

Glucagon-like Peptide 1 Agonist Use Does Not Increase 90-Day or 2-Year Complication Rates Following Hemiarthroplasty for Femoral Neck Fractures

Joshua A Holmstrom, Alex Miguel Holle, Annika Narendra Hiredesai, Jens Taylor Verhey, Joshua Bingham

INTRODUCTION:

Glucagon-like peptide-1 (GLP-1) receptor agonists are increasingly prescribed for the treatment of type 2 diabetes mellitus (T2DM) and weight loss. While these medications are effective at improving glycemic control and promoting weight loss, their impact on surgical outcomes in the orthopaedic trauma population remains unclear. The purpose of this study is to investigate the association between GLP-1 agonist therapy and 90-day medical and 2-year surgical complications for femoral neck fracture (FNF) patients treated with hemiarthroplasty.

METHODS: A retrospective cohort analysis was performed using a national claims database to identify patients who underwent hemiarthroplasty for FNF between January 1, 2010 and January 1, 2022. Patients on GLP-1 agonist therapy (n=567) were propensity score matched 1:4 to non-GLP-1 users (n=2,234) based on age, sex, Charlson Comorbidity Index (CCI), and each of its components. 90-day complications included myocardial infarction (MI), mortality, acute kidney injury (AKI), pneumonia, pulmonary embolism (PE), deep vein thrombosis (DVT), urinary tract infection (UTI), hematoma, sepsis, stroke, blood transfusion, emergency department (ED) visit, and wound dehiscence. Two-year incidence of revision, periprosthetic joint infection (PJI), fracture, aseptic loosening, and dislocation were evaluated. Bivariate logistic regression was used to calculate odds ratios (ORs).

RESULTS: There were no statistically significant differences in the 90-day medical complications, including the incidence of MI, mortality, AKI, pneumonia, PE, DVT, UTI, hematoma, sepsis, stroke, blood transfusion, ED visit, or wound dehiscence (p>0.05) between GLP-1 and control cohorts. There was also no difference in the 2-year surgical outcomes for the GLP-1 group with no differences in the odds of revision, PJI, fracture, aseptic loosening, or dislocation (p>0.05).

DISCUSSION AND CONCLUSION:

In patients who underwent hemiarthroplasty for FNF, GLP-1 receptor agonist therapy was not associated with increased risk of postoperative medical or surgical complications at 90 days or 2 years. These findings suggest that GLP-1 agonist therapy is not associated with postoperative medical and surgical complications in patients undergoing hemiarthroplasty for FNF. However, GLP-1 agonist use among other orthopaedic surgery populations has shown mixed results. For example, among patients undergoing primary total hip arthroplasty, GLP-1 use has been shown to be protective against several complications such as anemia, postoperative blood transfusion, or emergency department visit within 90-days postoperatively. Conversely, among shoulder arthroplasty patients, GLP-1 use has been associated with increased risk of deep vein thrombosis, myocardial infarction, pneumonia, blood transfusion, and readmission within 90-days postoperatively. Therefore, future research is needed to confirm the perioperative safety of GLP-1 agonists after hemiarthroplasty in the trauma setting and determine whether type and duration of GLP-1 usage affects postoperative outcomes.

Complication	Control (n=2234)	GLP-1 Users (n=567)	Odds Ratio (95% CI)	P-Value
Myocardial Infarction	37 (1.7%)	11 (1.9%)	1.17 (0.60-2.32)	0.78
Mortality	9 (0.4%)	1 (0.1%)	0.44 (0.06-3.45)	0.68
AKI	180 (8.1%)	45 (7.9%)	0.98 (0.70-1.38)	0.99
Pneumonia	137 (6.1%)	25 (4.4%)	0.71 (0.46-1.09)	0.14
Pulmonary Embolism	19 (0.9%)	1 (0.1%)	0.21 (0.03-1.54)	0.15
DVT	62 (2.8%)	12 (2.1%)	0.76 (0.41-1.42)	0.47
UTI	366 (16.4%)	86 (15.2%)	0.91 (0.71-1.18)	0.52
Hematoma	22 (1.0%)	1 (0.1%)	0.18 (0.02-1.32)	0.10
Sepsis	67 (3.0%)	20 (3.5%)	1.18 (0.71-1.97)	0.61
Stroke	13 (0.6%)	4 (0.7%)	1.21 (0.39-3.74)	0.97
Blood Transfusion	105 (4.7%)	23 (4.1%)	0.86 (0.54-1.36)	0.59
ED Visit	503 (22.5%)	122 (21.5%)	0.94 (0.75-1.18)	0.65
Wound Dehiscence	26 (1.2%)	10 (1.8%)	1.52 (0.73-3.18)	0.36

Table 1: Comparison of 90-Day Medical Complications Between Groups

Complication	Control (n=2234)	GLP-1 Users (n=567)	Odds Ratio (95% CI)	P-value
Revision	79 (3.5%)	19 (3.3%)	0.95 (0.57-1.57)	0.93
Periprosthetic Joint Infection	63 (2.8%)	21 (3.7%)	1.33 (0.80-2.19)	0.34
Fracture	56 (2.5%)	15 (2.6%)	1.06 (0.59-1.88)	0.97
Aseptic Loosening	18 (0.8%)	6 (1.1%)	1.32 (0.52-3.33)	0.74
Dislocation	46 (2.1%)	13 (2.3%)	1.12 (0.60-2.08)	0.86

Table 2: Comparison of 2-Year Surgical Complications Between Groups