Effects of Preoperative Glucagon-Like Peptide-1 (GLP-1) Agonist Medications on the Perioperative Course and Outcomes in Total Knee Arthroplasty

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INTRODUCTION:
GLP-1 agonists have become more prevalent among individuals managing diabetes and obesity, and thus increasingly present during total knee arthroplasty (TKA).The need to understand their perioperative ramifications cannot be overstated, with a particular focus on gastrointestinal manifestations such as delayed gastric emptying and gastroparesis. While they could escalate perioperative aspiration risk, discontinuation guidelines vary widely. This study aimed to examine the impact of GLP-1 agonists on perioperative events and outcomes following primary TKA.
METHODS:
A total of 532 patients who underwent primary TKA from 2011-2023 had documented GLP-1 agonist medications, 213 had confirmed start dates prior to TKA. Patients were compared to a propensity-matched cohort without GLP-1 agonist history (n=919) and a cohort who discontinued GLP-1 agonists for over a year (n=95). Intra- and peri-operative events were identified from anesthesia and postoperative notes using natural language processing. Three-year complications were screened using ICD-10 and CPT codes. Mixed-effects logistic regression was used to quantify associations between the perioperative course and the number of days medications were withheld.
RESULTS:
The study examined the impact of glucagon-like peptide-1 (GLP-1) agonists on perioperative course and outcomes following total joint arthroplasty in a cohort of 1,227 patients. In our cohort, those on GLP-1 therapy (n=213) exhibited higher rates of aspiration (7.0% vs. 4.1% in the no-GLP group, $p=0.01$) and nausea and vomiting ($p<0.001$) in the perioperative period, and increased periprosthetic joint infections (4.2% vs.1.3%, $p=0.001$), postoperatively. However, the GLP-1 group had fewer revision surgeries (2.8%) relative to the non-GLP-1 group (6.6%, $p=0.03$). After adjusting for comorbidities, each day of withholding medication decreased the odds of aspiration by 1% (OR: 0.99, 95% CI: 0.98-0.99; $p<0.001$). Consequently, withholding for a period of 10 days reduced aspiration odds by 9.6%.
DISCUSSION AND CONCLUSION:
This study evaluated the relationship between GLP-1 agonist therapy and perioperative outcomes in TKA. We found an increased risk of aspiration, nausea, and vomiting for those on GLP-1 agonist therapy up to surgery. Withholding GLP-1 agonists reduced the odds of aspiration by 1% per day. These patients also exhibited higher joint infection risk, contrasting prior studies, but lower revision rates. This study benefits from verified admission records and EMR data and underscores the need for prospective investigation into GLP-1 therapy implications for TKA patients. Understanding the influence of GLP-1 will help in weighing the immediate risks of these medications against potential long-term benefits, guiding the development of standardized perioperative management protocols.