

GLP-1 Receptor Agonist Use is Associated with Superior Outcomes Following Unicompartmental Knee Arthroplasty in Patients with Diabetes

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ABSTRACT

INTRODUCTION: Glucagon-like peptide-1 receptor agonists (GLP-1s) are increasingly used to manage obesity and type 2 diabetes mellitus (T2DM). Given their cardiometabolic effects, their influence on surgical outcomes warrants investigation. This study evaluated whether GLP-1 use within one year prior to unicompartmental knee arthroplasty (UKA) is associated with differences in postoperative complication odds in patients with T2DM.

METHODS: Using the PearlDiver M170-Ortho database, we identified patients with T2DM who underwent UKA between 2010 and 2022. Patients with documented GLP-1 use (semaglutide, liraglutide, tirzepatide, or dulaglutide) within one year prior to surgery were matched 1:5 to non-users by age, sex, obesity, metformin use, insulin use, and Elixhauser Comorbidity Index. Multivariable logistic regression was used to compare the odds of 90-day adverse events (AEs), emergency department (ED) visits, hospital readmissions, and 5-year revision.

RESULTS: The matched cohorts included 768 GLP-1 users and 2,500 non-users. GLP-1 use was associated with significantly lower odds of any 90-day AE (OR 0.54, $p < 0.001$), serious AEs (OR 0.53, $p < 0.001$), minor AEs (OR 0.57, $p < 0.001$), venous thromboembolism (OR 0.40, $p = 0.003$), cardiac events (OR 0.45, $p = 0.048$), pneumonia (OR 0.28, $p < 0.001$), urinary tract infection (OR 0.73, $p = 0.024$), ED visits (OR 0.53, $p = 0.033$), and hospital readmissions (OR 0.60, $p < 0.001$). GLP-1 use was also associated with lower odds of 5-year revision (OR 0.62, $p = 0.038$).

DISCUSSION: This study represents one of the first large-scale analyses to demonstrate a potential protective association between GLP-1s and UKA surgical outcomes. In patients with T2DM undergoing UKA, preoperative GLP-1 use was associated with significantly reduced odds of various short-term complications and 5-year revision. These findings support the potential benefit of GLP-1s in improving surgical outcomes and highlight their relevance in preoperative optimization strategies.

SIGNIFICANCE/CLINICAL RELEVANCE: This study suggests that preoperative use of GLP-1s is associated with improved short- and long-term outcomes in patients with T2DM undergoing UKA. As GLP-1 use continues to rise in clinical practice, these findings underscore its potential role in surgical risk reduction and support further investigation into its use as a perioperative optimization strategy.

Figure 1: GLP-1 Relative To Non-GLP-1

