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**Case Report**

# Gastrogastric fistula: a case report of a rare late complication after Roux-en-Y gastric bypass

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## ABSTRACT

Gastrogastric fistula (GGF) is an uncommon complication after Roux-en-Y gastric bypass (RYGB) which may lead to several adverse outcomes. Patients may be asymptomatic, present with non-specific symptoms, or present initially with a complication. A high index of clinical suspicion is required for diagnosis. Treatment options may vary, but ultimately surgery remains the standard of care. A 48-year-old male with a history of RYGB presented to the emergency department with upper gastrointestinal bleeding. Upper endoscopy revealed a gastrogastric fistula but no active bleeding source. The patient developed haemorrhagic shock, and a second endoscopy identified a marginal bleeding ulcer in addition to the fistula; endoscopic haemostasis was achieved. After stabilization, the patient underwent surgery - remnant gastrectomy and refashioning of the gastrojejunal anastomosis. This case highlights a rare complication of bariatric and metabolic surgery – GGF following RYGB, with a severe initial presentation. Prompt diagnostic evaluation and adequate treatment are necessary to improve patient outcomes, which may otherwise be unfavourable.

**Keywords:** Gastrogastric fistula, Bariatric surgery, Y-en-Roux gastric bypass, Gastrointestinal bleeding, Marginal ulcer

## INTRODUCTION

Among the obese population, surgical intervention remains the most effective and durable method for achieving weight loss. Despite the expansion of surgical options in recent years, laparoscopic Roux-en-Y gastric bypass (RYGB) continues to be one of the most commonly performed procedures worldwide.[1,2]

A gastrogastric fistula (GGF) is an uncommon postoperative complication characterized by an abnormal channel between the excluded gastric remnant and the gastric pouch.[2,3] Its reported incidence ranges from 1 to 6%.[1,4,5] This pathological communication allows food to enter the excluded gastric remnant rather than being fully diverted through the jejunal limb (alimentary limb), which may result in weight regain or insufficient weight loss, marginal ulcers with recurrent bleeding, abdominal pain and anastomotic stricture formation. Patients may be asymptomatic, or present with non-specific symptoms such as upper abdominal pain, nausea, pyrosis or bloating.[1,2,4]

The pathogenesis of GGF is attributed primarily to incomplete gastric division and anastomotic leak.[1,5] Other potential causes include marginal ulcers, distal obstruction and foreign body erosion.[5] GGFs may be associated with marginal ulcers, pouch gastritis and gastrojejunal anastomosis strictures. When anastomotic ulcers coexist with a GGF, patients may present with haemorrhage or perforation.[1] Weight regain is also common, as both restrictive and malabsorptive components of RYGB are compromised; large fistulas preferentially divert gastric pouch contents into the excluded stomach.[1]

Diagnosis requires a high index of clinical suspicion. GGF should be considered in patients with post-RYGB significant weight regain, persistent marginal ulcers or

gastroesophageal reflux symptoms.[1] Preferred diagnostic studies include upper gastrointestinal contrast study or upper endoscopy. Computed tomography (CT) scan with oral and intravenous contrast is also a useful method for diagnosis.[1]

Management depends on symptomatology. Asymptomatic GGFs may not require specific intervention. Symptomatic GGFs, either associated with ulcers or weight regain, may be treated medically, endoscopically or surgically.[1] Medical treatment consists of high-dose proton pump inhibitors (PPIs) and sucralfate, an acid suppressive therapy. Small fistulas may resolve with conservative measures alone.[3,4,6] Endoscopic repair of GGF is also feasible, using clips, suturing or applying stents, particularly for fistulas lesser than 10mm.[1,4,6,7]

Surgery however remains the standard of care for large fistulas, associated with persistent pain or bleeding, stenosis, or cases refractory to endoscopic therapy. Surgical options include fistula division or remnant gastrectomy (with or without refashioning of the gastrojejunal anastomosis).[1] Surgical treatment should be individualised according to the size and location of the fistula and the status of the gastrojejunal anastomosis. When feasible, the laparoscopic approach for remnant gastrectomy is technically demanding, but a safe and effective choice of treatment.[2,6,7,8]

## CASE REPORT

Clinical information for this patient was collected and the most relevant data selected for presentation. The pertinent literature was reviewed and key references were included to contextualize this case.

A 48-year-old male presented to the emergency department with a one-week history of melaena and associated asthenia. Laboratory studies revealed a haemoglobin level of 8.1 g/dl.

Medical history included arterial hypertension, type 2 diabetes mellitus, dyslipidaemia and an YRGB performed one year earlier for grade II obesity (12 months of follow-up). The patient received one unit of red blood cells (RBC). An upper endoscopy was performed, which revealed a gastrogastric fistula (Figure 1), without an identifiable bleeding source. The patient was then admitted to the infirmary ward and required two additional RBC units; by day two, the haemoglobin stabilised.

In order to study the GGF suspicion, a CT scan with oral and intravenous contrast was performed, which confirmed the diagnosis (Figure 2).

On day six, the patient developed a massive upper gastrointestinal bleeding with haemorrhagic shock (melaena and hypotension). Haemoglobin levels decreased to 5.6 g/dl and massive protocol transfusion was initiated. An urgent upper endoscopy was performed, identifying the known GGF and also a bleeding ulcer in the gastric pouch just proximal to the gastrojejunal anastomosis. Haemostasis was achieved endoscopically through the application of an over-the-scope clip (OTSC) (Figure 3).

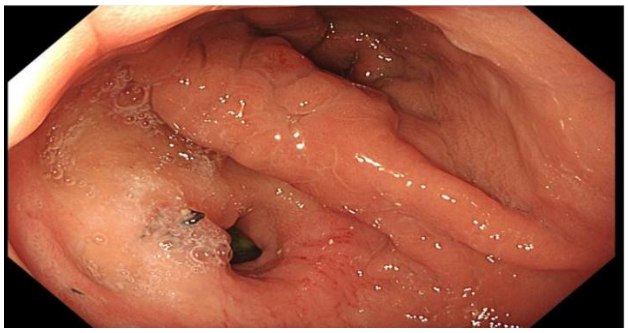

**Figure 1: Upper endoscopy showing the gastrogastric fistula. Two luminal paths are visible after the oesophagus: one is the gastrogastric fistula and the other leads to the gastrojejunal anastomosis.**

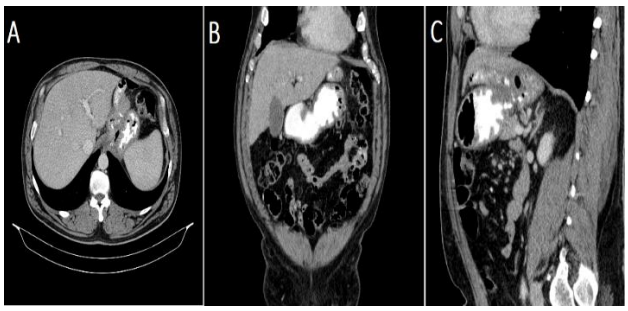


**Figure 2: CT scan with oral and intravenous contrast in the different planes (A) axial; (B) coronal; and (C) Sagittal). The images show visible oral contrast in both the jejunum (distal to the gastrojejunal anastomosis) and also inside the excluded stomach (confirming the presence of a gastrogastric fistula).**

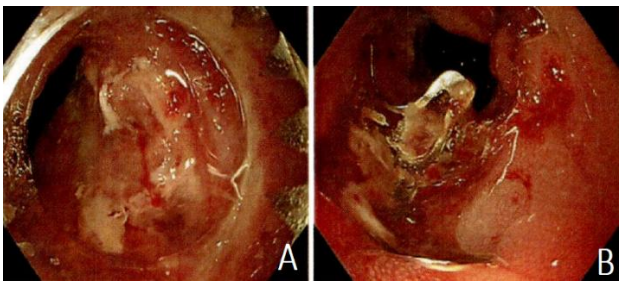


**Figure 3: Upper endoscopy performed during the episode of haemorrhagic shock, (A) a bleeding ulcer is identified on the gastric pouch immediately proximal to the gastrojejunal anastomosis, and (B) endoscopic haemostatic control was achieved with the application of a OTSC.**

After 18 days of hospitalization, the patient was discharged waiting for elective surgery for the GGF. Two months later, the patient underwent elective laparoscopic surgery. Intra-operative findings are shown in Figure 4.

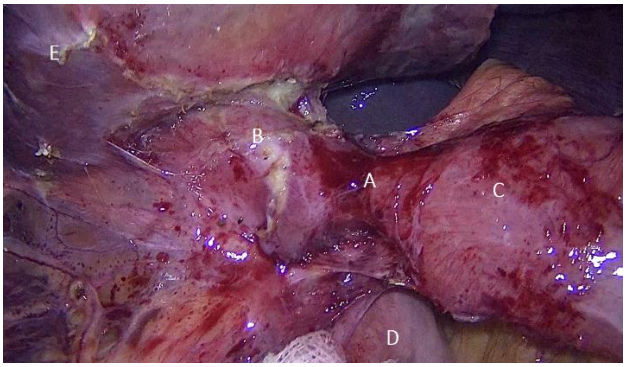


**Figure 4: Intraoperative laparoscopic image obtained during elective surgery for treatment of the gastrogastric fistula, A – gastrojejunal anastomosis; B – gastric pouch; C – jejunum (alimentary limb of the RYGB); D – excluded stomach/gastric remnant; and E – liver (left lobe).**

A laparoscopic remnant gastrectomy with refashioning of the gastrojejunal anastomosis (excision of the gastric pouch and creation of an esophagojejunal anastomosis) was performed (Figure 5).

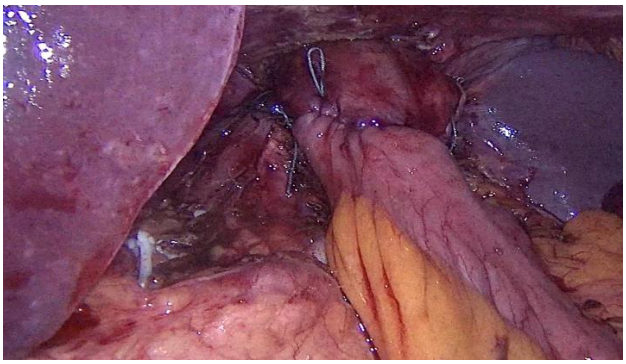

**Figure 5: Intraoperative image showing the newly created esophagojejunal anastomosis (following remnant gastrectomy, excision of the gastric pouch and refashioning of the previous gastrojejunal anastomosis).**

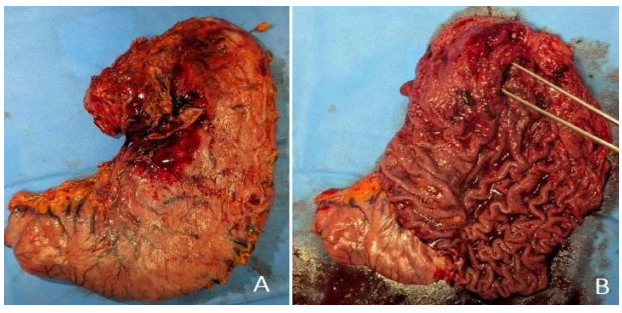


**Figure 6: (A) Specimen submitted to histopathological examination, consisting of the gastric remnant and the gastric pouch with the gastrojejunal anastomosis, connected by the gastrogastric fistula, and (B) the fistulous tract is clearly demonstrated with dissection forceps (B).**

The gastric remnant and gastric pouch with the anastomosis, connected by the GGF, were submitted for histopathologic evaluation (Figure 6). The postoperative course was uneventful and the patient was discharged on postoperative day four. Histologic analysis confirmed the gastrogastric fistula without additional abnormal findings.

## DISCUSSION

A GGF following RYGB remains a significant cause of morbidity.[1,3] Although traditionally described as an uncommon complication, its true prevalence is likely underestimated, as some GGFs may be asymptomatic and therefore remain undetected.[6]

The pathogenesis is not yet fully understood and is likely multifactorial. The main proposed mechanisms include incomplete transection of the gastric pouch from the excluded stomach and anastomotic leaks.[5] In this case, the fistula was most likely associated with a minor, clinically silent anastomotic leak that eventually progressed to a fully formed GGF.

Clinically, GGFs may be asymptomatic or present with nonspecific symptoms such as epigastric pain, nausea and gastrointestinal bleeding – often related to ulceration at the anastomotic site - or weight regain.[3,5]

Diagnosis is often challenging and high index of suspicion is essential. The primary diagnostic modalities include an upper gastrointestinal contrast study and upper endoscopy, although a CT scan can also be useful.[2,5] In this case, the coexistence of a marginal ulcer facilitated earlier diagnosis due to massive gastrointestinal bleeding as the initial presentation.

The treatment of GGFs varies widely depending on symptom severity. Small fistulas may be successfully managed medically with PPIs.[5,6] When the fistula is smaller than 10mm, endoscopic treatment is also a valuable option.[2,6,7] Surgical repair remains the preferred approach for large GGFs despite its technical complexity.[1,6] Surgical options include fistula division or remnant gastrectomy, with or without refashioning of the gastrojejunal anastomosis. All of these surgical options are considered safe, including when performed laparoscopically.[1,8] GGF itself is not an absolute indication for surgery; the main indications are refractory marginal ulcers and significant weight regain or weight-loss failure.[3,4] Given the patient's initial presentation with massive upper gastrointestinal bleeding secondary to a marginal ulcer, surgery was the most appropriate definitive treatment following stabilization, consisting of total gastrectomy (remnant gastrectomy with refashioning of the gastrojejunal anastomosis).

## CONCLUSION

In conclusion, this case illustrates a rare but serious complication of bariatric and metabolic surgery: GGF

following RYGB. Prompt diagnostic evaluation and appropriate management are essential to improving patient outcomes, which might otherwise be unfavourable.

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