

# GLP-1 Agonists Versus Bariatric Surgery: Which Management Carries Heavier Weight Prior to Total Hip Arthroplasty?

Samuel Peter Alfonsi, Omar Shalakhti, Alexander J Acuña, Ajay Saikrishna Potluri, Enrico Forlenza, E Bailey Terhune, Robert A Burnett

**INTRODUCTION:** Both glucagon-like peptide-1 (GLP-1) receptor agonists and bariatric surgery are interventions that can result in weight loss prior to total hip arthroplasty (THA). We sought to compare 90-day postoperative complications between THA patients with a history of GLP-1 use versus those who underwent bariatric surgery prior to THA.

**METHODS:** Patients undergoing elective, primary THA for osteoarthritis from 2005-2025 were identified from the TriNetX Research Network. Patients who underwent bariatric surgery 6-months to 1-year prior to THA were propensity score matched 1:1 to patients who initiated GLP-1 agonist therapy during this same time period based on the following: age, sex, race, ethnicity, chronic kidney disease, rheumatoid arthritis, hypertension, chronic ischemic heart disease, diabetes, and body mass index (BMI) 6 weeks prior to weight loss intervention. A total of 566 patients were included in each cohort with 90-day follow up. The risk of various 90-day complications associated with medical and surgical weight loss interventions was compared utilizing multivariate regression analyses.

**RESULTS:** Patients in the bariatric surgery cohort had significantly higher rates of PJI (4.4% vs. 1.8%,  $p=0.01$ ) and mechanical complications (1.8% vs. 0%,  $p=0.001$ ) compared to those in the GLP-1 cohort. Although there were comparable medical complications and surgical complications in isolation between cohorts, those in the GLP-1 cohort had significantly lower rates of any complication (5.3% vs. 9.7%,  $OR=0.5$  (0.27-0.99),  $p=0.046$ ) and any surgical complication (2.0% vs. 4.7%,  $OR=0.4$  (0.20-0.83),  $p=0.01$ ).

**DISCUSSION AND CONCLUSION:** There were largely comparable rates of adverse outcomes, but lower rates of any complication and any surgical complication among those initiating GLP-1 agonists prior to THA. Given the risks associated with bariatric surgery, GLP-1 analogues may offer a safer, less invasive alternative to surgical weight loss management without an increased risk of untoward events following THA.

Table 1: Patient Characteristics Following 1:1 Propensity Matching in GLP-1 vs Bariatric Surgery Patients Undergoing THA

Characteristic	GLP-1 (n = 566)	Bariatric (n = 566)	p-value
Age (years)	62.0 ± 9.1	61.1 ± 9.1	0.544
<b>Sex</b>			
Male	145 (25.6%)	146 (25.8%)	0.946
Female	392 (69.3%)	384 (67.8%)	0.609
<b>Ethnicity</b>			
Not Hispanic or Latino	436 (77.0%)	429 (75.8%)	0.624
Hispanic or Latino	15 (2.7%)	21 (3.7%)	0.309
Unknown Ethnicity	115 (20.3%)	116 (20.5%)	0.941
<b>Race</b>			
White	429 (75.8%)	420 (74.2%)	0.836
Black or African American	86 (15.2%)	86 (15.2%)	1
Unknown Race	34 (6.0%)	36 (6.4%)	0.569
<b>Nicotine Dependence</b>	97 (17.1%)	88 (15.5%)	0.469
<b>Chronic Kidney Disease</b>	89 (15.7%)	80 (14.1%)	0.453
<b>Rheumatoid Arthritis</b>	31 (5.5%)	31 (5.5%)	0.702
<b>Hypertension</b>	458 (80.9%)	458 (80.9%)	0.821
<b>Chronic Ischemic Heart Disease</b>	179 (31.6%)	176 (31.1%)	0.831
<b>Diabetes Mellitus</b>	268 (47.3%)	268 (47.3%)	1
<b>BMI (kg/m<sup>2</sup>)</b>	35.6 ± 6.2	34.8 ± 6.4	0.028
<b>BMI (kg/m<sup>2</sup>) categories</b>			
40+	344 (60.8%)	337 (59.5%)	0.671
35 - 40	357 (63.1%)	372 (65.7%)	0.352
30 - 35	341 (60.2%)	340 (60.1%)	0.855
25 - 30	226 (39.9%)	243 (42.9%)	0.808
0 - 25	102 (18.0%)	95 (16.8%)	0.583

Table 2: 90-day Post-Operative Complications in Patients With GLP-1 Use vs Bariatric Surgery Following THA

Complication	GLP-1 (%) n = 566	Bariatric (%) n = 566	Odds Ratio (95% CI)	p-value
<b>Surgical Complications</b>				
PJI	≤ 10* (1.8%)	24 (4.4%)	0.398 (0.189, 0.841)	0.013
Revision	≤ 10* (1.8%)	16 (2.9%)	0.59 (0.41-2.40)	0.238
Mechanical Loosening	≤ 10* (1.8%)	13 (2.4%)	0.741 (0.322, 1.704)	0.479
Dislocation	≤ 10* (1.8%)	≤ 10* (1.8%)	0.991 (0.409, 2.400)	0.984
Implant Fracture	0 (0.0%)	0 (0.0%)	--	--
Periprosthetic Hip Fracture	≤ 10* (1.8%)	≤ 10* (1.8%)	0.995 (0.411, 2.409)	0.990
Mechanical Complications	0 (0.0%)	≤ 10* (1.8%)	--	0.001
<b>Medical Complications</b>				
Wound Complications	16 (3.0%)	22 (4.2%)	0.704 (0.365, 1.355)	0.291
Transfusion	≤ 10* (1.8%)	≤ 10* (1.8%)	0.949 (0.392, 2.298)	0.907
DVT/PE	≤ 10* (1.9%)	≤ 10* (2.0%)	0.972 (0.401, 2.356)	0.950
Pneumonia	≤ 10* (2.1%)	≤ 10* (2.0%)	1.044 (0.430, 2.531)	0.925
Myocardial Infarction	≤ 10* (1.9%)	≤ 10* (1.9%)	1.202 (0.414, 2.427)	0.997
UTI	≤ 10* (2.4%)	≤ 10* (2.5%)	0.957 (0.394, 2.323)	0.922
Peripheral Nerve Injury	0 (0.0%)	0 (0.0%)	--	--
AKI	≤ 10* (2.0%)	≤ 10* (2.0%)	0.996 (0.411, 2.414)	0.993
Readmission	33 (9.2%)	41 (13.6%)	0.646 (0.397, 1.051)	0.077
<b>Any Complication</b>	16 (5.3%)	26 (9.7%)	0.523 (0.274-0.997)	0.046
<b>Any Medical Complication</b>	17 (5.6%)	20 (7.3%)	0.753 (0.386, 1.468)	0.403
<b>Any Surgical Complication</b>	11 (2.0%)	26 (4.7%)	0.407 (0.199-0.832)	0.011
AKI, Transfusion, DVT/PE, Pneumonia, MI, UTI, AKI	≤ 10* (3.2%)	13 (4.6%)	0.683 (295, 1.583)	0.372
<b>Mechanical Loosening, Dislocation, Implant Mechanical Complications</b>	≤ 10* (1.8%)	13 (2.4%)	0.741 (0.322, 1.704)	0.479

\*For deidentification purposes, TriNetX does not disclose the exact number of instances when the count is 10 or less.