

Jejunal Arteriovenous Malformation Detected by Video Capsule Endoscopy

Atsushi Iraha¹, Yasue Irei², Tatsuya Kinjo², Yuiko Oishi³, Tetsuya Ohira³, Tetsu Kinjo³, Akira Hokama^{3,*}, Noritake Kosuge⁵, Naoki Wada⁴, Mitsuhsa Takatsuki², and Jiro Fujita¹

Departments of ¹Infectious, Respiratory, and Digestive Medicine, ²Digestive and General Surgery, ³Endoscopy, and ⁴Pathology and Oncology, Graduate School of Medicine, University of the Ryukyus, Okinawa, ⁵Department of Pathology, Seirei Yokohama Hospital, Kanagawa, Japan

A 61-year-old man visited a clinic because of melena. He had taken amlodipine for hypertension but no antiplatelet drugs. After esophagogastroduodenoscopy (EGD) and colonoscopy were negative, he was referred to our hospital for overt small bowel bleeding. A physical examination showed stable vital signs and unremarkable abdominal findings. A laboratory examination showed hemoglobin of 11.7 g/dL. Video capsule endoscopy (VCE) was performed, which showed a bleeding erosion in the small intestine (Fig. 1A), however; subsequent balloon enteroscopy could not identify the lesion. Next, he underwent laparotomy and intraoperative enteroscopy which discovered a small submucosal lesion with a bleeding erosion in the distal jejunum (Fig. 1B), which was identified through the serosa (Fig. 1C) and resected with a minimal surgical margin. The histopathological examination showed an arteriovenous malformation (AVM) (Fig. 2). The postoperative course was unremarkable, and the gastrointestinal bleeding has not recurred.

AVM is a rare and important life-threatening bleeding cause of the small intestine. It is sometimes difficult to localize AVM, given the nature of intermittent bleeding and its small size. A recent review on the small intestinal AVM reported that two out of eighteen cases were detected by VCE.¹ According to the algorithm for the management for

hemodynamically stable patients with suspected overt small bowel bleeding suggested by the American Society for Gastrointestinal Endoscopy,² VCE is recommended when EGD and colonoscopy show normal results. In patients with possible intestinal obstructions or surgically altered anatomy, multiphase computed tomographic enterography (CTE) can be performed. Device-assisted enteroscopy, push enteroscopy, or intraoperative enteroscopy is recommended when significant lesions are detected by VCE or CTE. For hemodynamically unstable patients, CT angiography for localization of the bleeding source and subsequent angiography for embolization can be applied.² Despite the recent advances of diagnostic yield by balloon enteroscopy, failure of identifying AVM does exist, which may require intraoperative enteroscopy as a last resort, as shown in this case. A novel method of combination of angiography with intraoperative indocyanine green injection and enterectomy has been introduced recently.³ In conclusion, several modalities including VCE should be performed to diagnose bleeding sources in the small intestine.

CONFLICT OF INTEREST STATEMENT

None declared.

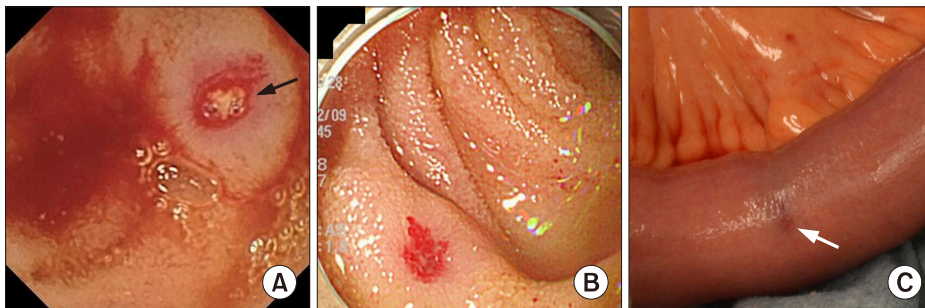


FIG. 1. (A) Video capsule endoscopy showed a bleeding erosion in the small intestine. (B) Intraoperative enteroscopy disclosed the small submucosal lesion with a bleeding erosion in the distal jejunum. (C) The lesion was identified through the serosa during laparotomy.

Corresponding Author:

Akira Hokama
Department of Endoscopy, Graduate School of Medicine, University of the Ryukyus, 207 Uehara, Nishihara, Okinawa 903-0215, Japan
Tel: +81-988951144, Fax: +81-988951414, E-mail: hokama-a@med.u-ryukyu.ac.jp

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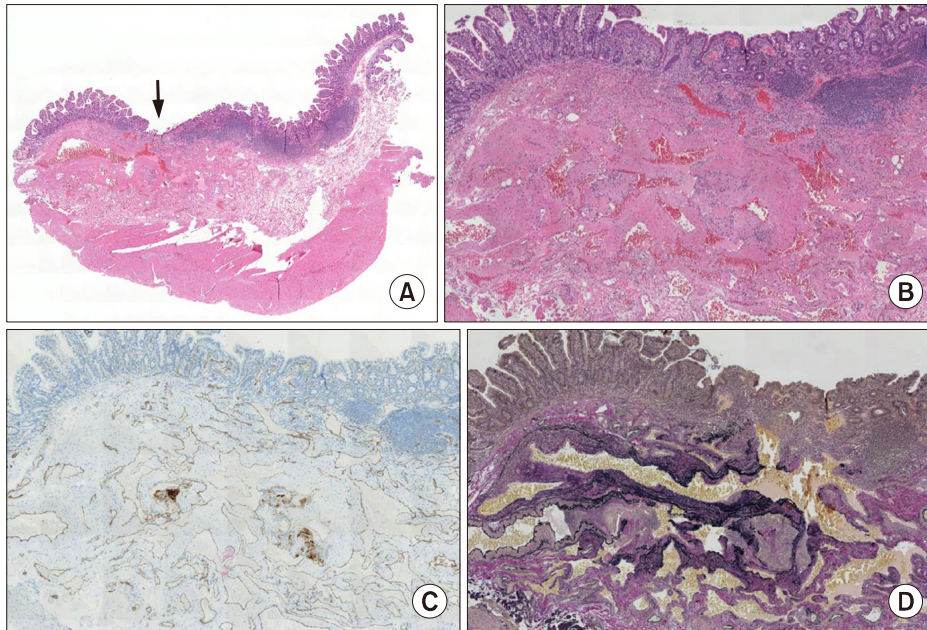


FIG. 2. (A) Histopathological examination of the resected lesion showed irregularly expanded vessels in the submucosal layer. Note the exposed vessels at the mucosal erosion (arrow) (Hematoxylin and eosin). (B) Numerous tortuous and dilated vessels were observed in the submucosal layer (Hematoxylin and eosin, $\times 40$). (C) Endothelial cells in the vascular walls were positive for immunostaining with CD31 ($\times 40$). (D) Note the transition from the thick-walled arteries to the thin-walled veins, making the diagnosis of arteriovenous malformation (Elastica van Gieson, $\times 40$).

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