A Review of Scientific Literature of Interest to Office-Based Anesthesiology Practice

This new section will provide a synopsis of articles from a wide range of anesthesiology journals that are applicable to office-based practice. Associate Editor Mark Saxen, DDS, PhD, of the Department of Oral Pathology, Medicine and Radiology at Indiana University will lead this effort. Dentist and physician leaders in office-based anesthesiology have graciously agreed to participate in this effort.

Chao Z, Jin HG, Cong Y. The effect of general anesthesia for the ambulatory dental treatment on children in Chongqing, Southwest China. *Pediatr Anesthesiol.* 2017;27:98–105.

The management of preoperative children for the treatment of early childhood caries is a significant and growing challenge in southwest China. This retrospective review examined the hospital records and posttreatment questionnaires for 659 children undergoing inhalational anesthesia with sevoflurane, in the Affiliated Hospital of Stomatology, Chongqing Medical University. A laryngeal mask airway was used for intraoperative airway management. Sixty-seven percent (67%) of the children were aged 4 or younger. Nearly 46% of the cases required 1 to 2 hours of intraoperative time, while 43.5% required greater than 2 hours. The most common postoperative complication was emergence agitation (20.3%), followed by headache (12.7%) and nausea/vomiting (11.8%). Two children experienced laryngospasm, and 5 children were unable to sustain spontaneously ventilation during maintenance, requiring assisted ventilation. Both of these complications occurred in children younger than 4 years of age. Upon follow-up, 82.8% of parents reported a high degree of satisfaction despite the fact that the mean cost of a dental general anesthetic ranged from one-third to one-half of the average family monthly earnings. Although the sample size is relatively small, this study provides a wealth of carefully collected and analyzed data that can be compared to similar outcomes studies in other cultures. (Summary MA Saxen†)

Green SM, Mason KP, Krauss BS, Hardman J. Pulmonary aspiration during procedural sedation: a comprehensive systematic review. *Br J Anaesth.* 2017;118:344–354.

Although pulmonary aspiration complicating operative general anesthesia has been extensively studied, little to no previous comprehensive reviews of aspiration during procedural sedation have been published. This first systematic review sought information on the circumstances, nature, and outcomes of previously published reports of sedation-related aspiration in people of all ages. A total of 1249 records were searched, including dental procedures and cases performed under moderate and/or deep sedation. Of those, 35 records contained reports of one or more incidences of pulmonary aspiration. Of the 292 occurrences during gastrointestinal endoscopy, there were 8 deaths. Of the 34 unique occurrences for procedures other than endoscopy, there was a single death in a moribund patient, full recovery in 31, and unknown recovery status in 2. No occurrences of aspiration occurred in nonfasted patients receiving procedures other than endoscopy. Although diligent caution remains warranted, the data in this study suggest aspiration during procedural sedation, other than endoscopy, appears rare, idiosyncratic, and typically benign. (Summary SA Green*)

Practice guidelines for preoperative fasting and the use of pharmacologic agents to reduce the risk of pulmonary aspiration: applications to healthy patients undergoing elective procedures: an updated report by the American Society of Anesthesiologists Task Force. *Anesthesiology.* 2017;26:376–393.

This ASA Practice Parameter Standards and Guidelines Statement updates the 2011 ASA Task Force report on Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration. The report upholds the current preoperative fasting guidelines for clear liquids, breast milk, nonhuman milk, and solids. The use of gastrointestinal stimulants, gastric acid secretion blockers, and antacids are recommended for consideration in patients at increased risk for aspiration but not for routine preoperative use. The use of antiemetics in patients at increased risk for postoperative nausea and vomiting is also acknowledged; however, routine use is not recommended in patients with no apparent risk of pulmonary aspiration. The use of anticholinergics is not recommended as a risk-reducing strategy for

aspiration. As with other ASA guidelines, rigorous review of the scientific literature, expert opinion, and ASA member opinion, along with associated meta analyses, are all rigorously and systematically presented in this report. (Summary MA Saxen†)

Sanders RD, Gaskell A, Raz A, et al. Incidence of connected consciousness after tracheal intubation. *Anesthesiology*. 2017;126:214–222.

Explicit recall of intraoperative events after intended general anesthesia is rare (0.1 to 0.2%); however, the amnestic nature of general anesthetic agents makes patient's postoperative reports of intraoperative events of limited value. The isolated forearm incidence of connected consciousness after tracheal intubation technique is an established real-time method for verifying patients' awareness after intubation. Stimulation of the forearm with a blood pressure cuff is followed by assessing a patient's response to a verbal command to squeeze the investigator's hand. It does not depend on explicit postoperative recall and indicates a state of awareness referred to as *connected consciousness*. In a prospective, multicenter study of 260 patients undergoing general anesthesia, 4.6% of patients had connected consciousness during general anesthesia, although none had explicit postoperative recall. This form of consciousness was more common in younger patients and those at lighter levels of general anesthesia, as detected by depth of anesthesia monitors. (Summary MA Saxen†)

Clebone A, Burian BK, Watkins SC, Gaivez JA, Lockman JL, Heitmiller ES. The development and implementation of cognitive aids for critical events in pediatric anesthesia. *Anesth Analg*. 2017;124:900–907.

Cognitive aids, such as emergency manuals (EMs), have been shown to increase the accuracy of response during a crisis in the perioperative setting. There are currently EMs available for both the adult and pediatric setting. This article describes the rationale behind the development of the Society for Pediatric Anesthesia Critical Events Checklist. In this article, the authors outline the steps needed to create the SPA crisis checklists. These steps include the initial development of the topics to be covered, a Pedi Crisis mobile application, and ways to design the checklists to maximize their utility. The article also describes the necessary training of the pediatric team and steps needed to properly validate cognitive aids created by

the Society for Pediatric Anesthesia. (Summary RD Urman‡)

Toner AJ, Ganeshanathan V, Chan MT, Kwok MH, Corcoran TB. Safety of perioperative glucocorticoids in elective noncardiac surgery: a systematic review and meta-analysis. *Anesthesiology*. 2017;126:234–248.

Glucocorticoids are commonly administered in the perioperative period to prevent postoperative nausea and vomiting. The relative safety of this practice, when weighed against the potential for postoperative infection and hyperglycemia, is unknown. This analysis identified 56 trials from 18 countries. The predominant glucocorticoid administered was dexamethasone. No effect on wound infection or length of hospital stay was identified. A rise in peak postoperative glucose concentration averaging 20 mg/mL was noted; however, this increase is probably of little clinical importance. The authors conclude that the perioperative administration of single-dose glucocorticoids for the prevention of postoperative nausea and vomiting is safe regarding postoperative infection risk, wound healing, and bleeding risk. (Summary MA Saxen†)

Heymans F, Feigl G, Grabler S, Courvosier DS, Weber KM, Dulguerov P. Emergency cricothyrotomy performed by airway-naïve medical personnel. *Anesthesiology*. 2016;125:295–303.

The aim of this study was to compare the performance of medical personnel, naïve to surgical airway techniques, in establishing an emergency surgical airway in cadavers using three commonly used cricothyrotomy techniques. Twenty randomly selected medical students received training and subsequently performed cricothyrotomy by 3 techniques: surgical, Melker, and QuickTrach II. The time to complete the procedure, rate of success, and number of complications were recorded. The success rates were 95%, 55%, and 50%, respectively, for surgical cricothyrotomy, QuickTrach, and Melker ($p = .025$). Most failures were the result of cannula misplacement in the nonsurgical techniques. Although these results favor surgical cricothyrotomy for trained medical personnel, several limitations of the study are discussed by the authors including the unexamined effect of bleeding, stress during crisis, anatomical variation, and the effect of training. (Summary MA Saxen)

Whippey A, Kostandoff G, Ma H, Cheng J, Thabane L, Paul J. Predictors of unanticipated admission following ambulatory anesthesia in the pediatric population: a retrospective case-control study. *Paediatr Anaesth*. 2016;26:831–837.

In this retrospective review, 21,957 cases of pediatric anesthesia, performed in a single tertiary ambulatory surgery center between April 2005 and October 2012, were examined to determine independent risk factors for postoperative hospital admission. The type of cases examined included dentistry, general surgery, gynecology, neurosurgery, ophthalmology, plastic surgery, and urology. Although the overall admission rate was low (0.97%), anesthesia-related causes accounted for 47% of the unanticipated admissions. Postoperative hypoxia was the most common anesthesia-related cause for admission (33%), followed by inadequate pain control (23%), and postoperative nausea and vomiting (20%). Surgical complications accounted for 33% of admissions followed by medical complications (11%) and social causes (9%). Patient factors reported to be predictive of admission included age less than 2 years, ASA 3 class, type of surgery, (orthopedics/dental/ENT)

duration of surgery (>1 hour), and time of completion of surgery (later than 3 PM). The greatest anesthetic cause for admission was postoperative hypoxia, particularly in children with coexisting obstructive sleep apnea. While prior studies cite surgical complications as the most common reason for unanticipated postoperative admissions for adults, this study identifies anesthetic complications as the most common reason for children. (Summary MA Saxon†)

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