

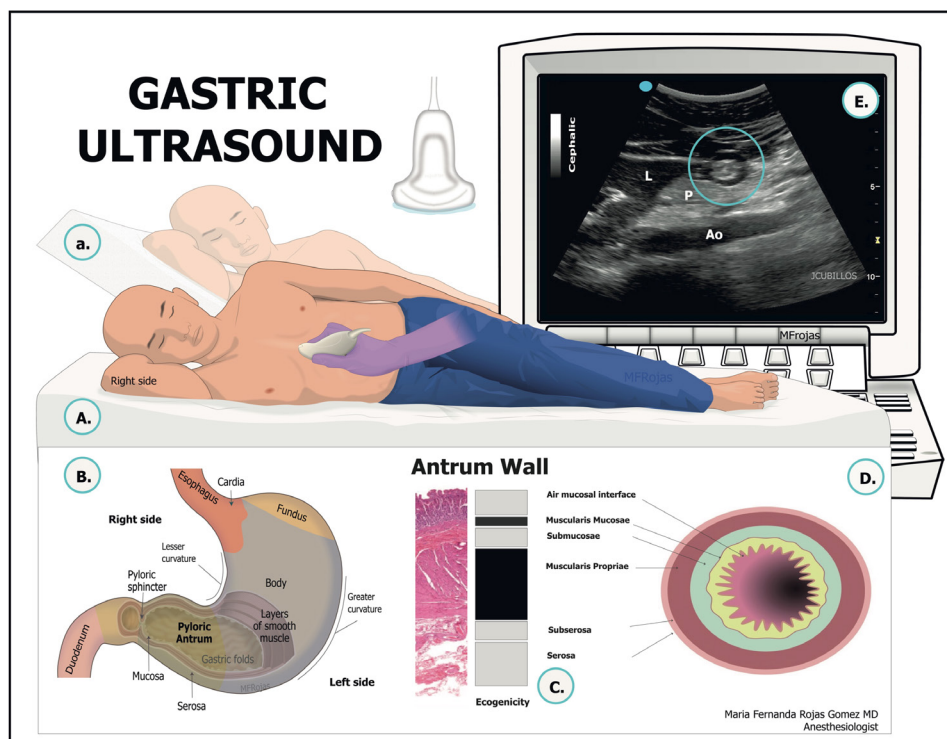


Figure 1 Gastric ultrasound image acquisition pearls: illustration of patient positioning, probe placement and orientation, key anatomical landmarks, and sonographic representation of the gastric anatomy. (A) Probe placement for gastric ultrasound with the patient positioned in the right lateral decubitus position at 0 degrees inclination (flat), the validated posture for gastric volume estimation. (a) Alternative patient positioning at 45 degrees inclination (semi-recumbent) to enhance the gravitational effect, facilitating gastric content movement toward the antrum. (B) Basic anatomical structures of the stomach. (C) Sonographic representation of the gastric wall layers at the level of the gastric antrum. (D) Anatomical illustration of the gastric antrum and its corresponding wall layers. (E) Gastric ultrasound image of an empty stomach, demonstrating the characteristic 'bull's eye' appearance when contracted, with key anatomical landmarks highlighted. Note: when using a low-resolution curvilinear transducer, only the muscularis propria layer is typically visualized as a hypoechoic structure, serving as a useful reference for identifying the gastric antrum. Ao, aorta; L, liver (left lobe); P, pancreas.

diagnostic test in both healthy and medically complex patient populations,^{5–19} these guidelines do not re-examine the diagnostic accuracy of gastric POCUS but rather assess and provide guidance regarding the evidence-based support for its use in clinical decision-making for medically complex patient populations.

Following approval by the ASRA-PM guidelines committee, the coauthors of the narrative review were assembled based on their expertise in gastric POCUS. The coauthors performed the narrative review and provided guidance on this document. The ASRA-PM Board of Directors has reviewed and endorsed this document. This document does not establish a standard of care or replace clinical judgment. It does not intend to limit or deny care, affect the rights of patients or providers, or define the standard of care. It is not intended to replace clinical judgment. In the imperfect setting of heterogeneous data, limited data, controversial topics, and bias inherent to expert opinion, compliance with the recommendations may not result in improved outcomes, that is, reduction in aspiration, compared with personalized medicine. We hope these practice recommendations will help further mitigate risk for an already low-risk complication. Ultimately, our suggestions aim to provide a structured approach to risk assessment and guide clinicians on the role of gastric POCUS in assessing gastric content for various clinical scenarios and patient acuity.

Fundamentals of gastric POCUS for assessing aspiration risk

To assist clinicians in understanding the principles of gastric ultrasound, we have included key figures (figures 1 and 2)

that illustrate probe placement, anatomy, and the sonographic appearance of the gastric antrum under various conditions. These figures are designed to serve as a rapid reference for practitioners. For greater detail and depth, please refer to other RAPM publications.^{8–20} Additionally, table 1 summarizes the Perlas qualitative grading system for fluid and solid-gastric content to assess aspiration risk. The grading system evaluates for fluid within the gastric antrum in both the supine and right lateral decubitus (RLD) positions without performing a quantitative assessment based on the cross-sectional area (CSA), which is summarized in table 1. A grade 0 antrum appears empty in both supine and RLD positions, indicating a low risk of aspiration. A grade 1 antrum is empty in the supine position but contains fluid in the RLD position, representing an intermediate risk. A grade 2 antrum contains fluid in both positions, suggesting a higher aspiration risk. A grade 3 antrum indicates a full stomach with solid contents or thick fluid, appearing hyperechoic and either homogeneous (eg, milk/dairy) or heterogeneous (eg, food) on ultrasound, and is associated with an increased aspiration risk.

METHODS

This review was registered in PROSPERO on July 31, 2023 (CRD42023445927).

Design

This work is a narrative review. It was carried out using the Cochrane Handbook for Systematic Reviews of Interventions²¹