

## Gastric Perforation on an Intra-gastric Balloon: A Rare but Fatal Complication

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### Abstract

### Case Report

Obesity is one of the most important public health issues due to its prevalence and associated complications. Endoscopic treatment with the introduction of an intra-gastric balloon (BIG) is a temporary aid that helps achieve weight loss and changes in eating habits. The results are encouraging in terms of weight loss and improvement of comorbidity factors; but this technique, despite being spectacular, still exposes it to serious and fatal complications such as gastric perforation by compression of the wall. Our article has well treated this complication in terms of its rarity; its severity and pathophysiology which makes our work interesting to improve endoscopic techniques of ballooning and modifies the monitoring times.

**Keywords:** Obesity, Endoscopic treatment, intra-gastric balloon, pathophysiology.

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## INTRODUCTION

Obesity is a disease in its own right, which can lead to many complications affecting quality and life expectancy. It is now a real public health problem, particularly among young people. The treatment of morbid obesity is often surgical. The placement of an intra-gastric balloon may be a preliminary step to restrictive or bypass surgery. Complications of this endoscopic procedure are rare, represented mainly by nausea, vomiting and peptic esophagitis. Gastric perforation secondary to pyloric obstruction is an exceptional complication. We report a case of high occlusion by secondary pyloric obstruction to an intra-gastric balloon, a review of the literature is also carried out.

## CASE PRESENTATION

A 55-year-old woman who has a history of arterial hypertension controlled by calcium channel blockers, he also reports the notion of introducing an intra-gastric balloon for the treatment of morbid obesity. she goes to the emergency room for the management of vomiting with intense epigastric pain which goes back 24 hours before her admission, with an alteration of the general state, the clinical examination finds a patient obnubilée GCS at 13, very dehydrated, shocked with a thready pulse and arterial tension at 9/6, polypneic with respiratory rate 23 cycle /min, the abdominal examination finds a very distended abdomen

tense with generalized sensitivity on all the abdomen , the hernial orifices are free and the rectal touch objective an empty rectal ampoule, the biological balance objectivait of the whites at 15000, a CRP at 200 and a hyponatremia at 125meq , the rest of the ionogram, the liver balance, and the hemostasis parameters are normal, after the patient's hemodynamic and respiratory stabilization , an abdominal CT (A) was realized that objectified a huge stasis stomach reaching the secondary pelvis to pylor obstruction by the intra-gastric balloon.

There is also a small curvature enhancement defect with a large 5 cm puncture associated with pneumoperitoth, also a peritoneal effusion of high abundance.

Conservative measures were applied once the diagnosis was confirmed (nasogastric aspiration, infusion, intravenous, antispasmodic, proton pump inhibitors, antiemetics). Figure-1 median laparotomy is performed one hour later, with to exploration;

- Presence of a huge stasis stomach reaching the pelvis with palpation of an intra-gastric balloon landlocked at the pylor
- Presence also of a necrosis interesting the small curvature which includes a perforation measuring 6 cm Figure-2.

- The surgical procedure consisted of a gastric emptying with extraction of balloon which is intact.
- A total gastrectomy was performed Figure-3.

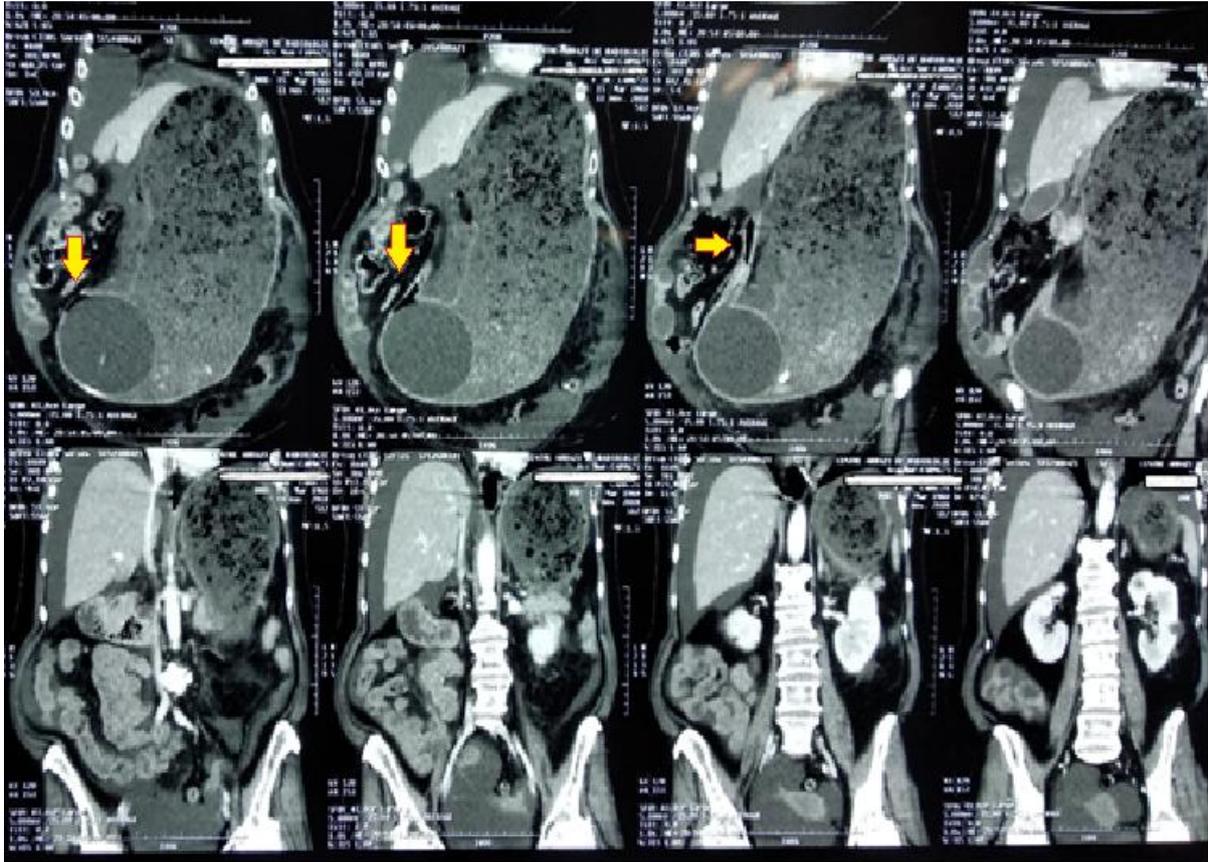
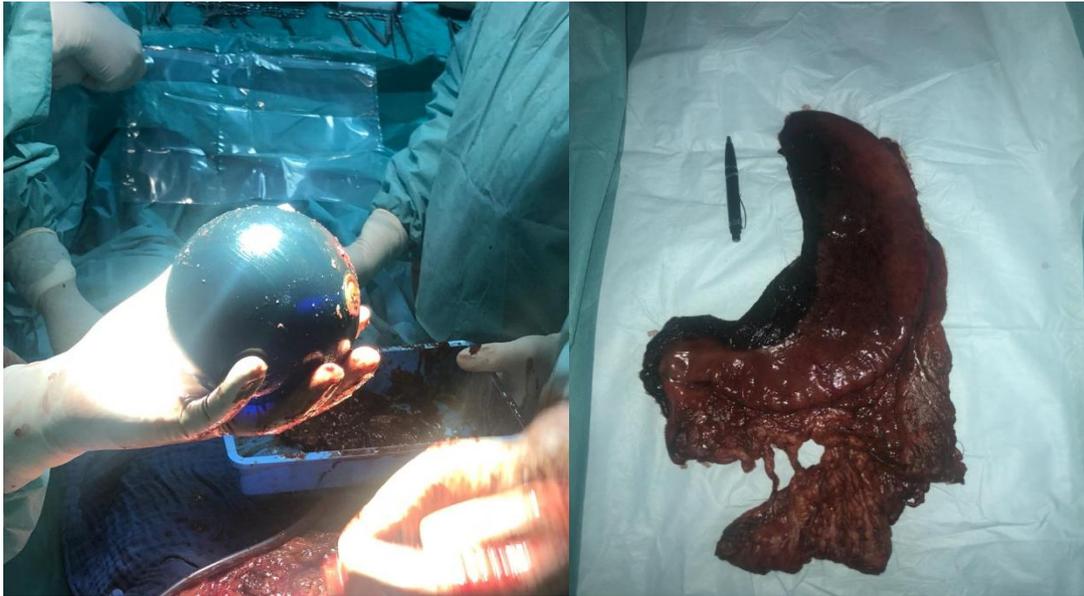


Fig-1: ABDOMINAL CT: objecting a necrosis of the small curvature that is perforated next to the balloon



Fig-2: Intraoperative image objecting necrosis of small curvature



**Fig-3: Image showing intragastric balloon (left image) and gastrectomy room (right image)**

## DISCUSSION

The implementation of a BIG for the treatment of obesity has been described since the early 1980s. The first results were published in 1982 [1]. This is a procedure that involves introducing an elastic balloon into the stomach in order to achieve an «artificial bezoar» to reduce appetite, food intake and induce weight loss.

The installation of a BIG is relatively non-invasive and reversible, its implementation being under endoscopic control. The application of a BIG is indicated in the treatment of morbid obesity in addition to dietary measures or as the first time in superobese patients before subsequent bariatric surgery [2, 3]. At the beginning of their use, the silicone BIG were filled with a saline solution with a quantity of 400 to 700 ml. There are three types of BIG marketed. The two most used are left free in the gastric cavity and have an average volume of 500 ml: one filled with water (Inamed Health®), the other inflated with air (Helioscopie®). The third BIG (Districlass®) works according to a different principle: it is smaller in size (200 ml) and fixed to the wall by an implantable chamber system that also allows the volume to be adjusted.

Since 2004, a new generation of BIG has appeared: made of silicone-coated polymer of the heliospher® type, filled with air with a volume between 650 and 750 ml [4]. Most authors recommend removal of BIG six months after installation, regardless of effectiveness and weight. Our patient was 8 months away from the pose. She had been properly informed of the need to file the BIG at 6 months.

The efficacy and safety of BIG was evaluated in a meta-analysis [5] in 2008 involving 3,608 patients. The average weight loss at the end of treatment was 32.1% with a weight loss ranging from 10 to 19 kg on average over four to six months according to studies [7-16] and the average reduction in body mass index (BMI) of 5.7 kg/m<sup>2</sup>. However, despite the importance of the number of people lost of sight, a significant part of the excess weight loss can be resumed one year after the end of treatment.

Milone *et al.*, [16] compared the effect of the balloon to that of a sleeve gastrectomy before gastric bypass surgery in super-obese patients. Weight loss was significantly lower in the balloon group (22 versus 45 kg on average), but with significant resolution of comorbidities in 90% of patients in both groups. The symptoms most frequently encountered after a BIG are non-specific and innocuous, such as nausea, vomiting, cramping and abdominal pain in 10 to 90% of cases depending on the series, mainly during the first week [15]. More serious complications such as gastroduodenal ulcers and gastric dilations are more rarely described [8, 9].

Other serious complications were reported: Totté *et al.*, [9] described two gastric perforations requiring laparotomy in a series of 126 patients. Gastric perforation can be fatal [10-12] especially in patients with a history of gastric surgery, leading authors to consider such a history as an absolute contraindication to BIG. Esophageal perforations have been described due to difficulties in laying [11] or extraction [12] of BIG. Cubattoli *et al.*, [12] described a case of cardiac arrest becoming complicated by a vegetative state, by probable vagal stimulation a few hours after the pose of a BIG.

A multitude of cases of migration of BIG following its rupture have been reported [14-16], causing obstructions of the small bowel, complete or incomplete, or even the colon [15], and requiring endoscopic or surgical extraction.

## CONCLUSION

BIG is an endoscopic technique for the treatment of obesity whose long-term effectiveness remains to be evaluated. In practice, BIG can currently be included in the therapeutic arsenal of multidisciplinary groups specialized in the management of obesity, as an alternative or in preparation for bariatric surgery.

This technique exposes to complications, including surgery, as illustrated in this case of secondary gastric perforation has a pylor obstruction by BIG.

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