

An Uncommon Cause of Obscure Gastrointestinal Bleeding: Inverted Meckel's Diverticulum With Combined Ectopic Gastric Mucosa and Pancreatic Ectopia in an Adult

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To the Editor

Inversion of a Meckel's diverticulum (MD) is an exceptionally rare clinical entity, accounting for less than 4% of all symptomatic MD cases in adult patients [1]. When inverted, the diverticulum typically acts as a lead point, precipitating an ileo-ileal intussusception [2,3]. While gastrointestinal bleeding secondary to ulceration from ectopic mucosa is a diagnostic hallmark of MD in children, it represents a highly atypical presentation in adulthood, posing a major diagnostic and therapeutic challenge for acute care surgeons [4,5].

We read with interest recent literature regarding small bowel intussusception and wish to contribute a highly unusual case that highlights a major radiological pitfall and a rare histopathological finding. A 49-year-old male presented to Department of Emergency following multiple episodes of melena. On admission, the patient was hemodynamically stable, with localized left iliac fossa tenderness and no signs of peritonitis. Initial laboratory investigations revealed a hemoglobin (Hb) level of 13.2 g/dL, which progressively dropped to 10.9 g/dL within the first 24 hours of clinical observation. An urgent esophagogastroduodenoscopy and a subsequent colonoscopy identified residual melena throughout the colon but failed to locate an active source of bleeding, with the terminal ileum appearing unremarkable. A contrast-enhanced abdominal computed tomography (CT) scan was performed to investigate the obscure gastrointestinal bleeding. It demonstrated a 17 × 17 mm endoluminal mass of adipose density (–80 HU) within an ileal loop in the left flank, associated with a characteristic “target sign” or “telescope” appearance of the adjacent bowel (Fig. 1). Based on the pure fat attenuation, a presumptive radiological diagnosis of ileo-ileal intussusception secondary to an intraluminal fatoma was made.

Given the persistent anemia, surgical exploration was

deemed mandatory. An open laparotomical approach was preferred over laparoscopy; since the CT scan could not definitively rule out a malignant fat-containing intraluminal lesion, direct manual palpation was considered essential to assess the mass and guarantee oncologically safe resection margins. Intraoperatively, an ileo-ileal intussusception was identified 60 cm proximal to the ileocecal valve, driven by an inverted MD that had fully invaginated into the intestinal lumen (Fig. 2).

A segmental ileal resection was performed, and intestinal continuity was restored via a manual two-layer isoperistaltic ileo-ileal anastomosis. Gross macroscopic examination of the resected specimen revealed a 3 cm diverticular formation containing an entrapped 1.8 × 1.5 cm fragment of mesenteric adipose tissue. Histopathological analysis definitively confirmed a true Meckel's diverticulum exhibiting a rare combined pseudopyloric and pancreatic ectopic tissue. Notably, an area of necrotizing granulocytic inflammation and mucosal ulceration was identified at the base of the diverticulum adjacent to the fat tissue. While the ulceration presented signs consistent with recent bleeding, this invaginated mesenteric fat, tightly compressed within the inverted serosal core, was the direct cause of the radiological “pseudolipoma” appearance on the preoperative CT scan. The patient's postoperative course was uneventful, and he was discharged in good condition on the eighth postoperative day. At the 13-day follow-up, the patient had completely recovered with stabilized hemoglobin levels. At the 3-months follow-up, the patient was in good clinical condition and showed no signs of bleeding or anemia.

Preoperative diagnosis of an inverted MD remains notoriously difficult due to overlapping CT features with other fat-containing intraluminal lesions. On CT imaging, an inverted MD characteristically presents as a central core of fat attenuation surrounded by a thick, double-layered collar of soft-tissue attenuation representing the intestinal walls [6,7]. In our case, the core of entrapped mesenteric fat mimicked an intraluminal fatoma. This “pseudolipoma” sign is the most deceptive radiological pitfall reported in the literature [6,7]. From a radiological standpoint, the differential diagnosis of an intraluminal fat-density mass leading to adult intussusception must include true gastrointestinal

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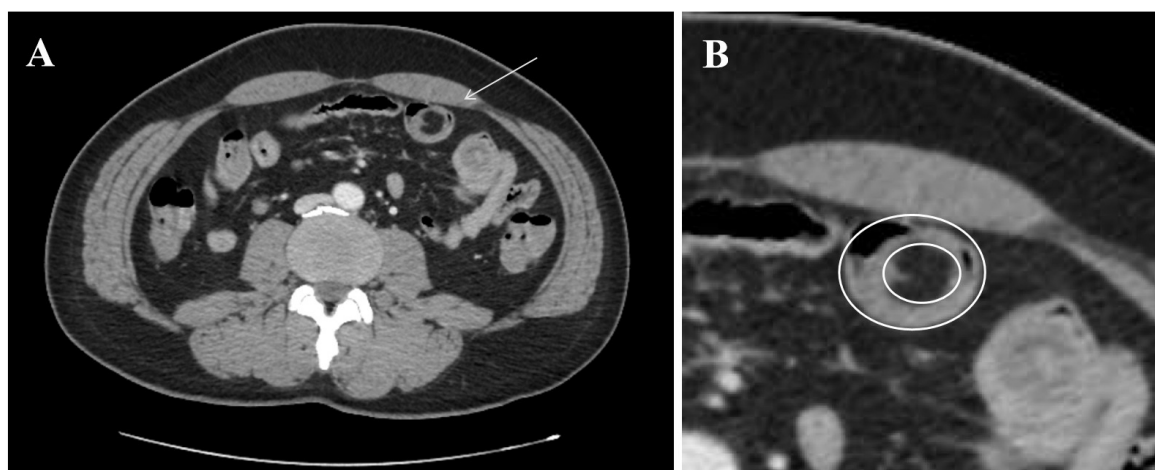


Fig. 1. Computed tomography findings of ileal intussusception. (A) Computed tomography (CT) scan showing the endoluminal mass with fat attenuation within an ileal loop in the left flank (arrow). (B) Detail showing the characteristic “telescope” appearance of the concentric bowel walls (circles).

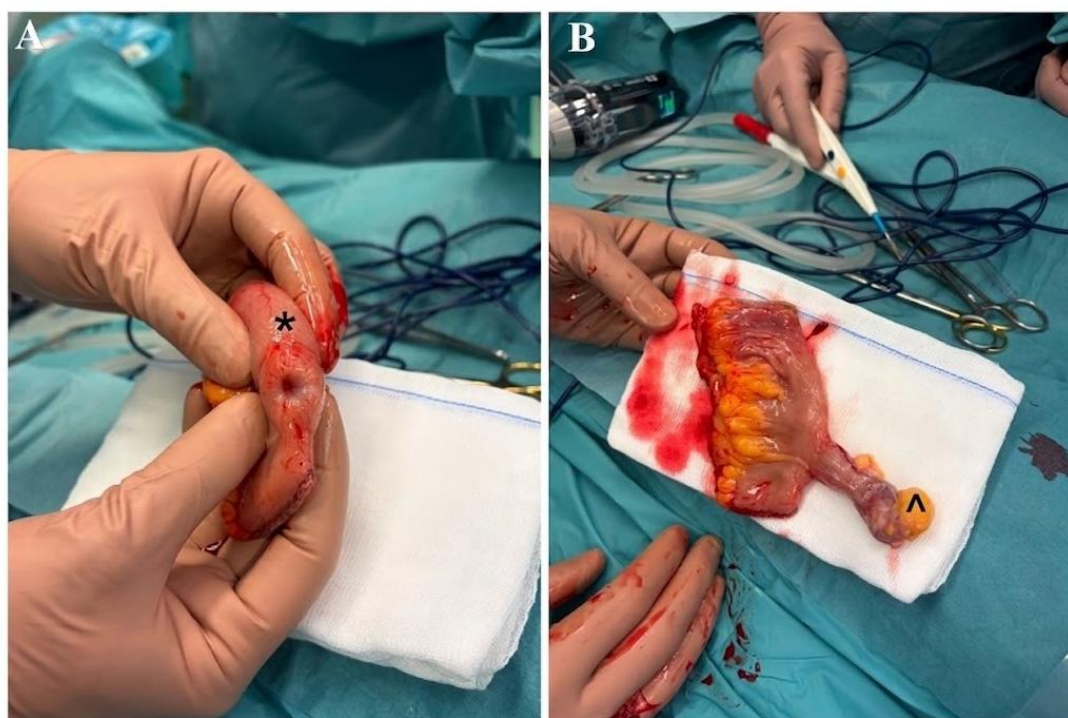


Fig. 2. Intraoperative macroscopic appearance of the surgical specimen. (A) The resected ileal segment showing the Meckel’s diverticulum arising from the antimesenteric border; the diverticulum remains inverted into the intestinal lumen, with only its neck (*) visible from the serosal surface. (B) The same specimen following manual eversion of the diverticulum, fully exposing its entire length and revealing an entrapped fragment of mesenteric adipose tissue (pseudolipoma) located at the tip of the diverticular formation (^).

lipomas, which typically exhibit a significantly thinner peripheral soft-tissue collar compared to the thick, vascularized outer muscular wall of an inverted diverticulum [6]. Other rare entities include liposarcomas—characterized by thick septations or heterogeneous density—and gastrointestinal stromal tumors (GISTs) and adenocarcinomas with fatty degeneration or mesenteric fat entrapment. The clinical scenario was further confounded by obscure bleed-

ing, which may have been associated with the presence of ectopic tissue [4,8]. While single ectopic tissue is well-documented, the synergistic coexistence of both gastric and pancreatic tissue as at the diverticular base provides an aggressive pathophysiological substrate [8]. Ectopic gastric mucosa secretes hydrochloric acid, which lowers local pH; this acidic microenvironment triggers the activation of exocrine pancreatic enzymes—such as trypsinogen—secreted

by the coexisting pancreatic ectopia. In our patient, this combined enzymatic and chemical assault leads to mucosal proteolysis and severe peptic ulceration of the adjacent unprotected ileal mucosa, providing the pathophysiological substrate for the obscure bleeding.

Regarding surgical strategy, there is a clear consensus that symptomatic MD in adults necessitates formal intervention [9]. While a simple diverticulectomy or wedge resection might be sufficient for incidental or uncomplicated findings, a segmental ileal resection may be considered an appropriate surgical approach for inverted or bleeding cases [5,9]. This approach allows complete removal of the affected ileal segment, including ectopic mucosal tissue and adjacent ulcerated or ischemic areas, which may reduce the risk of persistent or recurrent symptoms; however, long-term follow-up is required to further evaluate postoperative outcomes.

In conclusion, an inverted Meckel's diverticulum must be meticulously included in the differential diagnosis of adult intussusception and obscure gastrointestinal bleeding, even when high-resolution CT imaging strongly suggests a benign intraluminal lipoma. Acute care surgeons and radiologists must maintain a high index of suspicion. The coexistence of dual ectopic gastric mucosa and pancreatic ectopia may represent a risk factor for digestive bleeding. Segmental ileal resection can provide excellent clinical outcomes.

Availability of Data and Materials

The data analyzed are available from the corresponding author upon reasonable request.

Author Contributions

GDD, MC, and PAGB wrote the draft and collected the data. All authors have been involved in revising the manuscript critically for important intellectual content. All authors gave final approval of the version to be published. All authors have participated sufficiently in the work to take public responsibility for appropriate portions of the content and agreed to be accountable for all aspects of the work in ensuring that questions related to its accuracy or integrity.

Ethics Approval and Consent to Participate

The study has been conducted in accordance with the Declaration of Helsinki. Informed consent was obtained from the patient prior to publication. This manuscript describes a single case report and does not constitute formal human subjects research requiring institutional review board approval.

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Conflict of Interest

The authors declare no conflict of interest.

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