

GLP-1 ANALOGUES AND PERIOPERATIVE ASPIRATION RISK: DELAYED GASTRIC EMPTYING AND PREOPERATIVE WITHHOLDING TIME: AN INTEGRATIVE REVIEW

VITOR BASTOS MESQUITA¹, GABRIELA BASTOS MESQUITA², MATHEUS COTIAN CUNHA DE LIMA¹, TIAGO GUEDES ÁLVARES¹,
SOFIA DE SOUZA BARBOSA CARNEIRO¹, PAULO HENRIQUE DE AQUINO JUNIOR³

1. Graduando em Medicina na Universidade Federal de Goiás, Goiânia/GO, Brazil.

2. Graduanda da Pontifícia Universidade Católica de Goiás, Goiânia/GO, Brazil.

3. Médico generalista formado pela Universidade Federal de Goiás, Goiânia/GO, Brazil.

ABSTRACT

Introduction: Glucagon-like peptide-1 receptor agonists delay gastric emptying, raising concerns regarding the perioperative risk of regurgitation and pulmonary aspiration. Objectives: To synthesise the evidence on delayed gastric emptying and pulmonary aspiration in adults taking GLP-1 receptor agonists undergoing elective procedures and to analyse divergences among recommendations regarding drug withholding and fasting times. Methods: Integrative review conducted according to the six stages described by Souza, Silva and Carvalho, with a search performed on 23 August 2026 in PubMed/MEDLINE and LILACS, complemented by the Cochrane Library. Primary studies in adults published between 2021 and 2026 in Portuguese, English or Spanish were included; medical society documents were analysed separately. Screening was performed by three independent reviewers using the Rayyan platform. Results: Of 132 records identified, 17 composed the synthesis, comprising 14 primary studies and 3 normative documents. Studies assessing residual gastric content consistently showed an association with drug use, with odds ratios ranging from 4.29 to 36.97, greater with recent exposure and non-significant after withholding for more than seven days. Studies assessing clinical outcomes found no increased risk of pulmonary aspiration. The recommendations converge on not routinely withholding the drug but diverge regarding prolonged fasting. Conclusions: The dissociation between surrogate and clinical outcomes explains the divergence among recommendations. Current evidence does not allow the issue to be definitively settled.

Keywords: Glucagon-like peptide-1 receptor agonists, Gastric emptying, Respiratory aspiration of gastric contents, Fasting, Preoperative care.

INTRODUCTION

Glucagon-like peptide-1 receptor agonists were introduced into clinical practice in the mid-2000s for the treatment of type 2 diabetes mellitus and, more recently, have also been licensed for the treatment of obesity in people with or without diabetes.¹ In addition to their incretin effect, these drugs act on gastrointestinal

motility, delaying gastric emptying, a mechanism that contributes to limiting postprandial glycemic excursions and promoting early satiety.^{1,2} Weekly formulations, whose elimination half-life may exceed one hundred and sixty hours, have become the most widely prescribed, and the expansion of indications has made encounters with patients using these medications routine during pre-anesthetic assessment.^{1,2}

The same mechanism underlying the therapeutic benefit has raised concerns regarding periprocedural safety. Delayed gastric emptying may result in retention of food contents even after compliance with conventional fasting times, with a potential risk of regurgitation and pulmonary aspiration during sedation or anesthetic induction.^{2,3} Beginning in 2023, case reports of regurgitation and aspiration emerged in patients who had complied with current fasting guidelines,² as well as studies documenting a higher prevalence of residual gastric contents in this population, assessed by gastric ultrasonography or direct endoscopic visualization.^{3,4}

The response of medical societies to this scenario has not been uniform. In 2023, a U.S. consensus-based guidance recommended withholding the drug before elective procedures.^{1,5} In 2024 and 2025, however, multidisciplinary documents published by different societies began to advise against routine discontinuation, adopting individualized risk-stratification strategies instead.^{1,5,6} These same recommendations differ regarding the alternative approach: while some recommend extending fasting for solids to twenty-four hours,^{5,6} another expressly advises against this measure.¹ This is, therefore, an unusual situation in which highly representative societies, analyzing the same body of evidence within a period of less than two years, reached operationally incompatible recommendations.

Thus, a gap persists between the growing body of evidence and the absence of a consensus approach applicable to clinical practice. Published reviews and meta-analyses have focused on estimating the magnitude of the association between drug use and residual gastric contents,⁵ without systematically examining why the recommendations derived from this evidence differ from one another or discussing their applicability to healthcare settings with limited availability of the resources presupposed by these recommendations. The present study aims to synthesize the available evidence on delayed gastric emptying and pulmonary aspiration in adults using GLP-1 receptor agonists undergoing elective procedures under sedation or general anesthesia, and to analyze the divergences among medical society recommendations regarding drug discontinuation and fasting duration, with attention to their applicability to the Brazilian context.

METHODS

A This is an integrative literature review conducted according to the six stages proposed by Souza, Silva, and Carvalho: identification of the topic and formulation of the guiding question, establishment of inclusion and exclusion criteria, definition of the information to be extracted, evaluation of the included studies, interpretation of the results, and presentation of the synthesis of knowledge.⁷

The guiding question was formulated as follows: in adults using GLP-1 receptor agonists undergoing elective procedures under sedation or general anesthesia, what evidence is available regarding delayed gastric emptying and pulmonary aspiration, and how can the divergences among society recommendations regarding drug discontinuation and fasting duration be explained?

The search was conducted on August 23, 2026, in the PubMed/MEDLINE and LILACS databases, the latter through the Regional Portal of the Virtual Health Library. The Cochrane Library was also searched on 08/23/2026 to determine whether a systematic review addressing the same guiding question existed; the search identified no review published within the previous two years.

In PubMed, a strategy structured into three blocks combined with the Boolean operator AND was used, covering the drug, gastric outcome, and periprocedural context, with truncation and the combined use of MeSH descriptors and title and abstract terms. A date filter was applied for the period from 2021 to 2026, with no other filters. In LILACS, an equivalent strategy in Portuguese was used, with free-text terms, given the lower consistency of indexing in the database. The complete strategies for each database are presented in Chart 1.

Primary studies involving adults aged 18 years or older using a GLP-1 receptor agonist or GLP-1/GIP co-agonist, undergoing an elective procedure under sedation or general anesthesia, or assessed for gastric emptying with stated anesthetic or procedural implications, that reported outcomes of residual gastric contents, pulmonary aspiration, regurgitation, procedure cancellation, or pulmonary complications were considered eligible. Clinical trials, cohort studies, cross-sectional studies, case-control studies, case series, and case reports published in Portuguese, English, or Spanish between 2021 and 2026 were accepted.

Narrative reviews, systematic reviews, meta-analyses, and other secondary syntheses were excluded because they did not constitute primary sources of data and because of the risk of double-counting the same participants; studies involving exclusively pediatric populations; studies without an outcome related to gastric contents or aspiration; animal or in vitro studies; and editorials and letters without original data.

Two methodological decisions were recorded prior to screening. The first was the inclusion of case reports and case series as eligible primary evidence, since they constitute a relevant portion of the available body of evidence on pulmonary aspiration associated with the use of these drugs. The second was the retention of position statements, guidelines, and consensus documents issued by medical societies, which were not included in the synthesis of primary studies and were analyzed separately in a dedicated comparative chart, since they constitute the subject of the second half of the guiding question.

The records were exported to the Rayyan platform, where duplicate detection and title and abstract screening were performed. Screening was conducted independently and blindly by three reviewers, with disagreements resolved by majority decision at a joint meeting held after completion of all three screenings. The selected studies were read in full by the review lead, who extracted the data using a standardized instrument containing author, year, country, study design, sample size, population and drug management, outcome assessment method, main findings, and occurrence of clinical aspiration.

As this was a literature review using exclusively published and publicly available data, submission to a Research Ethics Committee was not required.

RESULTS

Selection of Studies

The search identified 132 records, 127 in PubMed/MEDLINE and 5 in LILACS. After removal of 3 duplicates, 129 records underwent title and abstract screening, resulting in 112 exclusions. The remaining 17 records were assessed in full, and all were retained, comprising the final synthesis: 14 primary studies, presented in Table 1, and 3 normative documents from medical societies, analyzed in Table 2. The selection flow is presented in Figure 1.

The main reason for exclusion during screening was classification as a secondary synthesis, a category that included narrative reviews, systematic reviews, meta-analyses, and opinion articles, followed by the absence of a periprocedural context in studies addressing gastric emptying solely as a pharmacodynamic phenomenon, without discussion of anesthetic implications.

Characterization of the Studies

Of the 14 primary studies included, 7 were conducted in the United States, 2 in Brazil, 2 in Canada, and 1 in each of the following countries: Denmark, Belgium, and Mexico. Regarding year of publication, 1 study was published in 2023, 3 in 2024, 4 in 2025, and 6 in 2026, demonstrating a concentration of publications over the last three years.

Regarding study design, 9 studies were prospective observational studies, including one matched case-control study and one cross-sectional study with blinded assessors; 4 were retrospective, three of which were based on large electronic record databases; and 1 was a case report. Sample size ranged from 1 patient in the case report to 45,636 visits involving 30,328 patients in the largest administrative database study.

The method used to assess outcomes divided the studies into two groups. Nine studies used surrogate risk outcomes, measured by point-of-care gastric ultrasonography or direct endoscopic visualization of gastric contents. Five studies evaluated clinical outcomes, such as pulmonary aspiration, pneumonitis, respiratory failure, procedure cancellation, and mortality.

Semaglutide was the most represented drug, being the only drug evaluated in five studies and the predominant drug in the remaining studies, with proportions ranging from 31.1% to 96% of the samples. Weekly formulations predominated in all studies that specified the dosing regimen.

Residual Gastric Contents: Magnitude and Determinants

Studies evaluating residual gastric contents by ultrasonography or endoscopy consistently demonstrated a higher prevalence of the outcome among users of GLP-1 receptor agonists. The magnitude of the association, however, varied widely among studies.

The largest effect was observed in a Brazilian prospective cohort that, by design, included only patients who had received semaglutide within the 10 days preceding the procedure: increased residual gastric contents were present in 40% of exposed patients versus 3% of controls, with an adjusted odds ratio of 36.97 (95% CI 16.54–99.32).⁴ In a study involving volunteers who had recently initiated semaglutide, most of whom were still in the dose-escalation phase, gastric solids were observed in 90% of participants in the lateral decubitus position versus 10% of controls, with a relative risk of 7.36 (95% CI 1.13–47.7).³

In populations with heterogeneous drug management, the association remained robust, with an intermediate magnitude. A U.S. prospective cohort identified an odds ratio of 11.3 (95% CI 5.2–24.7) for a full stomach, with a median gastric volume of 0.61 mL/kg among users versus 0.16 mL/kg among diabetic controls.⁸ A case-control study matched for age, body mass index, and diabetes status found an odds ratio of 4.29 (95% CI 1.63–11.29) for a full stomach and 9.85 (95% CI 2.57–37.76) specifically for solid contents, with no significant difference in calculated gastric volume.⁹ A Brazilian retrospective cohort involving 1,094 endoscopies identified increased residual gastric contents in 20.33% of semaglutide users versus 3.19% of nonusers.¹⁰

Two studies conducted in populations that had effectively complied with the recommended drug discontinuation period did not replicate the association. In a Canadian cross-sectional study in which all exposed patients had discontinued the drug for at least 7 days, with a median of 11 days, the prevalence of increased residual gastric contents was 42% among exposed patients and 24% among controls, with a nonsignificant adjusted prevalence ratio of 1.65 (95% CI 0.70–3.70).¹¹ In a prospective study with a median of 9 days since the last dose, no difference in gastric volume was observed between the groups.¹²

A similar result was obtained in a population in which the drug was continued but fasting was prolonged: with a mean fasting duration of 13.0 hours, the prevalence of retained solids was 5.4% among users and 5.0% among controls, with no significant difference, and fasting duration proved to be a more relevant determinant of the outcome than the time elapsed since the last dose.¹³

It should be noted that the prevalence of the outcome in the control group varied substantially among studies, from 3% to 24%, a variation attributed by the authors themselves to the composition of the comparison groups, particularly the proportion of patients with diabetes, a population in which delayed gastric emptying occurs independently of drug use.¹¹

Preoperative Discontinuation Time

Four studies directly evaluated the relationship between the discontinuation interval and residual gastric contents, with divergent results regarding the appropriate cutoff point.

The Brazilian cohort identified a continuous dose-response gradient: an odds ratio of 10.0 (95% CI 6.67–15.65) for discontinuation of up to 7 days, 4.59 (95% CI 2.91–7.37) for 8 to 14 days, 1.37 (95% CI 0.45–3.43) for 15 to 21 days, and 0.48 (95% CI 0.03–2.37) for more than 21 days. In the combined analysis with digestive symptoms, only the category of discontinuation for more than 14 days without symptoms was not associated with the outcome, with an odds ratio of 0.77 (95% CI 0.22–2.01). In the same study, the presence of ongoing digestive symptoms was the strongest isolated predictor of the outcome, with an odds ratio of 15.1 (95% CI 9.85–23.45), and fasting duration was not associated with residual gastric contents.¹⁰

In contrast, a U.S. prospective study observed significantly greater gastric volumes only among patients whose last dose had occurred less than 7 days previously, with no difference between intervals of 7 to 14 days and more than 14 days ($p=0.937$), suggesting that discontinuation beyond one week provides no additional benefit.⁸ A multicenter study involving 316 patients identified, through ROC curve analysis, cutoff points of 7.5 days of discontinuation and 21.3 hours of fasting for solids as thresholds associated with a higher prevalence of increased residual gastric contents.¹⁴

A Mexican case report documented persistence of solid contents on gastric ultrasonography in a patient who had complied with a one-week discontinuation period and 12 hours of fasting, with complete emptying of the gastric antrum observed only three weeks after the last dose.²

Clinical Outcomes

Taken together, studies evaluating clinical outcomes did not identify a significant increase in the risk of pulmonary aspiration associated with the use of GLP-1 receptor agonists.

A retrospective cohort of 13,361 adults with diabetes, matched using a high-dimensional propensity score, found no difference between users and nonusers regarding aspiration or pneumonitis, ileus within seven days, postoperative hypoglycemia, or 30-day mortality.¹⁵ Among 32,275 upper gastrointestinal endoscopies, procedure abortion due to retained food occurred in 0.6% of users versus 0.096% of nonusers, a statistically significant difference, although no episode of aspiration was recorded among patients with retained food.¹⁶

A Danish multicenter prospective study, in which 92% of patients continued the drug until the day of surgery under an enhanced recovery protocol, recorded no cases of pulmonary aspiration in 426 elective arthroplasties, with a 95% confidence interval of 0% to 1%.¹⁷ Among 45,636 visits for outpatient ophthalmic surgery under mild to moderate sedation, no association with desaturation

and no perioperative or postoperative aspiration events were identified. However, a higher likelihood of postoperative nausea and vomiting requiring antiemetic treatment was observed, with an odds ratio of 1.93 (95% CI 1.29–2.89).¹⁸

Among the studies assessing residual gastric contents, two reported isolated events. In the Brazilian cohort, one case of pulmonary aspiration occurred among 1,094 procedures, in a patient with previous gastric bypass, 12.4 hours of fasting, and a last dose 11 days earlier.¹⁰ In a U.S. prospective cohort, one aspiration event was recorded among 106 users, in a patient whose measured gastric volume was 0.56 mL/kg, a value below all thresholds commonly used to characterize high risk.⁸

Recommendations of Medical Societies

The three normative documents analyzed were published in 2025 and are presented in Table 2. All converge on the recommendation not to routinely discontinue GLP-1 receptor agonists before elective procedures, but differ regarding the measures to be adopted instead.

The multidisciplinary consensus led by the Association of Anaesthetists recommends continuing the drug throughout the perioperative period, observing conventional fasting guidelines, and explicitly advises against prolonging fasting times, combining this approach with individualized risk assessment, the use of point-of-care gastric ultrasonography before induction, and airway protection measures.¹

The Society for Perioperative Assessment and Quality Improvement consensus recommends continuing the drug in patients without significant gastrointestinal symptoms, defined as severe nausea, vomiting, and inability to tolerate oral intake, explicitly excluding fullness and early satiety from this definition. In contrast, it prescribes 24 hours of fasting for solids, with clear liquids permitted, and graduated fasting times for clear liquids according to carbohydrate content.⁵

The joint recommendations of the Australian and New Zealand societies also advise against elective preprocedural discontinuation, on the grounds that withholding long-acting agonists for one to two weeks is unlikely to alter drug-induced delayed gastric emptying. Instead, they prescribe a clear liquid diet for 24 hours followed by the standard 6-hour fasting period, and establish that, in the absence of this dietary modification or risk stratification by gastric ultrasonography, gastroscopy with an ultrathin endoscope, or administration of intravenous erythromycin, every patient using these drugs should be considered to have a full stomach.⁶

Regarding the supporting evidence, all three documents used a Delphi process, with varying degrees of structure: five rounds of voting preceded by a systematic review registered on an international platform, with 112 studies included, in the case of SPAQI;⁵ three rounds preceded by a targeted literature review in the British consensus;¹ and an abbreviated Delphi process following an in-person meeting in the Australian document.⁶ The latter explicitly classifies its recommendations as conditional, based on low-quality evidence, and provides for review in 2026.⁶

DISCUSSION

The main finding of this review is the systematic dissociation between surrogate outcomes and clinical outcomes. Studies that assessed residual gastric contents by ultrasonography or endoscopy identified a consistent and sometimes large association with the use of GLP-1 receptor agonists, with odds ratios ranging from 4.29 to 36.97.^{4,8,10} In contrast, studies that assessed pulmonary aspiration, pneumonitis, or pulmonary complications did not identify an increased risk, with only two isolated events recorded in a combined total exceeding ninety thousand patients and

procedures.^{8,10,15,18} It is this dissociation, rather than the isolated weakness of one study or another, that explains the divergence among society recommendations.

The apparent contradiction among studies of residual gastric contents is substantially reduced when the findings are ordered according to the time elapsed since the last dose of the drug rather than by study design. In populations undergoing dose escalation or with recent exposure, the prevalence of the outcome was highest, reaching 90% for gastric solids in volunteers with less than four weeks of therapy³ and an odds ratio of 36.97 in patients exposed within the ten days preceding the procedure.⁴ In populations with heterogeneous management, the association remained robust but was of intermediate magnitude.⁸⁻¹⁰ In contrast, in the two studies in which discontinuation for seven days or more was effectively followed, with median intervals of nine and eleven days, the association lost statistical significance.^{11,12} The same occurred in the population in which the drug was continued but fasting was extended to an average of thirteen hours.¹³ The literature is therefore more consistent than a superficial reading might suggest: the effect of the drug on gastric contents appears to depend on recent exposure and to be attenuated by both prolonged discontinuation and prolonged fasting.

A second, less frequently discussed source of heterogeneity is the composition of the comparison groups. The prevalence of increased residual gastric contents among controls ranged from 3% to 24% across the included studies.^{4,11} The authors of the study with the highest prevalence attributed this finding to the proportion of patients with diabetes in their control group, a population that exhibits delayed gastric emptying independently of the use of GLP-1 receptor agonists, and acknowledged that this composition reduced the contrast between groups and biased the comparison toward the null.¹¹ The converse is also true: the study that found the highest odds ratio had a control group with only 3% prevalence of the outcome.⁴ Effect estimates obtained from designs with different control groups are therefore not directly comparable, which warrants caution when interpreting meta-analyses that aggregate them.

The greatest point of divergence among societies is not drug discontinuation, on which there is convergence, but the approach adopted in its place. Two of the three documents analyzed replaced discontinuation with prolonged fasting, requiring twenty-four hours without solids,^{5,6} whereas the third explicitly rejects prolonged fasting and maintains the recommendation for conventional fasting.¹ The data from this review do not allow these two positions to be adjudicated with confidence. In support of prolonged fasting, the study conducted in a population that continued the drug and achieved thirteen hours of fasting found no difference in the prevalence of retained solids compared with controls,¹³ and the study that specifically examined the nature of the contents demonstrated that the difference between users and nonusers was concentrated in solids rather than liquid volume.⁹ Against prolonged fasting, the largest retrospective cohort included found no association between fasting duration and residual gastric contents,¹⁰ and the included case report documented persistence of solids after fourteen hours of fasting and one week of drug discontinuation, with resolution only three weeks after the last dose.²

The two Brazilian studies included occupy a unique position in this debate because they support a conclusion that differs from that adopted by the three consensus documents.^{4,10} The retrospective cohort of 1,094 endoscopies identified a continuous dose-response gradient between the discontinuation interval and residual gastric contents, with a decreasing odds ratio from 10.0 for discontinuation periods of up to seven days to nonsignificant values beyond fifteen days, whereas fasting duration was not associated with the outcome. The authors concluded that the initially recommended one-week discontinuation period is insufficient and that the three-week

period proposed by other societies is excessive.¹⁰ The same study identified ongoing digestive symptoms as the strongest isolated predictor of the outcome, with an odds ratio of 15.1, a finding that contrasts with the guidance of two of the consensus documents analyzed, according to which gastrointestinal symptoms alone should not determine management.^{1,6}

The applicability of international recommendations to the Brazilian context warrants specific consideration. The three guidelines analyzed make continuation of the drug conditional on the availability of mitigation measures that presuppose resources not always available in Brazilian healthcare settings, including point-of-care gastric ultrasonography performed by a trained professional, gastroscopy with an ultrathin endoscope under minimal sedation, and administration of intravenous erythromycin.^{1,5,6} One of the guidelines expressly states that, in the absence of these measures, every patient using the drug should be considered to have a full stomach,⁶ which, if applied literally in settings without access to perioperative ultrasonography, would transform the recommendation to continue the drug into a systematic indication for rapid-sequence intubation. Furthermore, the availability of these drugs for the treatment of obesity, frequently used outside their formal indication and without documentation in the medical record, makes a pre-anesthetic history specifically directed toward their use a practical element of greater importance than any discontinuation protocol.

It should also be noted that gastric ultrasonography, recommended by all three documents as a stratification tool,^{1,5,6} did not prove infallible in the literature reviewed. The only aspiration event occurring in one of the prospective studies involved a patient whose measured gastric volume was 0.56 mL/kg, a value below all thresholds commonly used to characterize high risk.⁸ Likewise, the finding of a higher likelihood of postoperative nausea and vomiting requiring antiemetic treatment, identified in a cohort of more than forty-five thousand visits,¹⁸ is not addressed by any of the three consensus documents analyzed, although it constitutes a clinically relevant and statistically consistent outcome.

This review has limitations that should be considered when interpreting its results. Heterogeneity among the included studies is substantial, both in outcome definitions, which varied with respect to the volume threshold adopted and whether thick liquids were included, and in assessment methods, populations, and drug management, precluding quantitative aggregation of the results and restricting the synthesis to a descriptive approach. The search was limited to two databases, without inclusion of Embase, which may have resulted in relevant studies being missed, particularly given that database's broader coverage of drug-related studies. No formal assessment of the methodological quality of the included studies using a validated instrument was performed, a procedure that is not mandatory in an integrative review design but constitutes a recognized limitation. Observational studies predominate and are subject to residual confounding, and most of the outcomes analyzed are surrogate rather than clinical outcomes. Finally, the substantial volume of publications during the period and the rapid pace at which recommendations have been revised mean that the synthesis presented here is necessarily time-bound.

CONCLUSION

The available evidence indicates that the use of GLP-1 receptor agonists is associated with a higher prevalence of residual gastric contents in patients undergoing elective procedures, with a more pronounced effect the more recent the drug exposure and an effect attenuated by both prolonged discontinuation and prolonged fasting for solids. This association, however, did not translate into a measurable increase in the incidence of pulmonary aspiration in studies assessing

clinical outcomes, in which events were rare and isolated.

The divergences among society recommendations arise primarily from the weight assigned to each of these two sets of findings. There is convergence regarding the recommendation not to routinely discontinue the drug, but divergence regarding the alternative approach, with two documents recommending prolonged fasting for solids and a third expressly advising against this measure. Current evidence does not allow this divergence to be definitively resolved, and all three recommendations are based on a body of evidence that their own authors classify as low quality.

In the Brazilian context, the application of these recommendations requires attention to the availability of the mitigation measures on which they depend, particularly perioperative gastric ultrasonography. Until studies adequately powered to detect differences in clinical outcomes are available, active identification of the use of these drugs during pre-anesthetic assessment and individualized risk stratification remain the best-supported approaches.

REFERENCES

1. El-Boghdady K, Dhesi J, Fabb P, Levy N, Lobo DN, McKechnie A, Mustafa O, Newland-Jones P, Patel A, Pournaras DJ, Clare K, Dhatriya K. 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*. 2025 Apr;80(4):412-24.
2. Fortis-Olmedo LL, Serna-Muñoz R, Cruz-Villaseñor JA, Achar-Farca T, Calva-Ruiz DS. Semaglutide and delayed gastric emptying: case report and analysis of anesthetic implications. *Rev Colomb Anestesiol*. 2025;53(2):e1137.
3. Sherwin M, Hamburger J, Katz D, DeMaria S Jr. Influence of semaglutide use on the presence of residual gastric solids on gastric ultrasound: a prospective observational study in volunteers without obesity recently started on semaglutide. *Can J Anaesth*. 2023 Aug;70(8):1300-6.
4. Nersessian RSF, da Silva LM, Carvalho MAS, Silveira SQ, Abib ACV, Bellicieri FN, Lima HO, Ho AMH, Anjos GS, Mizubuti GB. Relationship between residual gastric content and peri-operative semaglutide use assessed by gastric ultrasound: a prospective observational study. *Anaesthesia*. 2024 Dec;79(12):1317-24.
5. Oprea AD, Ostapenko LJ, Sweitzer B, Selzer A, Irizarry-Alvarado JM, Hurtado Andrade MD, Mendez CE, Kelley KD, Stewart E, Fernandez Robles CR, Chadha RM, Camilleri M, Mathur R, Umpierrez GE, Hepner DL. Perioperative management of patients taking glucagon-like peptide 1 receptor agonists: Society for Perioperative Assessment and Quality Improvement (SPAQI) multidisciplinary consensus statement. *Br J Anaesth*. 2025 Jul;135(1):48-78.
6. Hocking SL, Scott DA, Remedios ML, Horowitz M, Story DA, Greenfield JR, Boussioutas A, Devereaux B, Andrikopoulos S, Shaw JE, Olesnick BL. 2025 ADS/ANZCA/GESA/NACOS clinical practice recommendations on the peri-procedural use of GLP-1/GIP receptor agonists. *Anaesth Intensive Care*. 2025 Sep;53(5):300-306.
7. Souza MT, Silva MD, Carvalho R. Revisão integrativa: o que é e como fazer. *Einstein (São Paulo)*. 2010;8(1):102-6.
8. Wolla CD, Pecha TJ, Sirianni JM, Schorg LM, Wolf BJ, Wilson SH. Ultrasound assessment of preoperative gastric volume in fasted diabetic surgical patients: a prospective observational cohort study on the effects of glucagon-like peptide-1 agonists on gastric emptying. *J Clin Anesth*. 2025 Jun;104:111853.
9. Vlaeminck N, Van de Putte P, Dekeyser M, Baert N, Wallyn A, Vernieuwe L, Smits C, Wouters K, Van Cauwenberghe J, Saldien V. Gastric ultrasound in patients receiving semaglutide: a prospective, multicentre, matched control study. *Anaesthesia*. 2026 Jun;81(62):801-9.
10. Santos LB, Mizubuti GB, Silva LM, Silveira SQ, Nersessian RSF, Abib ACV, Bellicieri FN, Lima HO, Ho AMH, Anjos GS, Moura DTH, Moura EGH, Vieira JE. Effect of various perioperative semaglutide interruption intervals on residual gastric content assessed by esophagogastroduodenoscopy: a retrospective single center observational study. *J Clin Anesth*. 2024 Dec;99:111668.
11. Boudreau C, Couture M, Rousseau-Saine N, Laferrière-Langlois P, Roy-Renaud É, Burey J, Raymond M, Denault A, Morisson L. Residual gastric content after holding of glucagon-like peptide-1 receptor agonists before elective surgery: a cross-sectional study - the RESIDUAL study. *BMC Anesthesiol*. 2026 Jun 10;26(1):511.
12. Oates PL, McElrath AD, Boyd RP, Harcourt CA, Highland KB, Carness JM, Knuf KM. Glucagon like peptide-1 receptor agonist use not related with gastric volume after preoperative fasting: a prospective observational study. *Mil Med*. 2026 May;191(5-6):e1006-11.

13. Shahidifar E, Lesniowska M, Deschenes E, Polcha G, Manzo C, Barreiro T, Bigdeli G, Hemmat A, Brine P, Malik A, Song G. Fasting duration, not timing of last GLP-1 dose, predicts aspiration risk indicators: a prospective point-of-care gastric ultrasound study. *Dig Dis Sci*. 2026 May;71(5):1926-36.
14. Pai SL, Nimma SR, Beam WB, VanderWielen BA, Kalagara HK, Bettini LM, Yu S, Sharpe EE, Harbell MW; MAGIC (Mayo Anesthesia Gastric Imaging Collaborative) Collaborators. Assessment of gastric content using gastric ultrasound in patients on glucagon-like peptide-1 receptor agonists before anesthesia. *Anesth Analg*. 2026;142(4):640-9.
15. Klonoff DC, Kim SH, Galindo RJ, Joseph JI, Garrett V, Gombar S, Aaron RE, Tian T, Kerr D. Risks of peri- and postoperative complications with glucagon-like peptide-1 receptor agonists. *Diabetes Obes Metab*. 2024;26(8):3128-36.
16. Dev B, Hadi Y, Rizvi A, Cao C, Horwich B, Hoerter NA. Low rates of aborted endoscopy due to gastric food retention in patients on glucagon-like-peptide-1 receptor agonists. *Dig Dis Sci*. 2025 May;70(5):1838-43.
17. Mahmoud LI, Kehlet H, Madsbad S, Lindberg-Larsen M, Varnum C, Jakobsen T, Andersen MR, Bieder MJ, Overgaard S, Hansen TB, Gromov K, Jørgensen CC. Perioperative GLP1-RA management and risk of aspiration in patients with diabetes undergoing fast-track hip and knee arthroplasty. *Dan Med J*. 2025 Apr 9;72(5):A09240629.
18. Hyung B, Ye XY, Chandrakumar M, Lovshin JA, Peacock SC. Perioperative desaturation and postoperative nausea or vomiting requiring antiemetic administration in glucagon-like peptide-1 receptor agonist users undergoing ambulatory ophthalmic surgery under mild-to-moderate sedation: a large retrospective cohort study. *Diabetes Obes Metab*. 2026 Jun;28(8):7546-7554. *Ophthalmol*. 2022; 140(8): 791-798. doi: 10.1001/jamaophthalmol.2022.2135.

MAILING ADDRESS

NAYANE PEIXOTO SOARES

Avenida Bela Vista, nº 26, Bairro Jardim das Esmeraldas, Aparecida de Goiânia, Goiânia/GO, Brazil.

E-mail: nayane.peixoto@gmail.com

EDITORIAL AND REVIEW

Chief editors:

Waldemar Naves do Amaral - <http://lattes.cnpq.br/4092560599116579> - <https://orcid.org/0000-0002-0824-1138>

Nílzio Antônio da Silva - <http://lattes.cnpq.br/1780564621664455> - <https://orcid.org/0000-0002-6133-0498>

Authors:

Vitor Bastos Mesquita - <http://lattes.cnpq.br/2377811405710400> - <https://orcid.org/0009-0008-6093-0804>

Gabriela Bastos Mesquita - <http://lattes.cnpq.br/7717577676264422> - <https://orcid.org/0009-0004-3332-5407>

Matheus Cotian Cunha de Lima - <http://lattes.cnpq.br/1853281632705711> - <https://orcid.org/0009-0000-1571-2519>

Tiago Guedes Álvares - <http://lattes.cnpq.br/9791945737011173> - <https://orcid.org/0009-0004-3364-8249>

Sofia de Souza Barbosa Carneiro - <http://lattes.cnpq.br/5703139258792940> - <https://orcid.org/0009-0002-0575-965X>

Paulo Henrique de Aquino Junior - <http://lattes.cnpq.br/6962122509327846> - <https://orcid.org/0000-0002-4244-4350>

Library Review: Izabella Goulart

Spell Check: Dario Alvares

Translation: Soledad Montalbetti

Received: 27/08/26. Accepted: 27/08/26. Published in: 22/09/2026.