International Journal of Innovative Technologies in Social Science

e-ISSN: 2544-9435

Scholarly Publisher
RS Global Sp. z O.O.
ISNI: 0000 0004 8495 2390

Dolna 17, Warsaw,
Poland 00-773
+48 226 0 227 03
editorial_office@rsglobal.pl

ARTICLE TITLE	INTERNATIONAL GUIDELINES ON PERIOPERATIVE MANAGEMENT OF GLP-1 RECEPTOR AGONISTS: A NARRATIVE REVIEW
DOI	https://doi.org/10.31435/ijitss.4(48).2025.4724
RECEIVED	26 October 2025
ACCEPTED	14 December 2025
PUBLISHED	23 December 2025
LICENSE	The article is licensed under a **Creative Commons Attribution 4.0 International License.**

INTERNATIONAL GUIDELINES ON PERIOPERATIVE MANAGEMENT OF GLP-1 RECEPTOR AGONISTS: A NARRATIVE REVIEW

Karol Grela *(Corresponding Author, Email: karol.grela1999@gmail.com)*
Medical University of Warsaw, Warsaw, Poland

Aleksandra Grygorowicz
Medical University of Warsaw, Warsaw, Poland
ORCID ID: 0009-0002-7729-8178

Klaudia Baran
Medical University of Warsaw, Warsaw, Poland
ORCID ID: 0009-0004-9599-792X

Michał Ględa
Medical University of Łódź, Łódź, Poland
ORCID ID: 0009-0003-8148-160X

Michał Szyszka
Lower Silesian Center for Oncology, Pulmonology and Hematology, Wrocław, Poland
ORCID ID: 0009-0002-5307-1753

Weronika Radecka
Cardinal Stefan Wyszyński University, Warsaw, Poland
ORCID ID: 0009-0007-1116-398X

Weronika Kozak
University of Warmia and Mazury, Olsztyn, Poland
ORCID ID: 0009-0009-5605-2794

Agnieszka Szreiber
University of Warmia and Mazury, Olsztyn, Poland
ORCID ID: 0009-0006-3432-8284

Karolina Nowacka
Medical University of Gdańsk, Gdańsk, Poland
ORCID ID: 0009-0004-4933-755X

Kamil Jabłoński
Medical University of Silesia in Katowice, Katowice, Poland
ORCID ID: 0009-0003-4682-2405

Anna Woźniak
Lazarski University, Warsaw, Poland
ORCID ID: 0009-0000-5065-6313

Kornelia Rynkiewicz
Medical University of Warsaw, Warsaw, Poland

ABSTRACT

Background: The widespread use of glucagon-like peptide-1 receptor agonists (GLP-1 RAs) in the treatment of diabetes mellitus and obesity has led to a growing number of patients receiving these agents presenting for surgical and procedural interventions. Their known effects on gastric motility have raised concerns regarding delayed gastric emptying and perioperative aspiration risk, prompting the publication of multiple professional society recommendations.
Objectives: This review aims to identify, compare, and critically analyse contemporary clinical practice guidelines addressing the perioperative management of patients treated with GLP-1 receptor agonists, with particular focus on drug continuation versus withholding, risk stratification, and mitigation strategies.
Methods: A narrative review of professional society guidelines published between 2020 and 2025 was conducted. A structured bibliographic database search and citation analysis identified official recommendations from anaesthesiology, diabetology, gastroenterology, and perioperative medicine societies. Guidelines were analysed with respect to recommendations on perioperative GLP-1 RA management, identification of high-risk patients, proposed risk mitigation strategies, and supporting evidence.
Results: Substantial heterogeneity was observed among guidelines. While early recommendations favoured routine discontinuation of GLP-1 RAs, more recent guidance supports an individualised, risk-based approach. Commonly identified risk factors include early treatment phase, dose escalation, higher doses, gastrointestinal symptoms, and comorbid conditions affecting gastric motility. Proposed mitigation strategies include dietary modification, selective drug withholding, gastric point-of-care ultrasound, and tailored anaesthetic techniques. Most recommendations are based on low-quality evidence and expert opinion.
Conclusions: Current guidance increasingly favours personalised perioperative management of GLP-1 RA–treated patients. High-quality prospective studies are needed to better define perioperative risk and inform evidence-based, harmonised recommendations.

KEYWORDS

GLP-1 RA, Recommendations, Guidelines, Perioperative Care, Anaesthesiology, Gastric Ultrasound

CITATION

Karol Grela, Aleksandra Grygorowicz, Klaudia Baran, Michał Głęda, Michał Szyszka, Weronika Radecka, Weronika Kozak, Agnieszka Szreiber, Karolina Nowacka, Kamil Jabłoński, Anna Woźniak, Kornelia Rynkiewicz (2025) International Guidelines on Perioperative Management of GLP-1 Receptor Agonists: A Narrative Review. *International Journal of Innovative Technologies in Social Science*. 4(48). doi: 10.31435/ijitss.4(48).2025.4724

Introduction

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) constitute a class of pharmacological agents with rapidly increasing clinical relevance. Members of this group include albiglutide, dulaglutide, exenatide, liraglutide, lixisenatide, semaglutide, and the dual GIP/GLP-1 agonist tirzepatide. Although originally developed as glucose-lowering therapies for type 2 diabetes mellitus, several agents within this class have also demonstrated significant reductions in cardiovascular risk(Brown et al., 2021; Sattar et al., 2021; Shyangdan et al., 2011; Vilsboll et al., 2012). In addition, selected GLP-1 RAs have transformed the pharmacological management of obesity, achieving clinically meaningful weight reduction that has surpassed the efficacy of previously available therapies (Giannakogeorgou & Roden, 2024; Gudzune & Kushner, 2024; Taha et al., 2022).

As the clinical use of GLP-1 RAs expands, an increasing number of patients receiving these agents present for elective and urgent surgical procedures (Aschen et al., 2025). This trend has heightened interest in their perioperative implications, particularly given the pharmacological effects of GLP-1 RAs on gastrointestinal motility. By reducing antral contractility, increasing pyloric tone, and modulating vagal pathways, these medications can delay gastric emptying to a clinically relevant extent (Jalleh, Marathe, et al., 2024). These pharmacological properties have raised concerns regarding whether the anaesthetic management of patients receiving GLP-1 RAs may be associated with an increased risk of perioperative complications, particularly regurgitation and pulmonary aspiration (Sodhi et al., 2023).

Indeed, several cases of perioperative regurgitation and pulmonary aspiration have been reported in patients treated with these agents (Klein & Hobai, 2023). The presence of residual gastric contents has also been documented in endoscopic and imaging studies among individuals who adhered to standard preoperative fasting guidelines (Facciorusso et al., 2025). The delay in gastric emptying is known to be most pronounced during the early stages of therapy or following dose escalation; however, this effect persists to a lesser yet clinically relevant extent throughout long-term treatment. Moreover, some patients receiving GLP-1 RAs have an inherently increased risk of gastroparesis, for example due to underlying diabetes mellitus (Jalleh, Plummer, et al., 2024).

Conversely, some experts have noted that withholding these medications before surgery may lead to deterioration in glycaemic control, introducing a separate set of perioperative risks (Makino et al., 2019). In recent years, an increasing number of professional societies in anaesthesiology, diabetology, and perioperative medicine have issued recommendations addressing the management of patients taking GLP-1 RAs in the perioperative setting. Unfortunately, due to the lack of high-quality evidence, these guidelines rely predominantly on expert opinion and differ substantially from one another (Chang & Bittner, 2024).

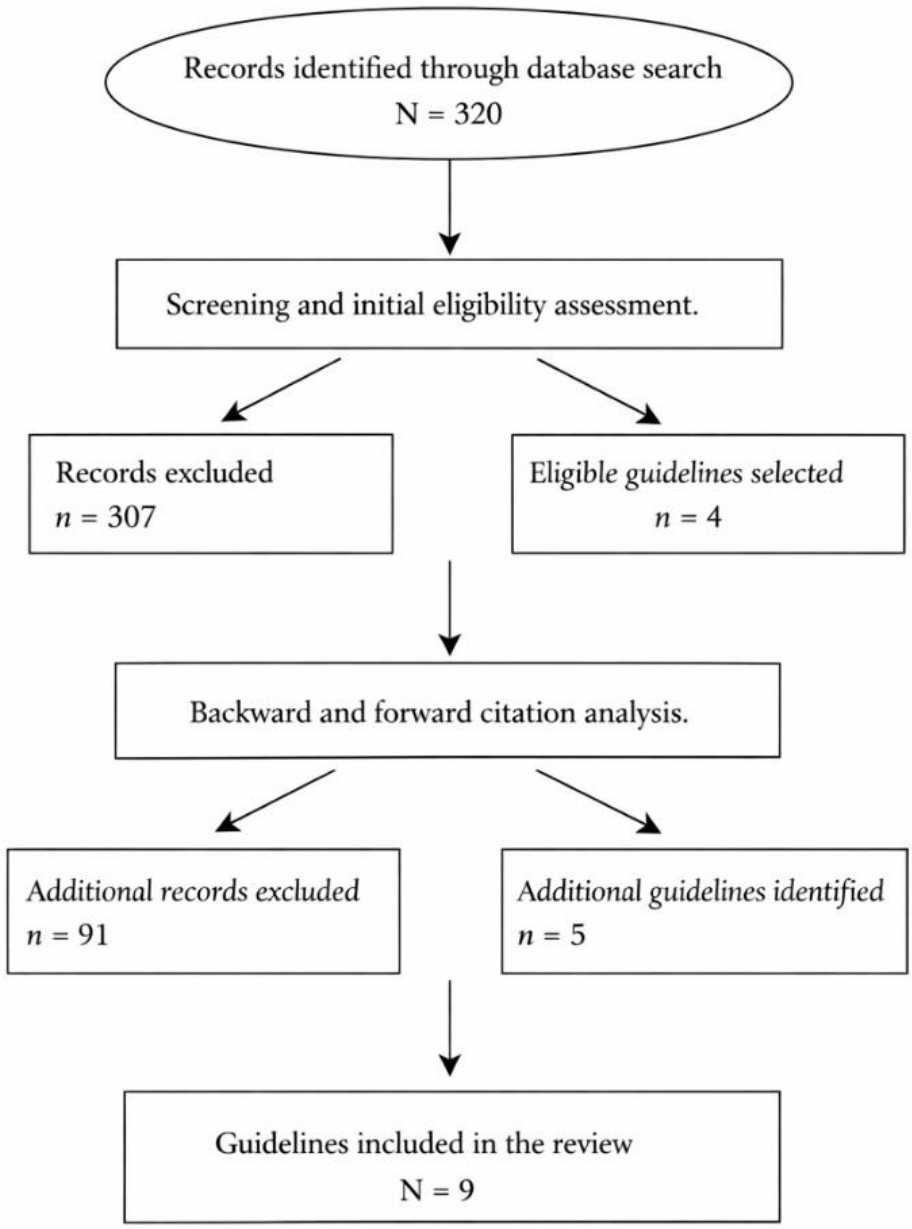
The aim of the present review is to identify the most relevant guidelines on this topic and to compare them systematically in order to delineate areas of concordance and disagreement. By synthesising their key recommendations and highlighting uncertainties, this work seeks to clarify the complex and evolving landscape of perioperative management for patients treated with GLP-1 RAs—an issue of growing significance in contemporary anaesthetic practice.

Methodology

The authors conducted a review of clinical practice recommendations issued by scientific and professional societies and published between 2020 and 2025. Guidelines were included if they were official statements of national or international scientific societies, published in English, and originating from fields such as anaesthesiology, diabetology, perioperative medicine, or related specialties. Excluded were publications in languages other than English, recommendations authored solely by individual experts or non-society groups, as well as commentaries or opinion pieces not constituting formal guidelines.

A structured search of the PubMed, Embase, and Web of Science databases was performed, incorporating combinations of the following terms: “guideline”, “recommendation”, “consensus”, “statement”, “practice guideline”, “clinical practice”, “perioperative”, “preoperative”, “anaesthesia”, “anesthesia”, “surgery”, “surgical”, “aspiration”, “fasting”, “GLP-1 receptor agonist”, “glucagon-like peptide-1 receptor agonists”, as well as the names of individual agents within this class. A total of 320 records were identified, of which four documents met the predefined inclusion and exclusion criteria.

Subsequently, a backward and forward citation analysis was performed using the selected documents as index references. This process resulted in the identification of an additional five eligible guidelines. In total, nine professional society recommendations were included in the review. A flowchart illustrating the guideline selection process is presented in Figure 1. A complete list of these guidelines is presented in Table 1.



Each included guideline was analysed using a structured framework aimed at addressing the following key questions. First, do the recommendations advise withholding or continuing GLP-1 RAs in the perioperative period, and under what circumstances? Second, which patient groups are identified as being at increased risk of adverse perioperative outcomes related to delayed gastric emptying, and what clinical features define these high-risk categories? Third, what strategies are recommended to mitigate perioperative complications, and for which patient groups are these strategies intended?

The guidelines were further evaluated with respect to the quality of the evidence supporting their recommendations. Areas of concordance and divergence between documents were systematically compared. The SANRA scale was applied to support the structure and quality of the review (Baethge et al., 2019).

No.	Professional society / Organisation	Title of guideline / consensus document	Year
1	American Society of Anesthesiologists (ASA)	Consensus-Based Guidance on Preoperative Management of Patients (Adults and Children) on Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists	2023
2	Society for Ambulatory Anesthesia (SAMBA)	Consensus Statement on Perioperative Management of Patients Receiving GLP-1 Receptor Agonists	2024
3	Centre for Perioperative Care (CPOC)	Guidance on the Perioperative Management of Adults Taking GLP-1 Receptor Agonists	2024
4	Society for Perioperative Assessment and Quality Improvement (SPAQI)	Multidisciplinary Consensus Statement on Perioperative Management of Patients Taking GLP-1 Receptor Agonists	2025
5	Australian Diabetes Society (ADS), Australian and New Zealand College of Anaesthetists (ANZCA), Gastroenterological Society of Australia (GESA), National Association of Clinical Obesity Services (NACOS)	Clinical Practice Recommendations on the Peri-Procedural Use of GLP-1 and Dual GIP/GLP-1 Receptor Agonists	2025
6	Association of Anaesthetists (UK) and partner societies	Elective Perioperative Management of Adults Taking GLP-1 Receptor Agonists, GIP Agonists and SGLT-2 Inhibitors: A Multidisciplinary Consensus Statement	2025
7	American Diabetes Association (ADA)	Diabetes Care in the Hospital: Standards of Care in Diabetes	2024/2025
8	American Gastroenterological Association (AGA)	Rapid Clinical Practice Update on the Management of Patients Taking GLP-1 Receptor Agonists Prior to Endoscopy	2024
9	American Society of Regional Anesthesia and Pain Medicine (ASRA)	Narrative Review and Expert Practice Recommendations for Gastric Point-of-Care Ultrasound to Assess Aspiration Risk	2024

Results

Problem 1: Withholding vs continuing GLP-1 receptor agonists

The guidelines reviewed in this article differ substantially in their recommended strategies regarding the perioperative discontinuation of GLP-1 receptor agonists. The ASA experts emphasise the limited evidence available on this topic. Nevertheless, drawing primarily on case reports, they suggest withholding GLP-1 agonists on the day of surgery for patients taking daily formulations and one week prior to surgery for those receiving weekly formulations. (Girish P. Joshi et al., 2023) This recommendation was subsequently endorsed by the Society for Ambulatory Anesthesia in their Consensus Statement. While these guidelines directly reference the ASA recommendations, they differ with respect to tirzepatide, which they advise continuing unless the patient commonly experiences nausea or vomiting after administration, or if the patient is at high risk for postoperative nausea and vomiting (PONV) (Rajan et al., 2024).

A completely opposite standpoint is presented in the CPOC guidance. For patients with diabetes, the authors recommend continuing GLP-1 RA therapy regardless of the dosing schedule. They emphasise the importance of maintaining perioperative glycaemic contro (CPOC, 2021) l. SPAQI, on the other hand, based on a systematic literature review conducted by the authors, recommends continuing GLP-1 RAs perioperatively in patients without significant gastrointestinal symptoms. In patients who experience severe nausea, vomiting, or an inability to tolerate oral intake—but not symptoms such as fullness or early satiety—the medication should be withheld. The guidelines highlight the risk of deterioration in glycaemic control if the medication is stopped and note the lack of evidence for increased risk of aspiration or postoperative pneumonia(Oprea et al., 2025).

Australian scientific societies issued clear recommendations against withholding GLP-1 RAs perioperatively. In addition to the arguments mentioned above, they emphasise the cardioprotective and renoprotective properties of this class of medications. They also question the assumption that the presence of residual gastric contents necessarily translates into a higher risk of aspiration pneumonia(Hocking et al., 2025).

The UK consensus likewise recommends continuing GLP-1 RAs but only after discussion with the patient, using a shared decision-making approach. The authors further note that the interruption period proposed by ASA may be insufficient for agents with longer half-lives(El-Boghdadly et al., 2025). A shared decision-making model is also the central recommendation of the American multisociety clinical practice guidance. Kindel et al. advise consultation among the procedural, anaesthesia, and prescribing care teams, with explicit consideration of patient preferences and careful assessment of risk factors. GLP-1 RAs may be continued in patients without an elevated risk of delayed gastric emptying. If discontinuation is deemed necessary, they suggest following the original ASA guidance(Kindel et al., 2024).

The ADA does not issue a firm stop/continue recommendation. While it cites the ASA guidance, it immediately notes the limited nature of the evidence and calls for an “interprofessional and personalised approach,” taking into account the indication for therapy, glycaemic control, procedure type and urgency, anaesthetic technique, the feasibility of gastric ultrasound, and the need for “full stomach precautions(ElSayed et al., 2025).”

Problem 2: Identification of patients at high risk of delayed gastric emptying

Overall, all guidelines reviewed in this study concur that patients treated with GLP-1 receptor agonists exhibit an increased risk of delayed gastric emptying to some extent. In the guidelines addressing gastric point-of-care ultrasound, Haskins et al. cite studies in patients receiving semaglutide demonstrating a significantly higher proportion of individuals with solid or large-volume liquid gastric contents despite standard fasting, compared with control groups(Haskins et al., 2025).

The ASA notes that this risk is particularly elevated in patients who have recently initiated therapy, as tachyphylaxis has not yet developed. Furthermore, the presence of adverse gastrointestinal symptoms—such as nausea, vomiting, dyspepsia, and abdominal distension—in patients receiving GLP-1 agonists is considered predictive of increased residual gastric contents(Girish P. Joshi et al., 2023).

According to Oprea et al., the presence of such symptoms is likely indicative of delayed gastric emptying. However, the absence of gastrointestinal symptoms alone is insufficient to reliably exclude residual gastric contents. Risk is further increased in patients in the early phase of treatment or during dose escalation, as well as in those receiving higher doses and shorter-acting formulations(Oprea et al., 2025).

A more comprehensive and structured list of risk factors was proposed by Kindel et al. in their guidance. These authors similarly demonstrate that the risk is heightened during the escalation phase, encompassing both treatment initiation and dose increases. They further emphasise the dose-dependent nature of the effect and the

influence of the pharmacokinetic profile of the agent, especially drug duration of action. A broader spectrum of gastrointestinal symptoms associated with increased risk was identified, including nausea, vomiting, abdominal pain, dyspepsia, and constipation. Additionally, they draw attention to other conditions known to impair gastric emptying, such as bowel dysmotility, gastroparesis, Parkinson's disease, and related disorders(Kindel et al., 2024).

The ADS/ANZCA/GESA/NACOS recommendations also caution against attributing an increased aspiration risk solely to the presence of gastrointestinal symptoms. In these guidelines, all patients receiving GLP-1 or dual GIP/GLP-1 agonists are considered to have an increased risk of residual gastric contents(Hocking et al., 2025).

El-Boghdadly et al. suggest that every patient treated with a GLP-1 RA has at least two risk factors for delayed gastric emptying: the medication itself and either diabetes or obesity—often both. Based on their review of case reports, in 6 out of 10 cases at least three different risk factors for pulmonary aspiration were identified. The overall risk was shown to depend on multiple variables, including indication, urgency, fasting status, anaesthetic technique, airway management strategy, comorbidities, and concomitant medications(El-Boghdadly et al., 2025).

In the Diabetes Care in the Hospital Standards, the authors advocate an individualised approach, taking into account factors such as "primary indication of these medications, current glycaemic management, type of surgery or procedure and its urgency, type of anaesthesia, consideration of preoperative gastric ultrasound to quantify gastric contents, and implementation of full stomach precautions"(ElSayed et al., 2025).

Problem 3: Strategies recommended to mitigate perioperative complications

Across the reviewed guidelines, a range of strategies is proposed to mitigate perioperative complications potentially associated with GLP-1 receptor agonist therapy, particularly the risk of regurgitation and pulmonary aspiration. Although considerable variability exists among the recommendations analysed in this review, several recurring approaches can be identified. The first recommended strategy is the preoperative withholding of GLP-1 RAs. This approach is advocated by experts from the ASA and SAMBA(Girish P. Joshi et al., 2023; Rajan et al., 2024). This issue has been described in detail in the previous section of this manuscript.

Another commonly endorsed strategy involves preprocedural dietary modification. In the 2024 multisociety clinical practice guidance, the authors recommend a 24-hour clear-liquid diet prior to surgery for patients with risk factors for delayed gastric emptying. In cases of uncertainty on the day of the procedure, the use of point-of-care gastric ultrasound is suggested for further risk assessment, provided this technique is available. If residual gastric contents are confirmed or cannot be reliably excluded, the authors recommend considering rapid sequence induction of general anaesthesia for tracheal intubation or postponement of the procedure. At every stage, the authors encourage patient involvement through a shared decision-making process(Kindel et al., 2024).

The 2025 SPAQI experts propose somewhat different recommendations. Based on observational studies, case reports, and investigations of gastric emptying, they recommend a clear-liquid diet for all patients receiving GLP-1 RAs. Furthermore, the authors advise fasting for high-carbohydrate clear liquids (≥10% glucose) for 8 hours before surgery and for no- or low-carbohydrate clear liquids for 4 hours before surgery. In patients who did not adhere to the recommended fasting intervals or who report gastrointestinal symptoms on the day of the procedure, the authors propose the use of point-of-care ultrasound to assess aspiration risk. In the absence of ultrasound availability, the patient should be treated as having a full stomach(Oprea et al., 2025).

The ANZCA guidelines likewise recommend a 24-hour clear-liquid diet for all patients treated with GLP-1 RAs. Fasting should be maintained for at least 6 hours prior to the procedure. In cases of non-adherence to dietary recommendations, the authors propose risk mitigation strategies including point-of-care gastric ultrasound to assess aspiration risk, minimally sedated gastroscopy with an ultrathin endoscope to directly visualise gastric contents, or the use of prokinetic agents such as intravenous erythromycin to accelerate gastric emptying. If these techniques are unavailable or if aspiration risk remains elevated despite their use, appropriate anaesthetic techniques should be considered to reduce risk, such as regional anaesthesia or rapid sequence induction. If the assessed risk is deemed excessive, the procedure should be deferred(Hocking et al., 2025).

An alternative strategy is proposed in the British multidisciplinary consensus statement. The authors do not recommend withholding GLP-1 RAs nor extending fasting duration. Instead, they advocate modification of anaesthetic techniques. Where feasible, regional anaesthesia should be preferred. Rapid sequence induction

should be considered in patients at increased risk of pulmonary aspiration, while acknowledging the potential complications associated with this approach*. Additional measures proposed to reduce the risk of aspiration include administration of prokinetic agents (such as erythromycin), preferential use of a cuffed tracheal tube instead of a supraglottic airway device, appropriate application of cricoid pressure, positioning the patient with the head elevated, and placement of an orogastric or nasogastric tube before induction of anaesthesia and prior to tracheal extubation. These guidelines also emphasise the utility of point-of-care gastric ultrasound for improved risk assessment(Kindel et al., 2024).

Risk mitigation through appropriate anaesthetic techniques is likewise highlighted in the CPOC guidance. According to the authors, "prudent precautions should be undertaken to avoid pulmonary aspiration. These include regional anaesthesia or intubation using a modified rapid sequence induction using the ramped position(CPOC, 2021)."

Experts from the ADA refrained from issuing explicit recommendations regarding specific perioperative risk mitigation strategies. Instead, they emphasised an "interprofessional and personalised approach for perioperative management of individuals taking a GLP-1 RA". They additionally suggested consideration of preoperative gastric ultrasound to better assess the risk of residual gastric contents.

A different perspective is provided in the ASRA guidelines. In this publication, the authors evaluated the available evidence and developed guidance regarding the use of point-of-care ultrasound in clinical decision-making for various patient populations. They conditionally support the use of gastric POCUS to assess perioperative gastric risk in patients receiving GLP-1 RAs. The authors demonstrate that this method is useful for evaluating gastric content and volume in patients undergoing regional anaesthesia. However, they also emphasise the limited quantity of available scientific evidence in this relatively new field. The guidelines further highlight the utility of this modality in patients with obesity and diabetes mellitus(Haskins et al., 2025).

Discussion

This review highlights substantial heterogeneity among professional society guidelines addressing the perioperative management of patients treated with glucagon-like peptide-1 receptor agonists. Although all analysed documents acknowledge the pharmacological effect of GLP-1 RAs on gastric motility and the potential implications for aspiration risk, their recommendations diverge markedly with respect to drug discontinuation, risk stratification, and mitigation strategies. These discrepancies largely reflect the limited quality of available evidence and the differing clinical priorities of the specialties involved in guideline development*.

The divergent recommendations regarding perioperative continuation or withholding of GLP-1 receptor agonists primarily reflect differing assessments of competing clinical risks. Guidelines favouring routine or selective withholding place greater emphasis on airway safety and the uncertainty surrounding gastric emptying in GLP-1 RA–treated patients (Girish P. Joshi et al., 2023; Rajan et al., 2024). In contrast, guidelines supporting continuation of GLP-1 RAs prioritise maintenance of metabolic stability and highlight the lack of compelling evidence linking GLP-1 RA use to clinically meaningful increases in perioperative aspiration or postoperative pulmonary complications. These documents underscore the risks associated with withdrawal, including deterioration in glycaemic control and disruption of chronic disease management.

A key point of convergence across most recommendations is the rejection of a uniform, drug-centred approach. Instead, most guidelines emphasise that decisions regarding continuation or discontinuation of GLP-1 RAs should be guided by patient-specific and procedure-specific risk factors rather than medication use alone.

Across the guidelines discussed in this review, multiple sets of risk factors for delayed gastric emptying and aspiration pneumonia in patients receiving GLP-1 RAs are described. In general, experts agree that patients treated with these agents have an increased risk compared with the general population, although this risk is not uniform. Early treatment phase, dose escalation, higher doses, indication for therapy, and the presence of significant gastrointestinal symptoms are consistently recognised as key risk modifiers.

Comorbid conditions that impair gastric motility—such as Parkinson's disease—as well as concomitant medications further contribute to risk. The majority of reviewed publications support an individualised approach to aspiration risk assessment, incorporating patient history, clinical status, procedural preparation, and perioperative management strategies rather than relying solely on pharmacotherapy.

Differences among professional society recommendations are also evident with respect to strategies aimed at reducing the risk of aspiration pneumonia. Experts from the ASA and SAMBA recommend withholding GLP-1 RAs prior to surgery; however, this strategy has been increasingly questioned in more recent publications(Girish P. Joshi et al., 2023; Rajan et al., 2024). A systematic review by Kamarajah et al.

found no evidence of an increased risk of perioperative complications in patients using GLP-1 RAs(Kamarajah et al., 2025). In contrast, ANZCA guidelines explicitly recommend against routine discontinuation of these agents(Hocking et al., 2025).

Dietary modification—particularly the use of a preoperative clear-liquid diet—has emerged as an alternative strategy, especially in patients with identified risk factors(Hocking et al., 2025; Kindel et al., 2024; Oprea et al., 2025), although no consensus exists regarding the optimal duration of such interventions. Abdominal point-of-care ultrasound is recommended by nearly all guidelines as a tool for assessing aspiration risk. While this non-invasive modality has demonstrated clinical utility, studies directly evaluating its effectiveness in reducing perioperative complications remain lacking(Haskins et al., 2025).

Another proposed strategy is the use of prokinetic agents. Although this approach appears promising, the available evidence remains limited, with few studies formally evaluating its efficacy in the perioperative setting (Hocking et al., 2025; Kindel et al., 2024)

An overarching theme across all reviewed guidelines is the limited quality of the evidence underpinning their recommendations. Most guidance documents rely predominantly on expert opinion, case reports, small observational studies, and physiological investigations of gastric emptying rather than on prospective or randomised outcome data. Consequently, recommendation strength varies considerably and often reflects precautionary principles rather than evidence-based risk estimates. This limitation underscores the need for high-quality prospective studies to better define clinically relevant risk, validate assessment tools such as gastric point-of-care ultrasound, and support more consistent perioperative guidance.

A key strength of this review is its comprehensive and multidisciplinary comparison of contemporary professional society guidelines addressing the perioperative management of patients receiving GLP-1 receptor agonists. By synthesising recommendations from anaesthesiology, diabetology, gastroenterology, and perioperative medicine societies, this work provides a structured overview of areas of consensus and divergence directly relevant to clinical practice.

Several limitations should be acknowledged. This review focuses exclusively on published guidelines and consensus statements and does not evaluate real-world adherence or clinical outcomes. In addition, the analysed guidance is constrained by the limited availability of high-quality primary evidence, with most recommendations based on expert opinion rather than prospective or randomised data. Finally, as a narrative review, this work may be subject to selection bias despite a structured search strategy.

Conclusions

The perioperative management of patients treated with glucagon-like peptide-1 receptor agonists remains an area of clinical uncertainty and evolving practice. Owing to the divergence of expert recommendations, it is difficult to draw definitive conclusions. There is no clear consensus regarding whether GLP-1 RAs should be withheld or continued in the perioperative period; however, an emerging trend supports an individualised, risk-based approach rather than routine discontinuation of these agents.

With respect to risk factors for delayed gastric emptying, the most frequently identified include gastrointestinal symptoms, early treatment phase, dose escalation, higher doses, and relevant comorbidities. A range of mitigation strategies—including dietary modification, selective drug withholding, gastric point-of-care ultrasound, and tailored anaesthetic techniques—may be employed; however, the effectiveness of many of these interventions remains insufficiently validated. The use of gastric ultrasound appears to be the most widely accepted and recommended strategy, although its application is supported predominantly by expert opinion rather than high-quality outcome data.

High-quality prospective studies are urgently needed to quantify clinically meaningful perioperative risk, evaluate proposed mitigation strategies, and support the development of more consistent, evidence-based guidelines. Until such data become available, perioperative management of patients treated with GLP-1 RAs should rely on careful clinical judgment informed by individual risk assessment and interdisciplinary communication.

Funding Statement: The article did not receive any funding.
Institutional Review and Board Statement: Not applicable.
Informed Consent Statement: Not applicable.
Data Availability Statement: Not applicable.
Conflict of Interest Statement: No conflicts of interest to declare.

REFERENCES

1. Aschen, S. Z., Zhang, A., O'Connell, G. M., Salingaros, S., Andy, C., Rohde, C. H., & Spector, J. A. (2025). Association of Perioperative Glucagon-like Peptide-1 Receptor Agonist Use and Postoperative Outcomes. *Annals of Surgery*, *281*(4), 600–607. https://doi.org/10.1097/SLA.0000000000006614
2. Baethge, C., Goldbeck-Wood, S., & Mertens, S. (2019). SANRA—a scale for the quality assessment of narrative review articles. *Research Integrity and Peer Review*, *4*(1), 5. https://doi.org/10.1186/s41073-019-0064-8
3. Brown, E., Heerspink, H. J. L., Cuthbertson, D. J., & Wilding, J. P. H. (2021). SGLT2 inhibitors and GLP-1 receptor agonists: established and emerging indications. *The Lancet*, *398*(10296), 262–276. https://doi.org/10.1016/S0140-6736(21)00536-5
4. Chang, M. G., & Bittner, E. A. (2024). Comparison of societal guidance on perioperative management of glucagon-like peptide-1 receptor agonists: implications for clinical practice and future investigations. *Canadian Journal of Anesthesia/Journal Canadien d'anesthésie*, *71*(9), 1302–1315. https://doi.org/10.1007/s12630-024-02810-5
5. El-Boghdadly, K., Dhesi, J., Fabb, P., Levy, N., Lobo, D. N., McKechnie, A., Mustafa, O., Newland-Jones, P., Patel, A., Pournaras, D. J., Clare, K., & Dhatariya, K. (2025). Elective peri-operative management of adults taking glucagon-like peptide-1 receptor agonists, glucose-dependent insulinotropic peptide agonists and sodium-glucose cotransporter-2 inhibitors: a multidisciplinary consensus statement. *Anaesthesia*, *80*(4), 412–424. https://doi.org/10.1111/anae.16541
6. ElSayed, N. A., McCoy, R. G., Aleppo, G., Balapattabi, K., Beverly, E. A., Briggs Early, K., Bruemmer, D., Echouffo-Tcheugui, J. B., Ekhlaspour, L., Galindo, R. J., Garg, R., Khunti, K., Lal, R., Lingvay, I., Matfin, G., Pandya, N., Pekas, E. J., Pilla, S. J., Polsky, S., … Bannuru, R. R. (2025). 16. Diabetes Care in the Hospital: Standards of Care in Diabetes—2025. *Diabetes Care*, *48*(Supplement_1), S321–S334. https://doi.org/10.2337/dc25-S016
7. Facciorusso, A., Ramai, D., Dhar, J., Samanta, J., Chandan, S., Gkolfakis, P., Crinò, S. F., Maida, M., Anderloni, A., Boskoski, I., Triantafyllou, K., Dinis-Ribeiro, M., Hassan, C., Fuccio, L., & Arvanitakis, M. (2025). Effects of Glucagon-Like Peptide-1 Receptor Agonists on Upper Gastrointestinal Endoscopy: A Meta-Analysis. *Clinical Gastroenterology and Hepatology*, *23*(5), 715-725.e3. https://doi.org/10.1016/j.cgh.2024.07.021
8. Giannakogeorgou, A., & Roden, M. (2024). Role of lifestyle and glucagon-like peptide-1 receptor agonists for weight loss in obesity, type 2 diabetes and steatotic liver diseases. *Alimentary Pharmacology & Therapeutics*, *59*(S1). https://doi.org/10.1111/apt.17848
9. Girish P. Joshi, Basem B. Abdelmalak, Wade A. Weigel, Sulpicio G. Soriano, Monica W. Harbell, & Catherine I. Kuo. (2023). *American Society of Anesthesiologists Consensus-Based Guidance on Preoperative Management of Patients (Adults and Children) on Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists*.
10. Gudzune, K. A., & Kushner, R. F. (2024). Medications for Obesity. *JAMA*, *332*(7), 571. https://doi.org/10.1001/jama.2024.10816
11. *Guideline for Perioperative Care for People with Diabetes Mellitus Undergoing Elective and Emergency Surgery*. (2021). Centre for Perioperative Care (CPOC).
12. Haskins, S. C., Bronshteyn, Y. S., Ledbetter, L., Arzola, C., Kalagara, H., Hardman, D., Panzer, O., Weber, M. M., Heinz, E. R., Boublik, J., Cubillos, J., Hernandez, N., Zimmerman, J., & Perlas, A. (2025). ASRA pain medicine narrative review and expert practice recommendations for gastric point-of-care ultrasound to assess aspiration risk in medically complex patients undergoing regional anesthesia and pain procedures. *Regional Anesthesia & Pain Medicine*, rapm-2024-106346. https://doi.org/10.1136/rapm-2024-106346
13. Hocking, S. L., Scott, D. A., Remedios, M. L., Horowitz, M., Story, D. A., Greenfield, J. R., Boussioutas, A., Devereaux, B., Andrikopoulos, S., Shaw, J. E., & Olesnicky, B. L. (2025). 2025 ADS/ANZCA/GESA/NACOS clinical practice recommendations on the peri-procedural use of GLP-1/GIP receptor agonists. *Anaesthesia and Intensive Care*, *53*(5), 300–306. https://doi.org/10.1177/0310057X251355288
14. Jalleh, R. J., Marathe, C. S., Rayner, C. K., Jones, K. L., Umapathysivam, M. M., Wu, T., Quast, D. R., Plummer, M. P., Nauck, M. A., & Horowitz, M. (2024). Physiology and Pharmacology of Effects of GLP-1-based Therapies on Gastric, Biliary and Intestinal Motility. *Endocrinology*, *166*(1). https://doi.org/10.1210/endocr/bqae155
15. Jalleh, R. J., Plummer, M. P., Marathe, C. S., Umapathysivam, M. M., Quast, D. R., Rayner, C. K., Jones, K. L., Wu, T., Horowitz, M., & Nauck, M. A. (2024). Clinical Consequences of Delayed Gastric Emptying With GLP-1 Receptor Agonists and Tirzepatide. *The Journal of Clinical Endocrinology & Metabolism*, *110*(1), 1–15. https://doi.org/10.1210/clinem/dgae719
16. Kamarajah, S. K., Gudiozzi, N., Findlay, J. M., Lee, M. J., Pinkney, T., & Markar, S. R. (2025). Evaluation of safety of preoperative GLP-1 receptor agonists in patients undergoing elective surgery: a systematic review, meta-analysis and meta-regression. *EClinicalMedicine*, *87*, 103408. https://doi.org/10.1016/j.eclinm.2025.103408
17. Kindel, T. L., Wang, A. Y., Wadhwa, A., Schulman, A. R., Sharaiha, R. Z., Kroh, M., Ghanem, O. M., Levy, S., Joshi, G. P., & LaMasters, T. L. (2024). Multisociety clinical practice guidance for the safe use of glucagon-like peptide-1 receptor agonists in the perioperative period. *Surgery for Obesity and Related Diseases*, *20*(12), 1183–1186. https://doi.org/10.1016/j.soard.2024.08.033

18. Klein, S. R., & Hobai, I. A. (2023). Semaglutide, delayed gastric emptying, and intraoperative pulmonary aspiration: a case report. *Canadian Journal of Anesthesia/Journal Canadien d'anesthésie*, *70*(8), 1394–1396. https://doi.org/10.1007/s12630-023-02440-3
19. Makino, H., Tanaka, A., Asakura, K., Koezuka, R., Tochiya, M., Ohata, Y., Tamanaha, T., Son, C., Shimabara, Y., Fujita, T., Miyamoto, Y., Kobayashi, J., & Hosoda, K. (2019). Addition of low-dose liraglutide to insulin therapy is useful for glycaemic control during the peri-operative period: effect of glucagon-like peptide-1 receptor agonist therapy on glycaemic control in patients undergoing cardiac surgery (<scp>GLOLIA</scp> study). *Diabetic Medicine*, *36*(12), 1621–1628. https://doi.org/10.1111/dme.14084
20. Oprea, A. D., Ostapenko, L. J., Sweitzer, B., Selzer, A., Irizarry-Alvarado, J. M., Hurtado Andrade, M. D., Mendez, C. E., Kelley, K. D., Stewart, E., Fernandez Robles, C. R., Chadha, R. M., Camilleri, M., Mathur, R., Umpierrez, G. E., & Hepner, D. L. (2025). Perioperative management of patients taking glucagon-like peptide 1 receptor agonists: Society for Perioperative Assessment and Quality Improvement (SPAQI) multidisciplinary consensus statement. *British Journal of Anaesthesia*, *135*(1), 48–78. https://doi.org/10.1016/j.bja.2025.04.001
21. Rajan, N., Duggan, E. W., Abdelmalak, B. B., Butz, S., Rodriguez, L. V., Vann, M. A., & Joshi, G. P. (2024). Society for Ambulatory Anesthesia Updated Consensus Statement on Perioperative Blood Glucose Management in Adult Patients With Diabetes Mellitus Undergoing Ambulatory Surgery. *Anesthesia & Analgesia*, *139*(3), 459–477. https://doi.org/10.1213/ANE.0000000000006791
22. Sattar, N., Lee, M. M. Y., Kristensen, S. L., Branch, K. R. H., Del Prato, S., Khurmi, N. S., Lam, C. S. P., Lopes, R. D., McMurray, J. J. V, Pratley, R. E., Rosenstock, J., & Gerstein, H. C. (2021). Cardiovascular, mortality, and kidney outcomes with GLP-1 receptor agonists in patients with type 2 diabetes: a systematic review and meta-analysis of randomised trials. *The Lancet Diabetes & Endocrinology*, *9*(10), 653–662. https://doi.org/10.1016/S2213-8587(21)00203-5
23. Shyangdan, D. S., Royle, P., Clar, C., Sharma, P., Waugh, N., & Snaith, A. (2011). Glucagon-like peptide analogues for type 2 diabetes mellitus. *Cochrane Database of Systematic Reviews*, *2013*(7). https://doi.org/10.1002/14651858.CD006423.pub2
24. Sodhi, M., Rezaeianzadeh, R., Kezouh, A., & Etminan, M. (2023). Risk of Gastrointestinal Adverse Events Associated With Glucagon-Like Peptide-1 Receptor Agonists for Weight Loss. *JAMA*, *330*(18), 1795. https://doi.org/10.1001/jama.2023.19574
25. Taha, M. B., Yahya, T., Satish, P., Laird, R., Agatston, A. S., Cainzos-Achirica, M., Patel, K. V., & Nasir, K. (2022). Glucagon-Like Peptide 1 Receptor Agonists: A Medication for Obesity Management. *Current Atherosclerosis Reports*, *24*(8), 643–654. https://doi.org/10.1007/s11883-022-01041-7
26. Vilsboll, T., Christensen, M., Junker, A. E., Knop, F. K., & Gluud, L. L. (2012). Effects of glucagon-like peptide-1 receptor agonists on weight loss: systematic review and meta-analyses of randomised controlled trials. *BMJ*, *344*(jan10 2), d7771–d7771. https://doi.org/10.1136/bmj.d7771