CASE REPORT

Late postoperative bleeding after Roux-en-Y gastric bypass: management and review of literature

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SUMMARY

Gastrointestinal (GI) bleeding is a catastrophic complication of gastric bypass. Bleeding can occur during the early or late phase after the operation. Though bleeding after gastric bypass is infrequent, late bleeding is exceedingly rare. We present two patients with late bleeding following Roux-en-Y gastric bypass (RYGB). The first patient, a 65-year-old woman, presented with life-threatening upper GI bleeding almost 5 years after laparoscopic RYGB. The second patient, a 62-year-old woman, presented with upper GI bleeding after almost 14 years following RYGB. Both, due to an eroding marginal ulcer. We discuss here the management of a rare and catastrophic complication of late GI bleeding and review the various reports in the literature describing the late bleeding as a complication of gastric bypass. Late GI bleeding after RYGB presents a diagnostic and interventional challenge. High index of suspicion and adequate management strategies may lessen morbidity and mortality.

BACKGROUND

Among adults in the USA, the prevalence of obesity was 36.3% during 2011–2014. With obesity rates increasing, the number of bariatric operations performed is also increasing. In the last two decades, a variety of operations such as gastric banding, sleeve gastrectomy and gastric bypass have been commonly performed. Laparoscopic Roux-en-Y gastric bypass (LRYGB) is a commonly performed bariatric operation, to which other bariatric operations are compared. Complications after LRYGB include bleeding (<4%), leak (0%–4.4%), wound infection (<5%), venous thromboembolism (<1.5%), anastomotic stricture (2%–16%) and marginal ulcer (0.7%–5.1%). Among these, postoperative bleeding is a major source of morbidity. Most commonly this occurs in the perioperative period and may require transfusion or reoperation. Massive, late haemorrhage occurring more than 30 days after operation occurs more rarely, and may happen as late as 25 years after the operation. We report two patients, who presented with severe bleeding several years after LRYGB, in extremis, requiring reoperation.

CASE PRESENTATION

Case 1

A 65-year-old woman was admitted to the medical intensive care unit at the Cleveland Clinic after being transferred with new onset haematemesis. The patient initially presented to an outside facility with haematemesis, melena and dizziness for 10 days with haemoglobin of 5 mg/dL. She had undergone LRYGB almost 3 years ago and had a background history of chronic obstructive pulmonary disease (COPD) and alcohol abuse. Esophagogastroduodenoscopy (EGD) performed on admission showed a 3 cm ulcer at the gastrojejunostomy (GJ) with adherent clot and no active bleeding. The site was injected with epinephrine and a surgical consultation was sought due to her history of Roux-en-Y gastric bypass (RYGB). Repeat EGD performed by the surgical team showed, apart from the previous findings, a small tract anterolateral to the ulceration, demonstrating a possible gastrogastric (GG) fistula. No active bleeding was noted. Initially, she was managed conservatively with proton pump inhibitors and 4 units of packed red blood cells (pRBC), which increased her haemoglobin to 9.3 mg/dL. Few days later, she acutely became hypotensive and tachycardic, followed by large volume haematemesis. She was intubated and aggressively resuscitated and started on pressor. She was emergently taken to the operating room for exploration. She underwent exploratory laparotomy, partial gastrectomy with resection of the proximal gastric remnant and subtotal resection of the proximal gastric pouch, distal pancreatectomy, splenectomy with direct ligation of the splenic artery, necessitated by the intraoperative finding of a GG fistula eroding through the remnant into the pancreas and splenic artery with haemorrhage. The patient had pulseless arrest intraoperative with return of sinus rhythm after cardiopulmonary resuscitation. She was left in discontinuity due to haemodynamic instability. Postoperative, she underwent proximal splenic artery embolisation due to concern that the ligated splenic artery would bleed again, owing to the friability of the arterial wall as determined in the operating room. She returned to the operating room for abdominal washout, GJ (using the Roux-limb and the small gastric pouch after resection of the prior GJ—gastric pouch was almost 8 cm prior to subtotal resection during this case), remnant gastrostomy tube and abdominal closure with Vicryl mesh. Postoperatively, intensive care monitoring and vasopressor support was maintained. She was subsequently weaned off pressor support and eventually extubated. She was discharged to a rehabilitation facility in a stable condition. Jackson-Pratt (JP) drain was removed 2 months after her operation. Ten months after her operation, she was tolerating oral diet and returned to her daily activities.
Case 2
A 62-year-old woman presented to the emergency department with history of increasing abdominal pain, distention and nausea of a few days’ duration. She had undergone RYGB about 14 years ago at an outside facility, had a revisional operation 2 years ago (Roux-limb lengthening), followed more recently by laparoscopic placement of a feeding jejunostomy tube for failure to thrive. She was admitted and managed non-operatively with a diagnosis of partial small bowel obstruction. Her symptoms improved over the next few days. However, 5 days after admission she presented with severe upper abdominal pain followed by 150 cc emesis of dark red blood. She was tachycardic and hypotensive and was transferred to the intensive care unit. Her haemoglobin was 11.7 mg/dL with a lactate of 2.4. Emergent EGD performed at the bedside revealed a marginal ulcer with active bleeding which was injected with epinephrine and clipped. It also revealed a 7 cm proximal gastric pouch. She received 4 units of blood during the next 2 days and her haemoglobin was stable at 14 mg/dL. Next day, interventional radiology performed a mesenteric angiography which revealed a left gastroepiploic artery and splenic artery pseudoaneurysms at the mid splenic artery level. A splenic artery embolisation along with super selective embolisation of the left gastroepiploic artery was performed. She continued to be stable and was transferred to the regular nursing floor. During the next couple of days her haemoglobin started to trend down and reached a value of 6.8. A repeat EGD revealed a near complete dehiscence of the GJ with ulcer eroding into the pancreas. Keeping in mind her adequate nutritional status, good physiological parameters and in order to avoid a catastrophic bleeding in the future, a decision was made to operate. An exploratory laparotomy and extensive lysis of adhesion, partial gastrectomy (due to GG fistula), revision of the GJ along with remnant gastrostomy was performed. Post-operatively, she received 2 units of pRBC, and her haemoglobin was stable. Tube feeds were restarted and she was eventually discharged to a skilled nursing facility.

OUTCOME AND FOLLOW-UP
Both patients were doing well a year after their operation for upper gastrointestinal (GI) bleeding. They were tolerating a regular diet and had returned to their routine activities.

DISCUSSION
GI bleeding is an uncommon but catastrophic complication following elective bariatric operation with a reported incidence of 0.3%–3.5%. Early bleeding (<30 days postoperative) is uncommon and is usually due to bleeding from the anastomosis or staple line. Numerous studies have described early bleeding as a complication following RYGB operation. Late bleeding is exceedingly rare. Though the actual incidence of late bleeding (>30 days postoperative) is unknown, it has been described in several case reports. The common causes for late bleeding are significant gastritis, marginal ulcers at the GJ, ulcers in the pouch, gastric remnant stomach or duodenum. It is very important to diagnose the source of bleeding in RYGB patients to appropriately manage it. Though, this can be challenging, the distinction between melena and haematochezia may provide a clue of the source. Haematochezia usually originates from the Roux-limb, whereas melena from the gastric remnant. Hence, in a RYGB patient with normal EGD, gastric remnant or duodenum should really be suspected as the source of upper GI bleeding, especially in the setting of melena. Classic duodenal ulcer should also be in the differential diagnosis, as the duodenum cannot be visualised on EGD in these patients. With bleeding in the gastric remnant, CT will usually show a dilated gastric remnant with blood clots.

Rahl et al reported seven patients (724 patients) who presented with late haemorrhage. All patients underwent initial EGD. Three patients had GJ ulceration as the cause of bleeding that was managed either with EGD and epinephrine injections (n=2) or laparoscopic revision of RYGB (n=1). One patient, who presented 46 months after the index operation, had a GJ ulceration and GG fistula that was managed with resection of the gastric remnant. One patient had bleeding Dieulafoy lesion managed with laparoscopic transgastric endoscopy and argon plasma coagulation.

Heneghan et al studied 4466 patients over a period of 10 years. Forty-two patients developed postoperative bleeding, of which 12 patients presented with late bleeding with a mean presentation of 553 days. The cause in eight patients was marginal ulceration. All patients underwent either a CT scan or EGD as the initial investigation. None of the late bleeding cases were related to staple line. Two out of the eight patients who presented with more rapid bleeding caused by erosion of the ulcer into an underlying vessel required operative intervention. Remaining six patients had a chronically inflamed erythematous marginal ulcers managed conservatively with acid suppression therapy.

Braley et al described four patients in their case series, all of whom presented with anaemia, and melena as a primary symptom. Endoscopy, mesenteric angiography and nuclear scintigraphy were unsuccessful in identifying the source of bleeding. All patients underwent total or subtotal gastrectomy of the excluded stomach with resolution of the symptoms. Majority of the bleeding, occurring many years after the index operation with negative diagnostic work-up in localising the source of bleeding, were due to pathology in the gastric remnant and duodenum.

Rare causes of late bleeding include marginal ulcers forming GG fistulas and eroding into nearby structures. Sánchez Antúnez et al reported a rare case of late bleeding after LRYGB presenting over 30 months after the index operation. Their patient presented initially with haemorrhagic shock, which was managed with therapeutic EGD and blood transfusions. The patient was readmitted for bleeding. Transarterial embolisation with selective arteriography of the celiac vessels was attempted followed by laparotomy, which revealed a bleeding diarrheamic vessel noticed through the eroded gastric vessels was attempted.

Marginal ulceration at the GJ is a known complication of both open and LRYGB operation with an incidence ranging from 0.6% to 16%. Aetiology of these ulcers is multifactorial; factors contributing could be patient related such as non-steroidal anti-inflammatory drug therapy, and tobacco use or local factors like anastomotic tension and increased gastric acid production.

Another potential late complication of the RYGB operation is the formation of GG fistula. The incidence reported is anywhere between 0% and 46%, even though there could be decline in the current incidence due to the adoption of complete transection of the pouch from the remnant stomach. Carrodeguas et al, in a recently studied large series of 1292 patient who underwent RYGB, reported an incidence of 1.2% patients forming GG fistula. The mean time from the operation to development of GG fistula was 80 days. It has been reported that apart from the staple line dehiscence, formation of...
of GG fistula could be a contributing factor for the aetiology of a refractory marginal ulcer.20 21 The pathophysiology of refractory marginal ulcer in the setting of a GG fistula—reflux of acid from the gastric remnant into the pouch, which in turn would contact with the unprotected jejunal mucosa of the Roux-limb.

Rare causes of late bleeding have been reported in the literature, but to our knowledge there has been no report of a case where the bleeding was as a result of marginal ulcer eroding into the posterior wall of remnant stomach as GG fistula, leading to erosion into pancreas and the splenic artery. The importance of emergent management and surgical intervention after failure of conservative measure cannot be sufficiently emphasised. This case series highlights the use of combined management of a ruptured splenic artery pseudoaneurysm by operation and interventional radiology.

Learning points

► High index of suspicion for an eroding marginal ulcer as the cause of late gastrointestinal bleeding in a patient with prior Roux-en-Y gastric bypass.
► Avoidance of ulcerogenic medications—non-steroidal anti-inflammatory drugs, steroids, smoking.
► Multidisciplinary care—surgeon, gastroenterologist/endoscopist, interventional radiologist.
► Stabilisation and transfer to a tertiary/quaternary care centre.

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