## Effect of GLP-1 Receptor Agonist Mediated Weight Loss on Outcomes After Total Hip Arthroplasty

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## INTRODUCTION:

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

## METHODS:

The TrinetX research network was queried to identify patients who underwent primary THA between March 2021 - May 2024. Patients who achieved a preoperative BMI reduction from  $\geq$ 43 to  $\leq$ 40 within 1 year while being prescribed a GLP-1RA were identified. Patients were 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 $\geq$ 43 who did not lose weight and control group B were with patients with a preoperative BMI $\leq$ 40 who were not being prescribed a GLP-1RA. Risk ratios were evaluated for postoperative outcomes. RESULTS:

118 patients were identified. After 1:1 propensity matching, 115 patients were matched to control group A and 118 patients were matched to control group B. Compared to control group A, GLP-1RA patients had a decreased risk of pulmonary embolism (0% vs 9.2% p=0.001). Compared to control group B, GLP-1RA patients had a decreased risk of aspiration (0% vs 8.5% p=0.001). Compared to both control group A and B, GLP-1RA patients had an increased risk of mortality (8.8% vs 0% 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 THA had a decreased risk of complications, but an increased risk of mortality. GLP-1RAs may not be a safe tool for patients to achieve weight optimization prior to THA.

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

|                     | GLP-1RA group<br>(% risk) | BMI >43 group<br>(% risk) | P value |
|---------------------|---------------------------|---------------------------|---------|
|                     |                           |                           |         |
| Readmission         | 0                         | 0                         | -       |
| ED visits           | 27.8                      | 22.2                      | 0.57    |
| Revision            | 9.0                       | 9.3                       | 0.95    |
| Mortality           | 8.8                       | 0                         | 0.001   |
| SSI-Deep            | 8.9                       | 9.1                       | 0.97    |
| SSI-Superficial     | 8.8                       | 8.7                       | 0.98    |
| DVT                 | 9.4                       | 9.2                       | 0.95    |
| Pulmonary embolism  | 0                         | 9.2                       | 0.001   |
| Acute Renal Failure | 12.5                      | 11                        | 0.76    |
| Aspiration          | 0                         | 0                         | -       |

|                     | GLP-1RA group<br>(% risk) | BMI < 40 group<br>(% risk) | P value |
|---------------------|---------------------------|----------------------------|---------|
|                     |                           |                            |         |
| Readmission         | 0                         | 0                          | -       |
| ED visits           | 27.8                      | 22.7                       | 0.60    |
| Revision            | 8.8                       | 8.9                        | 0.97    |
| Mortality           | 8.5                       | 0                          | 0.001   |
| SSI-Deep            | 8.7                       | 8.8                        | 0.97    |
| SSI-Superficial     | 8.5                       | 8.5                        | 0.98    |
| DVT                 | 9.2                       | 9.0                        | 0.97    |
| Pulmonary embolism  | 0                         | 0                          | -       |
| Acute renal failure | 12.3                      | 12.3                       | 1.0     |
| Aspiration          | 0                         | 8.5                        | 0.01    |

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