

Late Complications of Bariatric Surgery

Robert E. Kraichely, MD^{a,*}, Catherine C. Romano DeLange, DO^b

KEYWORDS

- Bariatric surgery • Roux-en-Y gastric bypass • Gastric bypass • Sleeve gastrectomy
- Gastric banding • Biliopancreatic diversion • Duodenal switch
- Postoperative complications

HOSPITAL MEDICINE CLINICS CHECKLIST

1. Become familiar with types of bariatric surgery performed and nomenclature.
2. Establish type of weight loss surgery performed and acquire operative notes of bariatric surgery and any subsequent operations.
3. Promptly recognize late but urgent complications, with early input of bariatric surgeon as indicated.
4. Follow asymptomatic patients regularly, including routine laboratory and bone density testing.
5. Use micronutrient support with daily multivitamin in all bariatric patients and further supplementation in patients with history of malabsorptive surgery.

BACKGROUND

Bariatric surgical procedures have become well-established options for medically complicated obesity over the last several decades. There is a large body of data supporting these procedures for durable weight loss and reduction in obesity-related morbidity and mortality. However, all bariatric procedures come with complications, both perioperative and late postoperative. Most bariatric surgeries are performed laparoscopically, reducing rates of wound complications. Perioperative complications still comprise complications with the highest mortality. Late postoperative complications, although having lower consequent mortality, cause significant morbidity. These complications may be common among bariatric procedures or unique to the specific type of bariatric surgery.

^a Division of Gastroenterology and Hepatology, Mayo Clinic College of Medicine, 200 First Street SW, Rochester, MN 55905, USA; ^b Department of Medicine, Mayo Clinic College of Medicine, 200 First Street SW, Rochester, MN 55905, USA

* Corresponding author.

E-mail address: kraichely.robert@mayo.edu

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Perioperative complications are those with the highest mortality. These complications include pulmonary embolism, anastomotic leak, splenic injury, hemorrhage, and wound dehiscence. Their recognition and management are surgical and beyond the scope of this review. This review focuses on late complications, including nutritional complications, their recognition and management.

1. What is the current understanding of how bariatric surgery works?

The field has evolved since jejunioileal bypass gave way to Roux-en-Y gastric bypass (RYGB). At least 4 types of bariatric surgical procedures are available commonly (Fig. 1). Of these procedures, RYGB is the most common obesity surgery performed in the United States. The comprehension of the mechanisms of weight loss and benefit has also evolved since in recent years. Although bariatric surgeries were considered effective by mechanical restriction of stomach capacity or by nutrient malabsorption, there is better understanding of the surgical effect on metabolism and satiety through neural and hormonal mechanisms. Ghrelin, a major orexigenic hormone, decreases with most bariatric surgery,¹⁻³ although there is large body of conflicting data.⁴⁻⁶ Other hormones, including glucagon-like peptide-1 and peptide YY, also influence satiety and glucose metabolism and are altered after bariatric surgery,^{7,8} but their relative contributions to weight loss with the various bariatric procedures are even less clear than that of ghrelin.

2. What are the common types of bariatric procedures performed in the United States?

- RYGB (open or laparoscopic)
- Laparoscopic sleeve gastrectomy (LSG)
- Laparoscopic adjustable gastric banding (LAGB)
- Biliopancreatic diversion (BPD) with duodenal switch (DS) (open or laparoscopic)

BARIATRIC SURGICAL PROCEDURES AND UNIQUE COMPLICATIONS

LAGB

LAGB has gained a large share of bariatric surgeries in the United States in the last decade. It is offered as a less complex, adjustable, and more easily reversible surgery than its alternatives. However, there was a significant decline in banding in 2012 to 4% of all bariatric surgeries compared with 23% in 2008.⁹

LAGB surgery is simple. After the pneumoperitoneum is achieved, a balloon cuff is placed around the proximal stomach and inflated with saline (often postsurgically) to achieve the desired amount of restriction. The balloon is connected via tubing to a port/reservoir on the anterior abdominal wall that can be accessed nonsurgically to adjust the balloon cuff. Late complications unique to LAGB include achalasia-like esophageal dysmotility and complications related to the hardware itself (band slip-page, band erosion, port/tube leakage/infection, bowel obstruction caused by the tube). Recent retrospective studies have found complications in up to 30% of LAGB.¹⁰

What complications are unique to LAGB?

Esophageal dysmotility

Gastroesophageal reflux symptoms and esophagitis are more common after gastric banding by comparison of preoperative manometry and pH monitoring.^{11,12}

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