The Assessment of Obesity-related Metabolic Comorbidities (AOMC) Score Better Describes Gastric Bypass Effects on Diabetes than Routine Measures

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Introduction

Bariatric surgery is a widely accepted and underutilized treatment for obesity and has been shown to have sustained effects on comorbidities including type 2 diabetes (DM). However, severity stratification and longitudinal evaluation of DM response to gastric bypass surgery is not standardized. Because there is a wide variety of definitions for remission and response to diabetes used in the bariatric literature, we devised the AOMC scoring system to better describe diabetes severity.

Study Aim: Evaluate the **A**ssessment of **O**besity-related **M**etabolic **C**omorbidities (AOMC) system to stratify diabetes response to RYGB compared to diabetes definitions by medication use and HbA1c.

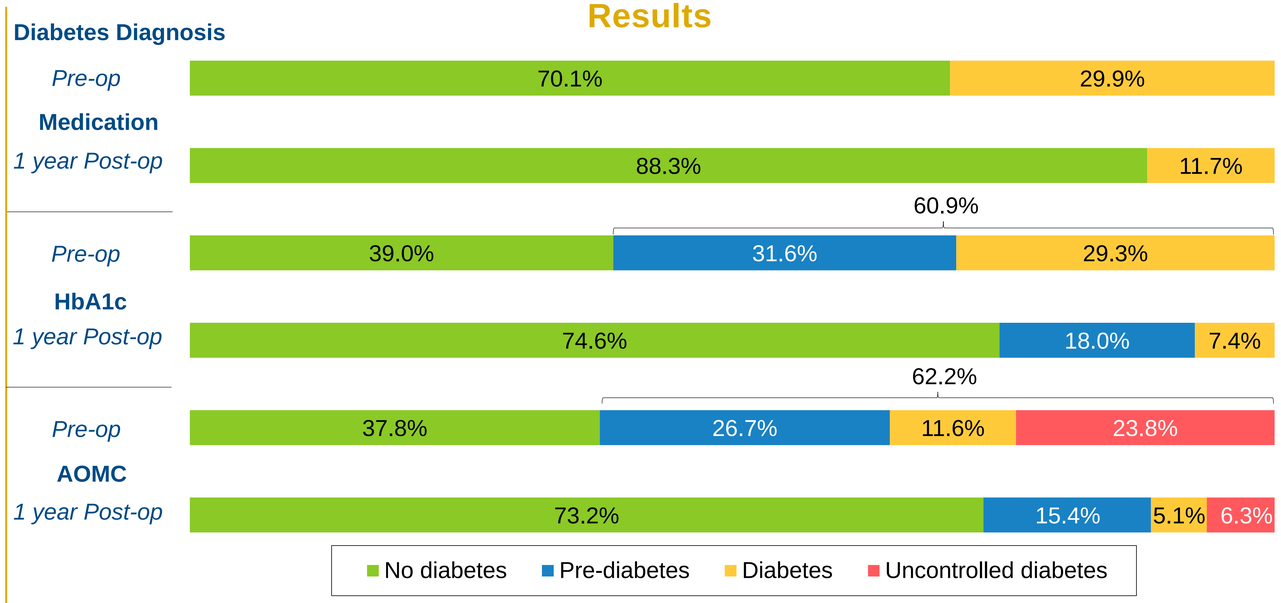
Design/Sample

We performed a retrospective review of 351 patients undergoing bypass surgery from 2012-2016 at UC Davis Medical Center. Age, sex, race/ethnicity, anthropometrics, labs, and medications were collected. AOMC Scores were calculated and compared preoperatively to 1-, 2-, and 5-years postoperatively. Diabetes responses by AOMC score were compared to diabetes definitions by medications and HbA1c.

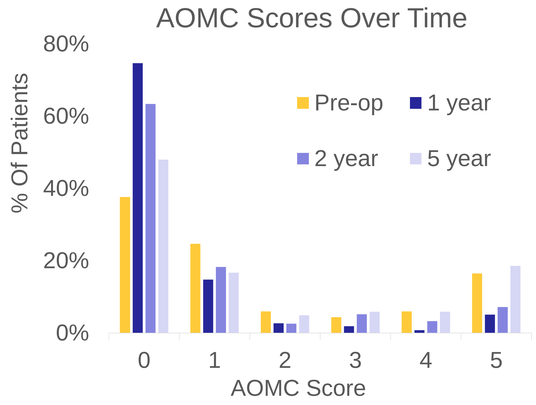
AOMC Scoring System

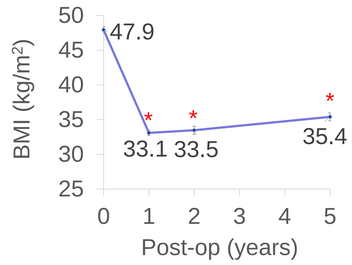
Score	Fasting Plasma Glucose (mg/dL)	HbA1c (%)	Medications	Objective Definition
0	< 100	< 5.7	No	No history of DM
1	100 – 125	5.7 – 6.4	No	Pre-DM or DM controlled by lifestyle changes
2	≥ 126	6.5 – 8.4	No	DM untreated
3	-	< 7.0	Single oral	DM controlled with medication
4	-	< 7.0	Multiple or insulin	DM controlled with more medications
5	-	≥ 7.0	Multiple or insulin	DM uncontrolled with medications
	-	≥ 8.5	No	Severe DM untreated

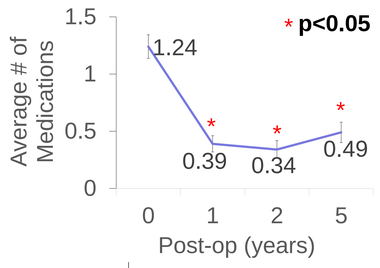
Results



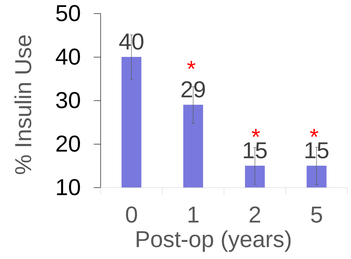
Characteristics	N = 351
Female	(268) 76.4%
Age (years)	45.8 ± 11.3

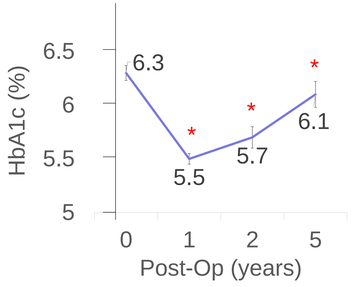






* p<0.05





Analysis

Postoperative changes were compared with a Friedmans two-way analysis of variance by ranks for ordinal variables and Wilcoxon signed rank test for continuous variables. Significance was noted with threshold of 0.05.

- Medication use alone grossly overestimates the number of patients without diabetes.
- AOMC uniquely identifies patients with controlled diabetes and uncontrolled diabetes.
- Postoperatively, there was a larger shift in AOMC scores toward 0, representing no diabetes.
- BMI significantly decreased at 1 year and weight loss was maintained at 5 years postoperatively.
- Average anti-diabetic medications decreased significantly following gastric bypass surgery.
- Percentage of patients on insulin significantly decreased after gastric bypass surgery.
- HbA1c significantly decreased from 6.3 to 5.5 at 1 year but did increase over time.

Conclusions

- AOMC scoring is a more sensitive measure to show the longitudinal effects of gastric bypass on diabetes
- AOMC scores can give guidance on better therapeutic management based on more specific disease severity
- AOMC scoring is adaptable for both surgeons and referring physicians

Limitations:

- Our study was limited by its retrospective nature
- The study was done at a single institution
- There was a lower 5-year follow up rate

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