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Fasting for anaesthesia: Less is more!

In recent years, a large body of literature has been published questioning the dogma of fasting long durations before anaesthesia.^[1-4] Historically, fasting recommendations were that all patients preparing for surgery should be *nil per os* (NPO) from midnight prior to surgery. Guidelines from the American Society of Anesthesiologists (ASA) were first published in 1999 allowing (although not encouraging) clear fluids up until 2 hours prior to anaesthesia in response to studies that demonstrated the safety of this practice.^[5] At the Children's Hospital of Philadelphia, the 2-hour clear fluid fasting policy actually resulted in children fasting for an average of 9 hours in an evaluation of 35,000 patients.^[2] A similar period of fasting (average 9.5 hours) was observed in an audit of children undergoing CT scan under sedation at PGIMER, Chandigarh.^[6] Other reports from different parts of the world also show prolonged duration of preoperative fasting.^[7-9]

Since the first publication of the ASA guidelines in 1999, evidence has emerged on the benefit and the safety of drinking clear beverages up to 1 hour before anaesthesia for healthy children.^[1-4] As mentioned by Toms and Rai in the September 2019 issue,^[10] a consensus statement from the European Society for Pediatric Anesthesiology (ESPA), the Association of Pediatric Anaesthetists of Great Britain and Ireland, and L'Association Des Anesthésistes-Réanimateurs Pédiatriques d'Expression Française encourages clear fluid up until 1 hour prior to anaesthesia. This statement has been endorsed by the Society for Pediatric Anaesthesia in New Zealand and Australia, the Canadian Pediatric Anesthesia Society, and the European Society for Pediatric Anesthesiology. Coinciding with a quality improvement project to decrease clear fluid fasting times and supported by evidence of the safety of shorter clear fluid fasting

times, we changed our policy at Children's Hospital of Philadelphia in 2017 to a 1-hour fasting time for clear fluids. This gave our patients more opportunity to drink prior to anaesthesia and did not increase aspiration events in the 16,000 children we studied.^[2] We encourage the Indian Society of Anaesthesiologists endorse similar fasting guidelines and track their aspirations rates with these changes.

Although pulmonary aspiration is a serious complication of anaesthesia, it remains a relatively uncommon event, with an incidence of 10 per 10,000 cases reported in the recent APRICOT study.^[11] The vast majority of events have minor sequelae; serious complications are rare. Aspiration generally occurs in patients with other major comorbidities and risk factors, and in emergency situations.^[12,13] The guidelines published by our professional societies focus on healthy individuals having elective procedures. As such, we do not have specific recommendations to address these potentially higher-risk patients, and we are left using clinical acumen and best judgment to decide on appropriate fasting times.

One specific patient population that may benefit from a critical reassessment of feeding dogma is the critically ill patient with an endotracheal tube or a tracheostomy that are fed via post-pyloric enteral tube. Tube feeding formula itself fits into the 6-hour fast category for a light meal, infant formula and non-human milk, but fasting guidelines were created for a bolus meal, not the continuous infusion used in post-pyloric tube feeding. Of note, the ASA guidelines are based on evidence from patients without critical illness.^[14] Gastric content residual from a continuous rate of feeding is likely to be significantly less than the single meal over short duration imagined by the

guidelines, but data in critically ill children is sparse. Most studies of enteral tube feedings in children with endotracheal tube or tracheostomy are done within the critical care setting, rather than in the operating suite.^[15-20] Future studies are warranted to determine the safety of continuing feeds less than 6 hours prior to anaesthesia, especially if there is no airway intervention planned, and there is no intolerance of feeds.

There are many benefits to feeding patients prior to anaesthesia, especially when they are already intubated. Malnutrition in the intensive care setting can lead to loss of lean muscle mass and may contribute to infections, more ventilator days, longer ICU stay and mortality. Enteral feeding is superior to parenteral nutrition in patients able to tolerate it. In maintaining the mucosal integrity by feeding enterally, translocation of intestinal microbes may be reduced.^[15,18]

Children with burns are of special concern. Burn injury may increase metabolic requirements up to 200% of the normal, and can make it especially challenging to meet protein calorie demands when feeds are withheld for any reason.^[21,22] Burn centers regularly feed their patients during anaesthesia, especially if there is a post-pyloric tube in place. Aspiration events in these patients are exceedingly rare.^[21-23] Shriner's Burns Institute in Cincinnati, USA, studied aspiration events with transpyloric feeds from 1986-1990 in 80 patients, matched for age and degree of burn injury who were either fed or fasted during surgery. There were no aspiration events in either group, and they found a significant caloric deficit and an increase in wound infections among children who were fasted during surgery.^[22] There is ample evidence that actual preoperative fasting times far exceed required fasting times resulting in significant interruptions in feeds and caloric deficits.^[2,4,7-9,20,24] It appears reasonable, therefore to continue post-pyloric feeds in burn patients up until, and even, during the course of surgery, provided airway or bowel manipulation are not part of the surgical plan.

As new evidence emerges regarding the safety of shortened fasting times for clear fluids in children, many national pediatric anesthesia societies are updating their fasting guidelines to reflect this data. However, recommendations may not be appropriate for all possible situations and clinical judgment remains critical for the safe practice of anaesthesia.

In light of evidence for the safety and benefit of continuing post-pyloric feeds in intubated children, we should modify our practice based on the evolution of medical knowledge.

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