



The Implications of Glucagon-like Peptide-1 Agonist Drugs on Anesthesia Care Planning

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INTRODUCTION

Glucagon-like peptide-1 (GLP-1) agonists have been approved as a type 2 diabetes mellitus (DM2) treatment since 2005

In 2021, the U.S. FDA approved their use for chronic weight management, leading to a rise in public demand

Anecdotal evidence suggested a link to delayed gastric emptying, increasing this population's risk for perioperative bronchopulmonary aspiration under monitored anesthesia care (MAC)

Safe anesthesia care planning for patients who take GLP-1 agonists has been a popular topic among anesthesia departments since the ASA's guideline was released in June 2023

OBJECTIVES

Investigate the relationship between GLP-1 agonists and their effects on gastric emptying in the setting of

Present observational data to the affiliated organization's anesthesia department to influence the care of patients who take GLP-1 agonists and undergo MAC anesthesia

RESEARCH QUESTION

Do adult patients between the ages of 18 and 85 years having an elective esophagogastroduodenoscopy (EGD) have greater odds of gastric contents that are visualized endoscopically if they take a GLP-1 agonist compared to those who do not take a GLP-1 agonist, in procedures that occur between January 1 and August 1, 2024?

METHODS

Design: Retrospective chart review, underwent IRB expedited review procedures, IRB number 24-004958

Setting: Midwest regional referral center for a large health system

Sample: Convenience sample, adults aged 18-85 years who underwent elective EGD procedures with MAC anesthesia, between January 1 and August 1, 2024

Three groups: no GLP-1 agonist, control ($n = 30$), GLP-1 agonist for DM2 ($n = 30$), GLP-1 agonist for weight loss ($n = 11$)

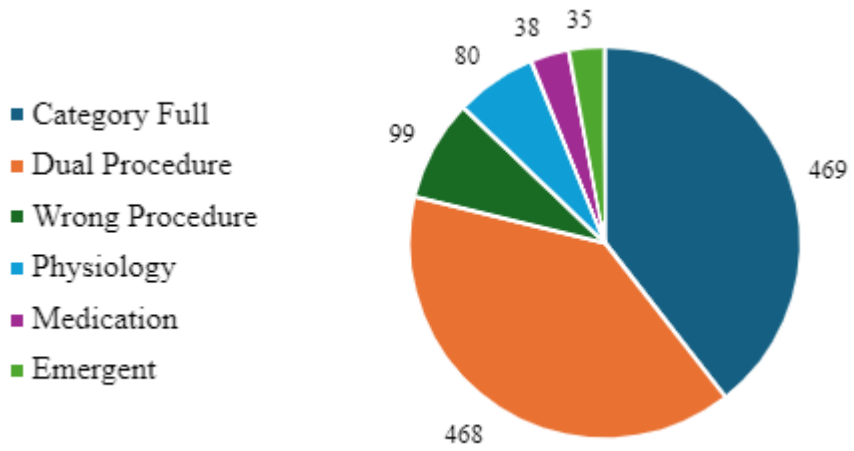
Exclusion Criteria: Emergent cases, procedures paired with other endoscopy procedures (e.g., colonoscopy), diagnosed pathophysiological conditions that effect gastric emptying (e.g., bariatric surgery, gastroparesis, pregnancy), medications that effect gastric emptying (e.g., chronic opioid use, laxatives, bowel preparation solutions, pro-kinetics), elective general anesthesia

Data Collection: Demographics (e.g., age, sex, ASA physical status, diagnosis of DM2); the presence, formulation, dose of GLP-1 agonist drug; physiologic data (e.g., BMI, hemoglobin A1c)

Outcomes of interest included conversion from MAC to general anesthesia, presence of gastric contents, aborted procedures, presence of GI symptoms (e.g., nausea, vomiting) on procedure day

RESULTS

Figure 1
A Categorical Summarization of 1193 Excluded EGD Encounters



Note. The "Category Full" and "Dual Procedure" designations comprise 78.5% (937/1193) of the EGD encounters that were excluded. The "Wrong Procedure" category includes other upper endoscopy procedures that were not EGDs, 8.3% (99/1193). "Physiology" refers to participants who met exclusion criteria due to a diagnosed condition that affects gastric emptying. Three EGD encounters that were completed electively with general anesthesia and one EGD encounter of a patient who did not meet the age criterion are not depicted.

Table 1
The Demographic Characteristics of the 71 EGD Encounters that Met Inclusion Criteria

Variables	Non-GLP-1 (n = 30)	GLP-1, DM2 (n = 30)	GLP-1, Weight (n = 11)
Age (years)	58.9 ± 15.3	62.7 ± 10.0	50.5 ± 9.5
Legal Sex (% female)	60% (18/30)	46.7% (14/30)	81.8% (9/11)
BMI (kg/m ²)	28.6 ± 7.1	35.5 ± 7.4	33.5 ± 4.9
ASA Physical Status			
II	30.0% (9/30)	6.7% (2/30)	36.4% (4/11)
III	63.3% (19/30)	76.7% (23/30)	63.6% (7/11)
IV	6.7% (2/30)	16.7% (5/30)	0% (0/11)
Hemoglobin A1c (%)	6.2 ± 2.0	7.5 ± 1.8	5.5 ± .35

Note. Age, BMI, and Hemoglobin A1c are each represented with a mean and standard deviation. No participants that met inclusion criteria that had an ASA physical status of I, V, or VI. Hemoglobin A1c was only collected if it was documented within a year of the procedure date.

Table 2
Endoscopic Visualization of Gastric Contents by Group

Group	Occurrences of Endoscopic Visualization of Gastric Contents		Sample Size
	Yes	No	
GLP-1, DM2	2	28	n = 30
GLP-1, Weight	2	9	n = 11
GLP-1 (Total)	4	37	n = 41
Non-GLP-1	1	29	n = 30

Note. The comparison groups, patients who took GLP-1 agonists for DM2 and chronic weight management, were combined to create one group of patients who took GLP-1 agonists. The observations in the shaded, 2 x 2 matrix were the basis for the odds ratio calculation.

DISCUSSION

Primary Findings:

9.8% (4/41) of participants who took GLP-1 agonists and 3.3% (1/30) of participants who did not take GLP-1 agonists had retained gastric contents regardless of proper NPO status and appropriate preoperative holding of their GLP-1 agonist medications

Odds Ratio = 3.14

95% Confidence Interval [0.33, 29.58]

The odds of retained gastric contents were 3.14 times greater in those who took GLP-1 agonists compared to those who did not

Secondary Findings:

5 participants with retained gastric contents and 6 participants with GI symptoms on procedure day

90.9% (10/11) took GLP-1 agonists

72.7% (8/11) were female, BMI > 30 kg/m², GLP-1 agonist

Female patients who took GLP-1 agonists and had a BMI > 30 kg/m² appeared to have the greatest risk of retained gastric contents

CONCLUSIONS

Although no evidence of perioperative bronchopulmonary aspiration was found during chart analysis, demographic trends could indicate who may be at higher risk for such events

Anesthesia providers should consider modifying their anesthesia care plan for patients who take GLP-1 agonists and meet demographic criteria (i.e., female, BMI > 30 kg/m²) to decrease their risk of perioperative bronchopulmonary aspiration during MAC anesthesia

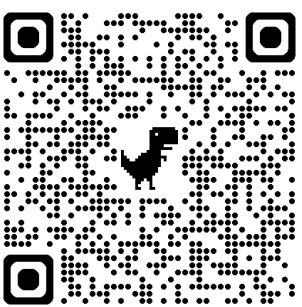
Further research is needed on this topic to further examine the demographic trends that were identified during this project

ACKNOWLEDGEMENTS

Michelle Dahl, DNP, CRNA for her continued support and guidance throughout the completion of this project

The anesthesia department, endoscopy nurses, and endoscopy proceduralists at the affiliated organization for providing preoperative patient education and safe intraoperative care to participants

REFERENCES



References



Paper

