



Surgery

A CASE SERIES ON SMALL BOWEL DIVERTICULUM CAUSING OBSTRUCTION

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ABSTRACT Small bowel diverticula are uncommon, often asymptomatic lesions but can present with various complications requiring medical or surgical intervention. Objective is to describe the clinical presentation, diagnostic findings, management, and outcomes of patients diagnosed with small bowel diverticula at our hospital.

KEYWORDS : small bowel diverticula, obstruction, surgery

INTRODUCTION

Diverticula are outpouchings of the gastrointestinal wall. In the small intestine acquired diverticula involve herniation of the mucosa and submucosa through the muscularis propria at points of weakness (commonly where mesenteric vessels penetrate the bowel wall). Congenital diverticula (e.g., Meckel's diverticulum) involve all layers of the bowel wall.

Epidemiology:

Rare compared to colonic diverticulum. Duodenal diverticula: Occur in ~5-22% of the population (common in elderly). Jejunal and ileal diverticula: Incidence around 0.06–1.3% in autopsy series. Slight male predominance for jejuno-ileal diverticula. While the majority of small bowel diverticula remain asymptomatic and are often detected incidentally during imaging or surgery for unrelated conditions, they can occasionally give rise to a variety of complications. These include diverticulitis, hemorrhage, perforation, obstruction, and malabsorption secondary to bacterial overgrowth in stagnant loops. Jejunal and ileal diverticula, in particular, are associated with higher complication rates compared to duodenal diverticula due to their location and diagnostic challenges.

METHOD:

A single institution retrospective case series study was conducted on patients presented to private teaching hospital from November 2023 - October 31, 2024. Three patients with the postoperative diagnosis of complicated small bowel diverticulum were included in the case series study. All patients underwent surgical intervention under general anesthesia, with open laparotomy and case specific management was offered for each patient and discharged with follow up at surgical opd.

Case Presentations:**Case 1**

75 years old patient came to Casualty of our hospital with the chief complaint of pain abdomen for one day, which was progressively increased during the last 4-5 hours. He had complaints of multiple episodes of vomiting started few minutes later to the onset of abdominal pain, which were non bilious. And one episode of fever which reduced with medication. On examination his was in sinus tachycardia, slight hypertensive, tachypneic and afebrile in condition. Abdomen is distended, a tender swelling of size of about 8x3cms present in the left inguinal region, Pyriform in shape extending up to the scrotum, local rise of temperature positive, testis not separately palpable.

All required blood investigations were normal. With the diagnosis of an incarcerated hernia patient was taken into the operation theatre after the adequate resuscitation. An inguino-scrotal incision was made, and the hernia sac was identified. Upon dissection, the sac contained a portion of the intestine along with a Meckel's diverticulum. Intraoperatively Perforated litre's hernia was noticed by a fish bone (figure 1). The incision was extended across the abdomen to allow for adequate exploration where presence of pus in the abdominal cavity was noticed. The Meckel's diverticulum was excised by wedge resection, and primary repair of the bowel was performed. The abdomen was then closed in layers. Patient was discharged on POD 6.



Figure1: Litre's hernia with fish bone perforation presented as inguinal obstruction.

Case 2

A 17 year old female patient presented to our emergency with chief complaints of abdominal pain for 4 days, which was crampy, diffuse. And she had multiple episodes of bilious vomiting for four days and also complained of not passing faeces and flatus for 3 days. On physical examination, the patient's vital signs were tachycardiac, normal respiration and normotensive and afebrile. Abdomen was distended and there was tenderness all-over the abdomen. Digital rectal examination revealed empty rectum. Examination of all the remaining systems was unremarkable. Abdominal x-ray (figure 4). revealed multiple air-fluid levels.

Thereby, preoperative diagnosis of acute abdomen secondary to small bowel obstruction was made and the patient was adequately resuscitated and was optimized for surgery.

Midline exploratory laparotomy was done. Intraoperatively an inflamed vitello intestinal duct with a band at its base, adjacent to ileal mesentery, around 60cms from the ileocecal junction with small bowel adhesions was noticed (figure 2). and a false diverticula from 100cms from ileocecal junction was noticed (figure 3).. The proximal small bowel was dilated but viable. The distal ileum and entire colon collapsed. Adhesions around the vitello-intestinal duct were released and wedge resection was done followed by primary repair. False diverticulum was left in situ as it was passable. Postoperative period was uneventful and was discharged on the seventh postoperative day.

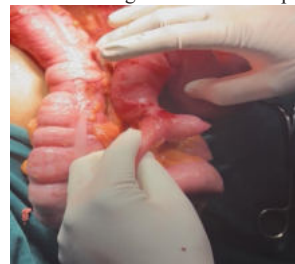


Figure 2: True Diverticulum with diverticulitis at 60 cms of IC junction.



Figure 4: Erect X-ray abdomen showing signs of bowel obstruction



Figure 3: False diverticulum at 100 cms of IC junction

Case 3

A 59-year-old woman presented to emergency with a four day history of sudden onset of right upper quadrant and epigastric pain, which was insidious in onset, progressive in nature, constant, squeezing type of pain, aggravated on movement. Pain is associated with nausea but no history of vomiting. Complaints of abdominal distension since three days. History of last passage of dark coloured stool two days back and not associated with bleeding per rectum. There was no significant past surgical history. No history of recent travel and family history of colitis or inflammatory bowel disease. She is a known case of Type 2 Diabetes and hypertension and on regular medications including metformin, amlodipine. On physical examination, she was afebrile, tachycardic, tachypnoeic and hypertensive. Clinically, she appeared flushed and in pain. Her abdomen was distended, tender and guarding in the right upper and lower quadrants. There was no evidence of any lumps. Initial blood tests revealed raised white blood cell count $28.4 \times 10^9/l$ and C-reactive protein 31 mg/l. Rest of the investigations were within normal limits. An erect X-ray normally depicted multiple air-fluid levels with absent rectal gas shadow. With the preoperative diagnosis of acute abdomen secondary to small bowel obstruction, the patient was resuscitated adequately. Midline exploratory laparotomy was done with the intraoperative findings of approximately 200 ml of pus in peritoneum, dilated proximal small bowel with collapsed colon. A gangrenous Meckel's diverticulum was found at the distal ileum which was located approximately 40 cm from the ileo-cecal valve (figure 5). Segmental resection of 10 cm small bowel containing the diverticulum followed by end-to-end anastomosis in double layer using 4/0 vicryl was done. Postoperative period was uneventful.



Figure 5: Gangrenous Meckels diverticulum 40 cms from ileo ceacal valve.

Clinical Importance

Despite its often silent presentation, small bowel diverticula can lead to significant clinical complications. The most common manifestations include gastrointestinal bleeding, particularly in children, intestinal obstruction, inflammation (diverticulitis), and perforation.

DISCUSSION

The nonspecific and variable clinical presentations of small bowel diverticular disease often lead to delayed diagnosis, with many cases only identified following the onset of acute complications. Cross-sectional imaging, particularly contrast-enhanced computed tomography (CT), plays a pivotal role in diagnosis and in guiding management decisions.

Management strategies range from conservative treatment for uncomplicated cases to surgical intervention in cases of diverticulitis with perforation, hemorrhage, or obstruction. Despite their rarity, prompt recognition and appropriate treatment of complicated small bowel diverticula are crucial to reduce morbidity and mortality, especially in elderly patients

CONCLUSION

Small bowel perforation remains a significant surgical emergency with diverse etiologies ranging from trauma and inflammatory conditions to iatrogenic causes and malignancies. This case series underscores the importance of early recognition, prompt imaging, and timely surgical intervention in optimizing patient outcomes. While clinical presentation can be nonspecific, a high index of suspicion in at-risk patients is crucial. Multidisciplinary management and individualized treatment plans, informed by etiology and intraoperative findings, are essential to reduce morbidity and mortality. Further studies with larger cohorts are warranted to establish standardized protocols and to improve prognostication and outcomes in small bowel perforation cases.

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