



Fifty CM Common Limb in a One Anastomosis Gastric Bypass: A Case Report and Literature Review

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Abstract

Background: Laparoscopic One Anastomosis Gastric Bypass (OAGB) is increasing in popularity nowadays. Despite comparable weight loss to other bariatric and metabolic procedures and improvements in metabolic outcomes, its nutritional complications remain an important factor to consider.

Methods: A case report study type and literature review.

Results: We report a case of protein energy malnutrition as a complication of OAGB.

Conclusion: Clinicians should be aware of possible complications after OAGB due to the serious consequences and the high mortality rate if not managed properly. Furthermore, multidisciplinary management is crucial, and proper timing of revisional surgery is necessary to achieve the best results.

Introduction

As obesity is increasing in prevalence around the world, the need to satisfy therapeutic options for this emerging disease develops. Metabolic and bariatric procedures for the treatment of morbid obesity, as well as for type 2 diabetes, are among the most commonly performed gastrointestinal operations today [1]. Current data on One-Anastomosis Gastric Bypass (OAGB) identifies this procedure as safe and feasible, with short operative times, low complication rates, and excellent weight loss outcomes [2]. The OAGB was initially referred to as the 'mini' gastric bypass or the single-anastomosis gastric bypass. However, the International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) has agreed that the standard nomenclature for this procedure should be the Mini Gastric Bypass-One Anastomosis Gastric Bypass (MGB-OAGB) [3]. The concept behind a single anastomosis or 'loop' gastric bypass was first described by Mason and Ito in 1967 [4]. In the original configuration, the authors described a short and wide gastric pouch, horizontally based, and a loop gastrojejunostomy at the lower end of the pouch. Due to the reflux-inducing nature of this procedure, this concept was quickly disregarded as a viable option. It was Rutledge who modified this configuration in 1997 and named it 'Mini Gastric Bypass' (MGB), because the procedure was performed through a 'mini-laparotomy' [5].

Although Significant and similar weight loss results are seen following OAGB and other procedures such as Laparoscopic Roux-en-Y Gastric Bypass (LRYGB), some complications are more specific for OAGB. Bile reflux and its questioned resulting cancer is one of them. Nutritional disorders were also common in terms of Protein Energy Malnutrition (PEM) and diarrhea [6]. The aim of this work is to discuss a presentation of PEM after constructing a long Bilio-Pancreatic Limb (BPL).

Case Presentation

A 50-year-old lady, known to have uncontrolled Diabetes Mellitus (DM) and hypertension with a previous history of caesarian section that was complicated by intra-abdominal collection and ended up with small bowel resection of unknown length. 12 months before presenting to our hospital, she was diagnosed with morbid obesity, with a weight of 124 Kg and a Body Mass Index (BMI) of 51.1, in another neighboring country where she was offered a bariatric surgery to treat her DM that resulted in retinopathy and to help her lose weight. She underwent laparoscopic OAGB and adhesiolysis. Since then, she only tolerated clear fluids. A few months after this procedure, she developed acute cholecystitis that was managed with Laparoscopic cholecystectomy and adhesiolysis. Her condition deteriorated afterwards in terms of rapid weight loss, fatigability and recurrent daily diarrhea. She

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Figure 1: Nutritional dermatoses, obtained from the internet.



Figure 3 and 4: Stomach and GE junction as seen with colonoscopy.



Figure 2: Chest X-ray in a case of HAP.

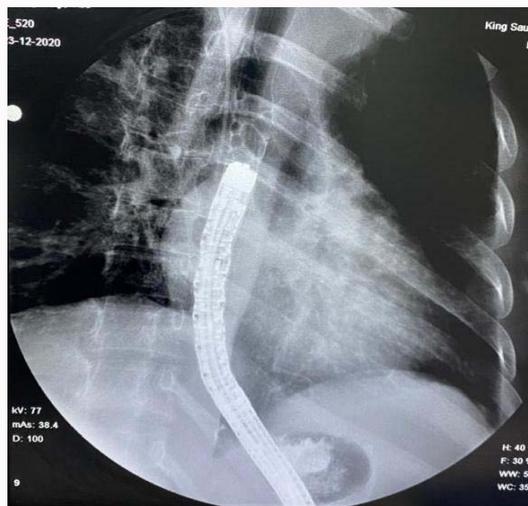


Figure 5: Lower GI scope in the esophagus.

also developed generalized dermatitis in her trunk, arms and legs. The patient presented to our Emergency Department (ED) with same complaints in addition to peripheral numbness and vomiting. Upon physical examination, she looked pale, malnourished, dehydrated, with muscular weakness and multiple skin lesions (Figure 1). Her weight was 58 Kg. Regarding her vitals: BP: 80/57 mmHg, Oxygen saturation 100% on room air, pulse rate 68 beat/min, her temperature was 36.9°C. Her abdomen had multiple scars and was soft with mild lower abdominal tenderness and a reducible incisional hernia in left lower abdomen. Blood investigations were significant for the following results: Hemoglobin 7.2 gm/dL (12.0 to 15.5), white blood cells 4,000/mcL (4,500 to 11,000), serum albumin 15.9 g/L (34 to 54), Potassium 3 mmol/L (3.6 to 5.2).

CT abdomen with Intravenous (IV) and oral contrast showed no evidence of contrast leak, and an upper central mesentery mild hazy fat stranding. In addition, a left lower abdominal wall defect was detected with a hernia sac containing a normal small bowel loop and mesenteric fat. She was admitted subsequently in the floor and started on IV broad spectrum antibiotics after full resuscitation in the ED. She was also started on vitamin replacement therapy and transfused 2 Units of PRBC. Upper GI endoscopy was done by our colleagues from gastroenterology team and showed a normal esophagus, with evidence of gastric by-pass and a widely patent very short efferent jejunal loop measuring 30 cm to 35 cm from stomach to ileocecal valve and a superficial ulceration at the gastrojejunostomy that was biopsied. Pathology showed a small bowel mucosa with non-specific chronic active inflammation that was negative for dysplasia or malignancy.

Enteral feeding was started through a nasojejunostomy tube was not considered after documenting the previously mentioned findings in the scope. As a result, a central line was inserted peripherally (PICC) and started on Total Parenteral Nutrition (TPN) with an 800 Kcal/day that was increased gradually. Moreover, she was allowed to have a liquid diet. Although feeding was started on a low rate, she developed re-feeding syndrome. Five days after admission, she was diagnosed with Hospital Acquired Pneumonia (HAP) (Figure 2). Pulmonary embolism was ruled out after conducting a CT that illustrated that the patient had bilateral pleural effusion and right upper and middle lobes consolidation. Despite being on liquids only, she complained of continuous foul-smelling diarrhea. As *Clostridioides difficile* was a differential diagnosis, she was isolated and a stool sample was sent for culture that came to be negative. It was noticed that her bowel habits improved significantly when kept Nil per Os (NPO) and when given an anti-diarrheal medication (Imodium 4 mg, i.e. 2 capsules followed by a capsule after each unformed stool). A total of 8 mg of Imodium daily was required to control these symptoms. Colonoscopy showed that the ileal surgical anastomosis and ileocecal valve were normal. Likewise, a normal looking terminal ileal mucosa was detected. Nevertheless, a short terminal ileum was observed (measuring 30 cm to 35 cm from ileocecal valve to the gastro-jejunal anastomosis). The scope passed freely from ileocecal valve to gastric anastomosis and then from gastric pouch to esophagus (Figures 3-5).

After spending two months on supportive measures, in

terms of feeding and a specialized dietician daily follow ups, her weight increased to 61.3 Kg and her albumin level improved to 22.18 g/L. As a consequence, a surgical revision was decided by a Multidisciplinary (MD) team including bariatric surgeons, dietitians, gastroenterologist, and psychiatrists. A laparoscopic exploration was conducted initially. Findings were severe adhesions between greater omentum and anterior abdominal wall, and an incisional hernia measuring about 5 cm x 5 cm in left lower quadrant with no contents. BPL measured 325 cm from the duodenojejunal junction while the common channel was measuring only about 50 cm. After releasing the adhesions, a reversal of the anastomosis was done with Endo GIA. The anastomosis site was transected to remove the ulcer and sent for histopathology analysis. Gastrogastric anastomosis was constructed in a side-to-side fashion. She tolerated the laparoscopic procedure well and started on clears after ruling out a leak with a gastrografine study. TPN was stopped gradually as she tolerated diet. She was discharged home on day 7 postoperatively. A month later she was evaluated in the clinic. Upon clinical assessment, she reported only heartburn. Physical examination revealed a weight of 67.7 Kg. In order to avoid excessive weight regain, special dietary instructions were provided. We conclude that good preparation and adequately building her up nutritionally was a key for a successful recovery.

Discussion

The management of obesity and its related comorbidities remains a global challenge. The American Society Of Metabolic and Bariatric Surgery (ASMBS) has granted the appraisal to OAGB as a technique with relatively short operative time, low complication rates, and excellent weight loss outcomes [2]. OAGB by laparoscopy consists of constructing a divided 25-ml (estimated) gastric pouch between the esophagogastric junction and the crow's foot level, parallel to the lesser curvature, which is anastomosed latero-laterally to a jejunal loop 200 cm distal to the ligament of Treitz [7].

While laparoscopic OAGB has been reported to be a simple and effective treatment for morbid obesity, controversy exists. In a study conducted by Lee et al. [8] comparing LRYGB to OAGB, they found in their 10-year experience that OAGB can be regarded as a simpler and safer alternative to with similar efficacy. A randomized trial (YOMEGA) comparing the outcomes of OAGB vs. standard LRYGB also documented that OAGB is not inferior to LRYGB regarding weight loss and metabolic improvement at 2 years [9]. Another study conducted over 5 years in India showed similar results. OAGB was reported to have equivalent or better weight loss, with added advantages of being technically easy, amenable to re-intervention or reversal, and offering better food tolerance. In addition, it was associated with better resolution of comorbid conditions [10].

On the other hand, the anatomical configuration and mal-absorptive characteristics of the OAGB will inevitably generate nutritional deficiencies and bile reflux [10,11]. Due to the anatomical variance of this procedure, malnutrition has been reported in 1.1% of patients undergoing OAGB [11]. Because of this stronger malabsorptive component, OAGB more frequently result in lower hemoglobin levels compared to LRYGB [11]. Iron deficiency anemia is common and has a variable incidence from 5% to 10% [11,2]. The presence of hypoabsorption, liver failure, protein malnutrition, diarrhea and steatorrhea has been increasingly reported in patients with a Biliopancreatic Limb (BPL) >200 cm to 250 cm [9,12,13]. While these complications mandating revisional surgery are serious, they are rare [2,3%] and the most common cause is malnutrition

(50% to 60%) [13,14]. Protein Energy Malnutrition (PEM) after OAGB is a multifactorial problem with a prevalence of 0% to 10% [14,15]. Most reports attribute PEM to excess length of the BPL in OAGB [16-18]. Therefore, many policies are recommended to avoid this complication, including measurement of the whole bowel, bypass of a fixed percentage of bowel length, tailoring the BPL according to BMI, and adherence to a maximum of 150 cm to 200 cm length of BPL [18,19]. This malnutrition has been described to be most of the time transitory, and the majority of patients responded to nutritional supplements without the necessity of immediate intervention or reversal/conversion procedures [11].

Multidisciplinary (MD) approach to PEM is crucial for early diagnosis and proper timing of intervention MD approach to PEM is crucial for early diagnosis and proper timing of intervention [14]. Once the diagnosis is established, gradual nutritional replenishment is mandatory to avoid re-feeding syndrome that is a fatal complication due to electrolyte imbalance mainly hypophosphatemia [18,20]. Multidisciplinary (MD) approach to PEM is crucial for early diagnosis and proper timing of intervention. The decision of revisional surgery is usually difficult as the surgeon weighs the operative complexity and the risk of weight regain vs. complications of PEM [18,21]. Delay in surgical intervention may lead to irreversible complications, in which any intervention will be a failure. OAGB can be revised to normal anatomy, LRYGB, shortening of the BPL, Sleeve Gastrectomy (SG), addition of a Braun side-to-side anastomosis, or vertical gastropasty [14,18]. Elgeidie et al. [17] do not recommend SG as a revisional technique in PEM because of the higher prevalence of leakage from the longer staple line in a high-pressure tube, and the limitation of further revisions after resection of the residual stomach [18,22]. LRYGB is beneficial in case of steatorrhea or biliary reflux [18,23,24]. Otherwise, Elgeidie et al. [17] recommend reversal to normal anatomy. In addition to the nutritional complications, OAGB has a common point among critics regarding the rising concern of gastritis and its potential association with cancer [11,14,15].

Conclusion

Nutritional complications post OAGB are not uncommon. Thus, certain strategies should be followed to avoid PEM; and if happens, MD management is important. In addition, proper timing of revisional surgery is necessary to avoid irreversible complications.

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