

Impact of laparoscopic gastric bypass and sleeve gastrectomy on anti-hyperglycaemic medication use in pre-existing type 2 diabetes mellitus

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Introduction

Bariatric surgery in obese patients with type 2 diabetes mellitus (T2DM) can achieve marked weight loss and improvement of their glycaemic control.

Laparoscopic Roux-en Y gastric bypass (GB) and sleeve gastrectomy (SG) are the most promising procedures. The Roux-en Y procedure involves creation of a small stomach pouch to restrict food intake. A segment of the jejunum is attached to the pouch, thereby bypassing the stomach and the duodenum. The sleeve gastrectomy involves removing 2/3 of the lateral aspect of the stomach.

This is one of the first studies in an Irish cohort to determine the effect of bariatric surgery on glycaemic control and medication use on a cohort of individuals with pre-existing type 2 diabetes.

METHODS

Retrospective case note analysis was performed on all surgeries performed by a single surgeon on obese individuals with pre-existing T2DM between 2008 and 2013.

Clinical and biochemical parameters of individuals with type 2 diabetes who underwent GB and SG were identified from the computerised bariatric surgery database. Missing data was collected by contacting general practitioners and patients.

Pre- and post-operative data demonstrating the presence or absence of diabetes, diabetes treatment and degree of control as defined by glycosylated haemoglobin (HbA1c) were obtained.

Statistical analysis was performed using SPSS ver20.

Table 1: Effect of bariatric surgery on medications, HbA1c and BMI.

	Pre-operatively	Post-operatively	P value
Oral hypoglycaemic agents*	50 (67.6%)	6(9.5%)	<0.001
Insulin*	10 (13.5%)	3(4.1%)	0.004
HbA1c** (mmol/mol)	62.9 ± 18.2	45.3 ± 11.7	0.008
BMI (kg/m ²)	47.2 ± 5.8	34 ± 5.4	<0.001

RESULTS

Between 2008 and 2013, 264(176 GB and 88 SG) patients underwent surgery, of whom 74(28%) of had pre-existing diabetes. Forty six (62%) were female with median age 51(33-75) yrs. Median duration of diabetes was 36(1-240) months.

BMI fell from 48.6 ± 7.0 kg/m² (n=74) to 34.0 ± 5.4 kg/m² (n=45) at 12 months, p<0.001

Treatment was by diet alone in 14 patients pre-operatively.

Of the 62 patients on oral medications pre-operatively, 38 had all medications discontinued post-operatively at a median follow up of 24 months.

22 of 31 patients on a single agents pre-op and 11 of 21 on two or more oral agents were off all treatment post-operatively.

Of the 10 on insulin pre-operatively, 4 were on dietary control alone.

The mean number of hypoglycaemic agents required post-operatively fell from 1.5 to 0.3 (p< 0.001).

Fifty two patients had pre and post HbA1c values. Mean HbA1c fell from 62.9 ± 18.2 to 45.3 ± 11.7 , p<0.008.

Median (range) time of HbA1c measurement was 15(3-49)months .

CONCLUSIONS

Significant glycaemic improvement with less medications required was observed in the majority of patients, highlighting the potential role of bariatric surgery in this increasingly common subset of patients with type 2 diabetes.

