



# Meckel's Diverticulum Mimicking Inflammatory Bowel Disease

Adyasha Kanungo<sup>1</sup> Swathi Shenoy<sup>1</sup> Aureen D'Cunha<sup>2</sup> Seema Pavaman Sindgikar<sup>1</sup>

<sup>1</sup>Department of Paediatrics, Nitte (Deemed to be University), K S Hegde Medical Academy, Mangalore, Karnataka, India

<sup>2</sup>Department of Paediatric Surgery, Nitte (Deemed to be University), K S Hegde Medical Academy, Mangalore, Karnataka, India

Address for correspondence Seema Pavaman Sindgikar, MD, Department of Paediatrics, K S Hegde Medical Academy, Mangalore, Karnataka 575018, India (e-mail: seemapavaman@nitte.edu.in).

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## Abstract

Intermittent abdominal pain is the most common gastrointestinal (GI) complaint in the pediatric age group. When basic investigations and sonograms do not give etiological basis, functional GI disorders are diagnosed. Meckel's diverticulum (MD), being the common GI surgical condition, can be missed in absence of classical symptoms. Clinical presentation varies based on the size, location, and presence of ectopic gastric mucosa. We report a case of an adolescent female with MD presenting as chronic abdominal pain. Abdominal ultrasonogram was normal. Abnormal fecal calprotectin level and colonoscopy directed for a suspicion of inflammatory bowel disease. Persistence of symptoms with increasing severity prompted a relook into the diagnosis. The presence of intussusception on abdominal scan during one of the painful episodes warranted emergency exploratory laparotomy. Intraoperatively, the lead point for intussusception was identified as MD, which was resected. Postoperative period was uneventful. There are no abdominal symptoms since a year during the follow-up period.

## Keywords

- ▶ chronic intermittent abdominal pain
- ▶ intussusception
- ▶ Crohn's disease

## Introduction

The prevalence of functional chronic abdominal pain in children is 13.5%.<sup>1</sup> Organic causes contribute to a minor proportion. The likelihood of diagnosing it as functional in origin is higher when the routine investigations do not yield an etiological basis for the disease. Intussusception in older children and adolescents is a relatively rare condition that is responsible for mechanical intestinal obstruction and a bowel lesion as the lead point is occasionally identified.<sup>2</sup> It is a surgical emergency and should be on the differential in any patient with isolated abdominal complaints. Meckel's diverticulum (MD) is caused by the failure of obliteration of the omphalomesenteric duct that attaches the yolk sac to the primitive gut between the fifth and ninth weeks of gestation. It can sag into the bowel lumen and then serve as a lead point to allow telescoping of the distal ileum into the large bowel, causing transient ileoileal and ileocolic types of intussusception. The inability of routine

scans to identify MD may result in delay in diagnosis causing untoward complications like bowel obstruction and in turn gangrene. We report a case of MD in an adolescent girl with chronic abdominal pain presenting as intussusception needing emergency exploratory laparotomy.

## Case Report

A 14-year-old girl was referred with complaints of chronic intermittent abdominal pain of 2-year duration. The nature of intermittent pain was for two to three episodes per day with pain-free intervals for 3 to 4 days. It was localized to the epigastric and umbilical region, occasionally associated with nonbilious vomiting. Conservative treatment of nil per oral status for 48 hours, intravenous (IV) fluids, and antibiotics were given during these episodes of pain. Ultrasonography of the abdomen and pelvis was documented four times over a period of 2 years and was found to be normal. When she visited

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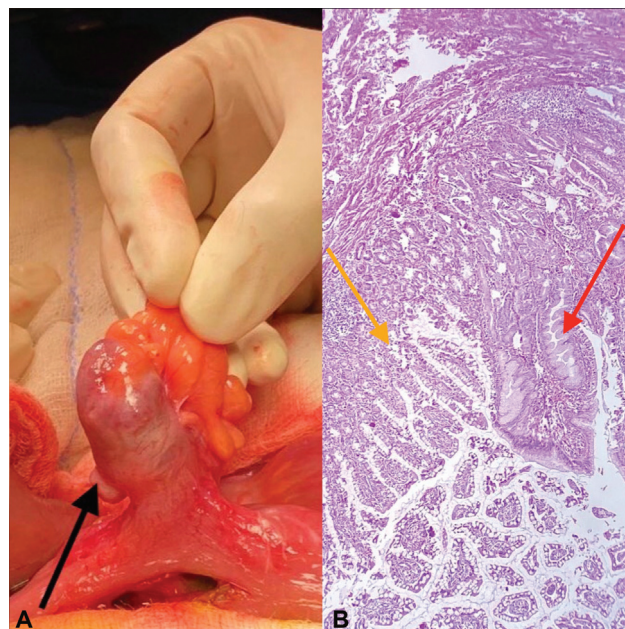
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us with acute pain in the abdomen, the focused examination suggested mild tenderness in the epigastric area without signs of bowel obstruction. There was no history of alternate constipation or diarrhea. Her body mass index was 28.8 kg/m<sup>2</sup> (>99th centile) suggesting obesity. Baseline blood investigations were normal. Medical causes of chronic abdominal pain such as abdominal migraine, irritable bowel syndrome, and inflammatory bowel disease (IBD) were considered as differentials. Electroencephalogram was normal. Fecal calprotectin level was elevated, 71.8 µg/g (normal value <50 µg/g). Levels more than 100 µg/g suggest underlying IBD.<sup>3</sup> Gastroscopy and colonoscopy suggested esophagitis, pangastritis, and edematous sigmoid colon mucosa with polyp in the rectosigmoid region. Rapid urease test was positive for *Helicobacter pylori* infection. The biopsy from the rectosigmoid region showed cryptitis and crypt abscesses suggestive of active colitis. As the clinical and biopsy features were favoring IBD, elevated fecal calprotectin levels were considered to be supportive for the diagnosis. She was managed conservatively with IV fluids, IV antispasmodics, antireflux measures, and anti *H. pylori* regimen. Her symptoms did not subside and the painful episodes recurred in greater intensity. Contrast-enhanced computed tomography (CT) abdomen with enterography (► Fig. 1) suggested ileoileal intussusception with dilated proximal small bowel loops. Exploratory laparotomy was performed and approximately 60 cm proximal to the ileocecal junction, an intraluminal mass was found that had intussusception. On eversion, thickened and inflamed MD was identified (► Fig. 2A). The mesentery adjacent to the diverticulum, 5 cm on either side, had a thick appearance likely due to previous episodes of intussusception. The tip of the appendix was congested. The rest of the bowel from duodenojejunal flexure to the rectum was normal. The bowel with MD was resected along with appendectomy. The postoperative period was uneventful. Histopathological examination confirmed the diagnosis of MD, which showed gastric heterotopia (► Fig. 2B). There were features of acute and chronic appendicitis and reactive mesenteric lymphadenitis. Postoperative period was managed with epidural analgesics and IV antibiotics. She had no complaints of abdominal pain or distension, constipation, or pain over the surgical site. She was discharged on postoperative day 10 with no complications. In the follow-up period of



**Fig. 1** Small bowel intussusception (ileoileal) (black arrow) with edema of intussusceptum and mesentery with proximal and small bowel obstruction.



**Fig. 2** (A) Thickened and mildly inflamed Meckel's diverticulum (black arrow). (B) Gastric glands (red arrow) with intestinal mucosa (yellow arrow) (hematoxylin and eosin stain, ×4).

1 year after the surgery, she continues to be asymptomatic and attends her school regularly.

## Discussion

Chronic intermittent abdominal pain is diagnosed in 10% of high school-going children. Intussusception as the cause of abdominal pain in adolescence requires a thorough evaluation. The causes include MD, polyps, Peutz-Jeghers syndrome, Henoch-Schonlein purpura, neutropenic colitis, cystic fibrosis, celiac disease, Ascaris infection, and malignancies. In a UK-based study, among 28% pediatric cases of intussusceptions, MD was identified as the pathological lead point.<sup>2</sup> As against the normal age range of infancy as presentation of intussusception, the median age was 4.9 years in the above cohort of MD. A spectrum of congenital gut anomalies may result depending on the stage of arrest of normal involution. The prevalence of MD ranges from 0.3 to 2.9% in the general population with a complication rate of less than 4%.<sup>4</sup> Intestinal obstruction due to intussusception or volvulus is a complication of MD, which can be the solo presenting feature at any age. Since most intussusceptions are idiopathic in origin, and most MDs are asymptomatic, the diagnosis of intussusception secondary to MD is very rare. We had this complicated and unusual case of MD presenting as chronic abdominal pain and intussusception. The diagnosis could be possible only by laparotomy demonstrating diverticulum with ectopic gastric mucosa. CT imaging can be helpful in the diagnosis of patients with Meckel's diverticulitis, but bowel obstruction presents a greater diagnostic challenge. Meckel's diverticulitis is often clinically indistinguishable from more common processes, such as appendicitis or Crohn's disease, with correct preoperative diagnosis

made in very few. Reports of patients with MD masquerading as IBD are rare, but cases of patients with MD associated with confirmed IBD are not uncommon. Few studies have shown that the prevalence of MD in patients with IBD is three times above that of the general population. Similar report of MD presenting as stricturing Crohn's disease is reported in a 29-year-old male by Kassim et al.<sup>5</sup> The overlapping features of both resulted in the delay of diagnosis. Abnormal levels of fecal calprotectin and polypoidal changes in the colonoscopy led to a diagnosis of IBD in our case. Absence of growth failure, bowel irregularities, and rectal bleeding with features of gastrointestinal (GI) obstruction warranted a diagnostic laparotomy. As illustrated in our case and supported by other reports, preoperative diagnosis of patients with MD can be challenging. Chronic inflammation could have resulted in polypoidal changes seen in the colon. The complications seen in such cases can be misdiagnosed as other more common GI disorders. Nuclear imaging using technetium-99 m pertechnetate can be considered for detection of ectopic gastric mucosa of MD if multiple radiographs do not yield a diagnosis. If ultimate surgical management is likely, an early laparoscopic or open exploration should be performed to prevent the morbidity and mortality associated with late complications.

## Conclusions

The diagnosis of MD should be considered in any child presenting with chronic intermittent pain in the abdo-

men and should be advised nuclear scans for the confirmation. Presence of cryptitis and polyposis along with elevated fecal calprotectin levels delayed the diagnosis in this case.

## Conflict of Interest

None declared.

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