Glucagon-Like Peptide-1 Receptor Agonist Use is Not Associated with Increased Complications After Total Hip Arthroplasty in Patients with Type-2 Diabetes

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INTRODUCTION: Glucagon-like peptide-1 (GLP-1) agonists have emerged as a powerful diabetic treatment adjunct; however, its effects on outcomes following total hip arthroplasty (THA) are not well known. The purpose of this study was to compare the risk of complications in type-2 diabetes patients who were on GLP-1 agonists with those who were not on these medications.

METHODS: In total, 14,065 type-2 diabetes patients undergoing primary THA between 2016 and 2021 were retrospectively reviewed utilizing a national database. Propensity score matching was employed at a 1:2 ratio to match patients who used GLP-1 agonists (n=812) to those who did not (n=1,624). Patients were matched on factors including age, sex, insulin status, presence of other diabetic medications, comorbidities, and smoking status. Multivariable logistic regressions were performed to examine 90-day and 1-year THA outcomes between groups.

RESULTS: Patients who were not on GLP-1 agonists exhibited increased rates of extended hospital stays (>3 days) (OR 1.28, P=0.01). Patients who were on GLP-1 agonists exhibited no significant differences in surgical or medical complication rates at 90-days compared to those not on GLP-1 agonists. There were also no significant differences in rates of all-cause revision THA, aseptic revision THA, or PJI at the 1-year postoperative period.

DISCUSSION AND CONCLUSION: This study demonstrated that GLP-1 agonists were not associated with increased risks for medical or surgical complication rates in patients with diabetes undergoing THA, and were associated with lower rates of extended hospital stays after surgery. This study provides additional evidence regarding the association of GLP-1 agonist use prior to THA with postoperative outcomes. Given the potential for increased glycemic control and weight loss, more data is needed to delineate the potential role of GLP-1 agonists in preoperative optimization of patients with diabetes prior to THA to minimize postoperative complications.

Table 1. Multivariate Analyses of Complications - Glucagon-Like Peptide-1 (GLP-1) Agonist versus No GLP-1 Agonist

Characteristic	*GLP1-Agonist n=812	No GLP-1 Agonist n=1,624	Odds Ratio** (95% CI)	Multivariate *P*-value
90-Day Surgical Complications				
Surgical Site Infection (SSI)	32 (3.9%)	83 (5.1%)	1.26 (0.82 – 1.94)	0.28
Prosthetic Joint Infection (PJI)	11 (1.3%)	16 (1.0%)	0.56 (0.25 – 1.26)	0.16
Wound Dehiscence	15 (1.8%)	25 (1.5%)	0.88 (0.45 – 1.70)	0.70
Periprosthetic Fracture	9 (1.1%)	17 (1.0%)	0.88 (0.37 – 2.06)	0.76
90-Day Medical Complications				
Cardiac Arrest	0 (0.0%)	2 (0.1%)	N/A	0.99
Stroke	8 (0.9%)	17 (1.0%)	0.78 (0.31 – 1.99)	0.60
Pneumonia	10 (1.2%)	20 (1.2%)	0.91 (0.39 – 2.14)	0.84
Deep Vein Thrombosis (DVT)	8 (1.0%)	25 (1.5%)	1.27 (0.49 – 3.29)	0.63
Urinary Tract Infection (UTI)	43 (5.3%)	92 (5.7%)	1.07 (0.73 – 1.57)	0.72
Acute Kidney Injury (AKI)	35 (4.3%)	53 (3.3%)	0.65 (0.41 – 1.03)	0.07
C. difficile infection	0 (0.0%)	7 (0.4%)	N/A	0.99
Hypoglycemic events	9 (1.1%)	13 (0.8%)	0.72 (0.29 – 1.77)	0.47
Resource Utilization				
90-Day Readmission	69 (8.5%)	140 (8.6%)	0.94 (0.69 – 1.28)	0.70
Extended Length of Stay (>= 3 days)	198 (24.4%)	470 (28.9%)	1.28 (1.05 – 1.55)	**0.01**
1 Year Outcomes				
All-Cause Revision Surgery	22 (2.7%)	53 (3.3%)	1.16 (0.69 – 1.94)	0.58
Aseptic Revision Surgery	20 (2.5%)	48 (2.9%)	1.21 (0.71 – 2.05)	0.48
Prosthetic Joint Infection (PJI)	12 (1.5%)	24 (1.5%)	0.84 (0.41 – 1.74)	0.64
Periprosthetic Fracture	9 (1.1%)	18 (1.1%)	0.96 (0.41 – 2.25)	0.93

**Values are given as the odds ratio for the no GLP-1 agonist group, with the 95% CI in parentheses
*GLP-1 = Glucagon-like peptide 1 agonist