



RARE FACES OF ACUTE INTESTINAL OBSTRUCTION- INTERNAL HERNIA AND ILEO-ILEAL KNOTTING - A RETROSPECTIVE DESCRIPTIVE STUDY

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Abstract : The aim of this study was to depict the incidence of internal hernia and ileo-ileal knotting as a cause of acute intestinal obstruction in our institution between May 2009 to September 2011. The study was a retrospective descriptive study which included patients admitted in our institution between May 2009 to September 2011 with features suggestive of acute intestinal obstruction. The data from the medical records of the patients were utilized. Data from 237 patients who were admitted with features of acute intestinal obstruction between May 2009 to September 2011 were analysed from the inpatient records. We report THREE CASES of acute abdomen where internal herniation into mesenteric defects created by previous surgeries and ileo-ileal knotting led to the development of acute intestinal obstruction. This study is important from the perspective that internal hernia and ileo-ileal knotting though rare should be borne in mind as a cause of acute abdomen particularly in

previously operated patients.

Keyword : Intestinal Obstruction, Internal Hernia, Ileo-ileal Knotting

INTRODUCTION: Internal hernias and ileo-ileal knotting are rare causes of acute intestinal obstruction. Acquired internal hernias result from inadequate closure (or dehiscence of) mesenteric defects after operative procedures (such as gastrojejunostomy, colostomy, ileostomy or bowel resection) or trauma. Three types of intestinal knots are distinguished: ileoileal; ileo-sigmoid and knots formed between the bowel and Meckel's diverticulum or the appendix. The etiology of ileo-ileal knotting is unknown and is the rarest among the three types. It is most common in areas where the diet is bulky and there is a high fibre content. The **aim** of this study was to depict the incidence of internal hernia and ileo-ileal knotting as a cause of acute intestinal obstruction in our institution between May 2009 to September 2011. **METHODS:** The study was a retrospective descriptive study which included patients

admitted in our institution between May 2009 to September 2011 with features suggestive of acute intestinal obstruction. The data from the medical records of the patients were utilized.



OUTCOMES:

Fig.A-Case 1: Internal herniation of small bowel loop through a rent in the transverse mesocolon due to a previously performed posterior gastrojejunostomy (indicated by white arrow) We report **THREE CASES** of acute abdomen where internal herniation into mesenteric defects created by previous surgeries and ileo-ileal knotting led to the development of acute intestinal obstruction. The **first patient** was a 70 yr old male who presented with pain abdomen and constipation for 4 days with history of vomiting and loss of appetite. Past history of laparotomy 40 yrs back for pain abdomen was present. Examination revealed a distended abdomen with diffuse tenderness, guarding & rigidity and absent bowel sounds. X-ray, USG and CT abdomen showed signs of intestinal obstruction but the level of which could not be delineated. Emergency laparotomy revealed **internal herniation of small bowel loop through a rent in the transverse mesocolon due to a previously performed posterior gastrojejunostomy**. The herniation was reduced and the rent in the transverse mesocolon was closed. The **second patient** was a 39 yr old male who presented with pain abdomen and vomiting for 3 days with history of constipation and loss of appetite. Past history of laparotomy for TB abdomen and anti-tuberculosis treatment was present. Examination revealed a distended abdomen with diffuse tenderness, guarding

& rigidity and sluggish bowel sounds. X-ray, USG and CT abdomen showed signs of intestinal perforation and intestinal obstruction. Emergency laparotomy revealed a ileal perforation and a constricting band obstructing the ileum along with **internal herniation of small bowel loop through a rent due to previously performed ileo-transverse anastomosis**. Primary closure of ileal perforation was done. The internal herniation was reduced and the rent was closed. The **third patient** was a 32 yr old male who presented with pain abdomen and vomiting for 1 day with history of constipation and loss of appetite. Examination revealed a distended abdomen with diffuse tenderness, guarding & rigidity and absent bowel sounds. X-ray, USG showed signs of intestinal obstruction. Emergency laparotomy revealed **ileo-ileal knotting between two loops of ileum about 30 cm from the ileo-caecal junction**. Ileo-ileal knotting was released between the two loops of ileum

DISCUSSION:

INTERNAL HERNIA:

INTERNAL HERNIAS can result due to acquired etiology or developmental defects.

ACQUIRED INTERNAL HERNIAS:

Acquired internal hernias result from the creation of abnormal mesenteric defects after operative procedures or trauma. Most commonly result from inadequate closure (or dehiscence of) mesenteric defects created during the performance of gastrojejunostomy, colostomy, ileostomy or bowel resection. The creation of a small space allows the herniation of the small intestine through the mesenteric rent and the development of intestinal obstruction. Internal hernias including strangulated hernias, have most recently been noted after

RESULTS:	
Total No. of cases of acute intestinal obstruction admitted between May 2009 to September 2011	237
No. of cases of internal hernia causing acute intestinal obstruction (1. internal herniation of small bowel loop through a rent in the transverse mesocolon due to a previously performed posterior gastrojejunostomy. 2. internal herniation of small bowel loop through a rent due previously performed ileo-transverse anastomosis)	2
No. of cases of ileo-ileal knotting acute intestinal obstruction (3. ileo-ileal knotting between two loops of ileum about 30 cm from the ileo-caecal junction)	1

Table 1. Incidence of internal hernia and ileo-ileal knotting causing

the performance of operations for morbid besity, especially Roux-en-Y gastric bypass. The treatment of these patients is operative reduction of the hernia and closure of the peritoneal defect. **INTERNAL HERNIAS RESULTING FROM DEVELOPMENTAL DEFECTS** are due to three general mechanisms:

Abnormal retroperitoneal fixation of the mesentery resulting in anomalous positioning of the intestine (e.g., mesocolic or paraduodenal hernias)

Abnormally large internal foramina or fossae (e.g., foramen of Winslow and supramesocolic hernias)

Incomplete mesenteric surfaces with the presence of an abnormal opening through which the intestine herniates (e.g., mesenteric hernias).

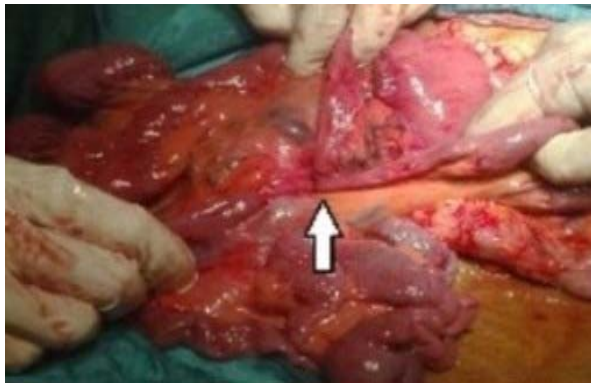


Fig.B-Case 2: Internal herniation of small bowel loop through a rent due previously performed ileo-transverse anastomosis (indicated by white arrow)

The **MESOCOLIC (PARADUODENAL) HERNIAS** are unusual congenital hernias in which the small intestine herniates behind the mesocolon. They result from abnormal rotation of the midgut and are categorized as either right or left. The **RIGHT MESOCOLIC HERNIA** occurs when the prearterial limb of the midgut loop fails to rotate around the superior mesenteric artery which results in the majority of the small intestine remaining to the right of the superior mesenteric artery. The **LEFT MESOCOLIC HERNIAS** occur as a consequence of in utero herniation of the small intestine between the inferior mesenteric vein and the posterior parietal attachments of the descending mesocolon to the retroperitoneum. The inferior mesenteric artery and vein are integral components of the hernia sac. About 75% of mesocolic hernias occur on the left side. The **MESENTERIC HERNIAS** occur when the intestine herniates through an abnormal orifice in the mesentery of the small intestine or colon. The most common location is near the ileocolic junction, although defects in the sigmoid mesocolon have also been described. Patients present with

intestinal obstruction resulting from compression of the loops of bowel at the neck of the hernia or by torsion of the herniated segment. Management of these patients involves reduction of the hernia and closure of the mesenteric defect.

ILEO-ILEAL KNOTTING:



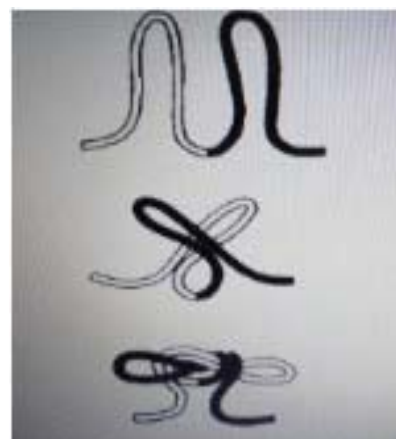
INTESTINAL KNOT formation was first described by Riverius in the 16th century and by Rokitansky in 1836. The lesion consists either of an intertwining or a knot formed between two loops of bowel, causing a complex intestinal obstruction and leading to strangulation of one or both loops. Three types of intestinal knots are distinguished: 1. Ileoileal 2. Ileosigmoid 3. Knots formed between the bowel and Meckel's

Fig.C-Case 3: Ileo -ileal knotting between two loops of ileum about 30 cm from the ileo-caecal junction (indicated by white arrow)

diverticulum or the appendix. The latter are not considered intestinal knots by some authors since adhesions play an important and consistent role in their formation. Ileosigmoid knotting is the most frequent, and has been described under various terms as compound volvulus, double volvulus, *volvulus associe* and *ileosigmoid intertwining*. The review of world literature shows that Shepherd (1967) reviewed

92 cases seen in one hospital in Uganda during 15 years and Kallio (1932) reviewed 157 North European cases of which 122 were from Finland. Most reported since then are from Africa. Knots most frequently form between a loop of ileum and the sigmoid colon (*ileosigmoid knotting*). It was found in 13% of Kallio's patients and 1% of Shepherd's. Knotting between two loops of ileum (ileo-ileal) as in our study is rare. Knotting between two loops of ileum (ileo-ileal) as in our study is rare. The mechanism of knotting has been described well by Faltin (1937) and Davey (1968). The etiology of knotting is unknown. It is most common in areas where the diet is bulky and there is a high fibre content. Shepherd (1967) suggested that knot formation may be associated with excessive motility of the ileum. The operative procedure of choice in dealing with ileo-ileal knots is to decompress both loops, untie the knot and resect. With ileosigmoid knots the ileum should be cut and unwound from the sigmoid.

CONCLUSION:



This study is important from the perspective that internal hernia and ileo-ileal knotting though rare should be borne in mind as a cause of acute abdomen particularly in previously operated patients.

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Fig.D-Diagram depicting the mechanism of knotting

The authors declare no conflict of interest

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