



Validating bedside ultrasound assessment of gastric content in children non-compliant with preoperative fasting guidelines presenting for ambulatory surgery: a case series

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Introduction

About 7% of children presenting for ambulatory surgery were inadequately fasted preoperatively¹. This leads to either delays or cancellations of elective surgeries causing parental dissatisfaction and the inefficient use of health resources. There has been an increasing interest in the use of ultrasound in various preoperative clinical scenarios including the qualitative and quantitative assessment of gastric contents in patients of all ages. We present a case series to demonstrate the use of ultrasound assessment of stomach contents in infants and children non-compliant with pre-operative fasting guidelines to individualize their anesthetic management.

Table 1

	Age	Fasting status	US findings	Management without US	Management with US	Change in management with US
1	2	Apple juice 1h prior	Empty antrum	Delay surgery	Proceed	Y
2	3	Couple potato chips 6 h prior	Solids in antrum	May proceed	Cancelled	Y/maybe
3	3	Clear fruit juice 90 mins prior	Empty antrum	Delay for 30 mins	Proceed	Y
4	5	Jello 4h prior	Empty antrum	Delay for 2 h/cancel	Proceed	Y
5	6m	Breast milk 2.5 h prior	Antrum full after 4 hours fasting	Proceed after adequate fasting time/cancel	Cancelled	Y/maybe
6	7m	Formula	Clear fluid	Proceed after 6h fasting	Delayed further 1h	Y
7	9	Apple 4h prior	Empty antrum	Delay for 2h	Proceed	Y

Case Descriptions

Case #1

A 2-year girl old scheduled for umbilical hernia had apple juice 1 hour before surgery. Ultrasound assessment of gastric contents revealed an empty stomach. Surgery proceeded as scheduled. Airway was secured with an LMA #2. There were no perioperative adverse events.

Case #2

A 3-year old boy scheduled for repair of right inguinal hernia had eaten a couple of potato chips approximately 6 hours before the surgical time. Gastric antrum scanned with ultrasound revealed an antrum filled with solid contents. Surgery was rescheduled for another day.

Case #3

A 3-year old girl scheduled for repair of umbilical and epigastric hernias was given clear fruit punch 90 mins before the surgical time. Bedside ultrasound of the gastric antrum revealed an empty antrum. Surgery was not delayed and airway secured with #2 LMA. Intraoperative and postoperative course were uneventful.

Case #4

A 5-year old boy scheduled for orchiopexy was given plain jello 4 hours before surgical time. In keeping with the institutional guide lines for jello, the surgery would be delayed for 2 more hours as jello is

considered a solid food. Ultrasound assessment of gastric contents revealed an empty stomach. Surgery proceeded as scheduled without any perioperative adverse events.

Case #5

A 6 month-old male child scheduled for circumcision was fed with breast milk 2.5 hours before surgical time. Ultrasound assessment after 4 hours of fasting revealed an antrum filled with solid gastric contents. The procedure was cancelled for the day.

Case #6

A 7-month-old male child was fed formula 5 hours before surgical time. Ultrasound assessment of gastric contents at 5 hours and 30 mins before surgical time showed antrum still filled with clear liquid. A repeat ultrasound of the antrum after an hour showed an empty antrum. The child was taken for surgery then and was completed with an uneventful perioperative course.

Case #7

A 9-year-old male child scheduled for circumcision had eaten an apple 4 hours before surgical time. Ultrasound assessment of the stomach revealed an empty antrum. Surgery was not delayed. Airway was secured with #4 LMA after intravenous induction. Perioperative course was uneventful.

Discussion

Ultrasound assessment of gastric contents altered the decision of clinical management definitely in 5 out of the 7 cases who were non-compliant with preoperative institutional fasting guidelines. (Table 1) NPO guidelines clearly state that they are not intended as standards or absolute requirements². Gastric ultrasound objectively confirms the adequacy of preoperative fasting and supplements³. Fig 1

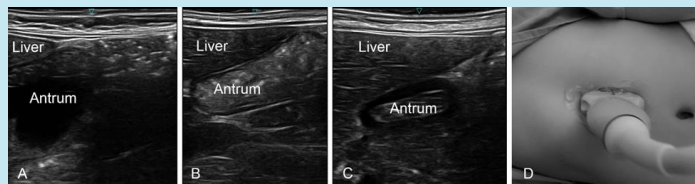


Figure 1. Sonographic images of the antrum filled with clear fluid (A), with solid contents (B) and empty (C), transducer position to scan the gastric antrum in the right lateral position (D).

References

1. Cantellow S et al. Paediatr Anaesth 2012; 8/97
2. Practice Guidelines for Preoperative Fasting. Anesthesiology 2017; 376
3. Perlas A et al. Can J Anaesth 2017; 1031