Intraoperative enteroscopy for lower gastrointestinal bleeding of obscure origin: Importance of endoscopic training of surgeons

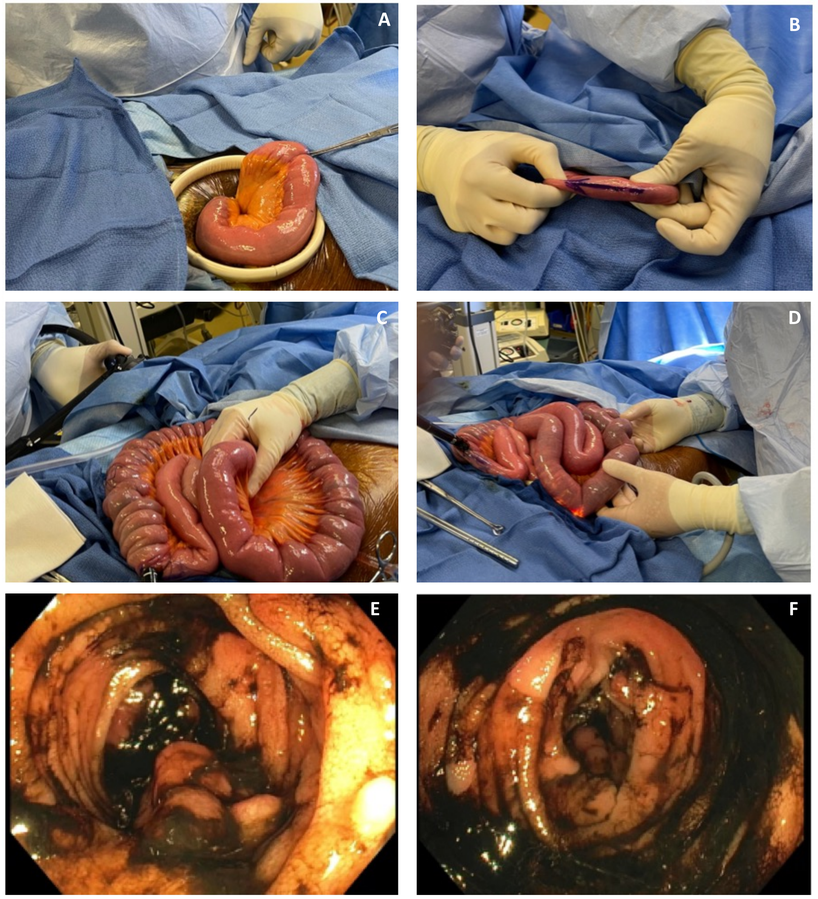
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Background:

Small intestinal tumors are an uncommon cause of gastrointestinal bleeding and can be difficult to localize. The sensitivity of CT angiograms is diminished in cases of low-volume bleeding, and nuclear medicine scans do not permit precise localization. Intraoperative enteroscopy via small bowel enterotomy is a novel procedure, allowing for real-time localization and definitive surgical treatment. An advanced endoscopic skillset and availability of emergency endoscopy support are prerequisites but are not widely available.

Case Presentation:

A 58-year-old male presented to the emergency room with worsening exertional dyspnea and congestive heart failure. Laboratory workup revealed severe anemia (hemoglobin/hematocrit of 2.2/10.3), and fecal occult blood test was positive. The patient underwent blood transfusions but developed cardiorespiratory failure requiring ventilatory support. He developed intermittent melena requiring daily blood transfusions. Colonoscopy revealed a terminal ileum suspected polypoid mass prolapsing into the cecum, and esophagogastroduodenoscopy showed a clean base pyloric channel ulcer. CT angiogram and nuclear medicine scan did not reveal any active bleeding. He was taken to the operating room and underwent intraoperative enteroscopy (using pediatric colonoscope) through an enterotomy in the small bowel approximately 30 cm proximal to the ileocecal valve. Enteroscopy examined approximately 2 meters of small bowel proximally with no evidence of blood or any suspicious lesions. Distal examination confirmed the presence of a small bowel polypoid mass and dark blood-filled terminal ileum and cecum. Laparoscopic hand-assisted ileocolic resection was carried out. Patient ceased bleeding after the procedure and was discharged after prolonged recovery from multiorgan failure.



Methods and Procedures:

1. Diagnostic laparoscopy is carried out.
2. A small hand-assist port is placed via Pfannenstiel incision (6 cm) and small bowel is extracorporealized. Fresh drapes are placed around bowel (A).
3. The insertion site is chosen in small bowel proximal to melanotic contents and small bowel direction marked with an arrow (B).
4. An enterotomy is made, and bowel contents are suctioned.
5. The enteroscope is inserted into the proximal small bowel without insufflation (C).
6. The enteroscope is stabilized by an assistant, and the small bowel is advanced onto it (D).
7. Intra-operative enteroscopy reveals melanotic contents of small bowel (E and F)
8. During withdrawal, assistant centers enteroscope and withdraws while insufflating with CO_2.

Conclusions:

This case illustrates successful management of gastrointestinal bleeding of obscure origin using minimally invasive and endoscopic techniques. Performance of intraoperative enteroscopy by a surgeon with endoscopic skills allowed for detection of the small bowel bleeding source and ruled out any upper gastrointestinal source due to absence of blood in the proximal small bowel. This case also underscores the importance of endoscopic training of general surgeons.