Case Report

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Ileo-ileal Knotting in a Postoperative Chronic Calcific Pancreatitis Patient: A Case Report

Surgery Section

SWATHY ELANGOVAN[1], VIVEKANANDA SUBRAMANIA NATHAN[2], R KARIKAL CHAKARAVARTHI[3], R SIVAMARIESWARAN[4], JS ATHISH PRANAV[5]

ABSTRACT

Ileo-ileal knotting is an exceptionally rare and potentially fatal cause of Small Bowel Obstruction (SBO), often leading to rapid vascular compromise, bowel ischaemia, and eventual gangrene if not promptly managed. The present case report describes a 43-year-old female with a prior history of Chronic Calcific Pancreatitis (CCP) who had underwent Frey's procedure one year earlier. She presenting with acute abdominal pain, bilious vomiting, distension, and obstipation. Imaging was indicative of mechanical obstruction. Emergency exploratory laparotomy revealed a tightly knotted ileo-ileal loop located approximately four feet from the ileocecal junction. Remarkably, the bowel appeared viable, and the knot was successfully untied without requiring resection. The present patient experienced a smooth and uneventful recovery period following the surgical procedure and was subsequently discharged on the sixth day. The present case is clinically significant as it represents a rare non-resectional outcome of ileo-ileal knotting in a postoperative abdomen, a scenario scarcely reported in current literature. Prior abdominal surgeries may predispose patients to altered bowel motility or mesenteric dynamics, increasing the likelihood of such complications. The rarity associated with diagnosing this condition underscore the significance of sustaining a keen awareness among healthcare professionals, particularly for patients in the postoperative phase who show indications of bowel obstruction. Prompt surgical intervention is essential not only for preserving life but also for ensuring the ongoing functionality of the bowel. Reporting such rare entities contributes meaningfully to surgical literature, enhances clinician awareness, and may improve diagnostic accuracy and patient outcomes in future presentations.

Keywords: Intestinal obstruction, Intestinal volvulus, Pancreatitis chronic, Postoperative period, Surgical procedures

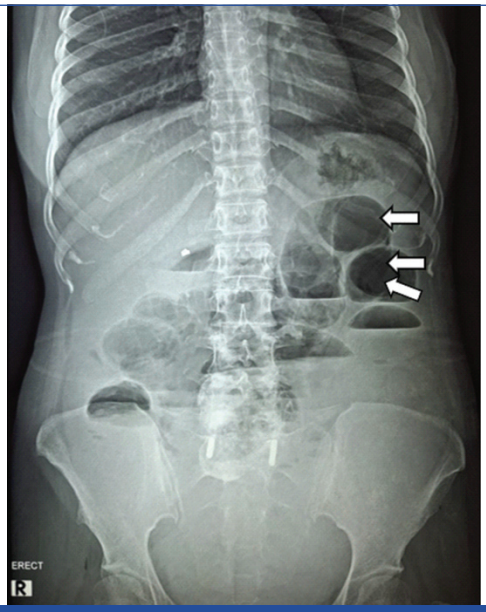
CASE REPORT

A 43-year-old female with a known history of Chronic Calcific Pancreatitis (CCP), for which she had undergone Frey's procedure one year prior, presented to the Emergency Department with acute abdominal symptoms. She reported severe abdominal pain, multiple episodes of bilious vomiting, progressive abdominal distension, and absolute obstipation for the past 24 hours. There was no history of recent trauma, travel, or similar prior episodes post-surgery.

Upon examination, the patient exhibited haemodynamic instability, with deranged vital parameters like tachycardia, hypotension, and mild tachypnoea suggestive of early hypovolemic or septic physiology. On clinical examination, the abdomen was mildly distended abdomen with no visible peristalsis. Bowel sounds were hyperperistaltic, and a digital rectal examination revealed stool staining. There were no signs of peritonism at that time. Given the clinical picture, the patient was evaluated for acute intestinal obstruction. Plain abdominal radiographs revealed eccentric dilated small bowel loops with multiple air-fluid levels, suggestive of a mechanical obstruction, as shown in [Table/Fig-1]. Following appropriate fluid resuscitation, nasogastric decompression, and correction of electrolyte imbalances, the patient was optimised for surgery.

An emergency exploratory laparotomy was performed. Intraoperatively, dilated proximal small bowel loops were noted. A rare finding of ileo-ileal knotting was observed approximately 4 feet proximal to the ileocaecal junction, causing a closed-loop obstruction, as shown in [Table/Fig-2].

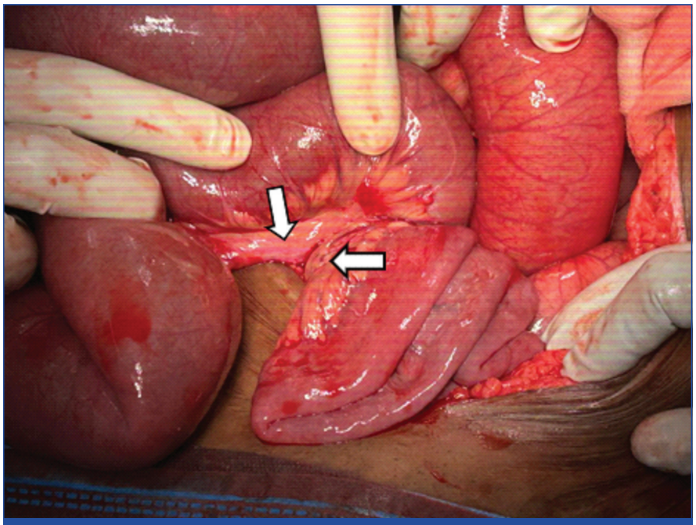
The involved bowel loops appeared viable, and no resection was deemed necessary. The knot was gently untied, and the bowel was decompressed. Peritoneal lavage was done, and the abdomen was closed in layers. The intraoperative and postoperative course was uneventful. The patient had a seamless recovery and was discharged on the sixth postoperative day. She was kept on weekly follow-up for one month, during which she remained symptomatically better and tolerated her diet well. Follow-up ultrasonography of the abdomen was found to be normal.



[Table/Fig-1]: Centrally located air-fluid levels and distended bowel loops (white arrows) indicating Small Bowel Obstruction (SBO).
White arrows indicate air-fluid levels in dilated small bowel loops

DISCUSSION

SBO is one of the most prevalent acute surgical conditions globally, accounting for approximately 20% of all surgical admissions for acute abdominal issues [1]. While adhesions, hernias, and malignancies are the leading causes, rare entities like intestinal knotting must also be considered, especially in patients with atypical profiles or



[Table/Fig-2]: Intraoperative image showing ileo-ileal knotting with proximal bowel distension and vascular congestion.
White arrows indicate the site of knotting and vascular congestion

postoperative status [2,3]. Intestinal knotting involves the intertwining of one bowel loop around another, forming a true knot that can rapidly impair mesenteric blood flow, leading to strangulation and necrosis [4,5]. Reported types of intestinal knotting include appendico-ileal, ileo-caecal, ceco-sigmoid, ileosigmoid, and ileo-ileal [5,6]. Among these, ileo-sigmoid knotting is relatively more common, while ileo-ileal knotting remains extremely rare and scarcely documented [7,8]. Ileo-ileal knotting is a rare subtype in which two ileal segments become mutually entangled. First described by Shepherd in 1967, only a few cases have been reported since [6,9]. The exact mechanism remains unclear, but suggested risk factors include a long, mobile mesentery, sudden and forceful peristalsis, bulky meals after fasting, and altered intra-abdominal anatomy, especially postoperatively [10]. Unlike other causes of SBO, ileo-ileal knotting has an acute fulminant course with rapid vascular compromise, where the time from symptom onset to bowel gangrene can be very short [9]. Non-specific symptoms like abdominal pain, vomiting, distension, and obstipation add to diagnostic difficulty, making preoperative identification rare. Definitive diagnosis is often made only during emergency laparotomy [10,11].

Bowel knotting, particularly involving the ileum, represents a surgical rarity with high potential for catastrophic outcomes if not promptly addressed [1,2]. The condition becomes even more complex when it arises in patients with a history of abdominal surgeries, as altered intra-abdominal dynamics may obscure the underlying pathology and delay definitive diagnosis [2,9]. In the present report, the patient, who had undergone Frey's procedure for CCP, exemplifies a unique subset of individuals predisposed to uncommon postoperative complications.

In the present case, a 43-year-old female with a background of CCP and a previous Frey's procedure presented with classical features of acute intestinal obstruction, including abdominal pain, bilious vomiting, distension, and obstipation, along with deranged vital signs. Clinical examination revealed a mildly distended abdomen with hyperperistaltic bowel sounds. Radiographs showed multiple air-fluid levels and dilated small bowel loops; however, the definitive diagnosis was made intraoperatively when a tight ileo-ileal knot was noted approximately four feet from the ileocecal junction. Interestingly, unlike many reported cases, the involved bowel was viable, and no resection was required.

The present case shares some similarities and contrasts with previously reported literature. In the case described by Shale WT et al., a 35-year-old male presented with acute crampy abdominal pain and bilious vomiting lasting 18 hours. Intraoperatively, a tight ileo-ileal knot was found, with 100 cm of gangrenous bowel requiring resection and primary anastomosis [10]. The postoperative period was complicated by anaemia and surgical site infection. Compared to that case, the present patient had a shorter symptom duration and more stable intraoperative findings, possibly contributing to the preservation of bowel viability.

Knfe G et al., described a paediatric patient (13-year-old male) presenting with generalised peritonitis due to ileo-ileal knotting. Laparotomy revealed 150 cm of gangrenous ileum, which was resected. This illustrates the fulminant course ileo-ileal knotting can take in younger patients as well. In contrast, the present patient did not exhibit signs of peritonitis, and early surgical intervention likely prevented bowel ischaemia [12].

In another report, Mohammed Y and Tesfaye K presented an 18-year-old female who was initially suspected to have gynaecological pathology due to generalised abdominal pain and haemoperitoneum. Laparotomy revealed an ileo-ileal knot with 100 cm of gangrenous bowel, eventually necessitating a right hemicolectomy and ileotransverse anastomosis [8]. This highlights the potential for diagnostic confusion in female patients of reproductive age. In the present case, the presence of prior gastrointestinal surgery helped streamline the diagnostic pathway toward SBO rather than gynaecologic causes.

Taniguchi K et al., reported an elderly female with a history of advanced colorectal malignancy presenting with intestinal strangulation due to ileo-ileal knotting. She underwent laparoscopic evaluation followed by conversion to open surgery. Approximately 2.5 meters of gangrenous small bowel was resected [5]. The advanced age and comorbid conditions in that case posed significant perioperative challenges, unlike the present case, where the intra- and postoperative period remained uneventful.

Recent case reports have continued to emphasise the diagnostic challenges and variable surgical outcomes associated with ileo-ileal knotting. Leal Isla Flores V et al., reported a case of bowel strangulation caused by an ileo-ileal knot that necessitated emergency surgery, with compromised bowel viability requiring resection [13]. Similarly, Kibret A described a double-loop SBO due to knotting, which posed significant intraoperative challenges and ultimately leading to bowel resection [14]. In contrast, Mohammed M et al., reported a rare instance where the knotted bowel was viable and managed without resection, similar to the present case [15].

What makes ileo-ileal knotting particularly formidable is its deceptive onset, initially mimicking typical SBO but often progressing rapidly to strangulation. In the majority of reported cases, ischaemia of the involved bowel segment necessitated resection [5,10,12,13,15]. The present patient exhibited a distinctive postoperative abdominal condition following Frey's procedure, which may have influenced changes in small bowel motility or configuration, thereby increasing the risk of knot formation. Nevertheless, her timely presentation, swift diagnosis, and immediate surgical intervention resulted in a favourable outcome, eliminating the necessity for bowel resection.

The present case reinforces the importance of maintaining a high index of suspicion for rare causes like ileo-ileal knotting in patients presenting with signs of SBO, particularly those with altered intra-abdominal anatomy due to prior surgeries. Early resuscitation, imaging, and timely surgical exploration are key to reducing the risk of bowel ischaemia and improving patient outcomes.

CONCLUSION(S)

The ileo-ileal knotting, though exceptionally rare, should remain a differential consideration in patients presenting with signs of acute intestinal obstruction, especially those with a history of intra-abdominal surgical interventions. The present case emphasises that early clinical recognition, prompt imaging, and timely surgical exploration can significantly influence outcomes, potentially avoiding bowel ischaemia and resection. Awareness of such atypical presentations in postoperative patients can aid in reducing diagnostic delays and improving surgical prognosis in similarly complex cases.

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PARTICULARS OF CONTRIBUTORS:
1. Postgraduate Student, Department of General Surgery, SRM Medical College Hospital and Research Centre, Kattankulathur, Chengalpattu, Tamil Nadu, India.
2. Professor, Department of General Surgery, SRM Medical College Hospital and Research Centre, Kattankulathur, Chengalpattu, Tamil Nadu, India.
3. Assisstant Professor, Department of Surgical Gastroenterology, SRM Medical College Hospital and Research Centre, Kattankulathur, Chengalpattu, Tamil Nadu, India.
4. Associate Professor, Department of General Surgery, SRM Medical College Hospital and Research Centre, Kattankulathur, Chengalpattu, Tamil Nadu, India.
5. Assisstant Professor, Department of General Surgery, SRM Medical College Hospital and Research Centre, Kattankulathur, Chengalpattu, Tamil Nadu, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Swathy Elangovan,
Postgraduate Student, Department of General Surgery, SRM Medical College Hospital and Research Centre, Kattankulathur, Chengalpattu, Tamil Nadu, India.
E-mail: swathye@gmail.com

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