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Faizan Sheraz
Department of Internal Medicine, HCA Healthcare / Sunrise GME Consortium, Las Vegas, NV, USA

Athena Dhaliwal
Department of Internal Medicine, HCA Healthcare / Sunrise GME Consortium, Las Vegas, NV, USA

Corresponding Author:
Faizan Sheraz
Department of Internal Medicine, HCA Healthcare / Sunrise GME Consortium, Las Vegas, NV, USA

Managing delayed gastric emptying in patients on glp-1 receptor agonists scheduled for endoscopy: A brief communication

Faizan Sheraz and Athena Dhaliwal

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Abstract
Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are widely used for diabetes and obesity but pose challenges during endoscopy due to delayed gastric emptying and increased retained gastric contents. Although aspiration risk remains low in large studies, higher rates of RGC often lead to procedural interruptions. Current guidelines differ, with some supporting individualized fasting and others recommending clear liquid diets or optional drug withholding. This brief communication summarizes evidence, highlights guideline variability, and proposes a practical risk-stratified approach to optimize procedural safety while maintaining metabolic stability in patients using GLP-1 RAs.

Keywords: GLP-1 receptor agonists, delayed gastric emptying, retained gastric contents, aspiration risk, endoscopy management, fasting guidelines, risk-stratified approach

Introduction

To the Editor

The rapid expansion of glucagon-like peptide-1 receptor agonist (GLP-1 RA) use for type 2 diabetes and obesity management has created new clinical challenges for gastroenterologists. With one in eight, approximately 43 million, Americans currently prescribed these agents, [1], endoscopists increasingly encounter patients on semaglutide, liraglutide, dulaglutide, and other GLP-1 RAs. A critical concern is the risk of retained gastric contents (RGC) and potential pulmonary aspiration during sedated endoscopy, given these medications' profound effects on gastric motility.

The Clinical Problem

GLP-1 RAs delay gastric emptying as a core mechanism of action, promoting satiety and glycemic control. Recent evidence demonstrates significantly elevated rates of RGC in patients taking these medications. Prospective studies using point-of-care gastric ultrasound after standard overnight fasting reveal solid gastric contents in 19-56% of GLP-1 RA users compared to 5-20% of matched controls [2-4]. Endoscopic case series report RGC rates of 5-30% in GLP-1 RA users versus 0.5-5% in non-users during upper endoscopy [2-5].

However, large database analyses present a more nuanced picture. A recent comparative cohort study of adults undergoing upper endoscopy found no increase in pulmonary aspiration rates (4.15 vs 4.26 per 1, 000 procedures) in GLP-1 RA users compared to controls, though procedure discontinuation due to RGC was significantly higher (adjusted RR 1.99) [7]. Similarly, systematic reviews have not demonstrated consistent increases in aspiration or pneumonia risk for elective procedures (summary RR ≈1.00 [0.76-1.30]) [1].

Divergent Guideline Recommendations

Professional societies have issued conflicting guidance, reflecting uncertainty in the evidence base:

American Gastroenterological Association (AGA): Recommends an individualized approach for asymptomatic patients, permitting standard fasting protocols (8 hours for solids, 2 hours for clear liquids). They suggest considering a clear liquid diet the day before the procedure and using gastric ultrasound for suspected RGC, while avoiding mandatory drug cessation for all patients [2, 3].

American Society of Anesthesiologists (ASA): Initially advised holding daily GLP-1 RAs on the procedure day and weekly agents for 7 days prior. However, following review of accumulating evidence, the ASA revised its position to support individualized management, stating most patients may continue therapy before elective procedures [1, 5, 6].

Australian and New Zealand Multisociety Recommendations (ADS/ANZCA/GESA/NACOS): Advocate continuing GLP-1/GIP agents peri-procedurally but implementing a 24-hour clear fluid diet followed by standard 6-hour fasting, with risk stratification using gastric ultrasound or minimally sedated gastroscopy when indicated [3].

A joint statement from multiple GI societies (AASLD/ACG/AGA/ASGE/NASPGHAN) emphasized that no data support routine cessation of GLP-1 RAs before elective endoscopy [1, 5].

Practical Management Framework

Given this evolving landscape, we propose a risk-stratified approach for gastroenterologists:

Standard-Risk Patients (Asymptomatic, No Upper GI Symptoms)

1. **Pre-procedure Assessment:** Screen all patients for GLP-1 RA use during scheduling
2. **Fasting Protocol:** Standard 8-hour solid food fast, 2-hour clear liquid fast
3. **Optional Enhancement:** Consider 24-hour clear liquid diet before procedure
4. **Drug Continuation:** Continue GLP-1 RA therapy, particularly for diabetes indications
5. **Procedural Readiness:** Prepare for potential RGC; have suction readily available

High-Risk Patients (Symptomatic: Nausea, Vomiting, Early Satiety, or Gastroparesis)

1. **Extended Preparation:** Implement 24-hour clear liquid diet
2. **Point-of-care Gastric Ultrasound:** When available, perform pre-sedation assessment
3. **Drug Withholding:** Consider holding GLP-1 RA for weight-loss-only indications (balance against metabolic needs for diabetes patients; consult endocrinology if uncertain)
4. **Full-Stomach Precautions:** Treat as high aspiration risk; consider deeper sedation or anesthesia support with airway protection
5. **Procedure Modification:** Consider awake unsedated endoscopy or postponement if significant RGC identified

Timing of Drug Discontinuation (If Elected)

Evidence does not support a specific cessation interval that reliably normalizes gastric emptying. If stopping medication

- **Daily Agents (Liraglutide):** Hold on procedure day
- **Weekly Agents (Semaglutide, Dulaglutide):** Insufficient data for optimal interval; 7-day withholding has been suggested but lacks validation [2, 3, 6]
- **Metabolic Considerations:** Coordinate with endocrinology for diabetes patients; monitor for hyperglycemia

Intra-procedural Management

1. Maintain high index of suspicion for RGC
2. Ensure adequate suction capacity and function
3. Position patient appropriately (left lateral decubitus when possible)
4. Have airway management equipment immediately available
5. Consider lower sedation depth or anesthesia support for high-risk patients
6. Document RGC presence and management in procedure report

Knowledge Gaps and Future Directions

Critical questions remain unanswered

- What is the optimal cessation interval for weekly GLP-1 RAs, if any?
- Which patient characteristics (drug type, dose, duration, GI symptoms, prior bariatric surgery) predict highest aspiration risk?
- How long does gastric motility impairment persist after drug discontinuation?
- What is the cost-effectiveness of routine gastric ultrasound screening?
- Do newer dual GLP-1/GIP agonists (tirzepatide) carry different risks?

Prospective randomized trials comparing management strategies are needed but face ethical and logistical challenges given the low absolute aspiration rates.

Conclusion

The GLP-1 RA era demands updated preprocedural protocols. While these agents increase RGC rates, documented aspiration events remain rare in large datasets. An individualized, risk-stratified approach balancing aspiration risk against metabolic needs represents the most prudent current strategy. Gastroenterologists should screen for GLP-1 RA use, consider extended liquid diets and gastric ultrasound for symptomatic patients, maintain high procedural vigilance, and avoid blanket drug cessation policies that may harm glycemic control. As the evidence base evolves, guidelines will require ongoing revision to optimize both procedural safety and metabolic health.

Conflicts of Interest

Guarantor of the article

Faizan Sheraz

Specific author contributions

Faizan Sheraz (Research and manuscript writing), Athena Dhaliwal (Literature Review)

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