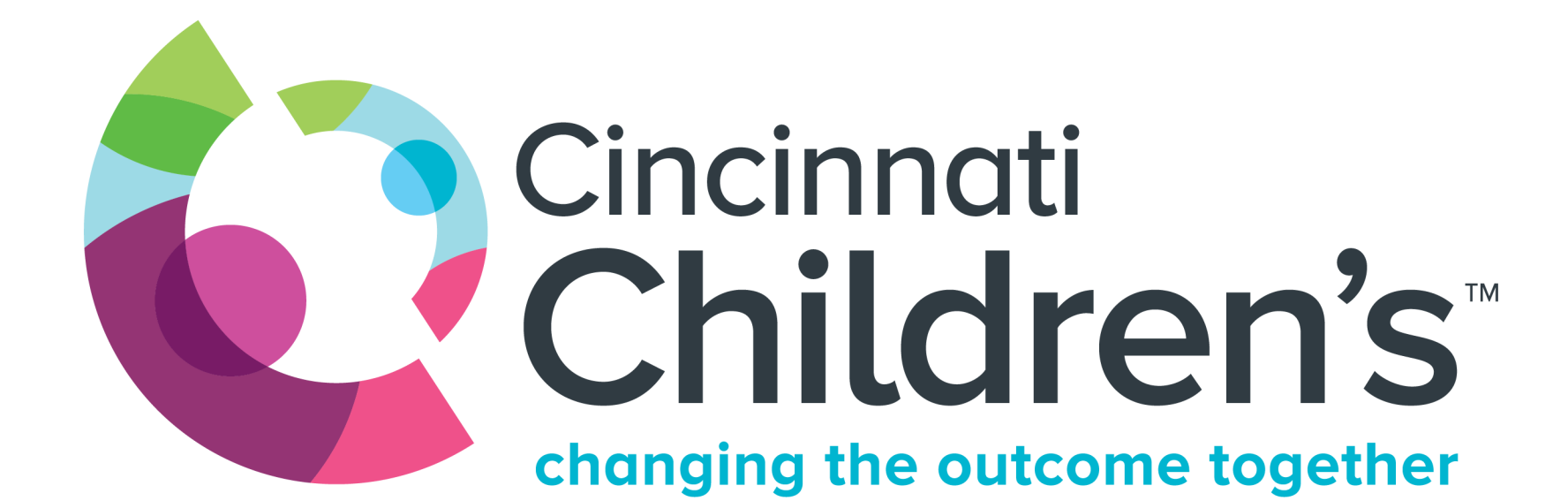


Utilization of point-of-care gastric ultrasound as a risk assessment tool in pediatric patients before surgery: A retrospective review

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Background:

Point of care gastric ultrasound (POGUS) has been shown to be a reliable diagnostic modality to accurately assess the gastric volume and content. Gastric ultrasound evaluation can minimize case delays, reduce cancellations, and allow for safer anesthetic management by providing an objective assessment of gastric contents at a given point in time.

Objectives:

To study utilization of point of care gastric ultrasound as a risk assessment tool to determine gastric contents in pediatric patients in the preoperative period.

Methods:

IRB approved study with retrospective chart review.

Existing records of all gastric ultrasound scans performed in perioperative patients over one year period time were collected from electronic medical records.

The following data were extracted and recorded on a data sheet: demographics, surgical procedures, NPO times, case delay time (minutes), case cancellations, indication for gastric ultrasound (NPO violation, risk factors for delayed gastric emptying, etc), gastric ultrasound findings and anesthetic management techniques.

Results:

Total number patients were 100 with 48 male and 52 female patients with an average age of 9.68 years. The following tables show the indications, ultrasound findings and risk assessments of the study population.

Based on the ultrasound findings, anesthetic management was changed in 42 patients. The most frequent change in the high-risk group was to perform rapid sequence induction and endotracheal intubation and in the low-risk group was to perform mask induction and LMA placement .

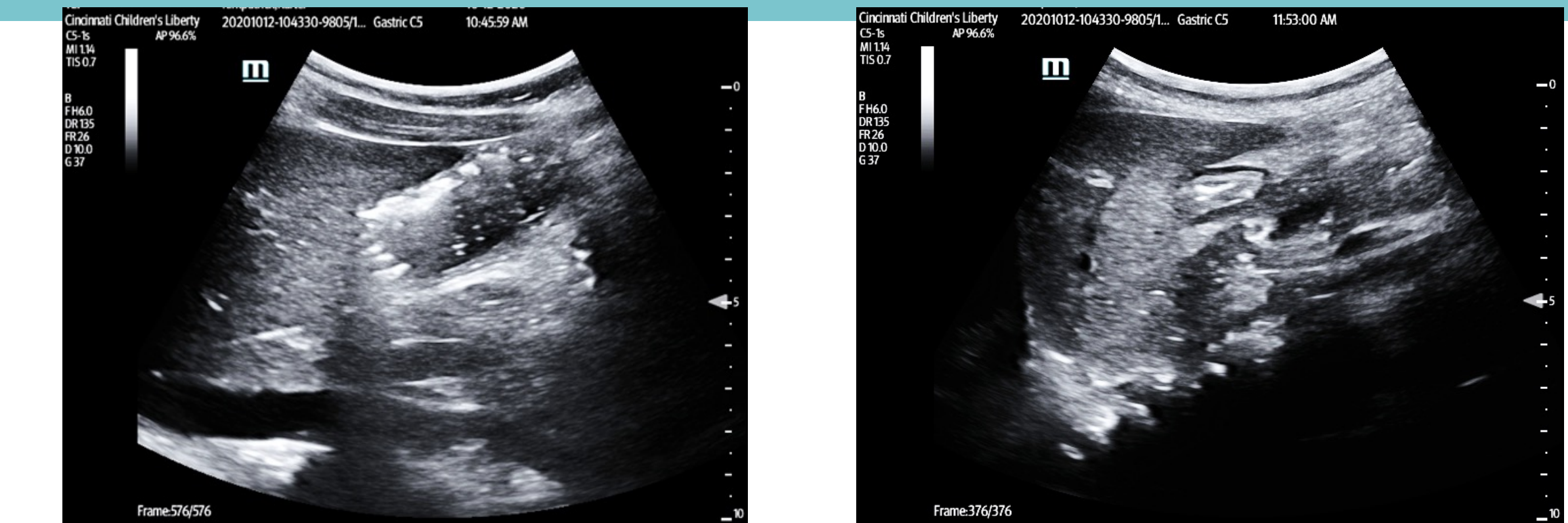
Indications:	N = 100
NPO violation/NPO unclear	49
Risk for delayed gastric emptying	30
Emergency	6
Pyloric stenosis	4
Training/Unknown	11

Ultrasound findings:	N = 100	
Empty	42	Low risk (69%)
Clear fluid<1.5ml/kg	27	
Clear fluid>1.5ml/kg	5	High risk (17%)
Solids	12	
Inconclusive study	9	Inconclusive (14%)
Incomplete report	5	

Pyloric stenosis- pre and post suctioning:



Serial scanning to follow gastric emptying:



Discussion:

The main indication for POGUS in our study was NPO violation or an unclear fasting history for elective procedure. This could vary based on institutional fasting guidelines of one hour versus two hours for clears.

POGUS provided objective evidence for the anesthesia providers to alter the airway management in certain patients to mask induction and LMA placement which could help improve patient and family experience.

It also provides objective evidence to justify the need for cancellation or preoperative intravenous line placement in high-risk patients.

There is about 10% chance of technically challenging studies where gastric ultrasound may not be able to provide a conclusive evidence secondary to excessive colonic air shadow, uncooperative patients and altered anatomy.

Conclusion:

It is feasible to use point of care gastric ultrasound as a risk assessment tool to determine gastric contents in the pediatric population and to formulate the appropriate anesthetic management.

References:

- Perlas A, Arzola C, Van de Putte P. Point-of-care gastric ultrasound and aspiration risk assessment: a narrative review. Can J Anesth/J Can Anesth. 2018;65(4):437-48.
- Gastricultrasound.org