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ABSTRACT SUBMISSION TITLE: *A3 - Impact of Preoperative GLP-1 Receptor Agonist use on DIEP Flap Breast Reconstruction Outcomes: A Single Institution Experience*

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Abstract Text:

PURPOSE:

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are increasingly prescribed for diabetes and weight loss, yet their impact on outcomes in autologous breast reconstruction remains unclear. This study evaluates association between preoperative GLP-1 RA use and postoperative complications in patients undergoing deep inferior epigastric perforator (DIEP) flap breast reconstruction.

METHODS:

A retrospective cohort study was conducted in patients who underwent DIEP flap breast reconstruction at a single institution between January 2019 and December 2025. Patients with documented GLP-1 RA use at the time of DIEP flap reconstruction were compared with non-users. Propensity scores were estimated using logistic regression incorporating age, body mass index, diabetes status, smoking history, laterality (uni- or bilateral reconstruction), ASA class, prior radiation, and timing of reconstruction (immediate or delayed). Patients were matched using nearest-neighbor matching at a 1:2 ratio. Postoperative wound healing, flap-related, and medical complications at 30

and 90 days were analyzed in the matched cohort using conditional logistic regression models, and continuous variables were analyzed using linear mixed-effects regression models.

RESULTS:

A total of 903 patients underwent reconstruction during the study period, including 37 patients on GLP-1 RAs and 866 non-users. There was a 15-fold increase in GLP-1 receptor agonist use (0.7% of patients in 2019 to 10.9% in 2025). Among GLP-1 users, later calendar year was associated with significantly lower odds of diabetes diagnosis (OR per year 0.47; 95% CI, 0.21–0.83; $P = 0.023$), indicating increasing use among non-diabetic patients over time. Propensity score matching yielded a cohort of 111 patients (37 GLP-1 RA users and 74 matched controls). Mean age, BMI, and ASA of this cohort were 51.6 years old, 31.3 kg/m², and 2.4, respectively. Thirty-six percent of patients had a history of diabetes, 83.8% were never smokers, 10.8% had previous radiation, 93.7% cases were bilateral, and 91.9% were immediate. There were no significant differences in DIEP flap weight between matched groups. GLP-1 RA use was associated with higher odds of postoperative seroma at 30 days (OR 3.84, 95% CI 1.16-12.70; $p = 0.03$) and any postoperative complication at 90 days (OR 3.14, 95% CI 1.15-8.57; $p=0.03$). Rates of mastectomy flap necrosis and delayed wound healing were higher among GLP-1 RA users, however did not reach statistical significance. There were no differences in fat necrosis, reoperation, and hospital readmission rates at 90 days. Flap compromise and flap loss occurred once in the overall cohort and thus were not included in the analysis. There was no incidence of VTEs in either group.

CONCLUSIONS:

GLP-1 RA use for weight loss among DIEP patients has increased substantially over the past 5 years. While GLP-1 RA therapy does not appear to increase the risk of major reconstructive morbidity, the observed increase in minor wound complications highlights the importance of careful perioperative optimization and further investigation as use continues to grow.

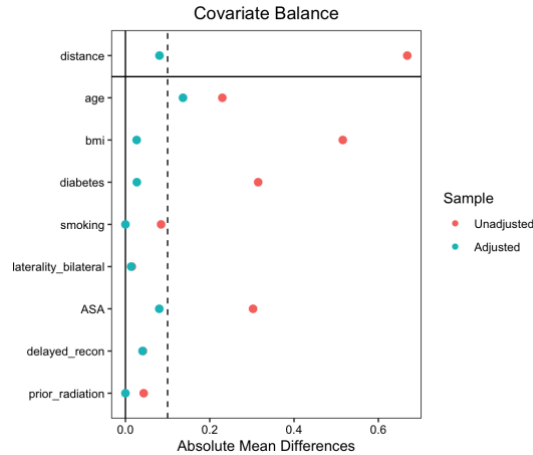


Figure 1: Covariate balance before and after 1:2 propensity score matching. Love plot displaying absolute standardized mean differences for each covariate comparing GLP-1 users and non-users before (unadjusted) and after (adjusted) 1:2 nearest-neighbor propensity score matching using an average treatment effect on the treated (ATT) estimand, with exact matching on prior radiation. Each point represents a covariate, and the vertical dashed line at 0.10 indicates the prespecified threshold for acceptable balance. Post-matching values demonstrate substantial reduction in imbalance across covariates, with all standardized mean differences below 0.20 and most below 0.10.

Table 1. Postoperative Complications Associated with GLP-1 Receptor Agonist Use in the Propensity Score-Matched Cohort

Complication	OR (95% CI)	P Value
30 Days		
Hematoma	2.99 (0.50–17.95)	0.229
Seroma	3.83 (1.16–12.70)	0.028
Surgical site infection	2.26 (0.49–10.42)	0.297
Wound dehiscence	1.37 (0.46–4.11)	0.572
Mastectomy skin necrosis	2.32 (0.93–5.79)	0.070
Any complication	1.93 (0.87–4.31)	0.107
90 Days		
Seroma	2.00 (0.28–14.20)	0.488
Surgical site infection	4.00 (0.36–44.11)	0.258
Delayed wound healing	2.39 (0.88–6.49)	0.086
Fat necrosis	2.38 (0.38–14.97)	0.355
Any complication	3.14 (1.15–8.57)	0.026
Return to operating room within 90 days	1.89 (0.68–5.28)	0.222
Readmission within 90 days	2.16 (0.65–7.19)	0.211

Odds ratios were estimated using conditional logistic regression accounting for matched sets. Values are reported as odds ratio (95% confidence interval). P values <0.05 were considered statistically significant.

Table 1: Association between GLP-1 receptor agonist use and postoperative complications in the 1:2 propensity score-matched cohort. Odds ratios (ORs) with 95% confidence intervals (CIs) were estimated using separate conditional logistic regression models for each outcome, accounting for the matched design. The primary outcome was any wound or flap-related

complication within 90 days. Secondary outcomes included reoperation, readmission, seroma, surgical site infection, wound dehiscence, delayed wound healing, fat necrosis, and mastectomy skin flap necrosis assessed at 30 and 90 days. Outcomes with low event frequency were interpreted descriptively. Statistically significant associations are indicated by $p < 0.05$.