



**A Rare Surgical Revelation: Perforated Jejunal Diverticulum Presenting As Acute Intestinal Obstruction**

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**Abstract**

Jejunal diverticulosis is a rare entity with a reported clinical incidence of 0.5%.<sup>1</sup> However, symptoms relating to its presence are non-specific, which does not only delay diagnosis, but also increases the risk of serious complications approaching 15%.<sup>2</sup>

Jejunal diverticula are uncommon, acquired lesions which are usually asymptomatic. When symptomatic they present with chronic nonspecific symptoms like

pain, nausea, malnutrition and sometimes with acute presentation like gastrointestinal hemorrhage, peritonitis and obstruction. While chronic pain and malabsorption occurs in 40% of cases, perforation occurs only in 2.3–6.4% of all diverticula-bearing patients.

**Objective:** We present the case of a patient provisionally diagnosed as Acute Intestinal obstruction. After surgical exploration, definitive diagnosis is Perforated Jejunal

Diverticulum. Review of literature and different treatment protocols are discussed.

**Keywords:** Perforated Jejunal diverticulum, Acute Abdomen, Resection and Anastomoses.

### Introduction

Jejunal diverticulosis is a rare entity, with a reported clinical incidence of 0.5%.<sup>1</sup> The non specific manner in which it typically presents however, with symptoms suggestive of malabsorption and chronic abdominal discomfort, can mask the true diagnosis. Alternative aetiologies, such as small bowel enteropathies, are usually considered. As such, the rate of serious complications necessitating operative intervention, namely bleeding and free perforation, can approach 15%.<sup>2</sup> We present a rare cause of acute abdominal pain secondary to a perforated jejunal diverticulum.

### Case Presentation

A 61year old lady R/o Marikavalasa presented to the Emergency department of GVP hospital, Madhurawada with a history of constipation to stools since 5 days and to flatus since 2 days, pain abdomen since 3days, bilious vomiting since 2days. Previous surgical history being Open Hysterectomy 12 years back and Open Repair of Incisional Hernia 10 years back. Co-morbidities include poorly controlled Type-2 Diabetes mellitus and Hypertension since 15 years.

On physical examination our patient's vital signs were a temperature of 98.6°F, heart rate 110 bpm, blood pressure 90/60 mm Hg, respiratory rate 22 cycles/min and oxygen saturation 94% at room air with signs of dehydration present. Per abdominal examination reveals distension, diffuse tenderness with guarding, impaired note on percussion and sluggish bowel sounds. Rectum was loaded with stools. Ryles tube had a feculent aspirate. Respiratory examination reveals bilateral lower lung fields crepitations. Patient also had Bilateral pitting

type of pedal edema, Pallor and oliguria (50ml over 3 hours). Routine blood investigations revealed mild anaemia (hb-10.6%), ? acute kidney injury (urea- 118mg/dl, creatinine- 3.3mg/dl), hypoalbuminaemia.

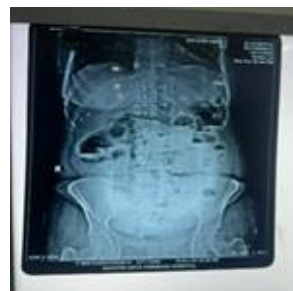


Figure 1:

Xray erect abdomen shows multiple dilated loops of bowel, few air-fluids levels in the dilated loops, ground glass opacities in the lower abdomen.

Ultrasound Abdomen and pelvis showed features suggestive of Small bowel obstruction with Moderate to gross ascites.

Patient was then admitted in ICU and resuscitated with IV fluids, Antibiotics, O<sub>2</sub> inhalation and nebulisation, central line catheterisation. On the presumption of small bowel obstruction and after stabilisation, patient was taken up for Emergency Exploratory laparotomy under General anaesthesia.

Intra-operatively, around 1000ml seropurulent collection noted throughout all the quadrants of the abdomen with most of the collection seen near the D-J flexure. A perforated jejunal diverticulum around 70cms from the D-J flexure, at the mesenteric border of around 1x1 cm with thickened adjacent mesentery and fibrinous debris noted. Several diverticula were identified on the mesenteric border on either side of the perforation along the entire length of jejunum, Largest measuring 5cms. Peritoneal lavage with Resection of Jejunal segment bearing the Diverticular perforation and end-to-end Jejunal anastomosis was done.



Figure 2:

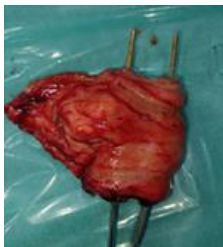


Figure 3:



Figure 4:

Intraoperatively blood transfusion was done and patient was on Inotropic support.

Post-operatively, patient developed Atrial fibrillation for which cardiologist opinion was taken and advise followed, developed oliguria for which nephrologist opinion was taken and advise followed. Due to decompensated septic shock and Systemic inflammatory response syndrome, patient died on post-op day-2.

### Discussion

Acquired diverticulosis of the small bowel was first described in 1794 by Sommering, and later in 1807 by Sir Astley Cooper.<sup>3</sup> Although the true aetiology has not been fully elucidated and is likely multifactorial, it is thought to develop as a result of peristaltic deficiencies and intestinal dyskinesia leading to high segmental pressures. As a result, herniation of the mucosa and

submucosa occurs on the antimesenteric border, which is made vulnerable by the entry of mesenteric vessels<sup>1-4-8</sup>.

Among the postulate causes, abnormalities in smooth muscle or of the myenteric plexus and functional deficiencies have proven casual associations<sup>3</sup>. As it relates to multiple giant jejunal diverticula (greater than 5 cm) with evidence of malabsorption and perforation, as in our patient. Occurrence in association with Ehlers-Danlos syndrome has been described<sup>9</sup>.

Historically, jejunal diverticula have been considered to be clinically silent in the vast majority of cases. The incidence of symptomatic diverticular disease is estimated at 0.5%, however, may be underestimated by virtue of the non-specific complaints it is typically associated with. The triad of 'flatulent dyspepsia', consisting of vague cramping abdominal pain, postprandial flatulence and diarrhoea, is often attributed to uncontrolled gastro-oesophageal reflux disease or small bowel enteropathies<sup>4</sup>. This may explain why upwards of 15% of those affected will develop complications that require operative intervention, namely bleeding, obstruction and perforation<sup>2</sup>. In comparison to duodenal diverticulosis, jejunal diverticula are nearly 18 times more likely to perforate<sup>10</sup>, as such, some advocate for seg mental resection in those with chronic symptoms following direct visualisation of diverticula via laparoscopy, in order to avoid the sequelae of advanced disease.

What is unique to the diverticular process as compared with small bowel enteropathies is that stasis and bacterial overgrowth are prominent, especially in so-called 'giant' lesions. Bacteria release siderophores and upregulate hepcidin, which can cause anaemia. Therefore, in those patients with a persistence of non-specific abdominal symptoms in the setting of elevations in bilirubin and anaemia, there should be high suspicion of jejunal

diverticulosis. Even when small bowel diverticula are considered, there is a significant challenge in achieving diagnostic confirmation. It should be noted that diagnosis is not necessary in the asymptomatic population since small bowel diverticulosis without symptoms or complications does not warrant treatment. Double-balloon enteroscopy is emerging as a useful modality in the localisation and management of bleeding diverticula, which avoids the need for bowel resection<sup>12</sup>. Capsule endoscopy has been described as a viable investigative tool for symptomatic patients in the elective setting. However, it carries the inherent risk of retained capsule, and diagnostic efficacy in this setting has yet to be determined. In the setting of active diverticulitis or perforation, CT scans often demonstrate bowel wall thickening, and may reveal a localised abscess or evidence of free perforation<sup>5</sup>. In short, at the present time, direct visualisation of diverticula is the only means of confirmation. In patients with a constellation of symptoms that have persisted despite multiple medical approaches, diagnostic laparoscopy may be the only definitive option. This is controversial though, considering the inherent risk of pursuing an invasive option on suspicion of uncomplicated disease. It should also be said that small bowel diverticula are often buried in the mesenteric fat and thus are not always readily identifiable.

In the case of free perforation and peritonitis, segmental resection and primary anastomosis remains the preferred intervention<sup>2,7,11</sup>. Since in most patients, diverticula will occur pre dominantly in the proximal jejunum, the goal of resection should be to involve the perforated segment as well as non involved visualised diverticula proximal to it. Where the disease is more diffuse, resection should be limited to avoid short bowel syndrome. Other described procedures such as simple closure, excision and

invagination, are associated with a nearly threefold increase in mortality rate. Simple diverticulectomy is thought to have the potential to disturb blood flow given its mesenteric location, and thus creates the potential for anastomotic break down or fistula formation<sup>8</sup>. There is some evidence to support lavage and drainage in the setting of contained microperforation followed by a continuation of conservative management. This however is to be reserved a means to avoid small bowel resection In high-risk patient groups<sup>13 14</sup>. Perforated jejunal diverticulitis is a rare acquired condition. While there is emerging evidence for the role of conservative management in the case of microperforation<sup>13 14</sup> the concern for progression to free perforation, especially in the setting of large lesions, makes segmental resection the preferred intervention.

#### Learning Points

Jejunal diverticulosis is a rare clinical entity.

The rate of serious complications requiring operative management, such as bleeding and perforation, can be upwards of 15%.

Conventional diagnostic modalities are not specific for this process, and options are further limited in the setting of an acute abdomen. Diagnostic laparoscopy is advocated in patients with suspected disease.

While conservative management may have a role in high-risk patients with small contained perforation, segmental resection remains the intervention of choice for free perforation.

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