J Surg Med. 2025;9(12):280-282.
https://doi.org/10.28982/josam.8234

JOSAM

Journal of Surgery and Medicine

e-ISSN: 2602-2079

Case report
https://jsurgmed.com/

Abdominal pain post bariatric procedure: What is the cause?

Lea Tessier [1], Daniel Meyer [2], Emily Heath [2], Kyoo-Yoon Choi [2]

[1] Department of Surgery, McMaster University, Hamilton, Ontario, Canada
[2] Department of Surgery, University of Calgary, Calgary, Alberta, Canada

ORCID of the author(s)

LT : https://orcid.org/0000-0002-2403-9079
DM: https://orcid.org/0009-0003-1619-9763
EH: https://orcid.org/0000-0001-6594-7949
KYC: https://orcid.org/0009-0005-5049-6037

Abstract

Omental ischemia after bariatric surgery is a rare cause of abdominal pain. We report a case of a 42-year-old female with a history of Roux-en-Y gastric bypass (RYGB) presenting with abdominal pain. Despite biochemical, radiologic, and endoscopic investigation, no cause was identified. Ultimately, diagnostic laparoscopy revealed ischemic omentum. Post-operatively, her symptoms resolved. This case highlights the diagnostic challenges in patients post-RYGB presenting with abdominal pain with no clear cause. Division of the omentum is common practice during RYGB in the case of an antecolic Roux limb. This may predispose patients to omental infarction and ischemia, and as such, suspicion should be high when initial investigations are equivocal. The potential role of omental division during RYGB warrants further investigation. Furthermore, this case reinforces the importance of diagnostic laparoscopy in select cases. Rare causes of abdominal pain, such as omental ischemia, should be considered in patients who are post-RYGB. When initial investigations are negative, early diagnostic laparoscopy should be considered.

Keywords: omental infarction, omental ischemia, Roux-en-Y gastric bypass, bariatric surgery, diagnostic laparoscopy, post-operative complication

Introduction

Omental ischemia is a rare but important cause of abdominal pain in post-bariatric surgery patients. It occurs due to compromised perfusion of a portion of the omentum, resulting in ischemia, pain, and necrosis. Although it may mimic common conditions, its presentation is often nonspecific, making a diagnosis difficult without surgical exploration [1].

Here, we present a case of a patient with a history of a laparoscopic Roux-en-Y gastric bypass (RYGB) who experienced persistent abdominal pain of unclear etiology. She underwent an extensive but inconclusive diagnostic evaluation, and was ultimately found to have ischemic omentum requiring surgical intervention. This case highlights the importance of considering omental infarction in the differential diagnosis of post-RYGB abdominal pain and underscores the role of early surgical exploration in select cases.

Corresponding Author
Kyoo-Yoon Choi
University of Calgary, 2500 University Drive NW, Calgary, Alberta, T2N 1N4, Canada
E-mail: kyoo.choi@medportal.ca

Informed Consent
The authors stated that the written consent was obtained from the patient presented with images in the study.

Conflict of Interest
No conflict of interest was declared by the authors.

Financial Disclosure
The authors declared that this study has received no financial support.

Published
2025 December 16

How to cite: Tessier L, Meyer D, Heath E, Choi KY. Abdominal pain post bariatric procedure: What is the cause? J Surg Med. 2025;9(12):280-282.

Case presentation

A 42-year-old female with a remote history of laparoscopic RYGB presented approximately five years postoperatively to the emergency department (ED) with a two-month history of progressively worsening right upper quadrant/epigastric pain. She described her pain as constant, focal, and sharp in the right upper quadrant and epigastrium, occasionally worsening postprandially. She has lost approximately 50 pounds since the bariatric procedure. Her past medical history included irritable bowel syndrome, acid reflux, attention deficit hyperactivity disorder (ADHD), anxiety, migraines, and restless leg syndrome. Her past surgical history included a laparoscopic appendectomy over 20 years ago, a laparoscopic cholecystectomy 12 years ago, and a cesarean section 10 years ago. Her medications included bronchodilators as needed, paroxetine, pramipexole, lisdexamfetamine, and metoclopramide as needed. She denies nonsteroidal anti-inflammatory drug (NSAID) use. She does not smoke, drink alcohol, or consume recreational drugs.

During her ED visit, no biochemical abnormalities were seen, and computed tomography (CT) of the abdomen and pelvis revealed no acute intra-abdominal abnormalities. She was discharged from the ED with prescriptions for ondansetron and a proton pump inhibitor (PPI).

Two months later, she presented with the same symptoms. On this visit, she was noted to have mild leukocytosis, elevated transaminases, as well as elevated alkaline phosphatase, gamma-glutamyl transferase, and bilirubin. These values are listed in Table 1. All other chemistries were normal, including troponin, lipase, hemoglobin, and electrolytes. A CT scan showed subtle dilatation of the intrahepatic biliary ducts, in addition to low attenuation in the falciform ligament, thought likely to be related to focal fatty infiltration, but MRI was recommended for further characterization (Figure 1, 2). She was admitted to the General Surgery service for further investigation.

The patient underwent a magnetic resonance cholangiopancreatography (MRCP), which showed subtle focal fat deposition and transient perfusion abnormality in a region of hypoattenuation near the falciform ligament, along with trace free fluid in the right upper quadrant. There was no biliary duct dilatation or cause of biliary duct dilation, such as choledocholithiasis, stricture, or mass (Figure 3).

Figure 1: Axial computed tomography scan showing subtle dilatation of the intrahepatic biliary ducts (triangle), and low attenuation in the falciform ligament (arrow).

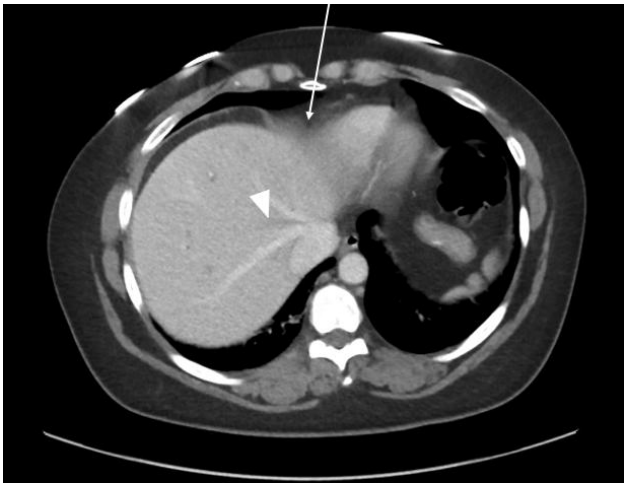
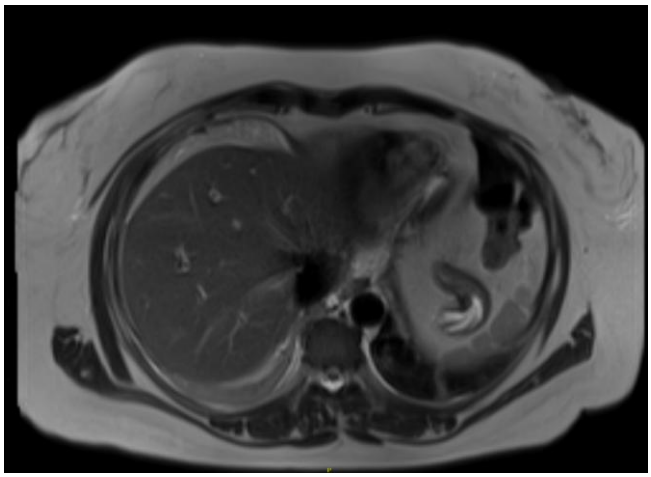


Figure 2: Sagittal computed tomography scan showing subtle dilatation of the intrahepatic biliary ducts (triangles), and low attenuation in the falciform ligament (arrow).

Figure 3: MRI scan showing subtle focal fat deposition, hypoattenuation near the falciform ligament (arrow), and trace free fluid in the right upper quadrant (triangle).



An esophagogastroscopy (EGD) performed on post-admission day 3 was normal; there were no ulcers, erosions, angiodysplastic lesions, or stenoses. Biopsies of the gastric pouch were taken, which revealed no *Helicobacter pylori* or dysplastic changes.

Given her ongoing symptoms and a negative workup, she underwent diagnostic laparoscopy on post-admission day 6. Intraoperatively, mildly inflamed and congested omentum was adherent to the right lobe of the liver, the right diaphragm, and the right side of the falciform ligament. This was carefully peeled off the liver with mild difficulty due to inflammatory changes, and there was diffuse mild oozing from the liver and the right diaphragm once the omentum was removed. The omentum was placed into the mid-abdomen to restore its normal anatomy and

hemostasis was achieved. A thorough diagnostic laparoscopy was performed, revealing no other abnormalities. Both Peterson's defect and the small bowel mesenteric defect were completely closed with no evidence of internal hernia. The small bowel was inspected from the gastrojejunal anastomosis to the ileocecal valve, and from the ligament of Treitz to the jejunojejunal anastomosis, which revealed no abnormalities. The appendix and the gallbladder were absent given the patient's history of surgical resection. Her symptoms had significantly improved on postoperative day 1. Opioid analgesics were used on postoperative day 1 for pain control, and only acetaminophen was used for pain control starting postoperative day 2. She tolerated an oral diet well and demonstrated return of bowel function starting postoperative day 1; subsequently, she was discharged on postoperative day 2. She was followed up as an outpatient four weeks postoperatively and reported complete resolution of her symptoms. Informed consent was obtained for the publication of this case report.

Table 1. Patient's laboratory values on second Emergency Department visit.

Chemical profile	Value	Reference range
Leukocytes	**13.1 x10^9/L**	4.0 - 11.0 x10^9/L
Hemoglobin	149 g/L	130-180 g/L
Platelets	176 x10^9/L	150 - 400 x10^9/L
Sodium	137 mmol/L	135-145 mmol/L
Potassium	4.0 mmol/L	3.5-5.2 mmol/L
Chloride	107 mmol/L	95-110 mmol/L
CO2	20 mmol/L	20-29 mmol/L
Creatinine	55 µmol/L	60-110 µmol/L
eGFR	111 ml/min/1.73m^2	>60 ml/min/1.73m^2
Alkaline Phosphatase	**131 U/L**	38 - 126 U/L
Gamma Glutamyl Transferase	**102 U/L**	5-40 U/L
Aspartate Aminotransferase	**613 U/L**	18 - 54 U/L
Alanine Aminotransferase	**353 U/L**	0 - 49 U/L
Lipase	37	
Albumin	37	
Bilirubin, Total	**27 µmol/L**	<21 µmol /L
Bilirubin, Conjugated	**16 µmol/L**	≤ 19 µmol /L
Troponin	<3 ng/L	<35 ng/L

Discussion

Patients with a history of bariatric procedures presenting with abdominal pain pose a unique diagnostic challenge. There are well-recognized complications post-Roux-en-Y gastric bypass surgery that lead to abdominal pain, such as marginal ulcers, internal hernia, intra-abdominal adhesions, or biliary complications, for which well-established management remedies exist. However, when extensive investigations are inconclusive, both patients and the health system can endure prolonged hospital stays and consumption of resources for diagnostic purposes [2]. In such instances, diagnostic laparoscopy may detect pathologic findings in over half of all cases [3,4].

In this patient, both CT and MRCP detected hypoattenuation adjacent to the falciform ligament. This subtle finding should broaden the differential diagnosis of abdominal pain and lower the threshold for surgical exploration. Recognizing this abnormality, in conjunction with the clinical picture, can help guide timely surgical decision-making.

In laparoscopic RYGB, division of the greater omentum is a common practice aimed at reducing tension from the antecolic Roux limb on the gastrojejunal anastomosis [1]. However, routine division of the greater omentum has been scrutinized for its potential impact on postoperative complications. A study by Dallal and Bailey [1] reported a case of omental infarction after antecolic gastric bypass, suggesting that division of the omentum may contribute to such complications. A review by Alwatari et al. [5] demonstrated that almost all cases of omental infarction after RYGB required surgical exploration for diagnosis and management. This case, along with existing data, highlights diagnostic laparoscopy as an irreplaceable diagnostic and therapeutic tool in post-bariatric patients with undifferentiated abdominal pain.

Conclusion

In bariatric surgical patients, diagnostic laparoscopy offers a minimally invasive means of confirming intra-abdominal pathology that is not recognized on initial workup. It allows for the prompt identification and treatment of typical and atypical causes of abdominal pain. Overall, this case reinforces the crucial role of early surgical intervention in this patient population when the clinical picture is unclear. The decision to divide the greater omentum during RYGB should be carefully considered, weighing the potential benefits of reduced anastomotic tension against the risk of rare but serious complications like omental infarction.

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