Effectiveness and Safety of GLP-1 Receptor Agonists in Patients With Weight Recurrence After Bariatric Surgery: A Real-World Study

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Background

- Metabolic and bariatric surgery (MBS) is among the most effective long-term treatments for severe obesity.
- Nearly 20% of patients experience clinically significant weight recurrence : ≥10% increase from nadir weight postoperatively.

- Adjuvant GLP-1RA use for post-bariatric weight recurrence is increasing, yet evidence is limited by small single-center studies, lack of comparator groups, and pooling of insufficient weight loss with true weight recurrence.

- Two RCTs support adjuvant liraglutide post-MBS. Real-world evidence for clinically significant weight recurrence across diverse populations remains lacking.

OBJECTIVES

(1) Compare GLP-1RA vs. non-use for the treatment of ≥10% post-MBS weight recurrence
(2) Evaluate whether treatment effectiveness varies by type 2 diabetes status
(3) Determine the safety (i.e., GI or post-bariatric surgery adverse effects) of GLP-1RA use vs non-use

Methods

1 Design & Data Source
- Retrospective new-user cohort study.
- OneFlorida+ Clinical Research Consortium (~26M patients; linked EHR, claims, death records); January 2015–January 2024.

2 Population
- Adults (≥18 yrs) with ≥10% post-MBS weight recurrence from nadir weight.
- Excluded: pregnancy, malignancy, revisional surgery, prior GLP-1RA use.

3 Exposure
- GLP-1RA initiators (semaglutide, tirzepatide, liraglutide, dulaglutide, exenatide, lixisenatide) matched up to 4:1 on BMI and encounter timing (±4 weeks).

4 Confounding
- 2-Stage: (1) Propensity score matching on BMI + encounter timing; (2) IPTW with propensity scores including demographics, comorbidities & medications. SMDs <0.1.

5 Outcomes
- Effectiveness: % recurrent weight lost at 6 & 12 months; IPTW-weighted Welch t-tests.
- Safety: GI/post-bariatric AEs via Cox proportional hazards models; intention-to-treat.

Study Population & Cohort Selection

217 **Patients with ≥10% weight recurrence included**

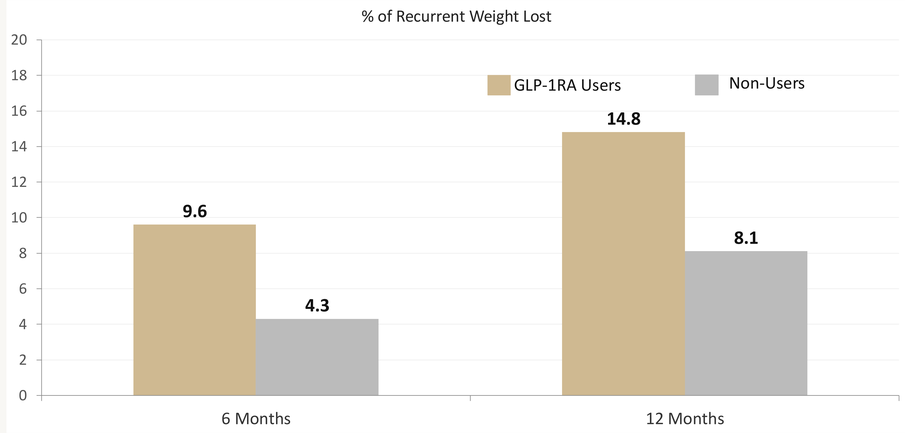
- *72 GLP-1RA users · 139 non-users at 12 months | 68 GLP-1RA users · 131 non-users at 6 months*
- *Most used GLP-1 RAs: : Semaglutide 51.8% · Dulaglutide 29.2% · Liraglutide 28.8% · Tirzepatide 8.9%*

Results: Effectiveness

% of Recurrent Weight Lost

Timepoint	GLP-1RA	Non-Users	p-value	95% CI
6 months	9.6%	4.3%	**p = 0.005 ✓**	0.21–1.17
12 months	14.8%	8.1%	**p = 0.017 ✓**	0.10–1.01

Both groups showed progressive improvement from 6 to 12 months. GLP-1RA users achieved significantly greater recurrent weight loss at each time point vs. matched non-users.



Subgroup Analysis: Type 2 Diabetes Status

Patients WITH Type 2 Diabetes

Timepoint	GLP-1RA	Non-Users	p-value	95% CI
6 months	13.6%	4.6%	**p = 0.007 ✓**	0.26–1.65
12 months	15.2%	10.7%	p = 0.37	–0.39–1.03

Earlier benefit may reflect additive metabolic effect of GLP-1RA.

Patients WITHOUT Type 2 Diabetes

Timepoint	GLP-1RA	Non-Users	p-value	95% CI
6 months	6.4%	4.9%	p = 0.466	–0.38–0.83
12 months	14.6%	7.1%	**p = 0.016 ✓**	0.12–1.19

Longer duration needed; significant recurrent weight loss benefit emerges by 12 months.

Results: Safety

No Increased

Risk of Adverse Events at 6 or 12 months (all p > 0.05)

Adverse Event	Timepoint	HR (95% CI)
Abdominal Pain	6 months	HR 1.21 (0.76–1.91)
Abdominal Pain	12 months	HR 0.70 (0.48–1.02)
Nausea/Vomiting	6 months	HR 1.24 (0.69–2.23)
Nausea/Vomiting	12 months	HR 1.14 (0.70–1.84)
GERD	6 months	HR 1.18 (0.81–1.71)
GERD	12 months	HR 0.79 (0.57–1.10)
Composite AE	6 months	HR 1.24 (0.92–1.68)
Composite AE	12 months	HR 0.80 (0.61–1.05)

Safety Finding

- GLP-1RA was NOT associated with increased risk of GI or post-bariatric adverse events.
- Composite AE rates were lower in GLP-1RA users at 12 months (45.8% vs. 53.2%; HR 0.80, 95% CI: 0.61–1.05).

Limitations

- Retrospective design; residual confounding possible despite IPTW
- Modest sample sizes limit agent-specific or procedure-specific subgroup analyses
- Florida-based health systems only; generalizability to other settings uncertain
- Adherence, discontinuation & weight loss durability beyond 12 months not assessable
- Recurrence threshold (≥10% from nadir) may exclude patients with lesser regain who could benefit

Conclusions

1. GLP-1RAs were associated with significantly greater recurrent weight loss at 6 months (9.6% vs. 4.3%, p=0.005) and 12 months (14.8% vs. 8.1%, p=0.017) vs. matched non-users.
2. GLP-1RA use was NOT associated with increased risk of GI or post-bariatric adverse events at either time point — supporting an acceptable safety profile post-MBS.
3. Subgroup analyses suggest benefit in both T2D (significant at 6 months) and non-T2D patients (significant at 12 months), with differing timing of response.
4. These real-world findings from OneFlorida+ support GLP-1RA as an effective and safe option for clinically significant post-MBS weight recurrence.