Bariatric surgery

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Abstract

Obesity is one of the most prevalent problems worldwide today, with the incidence fast increasing. As such, bariatric surgery is becoming a valuable alternative solution for those who have failed to lose weight by conservative means. Alongside obesity exist multiple comorbidities, both physical and mental, which have a significant affect upon the patient and need to be addressed before, during and after any operative intervention. This article outlines the problems associated with obesity, and discusses the most common operations in terms of risks and benefits. Finally, it explores the postoperative considerations that must be taken into account before embarking upon weight loss surgery.

Keywords Bariatric surgery; obesity; operation; weight loss

Obesity is a global health epidemic, with numbers of people diagnosed as obese rising in both the developed and developing world.[1] In the United States (USA), obesity rates have reached one-third of the population[2]; one-quarter of British people[3] and 31 million Chinese are also classed as obese.[4]

Obesity is associated with a significant number of medical and psychological health problems, all of which impact upon progression of the disease, and its treatment. Unfortunately, limited resources and lack of detailed understanding of the ideal way to treat patients who have failed to lose weight by simple lifestyle modification contribute to the debate surrounding bariatric surgery. However, the number of patients undergoing successful surgery is increasing, as new techniques are developed and safety improves, particularly since the introduction of laparoscopic techniques.

Although weight reduction is known to improve or cure the majority of weight-related physical health problems such as obstructive sleep apnoea, type 2-diabetes, hypertension and arthritis, it is often difficult to accomplish any meaningful weight loss without medical assistance. The psychological associations made with food mean that a substantial number of obese people eat for reasons other than hunger. These may include addiction, comfort or recreation, and these psychosocial aspects may make lifestyle modification almost impossible.

For patients who have failed with lifestyle measures or weight loss medications, bariatric surgery is often considered to be the next logical step towards achieving substantial weight loss and reducing medical comorbidities, many of which contribute to a decreased life expectancy.[5] Patients with morbid or super-obesity are far less likely to achieve enough weight loss to improve their physical and/or mental health without surgery.

Although the short-term results of surgery are easily apparent in copious amounts of literature, long-term data as to the benefits of bariatric operations are also emerging. The Swedish obesity study, the largest long-term study of bariatric surgery, not only demonstrated a significant difference in the amount of weight lost by patients undergoing surgery compared to those treated medically, but also demonstrated an overall sustained weight loss of 14–25% excess body weight loss at 10 years.[6]

The comorbidities associated with obesity are numerous, therefore obesity could be considered as a 'spectrum' of disease, rather than an entity on its own. Table 1 shows the most common comorbidities found in obese patients, although the list is not exhaustive; for example, increased risks of cancer have been seen in this population.

Pre-surgical considerations

No international (or often national) consensus exists as to which patients are suitable for bariatric surgery, although a patient should have a significantly high BMI (often above 40 kg/m^2 or 35 kg/m^2 with a weight related comorbidity) (Table 2).

Each case must be considered based on its individual merit, and in some specific cases, exceptions may be made by individual surgeons. Patients with medical comorbidities such as diabetes or sleep apnoea may benefit from a combined restrictive and malabsorptive operation, rather than purely restrictive as weight loss is often more significant (Table 3). Patients with psychological comorbidities may need substantial psychological support before considering them for surgery. Each patient should be able to demonstrate commitment to a healthier lifestyle following surgery, as those who do not change their eating and exercise habits may be liable to weight regain. Some centres require patients to quit smoking or drinking alcohol before offering surgery.

In most services, the surgical team should be supported by a dietitian, specialist nursing staff, anaesthetic doctors and psychologists, all of whom can work to maximize the weight loss outcome for each patient. The decision as to which operation to offer should be made in consultation between the surgeon and the patient, as many patients have a preference as to the type of surgery they prefer.

Operations can be classified in a number of ways, and each operation or procedure has its own advantages and disadvantages. The risks and benefits, along with complication risks, should be discussed thoroughly with the patient before undertaking any operative procedure.

In most circumstances each operation is performed laparoscopically, apart from the intra-gastric balloon and endobarrier, which are performed endoscopically. Patients who have had previous abdominal surgery, or those who have abdominal wall herniae, for example, may need to have these factors taken into consideration when choosing their operation.

Laparoscopic adjustable gastric banding (LAGB)

The laparoscopic adjustable gastric band (Figures 1 and 2) has until recently been one of the most popular forms of weight loss surgery, and remains in the repertoire of most bariatric surgeons. An adjustable silicone band is placed laparoscopically around the

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Comorbidities commonly associated with obesity

Medical comorbidities	Psychological comorbidities
Hypertension	Depression
Cardiac failure	Anxiety
Thromboemolic disease	Eating disorders
Hypercholesterolaemia	Social anxiety (e.g. Agoraphobia)
Type 2 diabetes	Suicidal ideation
Arthritis/back pain	
Infertility	
Liver disease	

Table 1

Classification of obesity

BMI	Classification
Less than 18.5	Underweight
18.5–24.9	Normal weight
25.0–29.9	Overweight
30.0–34.9	Class 1 obesity
35.0–39.9	Class 2 obesity
Over 40	Class 3 obesity

Table 2

fundus of the stomach and sutured in place to prevent band slippage. The restriction of the band is adjusted with fluid via a port, connected to the tubing and placed subcutaneously on the anterior abdominal wall. This causes early satiety once the pouch is full, and the amount of food is restricted until ingested foodstuff has passed through the band. A precursor to the bands in use today, was the vertical banded gastroplasty, but this is no longer in common use due to the high number of complications.

The band can be adjusted in the outpatient setting, either clinically based on patient comfort with swallowing, or with radiological assistance. Over-inflation of the band can lead to oesophageal dysmotility or dilatation, therefore optimum tightness must allow for food to pass through in reasonable time. A high level of patient compliance with dietary changes is required; 'cheating' is relatively simple by melting or pureeing food.

Although a relatively simple procedure that can be done as a day case operation, the LAGB has a significant number of longer-

One classification system for operative intervention

	Restrictive	Malabsorptive
Reversible	• Gastric band • Intra-gastric balloon	• Endobarrier
Irreversible	• Gastric sleeve • Roux-en-y gastric bypass • Biliopancreatic diversion	• Roux-en-y gastric bypass • Biliopancreatic diversion • Duodenal switch

Table 3

Laparoscopic adjustable gastric banding

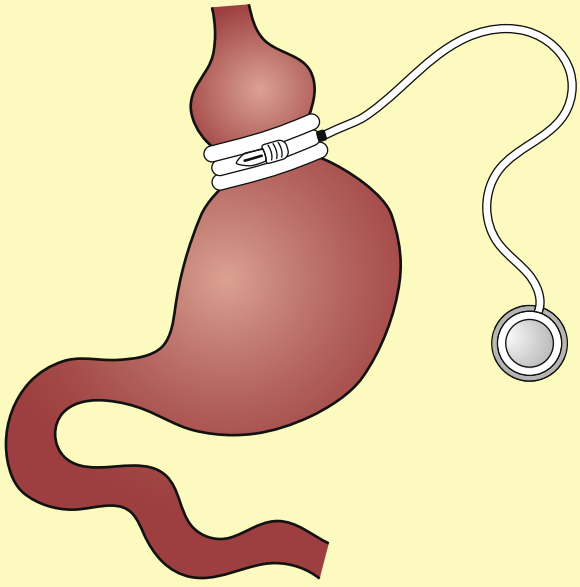

Figure 1

term complications, such as band slippage, erosion, port infections, and tubing issues.[7–9]

Average weight loss with the gastric band is around 50–60%.[10] Resolution of type 2 diabetes is less than other operations, therefore it may not be as useful in this patient cohort as other operations. As demonstrated by Dixon et al.[11] however, the gastric band has a five fold increase in curing type 2 diabetes when compared to medical management alone.

Sleeve gastrectomy (SG)

The sleeve gastrectomy is a more recent addition to the bariatric surgeon's repertoire. The stomach is stapled along its length over

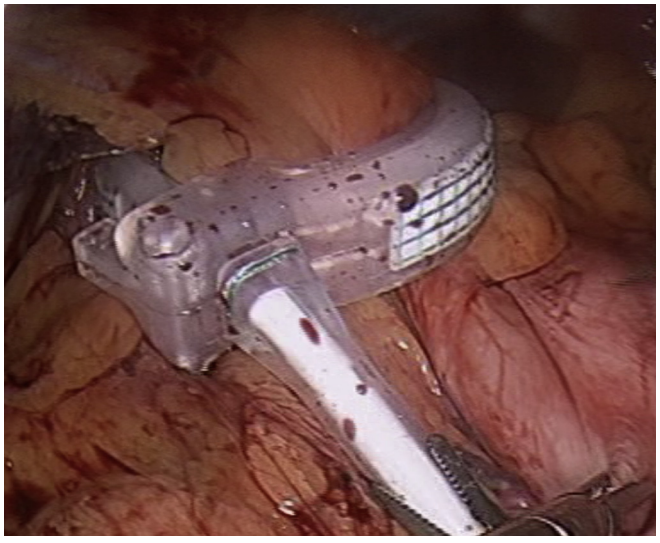

Figure 2 Intra-operative laparoscopic adjustable gastric banding.