GLP-1 Receptor Agonist Mediated Weight Loss Improves Outcomes After Total Knee Arthroplasty

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INTRODUCTION: Glucagon-like peptide-1 receptor agonists (GLP-1RA) are becoming increasingly popular as a form of weight loss management in morbidly obese patients. There remains a paucity of literature on the effect of GLP-1RA mediated weight loss on outcomes after total knee arthroplasty (TKA). This study aimed to evaluate the risk profile of TKA patients who underwent significant preoperative weight reduction using GLP-1RAs.

METHODS: The TrinetX research network was queried to identify patients who underwent primary TKA between March 2021 - May 2024 across 88 health care organizations. Patients who achieved a preoperative BMI reduction from ≥43 to ≤40 within 1 year while being prescribed a GLP-1RA were identified. Patients were then 1:1 propensity matched with two control groups to account for baseline differences in demographics, laboratory investigations, and comorbidities. Control group A were with patients with a preoperative BMI≥43 who did not lose weight and control group B were with patients with a preoperative BMI≤40 who were not being prescribed a GLP-1RA. Risk ratios were evaluated for postoperative outcomes.

RESULTS: A total of 268 patients were identified. After 1:1 propensity matching, 266 patients were matched to control group A and 268 patients were matched to control group B. Compared to control group A, GLP-1RA patients had a decreased risk of deep infection (0% vs 3.9%, p=0.001) and pulmonary embolism (0% vs 4% p=0.001). Compared to control group B, GLP-1RA patients had a decreased risk of aspiration (0% vs 3.7% p=0.001). There was no difference between groups for any other complications, readmissions or emergency department visits.

DISCUSSION AND CONCLUSION: Patients prescribed a GLP-1RA who underwent significant weight loss prior to TKA had a decreased risk of complications compared to patients who did not lose weight. GLP-1RAs can be an important tool to help patients achieve weight optimization prior to TKA.

Risk of Complications in Patients Undergoing Total Knee Arthroplasty after Weight loss with Glucagon-like Peptide 1 Receptor Agonist Compared to Controls

	GLP-1RA group (% risk)	BMI≥43 group (% risk)	P-value
Readmission	4.3	4.2	0.95
ED visits	16.1	9.9	0.24
Revision	3.9	3.9	0.97
Mortality	3.8	3.8	0.99
SSI-Deep	**0**	**3.9**	**0.001**
SSI-Superficial	3.8	3.8	1
DVT	4.0	4.0	1
Pulmonary Embolism	**0**	**4.0**	**0.001**
Acute renal failure	5.3	4.9	0.85
Aspiration	0	0	-

	GLP-1RA (% risk)	BMI ≤40 group (% risk)	P-value
Readmission	4.3	4.1	0.95
ED visit	16.1	12.7	0.56
Revision	3.8	3.8	0.99
Mortality	3.8	3.8	0.99
SSI-Deep	0	0	-
SSI-Superficial	3.7	3.8	0.99
DVT	4.0	3.9	0.97
Pulmonary Embolism	0	0	-
Acute Renal Failure	5.2	4.9	0.87
Aspiration	**0**	**3.7**	**0.001**

GLP-1RA: Glucagon-like Peptide 1 Receptor Agonist