

Mitigating Aspiration Risk in GLP-1 Agonist risk in GLP-1 Agonist Users: A Potential Role for Preoperative Proton Pump Inhibitors

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Introduction

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs), a widely used therapy for Type 2 Diabetes and Obesity, effectively regulate blood glucose and promote weight loss. This drug has the effect of decreasing gastric emptying, posing an increased risk of aspiration for patients undergoing anesthesia. This risk is apparent during the perioperative period, where standard fasting protocols may be inadequate in eliminating gastric contents. Proton pump inhibitors (PPIs), which decrease gastric acid secretion, offer the potential to mitigate the risk of aspiration by lowering gastric volume. There is a lack of research in the efficacy of PPI use in patients on GLP-1 RAs undergoing anesthesia. The aim of this study is to investigate the use of PPIs as a beneficial perioperative intervention to reduce aspiration risk in patients under anesthesia, aiming to inform evidence based clinical practices.

Methods

A narrative literature review was conducted using databases like Pubmed, Embase, and Cochrane library. Search keywords included"GLP-1 receptor agonists," "anesthesia," "aspiration risk," "gastric emptying," and "proton pump inhibitors." Articles were selected based on relevance to perioperative outcomes in GLP-1 receptor agonist users, presence of aspiration-related data, and any mention of proton pump inhibitor use. Articles focusing solely on diabetic management or PPI use in unrelated contexts were excluded. We synthesized findings from clinical studies, case reports, and expert reviews to assess the theoretical and practical impact of PPI administration on perioperative outcomes, particularly the reduction of gastric volume and acidity in GLP-1 RA users.

Proton Pump Inhibitors

- ↓ Acidity
- ↓ Gastric Volume
- ↓ Aspiration and Lung injury



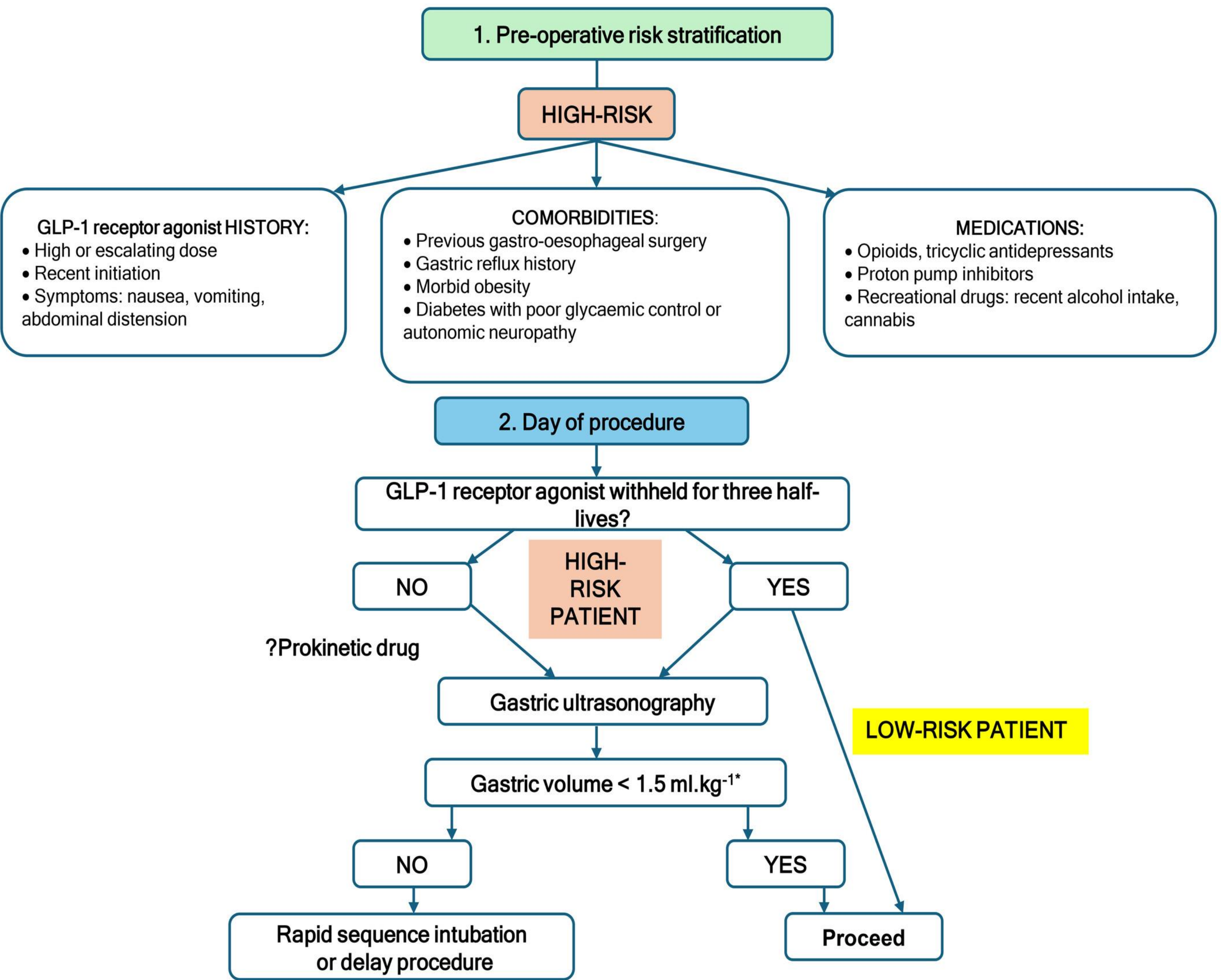
GLP-1 Receptor Agonists

- ↑ Acidity
- ↓ Gastric Motility
- ↓ Gastric Emptying

Results

The current literature consistently demonstrates that GLP-1 RAs delay gastric emptying, leading to an increased risk of residual gastric contents and aspiration despite standard fasting protocols. Multiple case reports and small cohort studies describe perioperative regurgitation events in patients on GLP-1 RAs, underscoring the need for tailored anesthetic management. While no randomized controlled trials directly assess the impact of preoperative proton pump inhibitors in this population, there is evidence that supports their ability to increase gastric pH and reduce acidity. This can potentially lessen the severity of aspiration-related pneumonitis. Overall, findings highlight a significant evidence gap and suggest that preoperative PPI administration can be a low-risk, plausible strategy that warrants prospective investigation.

Group	Typical Gastric pH	Typical Gastric Volume	Residual Gastric Content (“At-Risk” Stomach)	Aspiration / Pneumonitis Risk
Controls (no PPI)	1 – 3	≈ 30–50 mL	≈ 5 % with increased RGC	Baseline risk
GLP-1 RA users (no PPI)	1 – 3	↑ vs controls (due to delayed emptying)	≈ 24 % with increased RGC (Semaglutide)	Potentially ↑ intra-op regurgitation cases
Controls + PPI	4 – 5	↓	Fewer meet “acid aspiration” criteria	↓ severity of pneumonitis if aspiration occurs
GLP-1 RA users + PPI (anticipated)	≈ 4 – 5	↑ vs controls but pH buffered	Unknown – more data needed	Potentially ↓ severity of injury; efficacy unconfirmed



Source: Adapted from Milder DA, Milder TY, Liang SS, Kam PCA. Glucagon-like peptide-1 receptor agonists: a narrative review of clinical pharmacology and implications for peri-operative practice. Anaesthesia. 2024;79(7):735-747. doi:10.1111/anae.16306

Discussion

GLP-1 receptor agonist users present unique anesthesia risks, as standard fasting may not prevent aspiration due to delayed gastric emptying. A multimodal approach involving holding GLP-1 RAs preoperatively, initiating 24–48 hours of PPI therapy, and using gastric ultrasound to assess residual volume may enhance safety. PPIs offer a low-cost, low-risk adjunct, though current evidence is limited to small studies and case reports. Future research should assess gastric volume, pH, and aspiration outcomes after PPI use and explore combined strategies incorporating PPIs, promotility agents, and GLP-1 RA withholding.

Conclusion

GLP-1 receptor agonist use may increase aspiration risk during anesthesia due to delayed gastric emptying. Preoperative proton pump inhibitor therapy offers a simple, low-risk strategy to potentially reduce this risk and improve perioperative safety. While early findings are promising, larger prospective studies are needed to validate these interventions and inform future guideline development.

References

