GLP-1 Receptor Agonists and Total Hip Arthroplasty Outcomes: A BMI-Stratified Cohort Analysis

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INTRODUCTION:

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) have demonstrated metabolic and cardiovascular benefits, but their impact on postoperative complications and long-term surgical outcomes in Total Hip Arthroplasty (THA) patients remains unclear. While concerns exist regarding potential bone health effects, GLP-1 RAs may also offer protective benefits, particularly in patients with higher BMI. This study evaluates 90-day medical complications and 2-year surgical outcomes in THA patients on GLP-1 therapy, stratified by BMI.

METHODS:

A retrospective cohort analysis was conducted using a national database. GLP-1 users and non-users were matched 4:1 by age, gender, and Charlson Comorbidity Index (CCI) within six BMI categories (<19.9, 20-24.9, 25-29.9, 30-34.9, 35-39.9, ≥40). 90-day complications (e.g., readmission, thromboembolic events, renal failure) and 2-year surgical outcomes (e.g., periprosthetic fractures, revision THA, mechanical loosening, prosthetic joint infection [PJI]) were compared using chi-square tests and multivariate logistic regression models adjusting for residual confounders.

RESULTS:

A total of 23,148 GLP-1 users and 520,047 matched controls were identified. The mean age of GLP-1 users was 63.3 (±8.4) years, and 55 to 70% were female, depending on BMI category. After matching, GLP-1 users and controls had similar baseline demographics and comorbidity burdens ($p > 0.05$). GLP-1 users had significantly lower 90-day complication rates, including: Readmission ($p < 0.05$); Renal failure ($p < 0.01$); Deep vein thrombosis ($p < 0.01$); Pulmonary embolism ($p < 0.05$); Sepsis & urinary tract infections ($p < 0.01$). 2-year surgical outcomes favoured GLP-1 users, particularly in BMI ≥ 30 groups: Lower periprosthetic fracture risk ($p < 0.001$); Reduced revision THA rates ($p < 0.001$); Fewer cases of mechanical loosening ($p < 0.001$); Lower PJI incidence ($p < 0.001$). The protective effects were more pronounced in patients with BMI ≥ 30, suggesting a potential perioperative benefit of GLP-1 therapy in obese patients.

DISCUSSION AND CONCLUSION:

GLP-1 therapy was associated with reduced postoperative complications and better long-term THA outcomes, particularly in higher BMI populations. These findings suggest a potential protective role for GLP-1 RAs in the perioperative management of obese THA patients. Further research is warranted to explore the mechanistic effects of GLP-1 therapy on bone health and wound healing in orthopedic surgery.