American Journal of Surgery Case Reports

Case Report

Intussusception after Roux-En-Y Gastric Bypass: Not Always a Benign Cause

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Abstract

Introduction: It has been reported that weight gain and obesity account for approximately 20% of all cancer cases. Among these, small bowel adenocarcinoma has been suggested to be linked to obesity, specifically the visceral type. Some experience an early onset due to intussusception of the small bowel.

Case presentation: A 44-year-old man, who underwent Roux-en-Y gastric bypass surgery for obesity fourteen years ago, developed an acute presentation of intussusception of the alimentary limb. Clinically stable, he was submitted to an upper endoscopy, which revealed an intraluminal vegetative lesion located 50 cm distal to the gastroenteroanastomosis, temporarily undone with device progression and insuflation. Laparoscopy was performed, and a 10 cm segment was resected, with a corresponding lymphadenectomy.

Discussion: Intussusception in adults, especially in the obese population, should always raise concern for cancer, like small bowel adenocarcinoma. Visceral obesity may impede the movement of the small intestine, reducing its activity and motility, and promoting stasis of potentially carcinogenic substances; it also promotes insulin resistance, which is implicated in the development of GI tumors; and leptin has been identified as a risk factor for colorectal malignancies. The diagnosis can be delayed due to confusion with other common symptoms after bariatric surgery, such as nausea, oral intolerance, weight loss, and anemia. Its prognosis is worse than colon cancer.

Conclusion: Small bowel adenocarcinoma is a rare but deadly condition, with its etiology still not well-elucidated, but with some known risk factors like obesity. It's vital to rule out malignancy in intussusception cases in adults. It is also important to conduct a thorough examination of the small bowel during post-surgical endoscopies, particularly beyond gastroenteroanastomosis after bariatric surgery.

Keywords: Roux-en-Y Anastomosis; Gastric bypass; Intussusception; Small intestine; Adenocarcinoma

Introduction

Obesity represents a continuously growing global epidemic, which increases the likelihood of serious diseases such as hypertension, diabetes, and cancer. It has been reported that weight gain and obesity account for approximately 20% of all cancer cases [1]. Among these, Small Bowel Adenocarcinoma (SBA) has been suggested to be linked to obesity, specifically the visceral type [2]. Unfortunately, many patients are diagnosed with SBA at a late stage due to its insidious presentation [3]. However, some experience an early onset due to Intussusception of the Small Bowel (SBI), leading to symptoms such as abdominal pain, vomiting, bleeding and bowel obstruction. It is known that bariatric surgery can cause iatrogenic lead points due to suture or staple lines, leading to SBI [4]. Nevertheless, intussusception in adults, especially in the obese population, should always raise concern for cancer [5].

Citation: Ferri JVV, Sobottka WH, Sadowski JA, Alves Castro GR, Haida VM, Cocicov MS, et al. Intussusception after Roux-En-Y Gastric Bypass: Not Always a Benign Cause. Am J Surg Case Rep. 2023;4(9):1092.

Publisher Name: Medtext Publications LLC

Manuscript compiled: Sep 20th, 2023

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Case Presentation

We present the case of a 44-year-old man who underwent Roux-en-Y Gastric Bypass Surgery (RYGB) for obesity fourteen years ago (BMI 37 kg/m^2 to 27 kg/m^2). The patient had a documented allergy to penicillins and a history of hypothyroidism. He presented to the emergency department with postprandial abdominal pain, which had been worsening over the course of the last fifteen days. Other symptoms included malaise and nausea, but no bleeding was reported. The patient was stable, with normal vital signs, hydrated, and did not report abdominal pain upon palpation. There were no lab abnormalities detected. A Computed Tomography (CT) scan revealed the presence of a 9 cm long intussusception in the alimentary loop. However, there was good progression of oral contrast through the area, and no dilation of proximal loops. To further diagnose and attempt to reverse the intussusception, an upper endoscopy was performed. This identified an intraluminal vegetative lesion located 50 cm distal to the Gastroenteroanastomosis (GEA) (Figure 1). Gentle progression of the endoscopy device and insuflation were used to temporarily undo the intussusception. The lesion was marked with blue dye, and a surgical approach was chosen- a laparoscopic enterectomy. A 10 cm segment was resected, with a corresponding lymphadenectomy (Figure 2). For reconstruction, a laterolateral stapled anastomosis with mesentery closure was used. The final pathology analysis revealed the presence of a well-differentiated adenocarcinoma that had infiltrated the subserosal area (pT3). The margins were free, and no lymph nodes were affected. The patient recovered well and was discharged home two days later.

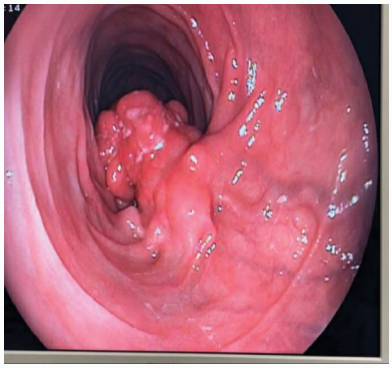

Figure 1: Upper endoscopy showing a bulky and irregular vegetative lesion 50 cm distal to the GEA.

Figure 2: Segmental enterectomy showing a 4.2 cm long vegetative adenocarcinoma.

Discussion

Malignant Small Bowel Tumors (SBT) is a devastating form of GI cancer, with most cases considered unresectable for cure at the time of diagnosis [6]. SBAs are rare compared to other Gastrointestinal (GI) cancers (0.6% of all new cancers per year in the U.S.) [7] and mostly affect males in their sixth decade of life [3]. Nonetheless, its prognosis is worse than colon cancer (five-year OS of 34.9% *vs.* 51.5%), and only surgery improves survival [8]. It is the most common histological type of malignant SBTs [9]. The development of SBA may be influenced by genetic factors such as abnormal p53, mismatch repair, FAP, and also chronic inflammation due to cytokine triggering, cell growth and dysplasia [3].

Abdominal pain and weight loss are the most prevalent symptoms of small bowel tumors, followed by nausea/vomiting and bowel obstruction [10]. Diagnosis is accomplished through abdominal imaging, particularly CT scan in acute episodes such as obstruction, large masses, and intussusception. Endoscopic procedures, such as ileum evaluation through colonoscopy and newer techniques like double balloon enteroscopy, may also facilitate diagnosis [3]. In the gastric bypass population, evaluation of the jejunum beyond the GEA can be performed through conventional upper endoscopy, as demonstrated in the case presented. CT scan or MRI is used to stage the disease and detect distant metastases. Carcinoembryonic Antigen (CEA) and Carbohydrate Antigen (CA) 19-9 are not exclusive to SBAs but can be elevated, making them more useful for follow-up rather than diagnosis. The primary curative treatment for SBAs is surgical resection, which is the only definitive option for survival benefit [8]. All disease must be excised with negative margins, along with an appropriate lymphadenectomy. Most experts recommend the removal of at least 12 lymph nodes for optimal staging [3]. Adjuvant therapy is considered for locally advanced tumors, including those with positive lymph nodes and T4 disease [11]. Stage IV patients may benefit from chemotherapy and palliative surgeries [3].

Obesity has been linked to the development of GI adenocarcinomas, with SBA being explained by at least three factors. Visceral obesity may impede the movement of the small intestine, reducing its activity and motility, and promoting stasis of potentially carcinogenic substances, which is one of the reasons for the rarity of SBTs [12]. Visceral obesity also promotes insulin resistance, which is implicated in the development of GI tumors [13]. Finally, leptin, derived from adipocytes and playing a crucial role in the GI tract, has been identified as a risk factor for colorectal malignancies [14].

Although weight loss reduces the risk of GI malignancies, it can also delay diagnosis due to confusion with other symptoms common after bariatric surgery, such as nausea, oral intolerance, weight loss, and anemia [15]. The impact of bariatric surgery on SBA is not yet understood, as it has been suggested to increase colorectal cancer [16]. However, various cases have been reported after Roux-en-Y reconstruction [15,17-19]. Also, Rogers et al. [20] reported a case of tubulovillous adenoma with atypia discovered just distal to the gastrojejunal anastomosis, eight years after gastric bypass, bringing the question if some factors could insult the bowel mucosa, leading to chronic inflammation and dysplasia, such as gastric acid.

Unlike children, SBI in adults should always be investigated, even in cases of spontaneous resolution, due to a high risk of underlying malignant tumors- 38% in some series [21]. Clinical symptoms and CT scan are typically used for diagnosis, and delays in diagnosis can lead to bowel ischemia. Oor's study following RYGB found that SBI was more common in female patients who had experienced significant weight loss, with an incidence of 0.64% [22]. Unlike most adult SBIs, which are antegrade, retrograde intussusceptions occur more frequently after RYGB and are not associated with a lead point [4]. In the case presented, there was a clear cause that led to bowel telescoping. It is important to note that many lesions may go undetected during endoscopic evaluation due to the limited length of the device or technical difficulties.

Conclusion

SBA is a rare but deadly condition, with its etiology still not well-elucidated, but with some known risk factors like obesity. It's vital to rule out malignancy in intussusception cases in adults. It is also to conduct a thorough examination of the small bowel during post-surgical endoscopies, particularly beyond the GEA.

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