Impact of Preoperative GLP-1 Receptor Agonists on Outcomes Following Total Knee Arthroplasty

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INTRODUCTION: Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) improve glycemic control and promote weight loss in obesity and type 2 diabetes. Given their metabolic and anti-inflammatory effects, interest is growing in their perioperative use, but limited data exists on outcomes in orthopaedic surgery. We evaluated whether preoperative GLP-1 RA therapy influences postoperative outcomes after elective total knee arthroplasty (TKA).

METHODS: A retrospective cohort analysis was performed on adult patients who underwent primary elective TKA from January 2021 to January 2023. GLP-1RA use was defined as an active prescription within the year prior to surgery. Patients were matched 1:4 to non-users using propensity scores based on age, sex, race, body mass index (BMI), and Charlson Comorbidity Index, resulting in 148 GLP-1RA users and 592 matched controls. The primary outcome was any 90-day postoperative complication (infection, thromboembolism, emergency department [ED] visit, and readmission). Secondary outcomes included discharge to home versus facility, length of stay (LOS), and achievement of the Centers for Medicare and Medicaid (CMS) defined substantial clinical benefit (SCB) on validated outcome scores (≥20-point improvement in the Knee injury and Osteoarthritis Outcome Score for Joint Replacement [KOOS-JR]). Socioeconomic indicators were also measured using the Area Deprivation Index (ADI) and Social Vulnerability Index (SVI).
RESULTS: Matched groups were similar demographically. GLP-1RA users had higher baseline hemoglobin A1c, American Society of Anesthesiologists (ASA) classification, ADI, and SVI. Ninety-day complication rates were statistically similar: ED visits (13 versus 11%, $p = 0.50$), infections, and readmissions showed no differences. GLP-1RA use was not independently associated with increased complications. However, GLP-1RA users had significantly shorter median LOS (8 versus 24 hours, $p < 0.001$) and a higher rate of home discharge (100 versus 96%, $p = 0.012$). GLP-1RA use was an independent predictor of home discharge (OR 0.06, $p = 0.049$). Functional improvement rates (SCB) were comparable (65 versus 70%, $p = 0.50$).

DISCUSSION AND CONCLUSION: Preoperative GLP-1 RA use was associated with favorable discharge and LOS outcomes following elective TKA, without increased risk of perioperative complications. Despite higher baseline medical and social risk, GLP-1 RA users achieved comparable functional recovery. These findings support the safety of GLP-1 RA therapy in the perioperative period and suggest potential benefits for postoperative recovery. Further prospective studies are warranted to explore mechanisms and long-term effects in orthopaedic surgery.