

CASE REPORT

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Gastric remnant perforation after single anastomosis gastric bypass

Alen M Brodaric, Ngee-Soon Lau, Charbel Sandroussi

ABSTRACT

Introduction: Acute perforation of gastric remnants after single anastomosis gastric bypass are scarcely reported in the literature. The leak of gastrointestinal contents into the abdomen increases morbidity and if not promptly recognized can lead to mortality from sepsis.

Case Report: A 42-year-old male developed abdominal pain and fever after laparoscopic removal of adjustable gastric band, hiatus hernia repair, and single anastomosis gastric bypass. Computed tomography showed evidence of viscus perforation, bowel obstruction, and intra-abdominal infection. Operative findings suggested bowel obstruction of the afferent small bowel loop led to perforation at the gastric remnant staple line which was repaired primarily.

Conclusion: Patients presenting with early sepsis after single anastomosis gastric bypass should be investigated with computed tomography. Gastrointestinal leaks should be promptly addressed with surgical washout, primary repair, and suture reinforcement.

Keywords: Anastomotic leak, Bariatric surgery, Gastric bypass, SAGB, Viscus perforation

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INTRODUCTION

Gastric remnant perforation is rare in the short-term after surgery. However, it highlights the vulnerability of the gastrointestinal system in the early healing phase. There is a degradation of esophageal and colonic anastomotic strength by 40% and 70% respectively after 48 hours due to the inflammatory phase of intestinal healing which increases collagenase proteolytic activity [1, 2]. These factors would make the staple line anastomosis of a bypassed stomach vulnerable to perforation in the context of increased intra-luminal pressure from a concurrent small bowel obstruction. A study of sleeve gastrectomy specimens found that half of the leaks occurred at the staple line with most occurring at the junction between staple lines [1].

CASE REPORT

A 42-year-old male presented to an Emergency Department six days after elective laparoscopic removal of adjustable gastric band, hiatus hernia repair, and single anastomosis gastric bypass for weight loss [weight 155 kg, height 187 cm, body mass index (BMI) 44 kg/m²] with sudden onset generalized abdominal pain and fever. His past medical history was only significant for obesity and he took no regular medication. He did not use tobacco, alcohol, or illicit substances. There was no family history of peptic ulcer disease. He had generalized abdominal tenderness on examination and tachycardia to 130 bpm.

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His leukocyte count was $14.6 \times 10^9/L$ (Normal range: $4.0-10.0 \times 10^9/L$), C reactive protein 518 mg/L (<3 mg/L), creatinine 273 $\mu\text{mol/L}$ (60–110 $\mu\text{mol/L}$), and lactate of 3.4 mmol/L (<1.9 mmol/L). Computed tomography (CT) with oral contrast showed an intra-abdominal abscess, pneumoperitoneum (Figure 1), obstructed small bowel without a transition point (Figure 2) and extra-luminal oral contrast (Figure 3).



Figure 1: Axial computed tomography abdomen showing intraabdominal abscess over left lobe of liver with pneumoperitoneum.



Figure 2: Coronal computed tomography abdomen and pelvis with oral contrast showing obstructed small bowel.

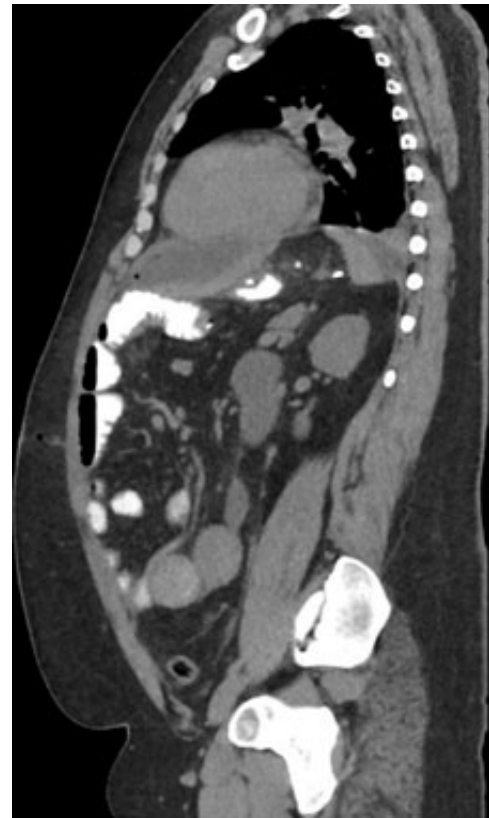


Figure 3: Sagittal computed tomography abdomen and pelvis with oral contrast showing obstructed small bowel against anterior abdominal wall and extra-luminal contrast.

Differential diagnosis

The differential diagnosis for his acute presentation would be:

- Anastomotic leak with intra-abdominal sepsis
- Viscus perforation
- Complicated internal hernia
- Perforated gastroduodenal ulcer

Post-operative patients presenting with abdominal pain, early shock, and significantly elevated inflammatory markers raise warrant early investigation intra-abdominal sepsis with CT imaging. The radiological findings combined with the clinical presentation suggested there was a viscus perforation or anastomotic leak combined with small bowel obstruction. A perforated viscus may be the result of a strangulated section of bowel from an internal hernia or pressurization of the bowel. A gastroduodenal ulcer perforation would be an unlikely cause as these patients routinely have a gastroscopy prior to or at the time of surgery.

Operative findings

At operation there were acute abdominal adhesions and dilated small bowel proximal to the gastroenterostomy with collapse of the bowel distal to the anastomosis. There was a large volume of bile-stained gastric fluid in the supracolic compartment with an intra-abdominal

abscess overlying the left lobe of the liver. There was pressurization of the gastric remnant from the obstructed afferent small bowel loop and perforation at the pyloric end of the staple line of the gastric remnant (Figure 4).

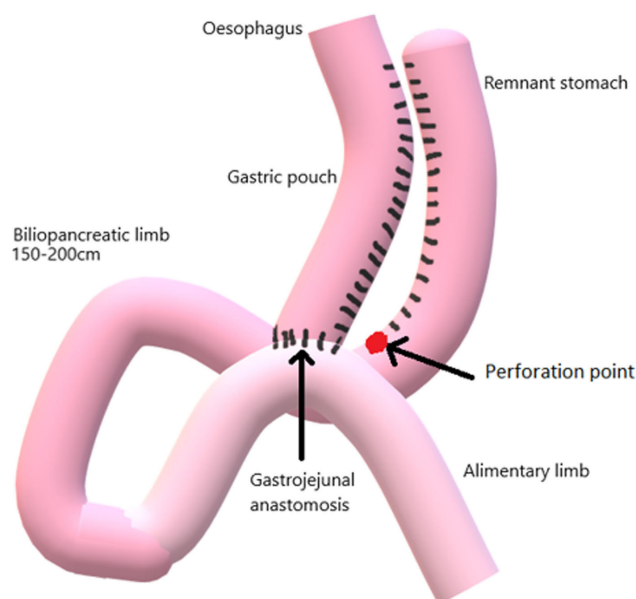


Figure 4: Graphical representation of anatomical configuration after single anastomosis gastric bypass including the point where this patient suffered a perforation.

The perforation was repaired primarily, followed by oversew of the staple line and reinforcement with an omental patch before extensive abdominal washout and placement of two 10 mm Jackson–Pratt drains. Over the next 14 days he was treated with bowel rest, total parenteral nutrition, endoscopic dilation of the gastroenterostomy anastomosis to 19 mm and percutaneous drainage of left subphrenic and pelvic collections as well as a left pleural effusion.

Follow-up

His community recovery was complicated by a right lower limb deep vein thrombosis and recurrent left pleural effusions requiring pigtail catheter chest drainage. He was admitted three months after discharge with bilateral pleural effusions requiring intravenous antibiotics and pigtail catheter drainage. Following this admission, he recovered to his baseline level of function including return to employment and continued independence with all activities of daily living. After resolution of his deep vein thrombosis, his anticoagulation was ceased.

DISCUSSION

Early small bowel obstruction occurs in 0.5–5.2% of patients after Laparoscopic Roux-en-Y gastric bypass (RYGB), the incidence after SAGB is unknown [2].

Overall anastomotic leak rates after SAGB are estimated at 1.7% and acute gastric remnant leaks are rare 0.03–0.2% [2–4] while late perforations occur at a median of 18 months in 1% of patients [5]. Early obstruction is particularly concerning in this situation where there is a healing staple line which is at risk of leaking.

The principles of immediate management are lavage of the intra-abdominal contamination to control the infection, repair the source of the leak, and alleviate distal obstruction. Early laparoscopy enables thorough washout of infection substrate and repair of any perforation. Abdominal drain placement facilitates clearance of residual contamination. The literature reports varying management options: surgical (laparoscopic washout, drainage, T-tube placement or conversion to RYGB), percutaneous drainage and/or endoscopic (T-tube placement or pigtail drain insertion) [6]. Treatment should be guided by whether a discrete point of leak may be repairable, the volume and morphology of intra-abdominal contamination, as well as clinical condition.

This patient did not have any signs of symptoms to indicate there were any surgical complications prior to discharge following his original surgery and this highlights the importance of early review and imaging for patients who do not follow a standard clinical course in the post-operative period.

CONCLUSION

We recommend early laparoscopic washout, perforation primary repair, and omentoplasty followed by suture reinforcement of the entire staple line. Surgeons should consider suture reinforcement of staple line anastomosis as primary prevention for anastomotic leak as this provides the highest perforation resistance.

REFERENCES

1. Causey MW, Fitzpatrick E, Carter P. Pressure tolerance of newly constructed staple lines in sleeve gastrectomy and duodenal switch. *Am J Surg* 2013;205(5):571–4.
2. Khoraki J, Mazzini GS, Shah AS, Del Prado PAR, Wolfe LG, Campos GM. Early small bowel obstruction after laparoscopic gastric bypass: A surgical emergency. *Surg Obes Relat Dis* 2018;14(8):1118–25.
3. Musella M, Susa A, Manno E, et al. Complications following the mini/one anastomosis gastric bypass (MGB/OAGB): A multi-institutional survey on 2678 patients with a mid-term (5 years) follow-up. *Obes Surg* 2017;27(11):2956–67.
4. Noun R, Skaff J, Riachi E, Daher R, Antoun NA, Nasr M. One thousand consecutive mini-gastric bypass: Short- and long-term outcome. *Obes Surg* 2012;22(5):697–703.
5. Felix EL, Kettelle J, Mobley E, Swartz D. Perforated marginal ulcers after laparoscopic gastric bypass. *Surg Endosc* 2008;22(10):2128–32.

6. Liagre A, Queralto M, Juglard G, Anduze Y, Iannelli A, Martini F. Multidisciplinary management of leaks after one-anastomosis gastric bypass in a single-center series of 2780 consecutive patients. *Obes Surg* 2019;29(5):1452–61.

Author Contributions

Alen M Brodaric – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Ngee-Soon Lau – Design of the work, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Charbel Sandroussi – Design of the work, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy

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Guarantor of Submission

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Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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