


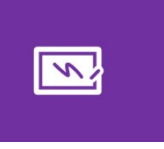


PERIOPERATIVE GLP-1 AGONISTS: THE CASE FOR POCUS ASSESSMENT OF THE GASTRIC ANTRUM

GREGORY COLLINS, DNP, CRNA



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EXPOSE	IDENTIFY	DEMONSTRATE
Expose the pharmacology & prevalence of GLP-1 agents	Identify perioperative risks & means of mitigation	Demonstrate the ability to identify & assess the gastric antrum

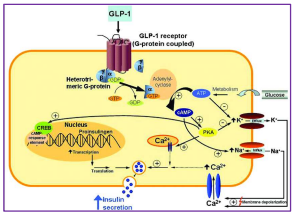
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GLP-1 Agonists

"GLUCAGON-LIKE PEPTIDE"

G-coupled protein receptor

GLP receptor activation stimulates complex cascade, leading to ↓ blood glucose



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GLP-1 Agonists

4 DISTINCT TARGETS

GLP-1R agonist-related adverse events:

- Nausea
- Diarrhea
- Vomiting
- Gallbladder disorders

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DARK SIDE of GLP-1 Agonists

Explore Semaglutide

See if you are eligible for a semaglutide prescription as part of our comprehensive weight management program.

[See if I qualify!](#)

15% Savings from Semaglutide
 GLP-1 Medication, if appropriate
 FSA/HSA Eligible

Semaglutide, the same active ingredient as weight loss drug Wegovy®. Delivered overnight.

Weight loss medicine Wegovy® and Ozempic® are in short supply. Get treatment with a doctor who can prescribe semaglutide if it's right for you.

[See if I qualify!](#)

Semaglutide Prescribed Online
Only \$297 per Month
Includes Doctor & Medication
No Hidden Fees – No Insurance Needed

[Get Started Now](#)

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6 Week Belly

Ozempic Weight Loss

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Anesthetic Implications



Doctors warn some popular weight-loss drugs may raise risk of complications under anesthesia

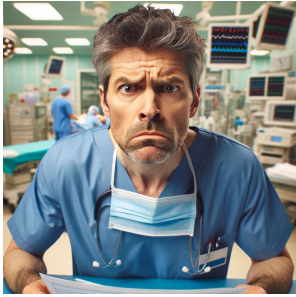
BEWARE!

- 6 million prescriptions in first 4 mo of 2023
- Unknown number of patients receiving meds without prescription
- Most have 1-3 week half-life, drugs detectable 5-7 weeks after SQ dose
- 10-fold increase in gastric contents in patients on GLP-1 drugs**
- Obvious risk for perioperative aspiration**

Jones PM, Hobel IA, Murphy PM. Anesthesia and glucagon-like peptide-1 receptor agonists: proceed with caution! Can J Anaesth. 2023 Aug;70(8)

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Anesthetic Implications



WTF?

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Practice Recommendations

CANADIAN/EUROPEAN SOCIETIES

- Hold drug for 3 half-lives**
- POCUS assessment of gastric contents**
- Consult endocrinology if diabetic patient**
- Fasting?**

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AANA

American Association of
Nurse Anesthesiology

AANA Publishes Considerations for Anesthesia Care of the Patient on a GLP-1 Receptor Agonist

Because of these risks, providers may need to do additional screenings such as a point-of-care ultrasound of a patient's stomach contents before surgery. If the ultrasound indicates that gastric contents are present or imaging is inconclusive, the surgical team may consider delaying an elective procedure or proceeding as "full stomach" to mitigate the risks of regurgitation and aspiration while intubated for anesthesia care.

The length of time various GLP-1 medications continue to impact a patient were considered in developing these recommendations. Example recommendations include:

- If daily dose: Consider holding day of surgery/procedure.
- If weekly dose: Consider holding one week before surgery/procedure.

<https://www.aana.com/news/aana-publishes-considerations-for-anesthesia-care-of-the-patient-on-a-glp-1-receptor-agonist>

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American Society of Anesthesiologists

American Society of Anesthesiologists Consensus-Based Guidance on Preoperative Management of Patients (Adults and Children) on Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists

Day(s) Prior to the Procedure:

- For patients on daily dosing consider holding GLP-1 agonists on the day of the procedure/surgery. For patients on weekly dosing consider holding GLP-1 agonists a week prior to the procedure/surgery.
- This suggestion is irrespective of the indication (type 2 diabetes mellitus or weight loss), dose, or the type of procedure/surgery.
- If GLP-1 agonists prescribed for diabetes management are held for longer than the dosing schedule, consider consulting an endocrinologist for bridging the antidiabetic therapy to avoid hyperglycemia.

Day of the Procedure:

- If gastrointestinal (GI) symptoms such as severe nausea/vomiting/retching, abdominal bloating, or abdominal pain are present, consider delaying elective procedure, and discuss the concerns of potential risk of regurgitation and pulmonary aspiration of gastric contents with the proceduralist/surgeon and the patient.
- If the patient has no GI symptoms, and the GLP-1 agonists have been held as advised, proceed as usual.
- If the patient has no GI symptoms, but the GLP-1 agonists were not held as advised, proceed with "full stomach" precautions or consider evaluating gastric volume by ultrasound. If possible and if proficient with the technique, if the stomach is empty, proceed as usual. If the stomach is full or if gastric ultrasound inconclusive or not possible, consider delaying the procedure or treat the patient as "full stomach" and manage accordingly. Discuss the concerns of potential risk of regurgitation and pulmonary aspiration of gastric contents with the proceduralist/surgeon and the patient.
- There is no evidence to suggest the optimal duration of fasting for patients on GLP-1 agonists. Therefore, until we have adequate evidence, we suggest following the current ASA fasting guidelines.^{15,16}

<https://www.asahq.org/about-us/newsroom/news-releases/2023/06/american-society-of-anesthesiologists-consensus-based-guidance-on-preoperative>

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American Society of Anesthesiologists

Advocating for You - Education & CME - Your Career - Research & Guidelines - Meetings - Managing Your Practice

NEWS

October 28, 2024

Most Patients Can Continue Diabetes, Weight Loss GLP-1 Drugs Before Surgery for GI Problems Should Be Procedure

New Multi-society Clinical Practice Guidance Released

ASMB's guidelines/statements

Multisociety clinical practice guidance for the safe use of glucagon-like peptide-1 receptor agonists in the perioperative period

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Practice Recommendations

- Patients in the **escalation phase** of GLP-1 drugs (early in treatment) are more likely to have delayed stomach emptying. The escalation phase (when the patient is given increasing doses of the GLP-1 drug) typically lasts four to eight weeks, depending on the drug and the reason it has been prescribed. **Elective surgery should be deferred** and only proceed once the escalation phase has passed and GI side effects have dissipated.
- Patients who have **GI symptoms**, including nausea, vomiting, abdominal pain, shortness of breath or constipation should **wait until their symptoms have dissipated** before proceeding with elective surgery.
- Patients on a **higher dose of the GLP-1 drug** typically have more GI side effects and should follow a **liquid diet for 24 hours before the procedure**.
- Patients with **other medical conditions that slow stomach emptying**, such as Parkinson's disease may further **modify the perioperative management plan**.

Khandel TL, Wang AY, Wadhwa A, et al. Multisociety clinical practice guidance for the safe use of glucagon-like peptide-1 receptor agonists in the perioperative period. Surg Obes Relat Dis. 2024;20(12):1183-1186. doi:10.1016/j.soard.2024.08.033

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Practice Recommendations

Surgery for Obesity and Related Diseases
Volume 20, Issue 12, December 2024, Pages 1183-1186

AS1185 guidelines/statements

Multisociety clinical practice guidance for the safe use of glucagon-like peptide-1 receptor agonists in the perioperative period

“The guidance notes...adjusting the anesthesia plan to minimize aspiration risk and **using point-of-care ultrasound right before the procedure to assess stomach contents...**”

Khandel TL, Wang AY, Wadhwa A, et al. Multisociety clinical practice guidance for the safe use of glucagon-like peptide-1 receptor agonists in the perioperative period. Surg Obes Relat Dis. 2024;20(12):1183-1186. doi:10.1016/j.soard.2024.08.033

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Practice Recommendations

Common GLP-1 Agonists				
GLP1 Agonists	Clinical Dosing	Pharmacokinetics <small>HALF-LIFE</small>	Elimination	Special Considerations
Exenatide <small>(Byetta®/Bimvan®)</small>	SQ, twice daily (IR), weekly (ER)upitratred	3 hours	Renal	Associated with immune-mediated thrombocytopenia
Lixisenatide <small>(Adurom®)</small>	SQ, daily, upitratred	3 hours	Renal	No longer available in United States
Semaglutide <small>(Wegovy®, Ozempic®, Rybelsus®)</small>	SQ, weekly, upitratred Oral, daily, upitratred	7 days	Renal	Approved (SQ formulation only) for weight loss
Liraglutide <small>(Saxenda®, Victoza®)</small>	SQ, daily, upitratred	12.5 hours	Renal	Approved for weight loss
Dulaglutide <small>(Trulicity®)</small>	SQ, weekly	4.5 days	Renal	
GLP1/GIP Agonist				
Tirzepatide <small>(Mounitor®)</small>	SQ, weekly	5 days	Renal	Approved for weight loss

SQ subcutaneous

<https://www.asps.org/articles/serious-anesthesia-risks-of-semaglutide-and-other-glp-1-agonists-under-recognition>

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Practice Recommendations

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POCUS Assessment of Gastric Antrum

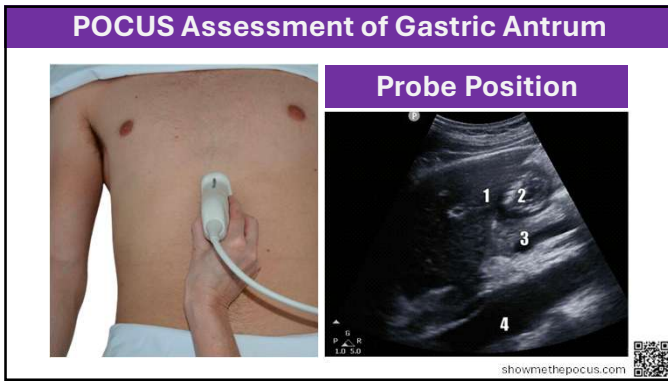
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POCUS Assessment of Gastric Antrum

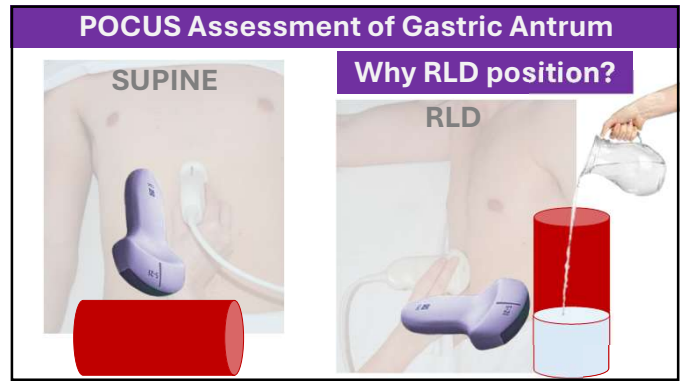
Why the ANTRUM?

- Most amenable to US assessment
 - ✓ Liver provides sonographic window
 - ✓ Limited air
 - ✓ Superficial location
 - ✓ Multiple, identifiable tissue layers
- *Accurate reflection of gastric contents*

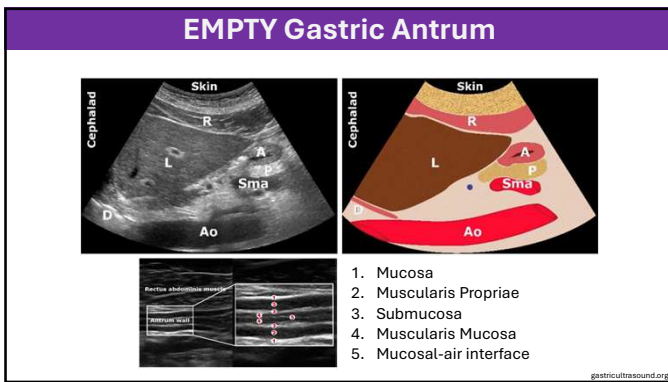
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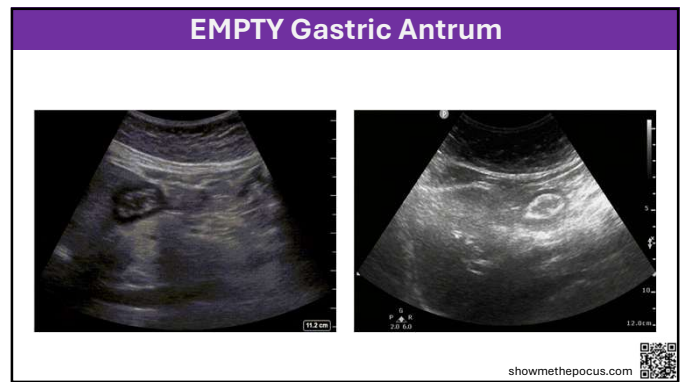
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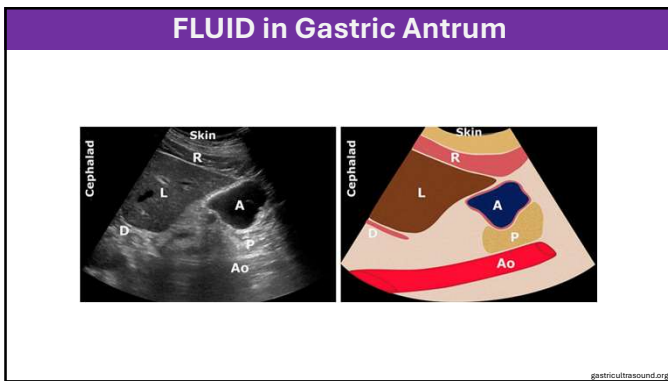
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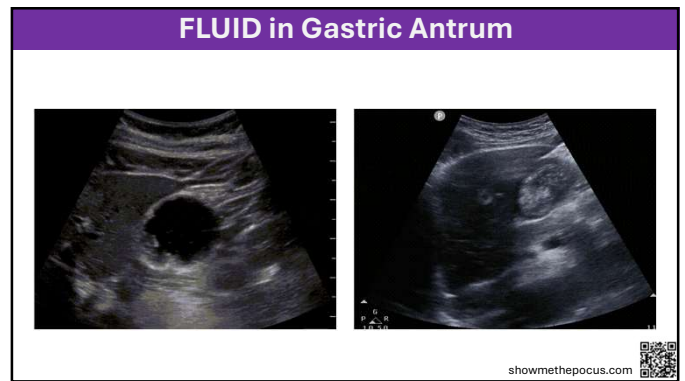
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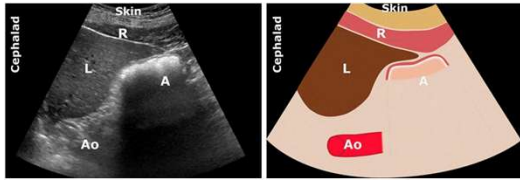


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“Early” SOLID Gastric Antrum



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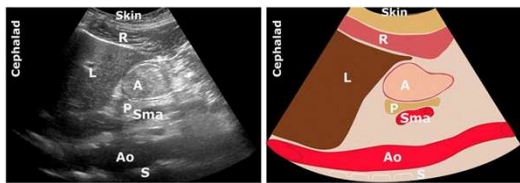
“Early” SOLID Gastric Antrum



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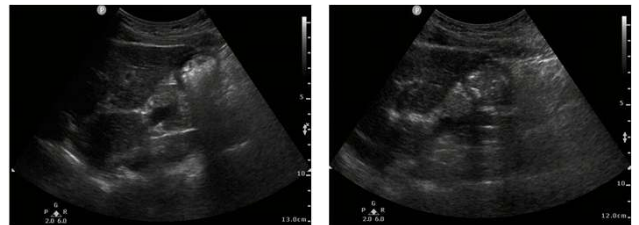
showmethepocus.com

“Late” SOLID Gastric Antrum



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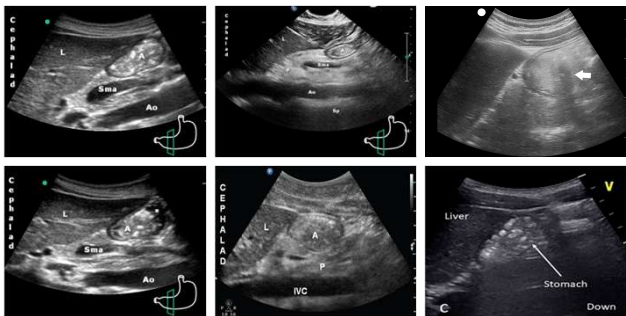
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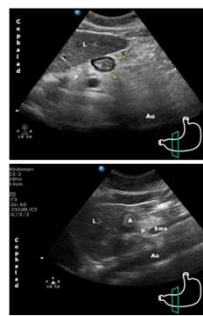
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“Late” SOLID Gastric Antrum



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OBJECTIVE Evidence-Based Decisions



Empty
=
EMPTY

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OBJECTIVE Evidence-Based Decisions

ANY Solid = FULL STOMACH

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OBJECTIVE Evidence-Based Decisions

Fluid ↓ QUANTITATIVE ASSESSMENT

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OBJECTIVE Evidence-Based Decisions

*** Freeze image at largest diameter... ↓ Use machine to calculate CROSS-SECTIONAL AREA (CSA)**

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Calculating Gastric Fluid Volume

VOLUME (ML) = 27.0 + 14.6 X RIGHT-LAT CSA - 1.28 X AGE

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Calculating Gastric Fluid Volume

Gastric UltraSound
A Point-of-care tool for aspiration risk assessment

Right Lat CSA	20	30	40	50	60	70	80
2	31	38	5	0	0	0	0
3	45	33	30	7	0	0	0
4	60	47	34	21	9	0	0
5	74	62	49	36	23	10	0
6	89	76	65	51	38	25	12
7	103	91	78	65	53	40	27
8	118	105	95	80	67	54	41
9	133	120	107	94	82	69	56
10	147	135	122	109	96	83	71
11	162	149	136	123	111	98	85
12	177	164	151	138	125	113	100
13	191	178	165	153	140	127	114
14	206	195	180	167	155	142	128
15	220	207	194	182	169	156	143
16	235	222	209	200	184	171	158
17	249	236	224	211	198	185	173
18	264	251	239	226	215	200	187
19	278	266	255	240	227	214	202
20	293	281	268	255	242	229	217
21	307	295	282	269	256	244	231
22	323	310	297	284	271	259	246
23	337	324	311	298	285	273	260
24	352	339	326	313	301	288	275
25	366	353	340	327	315	302	289
26	381	368	355	342	330	317	304
27	395	382	369	357	344	331	318
28	410	397	385	372	359	346	333
29	424	411	398	386	373	360	347
30	439	427	414	401	388	375	362

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OBJECTIVE Evidence-Based Decisions

→Delay?
→Cancel?
→Aspiration prophylaxis?
→NG/OG tube?
→ETT vs LMA?
→Standard induction vs RSI?

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K.I.S.S. Method

EMPTY STOMACH

- ✓ No visible contents in supine or RLD
- ✓ Clear fluid in RLD but no contents supine
- ✓ Clear fluid with CSA < 10 cm² in RLD

FULL STOMACH

- ✓ Thick fluid or solids in any position
- ✓ Obviously-distended antrum supine, RLD
- ✓ Clear fluid with CSA > 10 cm² in RLD

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Limitations of Study



- Previous bariatric procedure
- Gastric band in-situ
- Previous fundoplication
- Large hiatal hernia

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QUESTIONS?



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