

Inverted Ileal Diverticulum: A Rare Cause for Adult Intussusception

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Abstract: A diverticulum is a bulging sack in any portion of the gastrointestinal tract. The most common site for the formation of diverticula is the large intestine. Small intestine diverticular disease is much less common than colonic diverticular disease. The most common symptom is non-specific epigastric pain and a bloating sensation. Major complications include diverticulitis, gastrointestinal bleeding, acute perforation, pancreatic or biliary (in the case of duodenal diverticula) disease, intestinal obstruction, intestinal perforation, localized abscess, malabsorption, anemia, volvulus and bacterial overgrowth. We describe the clinical case of a 37-year-old male patient with a diagnosis of small bowel obstruction with intussusception. Intraoperative finding of solitary diverticulum arising from mesenteric boarder of distal ileum inverted in to lumen forming lead point for intussusception, underwent ileal resection with ileoileal anastomosis.postoperative period uneventful.

Keywords: ilealdiverticulum, intussusception, lead point, inverted, vasarecta

1. Introduction

Jejunioleal diverticula represent just 25% of all small bowel diverticula, but they are most likely to become symptomatic in a patient's lifetime compared to other small bowel diverticula[1, 4-6].With incidence of 0.2% to 7%, based on radiographic and autopsy data, usually diagnosed in the sixth or seventh decade of life with equal gender distribution[1.5]. Jejunioleal diverticula differ in that they are usually found as multiple diverticula and the majority are associated with diverticula elsewhere, with associated colonic diverticula found in as many as 85% of patients[4-6]. They are located on the mesenteric side of the bowel and are often overlooked even at surgery as they are hidden in the mesentery. Eighty-five percent are found in the jejunum and their presence decreases more distally in the small intestine. Nearly 70% of jejunioleal diverticula are multiple; solitary and pandiverticular disease has been described as well[2, 4-6.] Jejunioleal diverticula are generally considered to be acquired and are found at points where vasa recta penetrate the intestinal wall. This is supported by the fact that these diverticula occur at the mesenteric side and in regions where blood vessel caliber is greatest, that is, in the proximal jejunum and distal ileum. They are pseudodiverticula, lacking a true muscular wall (pulsion-type diverticula). Their development seems attributable to both disordered intestinal motility and focal weakness of the jejunal muscularis. Some authors theorize that jejunioleal diverticula may be secondary manifestations of a motor dysfunction of the smooth muscle or myenteric plexus of the small bowel.

2. Case Report

A 37 years male presenting with irregular episode of colicky abdominal pain since 6 months. On examination tenderness noted in right iliac fossa, underwent ultrasound examination shows intussusception which is confirmed with CECT abdomen[Fig1] as ileoileal intussusception and lipoma is

leading point. Underwent laparoscopic assisted ileal resection and ileoileal side to side anastomosis. Intraoperative findings are ileoleal intussusception and leading point is ileal false diverticulum arising from mesenteric boarder which is inverted in to bowel lumen along with mesentery forms leading point[Fig2, 3]. Histopathology shows ileal diverticulum of 5.5cm length[Fig4].post op period uneventful

3. Discussion

This case presented as chronic pain abdomen.On radiological investigation shows small bowel obstruction with intussusception (lipoma is the leading point).Intraoperatively we noticed false ileal diverticulum inverted in to lumen forming lead point along with mesentery. Patients with multiple jejunioleal diverticula are far more likely to develop symptoms than patients with solitary diverticula. The majority of jejunioleal diverticula are asymptomatic (60% to 82%), with approximately 40% to 60% of patients developing acute or chronic complications of the disease, and approximately 10% requiring operative intervention[3, 4-6]. The most usual form of symptomatic presentation in patients with jejunioleal diverticula are chronic symptoms, occurring in approximately 40% to 60% of patients. These patients exhibit a constellation of symptoms that range from long-standing vague abdominal pain to a syndrome of bloating, steatorrhea, malabsorption, and the sequelae of vitamin B12 deficiency. The underlying dyskinesia in patients with jejunioleal diverticula allows for the overgrowth of anaerobic bacteria caused by stasis within the involved segments and the diverticula themselves, similar to the syndrome seen in patients with duodenal diverticula. Acute complications occur in 10% to 20% of patients with jejunioleal diverticular disease and include gastrointestinal hemorrhage, diverticulitis with or without perforation, and obstruction. Again, the diagnosis is rarely made preoperatively[4-6].

Gastrointestinal hemorrhage accounts for 5% to 33% of complications of jejunoileal diverticula. Inflammation of diverticula that are in close proximity to branches of mesenteric vessels can lead to erosion and massive bleeding. Patients typically present with massive, painless hematochezia rather than melena. Endoscopy is of limited use except to rule out a colonic cause or a source proximal to the ligament of Treitz. Radiolabeled red blood cell scans and angiography are often done prior to operation and may be helpful if the bleeding is rapid. Conservative treatment is generally unsuccessful and with 80% mortality. Most patients will need resection of the small bowel segment containing the diverticula, which may require intraoperative endoscopy and other maneuvers to distend the small bowel to identify the diverticula. Selective mesenteric artery embolization may be required for pandiverticular disease if resection would result in short gut syndrome.

Diverticulitis is the most common complication of jejunoileal diverticula and accounts for 33% to 53% of cases, occurring in 2.3% to 6.4% of all patients with the disease. More than 80% of perforations result from diverticulitis. Abdominal pain, leukocytosis, and fever are usually present. Perforation generally causes localized peritonitis, as involved diverticula are often quickly walled off by the surrounding mesentery. Diverticulitis and perforation are often mistaken for peptic ulcer disease or appendicitis. As is the common theme with small intestinal diverticula, perforations are rarely diagnosed preoperatively. Uncomplicated diverticulitis may be treated conservatively with broad spectrum antibiotics and bowel rest; however, some authors recommend elective resection to avoid future complications. Mortality rates for perforations range from 10% to 50% as a result of the delay in diagnosis. Sequelae include abscess, fistula, and obstruction.

Obstruction is an uncommon complication (2.3% to 4.6%) because of the liquid nature of enterosuccus and the typically large ostia of jejunoileal diverticula. The intestinal lumen can become obstructed via compression by distended diverticula themselves, by associated inflammatory masses, or by enteroliths formed at the diverticular openings that break free and lodge downstream. Other causes include inflammatory adhesions, **intussusception**, and, rarely, volvulus, arising from the heavy diverticula-bearing segment twisting around other loops or mesentery. Enteroliths as an obstructing cause may be amenable to milking distally into the colon or through an enterotomy with removal to avoid bowel resection. All other causes mandate segmental resection.

4. Management

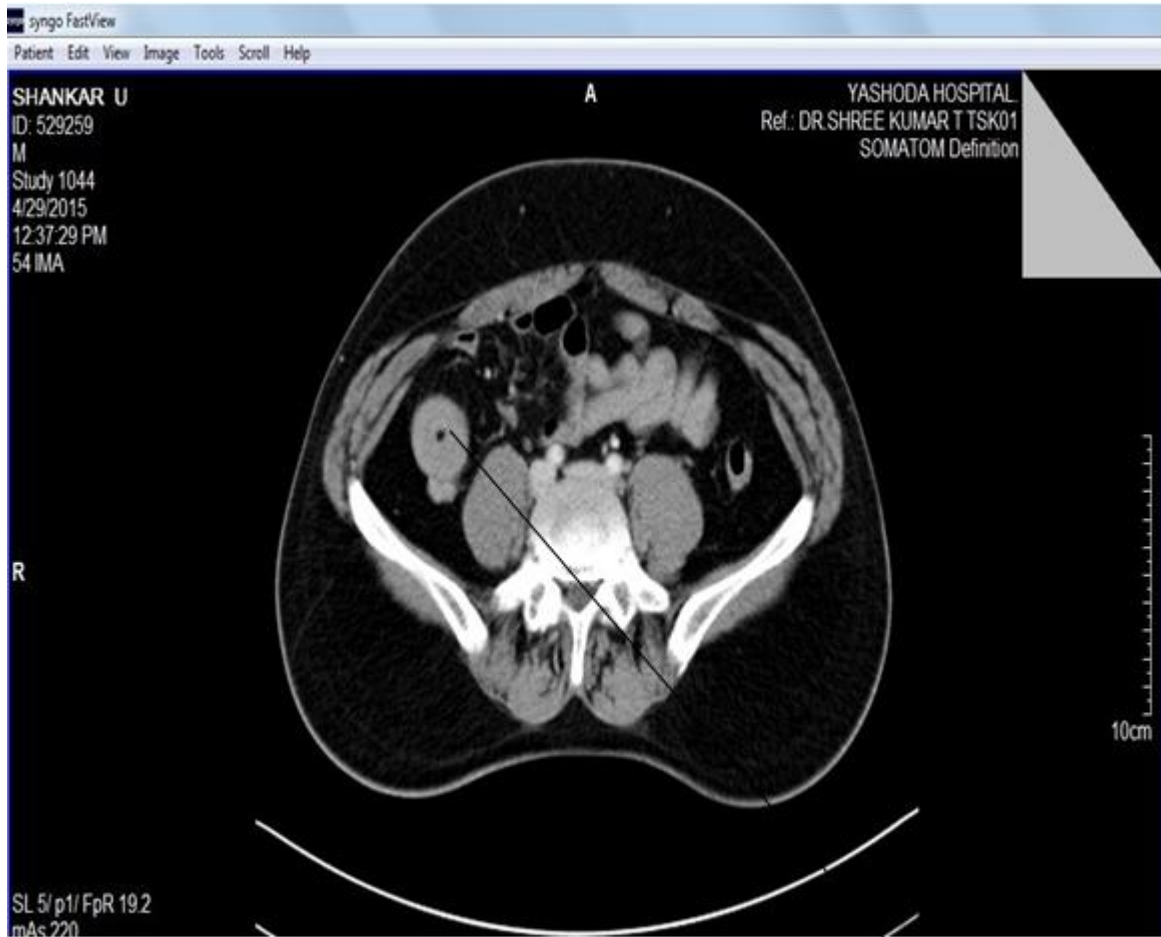
Nonoperative measures have a role in the treatment of chronic symptomatic diverticular disease with a 45% to 75% success rate using conservative treatment including broad-spectrum antibiotics for bacterial overgrowth, small frequent meals, and vitamin supplementation. Surgical resection in remaining patients has been successful but can be problematic when affected bowel is extensive. Supportive measures are also acceptable for uncomplicated diverticulitis and even in cases of focal perforations without peritonitis in clinically stable patients. When determining which patients should undergo operative treatment, most authors agree that incidentally found asymptomatic diverticula should be left in place as few patients will develop symptoms. As previously noted, patients with hemorrhage or perforation require resection of the entire affected segment because of the mesenteric location of these diverticula. Simple diverticulectomy or invagination results in decreased blood flow, predisposing to ischemia, leak, anastomotic breakdown, or fistula formation, and is associated with very high morbidity and mortality.

5. Conclusion

Small bowel diverticula are uncommon, and their diagnosis requires a high index of suspicion. Jejunoileal diverticula are most likely to produce symptoms from both acute and chronic complications of the disease. Inverted Meckel's diverticulum presenting as intussusception is common cause in intussusception cases but false diverticulum arising from mesenteric boarder inverted along with mesenteric fat forming a leading point for ileoileal intussusception is rare event.

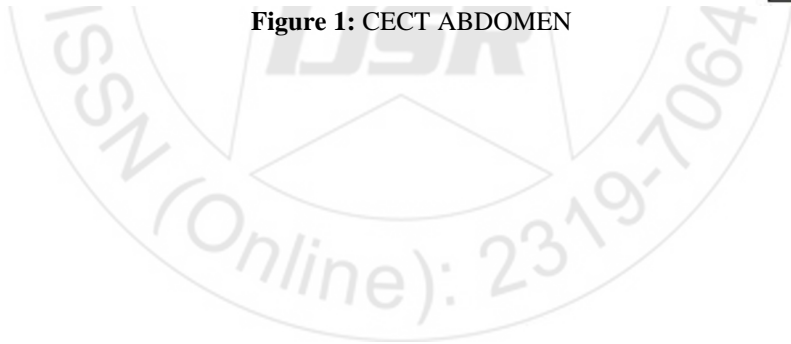
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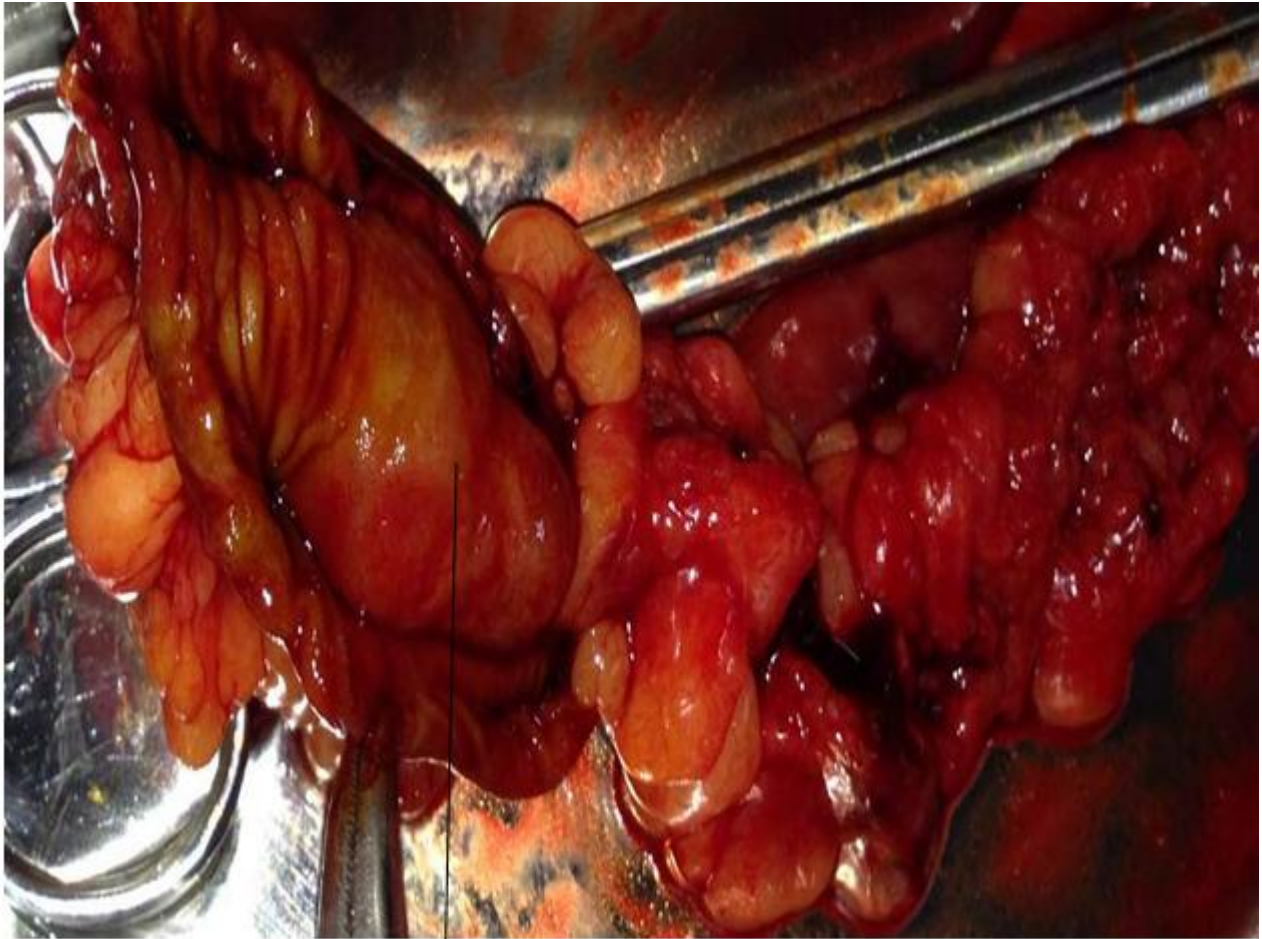
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Target sign

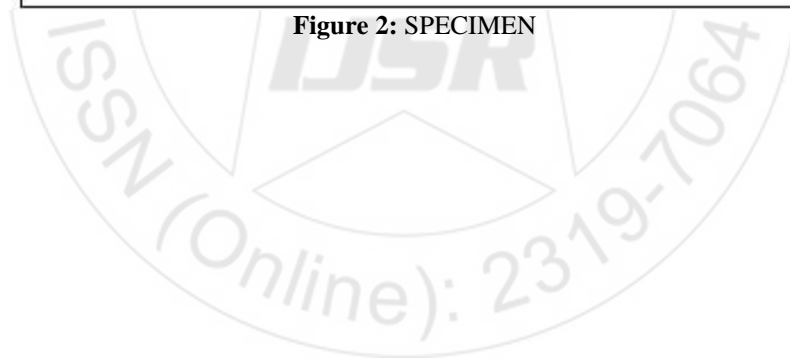
Figure 1: CECT ABDOMEN





Anti mesentric boarder incised showing luminal aspect and false diverticulum

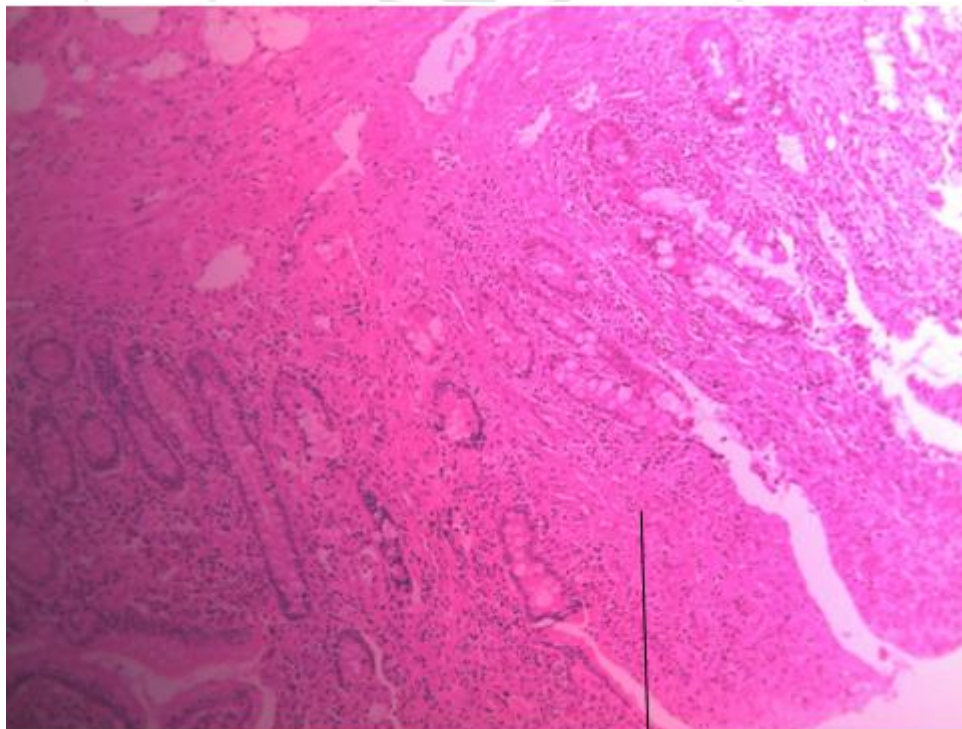
Figure 2: SPECIMEN





False diverticulum

Figure 3: RESECTED SPECIMEN



Splaying of muscularis mucosa

Figure 4: HPE SLIDE SHOWING SPLAYING OF MUSCULARIS MUCOSA