

Using Gastric Ultrasound to Guide the Anesthetic Plan for Traumatic Quadricep Tendon Rupture in a Patient on a GLP-1 Agonist

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Introduction

- Patients on glucagon-like peptide-1 (GLP-1) receptor agonists can be at high risk of regurgitation and aspiration of gastric contents due to GLP-1 induced delayed gastric emptying.
- The American Society of Anesthesiologists (ASA) recently released consensus-based guidelines on preoperative management of patients on GLP-1 agonists.¹
- We describe the use of gastric ultrasound in the preoperative management of a patient on dulaglutide who presented for urgent surgery where gastric ultrasound changed patient management.**

Case Report

- 74-year-old, BMI 32.5 kg/m² male with diabetes mellitus type 2 presented for urgent right quadricep tendon repair that was already >7 days post-rupture.
- During the preoperative phone call, the patient stated they last injected their weekly dulaglutide 3 days prior [half-life ~5 days].**
- After discussing the risks, the shared decision was made to perform a gastric ultrasound to further assess the type and volume of gastric contents.
- With a curvilinear 2-5MHz transducer we completed a **gastric ultrasound which showed fluid that appeared heterogeneous and hyperechoic, consistent with particulate gastric contents.**
- The cross-sectional area (CSA) of the gastric antrum was measured in both the supine and right lateral decubitus positions and was 8.41cm² and 9.75cm², respectively. (Figure 1 and 2)
- Using the relation between age and right lateral CSA, we found that the patient had low gastric volume.** (Table 1)²
- However, based on the appearance of the gastric contents, we decided to proceed with general anesthesia with an endotracheal tube. Patient underwent a rapid sequence induction with endotracheal intubation.
- After the procedure was complete, the patient was extubated and taken to PACU without complication.

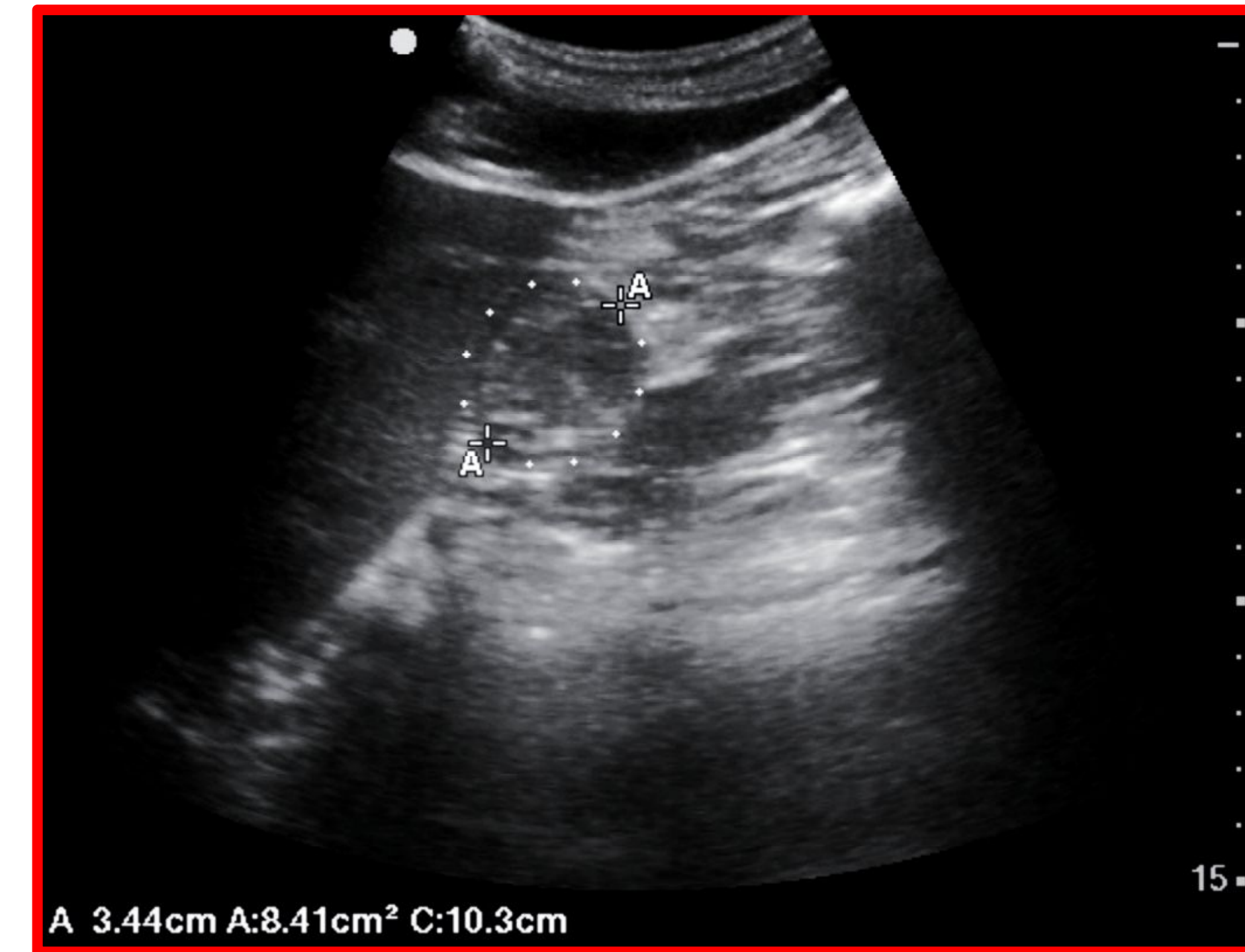


Figure 1: Sonogram showing gastric antral CSA in supine position

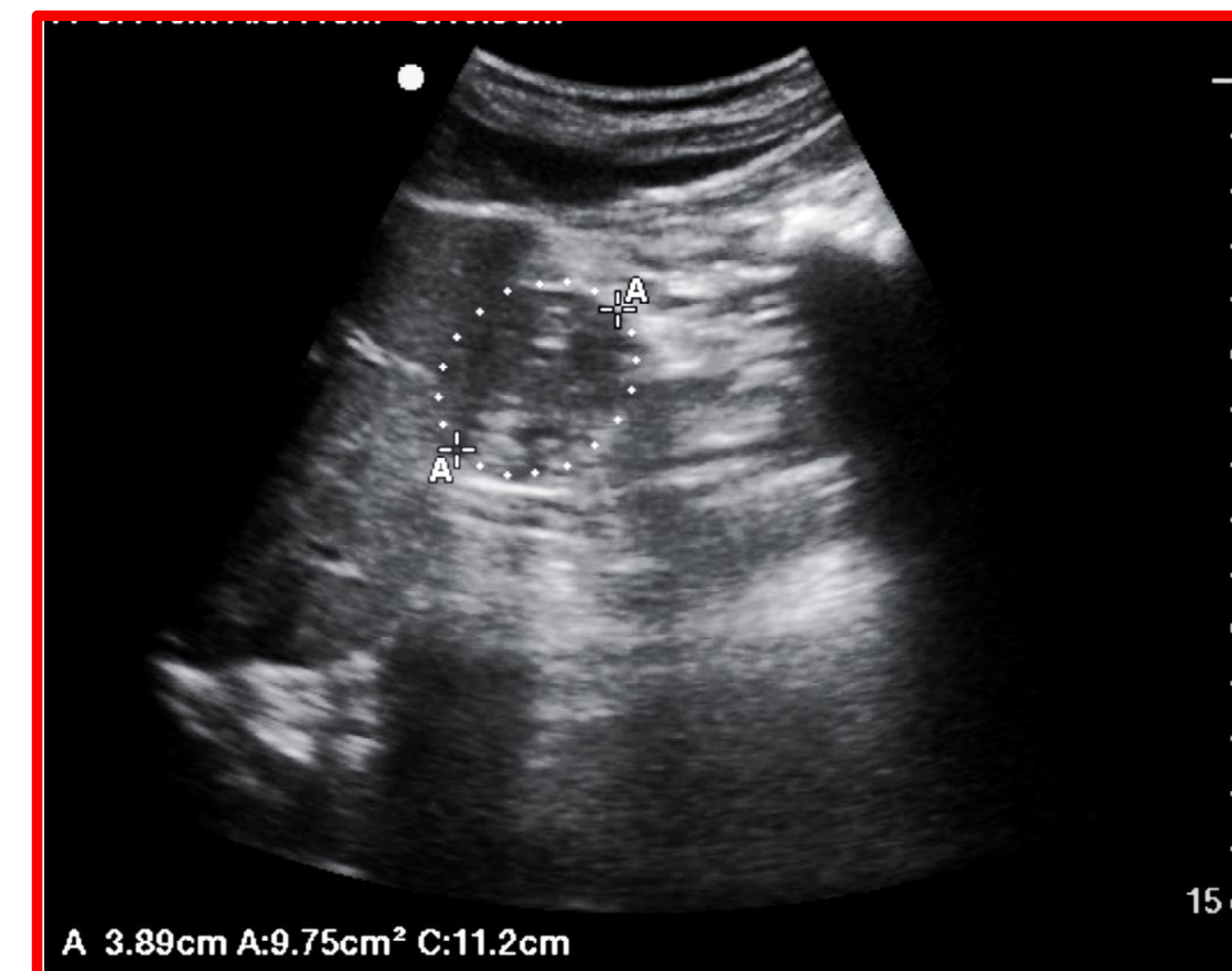


Figure 2: Sonogram showing gastric antral CSA in right lateral decubitus position

Right lat CSA (cm ²)	Age (years)						
	20	30	40	50	60	70	80
3	45	32	20	7	0	0	0
5	74	62	49	36	23	10	0
7	103	91	78	65	52	40	27
9	133	120	107	94	82	69	56
11	162	149	136	123	111	98	85
13	191	178	165	153	140	127	114
15	220	207	194	182	169	156	143
17	249	236	224	211	198	185	173
19	278	266	253	240	227	214	202
21	307	295	282	269	256	244	231

Table 1: Predicted gastric volume (mL) based on measured gastric antral cross-sectional area (cm²) with patient in the right lateral decubitus position. Shaded cells represent low volume states usually considered within the range of baseline gastric secretions for an average adult. Table from Anesth Analg 2013;116:357-63.

Discussion

- Both point-of-care gastric ultrasound and GLP-1 agonists are relatively new in the medical field. This report highlights several important aspects of care.
- First, the preoperative phone call identified the patient's use of a GLP-1 and this information guided the care on the day of surgery as the patient, anesthesiologist, and surgeon knew the case could be delayed or canceled.
- Second, point-of-care ultrasound can be used to quantitatively and qualitatively evaluate gastric volume and content to evaluate a patient's risk for regurgitation and aspiration at the bedside with minimal preoperative delay.³** It is important to ultrasound in both the supine and right lateral decubitus positions, evaluate peristalsis, and scan the entire stomach.
- Third, this case shows how gastric ultrasound changed the anesthetic plan as this case in a standard patient could be done with a supraglottic device but given the ultrasound results we decided to proceed with an endotracheal tube.
- Without the ultrasound results most anesthesiologists likely would have delayed this urgent case.

Conclusion

Point-of-care ultrasound can guide anesthesiologists to provide individualized care to patients on a GLP-1 agonist requiring urgent surgery.

References

- American Society of Anesthesiologists Consensus-based guidance on preoperative management of patients (adults and children) on glucagon-like peptide-1 (GLP-1) receptor agonists. American Society of Anesthesiologists (ASA). (2023, June 29). <https://www.asahq.org/about-asa/newsroom/news-releases/2023/06/american-society-of-anesthesiologists-consensus-based-guidance-on-preoperative>
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