

The Systemic Effects of Glucagon Like Peptide-1 Receptor Agonists Following Lower Extremity Fracture Care

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INTRODUCTION:

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are increasingly prescribed for patients with type 2 diabetes and obesity due to their cardiometabolic benefits. However, their effects on bone healing and postoperative outcomes following fracture remain controversial. This study investigates the association between preoperative GLP-1 RA use and clinical outcomes following surgical treatment of lower extremity (LE) fractures.

METHODS:

We conducted a retrospective cohort analysis comparing patients on GLP-1 RAs within one year prior to index surgery (+GLP) with those not on GLP-1 RAs (–GLP). The index event was defined as the date of surgical intervention for an LE fracture. Propensity score matching was performed 1:1 on age, sex, tobacco use, diabetes mellitus, primary hypertension, hyperlipidemia, chronic ischemic heart disease, chronic lower respiratory disease, and body mass index (BMI), resulting in 6,125 patients per group. This was conducted through the database software utilizing multivariate logistic regression with a 0.1 caliper. Outcomes were assessed at 1 month, 3 months, and 1 year, with the 1-year outcomes serving as the primary focus. Primary endpoints included nonunion and wound complications. Secondary endpoints included cardiac events, thromboembolic complications, and all-cause mortality.

RESULTS:

At 1-year follow-up, GLP-1 RA users demonstrated a significantly higher rate of nonunion compared to matched controls (5.4% vs 4.4%, Risk Ratio 1.2, 95% CI 1.0–1.4, $P = 0.04$) when assessing patients who also continued GLP-1 RAs postoperatively. There were no significant differences in wound dehiscence, deep or superficial surgical site infections, or hematoma. Importantly, the +GLP group experienced significantly lower rates of cardiac arrest (0.8% vs 1.6%, RR 0.5, 95% CI 0.3–0.7, $P < 0.01$) and all-cause mortality (4.4% vs 8.0%, RR 0.5, 95% CI 0.4–0.6, $P < 0.01$).

DISCUSSION AND CONCLUSION:

Preoperative GLP-1 RA use is associated with a modest increase in nonunion risk following LE fracture surgery, though it does not appear to increase wound complication rates. Notably, GLP-1 use is linked to significant reductions in cardiac arrest and mortality within one year. These findings suggest that while GLP-1 RAs may influence bone healing, their systemic benefits may outweigh orthopedic risks for select patients. Further prospective studies are warranted to clarify causality and guide perioperative management.