Improved Total Shoulder Arthroplasty Outcomes Associated With Semaglutide Utilization in Patients With Type II Diabetes: A Promising New Addition to Preoperative Optimization

Anthony Enzo Seddio¹, Christopher Wilhelm, Michael J Gouzoulis, Wasif Islam, Rajiv Siddhartha Vasudevan², Lee Eric Rubin³, Michael Medvecky⁴, Kenneth William Donohue, Jonathan N Grauer

¹Yale School of Medicine Department of Orthopaedics, ²Yale New Haven Health, ³Yale University, ⁴Yale School of Med INTRODUCTION: Semaglutide (the active agent in Ozempic[®]) has been increasingly recognized as one of the most effective medications in the management of type II diabetes mellitus (T2DM) and has been recently distinguished as a first-line therapy by the American Diabetes Association. Patients with T2DM undergoing orthopaedic surgery, such as total shoulder arthroplasty (TSA), may be using this medication for management of their disease. While T2DM has been associated with inferior postoperative TSA outcomes, the correlation of preoperative semaglutide use on such outcomes has never been characterized.

METHODS:

T2DM patients undergoing TSA (anatomic or reverse) were identified from the 2010 – Q3 2022 PearlDiver M165Ortho database using International Classification of Disease (ICD) and Current Procedural Terminology (CPT) codes. Exclusion criteria included: <18 years of age, fewer than 90-days of follow-up, and those with traumatic, neoplastic, or infectious diagnoses at the time of surgery.

T2DM patients who utilized semaglutide within one-year prior to TSA were identified and matched 1:4 with T2DM patients who did not based on age, sex, Elixhauser Comorbidity Index (ECI), end-organ diabetes complications, obesity (body mass index [BMI] >30), tobacco, insulin, and metformin use.

Incidence of 90-day individual and aggregated any, severe, and minor adverse events (AAE, SAE, MAE, respectively) were compared by univariable and multivariable analyses.

RESULTS: After matching, there were 632 T2DM+semaglutide and 2,302 T2DM-semaglutide patients. On multivariable analysis of the matched populations, T2DM+semaglutide patients had significantly lower odds of AAE (odds ratio [OR] 0.27, p<0.001) and SAE (0.40, p<0.001), including surgical site infection (OR 0.25, p=0.003), cardiac events (OR 0.32, p=0.003), and venous thromboembolism (OR 0.36, p=0.001). Additionally, T2DM+semaglutide patients had lower odds of MAE (OR 0.27), including pneumonia (OR 0.25), urinary tract infection (OR 0.30), acute kidney injury (OR 0.39), and ED visit (OR 0.37) (p<0.001 for all).

DISCUSSION AND CONCLUSION: The current study encouragingly found consistent reductions in 90-day adverse outcomes following TSA for patients with T2DM using semaglutide preoperatively. Further prospective analysis is warranted as the observed findings suggest clinical benefit of semaglutide integration into preoperative optimization pathways by the studied patient population.