

Perioperative Management of Patients Receiving GLP-1 Receptor Agonists: An Updated Clinical Review

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<https://doi.org/10.5281/zenodo.18383229>

Received: 13-December-2025, Revised: 03-January-2026, Accepted: 23-January-2026, Online First: 27-January-2026

ABSTRACT:

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are increasingly prescribed for type 2 diabetes, obesity, and cardiometabolic risk reduction. Their pharmacologic actions include delayed gastric emptying, appetite suppression, and improved glycaemic control, which have important implications for perioperative care. Recent multi-society guidance suggests that most patients can safely continue GLP-1 RAs before elective surgery, while those at highest risk for gastrointestinal side effects may benefit from a pre-procedural liquid diet and individualized planning.(1) Multidisciplinary consensus statements from the UK, Australia, and international societies emphasize risk stratification rather than routine discontinuation, integrating factors such as treatment phase, dose, gastrointestinal symptoms, and procedural risk. (2), (3), (4) This narrative review synthesizes current evidence and guidelines to provide a practical framework for anaesthesiologists and perioperative teams. Key elements include structured preoperative assessment, selective use of gastric ultrasound, full-stomach precautions in high-risk patients, and timely postoperative resumption of therapy. A patient-centred, risk-based approach can minimize aspiration risk while preserving metabolic stability and continuity of chronic disease management. (1), (3), (5)

Keywords: *GLP-1 receptor agonists; semaglutide; perioperative management; anaesthesia; gastric emptying; aspiration risk; diabetes; obesity*

1. INTRODUCTION:

The use of GLP-1 receptor agonists (GLP-1 RAs) has expanded rapidly worldwide for the management of type 2 diabetes and obesity, with additional benefits in cardiometabolic risk reduction. (93) These agents, including semaglutide, liraglutide, dulaglutide, and others, exert important effects on gastric motility and satiety, raising concerns about perioperative aspiration risk and altered fasting physiology. (3) In 2023–2025, multiple professional societies issued guidance on the perioperative management of patients taking GLP-1 RAs, reflecting evolving understanding and the need for harmonized practice. (1), (2), (3), (4), (5) This review summarizes current evidence and consensus recommendations and proposes a practical, risk-stratified approach for perioperative clinicians.

2. Pharmacology and perioperative relevance of GLP-1 receptor agonists:

GLP-1 RAs mimic the actions of endogenous GLP-1, enhancing glucose-dependent insulin secretion, suppressing glucagon, slowing gastric emptying, and

promoting satiety. (3) Long-acting weekly formulations and dual agonists (e.g., GLP-1/GIP) are increasingly used for both diabetes and obesity, often at higher doses than traditional glycemic regimens. (2), (3) The inhibition of gastric emptying is central to perioperative concerns, as it may increase gastric residual volume despite standard fasting intervals, potentially elevating the risk of regurgitation and pulmonary aspiration during anaesthesia or deep sedation. (1), (3), (5) These effects appear more pronounced during dose escalation, at higher doses, and in patients with pre-existing gastrointestinal motility disorders. (3), (5)

3. Evidence for aspiration risk and gastrointestinal effects:

Evidence linking GLP-1 RAs to perioperative aspiration risk is largely derived from case reports, small series, and physiologic studies of gastric emptying rather than large randomized trials. (3), (5) The Society for Perioperative Assessment and Quality Improvement (SPAQI) consensus statement highlights report of retained gastric contents and aspiration events

in patients on GLP-1 RAs despite adherence to fasting guidelines, particularly in high-risk individuals. (5) Similarly, the Australian ADS/ANZCA/GESA/NACOS recommendations note that GLP-1 RAs can significantly delay gastric emptying and that this effect may persist beyond the dosing interval, especially with long-acting agents. (3) While the absolute risk remains uncertain, the convergence of physiologic data and clinical reports has prompted a precautionary, risk-based approach in current guidelines. (1), (2), (3), (4), (5)

4. Evolution of perioperative guidelines:

4.1 Early caution and withholding strategies:

Initial responses to emerging reports favoured conservative management, including recommendations to withhold GLP-1 RAs before elective surgery. Early guidance suggested holding daily formulations on the day of surgery and weekly formulations for up to one week prior, particularly in high-risk patients, to mitigate potential aspiration risk. These approaches, however, raised concerns about glycemic destabilization and interruption of obesity treatment, especially in patients with limited alternative options. (3), (5)

4.2 2024 multi-society GLP-1 guidance:

In 2024, a multi-society clinical practice guidance led by the American Society of Anaesthesiologists (ASA), in collaboration with gastroenterology, bariatric, and obesity societies, concluded that most patients can continue GLP-1 RAs before elective surgery. (1) The statement emphasizes that only patients at highest risk for significant gastrointestinal side effects—such as those with prominent nausea, vomiting, or known gastroparesis—should follow a 24-hour liquid diet or undergo additional individualized measures. (1) Routine discontinuation is not recommended, and decisions should be tailored to patient-specific and procedural risk factors. (1)

4.3 UK multidisciplinary consensus statement:

A 2025 multidisciplinary consensus from UK organizations, including the Association of Anaesthetists, Centre for Perioperative Care, Joint British Diabetes Societies, and others, provides detailed guidance on the perioperative management of GLP-1 RAs, dual GIP/GLP-1 agonists, and SGLT2 inhibitors. (2), (4) The statement supports continuation of GLP-1 RAs in most patients, with enhanced assessment and mitigation strategies for those at higher risk of aspiration or euglycemic ketoacidosis (for SGLT2 inhibitors). (2), (4) It underscores the importance of multidisciplinary collaboration between anaesthesiologists, diabetologists, surgeons, and pharmacists. (2)

4.4 ADS / ANZCA / GESA / NACOS recommendations:

The 2025 ADS/ANZCA/GESA/NACOS clinical practice recommendations from Australia and New Zealand similarly advocate a risk-stratified approach to peri-procedural GLP-1 RA use. (3) They highlight the pharmacologic basis for delayed gastric emptying, identify high-risk scenarios, and recommend strategies such as liquid diets, procedure timing, and individualized decisions regarding continuation or temporary withholding. (3)

4.5 SPAQI consensus statement:

The SPAQI multidisciplinary consensus statement in the British Journal of Anaesthesia provides a structured framework for perioperative management, integrating patient factors, drug characteristics, and procedural risk. (5) It emphasizes shared decision-making, careful preoperative assessment of gastrointestinal symptoms, and the selective use of full-stomach precautions and gastric ultrasound in high-risk patients. (5)

5. Risk stratification for patients on GLP-1 receptor agonists:

A central theme across all major guidelines is the move from blanket discontinuation to individualized risk stratification. (1), (2), (3), (4), (5) Key domains include:

- **Drug-related factors:**

Type and formulation (daily vs weekly; GLP-1 vs dual agonist), dose, and treatment phase (initiation or dose escalation vs stable maintenance). (3), (5)

- **Patient-related factors:**

Presence of gastrointestinal symptoms (nausea, vomiting, bloating, early satiety), known gastroparesis, diabetes complications, obesity, and other aspiration risk factors (e.g., reflux, pregnancy, emergency surgery). (1), (3), (5)

- **Procedure-related factors:**

Degree of sedation or anaesthesia, airway management strategy, urgency of surgery, and the potential consequences of aspiration (e.g., major abdominal or thoracic surgery vs minor procedures). (2), (4), (5)

Patients can be broadly categorized into low-, intermediate-, and high-risk groups based on these factors, guiding the intensity of perioperative precautions. (2), (3), (5)

6. Practical perioperative management framework:

6.1 Preoperative assessment:

A structured preoperative assessment should include a focused history of GLP-1 RA use (agent, dose, frequency, duration, and timing of last dose) and gastrointestinal symptoms. (3), (5) Patients in the dose-escalation phase, on high doses, or reporting significant nausea, vomiting, or early satiety warrant closer evaluation. (3), (5) The 2024 ASA-led guidance

recommends that most patients continue GLP-1 RAs, while those at highest risk may benefit from a 24-hour liquid diet before the procedure and individualized planning. (1) When available, point-of-care gastric ultrasound can be used to assess gastric contents in uncertain or high-risk cases. (2), (5)

6.2 Intraoperative considerations:

For patients deemed high risk for delayed gastric emptying or aspiration, intraoperative management should follow full-stomach precautions. (2), (5) This may include rapid sequence induction, avoidance of deep sedation without airway protection, and careful positioning. For low-risk patients undergoing minor procedures with minimal sedation, standard fasting guidelines and routine airway management are generally appropriate. (1), (2), (5) Multidisciplinary communication with surgeons and nursing staff is essential to align expectations and contingency plans. (2), (4)

6.3 Postoperative management and resumption of therapy:

GLP-1 RAs can typically be resumed once the patient is tolerating oral intake and there are no significant postoperative gastrointestinal complications. (3), (5) For patients in whom therapy was withheld preoperatively, coordination with endocrinology or diabetes teams may be needed to adjust interim glycemic management and to safely re-titrate the GLP-1 RA if necessary. (3), (5) Monitoring for postoperative nausea, vomiting, and ileus remains important, particularly in high-risk patients and those undergoing major abdominal surgery. (3)

7. Special populations and procedural contexts:

7.1 Obesity and bariatric surgery:

Patients with obesity, especially those undergoing bariatric surgery, often receive GLP-1 RAs at higher doses and may have baseline delayed gastric emptying. (1), (3) Guidelines emphasize individualized assessment, with a low threshold for liquid diets, gastric ultrasound, and full-stomach precautions in this group. (1), (2), (3), (4) Close collaboration with bariatric teams is recommended.

7.2 Endoscopy and gastrointestinal procedures:

For endoscopic procedures, particularly those involving deep sedation or high aspiration risk, the same principles of risk stratification apply. (1), (3) The multi-society guidance involving gastroenterology and bariatric societies specifically addresses endoscopic practice, recommending continuation of GLP-1 RAs in most patients but enhanced precautions for those with

significant gastrointestinal symptoms or high-risk profiles. (1)

7.3 Emergency surgery:

In emergency settings, there is often insufficient time to modify GLP-1 RA dosing or implement prolonged liquid diets. High-risk patients should be managed as full stomach regardless of last dose timing, with rapid sequence induction and airway protection as appropriate. (2), (5) Gastric ultrasound may be useful when available and feasible. (2)

8. Summarizes:

1. Identify GLP-1 RA use:

- Confirm agent, dose, frequency, duration, and timing of last dose.

2. Assess risk factors:

- Drug factors: weekly vs daily, high dose, dose escalation.
- Patient factors: GI symptoms, gastroparesis, obesity, reflux, diabetes complications.
- Procedure factors: deep sedation/general anaesthesia, high aspiration consequence, emergency vs elective.

3. Risk category assignment:

- Low risk: stable dose, no GI symptoms, low-risk procedure.
- Intermediate risk: mild symptoms or moderate-risk procedure.
- High risk: significant GI symptoms, dose escalation, known gastroparesis, high-risk procedure.

4. Management strategy:

- Low risk: continue GLP-1 RA; standard fasting; routine airway management.
- Intermediate risk: consider 24-hour liquid diet; consider gastric ultrasound if available; plan airway strategy.
- High risk: 24-hour liquid diet; treat as full stomach; consider gastric ultrasound; consider temporary withholding in selected cases.

5. Postoperative

- Resume GLP-1 RA when oral intake is adequate and no major GI complications.
- Coordinate with diabetes/endocrinology teams if therapy was withheld.

Sources: synthesized from multi-society ASA guidance, UK multidisciplinary consensus, SPAQI statement, and ADS/ANZCA/GESA/NACOS recommendations. (1), (2), (3), (4), (5)

9. Tables:

Table 1. Key recent guidelines on perioperative management of GLP-1 receptor agonists

Guideline body / publication	Year	Scope	Core message on GLP-1 RAs
ASA + multi-society guidance	2024	Elective surgery, obesity, GI, bariatric	Most patients can continue GLP-1 RAs; high-risk patients may need 24-hour liquid diet and individualized measures
UK multidisciplinary consensus (Anaesthesia)	2025	GLP-1 RAs, dual agonists, SGLT2 inhibitors	Risk-stratified approach; continuation in most; enhanced precautions for high-risk patients
SPAQI consensus (BJA)	2025	Perioperative GLP-1 RA management	Structured risk assessment; shared decision-making; selective full-stomach precautions and gastric ultrasound
ADS/ANZCA/GESA/NACOS	2025	Peri-procedural GLP-1/GIP agonists	Emphasizes delayed gastric emptying; recommends individualized continuation vs withholding and liquid diets

Sources: ASA multi-society guidance, UK consensus statement, SPAQI BJA statement, ADS/ANZCA/GESA/NACOS recommendations. (1), (2), (3), (4), (5)

Table 2. Suggested risk stratification and management approach for patients on GLP-1 receptor agonists

Risk level	Typical features	Suggested perioperative approach
Low	Stable long-term use, no GI symptoms, low-risk procedure	Continue GLP-1 RA; standard fasting; routine airway management
Intermediate	Mild GI symptoms, dose escalation but low-risk procedure, or moderate-risk surgery	Consider 24-hour liquid diet; consider gastric ultrasound; plan airway strategy based on overall risk
High	Significant nausea/vomiting, known gastroparesis, high-dose weekly agent, high-risk surgery, or emergency	24-hour liquid diet when feasible; treat as full stomach; consider gastric ultrasound; consider temporary withholding in selected elective cases

Sources: synthesized from multi-society and national guidelines. (1), (2), (3), (4), (5)

10. DISCUSSION:

The rapid expansion of GLP-1 RA use has created a new interface between metabolic therapy and perioperative care. Early cautionary approaches that favoured routine withholding have evolved into more nuanced, risk-stratified strategies as evidence and experience

have accumulated. (1), (2), (3), (4), (5) Current guidelines converge on several key principles: most patients can safely continue GLP-1 RAs; high-risk patients require enhanced assessment and mitigation; and multidisciplinary collaboration is essential. (1), (2), (3), (4), (5) The incorporation of tools such as gastric

ultrasound, where available, and structured risk assessment frameworks can help clinicians balance aspiration risk against the harms of interrupting effective chronic therapy. (2), (5) Remaining gaps include limited prospective data on aspiration incidence and the need for more robust evidence in specific populations such as paediatrics and high-dose obesity treatment cohorts. (3), (5)

11. CONCLUSION:

GLP-1 receptor agonists present important but manageable challenges in the perioperative setting. Contemporary multi-society and national guidelines support a patient-centred, risk-based approach rather than routine discontinuation. By integrating drug, patient, and procedural factors into structured risk stratification, anaesthesiologists and perioperative teams can minimize aspiration risk while preserving metabolic stability and continuity of care. Ongoing research and continued multidisciplinary collaboration will further refine best practices in this rapidly evolving area.

12. Ethical and compliance statements:

Conflict of interest:

The author declares no conflicts of interest related to this manuscript.

Funding:

No external funding was received for the preparation of this review.

Ethical approval:

This article is a narrative review and does not involve human or animal subjects; therefore, formal ethical approval was not required.

Informed consent:

Not applicable, as no individual patient data are presented.

Data availability:

No new datasets were generated or analysed for this review.

Author contributions:

Jamila Hamdi conceived the topic, reviewed the literature, synthesized guideline recommendations, and drafted and approved the final manuscript.

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