

Late perforation at the site of jejuno-jejunal anastomosis after laparoscopic Roux-en-Y gastric bypass surgery: A Case Report

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INTRODUCTION:

- Being overweight/obese poses significant risks. Body mass index [(BMI) (kg/m2)] is an estimate of total body fat. A BMI > 25 kg/m2 is associated with a modest increase in mortality and a BMI > 30 kg/m2 is associated with a significant increase 1. The World Health Organization categorizes being overweight as a BMI of 25 kg/m2 to 29.9 kg/m2 and obesity as a BMI of 30 kg/m2 or greater 2 (Table 1). Obesity is associated with type 2 diabetes mellitus, hypertension, coronary artery disease, sleep apnea, and cancer.
- In 1994, Wittgrove described laparoscopic Roux-en-Y gastric bypass surgery (LRYGBS) which bypasses the distal stomach and proximal small bowel by creating a small stomach pouch and rerouting part of the alimentary tract 4. The standard approach to Roux-en-Y gastric bypass surgery (RYGBS) is laparoscopic 5. LRYGBS is considered the gold standard and is associated with long term weight loss and significant improvement of comorbidities 6. Although considered to be safe, LRYGBS can lead to serious complications if problems are not detected early. Early complications are anastomotic leak, bleeding, and venous thromboembolism. Late complications include gallstone disease, marginal ulcerations, small bowel obstruction, and anastomotic strictures 7.
- Jejuno-jejunal (j-j) anastomosis in RYGBS can be achieved with a stapler or sutures. Goitein et al. reported that bleeding from the staples, anastomotic leak, and obstruction are possible complications at the anastomosis site 8. Late perforation following LRYGBS is a very rare complication with an incidence under 1% 8,9,10. This report presents a case of perforation at the site of the j-j anastomosis occurring after LRYGBS that was managed successfully using an open technique.

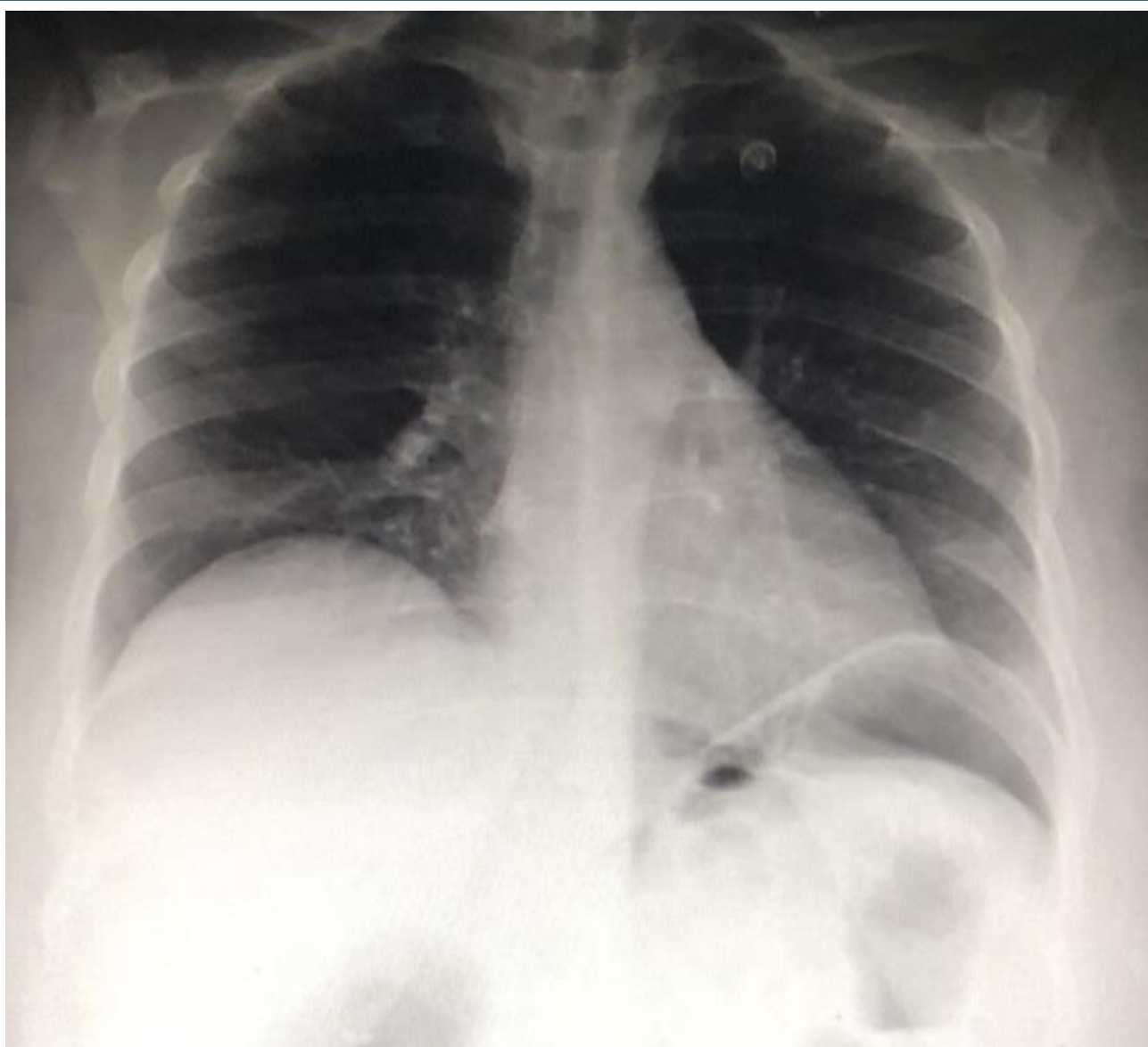
Table 1. overweight and Obesity Classification

	BMI(kg/m2)	Classification	Disease Risk	
			Waist size M/W (<102/<88 cm)	Waist size M/W (>102/>88 cm)
underweight	<18.5	---		
Normal	18.5-24.9	---		
Overweight	25.0-29.9	---	Increased	High
Obesity	30.0-34.9 35.0-39.9	I II	High Very High	VeryHigh Very High
Extreme Obesity	<40	III	Extremely High	Extremely High

PRESENTATION OF CASE:

- A 46-year-old woman (BMI 35kg/m2) with obesity-related co-morbidities underwent LRYGBS.
- She had uneventful laparoscopic appendectomy 8 weeks later and achieved 24% excess weight loss after 3 months.
- Fifteen weeks after surgery, she experienced a sudden onset of pain in the upper abdomen. The pain started gradually, was constant, colicky, and of increasing intensity. The pain worsened and was accompanied by vomiting and constipation for 2 days.
- There was no history of alcohol consumption or ulcerogenic medications.
- She presented to the emergency department (ED) one day prior to admission, where she was prescribed analgesics and discharged.
- She presented to the ED the next day with the same presentation. She was tachycardic, afebrile, and normotensive.
- Physical examination revealed a mildly distended, tender abdomen.
- Initial laboratory tests were normal except for an elevated leukocyte count (11,000/ μ L with left shift). The patient had a chest X-ray with an abdominal view, which showed free air under the left diaphragm dome (Figure 1).
- After exploratory laparoscopy, an open technique was applied due to anatomical anomalies. A 1.5 cm anterior j-j anastomotic perforation was identified, and intra-abdominal fecal matter was found (Figure 2). The perforation was closed using 3-0 absorbable sutures reinforced by a graham patch. Copious normal saline irrigation of the peritoneal cavity was completed.

Figure 1



Findings of chest X-ray: Free air under the dome of the left diaphragm

Figure 2



Findings at laparotomy: perforation at the jejuno-jejunal anastomosis. The bowel is otherwise healthy

DISCUSSION:

- Goitein et al. reported that postoperative leak, staple line bleeding, and bowel obstruction are complications of j-j anastomosis 8. Late perforation at the site of j-j anastomosis is a rare complication after LRYGBs 8,9. Anderson et al. reported a perforation following a biliopancreatic diversion 11. Goitein et al. reported that three out of 717 patients who underwent LRYGBS between January 2000 and January 2005 developed late j-j anastomotic perforations at 7 and 8 weeks postoperatively (0.42% incidence) 8. Gonzalez-Pezzat et al. described a patient who developed abscess due to late perforation at the site of j-j anastomosis 6 months after gastric bypass 9. Kalaiselvan et al. reported that three out of 1,652 patients who underwent LRYGBS between April 2002 and April 2012 developed this complication at 7, 9, and 18 weeks postoperatively (18% incidence) 10.
- An acute abdomen is the typical presentation of late perforation at the site of j-j anastomosis after LRYGBS 10. The manifestation of this complication is not always clear as it can mimic other conditions (obstruction or hernia) 9
- Our patient presented to the ED with symptoms of abdominal pain, vomiting, and constipation. In cases when the diagnosis is unclear, imaging may provide crucial information about intraabdominal pathologies. Rapid worsening of abdominal pain and typical findings of perforated viscous on standard radiograph mandated our patient transfer to the operating room 9
- This complication can be managed through laparoscopy. However, in cases where laparoscopy is difficult, an open technique is a viable alternative 9. Laparoscopy helps reduce postoperative stay, shorten time to return to activity, and permit evaluation of abdominal structures.
- Alternative surgical options for management of j-j perforation include temporary tube fistulization of the perforation, oversewing of the defect and reinforcement with an omental patch, and resection of the j-j perforation with immediate or delayed bowel anastomosis.
- In our case, no identifiable cause of j-j anastomotic perforation was found. We hypothesize that an ulcer formation resulted in perforation 10,12.

CONCLUSION:

- Acute abdominal pain after LRYGBS should raise the suspicion of postsurgical complication.
- Patients presenting with abdominal pain and tachycardia post bariatric surgery may suggest a leak or sepsis. Acute care surgeons should be familiar with diagnosis and management of such cases.

REFERENCES:

1. Khaodhiar L, McCowen KC, Blackburn GL. Obesity and its comorbid conditions. Clinical Cornerstone 1999;2(3):17–31. doi:10.1016/S1098-3597(99)90002-9.
2. WHO. (2016) Organization, Obesity and Overweight Fact Sheet, [http://www.thehealthwell_info/node/82914](http://www.thehealthwell.info/node/82914). 2017.
3. Guraya SY, Strate T. Systematic review and meta-analysis comparing weight loss outcomes by laparoscopic Roux-en-Y gastric bypass and sleeve gastrectomy; a systematic review and meta-analysis. International Journal of Surgery 1991. doi:10.1016/j.ijso.2019.08.010.
4. Wittgrove AC, Clark GW, Tremblay LJ. Laparoscopic gastric bypass, Roux-en-Y: preliminary report of five cases. Obes Surg 1994;4:353.
5. Berbiglia L, Zografakis JG, Dan AG. Laparoscopic Roux-en-Y gastric bypass. Surgical Clinics of North America 2016;96(4):773–94. doi:10.1016/j.suc.2016.03.003
6. Commonwealth of Massachusetts Betsy Lehman Center for Patient Safety and Medical Error Reduction Expert Panel on Weight Loss Surgery: Executive Report August 4, 2004*. Obes Res 2005;13(2):205–226. doi:10.1038/oby.2005.30
7. Early and late complications of bariatric operation Robert Lim• 1, Alec Beekley• 2, Dirk C Johnson• 3, Kimberly A Davis• 3 Author affiliations, Department of Surgery, Tripler Army Medical Center, Tripler, Honolulu, Hawaii, USA, Department of Surgery, Sidney Kimmel Medical College at Thomas Jefferson University, Philadelphia, Pennsylvania, USA, Department of Surgery, Yale School of Medicine, New Haven, Connecticut, USA Correspondence to Kimberly A Davis, Division of General Surgery, Trauma and Surgical Critical Care, Department of Surgery, Yale School of Medicine, New Haven, CT 06520-8062, USA; •kimberly.davis@yale.edu
8. Goitein D, Papasavas PK, Gagne DJ, Caushaj PF. Late perforation of the jejuno-jejunal anastomosis after laparoscopic Roux-en-Y gastric bypass. Obes Surg 2005;15(6):880–2.
9. Gonzalez-Pezzat I, Soto-Perez-de-Celis E, Pantoja-Millan JP. Late perforation and abscess formation at the site of the jejunojejunal anastomosis following laparoscopic roux-en-Y gastric bypass surgery. Obes Surg 2009;19(5):661–3 doi:10.1007/s11695-009-9831-9.
10. Kalaiselvan R, Abu Dakka M, Ammori BJ. Late perforation at the jejuno-jejunal anastomosis after laparoscopic gastric bypass for morbid obesity. Surg Obes Relat Dis 2013;9(6):874–8. doi:10.1016/j.soard.2013.04.020
11. Anderson PL, Velanovich VV, Kaufman CR, Carter PL. Late perforation of the distal Roux-en-Y anastomosis in a patient with biliopancreatic diversion. Obes Surg 1992;2:269–70.
12. Livingston EH. Complications of bariatric surgery. Surg Clin N Am 2005;85(4):853–68 doi:10.1016/j.suc.2005.04.007.
13. Buckwalter JA, Herbst CA Jr. Leaks occurring after gastric bariatric operations. Surgery 1988;103:156–60.
14. Sammut SJ, Majid S, Shoab S. Phytobezoar: a rare cause of late upper gastrointestinal perforation following gastric bypass surgery. Ann R Coll Surg Engl 2012;94(2):e85–7.
15. Kröll D, Kohler A, Nett PC. What causes late perforation of the jejuno-jejunal anastomosis after Roux-en-Y gastric bypass surgery? Obes Surg 2015;12:2421–2.
16. Hendriks T, Mastboom WJ. Healing of experimental intestinal anastomoses. parameters for repair. Dis Colon Rectum 1990;33:891–901.