

# Metabolic surgery as a treatment for type 2 diabetes

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Type 2 diabetes is a progressive disease. Good blood glucose control is essential to prevent the long term complications of diabetes. 80-90% of Type 2 diabetes patients are overweight or obese (BMI>25). Insulin resistance increases with

BMI and many patients struggle to achieve weight loss and optimal glycaemic control.

Metabolic surgery is a more effective treatment for diabetes for certain overweight subjects with Type 2 diabetes than medical therapy.

In Fife a pilot was initiated to investigate the weight loss and change in glycaemic control for a group of patients attending secondary care Diabetes Centre. Inclusion criteria were BMI>35 and referral for surgical treatment of their diabetes by a Consultant Endocrinologist.

## PRE SURGERY

**124.49kg**  
Average weight

**46.01kg/m<sup>2</sup>**  
Average BMI

**134.81** Average units of insulin/day  
**79.19 mmol/mol (9.4%)** Average HbA1c

The average age was 50.4 years. During the pre surgery process patients had to demonstrate 5% weight loss. Compulsory attendance at 6 group psychology sessions was required.

Dietetic intervention was delivered pre, peri and post operatively. A very low carbohydrate diet was implemented pre operatively to prepare for surgery. Further diet plans were implemented post operatively.

BMI, HbA1c, and % excess body weight loss were noted at baseline, pre-operative and post operative at 6 weeks, 3 months, 6 months, 9 months and 1 year. Change in diabetes medication was noted at referral, and 1 year post surgery.

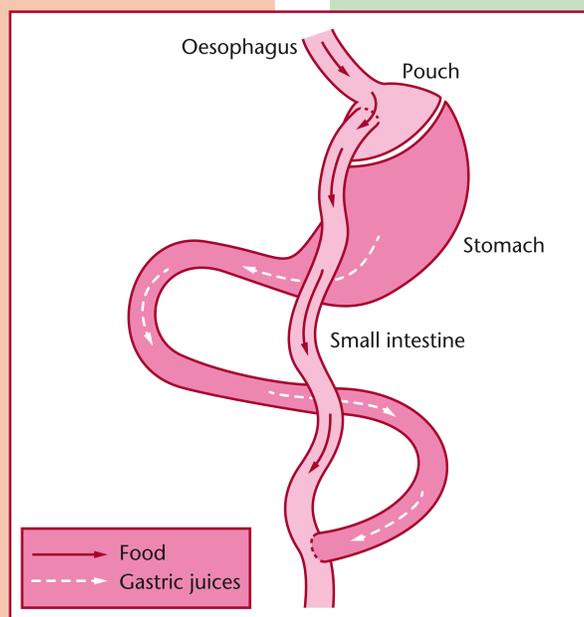
**2** patients completed the process but required further psychology so did not proceed to surgery

**6** patients dropped out of psychology sessions

**19** offered surgery

**3** declined

16 patients proceeded to surgery with 15 having roux-en-y gastric bypass, and 1 having vertical sleeve gastrectomy. All operations completed in 1 year May 2011 to May 2012.



## POST SURGERY

**85.2kg**

Average % excess body weight loss 69.44%

**31.45kg/m<sup>2</sup>**

Average BMI (down 31.4%)

**7.5** Average units of insulin/day

**52.56 mmol/mol (6.9%)** Average HbA1c (down 33.6%)

Diabetes medication was significantly reduced. Most patients were recommenced on metformin for cardiovascular protection.

At referral, 13 patients were on insulin, 11 patients were on GLP-1 analogues, 14 patients were on metformin, 1 patient was on pioglitazone and 1 patient was on gliclazide.

By 1 year 1 patient had commenced gliclazide, 1 had commenced saxagliptin and 2 recommenced insulin.

This represented an estimated annual cost saving of £26,611 for these drugs.

Daily insulin dose decreased significantly by 94.4% from an average of 134.81 units pre surgery to 7.5 units post-surgery at 12 month follow up.

### Conclusion:

Gastric surgery is an effective treatment for type 2 diabetes in the obese patient. How well participants engage in the pre surgery process is a predictor of more positive outcomes. These cases achieved the predicted weight loss of 67.8% for roux-en-y gastric bypass and 54% for vertical sleeve gastrectomy procedure, demonstrated by the National Surgery Registry Report 2010.

### PROS

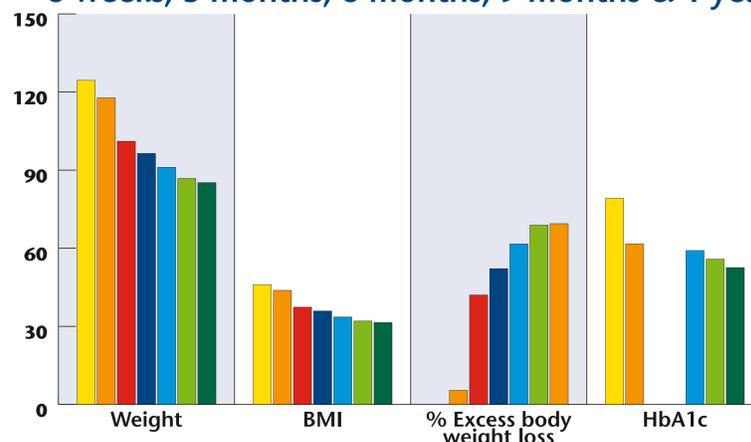
"A new life is hard to describe. Not having to plan when & where you will be during the day to inject insulin. Buy clothes off the peg. Know you can do things you did 20 years ago again. Regain your self confidence. But most of all know you have a far better chance of living a lot longer."

"Not having to rely on insulin every day. Big positive is feeling great about myself and finally enjoying life. I wish I felt like this years ago so big thanks for helping me get a life."

"Being able to live a normal life like other people. Able to wash myself without any help from others. Gaining self esteem about myself again. Fastening the ordinary seat belt on a plane. Having energy to spend time with my children /grandchildren. Feel good or better about my appearance. Feeling like I can actually join the Human Race as an ordinary person."

"Happy outlook. Feeling younger inside and out. Off all BP medication. Fitter. Going to be a granny now feel able to cope (stamina). Able to shop in normal stores. Walking a lot more. More confident in going into strange places/work situations. Restaurants order what I want without feeling everyone watching me. Wearing matching underwear. A new person (happier)."

### Outcomes measure at baseline, pre operative, 6 weeks, 3 months, 6 months, 9 months & 1 year



### CONS

"Only bad point is other people thinking I need to eat more. Pain in stomach but I am glad it is there as it reminds me how lucky I was to have this chance for a better life."

"Having to explain to waiters why my plate is still quite full when I am done. Pains in abdomen, problems with constipation."

"Dumping after something sweet. Not being able to eat certain things that managed before surgery. Not being able to eat and drink at the same time."

"You tend not to tell most people as you feel they would judge you in taking the easy option for weight loss which as we all know easy it is not."



### Acknowledgements

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