Case report

Abdominal compartment syndrome after laparoscopic Roux-en-Y gastric bypass: a case report

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Small bowel obstruction after laparoscopic Roux-en-Y gastric bypass (LRYGB) can be attributed to internal hernias, adhesions, or jejunojejunostomy stricture [1,2]. An underlying etiology or acquired abnormal anatomy, such as previous abdominal surgery, the creation of the Roux limb-related mesenteric defect, or luminal stricture due to mechanical stapling, can complicate postoperative recovery and predispose to this intractable condition [1,2]. However, abdominal compartment syndrome (ACS), a rare abdominal pathologic finding, has never been reported to be associated with small bowel obstruction after bariatric surgery [1–5]. We report the case of a 55-year-old woman who developed ACS secondary to jejunojejunal anastomotic stricture after LRYGB.

Case report

Our patient, a 55-year-old Asian woman, with a body mass index of 34 kg/m\textsuperscript{2} and poorly controlled type 2 diabetes mellitus (hemoglobin A1c of 12.4%), underwent uneventful antecolic/antegastric LRYGB. A 25-cm\textsuperscript{3} gastric pouch was created. Gastrojejunostomy and jejunojejunostomy anastomoses were performed using linear staplers. The alimentary and biliopancreatic limbs measured 100 cm, and the mesenteric and Petersen defects were closed with nonabsorbable sutures. The patient had an unremarkable postoperative course and was discharged on postoperative day 2 with instructions to consume a liquid diet. She presented 2 weeks later, with complaints of black stools, epigastric pain, nonbilious vomiting, and profound nausea of 2 days’ duration. She had no fever, and the physical examination was noteworthy for hypotension (blood pressure 80/58 mm Hg), tachycardia (124 beats/min), tachypnea (24 breaths/minute), jugular venous distension, and a tensely distended abdomen without rebound tenderness. The hemoglobin level was 13 g/dL, and the other biochemistry data showed metabolic acidosis with respiratory compensation (pH 7.349, arterial partial pressure of carbon dioxide 28.7 mm Hg, bicarbonate 15.5 mEq/L, base deficiency 8.6) and impairment of renal and liver function (creatinine 1.4 mg/dL, alanine aminotransferase 245 U/L). Her hypotension remained little responsive to crystalloids, packed red blood cell transfusion, and aggressive use of vasoactive agents (dopamine 12 µg/kg/min and norepinephrine 4 µg/min). A chest radiograph showed elevation of the diaphragm and subsequent computed tomography (CT) revealed severe dilation of the excluded stomach, duodenum, and proximal jejunum and displacement of both the kidney and the pancreatic tail. No obvious fluid was observed near the staple line (Fig. 1). In addition, a transition zone was seen at the level of the jejunojejunal anastomosis (Fig. 2).

Emergent laparotomy was performed because of a concern of ACS secondary to complete small bowel obstruction. On entering the peritoneal cavity, the blood pressure recovered immediately, and the high-dose dopamine could be titrated gradually during surgery. Intraoperatively, some ascites (300 mL) were present but an enormously distended
stomach. We performed decompressive gastrotomy with a 2000-mL bile-stained fluid evacuation. We checked the alimentary tract, and stenotic jejunojejunostomy was noted. Next, we resected the stenotic jejunojejunostomy, and a hand-sewn reanastomosis was done, and the gastrotomy was closed. The midline laparotomy wound was repaired primarily. Subsequently, the impaired liver and renal function and unstable hemodynamics recovered. She resumed an oral diet 4 days later and was discharged from the hospital on postoperative day 10.

Discussion

Small bowel obstruction is not infrequent after abdominal surgery and affects 1.5%–9.7% of patients after LRYGB [3]; however, small bowel obstruction presenting as ACS after LRYGB is rare [1,2]. Directly measuring a sustained intra-abdominal pressure \( \geq 20 \) mm Hg with new organ dysfunction is needed to confirm ACS [6]. For urgency, no precise intra-abdominal pressure was measured. An increased intra-abdominal pressure in morbidly obese patients can also be obscured [6–8]. However, many indirect signs from our patient, such as oliguria, an engorged jugular vein, distended abdominal wall without rebound tenderness, deterioration of renal and liver function, and extremely distended gastric remnant with displacement of solid abdominal viscera in the CT scan, helped to raise the clinical suspicion of ACS [6,9]. Also, the immediate recovery of blood pressure when decompressing the peritoneal cavity confirmed the clinical suspicion of ACS in our patient.

CT is the reference standard diagnostic tool for patients with a suspicion of small bowel obstruction after LRYGB. Emergent laparotomy or laparoscopy remains an alternative solution, especially for those with obscure symptoms or suspicion of ACS [3]. Although some investigators have advocated CT-guided percutaneous gastrostomy tube placement as an alternative option to diagnostic laparoscopy for jejunojejunalostomy-related gastric remnant dilation [4–7], we continue to advocate emergent diagnostic laparoscopy or laparotomy for those with early bowel obstruction after LRYGB for definitive management and to avoid possible intra-abdominal catastrophe of late intervention [3]. The occurrence of early small bowel obstruction after LRYGB, referred to as obstruction within 30 days of the procedure, usually implies technical errors or surgery-related complications, such as internal hernia due to mesenteric defect or anastomotic stricture [1,3]. The application of a double-stapling technique for closure of jejunojejunalostomy is a
common procedure for LRYGB, and the incidence of anastomotic stricture with its use has been .4–1.3% [1–3,10]. Although the incidence is extremely rare, it can cause devastating outcomes [1,3]. Therefore, we switched from stapled to sutured closure of the common enterotomy to prevent possible jejunojejunostomy stricture [2]. The present patient could initially tolerate a soft diet and progressed to complete small bowel obstruction later. We surmise that only a partial stricture of jejunojejunostomy was present initially that progressed to complete obstruction, owing to the distended bowel loops and distended gastric remnant caused acute angulation of the strictured anastomosis and eventually progressed to ACS.

Conclusion

ACS after LRYGB can be lethal and requires urgent surgical intervention. A high index of suspicion, together with the clinical signs and urgent CT, is needed to establish the diagnosis.

Disclosures

The authors have no commercial associations that might be a conflict of interest in relation to this article.

References