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Perioperative Management of GLP-1 Receptor Agonists in Anesthesia: A Narrative Review

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Glucagon like peptide 1 (GLP-1) receptor agonists, commonly known as GLP-1 receptor agonists, are increasingly used for type 2 diabetes, obesity, and cardiovascular risk reduction. Common examples include semaglutide, liraglutide, dulaglutide, and tirzepatide. Their rising use has created new concerns in anesthesia because these medications can delay gastric emptying, which may increase the risk of residual gastric contents, regurgitation, and pulmonary aspiration during sedation or general anesthesia. Early guidance recommended holding these medications before surgery, but newer multi-society guidance suggests that most patients can continue GLP-1 therapy before elective procedures, with individualized risk assessment for patients at higher risk. This narrative review discusses the mechanism of GLP-1 receptor agonists, perioperative aspiration concerns, evolving anesthesia guidelines, and practical clinical approaches for safe perioperative care.

Keywords: GLP-1; Semaglutide; Anaesthesia; Gastric Emptying

INTRODUCTION

GLP-1 receptor agonists have become widely used in both primary care and specialty care because they improve glycemic control and support weight loss. As more patients present for

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surgery while taking these medications, anesthesiologists must consider their perioperative effects. The main anesthesia concern is delayed gastric emptying [1-4]. A patient may follow standard fasting instructions but still have significant stomach contents at the time of anesthesia induction or deep sedation [3-4]. This creates concern for aspiration, especially in patients receiving general anesthesia, emergency surgery, or procedures requiring deep sedation.

The issue has become clinically important because guidance has changed over time. In 2023, the American Society of Anesthesiologists suggested holding daily GLP-1 medications on the day of surgery and weekly GLP-1 medications for one week before surgery.¹ However, later multi-society guidance stated that most patients can continue GLP-1 medications before elective surgery, while patients at higher risk may need added precautions.²

METHODS

This narrative review was developed using references from anesthesia guidelines, perioperative literature. The review focuses on clinically relevant concepts rather than a formal systematic review methodology. Articles were included if they addressed GLP-1, physiology, hemodynamic response and perioperative management of GLP-1 medications in surgery and during anesthesia

REVIEW

Evidence on Aspiration Risk

Current evidence suggests that GLP-1 receptor agonists are associated with increased residual gastric contents, but the direct link to pulmonary aspiration is less certain [3-6]. Case reports have described patients taking GLP-1 medications who had significant gastric contents despite appropriate fasting. The Anesthesia Patient Safety Foundation reported cases where patients had large-volume complex gastric contents despite following standard fasting guidelines [3].

A review noted that GLP-1 receptor agonists may increase the risk of gastric content retention and pulmonary aspiration, especially because these drugs delay gastric emptying. However, evidence remains limited, and aspiration itself is rare. This makes it difficult to estimate the true size of the

risk. The safest approach is not to treat every patient the same, but to identify patients who are more likely to have delayed gastric emptying [2,4].

Evolution of Guidelines

The ASA guidance is conservative. It advised holding daily GLP-1 receptor agonists on the day of surgery and holding weekly agents for one week before elective surgery. If the medication was not held, clinicians were advised to consider the patient as having a “full stomach” or to evaluate gastric contents with ultrasound when available [1].

New multi-society guidance changed the approach. It stated that most patients can continue GLP-1 receptor agonists before elective surgery. The guidance emphasized shared decision-making among the anesthesia team, procedural team, prescribing clinician, and patient. For higher-risk patients, the guidance recommended strategies such as a liquid-only diet for 24 hours before surgery, adjusting the anesthesia plan to reduce aspiration risk, using point-of-care gastric ultrasound when available, and delaying elective surgery in selected cases [2].

Identifying High-Risk Patients

Not every patient taking a GLP-1 medication has the same aspiration risk. Higher-risk patients may include those who: [1-2].

1. Recently started a GLP-1 medication
2. Are in the dose-escalation phase
3. Have active gastrointestinal symptoms
4. Are taking higher doses
5. Have known gastroparesis
6. Have diabetes with autonomic neuropathy
7. Are undergoing emergency surgery
8. Are undergoing procedures requiring deep sedation or general anesthesia

For these patients, anesthesiologists should consider additional precautions rather than relying only on standard fasting instructions [1-2].

Practical Anesthesia Management

A practical perioperative approach begins with medication reconciliation. The preoperative assessment should ask specifically about GLP-1 drugs because patients may know them by brand names such as Ozempic, Wegovy, Mounjaro, Trulicity, Victoza, or Saxenda.

The anesthesia team should ask about the last dose, dose changes, duration of therapy, and current gastrointestinal symptoms [1-2]. If the patient is low risk and has no symptoms, current multi-society guidance supports continuing the medication for most elective procedures.

For higher-risk patients, possible precautions include: [1-2].

- A 24-hour liquid diet before the procedure
- Delaying elective surgery if severe nausea, vomiting, or bloating is present
- Using rapid-sequence induction when aspiration risk is significant
- Avoiding deep sedation without airway protection in selected high-risk cases
- Considering gastric ultrasound if trained staff and equipment are available
- Coordinating with the prescribing clinician if holding the drug may affect diabetes control

For urgent or emergency procedures, there may not be time to modify medication use. In these cases, the patient should generally be treated as having a potentially full stomach, and airway management should be planned accordingly [1].

Role of Gastric Ultrasound

Point-of-care gastric ultrasound can help assess whether the stomach appears empty or contains fluid or solid material. This may be useful when the GLP-1 medication was recently taken, the patient has symptoms, or the fasting status is uncertain. However, gastric ultrasound requires

training and may not be available in all settings. It should support clinical judgment, not replace it [1-2].

Balancing Aspiration Risk and Therapeutic Benefit

Stopping GLP-1 therapy is not risk-free. In patients with diabetes, holding therapy may worsen glycemic control. In patients using these medications for obesity, interruption may affect appetite and weight management. For some patients, especially those with cardiovascular or metabolic disease, unnecessary discontinuation may create avoidable problems. This is why newer guidance favors individualized decision-making instead of automatic cancellation or automatic medication holds [2].

Discussion

The perioperative management of GLP-1 receptor agonists is an evolving topic in anesthesia. The central concern is not the medication itself, but the possibility that it may delay gastric emptying enough to make standard fasting less reliable [1-4]. Earlier guidance focused on holding the drug, while newer guidance focuses on risk stratification. This shift is important because many patients safely tolerate GLP-1 therapy and may not need medication interruption before surgery [2].

The best approach is patient specific. A stable patient on a long-term GLP-1 dose with no gastrointestinal symptoms is different from a patient who recently increased the dose and has nausea or bloating. Anesthesia planning should reflect that difference [2].

CONCLUSION

GLP-1 receptor agonists are increasingly common among surgical patients, and anesthesiologists must understand their perioperative implications. These medications can delay gastric emptying and may increase the chance of residual gastric contents despite standard fasting. However, current guidance suggests that most patients can continue GLP-1 medications before elective procedures. Patients with gastrointestinal symptoms, recent dose escalation, high doses, or other risk factors require a more cautious approach. Safe anesthesia care depends on careful preoperative screening,

shared decision-making, aspiration-risk planning, and selective use of strategies such as liquid diet, gastric ultrasound, rapid-sequence induction, or delaying elective surgery when appropriate.

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