

# RESEARCH HIGHLIGHTS

## DIABETES

### Bariatric surgery: a cure for type 2 diabetes mellitus?

Bariatric surgery can improve or completely resolve manifestations of type 2 diabetes mellitus (T2DM), Buchwald *et al.* report in a new meta-analysis. Such responses are maintained for at least 2 years after surgery, and procedures associated with an increased loss of excess body weight (%) confer the greatest benefits.

“Procedures that yielded the greatest weight loss resulted in the best diabetes resolution...”

Obesity is the primary risk factor for T2DM; 90% of all patients with T2DM are overweight or obese. Buchwald and colleagues examined the effects of surgery to reduce obesity on T2DM and how different procedures and overall reduction in weight affect outcomes.

A total of 621 studies on gastric bypass, gastroplasty, banding, and biliopancreatic

diversion/duodenal switch published between January 1990 and April 2006 were included in the review. The investigators analyzed data on 135,246 patients with a mean age of 40.2 years (range 16–65 years) and a mean BMI 47.9kg/m<sup>2</sup>. Diabetes and weight-loss outcomes were reported separately for 4,070 patients with T2DM. Resolution of T2DM (defined as discontinuing diabetes medications, having a normal fasting glucose level at follow-up of <5.55 mmol/l and/or an HbA<sub>1c</sub> <6%) was reported in 3,188 patients (78.1%). This proportion increased to 86.6% when patients with improved diabetes were included (defined as decreased use of diabetes medications and/or fasting glucose levels between 5.55–6.84 mmol/l).

Procedures that yielded the greatest weight loss resulted in the best diabetes resolution: biliopancreatic diversion/duodenal switch (95.1%), gastric bypass (80.3%), gastroplasty (79.7%), and gastric banding (56.7%); the

percent of excess weight loss associated with each of these procedures was 63.6%, 59.7%, 55.5% and 46.2%, respectively. In the studies in patients with T2DM, 82% had resolution of the clinical and laboratory manifestations of T2DM in the first 2 years after surgery, and 62% remained free of T2DM more than 2 years after surgery. Weight loss was also maintained for more than 2 years after surgery.

These data provide an impetus for randomized, controlled trials of metabolic or bariatric surgery versus standard medical care for the treatment of T2DM, the researchers conclude.

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**Original article** Buchwald, H. *et al.* Weight and type 2 diabetes after bariatric surgery: systematic review and meta-analysis. *Am. J. Med.* **122**, 248–256 e5 (2009).