ILEOSIGMOID KNOT IN AN ADOLESCENT

Sunil Kumar. V, Ramesh Babu. J, Rajesh. R, Naga Teja. M, Yella Reddy. C

1. Assistant Professor. Department of General Surgery, PES Institute of Medical Science & Research, Kuppam, Chittoor district, Andhra Pradesh.
2. Associate Professor. Department of General Surgery, PES Institute of Medical Science & Research, Kuppam, Chittoor district, Andhra Pradesh.
3. Resident. Department of General Surgery, PES Institute of Medical Science & Research, Kuppam, Chittoor district, Andhra Pradesh.
4. Resident. Department of General Surgery, PES Institute of Medical Science & Research, Kuppam, Chittoor district, Andhra Pradesh.
5. Professor & Head. Department of General Surgery, PES Institute of Medical Science & Research, Kuppam, Chittoor district, Andhra Pradesh.

CORRESPONDING AUTHOR:
Dr. Sunil Kumar. V,
No. 207, Block E,
PES staff quarters,
PESIMSR, Kuppam,
Chittoor dist. A.P – 517425.
E-mail: sunildocv@yahoo.com

ABSTRACT: Ileosigmoid knot is an unusual and rare cause of intestinal obstruction. It occurs predominantly in males of fourth decade onwards and is rarer in children. It is caused by various mechanisms and usually have long sigmoid with narrow pedicle, freely mobile small bowel and high bulk food habits. Though rare in occurrence, Ileosigmoid knot rapidly progresses to gangrene of varying length of the bowel. Ileosigmoid knot is classified depending on the direction of the torsion and the active bowel component of the knot, but it can be confirmed into any of the types only intra-operatively. Pre-operative diagnosis of this condition is very difficult as the clinical and radiological features are contradictory in most of the situations. The treatment is always surgical and there are some choices for the condition depending on the intra-operative findings. Early and prompt surgical management is absolute necessary step in saving the life of the patient. This case of ileosigmoid knot was encountered in an adolescent which is too uncommon, but was managed successfully with timely surgery and peri-operative care at a secondary care hospital. Four cases of ileosigmoid knot was reported in children till now and the authors report the fifth case in paediatric age group, which is the first paediatric ileosigmoid knot case in India.

KEYWORDS: Ileosigmoid knot, Compound volvulus, Intestinal obstruction

INTRODUCTION: Ileosigmoid knot is the uncommon and rare cause of intestinal obstruction that rapidly progresses to gangrene of ileum as well as sigmoid colon.[1, 2]. Pre-operative diagnosis is difficult and it is essential to differentiate from sigmoid Volvulus. After initial stabilisation of the patient, prompt surgical intervention is very important in the treatment.

CASE REPORT: A 14 year boy came to our emergency room with complaints of abdominal pain, fever and vomiting since 1 day. Abdominal pain was diffuse, continuous and non radiating. He had not undergone any previous surgeries. On examination, patient appeared sick, his pulse rate was 102/min and having low volume, BP was 90/60 mm Hg, respiratory rate was 34cycles/min. Abdomen was distended with no visible peristalsis, hyper-peristaltic bowel sounds were heard

and he had a roomy rectum on digital rectal examination. With a provisional diagnosis of intestinal obstruction probably due to Intussusception or congenital bands, patient was evaluated along with resuscitation. His erect abdominal radiograph showed few air-fluid levels but was not suggestive of primary cause (fig 1). Ultrasonography was indicative of intestinal obstruction. CT abdomen could not be done as the patient was unstable and due to technical reasons. With continuing resuscitation, patient was shifted to surgery. On laparotomy under general anaesthesia, the sigmoid colon was dilated and ileo-sigmoid knot was present at terminal ileum (fig 2&3). Since neither of the bowel loops was gangrenous, ileosigmoid knot was undone by rotating one and half turns anti-clockwise and mesosigmoidoplasty was done by incising sigmoid mesocolon longitudinally from root towards apex and suturing transversely with interrupted stitches to shorten the sigmoid mesocolon. Appendicectomy was done as appendix was also pulled towards the knot and showed mild inflammation. The patient developed altered electrical activity on ECG intra-operatively for which he was shifted to intensive care unit with continued ventilator support. Patient recovered well and was discharged after 15days. He is under timely follow-up since 2.5 years and is doing well.

DISCUSSION: Ileosigmoid knot, also known as Compound volvulus, is an unusual and rare cause of intestinal obstruction. It is more common in Asia, Africa and Middle East than in West[1, 2]. It is common in men in fourth decade onwards and is rare in children. There are only few cases reported in children till now[3-5].Though sigmoid Volvulus forms common etiology of intestinal obstruction, ileosigmoid knots are found in approximately 20% of those volvulus cases coming to laparotomy[5, 6]. The factors involved in causing ileosigmoid knotting are freely mobile small bowel with long mesentery; long sigmoid colon with a narrow pedicle; ingestion of high bulk diet in presence of empty small bowel; late pregnancy; transmesenteric herniation; Meckel's diverticulitis with a band; ileocaecal intussusceptions and floating caecum [1, 5, 7-11]. Ileosigmoid knot has been categorised into four types. In type I, ileum acts as active component and wraps around the sigmoid colon. In type II, sigmoid colon is the active component wrapping itself around ileum. In both these types it is subdivided as type A, when the direction torsion is clockwise and type B when torsion is counter-clockwise. In type III, the ileocaecal segment acts as the active component, while in type IV (undetermined type) it is not possible to differentiate the two components from each other[1, 5].

Preoperative diagnosis of this condition is very difficult [1]. The difficulty in the diagnosis is partly due to unfamiliarity of this rare condition and the confusing, self-contradictory features of this disease. While the presenting features of pain abdomen and vomiting suggest small bowel obstruction, the radiological findings are mostly that of colonic distension, which is uncommon in small bowel obstruction[1, 10-12]. Whenever possible, a CT scan could be useful investigation as it might show some signs like 'whirl sign', medial deviation of caecum and descending colon[4, 11, 13, 14].

Prompt treatment of this condition is necessary. The anatomical and pathological changes dictate the operative procedure [1, 4, 5, 7, 8, 12]. Ileosigmoid knot carries a grave prognosis with mortality ranging from 0-100%. The average mortality has declined over years, 0-47% being the rate 1990 onwards [1, 7, 8, 12, 15]. Undoing the knot with or without sigmoid enterotomy, mesosigmoidoplasty, resection of gangrenous bowel, and primary anastomosis or Hartmann's procedure are the choices for the operating surgeon to decide depending on the situation [6-8, 15-17]. Mesosigmoidoplasty is a simple and definitive procedure which can be followed in non-gangrenous sigmoid, as this avoids resections thus decreasing the morbidity

and preventing recurrence and its further complications, since recurrence of volvulus is common if the pathology is untreated[6, 16-21].

This case is being presented as our patient is an adolescent which is rare among the ileosigmoid knots which itself is a rare cause of intestinal obstruction. The present case is the fifth case reported among children and the first youngest case in India. The early management of this patient yielded a good outcome emphasising the fact that early and prompt surgical management of ileosigmoid knot is necessary for reducing the mortality due to the condition.

CONCLUSION: Ileosigmoid knot is a rare cause of intestinal obstruction. Preoperative diagnosis is difficult due to contradictory features. Prompt and timely treatment based on the intraoperative findings is a must. Better understanding of the condition and aggressive peri-operative care is life saving to the patient. Mesosigmoidoplasty is a valuable option when both ileum and sigmoid are non-gangrenous. Though rarer as a cause, ileosigmoid knot should be considered as a differential diagnosis in cases of intestinal obstruction even in children.

CONFLICT OF INTEREST: None declared

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Fig-1

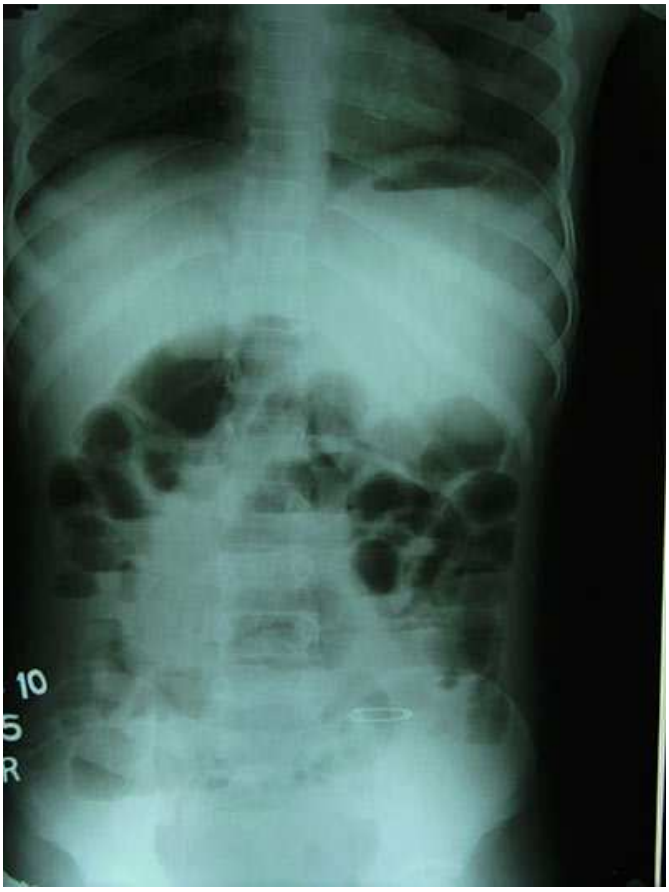

Fig-2

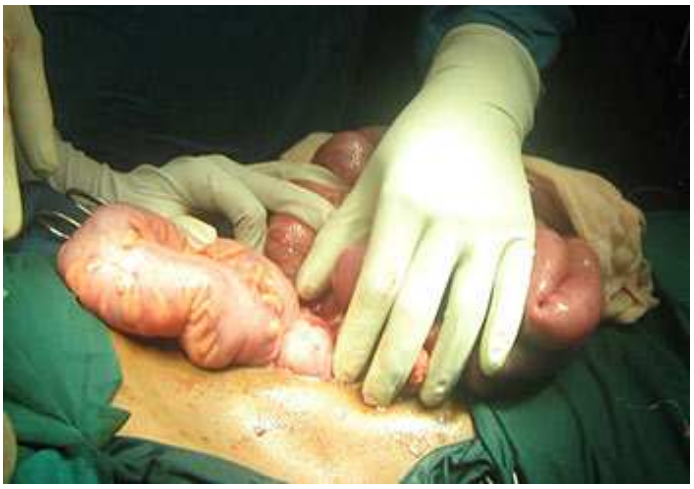

Fig-3