

Glycemic response to GLP-1 receptor-agonist medications is associated with reduced hemoglobin A1c following bariatric surgery.

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INTRODUCTION

- GLP-1 receptor agonists (GLP-1-RAs) are an increasingly common therapy for type 2 diabetes mellitus (T2DM)
- Endogenous GLP-1 secretion is elevated following bariatric surgery procedures
- We investigated whether patients most responsive to GLP-1-RA therapy exhibited greater post-operative decrease in HbA1c level

METHODS

- 47 patients who had taken a GLP-1-RA prior to Roux-en-Y gastric bypass (N=38) or vertical sleeve gastrectomy (N=9) were retrospectively identified
- HbA1c level, weight, and medication use were collected by chart review
- GLP-1-RA response was defined as change in HbA1c level after 3-9 months of medication use
- The association between GLP-1-RA response and post-operative outcomes at 6mo, 1yr, and 2yrs was assessed by generalized linear mixed models adjusted for A1c at GLP-1-RA initiation, weight at surgery, surgery type, and timepoint

CONCLUSION

- Greater preoperative response to GLP-1-RAs was associated with lower postoperative HbA1c
- GLP-1-RAs may potentially serve as a predictive tool in targeting patients with T2DM for surgery
- Further well-controlled prospective studies confirming this relationship are needed

Table 1. Preoperative Characteristics

Female [N (%)]	34 (72.3%)
Age (Years, Mean ± SD)	
Age at GLP-1-RA Initiation	49.5 ± 9.4
Age at Surgery	53.5 ± 8.9
GLP-1 Medication Type [N (%)]	
Liraglutide	22 (46.8%)
Exenatide	19 (40.4%)
Dulaglutide	5 (10.6%)
Semaglutide	1 (2.1%)
HbA1c (% , Mean ± SD)	
Starting HbA1c	8.3 ± 1.4
Post-GLP-1-RA HbA1c	7.3 ± 1.2
Number of Diabetes Medications (Mean ± SD)	
Starting Medications	2.3 ± 1.0
Post-GLP-1-RA Medications	2.2 ± 0.9
BMI (kg/m^2, Mean ± SD)	
Starting BMI	44.5 ± 7.4
Post-GLP-1-RA BMI	42.1 ± 7.6
BMI at Surgery	41.8 ± 6.2
Insulin Use [N (%)]	
Starting Insulin Users	13 (27.7%)
Post-GLP-1-RA Insulin Users	19 (40.4%)

No significant differences by surgery type.

Table 2. Correlation between GLP-1 induced HbA1c reduction and post-operative outcomes

	N	HbA1c	
		r	p-value
6 Months	41	0.38	0.02
1 Year	31	0.35	0.06
2 Years	27	0.43	0.03
% Total Body Weight Loss			
6 Months	44	-0.05	0.75
1 Year	44	-0.1	0.52
2 Years	38	<0.01	0.98

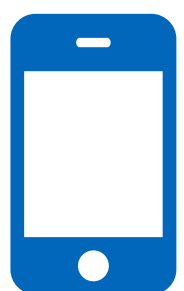
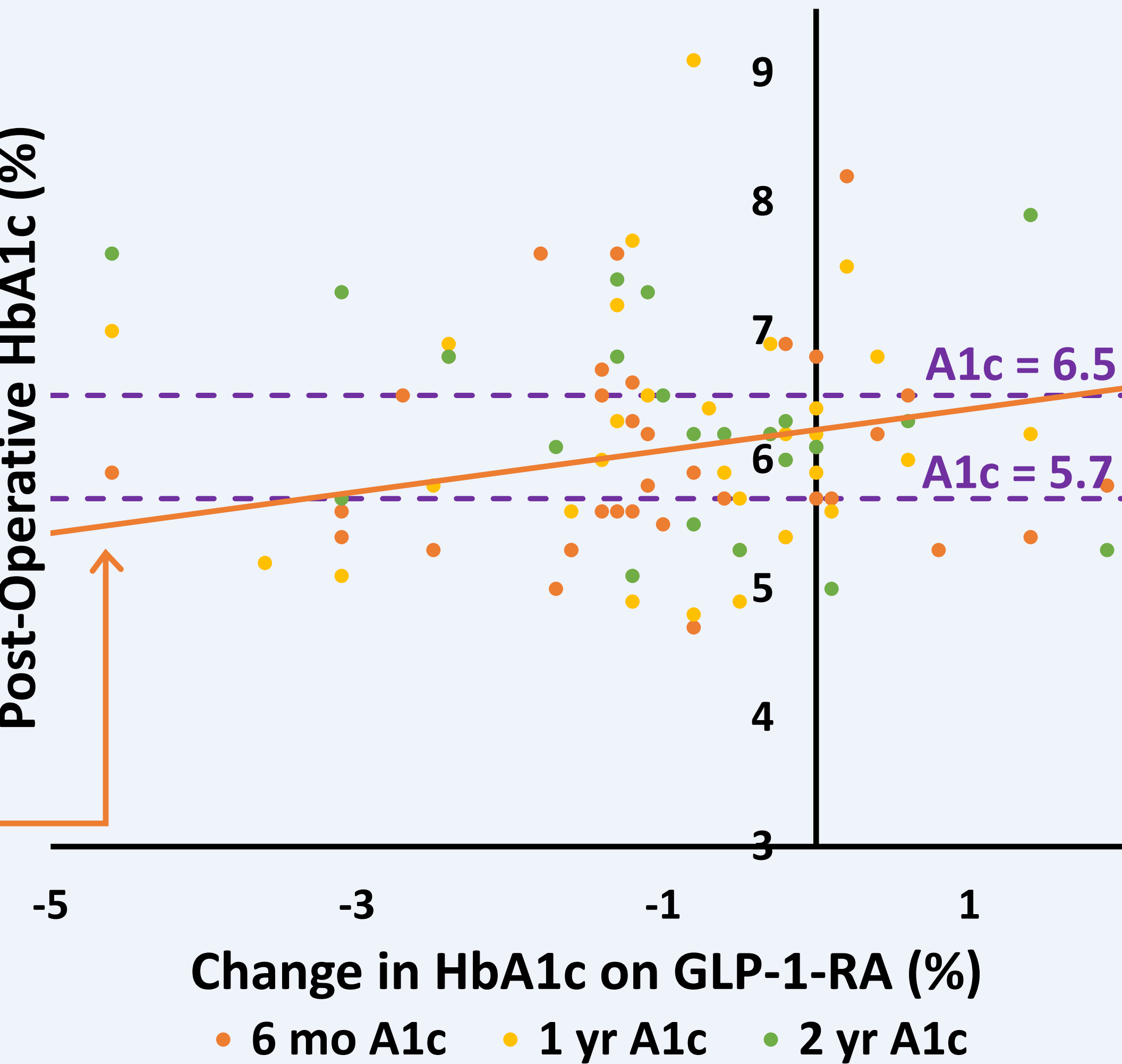
Adjusted for baseline HbA1c.

Table 3. Summary of Multivariable Analysis

Linear Regression	Change in HbA1c	
	Estimate ± SE	p-value
Postop HbA1c	0.28 ± 0.10	<0.01
% Total Body Weight Loss	-0.10 ± 1.30	0.92
Number of Medications	0.04 ± 0.07	0.59
Logistic Regression	OR (95% CI)	
	p-value	
HbA1c < 6.5	0.69 (0.41-1.16)	0.16
HbA1c < 5.7	0.50 (0.29-0.89)	0.02

Adjusted for baseline HbA1c, weight at surgery, surgery type, and timepoint.

Figure 1. Scatterplot of Raw Change in A1c on GLP-1-RA vs Post-Operative HbA1c



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