

# Advanced Esophagogastric Cancer after Bariatric Procedure

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## 2. Key Words:

Bariatric procedure; Gastric bypass; Roux-en-Y gastrojejunostomy; Gastric band; Regurgitation; Esophagogastric cancer

## 1. Abstract

A 74-year-old man, non-smoker or alcoholic, underwent gastric bypass with stapled division of the stomach and Roux-en-Y gastrojejunostomy 20 years ago. A band was used to limit the emptying of the gastric pouch. Follow up was abandoned there are ten years, and, three months ago, he suddenly began to lose weight again and noticed a large increase in the number of episodes of regurgitation of food, including liquids. An obstructive undifferentiated cancer was confirmed by EGD and biopsies. PET-CT proved advanced stage and patient was forwarded to chemotherapy after a multidisciplinary consensus. Because many of these patients have ongoing regurgitation, surveillance endoscopies seem to be mandatory to avoid too late diagnosis of associated esophagogastric cancer.

## 3. Introduction

The safety and efficacy of bariatric operations are well demonstrated. Gastric bypass is considered the gold standard surgery for the treatment of morbid obesity, due to its very good long terms results, with mean losses of 50–70% of excess bodyweight and control of obesity related diseases, especially if associated to a band to restrict the emptying of the small gastric pouch [1-4].

Adenocarcinoma of the esophagus associated to morbid obesity, also has been highlighted. However, association between weight-loss operations on the stomach and post-operative esophageal cancer must be better studied. We present herein one case of esophageal undifferentiated cancer that occurred longtime after bariatric procedure and that went unnoticed until reaching advanced stage.

## 4. Case Report

Written informed consent was obtained for publication of this case report and accompanying images. A 74-year-old, non-smoker or alcoholic, morbidly obese man underwent gastric bypass with stapled division of the stomach and Roux-en-Y gastrojejunostomy 20 years ago. A band was used to limit the emptying of the gastric pouch. A preoperative endoscopic evaluation did not show any esophagogastric problem and H. Pylori infection was discarded

by biopsies. In the post-operative period, he experienced expected persistent symptoms of regurgitation, particularly after overeating, and lost 52 Kg. Two surveillance upper endoscopies discarded any esophageal, gastric pouch or jejunal disease, except mild esophagitis, until ten years ago, when the follow-up was abandoned.

Three months ago, he suddenly began to lose weight again and noticed a large increase in the number of episodes of regurgitation of food, including liquids. Body mass index was 16.5, hemoglobin, 8.6 g/dL and serum albumin, 2.7 g/dL.

The passage of the endoscope through the distal esophagus was made impossible by the presence of an obstructive tumor, and undifferentiated carcinoma was confirmed by endoscopic biopsies submitted to anatomopathological and immunohistochemical studies. On the contrast-enhanced radiographs, extensive tumor was seen from the distal esophagus (Figure 1), and PET-CT showed the tumoral mass and several compromised lymph nodes (Figure 2), in addition to evidence of hepatic metastasis (Figure 3).

Due to the impossibility of endoscopic passage of transtumoral prosthesis or even of nasoenteric alimentary tube, gastrostomy was performed in the excluded stomach by videolaparoscopy (Figure 4). The patient was forwarded to chemotherapy after a multidisciplinary consensus.

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**Figure 1:** RX - extensive tumor from the distal esophagus; white arrow: tumor; black arrow: gastric band



**Figure 2:** PET-CT – tumoral mass and several compromised lymph nodes



**Figure 3** PET-CT – hepatic metastasis



**Figure 4:** RX – gastrostomy in the excluded stomach

## 5. Discussion

The association between bariatric procedures and subsequent development of esophagogastric adenocarcinoma may be coincidental, but this case does at least think about some etiopathogenic possibilities.

Fobi & Lee [5] and Capella & Capella [6] associated a gastric ring to Roux-en-Y gastric bypass, restricting the output of food of the small gastric chamber, in order to enhance efficiency in long-term weight loss.

The Roux-en-Y reconstruction is considered an effective anti-reflux procedure, but the presence of bile in the gastric pouch has been recognized in obese patient who have had Roux-en-Y gastric bypass [7]. Besides that, the reflux of gastric acid, secreted within the gastric pouch, facilitated after the gastric manipulation and anatomic modification of the esophagogastric junction, is almost certainly prolonged, due to the ring [8]. Furthermore, the gastric band can induce esophageal dysmotility in the long-term follow-up [9], thus worsening the distal esophagus exposure to refluxate. The longer contact time of the refluxate with the esophageal mucosa increases the aggression [10] and the relationship between gastroesophageal reflux and the development of Barrett's metaplasia, esophageal dysplasia, and adenocarcinoma is well established [11].

The presence of the band may be related to cancer due to impacted foreign body, which can cause adhesion and local reaction of the mucosa [12], and increase the internal pressure, acting against the mucosa, decreasing blood flow, with consequent decrease of parietal cells number, inducing mucosal metaplastic changes, which may progress to malignancy [13, 14].

In addition, it is also worth thinking that food stasis increases exposure of the lower esophagus to foreign compounds, potentially carcinogenic to the esophageal mucosa as highly suggested in cancer associated to achalasia [15]. The prolonged contact between food or other exogenous carcinogens and gastric pouch mucosa also can be carcinogenic [16].

The association between obesity and adenocarcinoma of the esophagus and gastric cardia has been highlighted in the literature for decades [17-19] and it is possible for these obese patients to be predisposed to cancer prior to bariatric surgery. However, it should be noted that cancer has arisen many years after the bariatric procedure [20], as happened in our case, and that new etiopathogenic factors may be involved.

Because many of these patients have ongoing regurgitation associated or not with overeating, the recognition of new relevant symptoms may be difficult and surveillance endoscopies seem to

be mandatory at least until prospective studies can adequately clarify whether there is a specific predisposition for some patients to the onset of cancer. The mere wait for new symptoms may delay the diagnosis to the point of incurability, as in the reported case.

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