CASE REPORT

Giant perforated marginal ulcer after laparoscopic Roux-en-Y gastric bypass

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SUMMARY

Perforation of a marginal ulcer (MU) is a complication of Roux-en-Y gastric bypass that can be life-threatening. We report a case of a perforated MU that presented 7 months after surgery with several interesting points for discussion. Firstly, the presentation of the ulcer was cryptic with unreliable investigations. Secondly, the ulcer presented again even after anastomotic revision surgery. Finally, the ulcer and the sepsis associated with perforation presented after months of poor nutritional intake with profound hypoalbuminaemia. Perforated MUs causing malnutrition pose clinicians with the difficult decision of which operation to offer; patch repair, revision of the anastomosis or reversal surgery. This case illustrates that primary reversal surgery for a perforated recurrent MU may be the most appropriate surgical management in this clinical situation.

BACKGROUND

Bariatric surgery is the most durable treatment for clinically severe obesity and has been proven to decrease all-cause mortality.¹ The most commonly performed bariatric procedure worldwide is the Roux-en-Y gastric bypass (RYGB), which has gained popularity for its combination of restrictive and malabsorptive effects.² However, bariatric surgery can be associated with significant morbidity from complications. Marginal ulcer (MU) is a well-documented complication of RYGB. MU incidence is low and reported to be 4.6% while perforation of these ulcers is up to 1.4%.³ There is little surgical consensus in the literature as to how to best manage MU.⁴ Medical management follows a similar algorithm as peptic ulcers from other aetiologies; namely proton pump inhibitor (PPI) therapy, sucralfate, *Helicobacter pylori* testing and eradication and consideration of patch repair for perforation. To our knowledge, there are no previous reports in the literature of a giant perforated ulcer that remains treatment resistant, and therefore little to guide management. We review here the case of a MU with two significant points of interest; first, the ulcer was found to have near circumferential perforation without clinical or objective evidence suggesting perforation and second, the ulcer remained treatment resistant and presented in the setting of severe malnutrition requiring reversal of gastric bypass.

CASE PRESENTATION

A 59-year-old woman underwent a laparoscopic RYGB without vagotomy for clinically severe

obesity with a preoperative weight of 98 kg and a body mass index approaching 40 kg/m². Her operation was uneventful and a postoperative contrast swallow was deemed satisfactory. She had significant ongoing pain at day 3 for which a CT scan of the abdomen was performed, demonstrating a small splenic infarct only. The patient's pain resolved and she was subsequently discharged.

At the 2-week outpatient follow-up appointment the patient reported ongoing nausea, vomiting and food intolerance. A contrast swallow revealed some transit delay slowing passage across the anastomosis. A gastroscopy demonstrated a small MU with an oedematous narrowed anastomosis. *H pylori* biopsy testing was negative. The patient was commenced on sucralfate and PPI continued.

While the patient seemed to show some initial improvement in symptoms, at 3 months she began to experience worsening fluid and food intolerance with ongoing epigastric pain and intermittent nausea. She was taken to the theatre for a diagnostic laparoscopy. An obstructive Roux limb mass was seen, presumably inflammatory, necessitating conversion to laparotomy to revise the gastrojejunal anastomosis.

Again after an initial respite in symptoms, after the revisional surgery, the patient continued to experience nausea and vomiting. Repeat gastroscopy demonstrated a patent gastrojejunal anastomosis. However of note, a new, large MU measuring 6 cm was seen with central 'black spots' (figure 1A,B). High-dose PPI therapy was initiated with planned repeat gastroscopy 4 weeks later.

The patient developed episodic small amounts of melaena over the course of a week in addition to further dietary intolerance necessitating inpatient admission for intravenous fluid therapy. At this point the patient had profound malnutrition with an albumin of 9 g/L. Her abdominal pain and nausea worsened with blood tests indicating a severe drop in haemoglobin in excess of her rehydration.

She then became acutely unwell with tachycardia and hypotension requiring inotropic support. After resuscitation and emergent transfer to theatre a gastroscopy was performed which demonstrated severe erosive gastritis with gastrojejunal anastomotic ulceration; however the anastomosis appeared to be intact. The enteroenterostomy was further intubated and showed no abnormality. In light of the concerning haemoglobin drop and inotrope requirement inconsistent with the gastroscopy findings, the decision was made to proceed to laparotomy.

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Figure 1 (A) Gastroscope demonstrating mucosal ulceration at a patent gastrojeunal anastomosis without evidence of perforation. (B) Gastroscope demonstrating mucosal oedema and surrounding oedema.

TREATMENT

At laparotomy a giant 10 cm perforated ulcer at the antimesenteric border encompassing over 90% of the gastrojeunal anastomosis was seen. The *Roux* limb showed patchy areas of partial and full thickness necrosis, self-patched by nearby omentum, mesentery and gastric serosa. The gastric bypass was reversed with anastomosis of pouch to gastric remnant and excision of the diseased *Roux* limb. A feeding jejunostomy was placed distally.

OUTCOME AND FOLLOW-UP

The postoperative period in intensive care unit was complicated by multiple issues. The patient developed septic shock requiring high-dose vasopressors, acute liver injury with coagulopathy, critical illness encephalopathy, renal failure, wound dehiscence and deconditioning. Despite this the patient was supported, treated with antibiotics, PPI, total parenteral nutrition feeding and made a gradual recovery. She began tolerating an oral diet and was discharged 30 days after reversal surgery. Histopathology demonstrated abrupt ulceration without evidence of ischaemia (figure 2).

DISCUSSION

Perforation of a MU is a rare but known complication of RYGB surgery. The literature available to guide clinicians is limited to retrospective case series and case reports with 115 total cases published. The largest case series by Felix *et al* found the incidence of perforated MU to be 1%.⁵ In the vast majority of these cases the treatment of these ulcers has been open or laparoscopic primary closure and omental patch or revision of the anastomosis if the perforation was deemed too large.^{5,6} To our knowledge, no published cases report reversal surgery as the primary management of a perforated MU.

This case poses the question of how to manage perforated MUs in patients who are malnourished; either to undertake reversal

surgery or primary closure with omental patch. The combination of the malabsorptive surgery and food intolerance due to the ulcer crippled this patient's nutritional status. Reversal surgery is a longer, more physiologically taxing surgery and requires the healing of both a gastrogastrostomy and enteroenterostomy. It however does reverse the malabsorptive bypass allowing the full small bowel absorption of enteral feeding that aids recovery from sepsis. Primary closure with omental patch is a smaller commonly laparoscopic procedure which closes the defect while the malnutrition can be addressed with a feeding duodenal tube with adjunctive total parenteral nutrition. It is still unclear which approach delivers better outcome.

An additional complexity in this case is that the MU recurred after revision surgery. This suggests that the patient is at a higher risk of developing MUs. Given her history as an ex-smoker with elevated cholesterol, this correlates with previously reported MU risk factors.

This case also illustrates a cryptic presentation of MU. Despite almost circumferential loss of anastomotic continuity, on endoscopic luminal views the anastomosis seemed complete. The omentum covering the anastomosis seems to have mitigated the loss of continuity and allowed passage of food and normal bowel function. The complete self-patching of the perforation explains why the patient developed evidence of sepsis very late.

In conclusion, this case illustrates an atypical presentation of perforated MU. It also depicts the difficulties in deciding the best operation for perforated MUs, in the setting of profound malnutrition and recurrence. This case suggests that in this situation primary reversal surgery may be the most appropriate management.

Learning points

- ▶ Marginal ulcers (MUs) can result in life-threatening anastomotic perforations long after the initial surgery.
- ▶ MUs can present with perforation with insidious symptoms.
- ▶ Recurrent MUs may be an indication for reversal surgery.
- ▶ In patients with severe malnutrition with perforated MUs, *Roux-en-Y* gastric bypass reversal may be the most appropriate surgical management.

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Figure 2 Histopathology demonstrating abrupt ulceration and loss of mucosal tissue.

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