

**Correlation of GLP-1 agonists with 90-day postoperative adverse events following geriatric hip fracture surgery:
A large database analysis**

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INTRODUCTION:

Glucagon-like peptide-1 (GLP-1) agonists are increasingly prescribed for metabolic disorders, such as type 2 diabetes mellitus (T2DM). While effective for glycemic control, recent case reports and case series have demonstrated a potential association with delayed gastric emptying and raised perioperative aspiration concerns. These potential risks have prompted some professional guidance to recommend holding GLP-1 therapy prior to elective surgery. In contrast, geriatric hip fracture patients require expedited fixation, limiting the opportunity to withhold such therapy. The current study, therefore, evaluated whether preoperative GLP-1 agonist use was associated with delayed surgery, increased 90-day complications, or increased 90-day healthcare utilization following hip fracture repair in geriatric patients with T2DM.

METHODS:

The January 2010 to April 2023 PearlDiver M170 database was queried for geriatric patients (≥ 65 years of age) with T2DM who underwent hip fracture surgery. Surgery included open reduction and internal fixation, hemiarthroplasty, or total hip arthroplasty within seven days of the index injury. Exclusion criteria were < 90 days of database activity following surgery, or coded neoplasm and/or infection within 90 days prior to surgery.

Patients were then stratified into GLP-1 agonist users, defined by a GLP-1 agonist prescription fill within one year preoperatively, and non-users. Users were matched (1:2) to non-users by age, sex, Elixhauser Comorbidity Index (ECI - a comorbidity burden measure), obesity (body mass index > 30 kg/m²), tobacco use, insulin use, and other diabetic medication use (sodium-glucose cotransporter-2 inhibitor and/or metformin).

Outcomes included time from fracture to surgery, 90-day adverse events (including gastrointestinal [GI] and pulmonary-related events), and healthcare utilization (including emergency department [ED] visits and readmissions). Multivariable logistic regression analyses, controlling for all matching variables, as well as surgery type, were then conducted to compare odds of all analyzed outcomes for users versus non-users. Significance was defined as $p < 0.05$.

RESULTS:

Among 94,548 geriatric hip fracture patients with T2DM, preoperative GLP-1 agonist use was noted for 1,534 (1.6%). After matching, 1,358 users and 2,587 non-users were selected.

GLP-1 agonist users underwent surgery slightly sooner (1.41 ± 0.88 vs 1.49 ± 0.94 days, $p=0.0108$). GLP-1 agonist users also demonstrated lower odds of urinary tract infection (OR=0.84, $p=0.042$), bleeding-related events (OR=0.67, $p=0.0029$), aspiration pneumonia/pneumonia (OR=0.77, $p=0.0306$), dyspnea/pleural effusion (OR=0.71, $p=0.0005$), ED visits (OR=0.79, $p=0.0052$), and readmissions (OR=0.79, $p=0.0089$). For other analyzed GI and pulmonary-related events, there were similar odds of nausea/vomiting, gastroparesis, and pancreatitis observed between study cohorts.

DISCUSSION:

Preoperative GLP-1 agonist use was not associated with delayed surgery and, importantly, was linked to reduced odds of several medical complications and healthcare utilization outcomes. Critically, there was no evidence for increased GI or pulmonary complication risks, as raised as a possibility by prior literature. These findings suggest that perioperative cessation of GLP-1 therapy may not be necessary for geriatric hip fracture patients.

SIGNIFICANCE/CLINICAL RELEVANCE:

Given the increasing possibility of geriatric hip fracture patients presenting on GLP-1 agonists, it is relevant to characterize the perioperative management and outcomes of geriatric hip fracture patients with exposure. The current study found that geriatric hip fracture patients on GLP-1 agonists were not having their surgeries delayed and actually had protective associations against 90-day complication risks, including GI and pulmonary-related events. These data therefore support timely fracture fixation without delay for medication cessation, informing perioperative management in this vulnerable population.