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REVIEW

# Guiding the non-bariatric surgeon through complications of bariatric surgery

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**KEYWORDS**
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Sleeve;
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Fistula;
Hemorrhage

**Summary** Complications in bariatric surgery are varied; they are severe at times but infrequent. They may be surgical or non-surgical, and may occur early or late. The goal of this systematic review is to inform and help the attending physician, the emergency physician and the non-bariatric surgeon who may be called upon to manage surgical complications that arise after adjustable gastric band (AGB), sleeve gastrectomy (SG), or gastric bypass (GBP). Data from evidence-based medicine were extracted from the literature by a review of the Medline database and also of the most recent recommendations of the learned societies implicated. The main complications were classified for each intervention, and a distinction was made between early and late complications. Early complications after AGB include prosthetic slippage or perforation; SG can be complicated early by staple line leak or fistula, and BPG by fistula, stenosis and postoperative hemorrhage. Delayed complications of AGB include intragastric migration of the prosthesis, late prosthetic slippage and infection, while SG can be complicated by gastro-esophageal reflux, and BPG by anastomotic ulcer and internal hernia. The analysis of available data allowed us to develop decisional algorithms for the management of each of these complications.


## Introduction

The prevalence of obesity is steadily increasing throughout the world [1,2], having doubled in the last 30 years; it is no longer uniquely confined to rich countries. Today, 500 million adults are obese and France, where 15% of adults are obese, has not escaped this pandemic [3].

Since 2005, the number of bariatric interventions carried out in France has multiplied by 3.4; more than 42,000 interventions were performed in 2013. Bariatric surgical activity is booming and its widespread application requires good quality management of surgical complications.

The HAS (High Authority for Health) has published recommendations, which were updated in 2009. Bariatric surgery involves two main types of intervention:

- strictly restrictive procedures include: adjustable gastric banding (AGB) (Fig. 1) and sleeve gastrectomy (SG) (Fig. 2);

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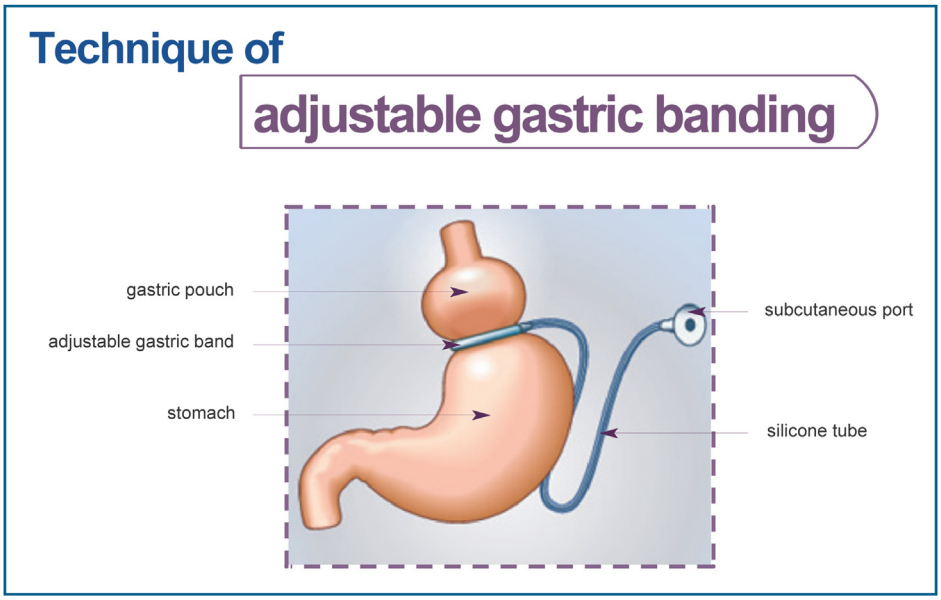


**Figure 1.** Schema of the adjustable gastric band (AGB).
From HAS-Obesity: surgical management in the adult, 2009. http://www.has-sante.fr/portail/upload/docs/application/pdf/2009-09/fiche_technique_anneau_gastrique_080909.pdf.

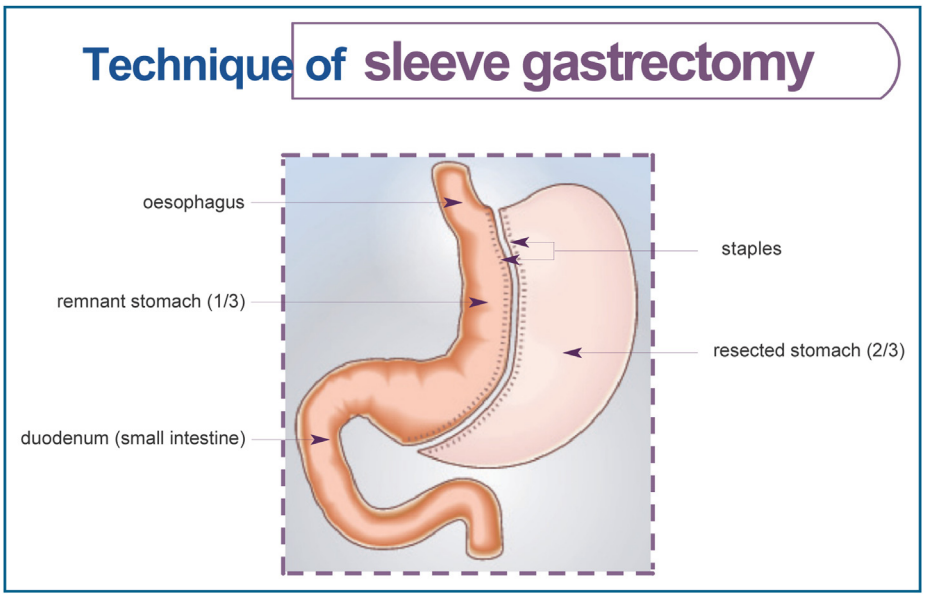


**Figure 2.** Schema of sleeve gastrectomy (SG).
From HAS-Obesity: surgical management in the adult, 2009. http://www.has-sante.fr/portail/upload/docs/application/pdf/2009-09/fiche_technique_gastrectomie_080909.pdf.

- mixed restrictive and malabsorptive procedures: the main variants are gastric bypass (GBP) [4] (Fig. 3) and biliopancreatic diversion (BPD). Complications of BPD have not been detailed in this systematic review in view of the low number of BPD performed in France in comparison with the other procedures.

Today, no single technique can objectively prevail over the others.

The AGB is the least aggressive intervention, and offers satisfactory weight loss that is dependent on a careful nutritional follow-up. This is a minimally invasive procedure and may be the first of several surgical procedures [5].

SG, whose use has expanded significantly in recent years, offers results that are intermediate between AGB and GBP; perioperative mortality rate is equally intermediate between AGB and GBP.

GBP offers the best initial weight loss and long-term weight stability [6,7]. The most commonly performed technique is the Roux-en-Y GBP. There is indeed a variant with a single anastomosis, called GBP en Omega or mini-GBP. This procedure has not, to date, been validated by the HAS nor recognized in the nomenclature [8].

Bariatric surgery has long been marginalized, and only recently has dedicated training of this discipline and its particularities been introduced. Therefore, many surgeons are

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