

Conference abstract

GLP-1 Receptor Agonists and Complications After Transesophageal Echocardiography: The GAS-TEE Study

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INTRODUCTION

Transesophageal echocardiography is routinely used for structural heart disease evaluation, perioperative assessment, and guidance of transcatheter interventions. Although considered safe, reported complication rates range from 1 to 6 percent and include aspiration, hypoxia, arrhythmia, bleeding, and esophageal injury. As TEE utilization expands, even small changes in procedural risk become clinically relevant. Glucagon-like peptide-1 receptor agonists are increasingly prescribed for type 2 diabetes and obesity. Their known effect of delayed gastric emptying has raised concern for peri-procedural aspiration. Endoscopic literature has demonstrated increased retained gastric contents among GLP-1 users, prompting evolving perioperative fasting recommendations. However, no study has specifically evaluated whether GLP-1 receptor agonist exposure increases complications in patients undergoing TEE.

We hypothesized that GLP-1 receptor agonist use is associated with increased 24-hour TEE complications compared with non-use. We also evaluated baseline clinical differences between groups to contextualize risk.

METHODS

GAS-TEE is a retrospective cross-sectional study of adults aged 18 years or older who underwent TEE at McLaren hospitals between January 1, 2023 and July 31, 2025. TEEs were identified using procedural billing codes. GLP-1 exposure included semaglutide, tirzepatide, liraglutide, or dulaglutide prescribed during the procedural period. The primary endpoint was any complication within 24 hours of TEE. Complications included aspiration pneumonia, oxygen desaturation requiring intervention, esophageal perforation, upper gastrointestinal bleeding, new atrial fibrillation, ventricular arrhythmia, transfusion requirement, or need for endoscopic intervention. Baseline variables included age, sex, race, body mass index, diabetes mellitus, gastroparesis, and left ventricular ejection fraction. Categorical variables were compared using chi-square testing and continuous

variables with independent t-testing. A two-sided p-value less than 0.05 was considered statistically significant.

RESULTS

A total of 251 patients were included. Of these, 223 (88.8%) were controls and 28 (11.2%) were receiving a GLP-1 receptor agonist. Mean age was similar between groups (72.4 vs 73.8 years, $p=0.598$). Left ventricular ejection fraction did not differ significantly (53.6% vs 52.5%, $p=0.659$). The GLP-1 group had significantly higher BMI (40.7 vs 29.4 kg/m², $p<0.001$) and substantially higher prevalence of diabetes (92.9% vs 15.7%, $p<0.001$). Gastroparesis prevalence was not significantly different. The overall 24-hour complication rate was 0.8% (2 of 251). Among controls, 1 of 223 patients (0.4%) experienced a complication. Among GLP-1 users, 1 of 28 patients (3.6%) experienced a complication. This difference did not reach statistical significance ($p=0.080$). Both events were aspiration pneumonia requiring antibiotic therapy and increased oxygen support. There were no cases of esophageal perforation, bleeding, atrial fibrillation, ventricular tachycardia, ventricular fibrillation, transfusion, or need for endoscopic intervention. Given the extremely low event frequency, multivariable logistic regression was not performed.

CONCLUSIONS

TEE complications were rare in this cohort. Although there was a numerically higher complication rate among GLP-1 users, the difference was not statistically significant. The study is underpowered to detect small differences due to the very low overall event rate. In this real-world cohort, clinically significant TEE complications remain uncommon among patients receiving GLP-1 receptor agonists. Larger multicenter datasets will be required to determine whether a clinically meaningful association exists and to guide evidence-based peri-procedural management recommendations.



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