A 65-year-old white male with history of infrarenal aortic aneurysm repair 8 years ago, hypertension, and hypercholesterolemia was transferred to our tertiary medical center for evaluation of a cold left leg. The patient stated that he woke up to go the restroom and fell due to left lower extremity weakness. He stated that he lost consciousness, but after regaining consciousness he noticed bright red blood per rectum. He presented to his local emergency department (ED) and was transferred for evaluation of a pulseless left leg by the vascular surgery service. On presentation to our facility, a Doppler was used to locate the intact pulses. On exam the patient was having black and bright red blood per rectum. A pulsatile abdominal mass was also appreciated.

Gastrointestinal Medicine (GI Med) was consulted for evaluation. An enteroscopy was performed in the ED which showed no active bleeding, but a large clot in the stomach which could not be washed away. The small bowel appeared normal. His hemoglobin at that time was 11.1 g/dL. The patient was admitted to the surgery service and GI Med repeated their enteroscopy which was normal except for a deformed duodenal bulb. The patient received polyethylene glycol colonic prep in anticipation of a colonoscopy the following morning. In the early morning hours, while enroute to the restroom, he fell again. He noted black stools again and his hemoglobin had decreased to 9.4 g/dL. He was transfused 2 units Packed Red Blood Cells and underwent repeat enteroscopy which showed the following (Figure 1).

(continued on page 91)
While undergoing enteroscopy, the vascular surgeons were consulted to the endoscopy suite. The patient was immediately taken to surgery where an aorto-bi-iliac graft was excised. Next, the lateral wall defect in the second and third part of the duodenum was repaired. The patient was discharged in stable condition.

An abdominal aortic aneurysm (AAA) may rupture into the GI tract called an aortoenteric fistula (AEF) or inferior vena cava (aortocaval fistula) (1). AEF is an uncommon condition in which an inflammatory tract develops between the aorta and the gastrointestinal tract. The fistula may develop as a primary process resulting from infectious aortitis, or inflammatory aortic aneurysm, or as a secondary process following aortic replacement with a synthetic graft for treatment of an abdominal aortic aneurysm (2). AEF are almost always secondary to previous reconstructive aortoiliac surgery (3), occurring with a frequency of about 0.5% following aortoiliac surgery (4). Although these fistulas most commonly appear 3- to 5-years after graft surgery, primary AEFs have also been reported (5).

AEFs characteristically develop between the proximal anastomosis and the overlying small bowel especially the third or fourth part of the duodenum (6), although communication to the colon has also been noted (2). It is thought that a low-grade infection at the site of contact between the anastomosis and the bowel leads to the fistula formation(3). Early in the formation of a primary AEF, the bowel wall is eroded from the outside by the adjacent AAA. This can lead to the leakage of intestinal contents, with local infection and sometimes abscess formation. Eventually, breakdown of the aortic wall leads to an AEF and GI bleeding (1).

The diagnosis of AEF must be considered in any patient with acute gastrointestinal hemorrhage and a history of aortic surgery (3). The patient with an AEF may have abdominal or back pain, fever, or other signs of intraabdominal infection or GI bleeding (7,8). Because most of these fistulas are into the duodenum, hemorrhage usually manifests as hematemesis or melena (1). The initial bleeding, often called the “herald” bleed results from erosion of vessels in the bowel wall and is often minor (1,9). This appears to be the initial bleed that alerted our patient to report to his hometown emergency department. Later, often after several days to weeks, massive bleeding results from rupture into the intestinal lumen (1).

All patients with previous aortic surgery and upper gastrointestinal bleeding should undergo esophagogastroduodenoscopy with particular attention to the distal duodenum and strict avoidance of biopsies. If such examination is negative, patients should undergo abdominal computed tomography, which will usually demonstrate periaortic inflammation and phlegmon, consistent with infection. Some surgeons advocate emergency angiography, including lateral views, to identify the small mycotic aneurysm that is frequently present. Angiography is rarely helpful (9).

The prognosis of patients with an AEF has been historically poor (over 50% mortality rate) but appears to be improving (4). In patients with exsanguinating hemorrhage, emergency laparotomy with control of the proximal aorta is indicated. Effective surgical management calls for removal of the aortic graft and extra-anatomic vascular bypass to restore distal aortic flow. Definitive therapy involves extensive, arduous reconstructive surgery (2).

### References