma it became active.

On the fourth postoperative day, the patient reported some pain at the stoma site and an urge to defaecate. Rectal examination showed a full rectum and an enema was given and the rectum evacuated. The ileal stoma became gangrenous and the patient was taken to theatre ten days postoperative to refashion the ileostomy.

The patient was discharged after another 5 days with an active ileal stoma. Subsequent follow-up was uneventful and an elective sigmoidectomy for the redundant sigmoid with closure of the ileostomy was done on the eighth week later and the patient was discharged.

DISCUSSION

Ileosigmoid knotting is a rare cause of an acute intestinal obstruction. It is more common in Africa, Asia and the Middle East than in the West, affecting men more commonly than females ^[1,3,4,5,6,7]. Alver classified it into four types based on the mechanism of formation of the knot. In type I which is the commonest, the ileum is the active component, wrapping itself around the sigmoid colon which is the passive component to form the knot.

Type II is the reverse of type I with the sigmoid being the active component and the ileum being the passive part. Type III is when both the ileum and the caecum (the ileo-caecal segment) acts as the active component and wrap around the redundant sigmoid ^[4,6,8]. Type IV or the undetermined type is when differentiating the two components from each other is impossible. Types I and II are further classified into subtypes A and B depending on whether the twisting is clockwise or counterclockwise respectively ^[4,6,9,12].

The mechanism by which an ileosigmoid knot develops is still unclear. The anatomical predisposing factors, including a hypermobile small intestine with an elongated mesentery and a redundant sigmoid colon with a long pendulous mesocolon and a short attachment at the base of the mesentery ^[1,4,5]. Meckel's diverticulum has been reported to be present in 14–53% of cases. The knotting leads to closed-loop obstruction and causes gangrene of both the ileal loops and the sigmoid colon within a few hours in most patients ^[7,9,10,11].

Heavy faecal loading of the sigmoid colon, arising from a high starch and cellulose diet, has also been blamed for the high incidence of sigmoid volvulus. This point should be remembered when taking a history. Our patient did not give much detail of his diet - probably because we did not stress on that point. However from my own observations, the condition of chronic constipation and a sigmoid colon heavily loaded with faecal material is a common finding in patients living in Juba, especially

patients with haemorrhoids and anal fissures.

Preoperative diagnosis of ileosigmoid knot is a challenge even for the most experienced surgeons. Plain abdominal radiographs may show the characteristic double closed-loop obstruction, with the sigmoid colon in the right upper quadrant and the small bowel loops in the left, but this is unusual and it is completely different from the typical features of small bowel obstruction where abdominal X-ray shows gaseous distension and air fluid levels. It is also different from large intestinal obstruction where the sigmoid volvulus presents with a typical inverted U appearance and large gaseous distensions^[4,9].

The classical clinical presentations of ileosigmoid volvulus is of unprecedented abdominal pain in 100% of cases pointing to a vascular impairment and suggesting strangulation and impeding gangrene, abdominal distension in 94 -100% of cases, nausea and vomiting in 87 – 100% of cases and rebound tenderness in about 69%. These features indicate a combination of both upper and lower intestinal obstruction, and their presence should be met with prompt laparotomy to avoid gangrene formation^[9,10,11].

Sigmoidectomy for the redundant sigmoid is mandatory in type II ileosigmoid knotting because the redundant sigmoid is the active component. If not resected, because of its healthy appearance in some cases, then the chances of recurrence of the condition are high. Hence a decision has to be made preoperatively depending on the condition of the patient. If the ileum is gangrenous, as with our patient, resection and anastomosis of the ileum and exteriorization through ileostomy is advisable and an elective sigmoidectomy is done later.

If the ileum is healthy; sigmoidectomy with immediate anastomosis is advisable and the ileum is released untouched. If the ileum and sigmoid colon are both gangrenous, then resection and exteriorization of both ileum and the colon are advisable^[9,10,11].

CONCLUSION

Type II ileosigmoid knotting is a rare but life-threatening cause of closed-loop intestinal obstruction. Clinical presentation of constant abdominal pain with mild to moderate abdominal distension with acute unprecedented intestinal obstruction should prompt suspicion of this diagnosis^[4,6,10].

Resection of the redundant sigmoid should be put in mind as mandatory because it is the active component and if left un-managed, then chances of recurrence are high. Sigmoidectomy could be done at the same laparotomy or planned as an elective procedure depending on the viability of the intestine^[9,10,11].

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Photographs were taken by Mr Tiberio Okori, a theatre nurse at Juba Teaching Hospital.