



Consumer summary Laparoscopic adjustable gastric banding for the treatment of obesity (Update and re-appraisal)

(This summary of the Review Group report has been adapted for consumers by E. Ahern)

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Important Note: The information provided in this summary is based on up-to-date research, however, it **is not intended to replace the advice of your medical practitioner**. Please ask your doctor if you have any further questions about the management of this condition.

Introduction

[Laparoscopic](#) adjustable gastric banding ([LAGB](#)) is a surgical technique that has been developed for the treatment of [obesity](#). ASERNIP-S has reviewed the available published [evidence](#) to assess the safety and effectiveness of this procedure.

What is ‘obesity’?

The average weight of Australians has increased over the past 40 years. This is attributed to an increase in the quantity of food available and a decrease in the amount of exercise in daily life. [Obesity](#) occurs when a person stores more energy in the form of fat than their body needs to function normally. This extra weight increases the person's risk of developing illnesses such as diabetes, high blood pressure, arthritis in the joints ([osteoarthritis](#)) and heart disease, particularly in men with increased fat around the

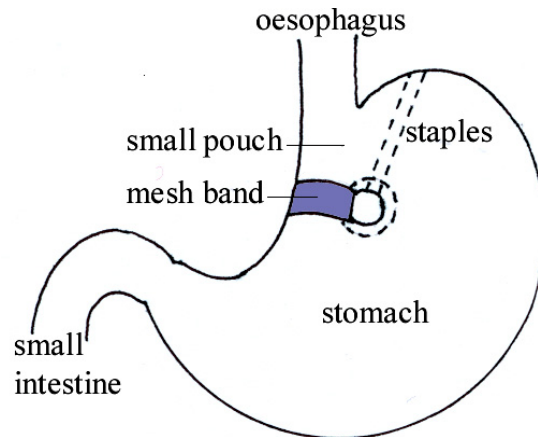
stomach, as well as psychological problems like depression, which is more likely to be experienced by obese women. Other health issues such as infertility, liver dysfunction, sleep disturbance, difficulties in breathing while sleeping and alterations in the level of fats in the blood have also been associated with obesity. When a person's body mass index ([BMI](#)), calculated by dividing weight in kilograms by height in metres squared, becomes greater than 35, [morbid obesity](#) is said to occur. This means that the person has become so overweight that their health is affected.

Conventional treatments for morbid obesity

The following treatments are available:

- **Dietary advice.** A weight-reducing diet is planned for the patient. The patient will lose weight when the energy intake in food (measured in [calories](#)) becomes less than the energy the person uses up. However, different individuals respond in varying degrees to the same weight-reducing diet. Furthermore, keeping the weight off is often a problem.
- **Behaviour therapy.** The patient is required to change or modify certain behaviour patterns, such as the amount of exercise undertaken. This means that the person can use up excess energy stored in fat by increasing physical activity.
- **Medication.** Drugs are prescribed that take away appetite or reduce the body's absorption of food. This means that a person can either reduce the amount of food they eat, or use laxatives to shorten the time food stays in the [intestine](#) and is absorbed.
- **Surgery.** At the present time, surgery remains the only effective option for the management of morbid obesity.
 1. **Limiting the capacity of the stomach for food.** Sections of the stomach can be stapled off so that the patient feels full after eating smaller quantities of food. Procedures include:
 - [Vertical banded gastroplasty](#) (Figure 1) The stomach is stapled to create a small pouch linking with the rest of the stomach through an opening, which is reinforced with a mesh band or collar to prevent expansion. When the small pouch fills with food, the person feels full.

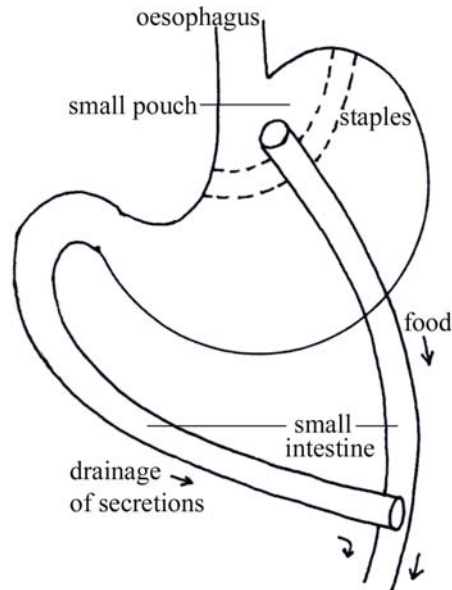
Figure 1: Vertical banded gastroplasty



However, the size of the pouch and opening must be just right. If it is too small, food cannot pass by easily and vomiting may result; if it is too big, weight loss will not occur. Another problem is that weight can be regained later, due to stomach stretching (as more food can be eaten at one time), or if patients increase the amount they eat by snacking more frequently.

2. **Reducing absorption of food.** Bypassing sections of the gut reduces absorption of food and results in weight loss. Procedures include: Roux-en-Y gastric bypass (Figure 2) Staples across the top of the stomach create a small pouch, which can contain only a limited amount of food. The long, narrow intestine (the small intestine) is cut, and the far end is attached directly to the small pouch. The other end is reconnected to the small intestine to allow drainage of secretions from the rest of the stomach. Digestion and absorption of food is reduced as it bypasses parts of the stomach and small intestine.

Figure 2: Roux-en-Y gastric bypass



However, procedures affecting the [absorption](#) of food may lead to an increased risk of malnutrition and vitamin deficiencies. Restrictive procedures are associated with significantly less long-term nutritional risk.

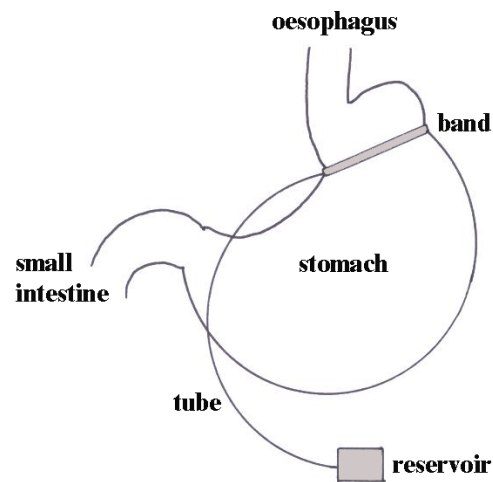
What is the laparoscopic adjustable gastric banding technique?

[Laparoscopic](#) adjustable gastric banding ([LAGB](#)) was developed to prevent the problems associated with the conventional procedures [see 1 & 2 above]. In this procedure, the stomach is partitioned off using bands such as the Lap-band™ or the Swedish Adjustable Gastric Band ([SAGB](#)) (Figure 3).

The [LAGB](#) technique is performed under general anaesthetic. A thin tube transporting a telescope, or [laparoscope](#), is inserted into the abdomen through a small cut. Other small cuts (usually four) are made in order to pass the surgical instruments and an inflatable silicone band to the site. The procedure is less '[invasive](#)' than the conventional methods, as smaller cuts are used. Pain after the operation is reduced and the patient can return to normal activities more quickly. The silicone band is placed around the top ([fundus](#)) of the stomach, creating a small pouch above the band. The band is connected by a tube to a reservoir. Fluid can be injected into, or removed from, this reservoir to adjust the

tightness of the gastric band so that it will cause weight loss and not vomiting. The reservoir is placed under the skin on the abdominal wall through a cut just below the ribs. The [LAGB](#) procedure is fully reversible as the normal functioning of the stomach and [intestine](#) is not interfered with.

Figure 3: Laparoscopic adjustable gastric banding



How does laparoscopic adjustable gastric banding compare to other surgical treatments for obesity?

There is little good quality [evidence](#) on the comparative safety and effectiveness of the [laparoscopic](#) adjustable gastric banding ([LAGB](#)) and other surgical procedures for treating [obesity](#). However, the following may be used as a guide.

Safety

In terms of safety, the limited data indicated that the short-term risk of dying during or shortly after this procedure was around 0.05% of patients, compared to 0.31% for [vertical banded gastroplasty](#) and 0.50% for [Roux-en-Y](#). Complication rates were also difficult to assess, but appeared to be similar for the new and conventional procedures; around 11.3% of patients experienced complications after [LAGB](#), compared to 25.7% following [vertical banded gastroplasty](#) and 23.6% after [Roux-en-Y](#). The most common types of complication for [LAGB](#) were stretching of the small gastric pouch above the band (4% of

patients) and slipping of the band (1.6% of patients). Vomiting is a side effect (as for conventional procedures), with one comparative study reporting a significantly lower rate for the [SAGB](#) compared to the Lap-band™. Injury to organs of the body occurred as a result of surgical errors in less than 1% of all procedures, but was more likely during [LAGB](#) than other procedures.

Effectiveness

In terms of effectiveness, it was difficult to compare rates of weight loss following these procedures due to the lack of longer-term data. However, it is clear that all three produced considerable weight loss in patients, over the maximum 4 year follow-up in the case of [LAGB](#), and for at least 10 years for the conventional procedures. Limited comparative data suggested that the [Roux-en-Y](#) operation was most likely to lead to the greatest weight loss, with [LAGB](#) and [vertical banded gastroplasty](#) more or less equivalent two years after the operation (although LABG may not be as effective regarding weight loss up to eighteen months postoperatively).

Studies suggested that all three procedures led to improvements in illnesses related to the patient's [obesity](#), such as asthma, diabetes or high blood pressure. However, there was no significant difference between the procedures in this respect, nor was there [evidence](#) to clearly show that the improvements were due to the operations concerned.

There was no significant difference in the time taken to complete the Lap-band™ and [vertical banded gastroplasty](#) procedures. Conversion from [LAGB](#) to open surgery, which requires larger cuts in the abdomen, was required in about 5% of patients in most studies, with a range of zero up to 25% of patients overall. Although little reliable comparative data was available, there did appear to be a lower risk of reoperation (for example to repair or remove bands) for patients who were fitted with the [LAGB](#) compared to those undergoing other procedures, with the highest risk recorded for [vertical banded gastroplasty](#). Most studies reported that 8% or less of [LAGB](#) patients required a further operation for band removal, except for one small study, which recorded a level of around 67%. This last figure is not representative of the majority of studies.

Postoperative hospital stay reported after [LAGB](#) ranged from around 1 to 12 days. Once again it was difficult to compare the procedures in this respect because of limited data. In one study patients were asked to rate the effect of the operation on their quality of life; patients who had undergone [Roux-en-Y](#) gave more favourable responses than those from the other two groups. Similarly, one comparative study showed that people who had the [Roux-en-Y](#) procedure were more likely to have satisfactory psychological outcomes than after the gastric banding operation; that is, the patients were less obsessed with food and had a positive evaluation of surgery.

What is the recommended procedure for treating obesity?

The ASERNIP-S review group concluded that [laparoscopic](#) adjustable gastric banding was at least as safe as the comparator procedures for up to 4 years after the operation. For the first 2 years, LABG was as effective as [vertical banded gastroplasty](#) but less effective than gastric bypass in producing weight loss. However, longer-term data is required before a true comparison between the procedures can be made. It is important, therefore, for both the patient and the surgeon to weigh up all factors before choosing which operation may offer the best possible outcome for each individual patient.

Key words: laparoscopic gastric banding, Lap-band™, Swedish Adjustable Gastric Band, obesity surgery

June 2002

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ASERNIP-S is a programme of the Royal Australasian College of Surgeons (RACS).

Glossary

absorption: the uptake of substances into or across the tissues of the body

BMI: body mass index, calculated by dividing weight in kilograms by height in metres squared

calorie: a measure of the energy value of food

digestion: the conversion of food into a substance which can be absorbed by the body

evidence: the body of research used to investigate the procedure in question

fundus: the top end of the stomach

intestine: the part of the gut lying between the stomach and the anus

LAGB: Laparoscopic adjustable gastric banding

laparoscope: long thin tube with a telescope on the end, used to see inside the abdomen

laparoscopic: The use of a [laparoscope](#) to see inside the abdomen. The tube is inserted through a small cut in the abdominal wall.

minimally invasive operation: operation accessing the site through a telescope rather than large surgical cuts

morbid obesity: morbidly obese people have a [BMI](#) greater than 35. The person becomes so overweight that the person's health is affected.

obesity: excessive energy storage in the form of fat, occurring when the food intake of a person provides more energy than required by that person

osteoarthritis: degeneration of a joint causing pain and stiffness

Roux-en-Y gastric bypass: A small pouch is made in the stomach, for example by stapling, limiting the amount of food which can be eaten. The pouch is then attached to the end of the narrowest part of the [intestine](#) (the [small intestine](#)).

SAGB: Swedish Adjustable Gastric Band

small intestine: the long, narrow part of the [intestine](#) following the stomach

vertical banded gastroplasty: The stomach is stapled to create a small pouch linking with the rest of the stomach. When the small pouch fills with food, the person feels full.

Food then passes through the link, which is reinforced with a mesh band or collar, to the rest of the stomach.