1 Approach to the patient with gross gastrointestinal bleeding

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Gastrointestinal (GI) bleeding is a common clinical problem that requires more than 300 000 hospitalizations annually in the United States. Most bleeding episodes resolve spontaneously; however, patients with severe and persistent bleeding have high mortality rates. Evaluation of a patient with bleeding begins with assessment of the urgency of the situation. Resuscitation with intravenous fluids and blood products is the first consideration. Once the patient's condition is stable, a brief history and physical examination will help determine the location of the bleeding. For probable or known upper GI bleeding, a nasogastric tube is placed to help determine the location of bleeding and to monitor the rapidity of the bleeding. The algorithm in Figure 1.1 is a general guideline for evaluation of nonvariceal upper GI bleeding. There is an important exception to this algorithm; endoscopy may be used urgently in *all* patients with upper GI bleeding regardless if their bleeding has stopped spontaneously, allowing triage of patients to outpatient, inpatient, or intensive care. This practice has been shown to be safe and to lead to significant cost saving as patients without risk factors such as coagulopathy, serious concomitant diseases, or bleeding stigmata do not require hospitalization.

Patients with liver disease or other causes of portal hypertension have a potential variceal source of hemorrhage. Urgent diagnostic endoscopy is indicated to confirm the bleeding source, because between one-third and half of these patients have bleeding from nonvariceal sites, and future management is different for bleeding varices. The algorithm in Figure 1.2 is for the evaluation and management of variceal hemorrhage.

Lower GI bleeding is defined as bleeding from below the ligament of Treitz. When patients hospitalized for GI bleeding are identified, lower GI sources account for one-quarter to one-third of all bleeding events. When the location of bleeding is suspected to be the lower GI tract, a nasogastric tube and even upper endoscopy may still be needed to rule out an upper GI source of hemorrhage. It is important to remember that as many as 10% of patients with hematochezia have an upper GI source, and that results of nasogastric aspiration can be falsely negative when bleeding is duodenal and there is no duodenogastric reflux or when the bleeding has ceased. The algorithm in Figure 1.3 is for evaluation of lower GI bleeding. Unfortunately, some patients have both upper and lower GI bleeding sites that defy diagnosis despite the numerous diagnostic modalities available. They need repeated studies if bleeding recurs or becomes a management problem.

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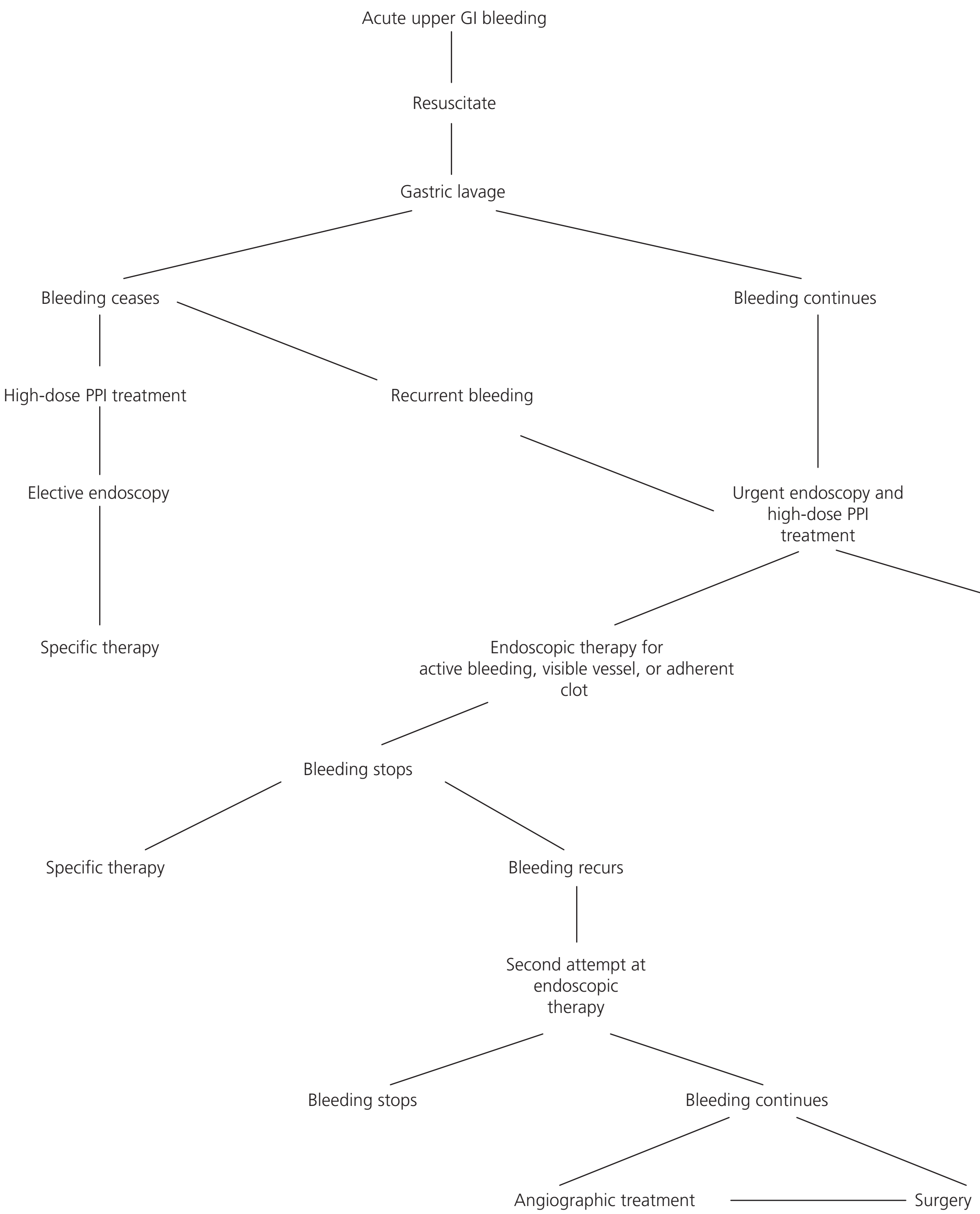


Figure 1.1 Algorithm for evaluation of nonvariceal upper GI bleeding. GI, gastrointestinal; PPI, proton pump inhibitor.

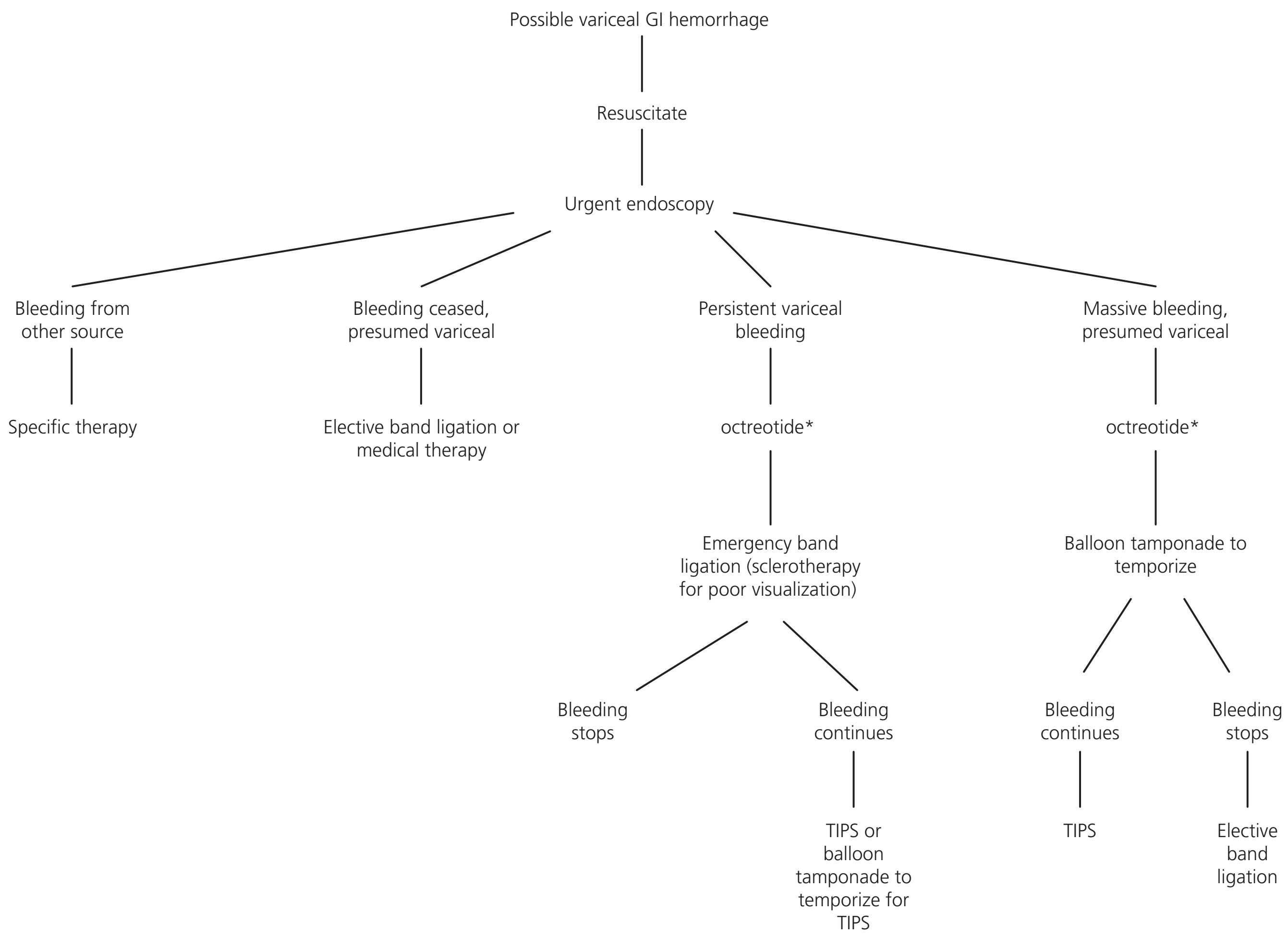


Figure 1.2 Algorithm for evaluation of variceal hemorrhage. GI, gastrointestinal; TIPS, transjugular intrahepatic portosystemic shunt. *If bleeding is persistent or massive, octreotide may be used prior to and concomitantly with endoscopy.

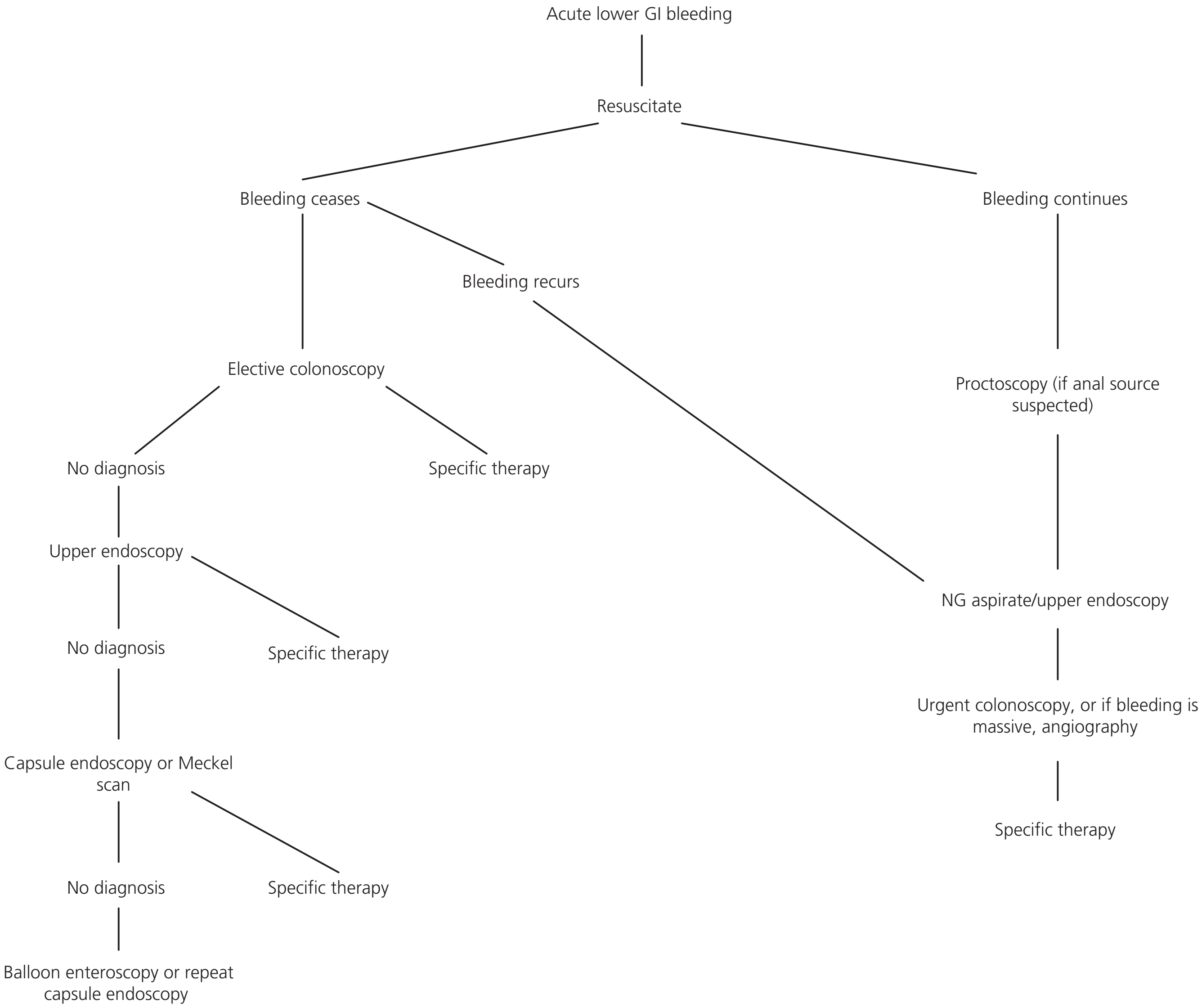


Figure 1.3 Algorithm for evaluation of lower GI bleeding. GI, gastrointestinal; NG, nasogastric.

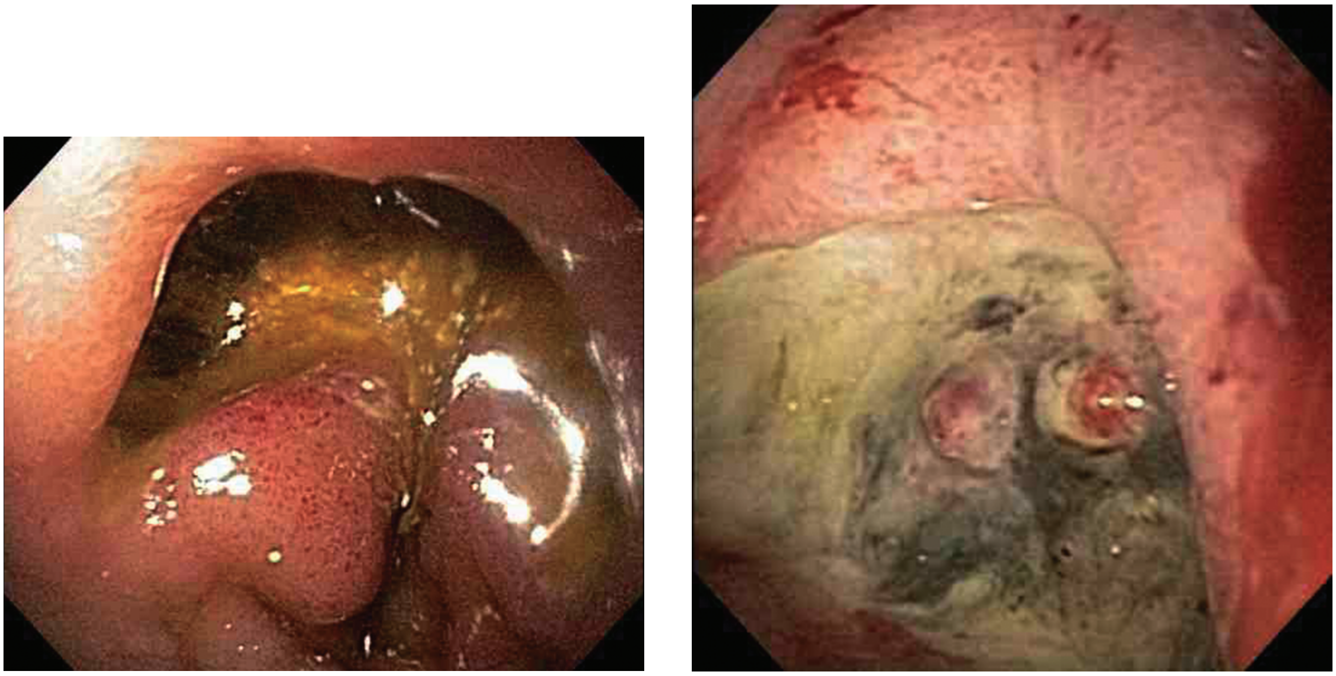
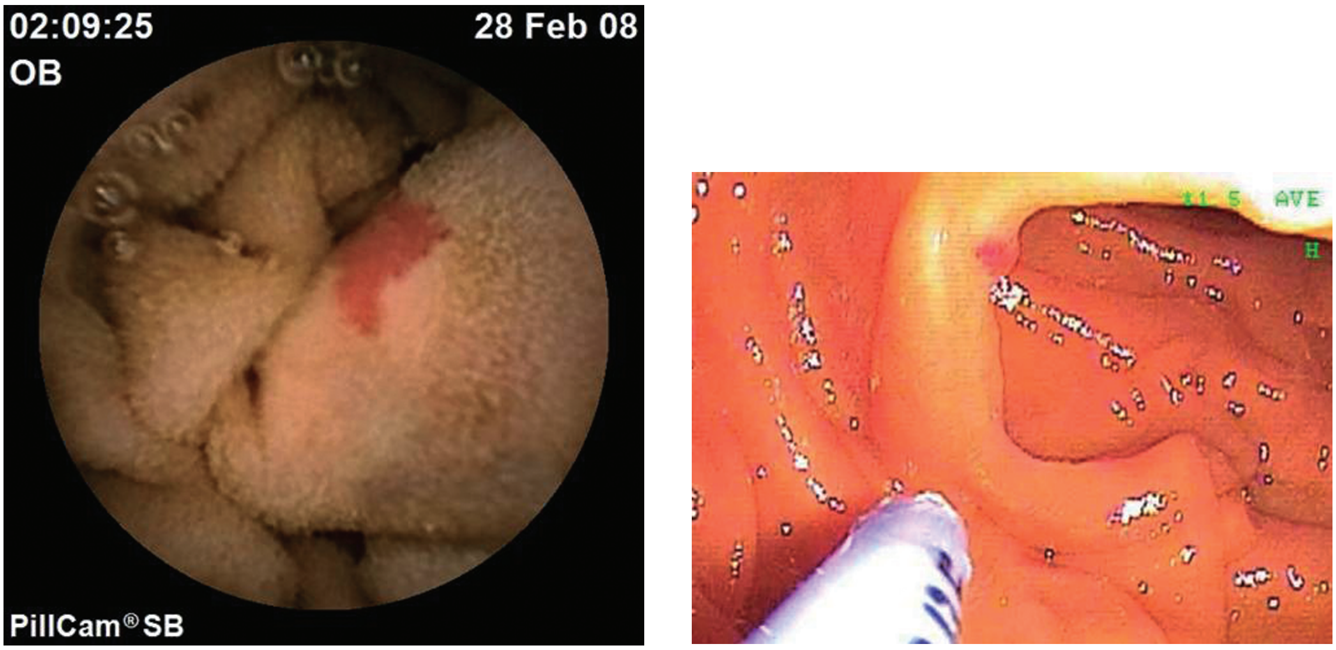
(a)  (b)

Figure 1.4 **(a)** An endoscopic view using a straight-viewing scope of a large posterior wall duodenal bulb ulcer in an elderly woman who had already required transfusion of 6 units of red blood cells. The entire ulcer could not be visualized adequately for endoscopic therapy. **(b)** Changing to a side-viewing duodenoscope gave excellent visualization of the crater base and a visible vessel, which was treated with epinephrine injection and multipolar coagulation. The patient had no further bleeding.

(a) 

(b)

Figure 1.5 **(a)** An 80-year-old man with aortic stenosis presenting with intermittent melena and anemia requiring a weekly transfusion. Two upper endoscopies, two colonoscopies, and a small bowel barium study did not reveal an etiology. Capsule endoscopy revealed multiple medium to large arteriovenous malformations in the distal jejunum and proximal ileum. **(b)** These lesions were treated with argon plasma coagulation during double balloon enteroscopy.

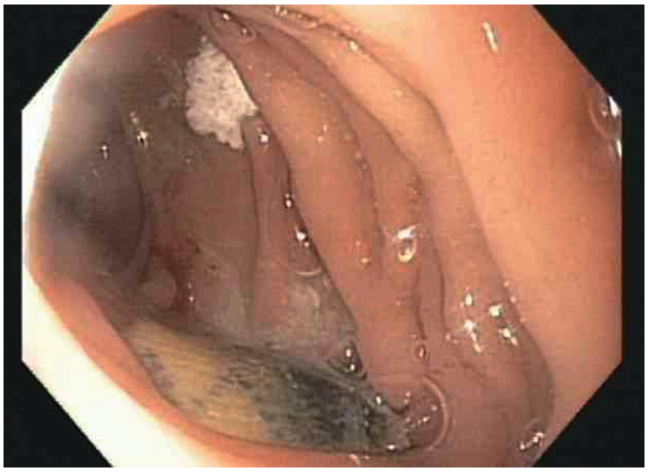


Figure 1.6 A 60-year-old man with a prior history of an aortic aneurysm repair presented with hematochezia. An upper endoscopy revealed visible aortic graft with distal oozing of blood in the third portion of the duodenum.

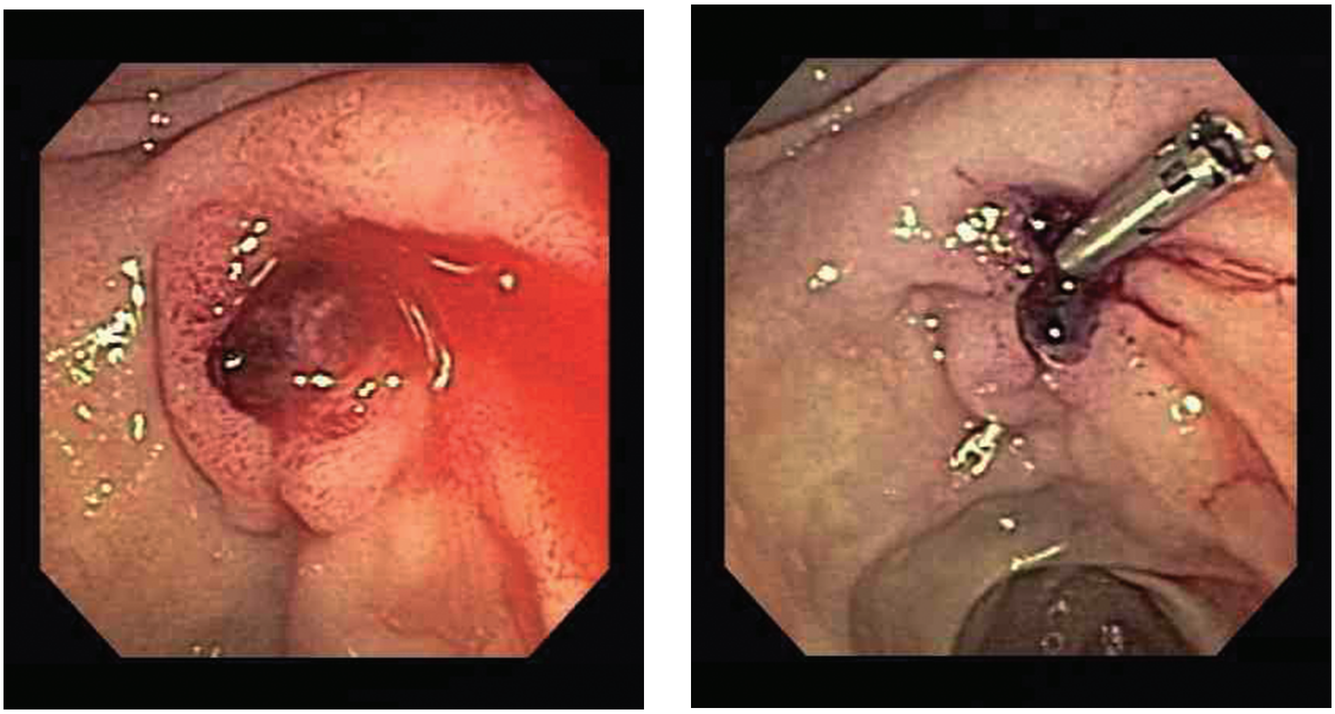
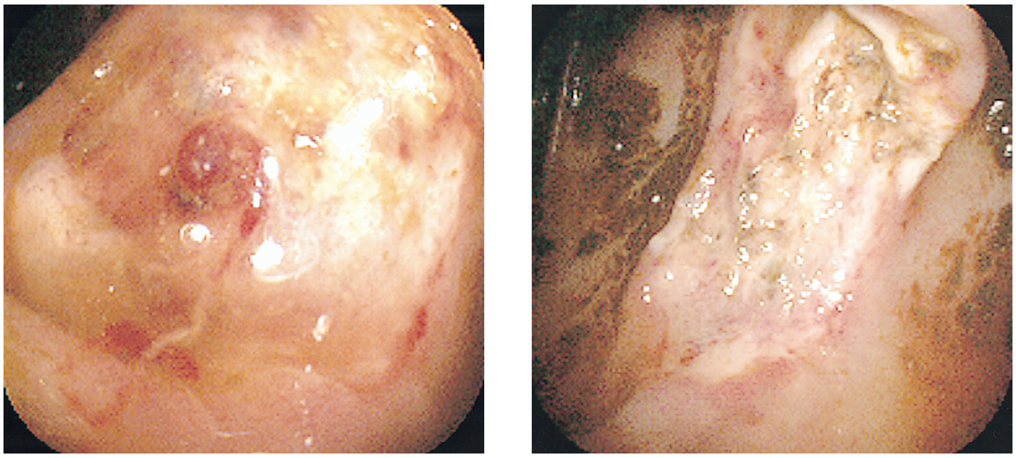


Figure 1.7 (a) Duodenoscopic view of the ampulla 1 week after biliary sphincterotomy in a patient who had restarted anticoagulation therapy and presented with melena. **(b)** After careful identification of the biliary and pancreatic orifices, the bleeding site was noted to be between these two sites, fairly close to the pancreatic orifice. Thermal therapy would require protective pancreatic stenting. Therefore, the choice for therapy was epinephrine injection followed by placement of a single clip. No further bleeding occurred.



(a) (b)

Figure 1.8 **(a)** Sigmoid colon view of a polypectomy site with a visible vessel in a 65-year-old woman who presented with hematochezia 3 days after polypectomy of a sessile polyp with snare electrocautery. **(b)** Sigmoid colon view of the postpolypectomy site after treatment with multipolar electrocoagulation.

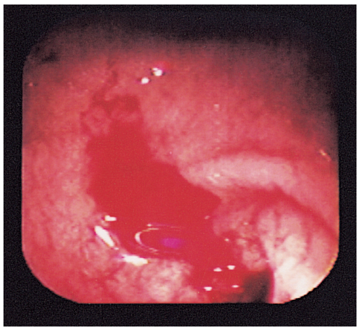


Figure 1.9 Duodenal bulb view of an actively bleeding Dieulafoy lesion in the distal bulb. After cleansing, there was no associated erosion or ulcer. This lesion was managed successfully with electrocautery. (Courtesy of W.D. Chey.)

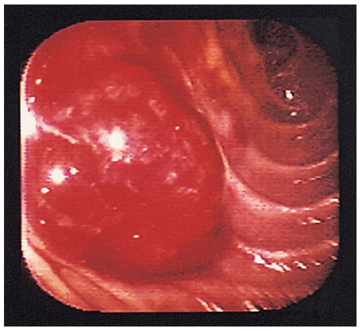


Figure 1.11 A 57-year-old woman with known metastatic carcinoma of the breast presented with melena and light-headedness. This lesion in the second portion of the duodenum was found at biopsy to be metastatic adenocarcinoma. (Courtesy of W.D. Chey.)

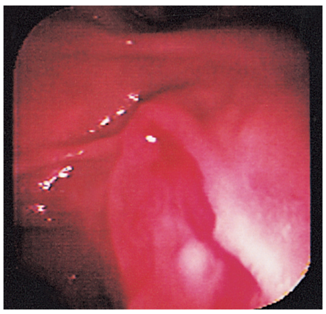


Figure 1.10 A 52-year-old man without a history of abdominal pain presented with his third episode of hematemesis in 5 months. Two previous upper endoscopic examinations did not show a bleeding source. At a third endoscopic examination, blood was found in the second portion of the duodenum, and examination with a side-viewing duodenoscope revealed hemobilia. Subsequent endoscopic retrograde cholangiopancreatography revealed a small stone in the distal common bile duct. The stone was removed after sphincterotomy.

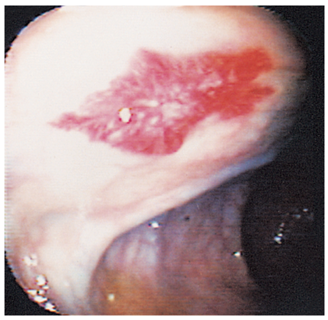
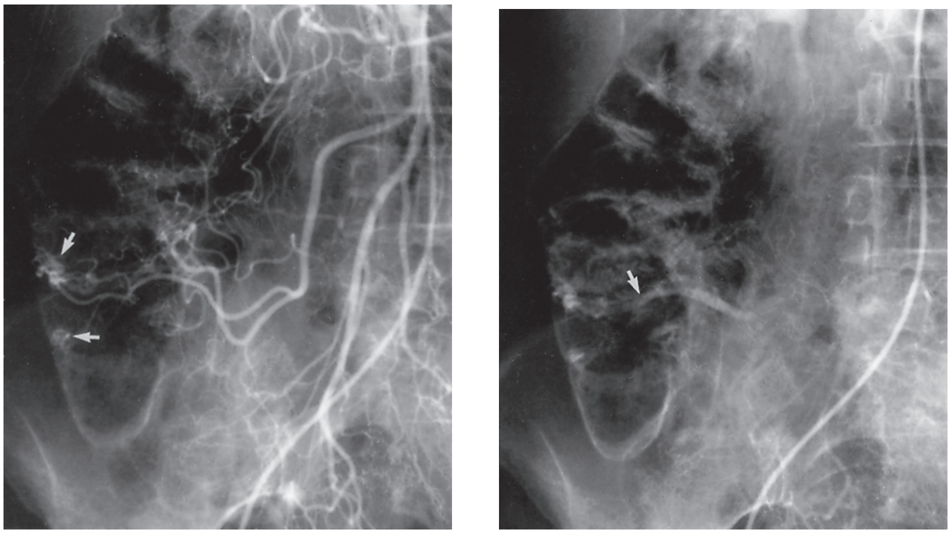


Figure 1.12 An 82-year-old man presented with an episode of hematochezia that lasted for 24 hours, along with mild anemia. Colonoscopy after preparation revealed vascular ectasia in the right colon.



(a) (b)

Figure 1.13 **(a)** Angiographic demonstration of two vascular tufts (arrows) consistent with cecal angiodysplasia. **(b)** Venous image from the same arteriogram demonstrated early venous filling (arrow), reflecting arteriovenous communication through a dilated vascular ectasia.

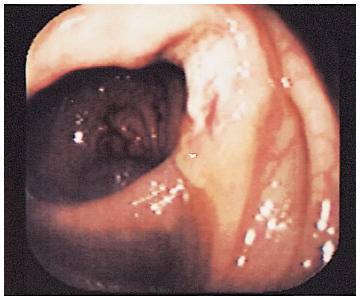
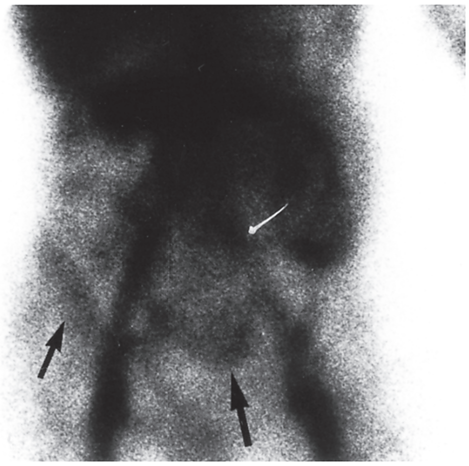


Figure 1.14 A 32-year-old man presented with maroon stools 4 days after running a marathon. Colonoscopy revealed two ulcers in the right colon. Biopsy findings were consistent with ischemia. The patient denied a history of use of nonsteroidal antiinflammatory drugs. Courtesy of W.D. Chey.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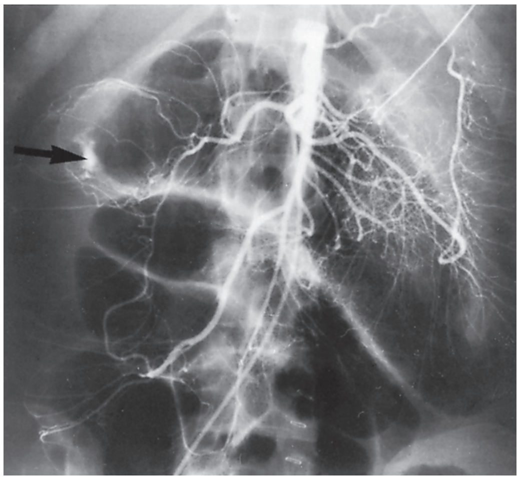
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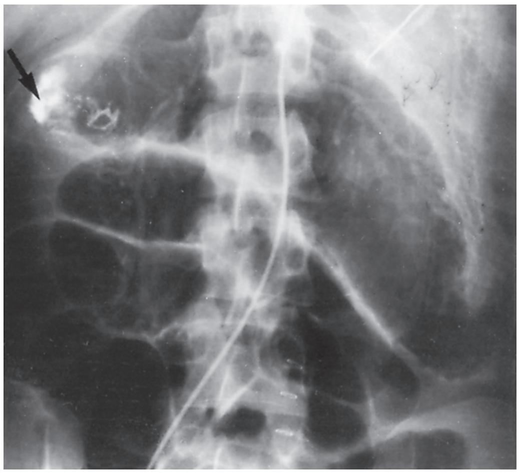
(c)

Figure 1.15 **(a)** Five-minute image from a technetium-99m pertechnetate-labeled red cell scan of a 23-year-old woman postpartum with diffuse intravascular coagulation and gross hematochezia. The radioactivity appears to extend from the hepatic flexure to a location distal to the splenic flexure (arrows). **(b)** Angiographic injection of the superior mesenteric artery of the same patient as in (a) immediately after the scintigraphic study demonstrated active bleeding in the hepatic flexure area of the colon (arrow). **(c)** Later image during the angiographic study shows persistent extravasation of contrast medium in the lumen of the colon (arrow).

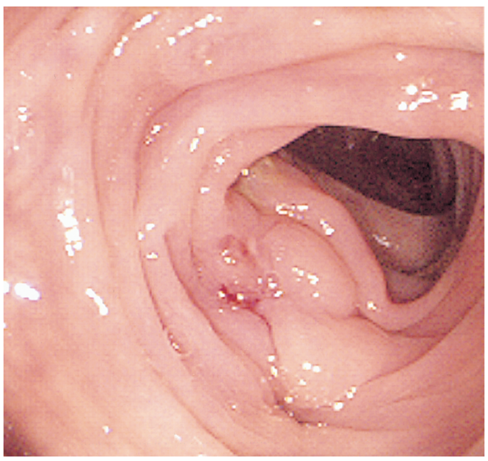

Figure 1.16 Sigmoid colon view of a bleeding diverticulum in a 68-year-old man on one aspirin per day after the bleeding was controlled with injection of 8 mL of 1:10 000 epinephrine.

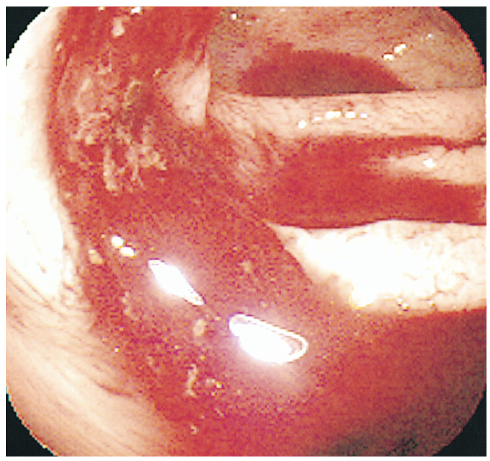

Figure 1.17 Sigmoid colon view of a bleeding diverticulum at 35 cm in a 58-year-old woman. The bleeding stopped after injection of diluted epinephrine and treatment with multipolar coagulation. The diverticula were limited to the sigmoid and descending colon. Hematochezia recurred 4 days later and a sigmoid colectomy was performed.