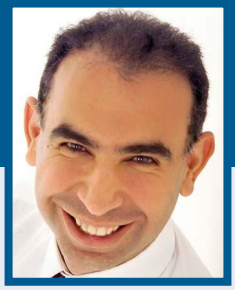
Obesity



Tailoring weight management interventions in type 2 diabetes

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A challenge in conducting randomised clinical trials involving bariatric surgery is whether trial participants are prepared to be randomised into the intervention arms. Most patients have preconceived ideas regarding their preferred surgical intervention. This is further compounded by the preference and skills of the surgeon for a particular procedure.

The study by Ding et al, summarised alongside, was a feasibility study involving 40 individuals aiming to examine whether it would be possible to conduct a larger trial comparing bariatric surgery with medical management. This is an increasingly important question given the improvements in diabetes medications, with many having a weight loss or weight neutral profile, and the fact that diabetes is very sensitive to moderate weight loss. The study randomised participants to laparoscopic gastric band surgery or medical management and complemented a previous study where participants were randomised to Roux-en-Y gastric bypass or medical intervention (Halperin et al, 2014). In both studies, the feasibility of conducting such randomised trials was demonstrated. The medical arm of the intervention included an intensive medical and lifestyle approach including medication change and adjustments, dietary change and calorie restriction, individualised physical activity, cognitive behaviour support and group education sessions (Hamdy and Carver, 2008). The effectiveness of this approach has been demonstrated in the Look AHEAD (Action for Health in Diabetes) study and other studies (Look AHEAD Research Group, 2013; Wing et al, 2013), as well as also within the UK NHS setting (Brown et al, 2015), albeit in with a less-intensive approach.

In the study by Ding et al, from the point of view of HbA_{1c}, the medical intervention was just as effective as bariatric surgery. Over the 1-year study, both groups experienced an HbA_{1c} reduction of about 10.929 mmol/mol (1%), which has been shown to be associated with a significant reduction in diabetes complications by the United Kingdom Prospective Diabetes Study (Taheri et al, 2015). The number of diabetes medications prescribed was lower at 1 year in the gastric band group, which is important given that 72% of this group were on insulin at baseline compared to 18% in the medical management group. Weight loss was greater in the gastric band group by about 5 kg. Furthermore, LDL-cholesterol was lower in the gastric band group. The study was a small feasibility study and firm conclusions cannot be made. Furthermore, the weight loss observed with the gastric band was much lower than other studies (e.g. Ponce et al, 2014). The authors stated that they did not have the funding to proceed to a larger study. In their trial comparing medical management with the gastric bypass, the investigators found the bypass to be superior for both glycaemia and weight loss with significantly lower number of diabetes medications at 1 year.

A key message of these studies is that intensive medical management can have significant beneficial effects for glycaemic control. Furthermore, weight loss is a major driver of glycaemic improvement (Leong and Taheri, 2012; Steven et al, 2015). Finally, we should not be dogmatic about any treatment for obesity complicated by diabetes and should tailor the intervention to the individual patient. ■

Brown A et al (2015) *BMJ Open* **5**: e007217
Halperin F et al (2014) *JAMA Surg* **149**: 716–26
Hamdy O, Carver C (2008) *Diab Rep* **8**: 413–20
Leong WB, Taheri S (2012) J R Coll **42**: 194–8
Look AHEAD Research Group (2013) *N Engl J Med* **369**: 145–54
Ponce J et al (2014) *Curr Med Res Opin* **30**: 841–48
Steven S et al (2015) *Diabet Med* **32**: 47–53
Taheri S et al (2015) Chapter 14:Drug Design and Therapeutic Development for Diabetes Mellitus. In: Peplow P, Adams J, Young T (eds). *Cardiovascular and Metabolic Disease : Scientific Discoveries and New Therapies*. Royal Society of Chemistry, Cambridge: 297–336
Wing RR et al (2013) *N Engl J Med* **369**: 2358–9

J Clin Endocrinol Metab

One year on: Gastric band versus intensive management

Readability	✓✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓✓

1 The aim of the study was to compare the effectiveness of laparoscopic adjustable gastric band (LAGB) to an intensive medical and weight management (IMWM) programme, which lasted for 1 year, for people with T2D.

2 Forty-five people were randomised to receive either an LAGB or IMWM and they were observed for 12 months. The participants were adults with a BMI between 30 and 45 kg/m^2 and had had T2D for a mean of 9±5 years.

3 The primary endpoint was the proportion of participants who, at 12 months, had an HbA_{1c} <48 mmol/mol (6.5%) and fasting glucose <7.0 mmol/L. They could be on or off medication.

4 After randomisation, five people decided not to undergo the procedure (four withdrew consent and one was no longer eligible).

5 At 12 months, 33% of the LAGB group and 23% of the IMWM group achieved the primary endpoint (P=0.457 for the difference).

6 Reductions in HbA_{1c} and weight at 3 months were also similar between the two treatment groups, although weight loss was significantly greater in the LAGB group at 12 months. Other health parameters were also similar, but systolic blood pressure was more greatly reduced after IMWM than LAGB.

7 The authors concluded that both LAGB and the IMWM programme had similar 1-year benefits.

Ding SA, Simonson DC, Wewalka M et al (2015) Adjustable gastric band surgery or medical management in patients with type 2 diabetes: a randomized clinical trial. *J Clin Endocrinol Metab* **100**: 2546–56

Obes Surg

Tools to predict diabetes remission after gastric bypass

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓✓

1 Statistical models can be used to predict diabetes remission after bypass surgery among people with T2D; however, their effectiveness and relevance in primary care is not known.

2 Using a cohort of 84 French people with T2D who had received Roux-en-Y gastric bypass surgery, 6 methods from the literature and 4 other models using pre-operative parameters were tested for accuracy in predicting diabetes remission. Remission 1 year after surgery was defined using association criteria.

3 The methods from the literature were simple logistic and J48 decision tree models, logistic regression models (n=2) and scoring systems (n=2). The authors also applied logistic regression, decision trees, lasso regression and elastic nets of the data themselves.

4 In the cohort, 60% of individuals had diabetes remission. However, the models from the literature had high error rates. Simple scoring systems, such as DiaRem, were more accurate (error rate 15.9%).

5 The discrepancies and high error rates could be linked to the differences in defining diabetes remission.

6 DiaRem was devised by Christopher D Still in 2014. The information required to calculate the DiaRem score is easily attainable so is a good choice to use in primary care.

7 From their analyses, the authors additionally recommended that a DiaRem score threshold of ≤6 would be likely to signify remission of T2D.

Cotillard A, Poitou C, Duchâteau-Nguyen G et al (2015) Type 2 diabetes remission after gastric bypass: what is the best prediction tool for clinicians? *Obes Surg* **25**: 1128–32

Diabetologia

Body changes after GD influence T2D incidence

Readability	✓✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓✓

1 The authors aimed to examine the effect of adiposity and weight changes after pregnancy in women who have experienced gestational diabetes (GD) to measure the influence of these parameters on the long-term risk of developing T2D.

2 The American study cohort included 1695 women who had incident GD over a 10-year period and who were followed for 7 more years. Over the total 18 years of follow-up, there were 259 incident cases of T2D.

3 After analysis, the adjusted hazard ratios (HR) of T2D associated with each 1 kg/m^2 increase in BMI were 1.16 (95% confidence interval [CI], 1.12–1.19) for baseline BMI (when GD was first reported) and 1.16 (95% CI, 1.13–1.20) for most recent BMI.

4 In regards to weight, each 5 kg increase in weight gain after GD was associated with a 27% higher risk of T2D.

5 Women who had a baseline BMI ≥30 kg/m^2 and gained ≥5 kg after GD had the highest risk of developing T2D (HR, 43.19; 95% CI, 13.60–137.11) compared to women who had a baseline BMI <25 kg/m^2 and gained <5 kg after GD.

Bao W, Yeung E, Tobias DK et al (2015) Long-term risk of type 2 diabetes mellitus in relation to BMI and weight change among women with a history of gestational diabetes mellitus: a prospective cohort study. *Diabetologia* **58**: 1212–9

Diabetes Care

Effect of lowering BMI cut points

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓✓

1 By estimating the prevalence of pre-diabetes and diabetes using a lower diabetes screening BMI cut-off for Asians (23 kg/m^2) as recommended in the revised American Diabetes Association standards, the authors aimed to identify what the impact on sensitivity and specificity would be.

2 A cross-sectional analysis of non-Hispanic Asians aged ≥45 years from the National Health and Nutritional Examination Survey was conducted. In total, 341 people were eligible.

3 Lowering the screening BMI to 23 kg/m^2 increased the sensitivity of screening for prediabetes and diabetes from 50.2 to 74.1% but decreased the specificity by half (both P<0.0001).

Hsia DS, Larrivee S, Cefalu WT et al (2015) Impact of lowering BMI cut points as recommended in the revised American Diabetes Association's *Standards of Medical Care in Diabetes-2015* on Diabetes Screening in Asian Americans. *Diabetes Care* **38**: 2166–8

Obes Surg

Effect of cardiac health after sleeve gastrectomy

Readability	✓✓✓
Applicability to practice	✓✓
WOW! Factor	✓✓

1 The authors sought to examine the impact of weight loss with sleeve gastrectomy on diabetic cardiomyopathy.

2 Eight people underwent cardiology tests using echocardiography before and 9 months after surgery.

3 After surgery, there were statistically significant reductions in weight loss, BMI and HbA_{1c}.

4 There was a significant improvement in left ventricular (LV) systolic function assessed by global longitudinal strain from –13.2±3.7 to –19.7±2.2% and LV ejection fraction (P<0.001 for both).

5 Sleeve gastrectomy improves cardiac function, as well as encouraging weight loss and improvements in HbA_{1c}.

Leung M, Xie M, Durmush E et al (2015) Weight loss with sleeve gastrectomy in obese type 2 diabetes mellitus: impact on cardiac function. *Obes Surg* 20 Jun [Epub ahead of print]

"The authors concluded that both laproscopic gastric band and an intensive medical and weight management programme had similar 1-year benefits."