#2317968 Cross-sectional assessment of preoperative gastric content with ultrasound in patients taking GLP-1 agonists

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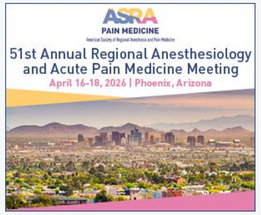

INTRODUCTION

- Studies have indicated that patients using semaglutide may experience slowed gastric emptying, resulting in residual gastric contents after adhering to NPO guidelines.[1,2] This raises concern about protection from aspiration under anesthesia.
- Our objective was to assess the **preoperative incidence of full stomach** using **ultrasound** in patients taking **GLP-1 agonist medications** compared to patients not taking GLP-1 agonists.

METHODS

- This study received HSS IRB approval (#2023-0867) and local approval from participating sites and was registered on ClinicalTrials.Gov (NCT06003985).
- **Inclusion criteria:** Elective surgery patients taking weekly injectable GLP-1 agonist medications for all indications and those not taking.
- **Exclusion criteria:** refusal to participate, gastric surgery, large hiatal hernia, large ascites, peritoneal dialysis, emergency surgery, and gastroparesis.
- All institutions followed June 2023 ASA guidance. A **gastric ultrasound exam** was performed by an anesthesiologist in the preoperative holding area, with clear fluid >1.5ml/kg or solid content indicating a full stomach.

GLP-1 agonist use was not associated with more full-stomach findings through gastric ultrasound under current NPO guidelines

Table 1. Baseline data and admission data.

	GLP-1 Use				
	No (N=156)		Yes (N=151)*		p-value
Sex, N and %					0.37
Female	83	53.21	88	58.28	
Male	73	46.79	63	41.72	
Race, N and %					0.80
White	124	79.49	120	79.47	
Black	11	7.05	13	8.61	
Asian	9	5.77	6	3.97	
Other	8	5.13	10	6.62	
Unknown	4	2.56	2	1.32	
Ethnicity, N and %					0.48
Hispanic	8	5.13	13	8.61	
Not Hispanic	140	89.74	131	86.75	
Other	8	5.13	7	4.64	
Surgery type, N and %					0.03
Hands/plastics	8	5.13	6	3.97	
General surgery	15	9.62	12	7.95	
Orthopedic	41	26.28	51	33.77	
Neuro/spine	48	30.77	21	13.91	
ENT	5	3.21	5	3.31	
Opthalmalogic	1	0.64	4	2.65	
Urologic	6	3.85	11	7.28	
Other	18	11.54	22	14.57	
GI	12	7.69	19	12.58	
missing	2	1.28	0	0	
Indication for GLP1, N and %					
Diabetes			74	49.01	
Weight loss			53	35.1	
Both			23	15.23	
Other			1	0.66	
Age, Median [IQR] and Min, Max	61.0 [52.0, 68.5]	24.0, 83.0	60.0 [51.0, 69.0]	23.0, 86.0	0.95
BMI, Median [IQR] and Min, Max	27.09 [24.03, 30.95]	16.61, 48.83	32.01 [28.10, 37.43]	19.48, 53.13	<0.0001
Hospital LOS (minutes), Median [IQR] and Min, Max	633.0 [364.0, 1915.0]	35.0, 20571.0	579.0 [246.0, 1771.0]	50.0, 13083.0	0.29

Table 2. Gastric content for the GLP-1 versus control group.

	GLP-1 Use				
	No		Yes		
Full stomach	N	%	N	%	p-value
No	140	89.7	130	86.1	0.38
Yes - all	16	10.3	21	13.9	
Full stomach by Type of Content	N	%	N	%	p-value
No	140	89.7	130	86.1	0.41
Yes - liquid	6	3.9	5	3.3	
Yes - solid	10	6.4	16	10.6	

Table 3. Preoperative fasting (NPO) hours for the GLP-1 group versus control group, days since last dose, and weeks of GLP-1 use stratified by fullness.

	GLP-1 Use			
	No	Yes		
NPO Hours by Content*	median [IQR]	median [IQR]	p-value	Adjusted p-value
Solid – all	15.98 [14.27, 17.55]	18.5 [13.5, 25.45]	0.0019	
Solid				
Full	16.63 [15.10, 17.33]	23.73 [19.63, 25.45]	0.02	0.1
Not full	15.97 [13.98, 17.57]	17.22 [13.22, 25.33]	0.0006	0.003
Fluid – all	4.08 [3.05, 7.30]	4.68 [3.12, 10.13]	0.236	
Fluid				
Full	4.68 [3.43, 5.88]	4.42 [2.67, 5.23]	0.96	1
Not full	4.0 [3.0, 7.87]	4.77 [3.33, 10.35]	0.47	0.89
Days since Last Dose**	-	median [IQR]		
By Content				
Full		11.09 [8.69, 14.00]		
Not full		9.02 [6.52, 13.36]		
Weeks of GLP-1 Use	-	N (%)		
By Content***			1	
Full ≥12		16 (13.79)		
Not Full ≥12		100 (86.21)		
Full <12		4 (12.5)		
Not Full <12		28 (87.5)		

*NPO times for solids in full patients compared to not full patients (by content) had no statistically significant difference in the GLP-1 group (p=0.23, adjusted p=0.63) and control group (p=0.82, adjusted p=1).
**No significant difference in days since last dose was found in patients in the GLP-1 group who were categorized as full compared to not full by content (p=0.15) and grade (p=0.17).
***Excludes patients with missing duration

RESULTS

- There was a **trend towards a higher incidence** of full stomach (presence of solids or fluid >1.5ml/kg) in the GLP-1 users compared to controls (13.9% vs 10.3%) which was of borderline statistical significance (p=0.38).
- Overall **fasting times for solids had a tendency to be longer in full patients in the GLP-1 group** but did not reach statistical significance (23.73 vs 16.63 hours, adjusted p=0.1).
- There were 2 intraoperative vomiting incidents, with 1 aspiration incident, all in the GLP-1 group.

DISCUSSION

- We show **no significant differences in full stomachs** between patients taking GLP-1 agonists and those who don't, with a tendency for a higher incidence in the GLP-1 group.
- This contrasts other studies showing a much higher incidence of full stomachs with GLP-1 agonist use.[3,4]
- **Our results may be explained by a median of 18.5 hours of solid NPO times in the GLP-1 group**, as one study showed a normal incidence of full stomach after 21 hours of fasting for solids.[6]
- There was no difference in full stomach within the GLP-1 group, whether they took the medication for less or more than 12 weeks, as suggested by previous studies.[4,5]

Full Abstract