CASE REPORT

Pyloric Stenosis-like Gastric Outlet Obstruction Following Gastric Bypass: A Case Report

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Summary

This case report describes a rare instance of hypertrophic pyloric stenosis (HPS) presenting after gastric bypass surgery in an adult patient. The patient exhibited symptoms of gastric outlet obstruction, including persistent vomiting and weight loss. Diagnostic imaging revealed significant pyloric muscle hypertrophy consistent with HPS, confirmed by endoscopic and histopathological findings. This report highlights the diagnostic challenges in differentiating HPS from more common post-bypass complications such as anastomotic stenosis. The case underscores the importance of thorough evaluation using imaging and histology to establish the diagnosis. Early recognition and appropriate surgical intervention led to symptom resolution. This report aims to increase awareness of this uncommon presentation and guide clinicians in managing similar cases effectively.

Keywords: Hypertrophic Pyloric Stenosis, Gastric Bypass, Roux-en-Y, Laparoscopic-assisted Transgastric Endoscopy, Gastrojejunostomy

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Introduction

Roux-en-Y gastric bypass (RYGB) is a widely performed bariatric procedure that creates a small gastric pouch and bypasses the distal stomach and proximal small intestine. While RYGB is effective for weight loss and metabolic improvement, it can lead to a range of long-term complications, including gallstone disease, marginal ulceration, and small bowel obstruction (1,2).

Hypertrophic pyloric stenosis (HPS) in adults is a rare condition characterized by thickening of the pyloric muscle, typically diagnosed through a combination of clinical symptoms-such as postprandial vomiting, abdominal pain, and gastric outlet obstruction-and imaging or endoscopic evidence of pyloric narrowing. In standard anatomy, upper endoscopy or contrast studies can directly visualize and confirm the diagnosis of HPS. However, in patients who have undergone RYGB, the remnant stomach and pylorus are excluded from the alimentary tract and are not accessible by conventional endoscopic approaches, posing significant diagnostic and therapeutic challenges (3). This anatomical alteration complicates the evaluation of distal gastric pathology, including HPS, as traditional

endoscopic and radiologic methods may be insufficient or inconclusive.

To date, there are no reports of adult HPS as a late complication following RYGB, nor of its diagnosis and management using a combined laparoscopic and endoscopic approach. We present a case of a 50-year-old male with a history of RYGB and two prior gastric remnant perforations, who developed HPS diagnosed via laparoscopy-assisted transgastric endoscopy. This case highlights both a rare complication and a novel diagnostic and therapeutic strategy in the post-RYGB population.

fractures

Case Presentation

Presentation and Clinical History

A 50-year-old male was referred to our facility with complaints of abdominal bloating and persistent hiccups. Patient was a non-smoker and BMI on current presentation was 26 kg/m^2. He had undergone laparoscopic Roux-en-Y gastric bypass surgery 15 years earlier, with an uneventful immediate postoperative course.

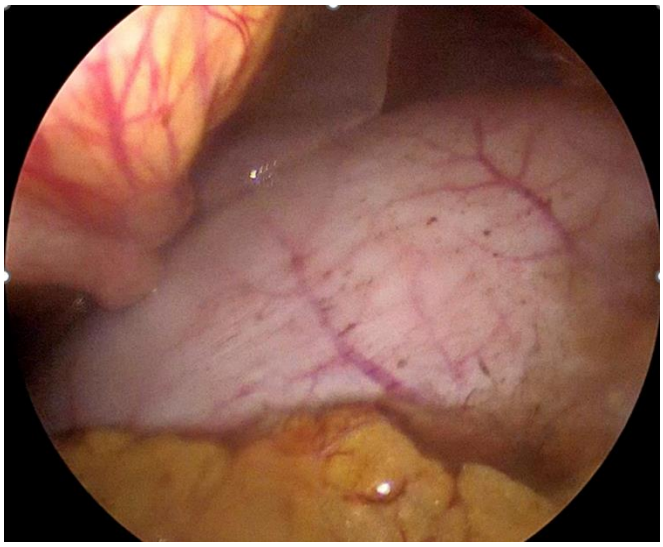

Figure 1: Laparoscopic view of a distended gastric remnant

However, his surgical history was complicated with two episodes of perforation in the excluded stomach, where the first episode occurred a year before admission and was surgically treated then. The second episode was treated by surgical resection of a significant portion of the gastric remnant, four months before admission. Adhesions associated with the previous procedures did no contribution to current condition as none of them were encountered. Patient did not report any history of *Helicobacter pylori* gastritis. Presentation leading to this surgical intervention – symptoms had lasted 3 weeks.

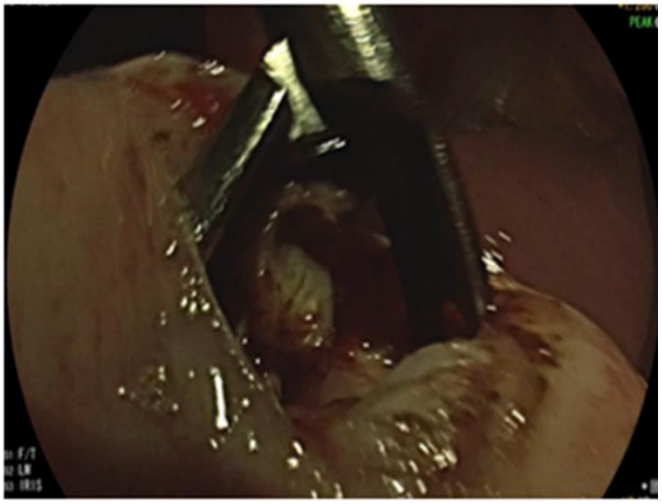

Figure 2a: Endoscope being inserted through a laparoscopic trocar to visualise the lumen of the stomach remnant.

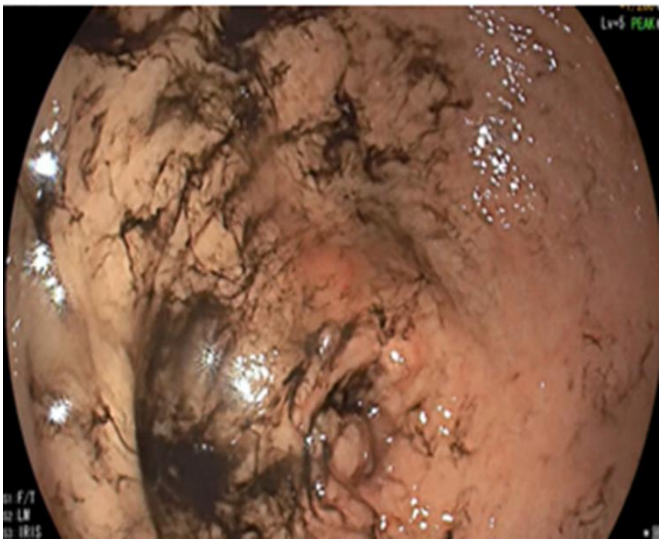

Figure 2b: Laparoscopy-assisted transgastric endoscopy of the gastric remnant revealing obstruction at the level of the pylorus

Patient clinical status was stable, with symptoms of abdominal bloating, hiccups and abdominal pain. Neither imaging or endoscopy showed any signs of

malignancy, with previously conducted gastric resection for same problem, histopathology also showing no malignancy.

Investigations and diagnosis

A computed tomography (CT) scan of the abdomen revealed significant distension of the excluded stomach, further confirmed with diagnostic laparoscopy on the day after admission. A laparoscopy-assisted transgastric endoscopy of the gastric remnant revealed obstruction at the level of the pylorus (Figures 1, 2a. and 2b).

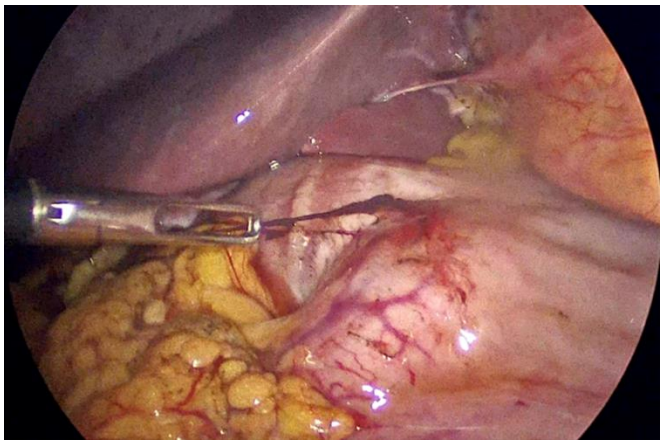

Figure 3: Pylorus scarring observed after performing adhesiolysis for adequate visualization

An adhesiolysis was also performed for adequate visualization, revealing scarring at the pylorus (Figure 3). Both endoscopic and laparoscopic findings of pyloric obstruction and scarring confirmed the diagnosis of adult hypertrophic pyloric stenosis.

Treatment plan and surgical intervention

The treatment plan involved creating a new anastomosis between the alimentary limb and the remnant stomach to bypass the obstructed pylorus.

The patient was placed in the supine position with legs apart for optimal access during the procedure, and general anesthesia was administered. After standard sterilization and draping, the abdominal cavity was accessed using an open technique at the supraumbilical level. Four trocars were inserted: a 5 mm one at the supraumbilical level, two 5 mm trocars, one changed to 12 mm later, and another 12 mm trocar (Figure 4).

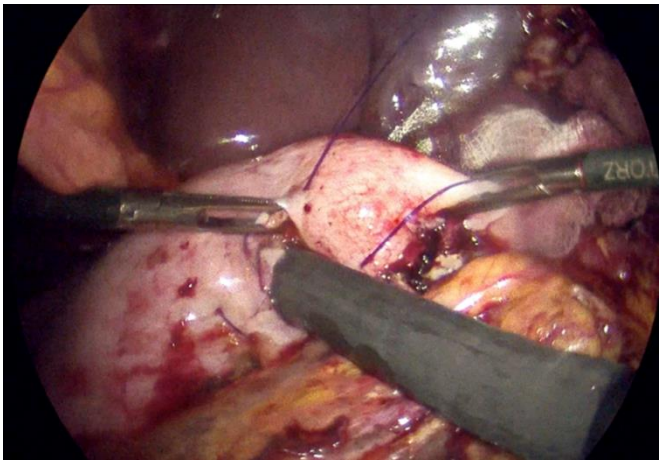

Figure 4: Abdominal cavity accessed by open technique at the supraumbilical level

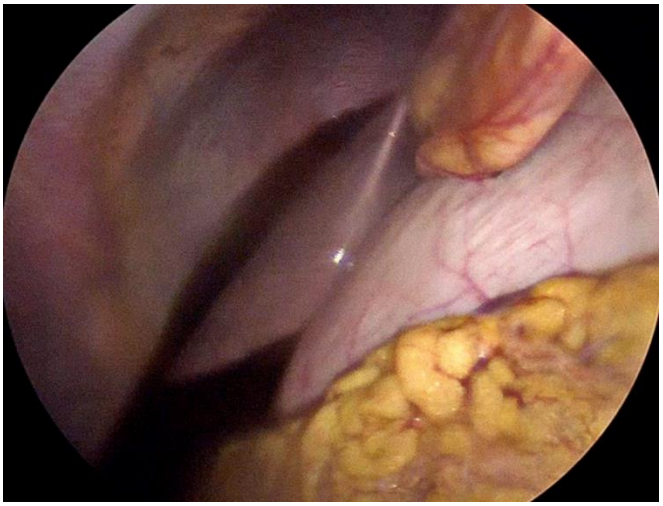

Figure 5: Presence of brownish fluid in the perihepatic area

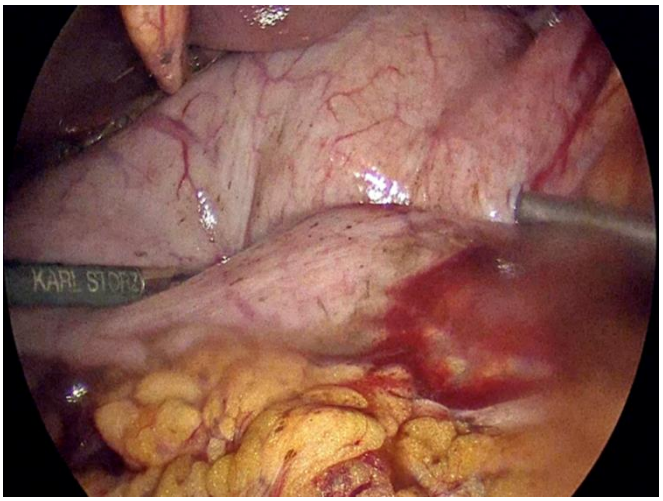

Figure 6: Distended remnant stomach emptied using aspiration needle

Diagnostic laparoscopic further revealed the presence of brownish fluid in the perihepatic area (Figure 5) and pelvis. The remnant stomach was also dilated, with significant adhesions around gastrojejunostomy and jejunojejunostomy.

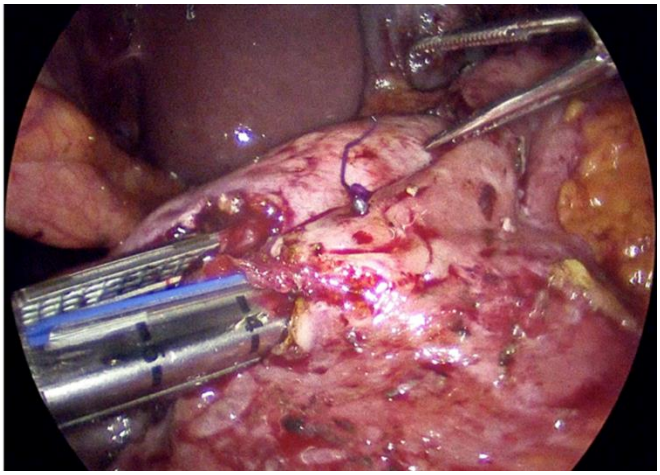

Figure 7: Anastomosis created between the remnant stomach and a jejunal loop using linear stapler

Using an aspiration needle, the distended remnant stomach was emptied (Figure 6). The bowel was examined from the gastric pouch down to the jejunojejunostomy using adhesiolysis, revealing no small bowel obstruction.

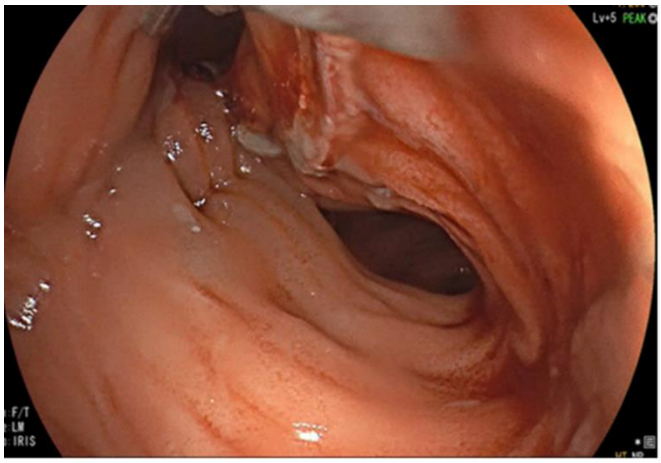

Figure 8: Intraoperative endoscopy confirming patency of newly created anastomosis

A small opening was made in the gastric remnants to facilitate further examination. To bypass the obstruction, an anastomosis was created between the remnant stomach and a jejunal loop approximately 30 cm distal to the gastric pouch using a linear stapler (Figure 7). The enterotomy was then closed with two layers of PDS sutures to ensure leak-proof closure. Another intraoperative endoscopy confirmed the patency of the newly created anastomosis (Figure 8), and a negative leak test confirmed the integrity of the surgical repair. Hemostasis was ensured throughout the procedure. Drains were placed and fixed in position, and all ports were removed under direct vision, followed by standard closure techniques.

Postoperative course

The patient's postoperative course was uneventful. CT showed a distended remnant stomach (post resection) with thickened pylorus. He remained stable and tolerated the procedure well. Oral liquids were initiated on the second-day post-surgery, and the patient was discharged in stable condition four days after admission, with detailed instructions for gradual return to regular dietary habits. The patient was scheduled for regular follow-up visits to monitor his progress and ensure optimal postoperative outcomes.

Discussion

Gastroenterostomy stenosis has been reported as an early complication after RYGB, with an incidence of 4.7 per 1000 person-years (4). However, adult HPS has only been identified as individual case reports in the literature (3,5,6). Most adult cases of HPS are idiopathic (2,4,5). In the present case, the patient experienced two episodes of perforation, a known post-RYGB complication, which despite treatment, progressed to HPS. Gastric remnant hemorrhagic ulcer, perforations, and necrosis are other known long-term complications of RYBG reported in the literature, commonly managed by complete resection of the gastric remnant (7,8).

Anterior perforations in the remnant stomach after Roux-en-Y gastric bypass are often caused by marginal ulcers, which can develop due to factors such as acid secretion from the excluded stomach, ischemia, or nonsteroidal anti-inflammatory drug (NSAID) use. Other contributing causes include Helicobacter pylori

infection, smoking, and delayed gastric emptying leading to increased intraluminal pressure. These perforations are clinically significant as they can complicate the postoperative course and may contribute to chronic inflammation and scarring, potentially affecting pyloric function and complicating the diagnosis of hypertrophic pyloric stenosis in the remnant stomach. Understanding these causes is essential for comprehensive management and highlights the complexity of gastric outlet obstruction in post-bypass patients (9,10).

Although many cases of gastric obstructions post-RYGB were reportedly malignant (11), our case had a benign obstruction due to pyloric stenosis, similar to that reported by Painter et al (12). Adult HPS has been reported in males above an average age of 50, similar to our case. Abdominal distension and pain, bloating, nausea, and vomiting are commonly reported symptoms among these patients (5), while in our case bloating and persistent hiccups were seen.

Exploratory laparoscopy and upper gastrointestinal (UGI) scans are mostly done to determine and confirm the diagnosis of pyloric stenosis, as adult HPS is difficult to diagnose without surgery (6). Delayed gastric emptying has been observed upon UGI scans, purportedly due to pyloric stenosis. In our case, we employed laparoscopic-assisted transgastric endoscopy, we found fluid accumulation in the perihepatic area. This technique provides easier access to the proximal GI tract by entering through the stomach.

Common methods of treating adult HPS usually involve surgical gastric resection, balloon endoscopic dilatation, pyloromyotomy, Billroth I anastomosis, or pyloroplasty. In the present case, surgical anastomosis between the alimentary limb and gastric remnant similar to a Billroth II reconstruction was created using a linear stapler. The literature has not reported a Billroth II reconstruction approach for treating benign adult HPS. In our case, linear staplers were used for the gastric reconstruction which is known for better postoperative recovery than circular staplers, therefore linear staplers are a feasible and safe method for anastomosis.

Proton pump inhibitors (PPIs) are recommended after Roux-en-Y gastric bypass to reduce gastric acid secretion, promote ulcer healing, and prevent marginal ulceration or recurrent perforation in the gastric remnant. In this case, postoperative PPI therapy was initiated to support mucosal healing and minimize the risk of further complications, highlighting the importance of medical management alongside surgical intervention in post-bariatric patients (13). Creation of a gastrojejunostomy between the remnant stomach and jejunum restores continuity for gastric emptying but may impact weight control. By allowing food to bypass the restrictive gastric pouch, this new pathway can increase caloric intake and nutrient absorption, potentially leading to weight regain. Therefore, while the procedure resolves obstruction, it may compromise the long-term effectiveness of the original bariatric surgery, necessitating close dietary monitoring and follow-up to minimize the risk of obesity recurrence (14).

Through this case report, we highlight the importance of considering adult HPS in the differential diagnosis of patients with a history of gastric bypass surgery presenting with symptoms of gastric outlet obstruction. Diagnostic laparoscopy and laparoscopic-assisted endoscopy were crucial in identifying the obstruction and guiding surgical management.

The successful creation of an anastomosis between the remnant stomach and jejunal loop provided a new pathway for gastric emptying, effectively relieving the patient's symptoms. Therefore, underscoring the need for continued surveillance and follow-up in patients with a history of bariatric surgery to address late-onset complications promptly. A limitation of this study is that it reports a single case, limiting the generalizability of the findings.

Conclusion

The present case illustrates the rare but important possibility of late-onset complications following bariatric surgery. The case highlights the need for heightened clinical awareness of HPS in patients presenting with gastric outlet obstruction symptoms long after surgery, particularly when traditional causes have been ruled out. The successful surgical management, including gastric remnant-to-jejunum

anastomosis, underscores the effectiveness of tailored surgical interventions in resolving such rare complications. This case reinforces the critical importance of long-term follow-up and surveillance in bariatric surgery patients to identify and address late complications promptly, ensuring better patient outcomes.

Author contributions

All authors equally contributed to conceptualization, investigation, methodology, project administration, data curation, resources and in writing, reviewing and editing of the original draft.

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