

Obesity

How does gastric bypass surgery cure type 2 diabetes?



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It is well known that type 2 diabetes in people who are severely overweight is often cured by bariatric surgery (surgery to induce weight loss). Given the high prevalence of obesity among people with diabetes there is increasing interest in this treatment strategy, although controlled

trials are still needed. The various operations available appear to differ in their ability to cure diabetes, and the reasons for this have been subject to much speculation.

Cummings and colleagues have reviewed this interesting subject. The two most commonly performed procedures are laparoscopic gastric banding and gastric bypass. While both procedures restrict food

intake, the gastric bypass bypasses the duodenum, resulting in somewhat greater weight loss and perhaps greater chances of diabetes resolution. There is increasing evidence that gastric bypass (and other procedures, such as biliopancreatic diversion, that bypass the proximal small bowel) bring about major changes in the secretion of gut hormones, including reductions in the appetite-stimulating hormone ghrelin, and increases in glucagon-like peptide-1 which stimulates pancreatic insulin secretion. These effects may contribute to the superior effects of gastric bypass on weight loss and diabetes resolution.

The identification of the hormonal mechanisms that promote diabetes resolution is a fascinating and important area of research in the quest to identify the most effective operations to cure type 2 diabetes.

JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM



Mechanisms behind weight loss after gastric bypass

Readability	✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓✓✓

1 Bariatric surgery is currently the most effective method of achieving major long-term weight loss, at best reducing body weight by 35–40% for at least 15 years.

2 The risks of obesity surgery are usually outweighed by the risks of morbid obesity.

3 Roux-en-Y gastric bypass (RYGB) seems to offer the best balance of effectiveness vs risk and is most widely used surgery for morbidly obese people in the USA.

4 The authors examine the hypothesised and known mechanisms that mediate the effects of RYGB and highlight areas of future research.

5 The mechanisms mediating weight loss and improved glucose tolerance after RYGB could include gastric restriction leading to early satiety, small meals and negative conditioning, and bypassing the foregut.

6 A third mechanism could involve expedited delivery of nutrients to the hindgut, enhancing the ileal brake and stimulating the release of glucose-dependent insulinotropic peptide (GIP) and peptide YY₃₋₃₆ (PYY) which may decrease food intake and increase glucose tolerance.

7 Many gut hormones have yet to be examined in this context, so this is an area with a great deal of opportunity for research.

8 The NIH (US National Institutes of Health) has sponsored a programme to answer some of these questions over the next five years.

Cummings DE, Overduin J, Foster-Schubert KE (2004) Gastric bypass for obesity: mechanisms of weight loss and diabetes resolution. *The Journal of Clinical Endocrinology & Metabolism* **89**: 2608–15

JOURNAL OF HUMAN NUTRITION AND DIETETICS



Obesity is under-recognised in primary care

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 Strategies to manage obese people as part of coronary heart disease and diabetes National Service Frameworks are expected to be developed by primary care, but little is known about current management practices for obesity in this setting.

2 The objective of this study was to examine approaches to obesity management in UK primary care and to identify gaps in current care.

3 Structured interviews were conducted with 141 GPs and 66 practice nurses (PN) from 40 primary care practices, so as to examine clinician self-reported approaches to obesity management.

4 Medical records were reviewed for 100 obese people per practice to review rates of diet counselling, obesity or dietetic centre referrals, as well as use of anti-obesity medication.

5 Of the GPs, 83% reported that they would raise weight as an issue with obese patients; 97% of PNs said the same.

6 Only 15% of GPs reported spending up to 10 minutes in a consultation discussing weight-related issues, compared with 76% of PNs.

7 Over 18 months, practice-based diet counselling (20%), obesity (1%) and dietetic centre (4%) referrals and any anti-obesity medication (2%) were recorded.

8 BMI was recorded for 64.2% of patients; prevalence of obesity was less than expected.

9 Obesity is under-recognised in primary care and weight management seems to be based on a brief intervention, mainly by PNs.

The Counterweight Project Team (2004) Current approaches to obesity management in UK primary care: the counterweight programme. *Journal of Human Nutrition and Dietetics* **17**: 183–90

THE JOURNAL OF ENDOCRINOLOGY & METABOLISM



Epidemic may be due to obesity predisposition

Readability	✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓✓

- This article discusses possible physiological systems behind the regulation of body weight – they are designed to maintain a stable body weight despite variations in daily energy intake and expenditure.
- The researchers suggest that the physiological systems may act to protect us from starvation.
- Other research suggests that the body has a more robust physiological response to weight loss than weight gain, so we are predisposed to obesity.
- Understanding of body weight and appetite may provide treatments which could control the obesity epidemic.

Wynne K, Stanley S, Bloom S (2004) The gut and regulation of body weight. *The Journal of Endocrinology & Metabolism* **89**: 2576–82

AMERICAN JOURNAL OF CLINICAL NUTRITION



Statement on use of lifestyle modification

Readability	✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓

- The American Diabetes Association, the North American Association for the Study of Obesity and the American Society for Clinical Nutrition issued a statement on using lifestyle modification in the prevention and management of type 2 diabetes.
- Lifestyle modification is the principal therapy for overweight and obese people with type 2 diabetes.
- Moderate weight loss and increased activity can improve insulin sensitivity and glycaemic control in people with type 2 diabetes, and can prevent development of type 2 diabetes in high-risk people.

Klein S, Sheard NF, Pi-Sunyer X et al (2004) Weight management through lifestyle modification for the prevention and management of type 2 diabetes: rationale and strategies. A statement of the American Diabetes Association, the North American Association for the Study of Obesity, and the American Society for Clinical Nutrition. *American Journal of Clinical Nutrition* **80**: 257–63

INTERNATIONAL JOURNAL OF OBESITY



Child obesity is related to abnormal arterial function

Readability	✓✓✓
Applicability to practice	✓
WOW! factor	✓✓✓✓

- This case-control comparison aimed to study arterial endothelial function and carotid intima-media thickness (IMT) – both early markers of atherosclerosis – in overweight children compared to normal-weight children.
- Participants comprised a total of 36 asymptomatic overweight children aged 9–12 years and 36 age- and gender-matched non-obese healthy children.
- Key parameters were BMI, carotid artery IMT and arterial endothelial function; secondary parameters were waist-hip ratio (WHR), body fat content, blood pressure, blood lipids, insulin and glucose.

Body fat, WHR, BMI, fasting blood insulin and triglyceride levels were higher in obese children, but the two groups were well matched for blood pressure levels, glucose and cholesterol levels.

- Being overweight was associated with impaired arterial endothelial function and increased carotid IMT.
- On multivariate analysis the degree of endothelial dysfunction correlated with BMI.
- Even if obesity is only mild-to-moderate, it is independently associated with abnormal arterial structure and function in otherwise healthy children.

Woo KS, Chook P, Yu C (2004) Overweight in children is associated with arterial endothelial dysfunction and intima-media thickening. *International Journal of Obesity* **28**: 852–57

‘Moderate weight loss and increased activity can improve insulin sensitivity and glycaemic control in people with type 2 diabetes.’

JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM



Spirolactone: fewer adverse events than metformin

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

- This study compared the efficacy of spironolactone with metformin in 82 adolescent and young women with polycystic ovary syndrome (PCOS) on BMI, waist-hip ratio, BP, hirsutism, menstrual cycles, hormone levels, insulin sensitivity and glycaemia at baseline and at month three and six of treatment.
- A total of 69 women completed the follow-up – mean age was 22.6 years and mean BMI 26.8 kg/m².

- The number of menstrual cycles in the spironolactone and metformin groups increased from 6.6 ± 2.1 and 5.7 ± 2.3 at baseline to 9.0 ± 1.9 and 7.4 ± 2.6 at the third month and to 10.2 ± 1.9 and 9.1 ± 2.0 per year at the sixth month, respectively.
- Hirsutism scores decreased in both groups, but more so in the spironolactone group, and both groups showed improvement in glucose tolerance and insulin sensitivity (but the effect of metformin was significant in the latter).
- Spirolactone and metformin are both effective, but spironolactone seems better in the treatment of hirsutism, frequency of menstrual cycles and hormone derangements, and is associated with fewer adverse events.

Ashraf Ganie M, Khurana ML, Eunice M et al (2004) Comparison of efficacy of spironolactone with metformin in the management of polycystic ovary syndrome: an open-labeled study. *The Journal of Clinical Endocrinology & Metabolism* **89**: 2756–62

‘Even if obesity is only mild-to-moderate, it is independently associated with abnormal arterial structure and function in otherwise healthy children.’