

Preoperative GLP-1 Receptor Agonist Exposure and Postoperative Complications After Autologous Breast Reconstruction: A Real-World TriNetX Cohort Study



Sergio A. Segrera, MS, Anandhini D. Narayanan, MD, Alexis K. Gursky, BS, Hailey P. Wyatt, MD, Carter J. Boyd, MD, Nolan S. Karp, MD

Hansjörg Wyss Department of Plastic Surgery

INTRODUCTION

- Glucagon-like peptide-1 (GLP-1) receptor agonists are increasingly used for both diabetes management and chronic weight loss, making perioperative exposure more common in reconstructive surgery patients.
- Despite widespread use, perioperative safety data remain limited and are largely focused on cosmetic surgery rather than complex reconstruction.
- In autologous breast reconstruction, even modest increases in flap-related or wound complications may lead to reoperation, prolonged recovery, and compromised reconstructive outcomes.

PURPOSE

- To evaluate whether sustained preoperative GLP-1 receptor agonist exposure is associated with short- and long-term postoperative morbidity after autologous breast reconstruction.
- Primary outcomes were hematoma, seroma, surgical-site infection, wound dehiscence, and flap complication at 15 and 30 days.
- Secondary outcomes were long-term deformity of the reconstructed breast and surgical revision at 12 and 18 months.

METHODS

- Retrospective cohort study using the TriNetX Research Network.
- Included adults who underwent autologous breast reconstruction.
- Preoperative GLP-1 exposure was defined as medication exposure within 6 months before the index procedure; comparators had no GLP-1 record within 1 year.
- One-to-one nearest-neighbor propensity-score matching was performed using logistic regression across demographic, procedural, oncologic, and medical comorbidity variables.
- Outcomes were analyzed using risk ratios and 95% confidence intervals, with statistical significance set at $p < 0.05$.

POSTOPERATIVE OUTCOMES AFTER PROPENSITY-SCORE MATCHING

Outcome	GLP-1 Exposure	No GLP-1 Exposure	Risk Ratio	P value
15-day flap complications and/or revisions	19.07%	9.82%	1.94	<0.0001
30-day flap complications and/or revisions	24.83%	13.04%	1.90	<0.0001
12-month deformity of reconstructed breast	54.14%	45.72%	1.18	<0.002
18-month deformity of reconstructed breast	55.82%	48.81%	1.14	<0.008
12-month surgical revision	38.85%	32.12%	1.21	<0.008
18-month surgical revision	41.94%	36.04%	1.16	<0.02

KEY BASELINE CHARACTERISTICS OF MATCHED COHORTS

Characteristic	GLP-1 Cohort (n=713)	No GLP-1 Cohort (n=713)
Age at index, mean $\pm$ SD	53.2 $\pm$ 9.5	53.9 $\pm$ 10.6
White race	64.5%	64.4%
Black/African American race	19.9%	19.6%
Hispanic or Latino ethnicity	12.6%	12.9%
Overweight/obesity	60.9%	62.3%
Diabetes mellitus	53.7%	53.3%
Malignant neoplasm of breast	83.6%	86.0%
Carcinoma in situ of breast	37.2%	37.6%
Prior radiation therapy	7.7%	8.3%
Prior chemotherapy/immunotherapy	15.6%	15.0%
Tobacco use	2.8%	3.6%
Nicotine dependence	7.2%	7.4%
Alcohol-related disorders	2.0%	1.8%
Hypertension	54.8%	56.9%
Liver disease	24.4%	25.2%
Chronic kidney disease	5.3%	5.3%
Coagulation defects	2.4%	2.2%

All post-match standardized differences were <0.1, indicating good covariate balance between cohorts.

RESULTS

- A total of 39,140 patients across 73 health systems met inclusion criteria; 719 had preoperative GLP-1 exposure and 38,421 served as comparators.
- After matching, 713 exposed and 713 unexposed patients achieved covariate balance across all measured variables.
- At 15 days, GLP-1 exposure was associated with higher risk of flap complications and/or revisions. At 30 days, elevated flap complication risk persisted.
- No significant differences were observed in hematoma, seroma, surgical-site infection, or wound dehiscence at early postoperative time points.
- Long-term deformity of the reconstructed breast and surgical revisions were more common in the exposed cohort at 12 months and 18 months.

CONCLUSIONS

- Preoperative GLP-1 therapy was associated with significantly increased early flap-related complications after autologous breast reconstruction.
- GLP-1 exposure was also associated with higher long-term deformity and revision rates through 18 months.
- These findings support incorporating GLP-1 exposure into preoperative risk stratification and counseling for ABR patients.
- Enhanced postoperative surveillance may be warranted in patients with recent GLP-1 exposure undergoing complex microsurgical reconstruction.
- Prospective studies are needed to clarify mechanisms and optimize perioperative management.

REFERENCES

- American Society of Anesthesiologists. American Society of Anesthesiologists Consensus-Based Guidance on Preoperative Management of Patients on GLP-1 Receptor Agonists. 2023.
- Joshi GP, Abdelmalak BB, Weigel WA, et al. Multi-society clinical practice guidance for perioperative management of GLP-1 receptor agonists. 2024.