

# Surgical options for weight loss

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**Surgery may be appropriate for certain obese patients who have failed to achieve weight loss using other strategies and who have a full understanding of the procedure, risks and follow up requirements.**

About 25% of Australian adults are obese (BMI >30 kg/m<sup>2</sup>).<sup>1</sup> Obesity is a significant risk factor for the metabolic syndrome and other diseases. Weight loss (bariatric) surgery provides lasting reduction in weight and remission of obesity-related comorbidities.<sup>2-4</sup> Current debate centres on the application of bariatric surgery in the nonmorbidly obese population and the choice of operation. A tailored approach to the choice of primary operation may lead to a reduction in the need for revisional surgery (Table).

## Who should consider surgery?

- Patient selection criteria for weight loss surgery have been described.<sup>5</sup> Surgery is indicated for morbidly obese patients (BMI >40 kg/m<sup>2</sup>) who have failed to achieve weight loss with dietary strategies.<sup>5</sup> In this patient group, there is good evidence that weight loss surgery improves quality of life and prolongs survival.<sup>4,6</sup> Surgery may also be considered in less severely obese patients (BMI between 35 and 40 kg/m<sup>2</sup>) who have significant obesity-related debility.<sup>5</sup>
- Weight loss surgery may be performed for individuals aged between 18 and

55 years in the absence of significant organ failure or psychiatric illness. All patients must have a full understanding of the procedure, risks and follow up requirements.

- It is important that patients have realistic expectations. Weight loss surgery is not cosmetic surgery – none of the operations predictably lead to complete loss of excess weight. Surgery is a tool for achieving weight loss, but it requires some degree of lifestyle change to be effective.
- Weight loss surgery may be appropriate for any patient with type 2 diabetes and BMI >30 kg/m<sup>2</sup>, but this has yet to be tested in prospective trials.
- Some of the newer antipsychotic medications are associated with weight gain. Patients using these medications may be considered for surgery if their illness is well controlled.

## What are the surgical options?

### Adjustable gastric banding

- Adjustable gastric banding involves laparoscopic placement of a silicone band around the proximal stomach (Figure 1). The band has a balloon that is attached by catheter to a subcutaneous reservoir, allowing adjustment of the degree of gastric

**Table. Patient factors influencing choice of bariatric surgery**

Factor	Adjustable gastric band	Gastric bypass	Sleeve gastrectomy
BMI >50 kg/m <sup>2</sup>	+	-	+
Patient goal of BMI <30 kg/m <sup>2</sup>	-	++	+
Remote location or difficulty with follow up	-	-	+
Gastro-oesophageal reflux disease	+	+	-
Type 2 diabetes	+	++	+

Guide to symbols: ++ strong indication, + indication, - relative contraindication.

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**Three surgical procedures for weight loss**

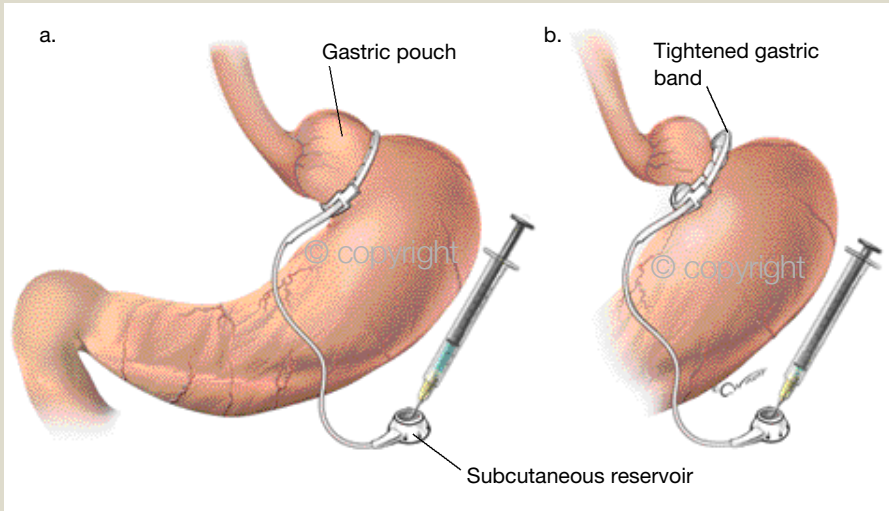


Figure 1. Adjustable gastric banding, showing low (a, far left) and high (b, left) degrees of gastric restriction. After placing a silicone band around the proximal stomach, the surgeon can control the restriction via a subcutaneous reservoir in the abdomen by addition or removal of saline solution.

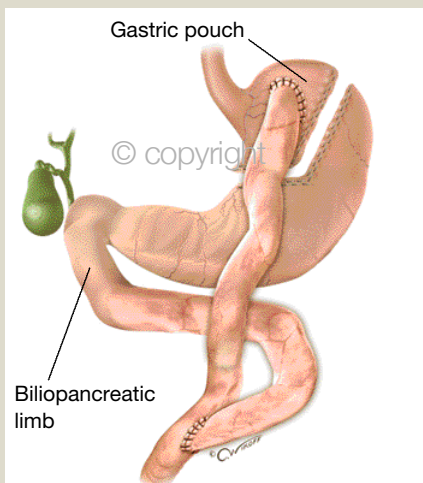


Figure 2 (far left). Gastric bypass involves creating a small gastric pouch and anastomosing a loop of small bowel to it. This bypasses most of the stomach as well as a section of small bowel.

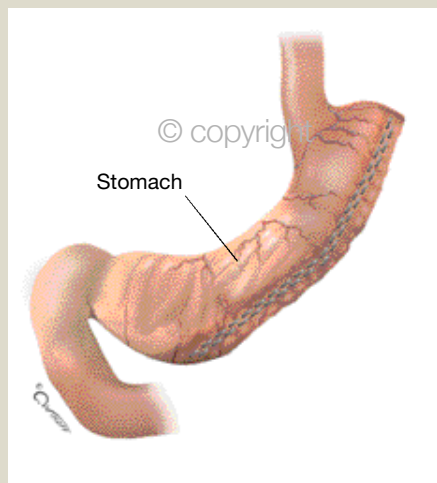


Figure 3 (left). In sleeve gastrectomy most of the stomach is resected to create a tube between 1 and 2 cm in diameter.

restriction. The procedure accounts for 95% of weight loss surgery in Australia.<sup>7</sup>

- Average excess weight loss is 55% at three years after surgery.<sup>8</sup> Up to 25% of patients fail to lose a significant amount of weight (<10 kg).
- Adjustable gastric banding is relatively safe: mortality is <1:2000 (comparable to gallbladder surgery).
- There is a need for revision in 1 to 2% of patients per annum. This is due to slippage of the stomach under

the band, erosion of the band into the stomach or hardware problems.

- Careful follow up is required for adjustment of the gastric band and dietetic counselling.

**Gastric bypass**

- Gastric bypass (laparoscopic or open surgery) involves creating a small gastric pouch and anastomosing a loop of small bowel to it, bypassing most of the stomach and a section of small bowel (Figure 2). The

procedure has been performed since the 1960s.

- Average excess weight loss is 65% by 18 months after surgery.<sup>2</sup> The failure rate is low.
- There are significant operative risks: anastomotic leak (1 to 3%), anastomotic ulcer, stricture, internal hernia (ongoing risk up to 5% lifelong) and mortality (up to 1%).
- Nutritional follow up is needed for vitamin B<sub>12</sub>/folate, iron, calcium and zinc levels.

## Sleeve gastrectomy

- Sleeve gastrectomy involves laparoscopically resecting most of the stomach, turning it into a tube between 1 and 2 cm in diameter (Figure 3). It is a relatively new procedure.
- Excess weight loss after sleeve gastrectomy is initially similar to that after gastric bypass. Long term data are not yet available.
- There have been no deaths reported in the trials involving laparoscopic sleeve gastrectomy, but case series suggest a rate between 0.1 and 0.5%.<sup>9</sup> Operative risks are early (staple line leakage, 1 to 2%; haemorrhage, 1 to 2%) and late (reflux, 10 to 20%).
- Sleeve gastrectomy is the only completely nonreversible weight loss operation.

## How does weight loss surgery work?

### Restriction

- All of the weight loss operations discussed above work primarily by restricting the volume of food that can be ingested to approximately the size of an entrée sized portion.
- Adjustable gastric banding causes a transient obstruction to the food bolus, leading to a stretch in the gastric pouch which signals satiety (via the vagus nerve).

### Hormonal effects

- After gastric bypass, undigested food entering the small bowel may lead to 'dumping' syndrome (e.g. sweating and tachycardia shortly after eating), which acts as a deterrent to over-eating sweet, high calorie foods.
- Resection of the gastric fundus (which occurs in sleeve gastrectomy) leads to significant reduction in levels of ghrelin, the only identified

'hunger hormone'. People who undergo this operation report a significant reduction in feelings of hunger.<sup>10,11</sup>

### Malabsorption

- Reducing the length of small bowel in which ingested food and biliary-pancreatic secretions mix reduces the capacity to absorb ingested nutrients.
- After gastric bypass the length of bypassed small bowel is between 75 and 150 cm, which does not usually lead to clinically significant malabsorption.
- Biliopancreatic diversion is the only primarily malabsorptive operation, but it is very rarely performed in Australia due to high morbidity and mortality rates.
- Malabsorption may lead to vitamin and protein deficiencies, osteoporosis, diarrhoea and body odour. **MT**

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**COMPETING INTERESTS: None.**

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