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(CASE REPORT)

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Case report: Acute gastric remnant dilation following laparoscopic mini-gastric bypass in a patient using GLP-1 receptor agonist

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Abstract

Acute gastric remnant dilation is a rare but potentially serious complication following mini-gastric bypass (MGB). While the majority of such cases have been reported after Roux-en-Y gastric bypass (RYGB), this case highlights a unique presentation following MGB. Additionally, the potential role of GLP-1 receptor agonists in influencing gastric motility and contributing to postoperative complications is explored.

A 44-year-old female with morbid obesity (BMI: 40) underwent laparoscopic MGB after unsuccessful weight loss attempts through lifestyle interventions and liraglutide (Saxenda) use. Postoperatively, the patient developed tachycardia and hypertension without gastrointestinal symptoms. Imaging revealed a dilated gastric remnant with a suspected stricture near surgical clips. Diagnostic laparoscopy identified a mildly kinked pylorus but no definitive obstruction. Despite stricture plasty, the patient continued to experience gastric dilation and required remnant gastrectomy. The patient's prior use of GLP-1 receptor agonists may have contributed to delayed gastric emptying and the development of this complication. The patient recovered well, achieving significant weight loss (BMI: 28) and metabolic improvement.

The case highlights the necessity of precise surgical techniques, mainly stapler placement, to avoid gastric remnant issues after MGB. It also stresses the need to consider the effects of GLP-1 receptor agonists on gastric motility in patients with prior use. Early detection and intervention are vital for preventing serious complications. Additionally, for patients receiving GLP-1 receptor agonists who are planned for bariatric surgery, discontinuation of these agents for an adequate period preoperatively may help prevent delayed gastric emptying and reduce the risk of remnant dilation.

Keywords: Gastric Remnant Dilation; Mini-Gastric Bypass; GLP-1 Receptor Agonist; Gastroparesis; Bariatric Surgery; Gastric Motility

1.Introduction

Bariatric surgery is associated with durable weight loss and significant improvement in obesity-related comorbidities. Long-term studies consistently demonstrate substantial reductions in body weight and metabolic disease following surgical intervention [1]. One-anastomosis (mini) gastric bypass (OAGB/MGB), a commonly performed bariatric procedure combining gastric restriction with a single gastrojejunal anastomosis, has anatomical and physiological differences from Roux-en-Y gastric bypass (RYGB) but achieves comparable clinical outcomes [2]. Although generally regarded as safe and effective, OAGB/MGB is associated with both early and late complications. Early complications include anastomotic leakage, bleeding, and bowel obstruction, whereas late complications may involve marginal ulcers, internal hernias, and nutritional deficiencies [2].

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Glucagon-like peptide-1 receptor agonists (GLP-1 RAs), including liraglutide and semaglutide, are known to delay gastric emptying and, in rare cases, induce gastroparesis [3,4]. Their inhibitory effect on gastric motility may exacerbate postoperative dysmotility or functional obstruction in susceptible patients [3,4]. We report a rare case of gastric remnant dilatation in a patient with prior OAGB/MGB receiving GLP-1 RA therapy.

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2.Case Presentation

A 44-year-old female with morbid obesity (BMI: 40, weight: 104 kg) presented for bariatric surgery evaluation after unsuccessful weight loss attempts despite using liraglutide (Saxenda), dietary modifications, and lifestyle interventions. She reported symptoms of heartburn, snoring, and features suggestive of obstructive sleep apnea. Her medical history included hypertension, hyperlipidemia, knee pain, and fatty liver disease. A signed, written, informed consent was obtained from the patient for the publication of this case report and any accompanying images.

Her laboratory tests revealed a mildly elevated HbA1c (6.4%) and an ultrasound showing a mild fatty liver. Endoscopy showed a 1 cm hiatal hernia, normal gastric and duodenal mucosa, and no signs of reflux. The patient opted for laparoscopic mini-gastric bypass (MGB) after discussing the risks, benefits, and potential complications, including leakage, bleeding, deep vein thrombosis (DVT), and the necessity for lifestyle modifications and lifelong supplements.

On January 16, 2024, the laparoscopic MGB was performed successfully. Postoperatively, the patient remained stable, but within 24 hours, she developed tachycardia (110-120 bpm) and hypertension. Notably, she did not experience nausea, vomiting, abdominal pain, or fever. She tolerated oral intake well, consuming 1.2L of fluids daily, and ambulated without difficulty.

Figure 1 Intraoperative image demonstrating the Index procedure.

Laboratory results indicated a normal white blood cell count (WBC 7000; reference 4000-10,000), slightly low potassium (K+ 3.0; reference 3.5-5.0), and an elevated C-reactive protein (CRP 69; reference <5). A contrast-enhanced CT scan of the chest and abdomen showed a markedly dilated bypassed gastric remnant with a suspected regional stricture near the surgical clips, without evidence of oral contrast leakage or extraluminal air. Mild pelvic free fluid was also noted, as shown in Figure 2.

Figure 2 Coronal Contrast-enhanced CT scan of the abdomen showing a dilated gastric remnant with suspected regional stricture near surgical clips

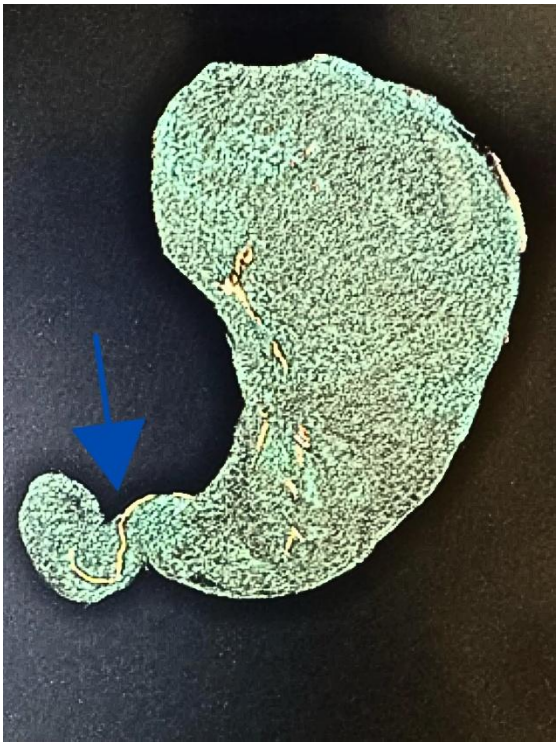

Figure 3 3D Reconstructed CT Model demonstrating the suspected stricture site

Given concern for impending gastric remnant perforation, the patient underwent diagnostic laparoscopy on January 20, 2024. Intraoperative evaluation demonstrated marked dilatation of the gastric remnant without an identifiable fixed stricture, although a mild kinking was noted near the pylorus. A gastrotomy with Heineke–Mikulicz strictureplasty was performed, consisting of a 6-cm longitudinal incision closed transversely to facilitate gastric emptying.

The patient tolerated the procedure well and was discharged on postoperative day one with stable vital signs and adequate oral intake (approximately 1.5 L/day). Representative intraoperative findings are shown in Figure 4.

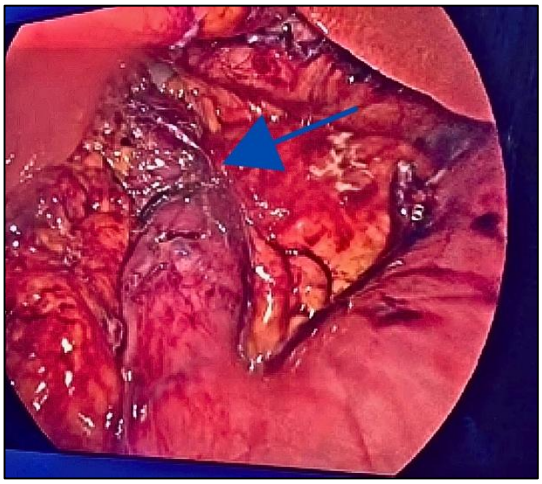

Figure 4 Image illustrating the suspected site of kinking

On February 1, 2024, a follow-up CT scan showed persistent gastric remnant dilation with a regional stricture (Figure 5). Given the lack of improvement, the patient was readmitted and underwent definitive remnant gastrectomy. Intraoperatively, the gastric remnant was markedly dilated, extending to the duodenum. Adhesions were noted between the gastrojejunostomy and remnant stomach, but no distinct stricture was found. The remnant stomach was resected. The patient recovered well, being discharged on postoperative day 2.

Figure 5 Follow-up CT scan showing persistent gastric remnant dilation despite stricture plasty

3.Discussion

Acute gastric remnant dilation following mini gastric bypass (MGB) is an exceedingly rare complication, with most reported cases occurring after Roux-en-Y gastric bypass (RYGB) [5]. In this case, intraoperative exploration did not reveal a clear mechanical stricture, suggesting a functional cause of delayed gastric emptying, such as autonomic neuropathy or gastroparesis [6]. Only one similar case following MGB has been reported, in which remnant gastric dilation was caused by narrowing due to the first stapler being placed too close to the incisura angularis, resulting in gastric outlet obstruction [7]. Although a similar technical factor was considered here, no stricture was identified intraoperatively, indicating that mechanical obstruction alone may not fully explain the presentation. A comparable case from UCLA described acute gastric remnant dilation in a diabetic patient, ultimately attributed to severe gastric hypomotility despite the absence of preoperative symptoms of autonomic neuropathy or gastroparesis [8]. Additionally, acute gastric dilation has been associated with GLP-1 receptor agonists, such as liraglutide (Saxenda), which delay gastric emptying [9]. Given the patient's prior use of liraglutide, prolonged GLP-1 agonist exposure may have contributed to underlying gastric motility dysfunction and postoperative complications, particularly following strictureplasty.[10]. Moreover, vigilant postoperative monitoring following MGB is crucial, as timely detection and management of remnant gastric complications can reduce morbidity and prevent potentially serious outcomes [11]. To avoid this complication, careful attention should be paid during surgery to avoid applying the first stapler too close to the incisura angularis. For management, gastrectomy of the remnant stomach may be a more definitive surgical solution than strictureplasty. Additionally, for patients receiving GLP-1 receptor agonists who are planned for bariatric surgery, discontinuation of these agents for an adequate period preoperatively may help prevent delayed gastric emptying and reduce the risk of remnant dilation.

4.Conclusion

This case underscores the importance of meticulous surgical technique. Careful attention to the anatomical landmarks, such as the incisura angularis, is crucial to prevent complications like gastric remnant dilation. Additionally, while surgical technique is paramount, the potential effects of GLP-1 receptor agonists on gastric motility should also be considered. In this patient, prior use of liraglutide (Saxenda) may have contributed to delayed gastric emptying, further complicating the postoperative course. Surgeons should be vigilant in assessing both surgical technique and the patient's medication history, as early recognition and timely intervention can significantly improve outcomes and prevent serious complications. For management, gastrectomy of the remnant stomach may be a more definitive surgical solution than strictureplasty.

Compliance with ethical standards

Disclosure of conflict of interest

All authors declare no conflicts of interest.

Statement of ethical approval

Institutional review board approval was not required for this single-patient case report.

Statement of informed consent

Written informed consent for publication was obtained from the patient.

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