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 jejunoejunostomy 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 RYG 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 RYG at 12 months.

- **Mortality:** Among RCTs reporting operative mortality, early (< 30 d from the procedure) and late (>30 d from the procedure) mortality were ≤1% for all procedures.

- **Complications:** 5 RCTs comparing RYG 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 dyslipidemia in surgically treated patients at 24 months compared with a non-surgical control group. Reductions in diabetes and dyslipidemia persisted to 10 years. Improvements were also seen for sleep apnoea, dyspnoea, and chest pain.

**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.