


Review: sparse high quality evidence supports surgery for obesity

Maggard MA, Shugarman LR, Suttorp M, *et al.* Meta-analysis: surgical treatment of obesity. *Ann Intern Med* 2005;**142**:547–59.

Q How effective and safe are surgical treatments for obesity?

METHODS



Data sources: Medline and EMBASE/Excerpta Medica (to July 2003), and existing systematic reviews.

Study selection and assessment: randomised controlled trials (RCTs), controlled clinical trials, cohort studies, and case series that evaluated surgical treatment of obesity.

Outcomes: weight loss, mortality, complication rates, and control of major obesity related comorbid conditions.

MAIN RESULTS

147 studies met the inclusion criteria: 89 reported weight loss results (mean age 38 y, 75% women, baseline body mass index 47 kg/m²), 134 reported mortality rates, and 128 reported complications rates. The analysis focused on the most common currently performed surgical procedures: Roux-en-Y gastric bypass (RYGB) (including open and laparoscopic), vertical banded gastroplasty (VBG), adjustable gastric banding, and biliopancreatic diversion (including duodenal switch).

Weight loss. 3 RCTs compared surgery with no surgery. 2 older RCTs favoured surgery: 1 RCT from 1984 showed greater weight loss at 24 months with horizontal gastroplasty plus diet than with diet alone (31 v 8 kg); 1 RCT from 1979 comparing jejunoileal bypass with medical treatment showed a 37 kg difference favouring surgery at 24 months. 1 RCT available only in abstract form that compared surgery with medical therapy (very low calorie diet, pharmacotherapy, and exercise) showed more loss of excess body weight in the surgical group than in the medical group (72% v 21%, $p < 0.001$). The most recent high quality evidence was from a large matched cohort study showing greater weight loss at 8 years (20 kg difference) and 10 years (17 kg difference) with surgery (mostly VBG or adjustable gastric banding) than non-surgical therapy. Of 5 RCTs comparing surgical procedures, 2 compared RYGB with VBG. Both procedures showed >30 kg of weight loss at 12 and 36 months, with RYGB showing an additional weight loss of 8–9 kg. 2 RCTs showed additional weight loss of 14 and 3 kg at 12 and 36 months, respectively, for VBG compared with laparoscopic adjustable gastric banding; and 1 showed similar weight reductions (≥ 30 kg) with open and laparoscopic RYGB at 12 months.

Mortality. Among RCTs reporting operative mortality, early (≤ 30 d from the procedure) and late (> 30 d from the procedure) mortality were $\leq 1\%$ for all procedures.

Complications. 5 RCTs comparing RYGB with VBG showed no difference between procedures in rates of adverse events. Studies comparing open with laparoscopic surgery showed reductions in wound complications, major and minor wound infections, and incisional hernias with the laparoscopic approach, but a greater rate of reoperation.

Comorbid conditions. No RCTs provided results on control of comorbid conditions. A cohort study showed a reduction in hypertension, diabetes, and dyslipidaemia in surgically treated patients at 24 months compared with a non-surgical control group. Reductions in diabetes and dyslipidaemia persisted to 10 years. Improvements were also seen for sleep apnoea, dyspnoea, and chest pain.

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CONCLUSION

Evidence, mostly from observational studies, suggests that surgical treatment of obesity is more effective than non-surgical treatment for weight loss and control of some comorbid conditions in patients with body mass index ≥ 40 kg/m².

Abstract and commentary also appear in ACP Journal Club.

Commentary

Obesity is a chronic condition resulting from a myriad of factors causing an imbalance of energy intake and expenditure. Although lifestyle changes can result in weight loss for some, many obese patients need more efficacious interventions for weight reduction. The use of pharmacological and surgical treatments has increased in response to the increasing prevalence of obesity.

Li *et al* and a Cochrane review on this topic¹ agree that several available medications combined with dietary intervention result in average weight loss of about 3–5 kg in excess of placebo with relatively mild short term side effects.

Although a 5–10% weight loss can result in reduced risk of chronic disease,² Foster *et al* showed that most patients achieving the degree of weight loss reported with pharmacotherapy by Li *et al* would be “very disappointed.”³ A group under-represented in pharmacological trials, severely obese patients (BMI > 40 kg/m²) may perceive less palliation from a “modest” weight loss. Large loss to follow up in trials and in clinical practice may, in part, reflect limitations of medical therapy and complicate the interpretation of trials.

With this in mind, clinicians should appreciate why some patients are enamoured with surgical treatments for obesity. Maggard *et al* noted that although current, high quality data are lacking, a large observational study from Sweden supports the efficacy and probable superiority of surgical treatments for severely obese patients. When considering the large, consistent differences in weight, major comorbid outcomes observed, and low risk of major complications in a large number of patients, they suggest it is more likely that the differences are attributable to surgical treatment and not due to unmeasured variables. Consistent findings from other investigators have been published.⁴ Still, RCTs are needed to establish causality and to detect small differences (particularly between surgical procedures) in outcomes important to patients, including quality of life and cost effectiveness.

Clinicians should consider many variables before generalising these data to patient care as they may not reflect such variables as advancements in surgical techniques, differences in technical skill, refined systems of care (eg, multidisciplinary bariatric surgery teams), patient age, and the addition of cointerventions (eg, behaviour therapy and support groups). Further research needs to explore the largely unexplained differences in results among many of the weight loss therapy trials. These differences suggest that patient populations with specific barriers to effective weight loss or specific comorbid conditions may respond better to different types of weight loss drugs, combinations of drugs, and cointerventions.

Clinicians should work with patients to define important outcomes, including the magnitude of weight loss, effect on relevant obesity related comorbid conditions, and cost to identify patients’ tolerance of risk for adverse events and to convey the uncertainty about the available evidence.

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1 Padwal R, Li SK, Lau DC. *Cochrane Database Syst Rev* 2004;(3):CD004094.

2 Goldstein DJ. *Int J Obes Relat Metab Disord* 1992;**16**:397–415.

3 Foster GD, Wadden TA, Phelan S, *et al.* *Arch Intern Med* 2001;**161**:2133–9.

4 Buchwald H, Avidor Y, Braunwald E, *et al.* *JAMA* 2004;**292**:1724–37.