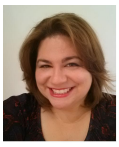
SOCIETY FOR AMBULATORY ANESTHESIA
Outpatient • Office Based • Non-Operating Room

ASC Medical Directors & Leaders Virtual Summit
Saturday, January 22, 2022

Pediatric Outpatient Anesthesia: Current Issues



Rosalie F. Tassone, MD, MPH
Envision Physician Services
Palms West Hospital and Palms West Children's Hospital

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Objectives

- Review the updated guidelines for pediatric patients undergoing tonsillectomy
- Present discussion perspectives regarding NPO guidelines in pediatric patients
- Refresh recommendations regarding neuromuscular blockade in pediatric patients

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www.SAMBAhq.org

I have nothing to disclose

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Introduction

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Starting at the End

- Population based retrospective cohort
  - Patients <18 years of age
  - Ontario 2014-2018
  - 3 days post surgery
- 83,468 surgeries
  - 2588 (3.1%) ED visit
  - 608 (0.7%) hospital admission


Open access Original research
BMJ Paediatrics Open
Emergency department use and hospital admission in children following ambulatory surgery: a retrospective population-based cohort study

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Starting at the End

- Majority of ED visits for
  - **pain** and **bleeding**
- Majority of hospital admissions for
  - **bleeding, dehydration, pain**
- Most common surgeries
  - Tonsillectomy and cholecystectomy

Sawhney M, VanDenKerkhof EG, Goldstein DH, Wei X, Pare G, Mayne I, Tranmer J. Emergency department use and hospital admission in children following ambulatory surgery: a retrospective population-based cohort study. BMJ Paediatr Open. 2021 Nov 23;5(1):e001188. doi: 10.1136/bmjpo-2021-001188. PMID: 34901470; PMCID: PMC8611446.

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Predictors of Unanticipated Admission

Pediatric Anesthesia

Pediatric Anesthesia ISSN 1155-5645

RESEARCH REPORT

Predictors of unanticipated admission following ambulatory surgery in the pediatric population: a retrospective case–control study

Amanda Whippey, Gregory Kostandoff, Heung K. Ma, Ji Cheng, Lehana Thabane & James Paul

Department of Anesthesia, McMaster University, Hamilton, ON, Canada

What is already known

- The rate of unanticipated admission following adult ambulatory surgery is almost 2% and can be used as a marker of patient safety, quality of care, and to identify appropriate patients for ambulatory surgery.
- Little is known about the incidence of and potential risk factors for unanticipated admission in the pediatric population.

What this article adds

- The incidence of pediatric unanticipated admission is low (0.97%) but significant.
- Anesthesia-related causes accounted for the majority of admissions.
- Predictive factors include age, ASA 3 class, type, duration, and time to completion of surgery as well as presence of OSA.

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Predictors of Unanticipated Admission

- Case control study of ambulatory patients requiring unanticipated admission between 2005 and 2013
- Incidence of unanticipated admission was 0.97%
  - 47% (98) was anesthesia related
  - Hypoxia, pain, PONV
- Factors associated with unanticipated admission
  - Age <2 years
  - ASA 3 class
  - duration of surgery >1 h
  - completion of surgery >3 pm
  - orthopedic, dental, ENT
  - Intraoperative events
  - OSA

Whippey A, Kostandoff G, Ma HK, Cheng J, Thabane L, Paul J. Predictors of unanticipated admission following ambulatory surgery in the pediatric population: a retrospective case-control study. Paediatr Anaesth. 2016 Aug;26(8):831-7. doi: 10.1111/pan.12937. Epub 2016 Jun 1. PMID: 27247224.

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Case presentation

- 14-year-old girl presents for adenotonsillectomy
- 5' 3" 75 kg BMI 29
- sleep disordered breathing
- PMH for mild asthma
- Meds- albuterol prn, oral contraceptives
- Clear nasal discharge for past 1 day
- Younger brother at home just recovered from URI

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Guidelines for Tonsillectomy

Guidelines Executive Summary

Clinical Practice Guideline: Tonsillectomy in Children (Update)—Executive Summary

Ron B. Mitchell, MD[1], Sanford M. Archer, MD[2], Stacey L. Ishman, MD, MPH[3], Richard M. Rosenfeld, MD, MPH, MBA[4], Sarah Coles, MD[5], Sandra A. Finestone, PsyD[6], Norman R. Friedman, MD[7], Terri Giordano, DNP[8], Douglas M. Hildrew, MD[9], Tae W. Kim, MD, MEHP[10], Robin M. Lloyd, MD[11], Sanjay R. Parikh, MD[12], Stanford T. Shulman, MD[13], David L. Walner, MD[14], Sandra A. Walsh[6], and Lorraine C. Nnacheta, MPH[15]

AMERICAN ACADEMY OF OTOLARYNGOLOGY–HEAD AND NECK SURGERY FOUNDATION

Otolaryngology–Head and Neck Surgery 2019, Vol. 160(2) 187–205

DOI: 10.1177/0194599818807917
http://otojournal.org
SAGE

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Guidelines for Tonsillectomy

5. Indications for polysomnography	Before performing tonsillectomy, the clinician should refer children with obstructive sleep-disordered breathing (oSDB) for polysomnography (PSG) if they are <2 years of age or if they exhibit any of the following: obesity, Down syndrome, craniofacial abnormalities, neuromuscular disorders, sickle cell disease, or mucopolysaccharidoses.	Recommendation
9. Perioperative pain counseling	The clinician should counsel patients and caregivers regarding the importance of managing posttonsillectomy pain as part of the perioperative education process and should reinforce this counseling at the time of surgery with reminders about the need to anticipate, reassess, and adequately treat pain after surgery.	Recommendation
10. Perioperative antibiotics	Clinicians should not administer or prescribe perioperative antibiotics to children undergoing tonsillectomy.	Strong recommendation against
11. Intraoperative steroids	Clinicians should administer a single intraoperative dose of intravenous dexamethasone to children undergoing tonsillectomy	Strong recommendation
12. Inpatient monitoring for children after tonsillectomy	Clinicians should arrange for overnight, inpatient monitoring of children after tonsillectomy if they are <3 years old or have severe obstructive sleep apnea (OSA; apnea-hypopnea index [AHI] >10 obstructive events/hour, oxygen saturation nadir <80%, or both).	Recommendation
13. Postoperative ibuprofen and acetaminophen	Clinicians should recommend ibuprofen, acetaminophen, or both for pain control after tonsillectomy.	Strong recommendation
14. Postoperative codeine	Clinicians must not administer or prescribe codeine, or any medication containing codeine, after tonsillectomy in children younger than 12 years.	Strong recommendation against

Mitchell RB, Archer SM, Ishman SL, et al. Clinical Practice Guideline: Tonsillectomy in Children (Update)—Executive Summary. *Otolaryngology–Head and Neck Surgery*. 2019;160(2):187-205. doi:10.1177/0194599818807917

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Opioid sparing anesthetics

- Codeine no longer routinely used
- Patients often sensitive to narcotics
- More opioid sparing approaches in literature
  - Ketorolac, dexmedetomidine, ketamine
  - However, some intraoperative narcotic use
- Peritonsillar local anesthetic injection

1) Aldamluji, N., Burgess, A., Pogatzki-Zahn, E., Raeder, J., Beloeil, H. and (2021), PROSPECT guideline for tonsillectomy: systematic review and procedure-specific postoperative pain management recommendations. Anaesthesia, 76: 947-961. https://doi-org.ezproxy.fau.edu/10.1111/anae.15299
2) Franz, AM, Dahl, JP, Huang, H, et al. The development of an opioid sparing anesthesia protocol for pediatric ambulatory tonsillectomy and adenotonsillectomy surgery—A quality improvement project. *Pediatr Anesth*. 2019; 29: 682– 689. https://doi-org.ezproxy.fau.edu/10.1111/pan.13662

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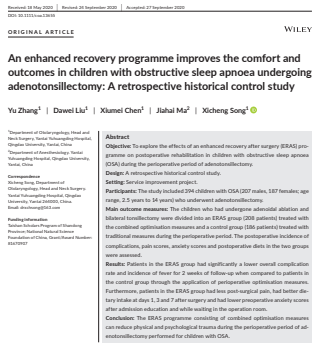
ERAS in Adenotonsillectomy



ORIGINAL ARTICLE

WILEY

An enhanced recovery programme improves the comfort and outcomes in children with obstructive sleep apnoea undergoing adenotonsillectomy: A retrospective historical control study

Yu Zhang[1] | Dawei Liu[1] | Xiumei Chen[2] | Jiahai Ma[2] | Xicheng Song[1]

Abstract

Objective: To explore the effects of an enhanced recovery after surgery (ERAS) programme on postoperative rehabilitation in children with obstructive sleep apnoea (OSA) during the perioperative period of adenotonsillectomy.

Design: A retrospective historical control study.

Setting: Service improvement project.

Participants: The study included 394 children with OSA (207 males, 187 females; age range, 2.5 years to 14 years) who underwent adenotonsillectomy.

Main outcome measures: The children who had undergone adenoidal ablation and bilateral tonsillectomy were divided into an ERAS group (208 patients) treated with the combined optimisation measures and a control group (186 patients) treated with traditional measures during the perioperative period. The postoperative incidence of complications, pain scores, anxiety scores and postoperative diets in the two groups were assessed.

Results: Patients in the ERAS group had significantly a lower overall complication rate and incidence of fever for 2 weeks of follow-up when compared to patients in the control group through the application of perioperative optimisation measures. Furthermore, patients in the ERAS group had less post-surgical pain, had better dietary intake at days 1, 3 and 7 after surgery and had lower preoperative anxiety scores after admission education and while waiting in the operation room.

Conclusion: The ERAS programme consisting of combined optimisation measures can reduce physical and psychological trauma during the perioperative period of adenotonsillectomy performed for children with OSA.

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ERAS in Adenotonsillectomy

- 294 children with OSA
  - 208 in ERAS group, 186 controls
- ERAS protocol included
  - ERAS education, nutritional assessment,
  - Periop anxiety management,
  - Standardized anesthetic, multimodal pain management
  - Drink 10% glucose (5 mL/kg) 2 hrs before surgery
- ERAS patients had less pain, anxiety, complications

Zhang, Y, Liu, D, Chen, X, Ma, J, Song, X. An enhanced recovery programme improves the comfort and outcomes in children with obstructive sleep apnoea undergoing adenotonsillectomy: A retrospective historical control study. *Clin Otolaryngol*. 2021; 46: 249– 255. https://doi-org.ezproxy.fau.edu/10.1111/coa.13653

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NPO guidelines

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ASA current guidelines

- 2 hrs for clears
- 4 hrs for breast milk
- 6 hrs for formula, light meal
- 8 hrs for heavy meal

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NPO concerns in children

- Instruction standardization
- Poor compliance
- Surgical case shuffling
- Aspiration risk
- Dehydration
- Patient and parent satisfaction
- Difficult IV access
- New studies related to gastric emptying

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1 hour fast for clears?

Pro-Con Debate: 1- vs 2-Hour Fast for Clear Liquids Before Anesthesia in Children

Nicola Disma, MD,* Peter Frykholm, MD,† Scott D. Cook-Sather, MD, FCPP,‡ and Jerrold Lerman, MD, FRCPC, FANZCA§

See Article, p 578

Perioperative fasting guidelines are designed to minimize the risk of pulmonary aspiration of gastrointestinal contents. The current recommendations from the American Society of Anesthesiologists (ASA) and the European Society of Anaesthesiology and Intensive Care (ESAIC) are for a minimum 2-hour fast after ingestion of clear liquids before general anesthesia, regional anesthesia, or procedural sedation and analgesia. Nonetheless, in children, fasting guidelines also have consequences as regards to child and parent satisfaction, hemodynamic stability, the ability to achieve vascular access, and perioperative energy balance. Despite the fact that current guidelines recommend a relatively short fasting time for clear fluids of 2 hours, the actual duration of fasting time can be significantly longer. This may be the result of deficiencies in communication regarding the duration of the ongoing fasting interval as the schedule changes in a busy operating room as well as to poor parent and patient adherence to the 2-hour guidelines. Prolonged fasting can result in children arriving in the operating room for an elective procedure being thirsty, hungry, and generally in an uncomfortable state. Furthermore, prolonged fasting may adversely affect hemodynamic stability and can result in parental dissatisfaction with the perioperative experience. In this PRO and CON presentation, the authors debate the premise that reducing the nominal minimum fasting time from 2 hours to 1 hour can reduce the incidence of prolonged fasting and provide significant benefits to children, with no increased risks. (Anesth Analg 2021;133:581–91)

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1 hour fast for clears: Pro

- Underlying concepts of preoperative fasting
  - ensure "safety" from aspiration
  - smooth and comfortable perioperative experience
- Often fasting times exceed recommended times
- Incidence of pulmonary aspiration is 0.6-9 cases/10,000 children undergoing anesthesia

Disma, Nicola MD*; Frykholm, Peter MD†; Cook-Sather, Scott D. MD, FCPP‡; Lerman, Jerrold MD, FRCPC, FANZCA§ Pro-Con Debate: 1- vs 2-Hour Fast for Clear Liquids Before Anesthesia in Children, Anesthesia & Analgesia: September 2021 - Volume 133 - Issue 3 - p 581-591 doi: 10.1213/ANE.0000000000005529

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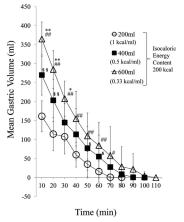
1 hour fast for clears: Pro

- During a fasting period of 1 hour, the greater part of any ingested fluid will empty from the stomach in healthy children
- Is endorsed and implemented already by some institutions and societies



Disma, Nicola MD*; Frykholm, Peter MD†; Cook-Sather, Scott D. MD, FCPP‡; Lerman, Jerrold MD, FRCPC, FANZCA§ Pro-Con Debate: 1- vs 2-Hour Fast for Clear Liquids Before Anesthesia in Children, Anesthesia & Analgesia: September 2021 - Volume 133 - Issue 3 - p 581-591 doi: 10.1213/ANE.0000000000005529

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1 hour fast for clears: Con

- Often fasting times exceed recommended times
- Gastric emptying is complex
- In context of 1-hour fast pulmonary aspiration has increased to 12-18:10,000

Disma, Nicola MD*; Frykholm, Peter MD†; Cook-Sather, Scott D. MD, FCPP‡; Lerman, Jerrold MD, FRCPC, FANZCA§ Pro-Con Debate: 1- vs 2-Hour Fast for Clear Liquids Before Anesthesia in Children, Anesthesia & Analgesia: September 2021 - Volume 133 - Issue 3 - p 581-591 doi: 10.1213/ANE.0000000000005529

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1 hr fast for clears: Con

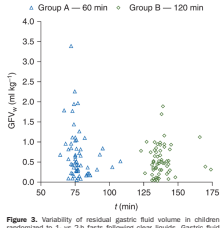

Figure 3. Variability of residual gastric fluid volume in children randomized to 1- vs 2-h fasts following clear liquids. Gastric fluid volumes were determined by blind aspiration of gastric contents. Median (IQR) fasting times were 76 min (73–79 min) for the intended 1-h fast cohort and 136 min (133–140 min) for the 2-h cohort. Note that none of the children actually fasted for the prescribed times. Volumes of the undefined clear liquids ingested were 5 mL/kg to a maximum of 150 mL. A disproportionate percentage (12%) of subjects fasting <2 h had residual gastric fluid volumes >1.25 mL/kg, the historical 95th percentile. GFV_R indicates gastric residual volume. Reproduced with permission from Schmitt et al.[22]

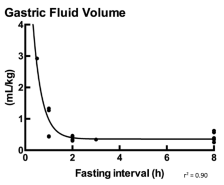

Figure 4. The relationship between the residual gastric fluid volume and the fasting interval. A tight exponential relationship was identified. Aggregate data plotted are that cited by Andersson et al.[23] Reproduced with permission from Lerman.[18]

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1 hour fast for clears: Con

- Clear liquids of varying composition and unlimited volumes are INCONSISTENTLY and UNRELIABLY emptied from the stomach in 1 hr
- Focus on improving compliance of 2-hour fast

Disma, Nicola MD*; Frykholm, Peter MD†; Cook-Sather, Scott D. MD, FCPP‡; Lerman, Jerrold MD, FRCPC, FANZCA§ Pro-Con Debate: 1- vs 2-Hour Fast for Clear Liquids Before Anesthesia in Children, Anesthesia & Analgesia: September 2021 - Volume 133 - Issue 3 - p 581-591 doi: 10.1213/ANE.0000000000005529

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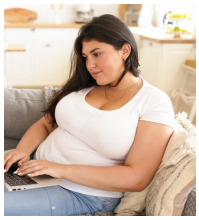
Back to our case

- 14-year-old girl presents for adenotonsillectomy
- 5' 3" 75 kg BMI 29
- sleep disordered breathing
- PMH for mild asthma
- Meds- albuterol prn, oral contraceptives



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Reversal of Neuromuscular Blockade

- Current literature with more attention toward reversal of neuromuscular blockade
- Full reversal not always achieved
- Sugammadex FDA approved in children
- Sugammadex vs Neostigmine
- Counseling patients on oral contraceptives who receive sugammadex about utilizing alternate form of contraception postoperatively

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U.S. FOOD & DRUG ADMINISTRATION

NDA 022225/S-008

SUPPLEMENT APPROVAL
FULFILLMENT OF POSTMARKETING REQUIREMENT

Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc.
126 E. Lincoln Avenue, PO Box 2000
RY34-B188
Rahway, NJ 07065

Attention: Dori Glassner
Director, Global Regulatory Affairs

Dear Ms. Glassner:

Please refer to your supplemental new drug application (sNDA) dated and received, August 26, 2020, and your amendments, submitted under section 505(b) of the Federal Food, Drug, and Cosmetic Act (FDCA) for Bridion (sugammadex) injection.

This Prior Approval supplemental new drug application proposes changes to the Package Insert based on data to fulfill the requirements of postmarketing requirement (PMR) 3003-8 in pediatric patients ages 2 to less than 17 years old. The data is from *Study P089 - A Phase 4 Double-Blinded, Randomized, Active Comparator-Controlled Clinical Trial to Study the Efficacy, Safety, and Pharmacokinetics of Sugammadex (MK-8616) for Reversal of Neuromuscular Blockade in Pediatric Participants.*

APPROVAL & LABELING

We have completed our review of this application, as amended. It is approved, effective on the date of this letter, for use as recommended in the enclosed agreed-upon labeling.

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Sugammadex in children

RESEARCH REPORT

Sugammadex for reversal of neuromuscular blockade in pediatric patients: Results from a phase IV randomized study

- Randomized a total of 288 pediatric participants aged 2 to <17 years
  - sugammadex 2 mg/kg
  - sugammadex 4 mg/kg
  - neostigmine 50 µg/kg
- Recovery from rocuronium- or vecuronium-induced moderate neuromuscular blockade faster with sugammadex 2 mg/kg than with neostigmine
- Reversal of deep neuromuscular blockade with sugammadex 4 mg/kg was consistent with that of moderate neuromuscular blockade reversal

Voss, T, Wang, A, DeAngelis, M, et al. Sugammadex for reversal of neuromuscular blockade in pediatric patients: Results from a phase IV randomized study. *Pediatr Anesth.* 2021; 00: 1– 10. doi:10.1111/pan.14320.

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Residual neuromuscular block

- impaired regulation of ventilation during hypoxia
- impaired pharyngeal function and airway protection
- is a risk factor for the development of postoperative pulmonary complications
- To assure normal vital muscle function and normal ventilatory regulation, an adductor pollicis TOF ratio of 0.90 should ideally be achieved before a patient is allowed to breath spontaneously after tracheal extubation
- This can only be reliably detected using objective monitoring techniques of neuromuscular function, such as accelometry or electromyography

Eriksson, Lars I. MD, PhD The Effects of Residual Neuromuscular Blockade and Volatile Anesthetics on the Control of Ventilation, Anesthesia & Analgesia: July 1999 - Volume 89 - Issue 1 - p 243-251 doi: 10.1213/00000539-199907000-00045

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Residual neuromuscular block

- Monocentric prospective observational cohort
  - 291 patients ages >29 weeks and < 19 years
- Incidence of residual neuromuscular block
  - 48.2% in OR
  - 26.9% in PACU
- Pharmacological reversal of neuromuscular block was administered in 23.3% of patients
  - 41% of these after the TOF measurement in the OR (due to residual blockade)
- Quantitative monitoring of neuromuscular blockade should be implemented in all patients when NMBAs are administered

Klucka J, Kosinova M, Krikava I, Stoudek R, Toukalkova M, Stourac P. Residual neuromuscular block in paediatric anaesthesia. Br J Anaesth 2019;122(01):e1–e7

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Reversal Agents and Postoperative Pulmonary Complications in Children

Association of Sugammadex or Neostigmine With Major Postoperative Pulmonary Complications in Children

Ralph J. Beltran, MD, Christian Mpody, MD, PhD, MBA, MPH, Olubukola O. Nafiu, MD, FRCA, MS, and Joseph D. Tobias, MD

- Propensity score-matched retrospective study using the Pediatric Health Information System (PHIS) dataset spanning the years 2016 and 2020
- Studied children <18 years who underwent elective, inpatient, noncardiac surgical procedures and received either neostigmine or sugammadex for reversal of NMB
- Primary outcome was major postoperative pulmonary complication, which we defined as the occurrence of either postoperative pneumonia or respiratory failure

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Reversal Agents and Postoperative Pulmonary Complications in Children

- 33,819 children
  - 23,312 (68.9%) received neostigmine
  - 10,507 (31.1%) received sugammadex
- No evidence of a statistically significant association between the NMB reversal agent and the incidence of pulmonary complications
- Choice of NMB reversal agent does not appear to impact the incidence of major postoperative pulmonary complications

Beltran, Ralph J. MD; Mpody, Christian MD, PhD, MBA, MPH; Nafiu, Olubukola O. MD, FRCA, MS; Tobias, Joseph D. MD Association of Sugammadex or Neostigmine With Major Postoperative Pulmonary Complications in Children, Anesthesia & Analgesia: January 12, 2022 - Volume - Issue - 10.1213/ANE.0000000000005872 doi: 10.1213/ANE.0000000000005872

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Sugammadex and hormonal contraceptives

- According to the package insert from Merck & Co, Inc.
- "5.6 Due to the administration of Bridion, certain drugs, including hormonal contraceptives, could become less effective due to a lowering of the (free) plasma concentrations."
- "7.3 In vitro binding studies indicate that Bridion may bind to progestogen, thereby decreasing progestogen exposure. Therefore, **the administration of a bolus dose of Bridion is considered to be equivalent to missing dose(s) of oral contraceptives containing an estrogen or progestogen**.
- **If an oral contraceptive is taken on the same day that Bridion is administered, the patient must use an additional, non-hormonal contraceptive method or back-up method of contraception for the next 7 days**."

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Sugammadex and hormonal contraceptives

- Sugammadex may interfere with hormonal contraception
- Counsel patients about decreased effectiveness of hormonal contraceptives with use of sugammadex for reversal of neuromuscular blockade
- Revise informed consent
- Documentation

Sugammadex and Oral Contraceptives: Is It Time for a Revision of the Anesthesia Informed Consent?

To the Editor

Our institutions, along with many others across the country, have revised protocols to address potential issues for women on oral contraceptives who have received sugammadex in the perioperative period. According to the package insert from Merck & Co, Inc., "5.6 Due to the administration of Bridion, certain drugs, including hormonal contraceptives, could become less effective due to a lowering of the (free) plasma concentrations." The insert also states, "7.3 In vitro binding studies indicate that Bridion may bind to progestogen, thereby decreasing progestogen exposure. Therefore, the administration of a bolus dose of Bridion is considered to be equivalent to missing dose(s) of oral contraceptives containing an estrogen or progestogen. If an oral contraceptive is taken on the same day that Bridion is administered, the patient must use an additional, non-hormonal contraceptive method or back-up method of contraception for the next 7 days." Due to these warnings, it is our understanding that many anesthesiologists and their institutions have gone to great lengths to notify patients of this potential risk by providing both counseling and additional discharge paperwork suggesting alternative contraceptive use for this patient subset.

Interestingly, a similar potential risk exists with the administration of common perioperative antibiotics. The package insert for a common oral contraceptive ORTHO-NOVUM tablets (norethindrone/ethinyl estradiol) states, "Contraceptive effectiveness may be reduced when hormonal contraceptives are coadministered with antibiotics, anticonvulsants, and other drugs that increase the metabolism of contraceptive steroids." While some of the implicated medications include antibiotics that are frequently

Corda, David M. MD; Robards, Christopher B. MD Sugammadex and Oral Contraceptives: Is It Time for a Revision of the Anesthesia Informed Consent?, Anesthesia & Analgesia: February 2018 - Volume 126 - Issue 2 - p 730-731 doi: 10.1213/ANE.0000000000002677

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Sugammadex and hormonal contraceptives

Informed Consent for Sugammadex and Oral Contraceptives: Through the Looking Glass

To the Editor

We read with interest Dr Corda and Robards's recent letter to the editor regarding sugammadex and informed consent. While well intended, their assertion "a similar potential risk exists with the administration of common perioperative antibiotics" in terms of effect on contraceptive effectiveness is a misconception held by too many physicians. In fact, rifampin and rifabutin are the only antibiotics demonstrated to affect the metabolism of combined hormonal or progestin-only contraceptives. This is evidenced by World Health Organization recommendations[1] regarding broad-spectrum antibiotics and hormonal contraceptives, as well as recent reviews in the obstetrics literature.[2] Luckily, neither rifampin nor rifabutin is in common use perioperatively.

The more salient issue at hand is the use of sugammadex in women of childbearing age, many of whom take hormonal contraceptives. In vitro studies have demonstrated the ability of sugammadex to bind progestogen, and likely render that day's dose of hormonal birth control ineffective. This is the equivalent of a missed contraceptive dose. This then necessitates our patients use a nonhormonal birth control method for the next 7 days, which in turn requires the documentation of said recommendation. Discussions on this topic have focused on informed consent and appropriate documentation of this risk. What if we took a step back?

The approval of sugammadex has led to its widespread use—in our institution, I have encountered second-year anesthesia residents (CA-1s) who have never prepared a dose of neostigmine and glycopyrrolate. Admittedly, sugammadex is a highly effective and reliable agent. When

- Women in their teens and 20s are about twice as likely as older women to have an unintended pregnancy while using birth control
- Adolescents with parents in tow may not be forthcoming regarding contraceptive use
- Consider using using neostigmine in lieu of sugammadex in these patients

Webber AM, Kreso M. Informed Consent for Sugammadex and Oral Contraceptives: Through the Looking Glass. Anesth Analg. 2018 Sep;127(3):e52. doi: 10.1213/ANE.0000000000003608. PMID: 29979198.

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Summary

- Choose your patients wisely
- Keep them hydrated
- Keep them strong
- Keep them informed
- Stay thoughtful in how you care for them

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Questions

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