Review

Perioperative Management of Patients on GLP-1 Receptor Agonists: Clinical Implications and Best Practices

Brendan Jones *

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Perioperative Management of Patients on GLP-1 Receptor Agonists: Clinical Implications and Best Practices

Brendan Jones

Kansas City University, Kansas City, MO, USA; S119716@kansascity.edu

Abstract: Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are increasingly prescribed for type 2 diabetes mellitus (T2DM), obesity, and cardiovascular risk reduction. As these medications become more common, perioperative clinicians must understand their implications. Recent data suggest GLP-1 RAs may delay gastric emptying and increase the risk of aspiration during anesthesia. This narrative review summarizes current evidence, highlights clinical guidelines, and offers a perioperative management framework for patients on GLP-1 RAs, including semaglutide, liraglutide, dulaglutide, and others. We also present a clinical decision table to guide perioperative medication holds and patient risk stratification.

Keywords: GLP-1 receptor agonists; Perioperative management; Aspiration risk; Surgical complications; Enhanced recovery after surgery (ERAS)

Introduction

GLP-1 receptor agonists are a cornerstone in modern management of metabolic diseases. Their popularity has surged due to benefits in weight reduction, glycemic control, and cardioprotection. However, perioperative challenges have emerged, particularly concerning delayed gastric emptying, a pharmacologic feature that may elevate aspiration risk during general anesthesia. Despite increasing clinical encounters with these agents, perioperative guidance remains inconsistent across institutions. This review outlines the clinical implications of GLP-1 RAs and provides actionable recommendations for perioperative providers.

Mechanism of Action of GLP-1 RAs

GLP-1 is an incretin hormone secreted by L cells in the small intestine in response to nutrient intake. GLP-1 RAs mimic this hormone by stimulating insulin secretion, suppressing glucagon release, and slowing gastric emptying via central and local gut mechanisms. These properties explain their efficacy in lowering blood glucose and promoting satiety but also underlie the potential anesthetic complications in surgical patients.

Preoperative Considerations

The primary concern is gastroparesis-like effects. In non-diabetic individuals and diabetics alike, GLP-1 RAs delay gastric emptying—this may persist even after drug discontinuation due to the long half-lives of weekly formulations like semaglutide (T½ ~7 days). Reported cases of intraoperative aspiration have led to heightened scrutiny.

- History Taking: Evaluate symptoms of nausea, vomiting, early satiety, bloating, and GERD.
- Medication Timing: Know last dose, formulation (daily vs. weekly), and renal function.
- ASA & Guidelines: ASA's recent recommendations suggest holding GLP-1 RAs before elective surgery, though not all providers adhere consistently.

Intraoperative Risks and Recommendations

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Aspiration risk is the central issue. Even with appropriate NPO status, delayed gastric clearance may leave residual stomach content. Anesthetic implications include:

- Increased aspiration pneumonia risk
- Delayed emergence or GI ileus postoperatively
- Unpredictable glucose dynamics

Anesthesia Implications:

- Consider rapid sequence induction (RSI)
- Use of gastric ultrasound in uncertain cases
- Delay surgery if recent GLP-1 dose taken and GI symptoms present

Postoperative Management

Postoperatively, the focus shifts to resumption of therapy and glycemic control:

- When to Restart: Resume GLP-1 RA when oral intake is tolerated without nausea/vomiting.
- Glycemic Monitoring: Risk of hyperglycemia if held >1 week; consider bridging strategies if needed.
- Nutrition: Reintroduce slowly with antiemetic support if needed.

Perioperative Management of GLP-1 Receptor Agonists

Drug	Dosing	Half-Life	Hold Before Surgery	Restart After Surgery	Key Risks
Semaglutide (Ozempic, Wegovy)	Weekly	~7 days	Hold 1 week prior	Resume when tolerating PO	Aspiration, delayed gastric emptying
Dulaglutide (Trulicity)	Weekly	~5 days	Hold 1 week prior	Resume when tolerating PO	Aspiration
Liraglutide (Victoza, Saxenda)	Daily	~13 hrs	Hold 1 day prior	Resume when tolerating PO	GI intolerance
Exenatide ER (Bydureon)	Weekly	~2 weeks	Hold 2 weeks prior	Resume when tolerating PO	Prolonged effect
Exenatide IR (Byetta)	BID	~2.4 hrs	Hold day prior	Resume when tolerating PO	Mild delay gastric emptying
Lixisenatide	Daily	~3 hrs	Hold day prior	Resume when tolerating PO	Mild delay gastric emptying

Clinical Decision Table

Scenario	GLP-1 RA Use	Recommendation	Rationale
Weekly GLP-1 RA within 7 days of elective surgery	Yes	Consider holding 1 week prior	Delayed gastric emptying increases aspiration risk
Daily GLP-1 RA taken <24 hours prior	Yes	Hold morning of surgery	Residual gastric contents may persist
GI symptoms (nausea, vomiting, bloating)	Yes or No	Delay surgery or evaluate with gastric ultrasound	Active symptoms increase risk

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No GI symptoms + held GLP-1 RA appropriately	No	Proceed with standard NPO guidelines	Lower aspiration risk
Emergent surgery	Yes or No	Use RSI or consider gastric suction/US	No time to safely withhold medication

Conclusions

As GLP-1 RAs become integral in chronic disease management, anesthesiologists, surgeons, and internists must coordinate care to mitigate perioperative risks. Holding GLP-1 RAs prior to surgery, particularly weekly formulations, may reduce aspiration risk. Institutional protocols should reflect evolving guidelines. Until more data emerge, a cautious, individualized approach remains essential.

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