Diabetes remission twelve years after laparoscopic adjustable gastric banding

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Background

In the clinical setting, more than half of all patients with Type 2 diabetes mellitus are obese. In this subcategory of patients, surgical options are increasingly being utilised to treat their myriad of metabolic comorbidities. Diabetes remission post-metabolic surgery stems from alterations in foregut hormonal mechanisms, as well as reduction in weight. Of the three most commonly performed metabolic surgical procedures (Roux-en-Y gastric bypass, sleeve gastrectomy and LAGB), the LAGB has the advantage of being the least invasive, reversible and has a low post-operative mortality rate. Although the rates of complications and re-operation in the long-term can be significant, LAGB remains as a therapeutic option for treatment of diabetes in obese patients, especially after careful patient evaluation.

Aim

The goals of this study were to determine baseline and post-LAGB characteristics associated with type 2 diabetes remission (cessation of hypoglycaemic medication and HbA1c of less than 6.5%) 12 years after receiving metabolic surgery.

Methods

An observational cohort of 113 diabetic participants (mean BMI, 42.9) who underwent LAGB between January 20th, 2003 and February 21st, 2005, at the Avenue Hospital (Melbourne, Australia) were contacted (in-person at outpatient clinic, by telephone or email) for evaluation. Of the 113 participants enrolled, 60 (53.1%) presented for review 12 years post-LAGB. Data collection was performed retrospectively to assess diabetes status at baseline and at 12 years. Fisher's exact test and unpaired t tests were used to analyse the data.

	Did not go into remission (n=52)	Standard Deviation	Diabetes remission (n=8)	Standard Deviation	p value
Baseline characteristics					
Female (%)	50.00%		50.00%		
Male (%)	50.00%		50.00%		
Mean age (years)	50.10	7.05	44.48	6.16	0.0375
Mean weight (kilograms)	121.33	25.16	125.80	31.16	0.5811
Mean Body Mass Index (kilograms/height ²)	42.24	7.65	43.44	10.04	0.6935
Diabetes duration (years)	5.32	5.87	1.36	2.16	0.0656
Current smoker (%)	13.46		0.00		0.5782
Ex-smoker (%)	42.31		37.50		1
Never smoked (%)	44.23		62.50		0.4543
Insulin use (%)	21.15		0.00		0.3301
Metformin use (%)	69.23		75.00		1
Sulphonylurea use (%)	40.38		25.00		0.6983
Mean fasting glucose (mmol/L)	9.56	3.19	7.19	2.43	0.0493
HbA1c (%)	8.27	1.35	6.98	1.68	0.0179

Results

The diabetes remission rate 12 years post-LAGB was 13.3% (n=8). The male to female ratio was 1:1. Significant baseline characteristics associated with type 2 diabetes remission was a younger age at time of LAGB insertion (p=0.0375), lower baseline fasting blood glucose (p=0.0493) and a lower baseline HbA1c (p=0.0179).

	Did not go into remission (n=52)	SD	Diabetes remission (n=8)	SD	p value
Outcomes					
Excess weight loss (%)	43.36	23.7	51.25	22.61	0.3830
Insulin cessation (%)	36.36				
Metformin cessation (%)	11.11				
Sulphonylurea cessation (%)	47.62				
Mean visits	49.02	29.4	68.50	30.35	0.0883
Re-operation rate (%)	46.15		75.00		0.2542

Excess weight loss (EWL) in the remission group was 51.25%, and 43.36% in the non-remission group. Within the non-remission group, four patients had insulin cessation, four patients had metformin cessation and ten patients had sulphonylurea cessation.

Conclusion

In younger obese diabetic patients with better glycaemic control at baseline, LAGB can be an effective tool for diabetes remission in the long-term. Revisional surgery and gastric reflux symptoms are common LAGB complications that should be discussed with candidate patients.

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Author Contributions

JMW conceived the study. PEO, PRB, WAB, and SS provided surgical care and, with JMW, CL and CC collated the data. JMW and CC analyzed the data. JMW drafted the manuscript and all authors reviewed and edited it. JMW is the guarantor of this work and, as such, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.