Use of Glucagon-Like-Peptide-1 (GLP1) Agonists for Augmented Weight Loss After Bariatric Surgery

Prathiba Vemulapalli MD, Samir Narula MD, Kristen Bridges MD, Jackson McKinney MS, Juan Martinez MS, Brian F Gilchrist MD
The Brooklyn Hospital Center, Brooklyn NY
Department of Surgery

Background

- Morbid Obesity, defined as a body mass index (BMI) greater than 40kg/m2, is a public health concern effectively treated by bariatric surgery.
- Glucagon like Peptide -1 (GLP1) agonists act by modulating appetite, satiety, and energy intake.
- GLP1 agonists have never been used in conjunction with initial bariatric procedures to augment weight loss.
- This study aims to investigate the difference in average total body weight loss and average excess body weight loss in morbidly obese patients who are minorities undergoing bariatric surgery (BS).

Methods

Table 1: Baseline Patient Demographics

Demographic (n)	Drug Group (16)	Control Group (16)
Age mean ± SD; years	43 ± 11	42 ± 14
Sex n (%)		
Female	12 (75%)	13 (81.25%)
Male	4 (25%)	3 (18.75%)
Ethnicity n (%)		
African American	13 (81.25%)	11 (68.75%)
Hispanic	2 (12.5%)	5 (31.25%)
Unknown	1 (6.25%)	0 (0%)
GLP1 Agonist used n (%)		
Semaglutide	10 (62.5%)	
0.25 mg/weekly injection	5 (31.25%)	
0.5 mg /weekly injection	1 (6.25%)	
1 mg/weekly injection	2 (12.5%)	
2 mg/weekly injection	1 (6.25%)	
5 mg/daily oral	1 (6.25%)	
Dulaglutide	6 (37.5%)	
0.75 mg q week injection	4 (25%)	
1.5 mg q week injection	2 (12.5%)	
Excess Body Weight at baseline mean ± SD (lbs)	130 ±46	133 ±33
Comorbidities n (%)		
Type 2 Diabetes not on Insulin	12 (75%)	12 (75%)
Type 2 Diabetes on Insulin	4 (25%)	4 (25%)
Hypertension	10 (62.5%)	9 (56.25%)
Dyslipidemia	6 (37.5%)	5 (31.25%)
Procedure Performed n (%)		
Sleeve Gastrectomy	16 (100%)	16 (100%)

- Our retrospective cohort study compared the change in weight (kg), change in BMI over a longitudinal 365-day period in patients after BS. The relevant time points that weights were captured are 1, 3, 6 and 12 months after BS.
- All patients underwent surgery while one group was given a GLP1 agonist after surgery for the first 365 days. The other group had surgery alone, without drug. All participants in the study had T2DM and underwent a sleeve gastrectomy.
- Patients designated in the drug arm were continued on their GLP1 agonist either dulaglutide or semaglutide after surgery. Patients in the control group had surgery but they were not placed on GLP1 agonists.
- The weight loss of sixteen patients in the treatment group were compared to sixteen patients in the control arm at 1, 3, 6, and 12 months after BS.

Results

- There was no statistical difference between the groups' baseline body weights (289.2 lbs. vs 295 lbs., p=0.351) or BMIs (46.3 vs 44.9, p=0.388).
- All patients had Type 2 DM
- After the one-year study period, patients in the drug group had achieved statistically significantly lower mean BMIs than in the control group (33 vs 36.1, p= <0.001) and greater total body weight loss (26.7 ±8.4% vs 22.2 ±5.4%, p<0.001).
- Subgroup analysis showed weight loss to be most augmented in patients on GLP-1 under the age of 45 (p<0.001).
- There were no glycemic or diabetes-related complications observed during the study period.

Figure 1: Box Plot Showing Change in BMI over study period

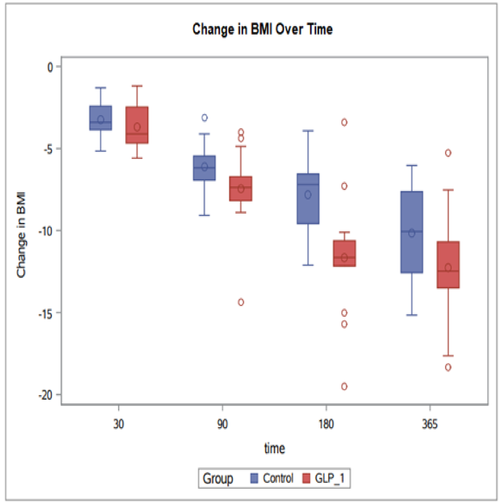


Table 2: Change In Body Weight and BMI Over Study Period

	Drug Group (mean ± SD)	Control Group (mean ± SD)	p-value (p<0.05)
Body Weight in lbs. (mean ± SD)			
Baseline	295.3 ± 49.6	289.2 ± 37.8	<0.001
At 1 month	263.7 ± 46.4	268.2 ± 37.1	<0.001
At 3 months	240.7 ± 52.4	249.1 ± 35.9	<0.001
At 6 months	218.2 ± 47.9	237 ± 34.3	<0.001
At 12 months	217.8 ± 41.4	224.9 ± 32.6	<0.001
Body mass index (kg/m²)			
Baseline	44.9 ± 7.1	46.3 ± 6	<0.001
At 1 month	41 ± 7	43± 5.6	<0.001
At 3 months	36.8 ± 7.5	40 ± 5.5	<0.001
At 6 months	33.5 ± 7.9	38.1 ± 6	<0.001
At 12 months	33 ± 6.9	36.1 ± 5.3	<0.001

Figure 2: Graphical representation of percent TBWL over study period

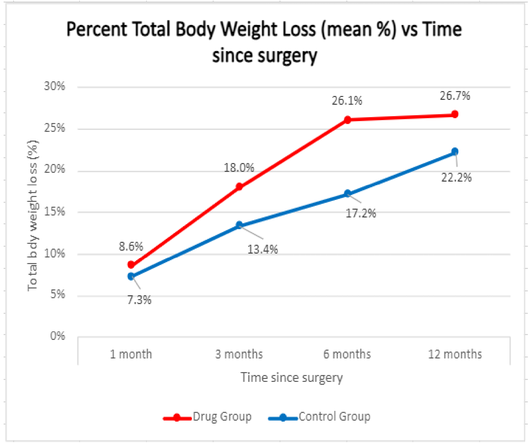


Table 3: Average Total Body Weight Loss Between Groups

Percent Total Body Weight Loss (Mean % ± SD) vs Time Since Surgery				
Time	**1 month**	**3 months**	**6 months**	**12 months**
Drug Group	8.6% ± 2.6	18% ± 5.7	26.1% ± 9.6	26.7% ±8.4
Control Group	7.3% ± 2.9	13.4% ± 3	17.2% ± 5.1	22.2% ± 5.4
p-value (p <0.05)	<0.001	<0.001	<0.001	<0.001

Conclusions

- We found that obese diabetic adults undergoing BS with concomitant administration of a GLP1 agonist lost more weight at each time point analyzed: one month, three months, six months, and twelve months.
- The data collected from these two groups of bariatric patients show that the use of GLP1 agonists as a weight loss adjunct at the time of surgery may be beneficial to augment short-term weight loss while not causing negative GI side effects associated with GLP-1 usage. No patient had to return to the emergency room or be readmitted for nausea, vomiting, or glycemic issues.
- GLP1 agonist administration as an adjunct to initial BS appears to be safe and effective without negative effects.
- In our primarily African America patients, their weight loss at one year was approximately 7% greater than those without the drug. It remains to be seen whether this effect is longer lasting benefits in terms of weight or co-morbidity recidivism.
- Further studies on the long-term effects of GLP1 basal agonist use to aid in weight loss in BS patients is warranted in a larger multi-institutional studies.

Mount Sinai
Clinical Affiliate of The Mount Sinai Hospital
Academic Affiliate of The Icahn School of Medicine at Mount Sinai

The Brooklyn Hospital Center