

A Novel Internal Hernia after Roux-En-Y Gastric Bypass: Case Report

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Abstract

This case report describes a 47-year-old female who presented with an acute small bowel obstruction due to an internal hernia through a novel anatomic space created by surgical material after a Roux-en-Y Gastric Bypass (RYGB). A novel internal hernia defect was created by an adhesive band found between a clip on the Jejunojejunostomy staple line and a nearby small bowel mesentery, which was then removed to relieve the obstruction. The importance of closing potential hernia sites during RYGB is highlighted by this case report, with studies showing a lower incidence of clinically significant internal herniation and small bowel obstruction when the JJ mesenteric defect and Petersen's space are closed using an endoscopic stapler or non-absorbable suture. This case report emphasizes the need to consider atypical herniation when investigating acute small bowel obstruction in patients who have undergone RYGB.

Introduction

Roux-en-Y Gastric Bypass (RYGB) is an effective surgical procedure for the treatment of obesity. Anatomic changes to the gastrointestinal tract created during a RYGB results in potential areas for internal herniation, which can lead to bowel obstructions and resultant bowel compromise. The typical areas for Internal Hernia (IH) in patients with RYGB include the Jejunojejunostomy (JJ) mesenteric defect, the area posterior to the Roux limb (i.e., Petersen's defect) (Apostolou, Langenbeck's Archives of Surgery 2023). KG, and the mesocolic defect (for those patients with a retro-colic Roux position). However, IH can occur in atypical locations, as well. This case report describes a patient presenting with an acute Small Bowel Obstruction (SBO) due to an IH through a novel anatomic space created by surgical material.

Case Report

A 47-year-old female presented to the emergency room with abdominal pain and symptoms of SBO including nausea, vomiting, and obstipation. Her surgical history consisted of multiple prior abdominal surgeries including an open vertical banded gastroplasty, subsequent revisional laparoscopic RYBG (ante-colic Roux position),

Citation: *Ting Li, Sunawer Aujla, Richdeep S Gill. A Novel Internal Hernia after Roux-En-Y Gastric Bypass: Case Report. Med Clin Case Rep Int. 2023;1(1):1-3.*

Received Date: 29 June, 2023; **Accepted Date:** 07 July, 2023; **Published Date:** 10 July, 2023

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appendectomy and abdominoplasty. She had lost approximately 120 lbs after her RYGB, did not have any postoperative issues and had been discharged from her local bariatric surgery program a few years prior.

At presentation, the patient had stable vital signs without tachycardia or fever. Her abdominal exam was significant for mild distension and focal peritonitis in the RLQ and periumbilically. A nasogastric tube inserted in the emergency room produced bilious output. Initial blood work was significant for an elevated white blood cell count ($13.6 \times 10^9/L$) and normocytic anemia (hemoglobin 86 g/L, mean corpuscular volume 81 fL). An urgent Computed Tomography (CT) scan showed a SBO with a transition point in the lower abdomen, adjacent to radiopaque surgical material. Review of the CT scan with the on-call radiologist could not rule out an internal hernia.

Given this patient's surgical history and concerning findings on examination and imaging, an urgent diagnostic laparoscopy was undertaken. Intravenous fluid resuscitation and broad-spectrum antibiotics had already been initiated in the emergency room. Informed consent was obtained, and the patient was brought to the operating room. She was positioned supine with her arms outstretched. Pneumoperitoneum was established using a veress needle inserted in the left upper quadrant at Palmer's point. Three ports were subsequently introduced under direct vision. These consisted of a 10 mm port in the left supraumbilical area, a 5 mm port in the left lower quadrant, and a 5 mm port in the left upper quadrant. A lysis of adhesions was done, and the entirety of the small bowel was assessed starting at the terminal ileum. An adhesive band between a clip on the JJ staple line and an adjacent area of small bowel mesentery was discovered. This band had created a novel IH defect through which a loop of small bowel had herniated. The band was lysed, relieving the obstruction. The herniated small bowel was moderately injected, but viable, and no resection was required.

The patient's postoperative recovery was uncomplicated. The nasogastric tube was removed on postoperative day 2 and she was discharged on postoperative day 3 after she was tolerating a regular diet. She did not present for follow up but was contacted by telephone 9 months postoperatively and reported having no issues after discharge from hospital.

Discussion

Internal hernia is a known potential complication due to the anatomic changes created during a RYGB. Reported rates of IH in different studies have been variable, but recent meta-analysis have shown rates of IH after RYGB to generally be 3% or lower.[1,3] The JJ mesenteric defect is the most common site of internal herniation.[1,3] Both position of the Roux limb (i.e., ante-colic versus retro-colic) as well as closure of the potential IH defects have been shown to effect subsequent rates of IH and Small Bowel Obstruction (SBO). The incidence of IH is lowest (1%) in patients with an ante-colic Roux limb in which all potential IH defects have been closed.[3] The rate of Small Bowel Obstruction (SBO) in patients with an ante-colic Roux limb is 1.4%.[1] Patients with a retro-colic Roux limb have both increased rates of IH as well as SBO.[1]

Two randomized controlled trials have shown the importance of closing potential IH sites during RYGB.[4,5] A lower rate of clinically significant IH (i.e. required surgery) was found in patients who had closure of both the JJ mesenteric defect and Petersen's space using an endoscopic stapler at the time of the initial RYGB.[4] Similarly, patients with closure of these defects using non-absorbable suture had a decreased risk of reoperation for SBO at 3 years post-RYGB.[5] In this latter trial, the most common cause of SBO was IH.[5]

While most studies on IH and SBO after RYGB have focused on anatomical changes, much less has been done regarding the effects of surgical materials. One study that described the use of endoscopic staplers for closure of potential IH defects during RYGB reported 4 patients who required reoperation for SBO at the JJ anastomosis.[6] The authors reported the obstructions were “directly related to closure of this mesenteric defect”.[6] Another group who routinely used EVICEL (a fibrin sealant) at the JJ anastomosis for hemostasis and prevention of anastomotic leak reported two patients that required early reoperation after RYGB for SBO due to kinking of the common channel caused by adhesions to the JJ anastomosis.[7] In the present case, the patient’s SBO was also directly related to manipulation of the JJ anastomosis at the initial RYGB. To our knowledge, this is the first case reported of a novel IH that resulted from placement of a surgical clip on an anastomotic staple line. These combined cases, while limited in number, highlight the importance of careful consideration when using surgical materials for adjunctive means during RYGB.

Conclusion

Patients after RYGB are at risk for IH and SBO. While these are largely due to anatomic changes in the gastrointestinal tract, they can also be due to surgical materials used during the initial operation. Surgeons performing RYGB should make efforts to prevent these complications by addressing the known anatomic changes as well as taking care and being judicious in the use of different adjunctive surgical materials.

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