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Case report

Arteriovenous Malformation Associated with a Jejunal Diverticulum: An Uncommon Cause of Small Bowel Bleeding

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Abstract

Jejunal diverticulosis is an uncommon cause of small bowel bleeding, and its coexistence with an arteriovenous malformation (AVM) is exceedingly rare. We report the case of an 81-year-old man presenting with overt gastrointestinal bleeding and hemodynamic instability. Conventional endoscopy and initial imaging studies failed to localize the bleeding source. Exploratory laparoscopy combined with intraoperative enteroscopy identified a large jejunal diverticulum with mucosal ulceration and associated vascular congestion. Histopathological analysis confirmed a true diverticulum with an underlying AVM. Surgical resection of the affected segment resulted in complete resolution, with no recurrence of bleeding during clinical follow-up. This report underscores the importance of considering uncommon combined etiologies in patients with obscure small bowel bleeding of unclear origin.

Keywords

Diverticulum; gastrointestinal hemorrhage; vascular malformations; capsule endoscopy; balloon enteroscopy.

INTRODUCTION

Small bowel bleeding refers to hemorrhage originating between the ampulla of Vater and the ileocecal valve. Clinically, it may present as melena or hematochezia, or manifest as obscure gastrointestinal bleeding suspected on the basis of iron deficiency anemia or a positive fecal occult blood test without an identifiable source on initial studies. This diagnosis should be considered when upper gastrointestinal endoscopy and colonoscopy fail to establish the cause, representing a highly complex diagnostic challenge[(1)].

Among the uncommon causes of small bowel bleeding, jejunal diverticula constitute the rarest form of small bowel diverticulosis. These lesions correspond to saccular herniations of the mucosa through focal defects in the intestinal wall at sites of reduced resistance. Although most patients remain asymptomatic, recognition of this condition becomes clinically relevant when complications such as diverticulitis, gastrointestinal bleeding, intestinal obstruction, or perforation occur[(1,2)].

Bleeding associated with jejunal diverticula typically results from erosion of adjacent vessels. However, in excep-

tional cases, an arteriovenous malformation may coexist. This uncommon vascular abnormality further increases the complexity of both the clinical presentation and the diagnostic process[3].

We present a case of obscure gastrointestinal bleeding ultimately attributed to a jejunal diverticulum concomitant with an arteriovenous malformation, which required the sequential use of different imaging modalities and surgical exploration to achieve a definitive diagnosis and provide curative treatment. Written informed consent was obtained from the patient, and the study was approved by the Institutional Ethics Committee (CCEI 17789-2025).

CASE PRESENTATION

An 81-year-old male patient with a history of hypertension, hiatal hernia, gastritis, coronary artery disease, and diverticulosis, as well as a recent hospitalization for Mallory-Weiss syndrome, was readmitted three days after discharge because of a seven-hour episode of profuse melena associated with asthenia, adynamia, dizziness, emesis, vomiting, and diffuse abdominal pain. On admission, hypotension (90/64 mm Hg) and tachycardia (110 beats per minute [bpm]) were documented, without fever, and with a respiratory rate of 16 breaths per minute. Laboratory studies revealed a hemoglobin level of 9.4 g/dL, without leukocytosis, thrombocytopenia, or other cytopenias. Electrolytes, liver enzymes, acid-base status, and lactate levels were within normal ranges. The patient was transferred to the intensive care unit (ICU), where initial hemodynamic stabilization was achieved with crystalloid administration and proton pump inhibitors. Due to persistent anemia, he required multiple packed red blood cell transfusions.

Given the recent history of Mallory-Weiss syndrome, upper gastrointestinal endoscopy was performed and ruled out active bleeding or stigmata of recent hemorrhage. Colonoscopy revealed extensive pancolonic diverticulosis, including diverticula in the distal ileum, without identification of a clear bleeding source. Persistence of melena suggested a more proximal gastrointestinal origin.

In light of these findings, capsule endoscopy was indicated for evaluation of the small bowel. The study demonstrated an image suggestive of a space-occupying lesion in the proximal jejunum, without signs of active bleeding (**Figure 1**). Antegrade enteroscopy advanced approximately three meters and revealed multiple wide-based diverticula without endoscopic stigmata of recent hemorrhage. No masses, polyps, or findings suggestive of neoplasia were observed. Magnetic resonance enterography ruled out associated focal lesions or signs of diverticulosis-related complications.

Given the unfavorable clinical course and persistent diagnostic uncertainty, the patient underwent exploratory laparoscopy with intraoperative enteroscopy. Multiple adhesions between the small bowel and the transverse mesocolon were identified, along with jejunal diverticula in the explored segment. A large diverticulum with marked vascular congestion and intradiverticular blood clots was identified (**Figure 2**), without other associated pathological findings. Segmental resection of the affected bowel was performed.

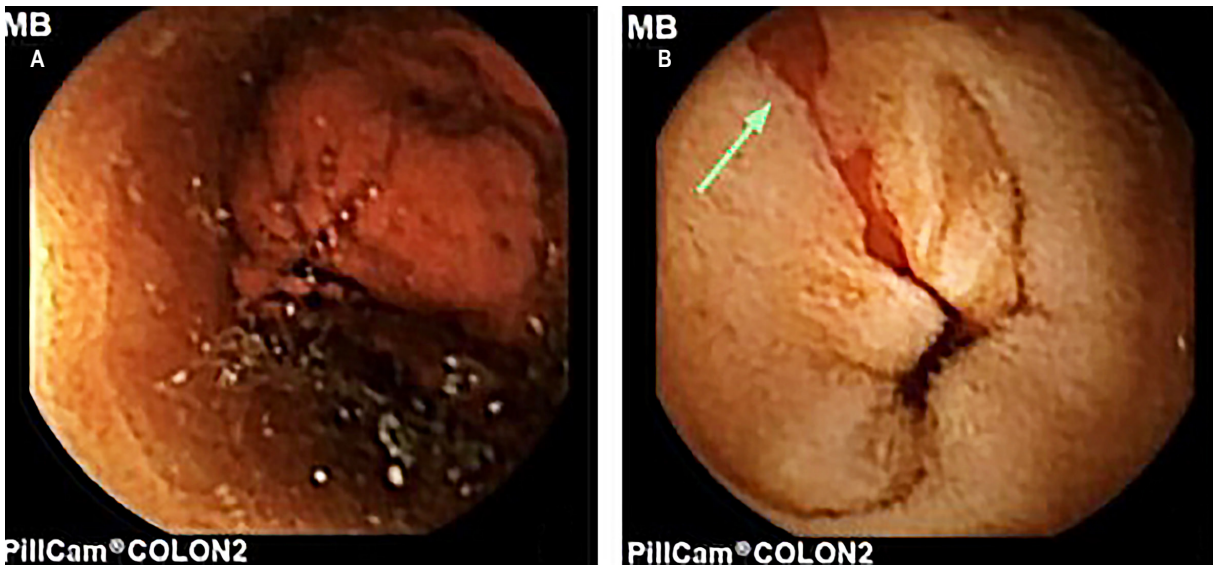


Figure 1. Capsule endoscopy findings. **A.** Image suggestive of a lesion in the proximal jejunum with focal mucosal disruption. **B.** Erosive lesion with visible blood residues, consistent with recent bleeding. Author's file.

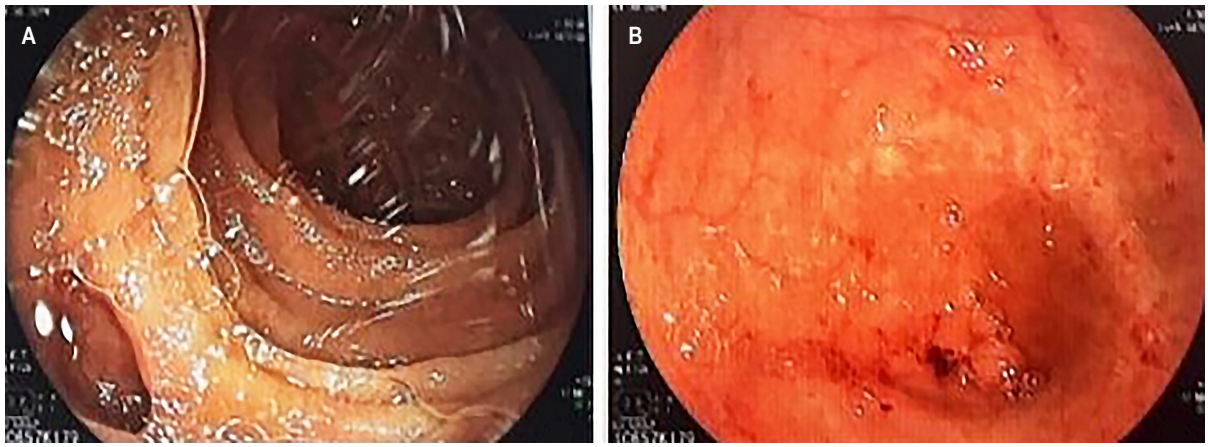


Figure 2. Intraoperative enteroscopy findings. **A.** Wide-necked jejunal diverticulum identified during surgical exploration. **B.** B. Intraluminal view of the diverticulum with clots and stigmata of recent hemorrhage. Author's file.

Histopathological analysis demonstrated true diverticula and pseudodiverticula with superficial mucosal erosion, acute serositis, submucosal edema, vascular ectasia and congestion, as well as a lesion consistent with an arteriovenous malformation. No further bleeding episodes occurred after surgery.

DISCUSSION

Few cases of gastrointestinal hemorrhage secondary to the coexistence of an arteriovenous malformation and jejunal diverticulosis have been described[3–8]. Small bowel bleeding is an uncommon event, accounting for approximately 5%–10% of all gastrointestinal bleeding cases[1,2]. The etiology varies according to patient age. In individuals younger than 40 years, vascular causes predominate, mainly angiodysplasia and Dieulafoy lesions, followed by inflammatory diseases, including Crohn's disease, intestinal ulcers, Meckel's diverticulum, and nonspecific enteritis, as well as tumors and polyposis syndromes. In patients older than 40 years, vascular etiologies remain the most common, particularly angioectasias and Dieulafoy lesions, together with ulcerative disease associated with nonsteroidal anti-inflammatory drug (NSAID) use and gastrointestinal neoplasms such as gastrointestinal stromal tumors (GISTs), lymphomas, carcinoid tumors, and adenocarcinoma. Other even less frequent causes include portal hypertensive enteropathy, intestinal varices, systemic vascular syndromes, and infiltrative or connective tissue diseases[1,2].

The diagnostic evaluation of persistent small bowel bleeding should begin with assessment of hemodynamic status. Although most patients are hemodynamically stable, this male patient required critical care management, ICU admission, and transfusional support because of persistent anemia. When upper gastrointestinal endoscopy and colonoscopy fail to localize the bleeding source, repeating these procedures may be considered if technical limitations were present, given that up to 30% of cases may originate outside the small bowel. Capsule endoscopy is the subsequent method of choice because of its high diagnostic yield and its value in excluding disease. If bleeding persists or recurs, deep enteroscopy and magnetic resonance enterography complement the evaluation according to clinical relevance and local availability. Intraoperative enteroscopy is reserved for selected cases in which clinical suspicion remains high despite previous nondiagnostic studies[2].

This case illustrates the value of a stepwise, adaptive, and methodical approach. Although the patient initially presented with melena and marked anemia, the initial studies were inconclusive. Capsule endoscopy suggested a jejunal lesion that was subsequently not confirmed by antegrade enteroscopy or magnetic resonance imaging. Clinical deterioration, together with persistent obscure bleeding, justified surgical exploration assisted by intraoperative enteroscopy, which identified a large jejunal diverticulum with superficial erosions, dilated congestive vessels, and intradiverticular clots. Histological examination confirmed pseudodiverticula and a vascular lesion consistent with an arteriovenous malformation as the cause of bleeding.

Although uncommon, the association between jejunal diverticulosis and arteriovenous malformation should be considered in the differential diagnosis of unexplained persistent small bowel bleeding. This report highlights the importance of maintaining clinical suspicion, integrating

fragmented findings, and adapting the diagnostic evaluation according to disease progression in order to achieve accurate diagnoses and curative treatment, even in uncommon clinical scenarios.

Informed Consent

Written informed consent was obtained from the patient, and the study was approved by the Institutional Ethics Committee (CCEI-17789-2025).

Conflict of Interest

The authors declare no conflicts of interest.

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Use of Artificial Intelligence Technologies

No artificial intelligence tools were used.

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