Preoperative Weight Loss Before Total Joint Arthroplasty Using Novel GLP-1 Agonists

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INTRODUCTION: Glucagon-like peptide-1 agonists (GLP-1s) are associated with significant weight loss, but little is known about their use before total joint arthroplasty (TJA). This study determined the preoperative prevalence of GLP-1s before TJA, preoperative weight loss on GLP-1s, and if preoperative GLP-1s were associated with postoperative outcomes.

METHODS:

Among 18,649 primary TJAs performed between 2019 and February 2023, we identified 6486 patients (2994 hips; 3492 knees), of which 239 used GLP-1s preoperatively. The mean age was 67 years, 50% were female, 31% had diabetes, and 12% had a BMI≥40 kg/m^2. GLP-1s were categorized as Food and Drug Administration (FDA)-approved for weight loss (Group 1: semaglutide and liraglutide) versus FDA-approved for diabetes or under investigation for weight loss (Group 2: dulaglutide, exenatide, lixisenatide, efpeglenatide, tirzepatide plus Group 1 medications). Univariable and multivariable models evaluated GLP-1 use, age, gender, BMI, and Charlson Comorbidity Index for the outcomes of complications, revisions, and reoperations. Mean follow-up was 5 years.

RESULTS:

The overall prevalence of GLP-1s before TJA was 3%, increasing from 1.7% in 2019 to 4.6% in 2022. Up to two years before TJA, mean preoperative weight change on GLP-1s was -2 kg over a mean 1 year. In univariable analyses, Group 1 was significantly associated with increased risk of reoperations (HR 2.0;p=0.012), but not significantly associated with complications (HR 1.4;p=0.28) or revisions (HR 2.1;p=0.051). Group 2 was not significantly associated with complications (HR 1.4;p=0.23), revisions (HR 1.4;p=0.35), or reoperations (HR 1.6;p=0.09). In multivariable analyses, Group 1 was not significantly associated with complications (HR 1.1;p=0.79), revisions (HR 1.8;p=0.16), or reoperations (HR 1.7;p=0.07). Among 13 knees with preoperative GLP-1s, there were four manipulations under anesthesia, one non-operative superficial infection, two wound revisions for superficial infection, two traumatic arthrotomies requiring irrigation and debridement (I&D), two early periprosthetic joint infections (PJI) requiring I&D, and one revision for periprosthetic fracture. Among seven hips with preoperative GLP-1s, there were two non-operative superficial infections, two hematoma evacuations, and two revisions for acute PJI.

DISCUSSION AND CONCLUSION:

The prevalence of preoperative GLP-1s before TJA tripled to 4.6% from 2019 to 2022, and preoperative weight change on GLP-1s varied considerably. GLP-1s were not associated with increased postoperative risks but investigational GLP-1s before TJA require further study.