Superior Postoperative Outcomes Following Total Hip Arthroplasty are Associated with as Short as Two-Months of Semaglutide Use for Type II Diabetic Patients

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INTRODUCTION:

Patients with type II diabetes mellitus (T2DM) are at high-risk for postoperative total hip arthroplasty (THA) complications. Semaglutide (Ozempic®) has emerged as a first-line therapeutic recommendation for T2DM. Its utilization at the time of THA has shown to modify the risk of various postoperative adverse events. However, the minimum preoperative treatment duration of semaglutide associated with superior THA outcomes has never been studied.

METHODS: A retrospective cohort of adult patients with T2DM utilizing semaglutide (T2DM+semaglutide) prior to THA were identified from the PearlDiver database. Exclusion criteria included: patients presenting for trauma, neoplasm, or infection, and <90-days follow-up. Five exclusive cohorts of semaglutide exposure were identified: <1mo, 1-2mo, 2-3mo, 3-6mo, and 6-12mo. Each cohort was individually matched 1:4 with non-semaglutide patients by age, sex, Elixhauser Comorbidity Index, frequency of end-organ diabetes complications, obesity (body mass index >30), tobacco, metformin, and insulin use. Odds of 90-day severe adverse events (SAE) including surgical-site infection, sepsis, venous thromboembolism, cardiac events, and minor adverse events (MAE) including pneumonia, acute kidney injury, urinary tract infection, and wound complications were compared by multivariable logistic regression utilizing Bonferroni correction.

RESULTS:

After individual cohort matching of 1,818 T2DM+semaglutide THA patients, <1mo, 2-3mo, 3-6mo, and 6-12mo of preoperative semaglutide exposure was identified for 64, 101, 154, 370, and 522 patients, respectively. Patients initiating semaglutide <1mo before THA revealed lower odds of MAE (odds ratio [OR] 0.07, $p<0.001$), with consistent reduction in MAE across all increased semaglutide exposure lengths ($p<0.001$ for all). Reduced odds of SAE were significant after a minimum of 1-2mo of semaglutide exposure (OR 0.11, $p=0.003$).

DISCUSSION AND CONCLUSION:

Two-months of preoperative semaglutide use before THA may be a sufficient therapeutic length to reduce both minor and severe postoperative complications. These findings have major clinical implications and lay the foundation for prospective analysis aimed at preoperative glycemic optimization.