

## A Review of Current Literature of Interest to the Office-Based Anesthesiologist

**Murugaiyan A, Sahoo AK, Rao PB, Misra S. Effect of 5% EMLA cream on postoperative sore throat in adults following general endotracheal anesthesia: a randomized placebo-controlled study. *Anesth Analg.* 2023;136(2):338–345. doi:10.1213/ANE.0000000000006269**

This study aimed to evaluate the effects of a eutectic mixture of local anesthetics (EMLA) cream applied topically over the endotracheal tube (ETT) cuff on the incidence and severity of postoperative sore throat (POST), cough, and voice hoarseness in adults after surgery. A total of 204 adults, ages 18 to 65, were randomly assigned to received 5% EMLA cream or lubricant gel (placebo) applied to the ETT cuff prior to elective surgery of an expected duration of 1 to 3 hours. The incidence of POST, cough, and hoarseness was significantly lower for patients in the EMLA group throughout the postoperative period. The main finding of the study was confirmation that EMLA cream reduced the incidence of POST, cough, and hoarseness without an increased incidence of adverse effects.

Comment: The authors acknowledge a major shortcoming of this study was the inability to measure serum levels of absorbed local anesthetics in the subjects. A 2.5-gram dose of EMLA cream was used to coat the ETT cuff in this study, which equates to 62.5 mg each of lidocaine and prilocaine. A past study in *Anesthesia Progress*<sup>1</sup> was used to determine the maximum predicted local anesthetic serum level in these patients was well below the toxic threshold. The highly vascular pharyngeal and tracheal mucosa is associated with higher systemic absorption than the skin, where EMLA cream is typically used. Although this study confirms the potential for local anesthetic toxicity is unlikely to be a factor in adult patients undergoing general elective surgery, toxic systemic absorption could potentially be a factor for pediatric patients as well as dental and oral surgical patients receiving additional local anesthesia for perioperative pain control.

**Jang G, Song JW, Kim HJ, Kim EJ, Jang JG, Cha S-I. Foreign-body aspiration into the lower airways in adults; multicenter study. *PLoS ONE.* 2022;17(7):e0269493. <https://doi.org/10.1371/journal.pone.0269493>**

Aspiration of a foreign body is common in children aged 6 months to 3 years; however, an increased incidence in

older adults is suspected due to the aging population. This multicenter retrospective, observational study examined data from 138 adult patients undergoing flexible bronchoscopy in South Korea between 2000 and 2019. Comorbidities, type and location of foreign body, and radiologic findings were recorded. A total of 91 patients were men. The mean age of all subjects was 66.3 (range: 29–87) years. A history of definite choking was present in 60 (43.5%) patients. The most common site of the foreign body was the right bronchus intermedius (27.5%). The most common type of aspirated foreign body was a tooth or tooth fragment (37.7%), followed by a chicken bone (15.2%), nuts (14.5%), and a fish bone (9.4%). Iatrogenic events accounted for 37.0% of aspiration cases, and the foreign body was successfully removed by flexible bronchoscopy in 91.3% of cases.

Comment: This study showed foreign-body aspiration is not a rare event. Iatrogenic causes were found in over one-third of the aspirations and included dental procedures, intubation, and tracheostomy change. The most common presenting symptoms described in this study were cough (60.9%) and dyspnea (44.2%).

**Karam C, Zeeni C, Yazbeck-Karam V, et al. Respiratory adverse events after LMA mask removal in children: a randomized trial comparing propofol to sevoflurane. *Anesth Analg.* 2023;136(1):25–33. doi:10.1213/ANE.0000000000005945**

Laryngeal mask (LMA) removal has been associated with adverse respiratory events in children, and the type of anesthetic agent used might affect the outcome. This prospective, randomized trial of 134 children, ages 6 months to 7 years, tested the hypothesis that total intravenous anesthesia (TIVA) with propofol was superior to sevoflurane in providing optimal conditions for LMA removal during emergence. Patient were randomly assigned equally to receive either TIVA with propofol or sevoflurane. In both groups, patients were mechanically ventilated. At the end of the procedure, LMAs were removed when patients were physiologically and neurologically recovered to a degree to permit a safe, natural airway. The primary aim of this study was to compare the occurrence of at least 1 adverse respiratory event, the prevalence of individual adverse respiratory events, and the airway hyperreactivity score following emergence from anesthesia between the 2 groups. Secondary outcomes included ease of LMA insertion, quality of anesthesia during the maintenance

phase, hemodynamic stability, time to LMA removal, and incidence of emergence agitation. Children receiving TIVA with propofol had a significantly lower incidence (10.8.% vs 36.2%; relative risk, 0.29; 95% CI: 0.14–0.64;  $P = .001$ ) and lower severity ( $P = .01$ ) of adverse respiratory outcomes compared with the patients receiving inhalational anesthesia with sevoflurane. There were no statistically significant differences in secondary outcomes between the 2 groups, except for emergence agitation that occurred more frequently in patients receiving sevoflurane ( $P < .001$ ).

Comment: Sevoflurane is a potent bronchodilator, and propofol has airway protective effects that help attenuate bronchoconstriction. However, propofol is superior to sevoflurane in laryngeal reflex suppression. In this study, both cough and laryngospasm were significantly reduced in the propofol group. A unique feature of this study was the direct, head-to-head comparison between the 2 techniques (sevoflurane vs propofol).

**Joshi G, Abdelmalak B, Weigel W, et al. 2023 American Society of Anesthesiologists practice guidelines for preoperative fasting: carbohydrate-containing clear liquids with or without protein, chewing gum, and pediatric fasting duration—a modular update of the 2017 American Society of Anesthesiologists Practice Guidelines for Preoperative Fasting. *Anesthesiology*. 2023;138(2):132–151. doi:10.1097/ALN.0000000000004381**

The task force reaffirmed the 2017 recommendations for clear liquids until 2 hours preoperatively. Simple or complex carbohydrate-containing clear liquids appear to reduce patient hunger when compared with noncaloric clear liquids. The addition of protein to preoperative carbohydrate-containing clear liquids did not appear to either benefit or harm healthy patients. The authors further suggested not to delay surgery in healthy adults after confirming removal of chewed gum. Prolonged fasting has well described adverse consequences. Actively encouraging clear liquids in healthy children as close as possible to 2 hours before procedures is important to help avoid adverse complications.

Comment: Although these guidelines reaffirm the 2017 guidelines, new guidance is provided on areas not previously addressed, including the ingestion of carbohydrate-containing clear liquids with or without protein, patients chewing gum, and the duration of fasting in pediatric patients.

**Garmon EH, Olson K. Narrative review of kratom, an emerging psychoactive substance with perianesthetic implications. *Anesth Analg*. 2022;135(6):1180–1188. doi:0.1213/ANE.00000000000006177**

Opioid overprescribing, with resultant overdose and death, has led to a national focus on alternative treatments for pain. With the decline in legal access to opioids, kratom has gained popularity as a legal, “natural,” and easily accessible nonprescription analgesic for consumers wishing to self-medicate for pain, opioid use disorder, and other mental health conditions. Although implications of kratom use in patients with chronic pain and/or opioid use disorder have been published, information on the perioperative implications is lacking. Anesthesiologists should be informed about kratom, including the potential for unexpected physiologic derangements and adverse drug interactions resulting from its complex pharmacologic activity, cytochrome P450 interactions, and common adulterations of the drug that may result in unpredictable clinical effects. This article explores the relevance of kratom to perioperative anesthetic care, including suggestions for anesthesiologists extrapolated from published information in nonoperative settings that may improve patient safety in individuals using kratom.

Comment: Kratom is a tropical tree native to southeast Asia. Its leaves contain over 40 pharmacologically active alkaloids, leading to a complex profile of effects. The mechanism of action includes acting as a mu-opioid receptor agonist while antagonizing kappa and delta opioid receptors. Street names for kratom include “thang,” “kakuam,” “thom,” “ketum,” and “biak.” Kratom leaves are usually consumed fresh, although dried leaves in powder form are also available. The fresh leaves are chewed while the powder form is often either swallowed or brewed into tea.

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## REFERENCE

1. Vickers ER, Marzbani N, Gerzina TM, et al. Pharmacokinetics of EMLA cream 5% application to oral mucosa. *Anesth Prog*. 1997;44:32–37.

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