Association of GLP1 Receptor Agonist Use With Pulmonary Aspiration During Endoscopy

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Introduction: There has been a surge in glucagon-like-peptide-1 receptor agonist (GLP1RA) use, raising safety concerns during endoscopy. By delaying gastric emptying, GLP1RA can leave retained gastric contents despite fasting, risking regurgitation and pulmonary aspiration. Though rare (1-5 events per 10,000 scopes, 0.01%-0.05%), pulmonary aspiration can be catastrophic, resulting in intubation, ventilation, or death. Therefore, urgent research is needed to determine whether GLP1RA increases anesthesia complications. Current evidence is conflicting; while smaller case series report increased retained gastric contents, most studies suggest no association with aspiration. However, many are underpowered or confounded. This study aimed to address these issues and fill a gap in literature.

Methods: TriNetX contains electronic health records from over 150 million de-identified patients. Active GLP1RA users consisted of patients undergoing endoscopy (upper or lower) with two instances of GLP1RA listed within six months prior (n=51,948). Non-users consisted of those undergoing endoscopy with no prior GLP1RA instances (n=3,633,823). Exclusions included prior foregut/small intestine surgery (including bariatric), motility disorders (achalasia, dyskinesia, ileus, esophageal obstruction), tracheostomy or intubation within six months prior, or ventilation one day before endoscopy. Propensity score matching was performed on 39 covariates: demographics (age, sex, ethnicity), comorbidities affecting aspiration risk (gastroparesis, obesity, diabetes, neurologic disease, etc.), and medications altering gastric motility (opioids, prokinetics, antiemetics, diabetes therapies, etc.). Outcomes were ICD-coded respiratory complications (aspiration pneumonitis, aspiration-related vomiting, foreign body aspiration, etc.) occurring within seven days. A secondary analysis extended to 30 days to account for delayed coding at discharge after complication.

Results: Propensity score matching achieved balance across all 39 covariates (standard mean difference <0.1). Within 7 days post-endoscopy, 34 outcomes occurred among 42,897 GLP1RA users (0.079%) versus 32 among 42,680 non-users (0.075%), yielding an odds ratio of 1.06 (95% CI: 0.65-1.71). For ICD J69 (“pneumonitis due to solids and liquids”), rates were 0.055% vs 0.053%, respectively. Expanding to 30 days, adverse outcomes occurred in 53 of 48,870 users (0.108%) and 66 of 48,659 non-users (0.136%), with an odds ratio of 0.80 (95% CI: 0.56-1.15).

Conclusion: No significant differences in adverse anesthesia outcomes were observed between GLP1RA users and non-users undergoing endoscopy. The observed rate of pulmonary aspiration in this study was comparable to the literature reported rate. Though expanding the time window to 30 days increased the adverse outcome rate, no significant risk difference between cohorts emerged. Therefore, this study shows no evidence of GLP1RA users experiencing a higher rate of pulmonary aspiration. Limitations include reliance on ICD-based data, which may be inaccurate from incorrect charting, and the observational design, which restricts causal inference. While designed to minimize uncertainty, preliminary analysis cannot ensure GLP1RA exposure. Future analysis will examine local data with dosage information, larger propensity matching ratios, and advanced statistical methods.

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