

Jejunal GI tumor using probe-based confocal laser endomicroscopy



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A 63-year-old woman was admitted to our hospital with overt obscure GI bleeding (melena) and anemia (Hb, 4.8 g/dL) treated with multiple blood transfusions. She had undergone plain CT, EGD, and total colonoscopy, which revealed no bleeding sources. Her medical history included abdominal hysterectomy performed because of uterine leiomyoma. On examination, there were no abnormalities other than palpebral conjunctiva anemia. An early arterial phase contrast-enhanced multidetector CT image demonstrated a 14-mm hypervascular tumor in the intrapelvic jejunum (Fig. 1).

On the second hospital day, double-balloon enteroscopy (DBE) through the oral approach demonstrated a submucosal tumor with ulceration on the top in the mid-jejunum (Figs. 2A and B). EUS with the use of a 20-MHz miniature probe through the working channel of the DBE demonstrated a submucosal homogenous hypoechoic mass (Fig. 3). Next, probe-based confocal laser endomicroscopy (pCLE) was performed through the working channel of DBE after intravenous injection of 250 mg fluorescein, which revealed enhanced densely populated spindle cell tumors with unenhanced rod-shaped nuclei both in the longitudinal section and in the cross-section beneath the villi (Fig. 4; Video 1, available online at www.VideoGIE.org). These findings were strongly indicative of GI stromal tumor (GIST).



Figure 1. Early arterial phase image of contrast-enhanced multidetector CT of the abdomen. *Arrow* indicates a hypervascular tumor in the intrapelvic jejunum.

By contrast, leiomyoma appears to be enhanced narrower spindle cell tumors with much less unenhanced nuclei with the use of pCLE. Sterilized India ink was injected into the submucosal layer adjacent to this tumor to localize it for laparoscopic surgery. Laparoscopy-assisted partial jejunal resection was performed on the 12th hospital day. Macroscopically, a 30- × 23-mm tumor was observed in the mid-jejunum (Fig. 5). Pathologically, it was localized in the submucosal layer to the proper muscle layer and was diagnosed as a high-risk GIST, which was immunoreactive

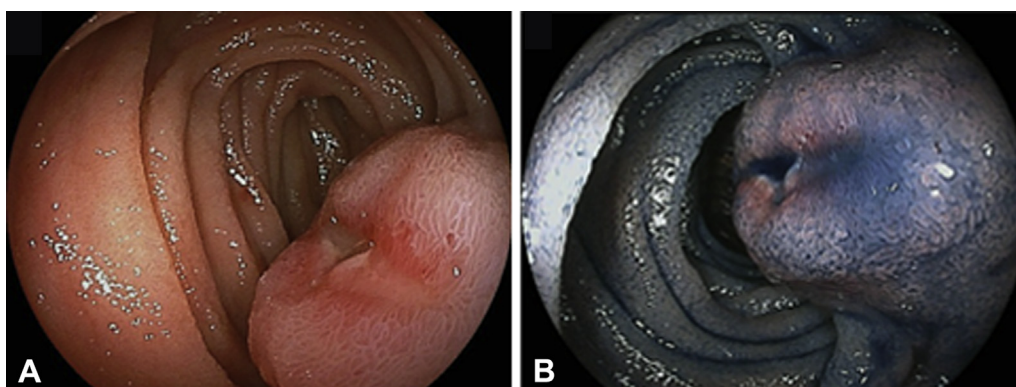


Figure 2. Double-balloon enteroscopic view through the oral approach. **A**, White-light image. **B**, Chromoendoscopic image with indigo carmine.

Written transcript of the video audio is available online at www.VideoGIE.org.



Figure 3. EUS view with use of a 20-MHz miniature probe through the working channel of a double-balloon enteroscope.

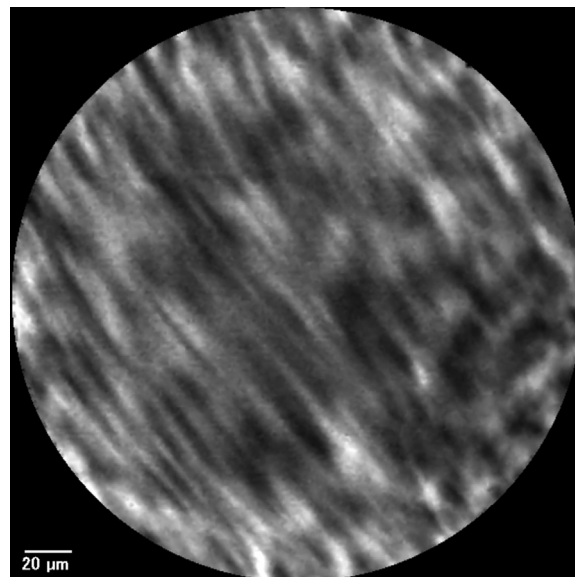


Figure 4. Probe-based confocal laser endoscopic image.

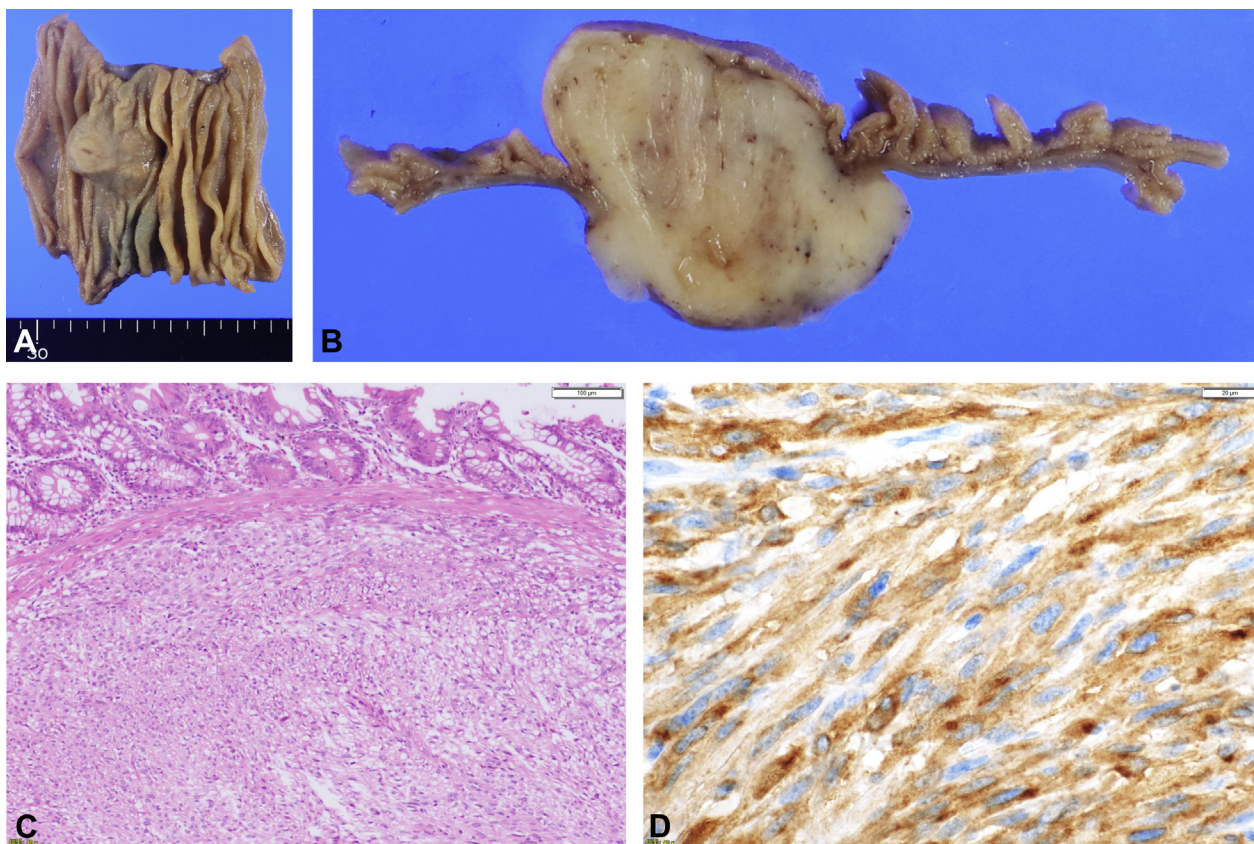


Figure 5. Surgical specimen. **A**, Macroscopic image on the luminal side. **B**, Macroscopic cross-sectional image. **C**, Surgical specimen (H&E, orig. mag. $\times 100$). **D**, Immunohistochemical staining with c-kit monoclonal antibody in a surgical specimen (orig. mag. $\times 400$).

for CD117/c-kit and DOG-1 but negative for S-100 protein and smooth muscle actin, with mitotic counts of 20 to 30 per 50 high-power fields and a 15% Ki67/MIB-1 proliferation index (Fig. 5).

GIST is one of the most frequent small-bowel malignant tumors, followed by malignant lymphoma, and is more prone to bleeding and anemia than are other small-bowel tumors.¹ This patient had recurrent small-bowel bleeding, and her hemoglobin concentration eventually dropped to 4.8 g/dL. We hesitated to take a biopsy specimen from the central ulceration of the GIST because it could have provoked massive bleeding. CLE is a novel endoscopic imaging technique that provides in vivo histologic analysis during ongoing endoscopy. The pCLE (Cellvizio), GastroFlex UHD and Coloflex UHD probes (Mauna Kea Technologies, Paris, France) are 3 meters and 4 meters long, respectively; therefore, they can be used during balloon-assisted enteroscopy. In this patient, the pCLE findings were strongly suggestive of GIST. The pCLE benefits patients who are taking antithrombotic agents, who have bleeding tendencies, or who have a condition for which taking pathologic samples is contraindicated or not recommended.² Even if regenerating nontumorous epithelium overlies the tumorous tissue, pCLE may be able to detect it by visualization of the subsurface microscopic architecture less than 100 μm in depth.³ In conclusion, pCLE could help in the in vivo diagnosis of submucosal

hypervascular tumors such as GIST in cases in which biopsy is not recommended.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

Abbreviations: DBE, double-balloon endoscopy or enteroscopy; GIST, GI stromal tumor; pCLE, probe-based confocal laser endomicroscopy.

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