

Conference abstract

Postoperative Complications and Revision Rates Following Total Shoulder Arthroplasty in Patients Receiving GLP-1 Agonists and/or SGLT-2 Inhibitors

Arthur Saroyan, BS¹, Jordan Kamen, BS¹, Jacob Keel, MS¹, Dylan Moran, BS¹, Avianna Arapovic, MD, MBA^{2a}, Lucas Haas, MD³, J. Michael Wiater, MD²

¹ Foundational Medical Studies, Oakland University William Beaumont School of Medicine, ² Orthopaedic Surgery, Corewell Health William Beaumont University Hospital, ³ Orthopaedic Surgery, Allegheny Health Network

Keywords: 2026 Research Forum Oral Presentation

<https://doi.org/10.69735/001c.163915>

INTRODUCTION

Glucagon-like peptide-1 receptor agonists (GLP-1) and sodium-glucose cotransporter-2 inhibitors (SGLT-2) are increasingly prescribed for patients with diabetes and obesity, populations also commonly undergoing total shoulder arthroplasty (TSA). While both medication classes have demonstrated cardiometabolic benefits, their comparative impact on postoperative TSA outcomes remains poorly defined. The purpose of this study was to compare short-term complications and mid-term revision outcomes following TSA in patients treated with GLP-1 agonists, SGLT-2 inhibitors, or dual therapy. We hypothesized that preoperative exposure to GLP-1 agonists and SGLT-2 inhibitors would have no difference in postoperative outcomes.

METHODS

A retrospective cohort study was performed using the PearlDiver national administrative claims database to identify adult patients with type 2 diabetes mellitus undergoing primary total shoulder arthroplasty (TSA) between 2010–2023. Patients were stratified by preoperative exposure to GLP-1 receptor agonists, SGLT2 inhibitors, dual therapy, or no therapy.

Cohorts were matched using 1:1 propensity score matching based on age, sex, and Charlson Comorbidity Index. Separate matched cohorts were generated for 90-day and 2-year analyses.

Primary outcomes included 90-day medical complications (infection, pneumonia, cardiac complications, myocardial infarction, cerebrovascular accident, deep vein thrombosis, pulmonary embolism, sepsis, urinary tract infection, hypoglycemia, and surgical site infection) and 2-year surgical outcomes (revision TSA, aseptic revision, dislocation, periprosthetic joint infection, ORIF, and debridement).

RESULTS

After propensity score matching, cohorts were well balanced across baseline characteristics. At 90 days, compared with no therapy, GLP-1RA use was associated with lower rates of cerebrovascular accident (0.32% vs 1.21%, $p<0.001$) and deep surgical site infection ($<0.17\%$ vs 0.34%, $p=0.010$), while other complications were similar. In contrast, SGLT2 inhibitor use was associated with lower rates of pneumonia (1.76% vs 2.36%, $p=0.036$), cerebrovascular accident ($<0.33\%$ vs 0.55%, $p=0.001$), deep vein thrombosis (0.39% vs 0.86%, $p=0.029$), pulmonary embolism ($<0.33\%$ vs 0.55%, $p<0.001$), and deep surgical site infection (0.00% vs $<0.31\%$, $p=0.049$) compared to no therapy. Similar reductions in thromboembolic and cerebrovascular events were observed in the dual therapy cohort. In head-to-head matched comparisons, 90-day complication rates were otherwise similar between GLP-1RA and SGLT2 cohorts.

At two years, SGLT2 inhibitor use demonstrated a higher overall revision rate compared to no therapy (11.00% vs 7.73%, $p<0.001$). While overall revision rates did not differ significantly between GLP-1RA and SGLT2 cohorts (9.85% vs 11.00%, $p=0.288$), aseptic revision occurred more frequently in the SGLT2 cohort compared to GLP-1RA (5.33% vs 3.82%, $p=0.040$). Rates of dislocation, periprosthetic joint infection, open reduction and internal fixation, and debridement were otherwise comparable between groups.

CONCLUSIONS

SGLT2 inhibitor and dual therapy use were associated with lower rates of early thromboembolic and cerebrovascular complications following TSA. However, SGLT2 inhibitor use was also associated with higher overall revision rates compared to no therapy and higher aseptic revision rates compared to GLP-1RA. These findings suggest that antidiabetic medication profile may influence both short-term medical and mid-term surgical outcomes.



This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CCBY-4.0). View this license's legal deed at <http://creativecommons.org/licenses/by/4.0> and legal code at <http://creativecommons.org/licenses/by/4.0/legalcode> for more information.