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BRIEF COMMUNICATION

Esophageal Squamous Cell Carcinoma After Adjustable Gastric Banding

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Abstract

The prevalence of morbid obesity has been increasing worldwide. Therefore, multiple laparoscopic adjustable gastric bandings (LAGBs) have been placed in Belgium in the nineties. The procedure was considered as minimal invasive with low morbidity rates. However, some publication cases suggest a possible association between LAGB and the onset of an esophageal cancer. We present a case of a 49-year-old female who consulted for dysphagia, epigastric pain, and anorexia 17 years after LAGB. An esophageal squamous cell carcinoma was diagnosed in the distal esophagus, close to the lap band. The diagnostic value of the performed contrast swallow study seemed limited. We suggest that a routinely gastroscopic evaluation in the long-term follow-up after LAGB should be strived for in patients presenting with late-onset dysphagia.

Keywords Esophageal · Squamous cell carcinoma · Gastric banding

Introduction

The prevalence of morbid obesity has been increasing worldwide. Bariatric surgery is currently the only treatment for morbid obesity that ensures long-lasting weight loss and lowers the risk of comorbidities in obese patients. Laparoscopic adjustable gastric banding (LAGB) was one of the most widely used techniques for morbid obesity. At present, there is no evidence that LAGB increases the risk of cancer. To our knowledge, there are only a few case reports of esophageal or gastric cancer after LAGB [1–10].

We present a case of esophageal squamous cell carcinoma many years after band insertion.

Case Report

A 49-year-old female presented with dysphagia, recurrent episodes of epigastric pain, and anorexia. The symptoms were associated with a 5-kg weight loss during the last 3 months. Apart from a laparoscopic cholecystectomy and a daily smoking habit, her medical history was unremarkable.

Seventeen years earlier, however, the patient had undergone LAGB for morbid obesity (height, 153 cm; weight, 111 kg; body mass index (BMI), 47.4 kg/m^2). The patient was postoperatively followed for 10 years, undergoing an annual contrast swallow study. These follow-ups were uneventful. After 10 years, no more follow-ups were scheduled. Fifteen years later, a general checkup and consequential contrast swallow study did not reveal any abnormalities.

When the patient became symptomatic, the swallow test was repeated. The patient weighed 66.8 kg and her BMI was 28.5 kg/m^2. Reduced contrast transit was visible at the gastric banding site, but no further abnormalities were detected. At this point, there was still no cause for alarm.

The gastric band was completely deflated and a proton pomp inhibitor was prescribed as a symptomatic therapy. Two weeks

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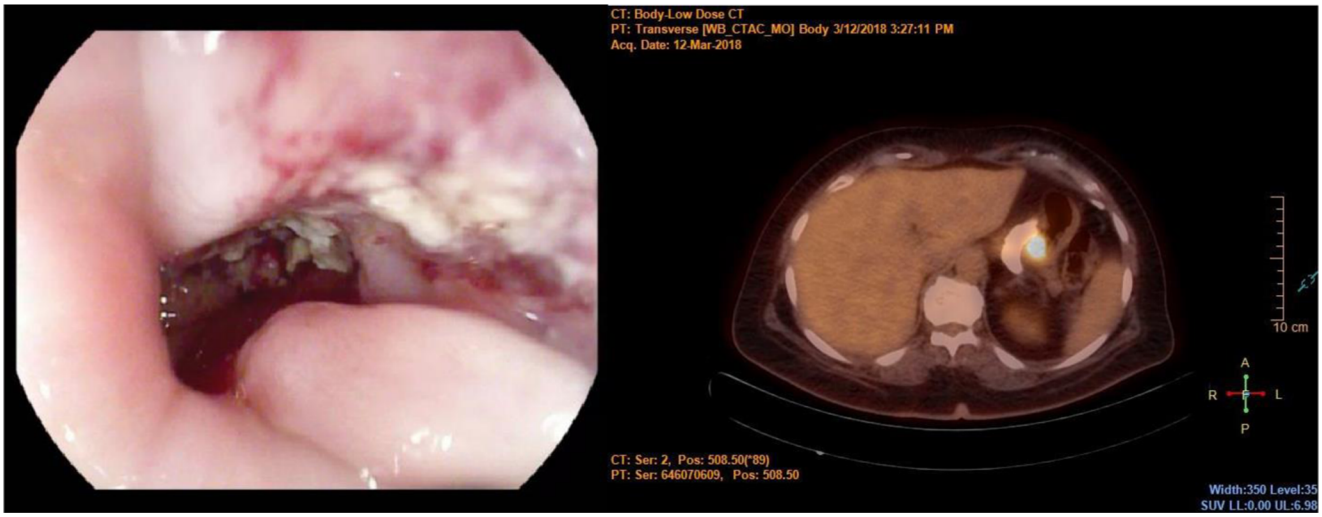

Fig. 1 **a** Endoscopic view of the necrotizing ulceration near the lap band; **b** PET-CT shows hotspot with FDG affinity proximal of the gastric banding

later, as symptoms persisted, an esophageal-gastroduodenoscopy was performed. The test showed a circular necrotizing ulceration near the lap band, but there was no sign of band erosion (Fig. 1a). A biopsy of the ulcer confirmed the diagnosis of an infiltrating, well-differentiated squamous cell carcinoma with necrosis in combination with a candidiasis.

The further oncological work-up included an endoscopic ultrasound and cross-sectional imaging (CT and PET-CT). The former exposed both proliferation into the cardia with transmural growth and some pathological lymph nodes (usT3N+); the latter showed important FDG uptake proximal to the lap band (Fig. 1b) and a small (8 mm) lymph node near the lesser curvature (cT3N1).

A feeding jejunostomy was laparoscopically placed and the gastric band was transected in an attempt to improve the dysphagia. The band was not removed for oncological reasons. A postoperative contrast swallow study showed an improved transit and reduced dysphagia.

After preoperative combined chemo-radiotherapy (i.e., carboplatin-Taxol 1× a week; 23 × 1, 8 Gy), the patient underwent a distal esophagectomy, total gastrectomy, and intrathoracic Roux-en-Y esophagojejunostomy. Anatomical

Table 1 Review of the literature

Author	Year	Patients (*n*)	Sex	Type of operation	Malignant tumor growth	Localization of the tumor	Age at diagnosis	Time period to operation (in years)
Snook K. L. [1]	2003	1	Female	LAGB	Esophageal cancer	Lower end of esophagus	58	8
Hackert Th. [2]	2004	1	Female	LAGB	Poorly differentiated gastric adenocarcinoma (pT2b)	Cardia	62	10
Trincado M. T. [3]	2005	1	Female	LAGB/RYGBP	Gastric cancer	Gastric pouch	57	5
Stroh C. [4]	2008	1	Female	LAGB	Gastric cancer	Pouch above the band	65	3
Korswagen LA. [5]	2009	1	Male	LAGB	Esophageal adenocarcinoma	Lower end of esophagus, just proximal to the esophagogastric band	43	2
Stauffer J. A. [6]	2011	1	Male	LAGB	Poorly differentiated esophageal adenocarcinoma	Gastroesophageal junction	66	2
Szewczyk T. [7]	2012	1	Female	LAGB	Gastric cancer	Middle of the stomach, lesser curvature, anterior wall	38	5
Orlando G. [8]	2014	1	Female	LAGB	Gastric adenocarcinoma	In the angulus	37	0,5
Mangla A. [9]	2018	1	Male	LAGB	Gastric adenocarcinoma	On the proximal body of the greater curvature	50	10
Trautman J. [10]	2018	1	Female	LAGB	Esophageal adenocarcinoma	Gastric inlet	65	19
This case	2018	1	Female	LAGB	Esophageal squamous cell carcinoma (T3N1)	Lower end of esophagus, level of the lap band	49	17

pathology revealed a squamous cell carcinoma, staged ypT3N0. The postoperative course was uneventful.

Discussion

Laparoscopic adjustable gastric banding was one of the most frequently performed operations to combat morbid obesity in Belgium in the nineties. The indications involved patients with a BMI $\geq$40 kg/m^2 or a BMI 35–40 kg/m^2 with associated co-morbidities (e.g., diabetes mellitus type 2, obstructive sleep apnea, arterial hypertension) and those who had failed to lose weight through dieting and other trials. The procedure was considered as minimal invasive with low early morbidity rates after surgery [11].

However, according to a few studies with a follow-up of 10 years and more, the long-term morbidity is disappointing [12]. Given the current data on long-term outcome with LAGB (e.g., GERD; need for reoperation), the number of bands placed is expected to further decrease [13]. At this moment, the gastric banding procedure is being replaced by laparoscopic Roux-en-Y gastric bypass and laparoscopic sleeve gastrectomy as the new gold standards in the treatment of morbid obesity [11].

To our knowledge, there are only a few cases in which LAGB led to either gastric or esophageal cancer (Table 1).

Even though the link between LAGB and the onset of esophageal cancer is unclear, some other factors should be taken into account. First, potential existing long-standing gastroesophageal reflux (due to the banding) and the evolution towards a Barrett's esophagus or metaplasia could contribute to the development of an adenocarcinoma [14]. On the other hand, chronic stasis and a heavy smoking habit could predispose to squamous cell carcinoma. Moreover, the effect of LAGB on gastroesophageal reflux has not been clearly demonstrated in literature. Some trials show an improvement of reflux by LAGB [15], while other studies show a deterioration [14].

Furthermore, in this case, despite several contrast swallow studies, the diagnosis of the tumor was only made during an endoscopy, emphasizing the importance of routinely performed gastroscopy in patients presenting with late-onset dysphagia a long time after performing LAGB.

Conclusion

Even though at present there is insufficient scientific evidence linking LAGB to gastroesophageal reflux, the list of publications indicating the long-term risk of esophageal (or gastric) adenocarcinoma and squamous cell carcinoma after LAGB is growing. To detect esophageal or gastric cancer after LAGB, a routinely performed gastroscopy in the long-term follow-up seems more useful than a contrast swallow study, especially in patients presenting with symptoms of late-onset dysphagia.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent does not apply.

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