

A Case Report on Complicated Bleeding in a Patient Post Roux-En-Y Gastric Bypass

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Introduction

Roux-en-Y gastric bypass (RYGB) is a fairly routine surgical procedure for treating patients with morbid obesity. Since postoperative upper gastrointestinal bleeding (GI) is uncommon and etiologies in these patients can be variable, investigation and treatment can be difficult in the post-surgical patient. We report a case of a 65 year-old female, post Roux-en-Y bariatric surgery who presented with severe gastrointestinal bleeding of obscure etiology on upper endoscopy.

The patient was eventually found to have a large complex pseudoaneurysm in an ulcer crater in the excluded stomach which complicated her hospitalization. To the best of our knowledge, no patient post Roux-en-Y has been reported to have this unique and important cause of bleeding.

Case Presentation

A 65 year old female with a history of Roux-en-Y gastric bypass six years prior, hypertension, and osteoarthritis presented to the emergency department (ED) with severe abdominal pain and melena for two weeks, culminating in a syncopal event.

She was taking Naproxen twice a day for a short duration of two weeks several months prior, but stopped and resumed an occasional acetaminophen for pain. Prior to this presentation, she was seen in the ED one week prior for similar symptoms, but was diagnosed with ischemic colitis and sent home on oral antibiotics. Upon re-presentation to the outside hospital, she was transferred to our facility for a higher level of care.

On exam, her vital signs were significant for tachycardia ranging from 110-130 beats per minute, and blood pressures that were low ranging from 80-100 mm Hg systolic over 40-60 mm Hg diastolic. She was ill-appearing and lethargic, with abdominal tenderness and in the left upper quadrant, without guarding or rigidity.

Lab workup was notable for a haemoglobin of 5.9 g/dL, a haematocrit of 19%, white blood cells of 10,700, platelets of 182,000, LDH of 75, lipase of 15, normal chemistry panel, normal coagulation studies, and normal liver function tests. Her initial workup at the outside facility included a Computer Tomography (CT) scan and a nuclear medicine bleeding scan, both of which did not reveal any acute pathology. The patient was thought to have a possible anastomotic ulcer; however both upper endoscopy and colonoscopy were unremarkable.

At our institution, she had an urgent double balloon enteroscopy which was able to access the afferent loop and traverse all the way to the remnant/excluded stomach. This showed a significant 2 cm ulcer

at the lesser curvature of the gastric remnant with a large adherent clot (Figure 1).

This ulcer was not actively bleeding, but had a visible vessel, which was cauterized prophylactically. Despite this intervention, the patient continued to decompensate with signs of hypovolemic shock.

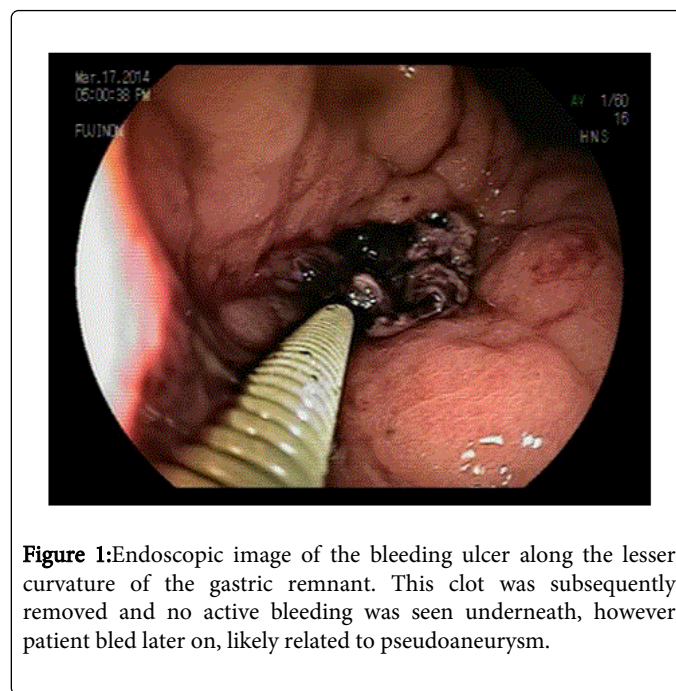


Figure 1: Endoscopic image of the bleeding ulcer along the lesser curvature of the gastric remnant. This clot was subsequently removed and no active bleeding was seen underneath, however patient bled later on, likely related to pseudoaneurysm.

Bariatric surgery was consulted, and they recommended arterial embolization of both the left gastric and right gastroepiploic arteries, which was performed by Interventional Radiology (IR).

Despite this, however the patient continued to slowly decompensate with daily symptoms of melena and labs showing blood loss anemia. Technetium labeled nuclear medicine scan was performed however was negative for any acute bleed.

A CT angiogram revealed a very large pseudoaneurysm with evidence of ongoing hemorrhage into the gastric remnant and subdiaphragmatic space (Figures 2 and 3).

The pseudoaneurysm was seen to arise from the left inferior gastric artery within a deep ulcer crater at the excluded stomach near the previous surgical site, resulting in a large intraluminal hematoma.



Figure 2: Axial contrast enhanced arterial phase CT image through the upper abdomen demonstrates an area of active extravasation along the medial wall of the stomach (white arrow), and large intraluminal hematoma within the remnant stomach (black arrow)



Figure 4: Angiogram of the upper abdomen demonstrates a bleeding gastric pseudoaneurysm (black arrow), which is supplied by a branch of the inferior phrenic artery, prior to ablation

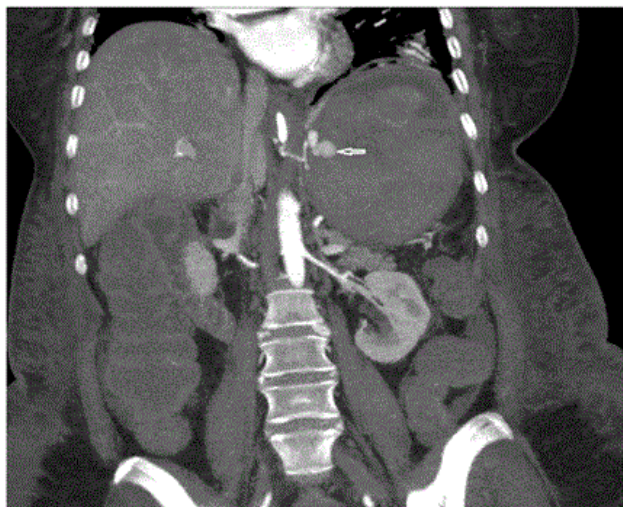


Figure 3: Coronal maximum intensity projection contrast enhanced arterial phase CT through the abdomen demonstrates a bleeding pseudoaneurysm along the medial wall of the stomach (white arrow), with small feeder vessel from the inferior phrenic artery

Angiography by Interventional Radiology (IR) confirmed a blush of contrast from the left inferior phrenic artery giving rise to the pseudoaneurysm (Figure 4). IR was then able to successfully terminate supply of the pseudoaneurysm with coil embolization of both the efferent and afferent vessel.

A follow-up CT angiogram performed afterwards confirmed a stable appearance of the pseudoaneurysm with no contrast extravasation coming off the left inferior gastric artery.

Discussion

Roux-en-Y gastric bypass (RYGB) is a fairly common surgical procedure for treating morbid obesity. Postoperative upper gastrointestinal bleeding (GI) after bariatric surgery is rare, but can be a fatal complication because of operator dependence to navigate the bleeding source. Laparoscopic Roux-en-Y gastric bypass (LRYGB) is responsible for significantly more episodes of GI hemorrhage than open RYGB [1]. It would be reasonable to consider the source of bleeding in these patients at the staple-lines of the gastro-jejunosomy (G-J) anastomosis, the site of the jejuno-jejunostomy (J-J), and the staple lines of the excluded stomach [2]. Another consideration for GI bleed in a post bariatric surgery patient is marginal ulceration which is a peptic ulcer that occurs near the G-J anastomosis in 1-16% of RYGB cases. This can be caused by various things like mucosal ischemia, pouch size, NSAIDs, and *H. pylori* [3-5].

Nguyen et al. proposed that the source of bleeding can be inferred based on the patient's clinical presentation; for example patients who presented with hematemesis were thought to be bleeding from the G-J anastomotic site while patients with melena were bleeding from the staple lines in the remnant stomach [2]. However, most authors would concede that finding the source of bleeding is difficult and studies performed previously do not have the power in patient size to make such generalizations.

In our case, while there was initially consideration for anastomotic bleed, enteroscopy did show a bleeding gastric ulcer in the remnant stomach. However, what made this exceptionally difficult to treat was the unsuspecting pseudoaneurysm formation, which was ultimately supplying the gastric ulcer. This pseudoaneurysm within a gastric ulcer is an extremely rare phenomenon. Certainly this patient could have developed the gastric ulcer from NSAID use or *H. pylori* infection, but the pseudoaneurysm formation prevented traditional endoscopic techniques from halting the bleed.

A pseudoaneurysm, also termed a false aneurysm, is a leakage of arterial blood from an artery into the surrounding tissue with a

persistent communication between the originating artery and the resultant adjacent cavity. Pseudoaneurysm formation can develop as a result of infection, trauma, neoplasm, inflammation, or surgical procedures [6]. Pseudoaneurysm formation is typically a rare phenomenon post intra-abdominal surgery, generally reported to occur in patients after liver transplantation, Whipple's procedure, and laparoscopic cholecystectomy, [7] but can occur in any procedure that involves arterial puncture. Because it can cause a profound amount of delayed yet massive bleeding, it is usually associated with high morbidity and mortality, estimated to take up to three weeks postoperatively to manifest [8]. Endovascular intervention is often necessary to treat pseudoaneurysms as they lack an intact vessel wall which can potentially cause enlargement and rupture [9]. Interestingly, our patient did not get diagnosed and treated with the proper procedure until nearly 4 weeks after her presentation to the hospital.

In our case, emergency angiography and coil embolization finally ceased the massive intra-abdominal and intraluminal bleeding caused by the inferior epigastric artery pseudoaneurysm. Minimally invasive angiographic techniques are the preferred treatment for most pseudoaneurysms [10,11], and they specifically allow for avoidable risks such as peritonitis, wound dehiscence and general anesthesia [12].

Conclusions

Based on our experience, it is important to recognize this rare and interesting finding of a pseudoaneurysm within a gastric ulcer crater giving rise to GI bleed. Certainly bleeding gastric ulcers and mucosal breakdown from anastomotic sites should be considered as the source of GI bleeding in patients post RYGB, but a pseudoaneurysm within a gastric ulcer requires some additional thought and consideration.

This case primarily illustrates an interesting and rare finding of a pseudoaneurysm within a gastric ulcer leading to recurrent bleeding and hypovolemic shock.

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