Surgical Management of Obesity in Patients with Morbid Obesity and Nonalcoholic Fatty Liver Disease

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KEYWORDS

• Metabolic • Weight loss • Surgery • Diabetes • Hypertension • Gastric • Malabsorption • Mortality

KEY POINTS

- Weight loss following conventional nonmalabsorptive bariatric-metabolic procedures reduces steatosis and lobular inflammation, but does not have a consistent effect on liver fibrosis.
- Rapid weight loss, especially with malabsorptive procedures, may produce a transient or prolonged increase in liver disease.
- The place for bariatric-metabolic surgery in patients with compensated cirrhosis is not established, but is contraindicated in decompensated cirrhosis.
- Long-term population studies are needed to establish the effect of bariatric-metabolic surgery on major liver morbidity and mortality, within the context of the effects of broader morbidity and mortality changes.

INTRODUCTION

Severe obesity with its associated comorbidities, including nonalcoholic fatty liver disease (NAFLD), can be considered as a chronic, relapsing disease and therefore needs a chronic disease approach to management. Chronic disease management requires a

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range of effective therapeutic options so that treatment can be stepped up or altered in relation to the severity of the individual's condition and response to the current therapy.[1] This management model also centers on the patient being well informed and critically engaged in the self-care aspects of the disease and having understanding of the options available for the management of the disease. There are many options for managing obesity-related comorbidity such as type 2 diabetes, hypertension, depression, and sleep apnea effectively, but there are limited options for managing the obesity effectively.

Weight loss is difficult because body weight and body fat are regulated by a range of highly efficient homeostatic mechanisms that have a bias toward preventing weight loss rather than weight gain.[2] Mechanisms that defend against weight (fat) loss include reduced energy expenditure through loss of lean body mass, energy adaptation with reduced thyroid activity, reduced sympathetic nervous activity, and improved muscle efficiency.[3] In contrast, intake is also influenced: weight loss generates feelings of hunger, changes the perceptions of food intake, increases the attractiveness and taste of food, reduces cognitive restraint, and increases the hedonic response to food.[4] As a result of these physiologic effects, lifestyle-behavioral interventions generate only modest long-term weight loss and maintaining weight loss is difficult. Drug therapy for weight loss has been limited and, with some drugs withdrawn from the market because of safety issues, a cautious approach has been taken to the regulatory approval and introduction of new medications. However, 2 new medications, lorcaserin[5] and an extended-release combination of phentermine and topiramate,[6] have recently been approved by the US Food and Drug Administration (FDA). In general, drug therapy has led to a useful 3% to 8% weight loss compared with placebo.[7–9] However, bariatric surgery is the most effective therapy available, with the most commonly used procedures generating sustained weight loss of 20% to 30% of body weight.[10]

LAPAROSCOPIC BARIATRIC-METABOLIC SURGERY

Bariatric surgery was revolutionized with the introduction of laparoscopic surgery in the early to mid-1990s and all currently used standard procedures (Roux-en-Y gastric bypass [RYGB], laparoscopic adjustable gastric band [LAGB], sleeve gastrectomy [SG], and biliopancreatic diversion with or without a duodenal switch [BPD+/−DS]) are performed laparoscopically (**Fig. 1**). Overall, there was a rapid increase in the use of bariatric surgery globally between 1995 and 2008, but this has been followed by a plateau effect at an annual global level of 340,000 procedures, which is considered to be a low (<1%) annual uptake among those eligible for surgery.[11,12] Procedure choice varies internationally and trends change with time in a manner resembling other fashions.[12] At present, RYGB, SG, and LAGB are the dominant three in all global regions, but the proportions vary and BPD+/−DS, which is the only procedure that is associated with significant malabsorption of macronutrients, makes up less than 3% of all procedures.

Indications

The indication for bariatric surgery follows a similar pattern internationally, with the more recent guidelines and position statements considering type 2 diabetes as a specific entity (**Table 1**).[13,14] The recognition that bariatric surgery has a role in managing obesity-related metabolic conditions, especially type 2 diabetes, has led to the inclusion of metabolic in national bariatric surgery societies' names, and the combined term bariatric-metabolic (BM) to describe the surgical specialty and the range of procedures used.

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