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Gastric Intussusception and Pseudodiverticula Following Gastric Plication - A Rare Complication

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1. Abstract

Gastric plication is a restrictive bariatric procedure that reduces stomach volume without resection tissue. Although considered a less invasive alternative to other bariatric surgeries, it can lead to rare complications such as gastric intussusception. This case report presents a 25-year-old woman who underwent laparoscopic gastric plication four months prior and presented to the Emergency Department with severe vomiting, stomach pain and malnutrition. A Computed Tomography (CT) scan revealed gastric intussusception and pseudodiverticula. The patient underwent surgical repositioning of the stomach with favorable postoperative recovery. This case highlights the importance of early recognition and management of gastric intussusception following gastric plication.

2. Introduction

Obesity is a major global health concern, where bariatric surgery has become an effective intervention for weight loss and metabolic improvements. Various surgical technique, including Roux-en-Y gastric bypass (RYGB), sleeve gastrectomy (SG) and adjustable gastric banding, have been established as standard procedures. More recently, gastric plication has emerged as a non-resective, reversible alternative that reduces stomach volume through folding and suturing rather than excision. This technique aims to achieve weight loss while minimizing the risk of nutritional deficiencies and staple-line leaks associated with other bariatric procedures [1-5].Despite its advantages, gastric plication is associated with certain complications, including gastric obstruction, reflux, perforation, suture dehiscence and, in rare case, gastric intussusception. Intussusception is an uncommon but serious condition in which a segment of the gastrointestinal track telescopes into an adjacent section, leading to obstruction and potential ischemia. In adults, intussusception is often associated with underlying pathology, such as tumors or postoperative changes, whereas in post- bariatric patients, altered gastric motility and mechanical factors may contribute to its occurrence. Incidence of intussusception following gastric bypass is 0.62 to 4.7%. [6-9].This case report describes a rare presentation of gastric intussusception following gastric plication, emphasizing the importance of timely diagnosis and surgical intervention to prevent complications.

3. Case Presentation

A 25-year-old woman with a history of morbid obesity (Body Mass Index (BMI): 35) underwent Laparoscopic Greater Curvature Plication (LGCP) four months prior. She had experienced satisfactory weight loss in the early postoperative period (she lost 28 kilos, BMI: 24,8) but presented to the emergency department with complaints of severe nausea, vomiting, epigastric pain and feeding difficulties for approximately 4-5 days. The pain was intermittent, non-radiating and worsened after food intake. She denied fever, gastrointestinal bleeding or other systemic symptoms.On physical examination, she was hemodynamically stable but exhibited moderate epigastric tenderness without peritoneal signs. Laboratory tests, including complete blood count and metabolic panel, were within normal limits. A- contrast-enhanced CT scan of the abdomen revealed gastric and duodenal intussusception with telescoping of the gastric folds to the severe dilated third part of the duodenum, leading to partial obstruction and gastric pseudodiverticula on the proximal greater curvature of the plicated stomach (Figure1). No evidence of ischemia or perforation was observed.Given the findings, the patient received a nasogastric tube, intravenous fluids and underwent diagnostic laparoscopy which confirmed gastric and duodenal intussusception without necrosis. Furthermore, plication had been performed using interrupted sutures and two pseudodiverticula was noted between sutures on the side of the plicated stomach on the proximal greater curvature, probably due to interrupted sutures from the previous plication operation (Figure2). Due to technical difficulties and adherences, the operation was converted to a laparotomy with a midline incision. The stomach was successfully repositioned and reinforced without the need for resection. The two pseudodiverticula were resected with liner staples. The postoperative course was uneventful, with gradual reintroduction of oral intake. The patient was discharged on postoperative day four with dietary modifications.

4. Discussion

Gastric intussusception is a rare but potentially life-threatening complication of the bariatric surgery, particularly in patients who have undergone gastric plication. Hence, it is important to share case experience and raise awareness as well as treatment approaches. Unlike other bariatric procedures, gastric plication involves the invagination of the gastric wall without resection, which may predispose patients to mechanical complication such as intussusception [1,2]. A few published case reports describe intussusception post gastric plication [10-12]. Almulaif A et al. [13]. Reported a case of obstructive jaundice six months after LGCP caused by gastric intussusception into the duodenum [13].The exact pathophysiology of intussusception after bariatric surgery is not fully understood, but several mechanisms have been proposed. First, the altered motility and delayed gastric emptying seen after bariatric surgery can lead to dysrhythmic contractions, increasing the risk of invagination. Second, mechanical factors, including excessive plication or asymmetric suturing, may create areas of localized redundancy in the gastric wall, making it prone to telescoping. Third, weight loss- induced changes in intra-abdominal pressure and mesenteric tension could further contribute to abnormal gastric movement and subsequent intussusception [7,8,11,12].Previous reports indicate that intussusception following gastric surgery is more commonly observed in RYGB patients, often at the jejunojejunal anastomosis site [7,8,14,15]. However, its occurrence in gastric plication patients is exceptionally rare, with only a few cases reported in the literature [10-13]. The clinical

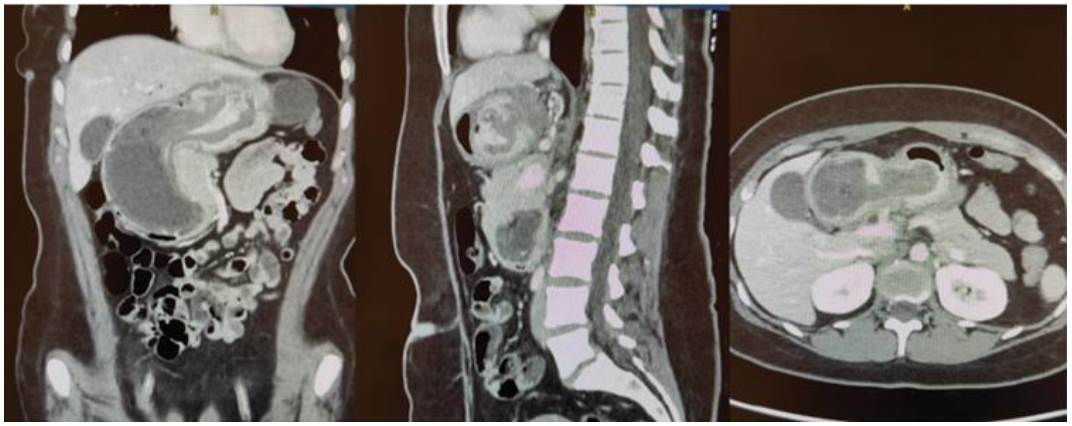

Figure 1: CT scan of the abdomen revealed gastric and duodenal intussusception with telescoping of the gastric folds to the severe dilated third part of the duodenum, leading to partial obstruction and gastric pseudodiverticula.

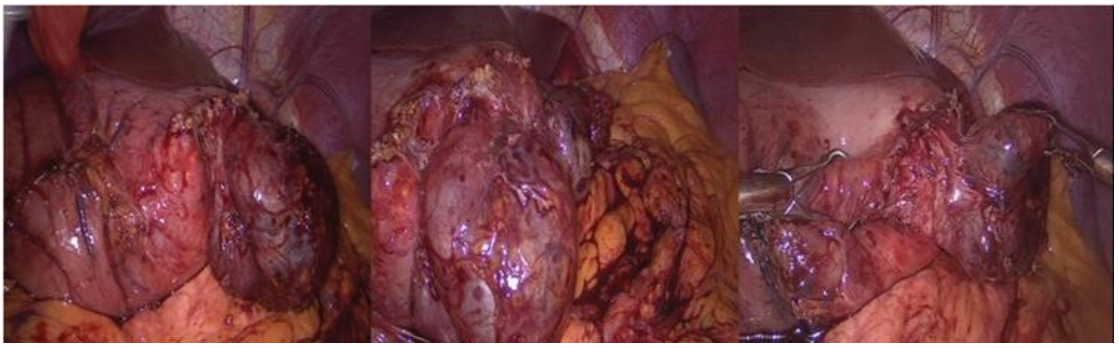

Figure 2: Laparoscopic presentation of gastric intussusception and pseuododiverticula following Laparoscopic Greater Curvature Plication.

presentation of gastric intussusception varies depending on the degree of obstruction and ischemia. Common symptoms include nausea, vomiting, postprandial pain, and early satiety. In severe cases, patients may present with signs of gastric strangulation, including peritonitis and hemodynamic instability. Diagnosis can be challenging due to the nonspecific nature of symptoms and the rarity of the condition. Radiological imaging plays a crucial role, with abdominal CT scans being the most effective modality for identifying intussusception. Characteristic findings include the "target sign" mass representing the telescoped gastric folds. Upper gastrointestinal contrast studies may also demonstrate delayed emptying or obstruction in the cases of incomplete intussusception [7].Timely surgical intervention is critical to prevent complications such as gastric ischemia and perforation. The preferred approach is laparoscopic reduction of the intussusception, with reinforcement of gastric sutures if necessary. In cases with severe ischemia or necrosis has occurred, partial gastrectomy may be required [7,8,10].Our patient first underwent laparoscopic surgery but was converted to a laparotomy reduction of the intussusception without the need for gastric resection except for resection of the pseudodiverticula. Postoperatively, gradual diet advancement and close follow-up were emphasized to monitor for recurrence or other complications. Dietary modifications, including smaller, frequent meals and avoidance of fibrous foods, were recommended to reduce mechanical stress on the plicated stomach. To minimize the risk of gastric intussusception after gastric plication, several preventive measures should be considered. Surgeons should ensure that plication sutures are evenly placed to prevent asymmetric folding.Long-term prognosis is generally favorable following successful surgical management. However, given the limited data on gastric intussusception post-LGCP, further studies are needed to establish best practices for prevention and early detection.

5. Conclusion

Gastric intussusception is a rare but serious complication following LGCP, likely due to altered motility and mechanical changes in the gastric wall. Early recognition through imaging studies and prompt surgical intervention are essential for optimal outcomes. This case report underscores the importance of vigilant postoperative monitoring and highlights the need for further research into the long-term risks associated with gastric plication.

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