

Indian Association of Paediatric Anaesthesiologists practice advisory for perioperative fasting in paediatric patients (Revised version 2023)

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INTRODUCTION

As protective airway reflexes are obtunded under sedation and anaesthesia, it is mandatory for patients to fast before undergoing any procedure under anaesthesia. The goal of fasting for a prescribed duration is not only to reduce the risk of pulmonary aspiration of gastric contents and to decrease the pulmonary effects if aspiration occurs but also to avoid negative metabolic effects of prolonged fasting.

Practice guidelines are systematically developed recommendations based on scientific evidence that assists the clinician and the patient in making appropriate decisions about health care. These recommendations can be modified and adopted to our institutional policies. These guidelines need revision from time to time as warranted by the evolution of medical knowledge, technology and practice. This perioperative fasting advisory recommended by the Indian Association of Paediatric Anaesthesiologists (IAPA) and adopted from the recommendations made by the American Society of Anesthesiologists (ASA) (1), the European Society of Anaesthesiology and Intensive Care (ESAIC) (2) and the Indian Society of Anaesthesiologists (3) have been modified to suit our local paediatric practice. These may be regarded as standard practice but their use cannot guarantee any specific outcome in all patients.

Target population

The following advisory can be applied to healthy paediatric patients including neonates undergoing elective surgical procedures under general anaesthesia, regional anaesthesia and monitored anaesthesia care.

These recommendations have to be modified for patients with high risk of regurgitation and pulmonary aspiration and additional aspiration prophylaxis needs to be taken.

This update addresses the perioperative fasting recommendations for clear liquids, breast milk, formula feeds, non-human milk/solids, chewing gum; role of gastric ultrasound in the management of full stomach patients and suggestions for postoperative feeding.

Various anaesthesia societies have proposed fasting guidelines with different regimens. A systematic review of these recommendations was done by Lambert and Carey,⁽⁴⁾ who reported that only two recommendations could be graded as level A: firstly, preoperative fasting should be minimized, and secondly, that clear fluids may be ingested until 2 hours before the administration of anaesthesia.

Definition

Preoperative fasting period is the prescribed time prior to any procedure done under anaesthesia when patients are not allowed oral intake of solids or liquids.

Why perioperative fasting is necessary?

The purpose of formulating the fasting advisory is as follows:

1. Mandatory fasting reduces the risk of pulmonary aspiration of gastric contents during induction of anaesthesia and during recovery.
2. These help in avoiding prolonged periods of fasting which may have negative metabolic effects like dehydration, hypoglycaemia, hunger and irritability.
3. Avoiding prolonged duration of fasting reduces preoperative morbidity and improves postoperative recovery and thus patient and parental satisfaction.

IAPA Recommendations

Fasting for clear liquids

We recommend that healthy children should drink clear liquids preferably carbohydrate containing liquids up to 3 ml/kg until 2 hours before administration of anaesthesia. This period of fasting for clear liquid may be reduced to 1 hour before administration of anaesthesia in low risk cases.

Clear liquid is defined as any liquid which takes <2 hours to empty from the stomach in human beings. Water with or without sugar, pulp-free juices, coconut water constitute clear liquids.

Evidence

Clear fluids rapidly empty from the stomach within 30 minutes. Sweetened drinks are slower to empty and emptying depends upon the type of sugar—fructose, sucrose, and galactose empty faster than glucose. Drinks higher in calories and osmolality delay emptying; however, these differences do not seem clinically relevant.

The incidence of pulmonary aspiration is low in paediatric population (2 per 10000) as per a multicenter study conducted in the United Kingdom.(5) Moreover clear fluids follow first-order kinetics and are eliminated exponentially. Thus when children are allowed free access to clear fluids in the perioperative period it is likely that most of it would have passed through the gastric ventricle in less than 1 hour.(6) Also, there was no difference in vomiting and gastric pH between children fasted 1 hour versus 2 hour.

When 1 hour fasting regimen was used, the MRI of gastric content volume was same as overnight fasting in the 3 ml/kg group whereas it showed larger residue when 7 ml/kg clear fluid was ingested.(7) Thus it is advisable to give small amounts of clear fluids at regular intervals than a large volume prior to surgery in children.(8)

Allowing clear fluid before surgery improves the comfort of child, reduces anxiety of parents, decreases thirst and the risk of dehydration.(9) Clear liquids (sucrose solution) up to 2 hours prior to anaesthesia may maintain electrolyte balance and can provide sugar to replete glycogen stores especially in neonates as they have impaired gluconeogenesis.(10)

Fasting for breast milk

We encourage breastfeeding until 4 hour before anaesthesia. Fortified breastmilk can also be allowed till 4 hour before anaesthesia.

Evidence

Observational studies looking at gastric volumes following breastfeeding both in preterm and term infants found that the gastric volume was at baseline in under 2 hours (11) and under 3 hours (12) of fasting respectively. Fortifying the breastmilk did not seem to affect the gastric emptying when compared to plain breast milk.(11)

Non-nutritive sucking on a pacifier has been shown to comfort the infant and also reduce the gastric volumes in premature infants.(13) Non-nutritive sucking on mother's breast (in a pre-pumped breast) should not be allowed within 3 hours as it can lead to aspiration.

Fasting for infant formula

We recommend a fasting period of 6 hours for infant formula before an elective procedure under general anaesthesia, regional anaesthesia and sedation.

Evidence

Though the newer guidelines are liberal and allow formula feeds up to 4 hours before anaesthesia (2) the emptying of formula milk is variable and depends on the composition. Formulae with predominant whey, empty faster than the casein rich formulae. Increase in acidity, osmolality and fatty acid concentration will delay gastric emptying.(14,15) To avoid confusion and problem in differentiating between the various types of infant formulae milk, IAPA recommends 6 h fasting for infant formula milk.

Fasting for non-human milk and solids

We recommend a fasting period of 6 hours for non-human milk (cow's milk) and light meal and 8 hours for fatty, fried full meals. Both the type and the amount of meal consumed are to be considered before inducing anaesthesia.

Evidence

Once ingested, on mixing with gastric acid, the cow's milk separates into solid (curd) and liquid phase. The liquid phase which is mostly water gets emptied faster whereas the solid phase follows the zero-order kinetics and emptying gets delayed for up to 6 hours.(16) Solids with less fat and protein content take 6 hours whereas meals with high fat and protein content may not get emptied from stomach till 8-9 hours. Thus we need to consider the type as well as the amount of food consumed during the preoperative evaluation. Though ESAIC allows light breakfast up to 4 hours before the procedure but the strength of evidence supporting this is weak and the recommendation is mostly based on experience over years and lack of any adverse outcome.

Chewing gum in the preoperative period

Children should not have their operation cancelled or delayed just because they are chewing a gum. However, they should be questioned about the presence of chewing gum in their mouth and if still present, should be asked to spit out before induction of anaesthesia.(2)

Evidence

Chewing gum in the preoperative fasting period did not show any increase in the gastric

fluid volume or any change in the gastric pH.(17,18)

Role of preoperative ultrasound

Ultrasound examination of the gastric antrum to look for the type and volume of gastric contents (solids/liquids) can be used when fasting instructions have not been adhered to and the anaesthetic technique can be modified based on the findings. However, this should not be considered as an alternative to compliance with fasting instructions or used as a tool to overcome the breach in fasting instructions. The findings could be subjective and it's safety has not been scientifically established.




Postoperative feeding

Early fluid intake should be encouraged in children in the postoperative period unless contraindicated. However, wakefulness of the patient, presence of intact airway reflexes and the type of surgery/procedure conducted should be considered before resuming oral feeds. It is better to start with smaller volumes of clear fluids and then escalate when tolerated.

Evidence

Liberal fluid intake as per the children's own needs in the postoperative period was found to reduce opioid consumption (19), lower incidence of postoperative nausea and vomiting (20), decrease post anaesthesia care unit stay (21,22) thus improve postoperative well-being. On the contrary, the incidence of vomiting increased when the children were forced to drink fluids.(22)

Summary of Perioperative Fasting Advisory in Pediatric Patients BY IAPA		
Fasting Interval	Type of Food	Examples
2 hours 1 hour is acceptable in low risk cases	Clear Liquids	Water, Glucose or Sucrose Solution, Non-carbonated pulp-free beverages e.g., Clear Apple Juice or, Coconut

		<p>water.</p> 
4 hours	Breast Milk and fortified breast milk	Breast Milk
6 hours	Infant Formula / Non-Human Milk /Solid Food (light meal)	<p>Formula Feeds, Powdered Milk, Cow, Buffalo Milk, Light meal, a bowl of Khichadi, Poha, Upma</p> 
8 hours	Solid Food (Heavy Meal)	 <p>Chapati, Vegetables, Fried Food, Non-veg Food, Cheese, Ice-cream</p>

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