

# Rising Use of GLP-1 Agonists Across Common Orthopaedic Procedures and Their Association With Improved Postoperative Outcomes

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## INTRODUCTION:

The use of GLP-1 receptor agonists, including semaglutide, has rapidly expanded due to their efficacy in managing type 2 diabetes and obesity. Despite increasing prevalence among surgical populations, trends in GLP-1 usage among patients undergoing orthopedic procedures have not been characterized. Additionally, emerging evidence suggests these agents may influence surgical outcomes. This study characterizes national trends in GLP-1 and semaglutide use among patients undergoing 10 common orthopedic procedures and evaluates their association with postoperative complication rates including ED presentations, surgical site infections, and revisions.

## METHODS:

A retrospective cohort study was conducted using a large national insurance claims database. Patients with diagnosis codes for obesity and procedure codes for any of 10 common orthopaedic procedures were identified. Procedures included total hip arthroplasty, total knee arthroplasty, ACL repair, hip cephalomedullary nail, hip hemiarthroplasty, lumbar fusion, total shoulder arthroplasty, carpal tunnel release, distal radius open reduction internal fixation (ORIF), and ankle ORIF. The proportion of patients undergoing each surgery taking semaglutide or other GLP-1 agonists were found from 2010 through the 1Q of 2023. These trends were also stratified by obesity class (BMI = 30-39.9 and BMI ≥ 40). Lastly, rates of ED presentation, surgical site infection, and revision within 90 days of primary operation were compared between GLP-1 users and GLP-1 naive patients as well as specifically semaglutide users compared to GLP-1 naive patients.

## RESULTS:

Analysis of trends in GLP-1 use from 2010 to 2023 revealed a consistent increase in GLP-1 usage rates in patients undergoing all 10 orthopedic procedures. Analysis of GLP-1 and semaglutide usage by BMI group showed a consistent increase in GLP-1 use among patients with BMI 30–39.9 and ≥40, with semaglutide use in both groups exhibiting a marked increase beginning in 2019. Semaglutide use also showed a trend of increasing use across all BMI groups. Across multiple major orthopedic procedures, both GLP-1 and semaglutide use were associated with significantly lower odds of ED presentation. Among GLP-1 users, 8 out of 10 major orthopedic procedures analyzed demonstrated significantly lower rates of emergency department (ED) presentation compared to non-users. In the semaglutide sub-analysis, 9 out of 10 procedures showed similarly reduced ED presentation rates. GLP-1 use was associated with significantly lower rates of SSI only among patients undergoing TKA and THA. Revision rates for GLP-1 users were lower for TKA patients, however they rates were increased among patients undergoing carpal tunnel release.

## DISCUSSION AND CONCLUSION:

GLP-1 and semaglutide use has steadily increased among patients undergoing orthopedic surgery, with sharp rises among those with BMI ≥30 beginning in 2019. GLP-1 receptor agonist use, particularly semaglutide, is associated with reduced rates of ED presentation following a range of major orthopedic procedures. While reductions in surgical site infections and revision rates were less consistent, notable benefits were observed in select procedures. These findings, alongside rising utilization trends across BMI categories, suggest a potential protective effect of GLP-1 agents on short-term postoperative outcomes in orthopedic surgery. Further prospective studies are warranted to clarify causality and

