

Introduction

- Pulmonary aspiration of gastric contents is a feared complication during anesthetic care. Several societies have recommended shorter fasting times for children to reduce perioperative discomfort and hypotension and enhance recovery.
- Although some literature demonstrates a low incidence of pulmonary aspiration with shorter fasting times, closed claims data indicates that aspiration still occurs and may be associated with significant morbidity and mortality.
- Our institution reduced fasting times for clear liquids before induction of anesthesia from 2 hours to 1 hour in June 2022.
- We conducted this study to compare the incidence of regurgitation, vomiting, and aspiration before and after this change.

Hypothesis

We expected regurgitation and vomiting to occur at a higher frequency than aspiration and be susceptible to changes in fasting guidelines.

Methods

- After IRB approval with waiver of informed consent, we retrospectively queried the electronic anesthesia record for all cases from January 2021 to March 2024 where vomiting, regurgitation, or aspiration were documented (n=656). Three authors screened cases with notes from the anesthesia records. Cases unanimously deemed not to indicate regurgitation, vomiting, or aspiration were excluded (n=417).
- We compared the incidence of these events and the duration of fasting in the period before ("pre" January 2021-May 2022) and after ("post" June 2022- March 2024) the change in fasting guidelines.
- Data are presented as median (interquartile range) or frequency (percent). Wilcoxon rank sum test, Fisher's exact test, or the Chi-square test were used to make statistical comparisons.

Results

- **The incidence of regurgitation, vomiting, or aspiration was 0.16% (212/130,052) with no difference in the period before and after the change to the fasting guidelines 0.18% (93/51,660) pre vs 0.15% (119/78842) post, p=0.202.**
- The median fasting time for clear liquids in non-emergency cases decreased significantly with the change in guidelines (237 minutes pre vs. 198 minutes post, p<0.001).
- There was no significant difference in median fasting time in patients who experienced regurgitation, vomiting, or aspiration in non-emergency cases (232 minutes pre vs. 211 minutes post, p=0.151).

	All patients		Regurgitation, Vomiting, or Aspiration	
	Pre (01/21-05/22)	Post (06/22-03/24)	Pre (01/21-05/22)	Post (06/22-03/24)
Number of Cases	51660	78842	93 (0.18%)	119 (0.15%)
Age (years)	8.3 (3, 15.5)	7.7 (3, 15)	11.7 (6.2, 17.1)	9.9 (4.3, 14.9)
Weight (kg)	27.9 (14.3, 57)	25.9 (14.2, 54.8)	49.4 (19.5, 64.1)	33.3 (16.5, 57.7)
ASA physical status				
ASA I	10522 (20.4%)	15273 (19.4%)	10 (10.8%)	17 (14.3%)
ASA II	22355 (43.3%)	36465 (46.3%)	36 (38.7%)	41 (34.5%)
ASA III	14354 (27.8%)	21285 (27%)	43 (46.2%)	52 (43.7%)
ASA IV	4248 (8.2%)	5597 (7.1%)	4 (4.3%)	8 (6.7%)
ASA V	174 (0.3%)	210 (0.3%)	0 (0%)	1 (0.8%)
ASA VI	5 (0.01%)	6 (0.01%)	0 (0%)	0 (0%)
Emergency	5099 (9.9%)	4830 (6.1%)	13 (14%)	11 (9.2%)

	All patients			Regurgitation, Vomiting, or Aspiration		
	Pre (01/21-05/22)	Post (06/22-03/24)	p-value	Pre (01/21-05/22)	Post (06/22-03/24)	p-value
Fasting times						
Clear liquids (minutes)	242 (164, 664) n=32840	201 (129, 555) n=52036	<0.001*	238 (165, 601) n=52	219 (129, 562) n=72	0.138
Solids (minutes)	821 (690, 969) n=35543	853 (726, 997) n=56163	<0.001*	907 (719, 1052) n=52	878 (738, 1050) n=78	0.833
Non-emergency cases						
Clear liquids (minutes)	237 (162, 653) n=31693	198 (128, 525) n=50906	<0.001*	232 (164, 535) n=50	211 (127, 502) n=70	0.151
Solids (minutes)	821 (692, 965) n=33990	853 (729, 996) n=54758	<0.001*	907 (725, 1049) n=50	872 (724, 1050) n=76	0.727

	All patients		Regurgitation, Vomiting, or Aspiration	
	Pre (01/21-05/22)	Post (06/22-03/24)	Pre (01/21-05/22)	Post (06/22-03/24)
Airway management				
ETT	23167 (44.9%)	34939 (44.3%)	77 (82.8%)	88 (74%)
Natural Airway	16072 (31.1%)	25660 (32.6%)	7 (7.5%)	15 (12.6%)
SGA	10685 (20.7%)	16020 (20.3%)	9 (9.7%)	11 (9.2%)
In-Situ (ETT or tracheostomy)	1736 (3.4%)	2223 (2.8%)	0 (0%)	5 (4.2%)
Primary anesthesia technique				
General	50046 (96.9%)	76438 (97%)	90 (96.8%)	116 (97.5%)
Monitored Anesthesia	1595 (3.1%)	2314 (2.9%)	3 (3.2%)	3 (2.5%)
Regional	19 (0.04%)	90 (0.1%)	0 (0%)	3 (2.5%)

Conclusion

- A change to a one-hour clear liquid fasting guideline was associated with decreased fasting times for elective cases and was not associated with increased regurgitation, vomiting, or aspiration in a large cohort.
- There are ongoing studies to classify adverse events and identify associations with patient and procedural factors.

References

Walker Paediatr Anaesth 2013
Warner Anesthesiology 2021
Frykholm EJA 2022
Joshi Anesthesiology 2023