Metabolic effects of bariatric surgery in residents of the UAE with type I diabetes

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Background

The use of metabolic surgery for the treatment of type 2 diabetes is well documented.

There are no prospective trials of the use of metabolic surgery in patients with type I diabetes, although small case series in other populations have been published. Obesity is increasingly common in people with type I diabetes.

Aims

To examine effects of metabolic surgery on weight, glycaemic control, lipid profile and insulin dose in residents of the UAE with type I diabetes mellitus.

Methods

Subjects (n=11)

- Individuals with type I diabetes
- Underwent bariatric surgery between January 2013 and February 2017

Retrospective review of insulin dose, anthropometry and metabolic parameters

- This was done both before and following metabolic surgery.
- ICLDC does not refer patients with type I diabetes for metabolic surgery as part of standard clinical practise and consequently these were patient self-referrals.

Statistical Analysis

Median values for each parameter before and following procedures were compared using the matched-pairs Wilcoxon signed rank test.

Discussion

In this patient cohort, the use of metabolic surgery in type I diabetes was associated with significant and beneficial changes in weight, total daily insulin requirement and LDL cholesterol, although there were no significant changes in HbA1c, HDL or triglycerides. This finding is in line with other recently reported patient cohorts.

Results

Metabolic surgery procedure reported

- Two individuals were treated with Roux-en-Y procedure
- Five underwent sleeve gastrectomy
- Four individuals did not report the nature of the procedure performed

Anthropometric measures pre- and post- metabolic surgery;

- Median BMI: 33.0 (27.9-34.0) kg/m² while median BMI following surgery was 28.5 (25.3-31.4) kg/m².
- Median change in weight: 18.5 (17.2-26.4) kg, equivalent to a reduction of 18.5 percent. This difference was significant (p<0.01).
- Median LDL: reduction from 2.67 (2.46-2.80) to 2.29 (2.07-2.52) mmol/L. This reduction was significant (p<0.05).
- Neither HDL (1.41 (1.13-1.51) mmol/L cf. 1.36 (1.21-1.40) mmol/L, p=0.49) nor triglycerides (0.71 (0.65-1.05) mmol/L cf. 1.07 (0.86-1.18) mmol/L, p=0.06) were significantly altered.

Insulin dose and glycemic control pre- and post-metabolic surgery;

- Trend (p=0.058) towards improvement in glycaemic control. Median HbA1c of 8.3 (7.7-9.0)% vs 7.7 (7.2-8.0)%.
- Total insulin dose was significantly reduced following surgery; 85 (60-116) to 50 (46-64) units (p <0.01).
- Median reduction in total daily insulin dose was 32%.

Figures: a) Absolute weight (kg) prior to and following metabolic surgery in each patient, b) percentage change in weight relative to weight at time of surgery prior to and following metabolic surgery, c) total daily insulin dose for each individual immediately prior to and following surgery.

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