SOCIETY FOR SAMBULATORY ANESTHESIA

Outpatient • Office Based • Non-Operating Room

2019 SAMBA Annual Meeting Abstracts

Session Title:	“Reverse to Avoid the Adverse”: Improving compliance with evidence-based reversal of nondepolarizing neuromuscular blockade
Session Number:	3435
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Feb 12, 2019 01:32 PM America/Central
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Submitter:	Alexandra Anderson Conrad (anderson.alexandra1@mayo.edu)
Last Update:	Feb 12, 2019 01:32 PM America/Central

Abstract Body/Description:

“Reverse to Avoid the Adverse”: Improving compliance with evidence-based reversal of nondepolarizing neuromuscular blockade

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Institution: UCSF Department of Anesthesia and Perioperative Care

Background:

Postoperative residual neuromuscular blockade (PRNB) is a common and often unrecognized postoperative complication with a spectrum of presentation and clinical sequelae. Routine monitoring and reversal of residual neuromuscular blockade are the only ways to reliably prevent PRNB. At our institution, we sought to improve patient safety through departmental education, regular reminders, standardized monitoring, and establishing guidelines for reversal in patients who received nondepolarizing neuromuscular blocking drugs (NMBDs).

Methods:

The goal of this quality improvement project was to increase the rates of appropriate reversal and quantitative neuromuscular monitoring in patients who received NMBDs. For the academic year 2017-2018, all adults (≥ 18 years of age) undergoing general anesthesia who received at least one documented dose of NMBDs were included in our analysis. Patients who remained intubated were excluded. To increase compliance with monitoring and reversal, we had quarterly presentations at departmental meetings with follow-up emails and bi-weekly reminder

messages. A best evidence reversal agent dosing guide was developed based on depth of neuromuscular blockade and placed in every operating room. Additional equipment for quantitative monitoring of neuromuscular blockade was procured throughout the year until most operating rooms had access to a quantitative monitor [Stimpods (Xavant Technology, Pretoria, South Africa) or E-NMTs (GE Healthcare, Waukesha, WI)]. Data was collected through the electronic medical record (EPIC, Verona, WI). Cases were considered a success for preventing PRNB if: 1. patients were appropriately reversed (defined as administration of sugammadex or neostigmine and glycopyrrolate) prior to extubation or 2. the provider did not administer a reversal agent, but utilized a quantitative monitor to demonstrate train-of-four ratio ≥ 0.9 before extubation. In 2016, we found a baseline success rate of 70.1%. The aim was to achieve a 10% increase in success rate from this baseline.

Results:

For the academic year 2017-2018, we well exceeded our goal with a departmental compliance rate for preventing PRNB of 86.8%.

Conclusion:

Provider education, regular reminders, increasing access to quantitative neuromuscular monitors, and cognitive aids on evidence-based monitoring and reversal of NMBDs increased compliance rates for preventing PRNB from 70.1% to 86.8%. This showed marked improvement that exceeded our original goal. Such tactics are an effective means to increase patient safety in this important area.

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Session Title:	Anesthetic Management of an Open Globe Repair in a patient with G6PD Deficiency; and the use of Sugammadex in G6PD deficiency
Session Number:	3476
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 21, 2019 01:06 PM America/Central
Status:	Submitted
Submitter:	Alisa Horsford,M.D. (Alisa.Chrisse.Horsford@emory.edu)
Last Update:	Feb 21, 2019 01:06 PM America/Central
Abstract Body/Description:	We present a case report on the anesthetic management of an open globe repair and corneal transplant in an ambulatory setting; where Propofol-TIVA, a peribulbar block using Marcaine, Rocuronium and Sugammadex were used in a G6PD deficient patient and did not result in a hemolytic crisis. G6PD deficiency is a well-known X linked hereditary enzymatic disorder of red blood cells and a cause hemolytic anemia that occurs due to RBC induced oxidative stress caused by several triggers including some anesthetic drugs. It is estimated that 400 million people are affected worldwide; with 10 % being of African American heritage and a lower frequency in Mediterranean populations (1). The anesthetic management of these patients can often be challenging since hemolysis can be triggered by many commonly used anesthetics and other antibiotic drugs. Some have likened the management of this disease to managing a patient with malignant hyperthermia in terms of its intraop management, perioperative planning and “drug triggering” risk. Other anesthetic considerations specific to this case include the continued need for muscle relaxation to prevent coughing and risking the extruding of vitreous contents while the globe is open as well as postoperative pain management. The anesthetic drugs that are known to induce a hemolytic crisis in patients with g6pd deficiency include sevoflurane, isoflurane, and lidocaine. Fentanyl has been listed as controversial in some articles and safe in others. Aware of these triggering agents, we decided to perform a general endotracheal anesthetic using propofol-TIVA, rocuronium for paralysis and a peribulbar block for intraop and postop pain control. There are also other anesthetic agents that are known to be safe to use in G6PD deficiency including midazolam, ketamine, codeine/ codeine derivatives and rocuronium. The reversal agents that are safe include neostigmine, glycopyrrolate, and edrophonium. Although there are documented cases of using neostigmine and glycopyrrolate as a safe reversal agents in G6PD Deficiency; there are very few if any documented cases of Sugammadex being used safely in patients with G6PD deficiency. This case report describes the anesthetic management of an open globe repair in a G6PD deficient patient, in which Propofol TIVA, a peribulbar block using

	marcaine and Sugammadex were safely used in the ambulatory setting. In the ambulatory setting, efficiency is paramount to uninterrupted workflow and for positive patient outcomes. The ability to quickly reverse neuromuscular blockade is a valuable tool, avoiding prolonged relaxation which can delay other cases. The rapid reversal of paralysis seen with Sugammadex also provides an additional benefit. If one runs into an unanticipated difficult airway in a G6PD deficient patient, Sugammadex could potentially be used for rescue purposes. Of course, more research is necessary to definitely make the claim that Sugammadex can safely be used in all G6PD deficient patients. In this case however, this particular patient was not adversely affected by its use in the ambulatory setting. Reference: 1. Cpt Ali R. Elyassi, DDS and Maj Henry H. Rowhan, DDS. Perioperative Management of G6PD Deficient Patient: A Review of Literature.
2.	
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Author 2:	Shana Segrs, M.D. (shana.segers@emory.edu) Emory University Resident - CA-3

Session Title:	Overcoming Barriers to Success: Improving Hand Hygiene compliance among anesthesia providers in the operative setting at a multi-site cancer center.
Session Number:	3434
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Feb 11, 2019 02:54 PM America/Central
Status:	Submitted
Submitter:	Alisa C. Thorne, M.D. (ct322@aol.com)
Last Update:	Feb 11, 2019 02:54 PM America/Central
Abstract Body/Description:	**Introduction** : AHRQ and CDC report that risk of SSI is significant, up to 3-4%, following ambulatory surgical procedures (1,2). Hand hygiene (HH) in the OR is among several variables associated with SSIs. Studies show complying with WHO 5 HH moments (Table 1) is challenging while anesthetizing patients. Extremely low rates of HH compliance are reported, some as low as single digits (3,4). HH knowledge deficits among anesthesia providers is reported to be low (5). We developed and carried out a plan to remove barriers and continuously improve HH compliance in high volume, fast paced ORs among 161 anesthesia providers at our 5 facilities. **Methods:** IRB determined this project exempt and to fall under quality improvement**.** This HH improvement program was conducted at Memorial Sloan Kettering Cancer Center (MSKCC) hospital and 4 outpatient operative sites in NY and NJ during the last six months of 2018. After consultation with MSKCC Infection Control (IC), barriers to HH compliance in the operative setting were identified and corrected : 1. Dispenser Survey: 110 OR/procedure room Purell dispensers surveyed, repaired, optimally located, additional ones added and all labeled with number to call if empty (Photo 1.); 2. Computer Learning: 161 anesthesia providers completed a new mandatory HH computer module; 3. Personal Devices: All anesthesia staff provided with 4 oz personal hand sanitizer devices; 4. Anesthesia OR workstation Zone 1 and Zone 2 (Photo 2) created and staff educated. 5. Two Grand Rounds on HH held 3 months apart; 6. Compliance Audit and one-on-one education: Peer HH Champions, trained by IC audited 161 (100%) anesthesia providers for compliance with WHO 5 HH moments while performing cases in the ORs/procedure rooms at all 5 MSKCC locations, using a data tool created by IC. First round audits were not punitive. They served two purposes: data collection and education. One-on-one education by Peer

	HH Champions was performed in the ORs/procedure rooms after non-compliance found and recorded. Note: first round audits took place over a 4-month period during which the other interventions mentioned were made to continuously improve compliance. One month after all 6 interventions were completed, a second-round audit was performed surveying 26 (16%) anesthesia providers . **Results:** 1st and 2nd round audit data were analyzed. Individual compliance with all 5 WHO moments significantly increased (53% vs. 77%, p=0.032) between 1st round (100% staff) and 2nd round (16% staff) audits (Table 1). There was a significant increase in compliance in moments 2 (immediately before an aseptic task) from 65% to 93 % (P = 0.034) and 4 (after patient contact) from 85% to 100% (P= 0.049). **Conclusion:** Interventions improved compliance with WHO 5 HH moments. Findings support a multi-faceted approach to improving HH in the operative setting. These successful interventions are feasible in both the ambulatory and in-patient surgery setting. Removing barriers makes it possible for anesthesia providers to comply with the WHO 5 moments for HH. References: 1. Owen P et al JAMA 2015; 311: 709-716 2. Rhee C et al Infect Control and Hosp Epidemiol 2015; 36: 225-8 3. Krediet AC et al BJA 2011; 107: 553-558 4. Rowlands J et al Am J Infect Control 2014; 42: 698-701 5. Fernandez PG et al Anesth Analg 2015;120: 837-843
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Session Title:	Adductor Canal Nerve Block vs Intra-articular Anesthetic in Knee Arthroscopy: A prospective Randomized Trial
Session Number:	3443
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 13, 2019 04:36 PM America/Central
Status:	Submitted
Submitter:	Audrice Francois, M.D. (afranc1@lumc.edu)
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Abstract Body/Description:

Adductor Canal Nerve Block vs Intra-articular Anesthetic in Knee Arthroscopy:

A prospective Randomized Trial

A Francois , M Perry, R Sophia, O Schantz, S Stakenas, D Evans

INTRODUCTION: Post perative pain is commonly associated with knee arthroscopy. Treatment includes an oral or intravenous opioid regimen which often leads to side effects like nausea, vomiting and constipation. These contribute to overall patient discomfort in the post operative period. Intraoperative injection of local anesthetic into the knee and regional nerve blocks have become common adjuncts to reduce post operative pain and reduce the use of opioids.

Current literature on the efficacy of intra-articular injection for analgesia, and the use of adductor canal blocks for reduction of acute perioperative pain vs placebo for day case knee arthroscopy is inconclusive. There is no literature comparing intra-articular local anesthetic injection and adductor canal nerve blockade for knee arthroscopy.

PURPOSE: To compare the efficacy of intra-articular lidocaine and bupivacaine vs single injection adductor canal nerve block with bupivacaine as it relates to postoperative analgesic effectiveness and opioid consumption following same day knee arthroscopy in a single blinded, prospective trial.

METHODS: Patient between the ages of 18 and 65 undergoing knee arthroscopy by a single surgeon were considered for inclusion into the study. Procedures include diagnostic arthroscopy, meniscal debridement, meniscal repair, microfracture and/or chrondroplasty. Patients were excluded if they have known history of substance abuse, are on preoperative opioids, or with chronic pain syndromes. Those meeting

	criteria were blinded and randomized to receive either an adductor canal nerve block, or intra- articular injection of local anesthetic. Outcome measures includes VAS pain scores as reported by the patient at 1, 2, 4, 16, 24, 36, 48 hours and 1 week, and total opioid consumption at 12, 24 and 48 hours post-operatively. All patients were discharged home with a prescription for 7.5/325mg tabs of hydrocodone/acetaminophen. DISCUSSION: The study is ongoing. Preliminary data to date shows no statistically significant difference in total opioid consumption at any point. At 1 hour post procedure, there were lower VAS scores with intra-articular injection when compared to adductor canal blockade, with no significant difference in opioid consumption. The 2 methods of analgesia for knee arthroscopy were equal at all other time points. In addition to perioperative pain control, these findings may be used to investigate areas of cost and time savings in perioperative treatment of knee arthroscopy.
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Session Title:	Opioid free anesthesia - the future of modern anesthesia
Session Number:	3469
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Feb 15, 2019 01:05 PM America/Central
Status:	Submitted
Submitter:	barry friedberg md (drbarry@goldilocksfoundation.org)
Last Update:	Feb 15, 2019 01:05 PM America/Central

Abstract Body/Description:	Introduction: "More than 75% of opioid and heroin overdoses start with prescription drugs," said Cleveland Clinic CEO, Dr. Toby Cosgrove. Opioid free anesthesia removes opioids from the anesthetic regimen and uses pre-incisional ketamine instead. Methods: Real time EMG/BIS brain monitoring of propofol provides a numerically reproducible, two-fold approach for opioid free anesthesia. Incremental propofol titration to BIS <75 with baseline EMG provides a stable CNS propofol level to block Propofol hallucinations. (1) Fifty milligrams IV ketamine 3" pre-incision saturates midbrain NMDA receptors. Absence of EMG spike with skin incision defines NMDA saturation, opioid free preemptive analgesia. (2) Opioid avoidance has a published 0.6% PONV rate in an Apfel-defined high-risk patient population *without* the use of anti-emetics. (3) Results: Between 1998-2018, more than 4,000 office-based surgery patients received BIS/EMG monitored propofol ketamine IV sedation. No patients were hospitalized for pain or PONV management. Postoperatively, no patients became opioid addicted or overdosed on opioids. (4) Conclusion: Opioid free anesthesia eliminates intra-operative opioids while virtually eliminating them for postop pain management. Opioid free anesthesia can eliminate an entire class of opioid addicts. References 1. Friedberg BL: Hypnotic doses of propofol block ketamine induced hallucinations. *Plast Reconstr Surg* 1993;91:196. 2. Friedberg BL: The effect of a dissociative dose of ketamine on the bispectral index (BIS) during propofol hypnosis. *J Clin Anes* 1999;11:4-7.

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Session Title:	Identification of Risk Factors for Sedation-related Adverse Events in Anesthesia Provider Administered Sedation for Endoscopy
Session Number:	3432
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 11, 2019 10:17 AM America/Central
Status:	Submitted
Submitter:	Brent Lee (blee@napaanesthesia.com)
Last Update:	Feb 11, 2019 10:17 AM America/Central

Abstract Body/Description:	Background: Several studies have been published on the safety and adverse events related to sedation for endoscopic procedures. Many of these studies however include sedation administered only by non-anesthesia providers directed by the endoscopist or a combination of non-anesthesia and anesthesia provider administration of sedation. Additionally many of the existing studies were conducted by endoscopists and published in gastroenterology journals. The adverse events in many of these studies have included both endoscopy and sedation-related adverse events. Our study sought to identify risk factors for major sedation-related adverse events during endoscopic procedures when sedation was delivered by anesthesia providers only. Methods: Sedation-related adverse events were collected on all endoscopy patients who received sedation delivered by anesthesia providers using provider self-reported collection methods at 24 endoscopy sites over a 15-month period. Cases which had at least one of 36 major sedation-related adverse events were identified. Bayesian multivariate regression with weakly informative priors was used to model factors associated with adverse events. Leave-one-out cross-validation and widely applicable information criterion were used to assess prediction accuracy from fitted Bayesian models to determine the most effective model for predicting adverse events.

	Results Our final analysis included 134 sedation-related adverse events in a population of 61,209 patients (58.4% female, 41.6% male). Multivariate predictors of adverse events included diagnosis of OSA, OR = 2.20, (95% CI: 1.25, 3.60); inpatient procedure, OR = 1.60, (95% CI: 1.08, 2.36); upper endoscopy procedure, OR 1.83 (95% CI: 1.99, 3.97); ASA 4, OR = 5.05 (95% CI 1.19, 33.78); and ASA 5 OR = 24.29, (95% CI: 0.87, 376.15). Other covariates (age, BMI, sex) were found to not contribute significantly to the predictability of adverse events. Conclusion: In anesthesia provider administered sedation during endoscopy, higher ASA status, inpatient status, upper endoscopy, and a history of OSA were identified in our study to have statistically higher odds of having a major sedation-related adverse event. Neither age nor BMI were found in our analysis to be predictive of sedation-related adverse events. Inpatients undergoing upper endoscopies with known diagnoses of OSA and ASA 5 status have an almost 17% probability of experiencing a major sedation-related adverse event. These risk factors can potentially be used to guide appropriate criteria for selection of which patients could be done safely at outpatient endoscopy centers vs. those that should be done at inpatient hospital facilities.
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Session Title:	Educating the Next Generation: A The Proposed Update for SAMBA Office-Based Anesthesia Curriculum 2010 into 2020
Session Number:	3474
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Feb 21, 2019 07:39 AM America/Central
Status:	Submitted
Submitter:	Brian Mark Osman (bosman@med.miami.edu)
Last Update:	Feb 21, 2019 07:39 AM America/Central
Abstract Body/Description:	To educate residents with current safety literature, system-based changes, developments in practice management and accreditation related to office-based anesthesia, we propose an update for the Society for Ambulatory Anesthesia Office-Based Anesthesia (OBA) Resident Curriculum. Since its initial inception in 2010, the number, complexity and variety of cases in the office-based anesthesia environment has experienced exponential growth. The literature in the past 10 years suggests that patient safety and outcomes in the office have greatly improved, likely due to proper credentialing of facilities and practitioners, accreditation, adherence to national societies guidelines, the incorporation of safety checklists, and the implementation of additional oversight at both state and federal levels. In addition to the updated literature, this update will include a revision to the office-based anesthesia curriculum highlighting system-based practice changes, including the implementation of customizable safety checklists for both the patient and provider, and the use of cognitive aids (i.e. an easily accessible office based emergency manual specifically geared to guide anesthesia providers though challenging and unexpected events in the office based anesthesia and surgical setting). Another addition will be an evidence-based review of anesthesia techniques to mitigate risk to the patient and improve outcomes and patient satisfaction for office-based procedures (i.e. Enhanced Recovery After Surgery (ERAS) techniques, multimodal therapies and non-opioid-based perioperative analgesia) that can be utilized to enhance rapid discharge and recovery. Over the past 10 years, accreditation agencies have focused greater attention to standards that are particular to this setting. There are currently 33 states that require offices performing medical and surgical procedures to obtain accreditation. Accreditation of office-based facilities allows a third party to monitor activities, provide external benchmarking, validation, and acknowledgement of a nationally recommended standard of care. In order to assess quality and gain understanding of current office based surgical and anesthesia practice in the USA, large-scale data outcomes are being collected an analyzed. Despite the numerous legislative and regulatory changes to support this, 17 states currently do not require adverse event

	reporting, limiting outcome data collection. There are several high-profile cases of adverse events/mortality, which have caught media attention, further supporting the implementation of new legislation and regulation involving quality and safety metrics. The focus is to increase accountability and standardize safe practice in office based anesthesia and surgery.
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Session Title:	A Case of Prolonged Emergence
Session Number:	3402
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Dec 13, 2018 04:55 PM America/Central
Status:	Submitted
Submitter:	Caryn M Hertz, MD (chertz@aims.unc.edu)
Last Update:	Dec 13, 2018 04:55 PM America/Central

Abstract Body/Description:

Introduction: Prolonged emergence from general anesthesia can be defined as abnormally prolonged regaining of consciousness wherein the patient remains unresponsive [1,2]. In otherwise healthy patients the occurrence of delayed recovery usually relates to some underlying undiagnosed condition or medical error [1-4].

Case: A 29 year old presented for laparoscopic ovarian cystectomy. PMH unremarkable except for BMI of 30. Uneventful general anesthetic in the past. She was placed on an ERAS protocol, which included oral premedication with pregabalin, acetaminophen and celecoxib. Preinduction was with midazolam and fentanyl; induction with propofol, lidocaine and rocuronium; maintenance with isoflurane, lidocaine and propofol infusions. Propofol was started at 120 mcg/kg/min, for 75 minutes, decreased to 50 mcg/kg/min for 45 minutes, for a total dose of 1221 mg. Lidocaine was infused at 1.5mg/kg/hr for 2 hours total. Infusions and isoflurane stopped 35 minutes before surgery end. BIS monitor read 30-40 throughout. After two twitches were confirmed, sugammadex reversal given, and spontaneous ventilation with good TV ensued. 10 minutes after the surgery ended the patient had no purposeful movement, reaction to pain nor endotracheal stimulation. Pupils equal and reactive. Naloxone, flumazenil, repeat sugammadex given without effect. CBC, Electrolytes, Urine Toxicology screen was sent and were later shown to be normal. After 45 minutes, decision was made to obtain a head CT scan, which was unremarkable. Patient was then transferred to ICU with ETT in place. 216 minutes after the surgery end time, the patient awoke in the ICU, and was extubated. She was discharged home the following morning, awake, neurologically intact, and with no adverse sequelae.

Discussion: Differential diagnosis for delayed emergence includes: 1)Patient factors-age, gender, genetic factors, comorbidities, body habitus, seizure, stroke, postoperative pain; 2)Drug Factors-residual drug effect, drug interactions, potentiation of other drugs; 3)Surgical and Anesthetic Factors-opioids, benzodiazepines, intravenous infusions, muscle relaxants, local anesthetic toxicity; 4)Metabolic Factors- glucose (Hyper or Hypo), electrolytes (hypernatremia), uremia, hypothyroidism, temperature, respiratory (Hypoxia Hypercapnia), liver disease (hypoalbuminemia) central anticholinergic syndrome; and 5)Neurologic-cerebral hypoxia, hemorrhage, embolism, thrombosis [1-4]. A number of factors including polymorphic changes in gamma-aminobutyric acid 2 receptor can adversely affect the rapid reversal of propofol anesthesia (2, 5, 6)

A systematic approach to evaluating patient includes 1)Stopping all anesthetics and stimulating the patient, 2)Maintain ABC's, 3)Look for possible causes- review history, anesthesia chart, 4)Eliminate/reverse remnants of Anesthetics, 5)Treat hypothermia, 6)Check and Correct metabolic abnormalities, 7) Substitution therapy- steroids, thyroxine, intralipid, blood, and 8) Rule out neurologic causes with CT [1-4] . Repeat CT in 6-8 hours if not resolved.

Conclusions: Fortunately, this patient's anesthetized state fully resolved over a the next 12 hours. She was counseled regarding future anesthetics that she most likely had a genetic variant affecting the metabolism of propofol. Consultation with pharmacology suggested some variations can exist, and some can be tested for. Patient declined further work up.

References:

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Delayed recovery from anesthesia: A postgraduate educational review

2)Frost EA. Differential diagnosis of delayed awakening from general anesthesia: A review. Middle East J Anaesthesiol. 2014;22:537–48

	3) https://www.openanesthesia.org/delayed_emergence_differential_diagnosis/ 4)Sher-Lu Pai, MD Section Editor:Natalie F Holt, MD, MPH Deputy Editor:Nancy A Nussmeier, MD, FAHA UP TO DATE :Delayed emergence and emergence delirium in adults Oct 2018. | This topic last updated: Oct 01, 2018. 5) Ricardo Jorge Dinis-Oliveira BioMed Research International, Volume 2018, Article ID 6852857 Metabolic Profiles of Propofol and Fospropofol: Clinical and Forensic Interpretative Aspects 6) Yonekura, Hiroshi MD; Murayama, Norie PhD; Yamazaki, Hiroshi PhD; Sobue, Kazuya MD, PhD A Case of Delayed Emergence After Propofol Anesthesia: Genetic Analysis
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Session Title:	Ambulatory Cystoscopy gone wild
Session Number:	3447
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 13, 2019 10:16 PM America/Central
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Submitter:	Deacon Farrell (deaconfarrellmd@gmail.com)
Last Update:	Feb 13, 2019 10:16 PM America/Central

Abstract Body/Description:	1. 50 y/o Female PMH of cervical cancer post radiation therapy , recurrent pyelonephritis and bilateral stent with nephrostomy tube placement one week prior who underwent cystoscopy in an ambulatory setting. The patient was taken to PACU after the procedure in which she became hypotensive and tachycardic with gross hemorrhagic bleeding in both bilateral nephrostomy bags. Patient was taken back to the OR and exploratory laparotomy for which a left nephrectomy followed by splenectomy with abdomen packing to control bleeding. Postoperative, she was noted to be in hypovolemic shock with persistent frank hematuria. She returned to the OR again for exploration and received massive blood transfusion including 12 units of RBCs, 10 FFP, 4 platelets, 2 cryoprecipitate, TXA and activated factor VII. She was transferred to the ICU with continued resuscitation and continuous renal replacement therapy. She had a remarkable recovery from disseminated coagulation in the ICU after 4 days, and was discharged home after 7 days with good renal recovery. Learning points from this case include: 1) Astute monitoring and surveillance in the perioperative period for signs of complication of hemorrhage, 2) Low threshold for surgical re-exploration, 3) Rapid resuscitation including correction and replacement of coagulation factors with tranexamic acid and other anti-fibrinolytic agents 4) Consideration of the use of factor concentrates or recombinant factor VII for persistent hemorrhage refractory to blood products and factors transfusion, and 5) correction of metabolic abnormalities by frequent laboratory analysis.

Author 1:	Deacon Farrell (deaconfarrellmd@gmail.com) SUNY Downstate Medical Center

Author 2:	Geraldine Diaz (Geraldine.Diaz@downstate.edu) SUNY Downstate Medical Center Associate Clinical Professor

Session Title:	Factors Affecting Publication Rates of Abstracts Presented at The Anesthesiology Annual Meeting 2016
Session Number:	3440
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 13, 2019 10:35 AM America/Central
Status:	Submitted
Submitter:	Divakara Gouda (divakara@sas.upenn.edu)
Last Update:	Feb 13, 2019 10:35 AM America/Central

Abstract Body/Description:	Objectives: This study seeks to ascertain the publication rate of abstracts presented at Anesthesiology-2016, the annual meeting of the American Society of Anesthesiologists (ASA), and to examine differences in publication rates across clinical track, country of origin, and the qualification of the first author. Any relationship between these factors and the journal of publication is explored including their impact factor. An effort was made to determine the average time it takes to be published. Methods: A total of 1128 abstracts were presented and examined. Their first author, his or her qualification ((M.D., D.O., ect.) and country of origin were extracted from the official ASA website (http://www.asaabstracts.com/). Google search, ResearchGate and PubMed were used to learn if research presented in the abstracts were published in medical journals in the next 2 years (until November 2018). If they were, the medical journal, its impact factor and the date of publication were recorded. Results: Of the 1128 abstracts presented at The Anesthesiology Annual Meeting 2016, 369 (32.7%) were published within the studied timeframe. By clinical track, Anesthetic Action and Biochemistry had the highest publication rate of 56.7%, while History and Education had the lowest of 18.8%. By country (with 10 or more presented abstracts), Taiwan had the highest publication rate of 72.7%, followed by Canada (65.2%) and Korea (56.7%). The most popular journal of publication was Anesthesia and Analgesia (42 publications)

	followed by Anesthesiology (31) and the British Journal of Anaesthesia (14). The clinical track with the highest average impact factor was Experimental Neurosciences (4.44) followed by Anesthetic Action and Biochemistry (4.33) and Drug Disposition (4.10). The country (with 10 or more presented abstracts) with the highest average impact factor was France (4.32) followed by Germany (3.81) and USA (3.49). First authors with an M.D. degree had a publication rate of 33.0% and published in journals with an average impact factor of 3.23, while first authors with a D.O. degree had a publication rate of 20.0% and published in journals with an average impact factor of 3.43. 183 abstracts (49.6% of total) were published within a year of The Anesthesiology Annual Meeting, and 139 abstracts (37.7% of total) were published between 1 year and 2 years of the meeting. Results: Publication rates and the strength of destination Journals (measured by impact factor) of abstracts presented at The Anesthesiology Annual Meeting vary across clinical track, country of origin, and qualification of first author. In certain time periods after the meeting, there seems to be more publication activity than other time periods. Further research is needed into the underlying drivers of these biases.
Author 1:	Divakara Gouda (divakara@sas.upenn.edu) University of Pennsylvania
Author 2:	Maithri Goud (mvgoud@vassar.edu) Vassar College Student

Session Title:	Mitochondrial Myopathy and Susceptibility to Malignant Hyperthermia - Ambulatory Anesthesia Care in an 11-Year Old Child
Session Number:	3478
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 21, 2019 02:31 PM America/Central
Status:	Submitted
Submitter:	Divya Dixit (ddixit@nemours.org)
Last Update:	Feb 21, 2019 02:31 PM America/Central

Abstract Body/Description:

Introduction: Children with mitochondrial myopathy (MM) are a challenging group for anesthesia care because there is disruption in cellular energy production resulting in greater vulnerability of organs like the brain, heart and skeletal muscles, which consume greater oxygen. The rarity of these cases has made it difficult for anesthesia providers to come up with a uniformly-accepted plan of care [1], [2]. We recently encountered a teenager with not only mitochondrial myopathy but who also has a brother and father diagnosed with an *RYR1* mutation. The *RYR1* mutation is often associated with susceptibility to malignant hyperthermia (MH). This unique genetic association has not been previously reported.

Report of the case: Our patient is an 11-year-old 51.4 kg female and a 35-week ex-premie. She required an InterStim® placement for urinary incontinence and hesitancy. She had temperature intolerance, mild developmental delays, easy fatigue, hypotonia and stiffness in her legs. She had MM confirmed by muscle biopsy. Electron transport chain respiratory analysis in muscle tissue indicated a complex IV deficiency (18% of normal) with borderline complex I deficiency (31%). Complexes II and III were also low and ranged between 39 and 44% [3]. She had negative mtDNA sequencing and deletion analysis. More importantly, her brother also has mitochondrial myopathy but in addition was diagnosed with an *RYR1* mutation. Amino Acid Change: P.Gly432Ser, heterozygous inheritance from the father who also tested positive for *RYR1* mutation. Because of this association we assumed our patient was also susceptible to MH. During prior anesthetics our patient was treated as MH susceptible and treated with non-triggering anesthetics. This was done not only because of the strong family history but also due to significant intolerance to heat requiring a cooling vest during warm climates.

Our patient was anesthetized with propofol, ketamine and fentanyl, and intubated without muscle relaxant. A clean anesthesia machine was used for providing ventilation via a circuit that also had Vapor-Clean Dynasthetics filters (charcoal filters) on the inspiratory and expiratory

	limbs. She was optimally hydrated. At end of the procedure she was easily awakened and trachea extubated. Her postoperative care was unremarkable and she was discharged after a suitable period of observation. **Discussion & Conclusion**: Our child had a rare combination of MM, history of intolerance to heat and strong first degree family history suggesting susceptibility to MH. We were able to provide care for a simple surgical procedure by using a trigger-free anesthetic technique. Proper planning and being prepared to treat MH and the availability of a transfer plan if needed should allow the freedom to take care of such patients in ambulatory surgery centers [4]. Our center also conducts an annual MH preparedness simulation exercise. **References**: 1. https://www.mhaus.org/healthcare-professionals/mhaus-recommendations/does-mitochondrial-myopathy-mm-increase-an-individuals-susceptibility-to-malignant-hyperthermia-mh/ 2. Woodward EL et al. Use of Methohexital and Dexmedetomidine for Maintenance of Anesthesia in a Patient With Mitochondrial Myopathy: A A Case Rep. 2017 Jan 15;8(2):33-35. 3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5000852/ 4. Larach MG, et al. Special article: Creation of a guide for the transfer of care of the malignant hyperthermia patient from ambulatory surgery centers to receiving hospital facilities. Anesth Analg. 2012 Jan;114(1):94-100
Author 1:	Divya Dixit (ddixit@nemours.org) Alfred I duPont Hospital for Children
Author 2:	Mary C. Theroux (Mary.Theroux@nemours.org) A.I. duPont Hospital for Children Professor of Anesthesiology and Pediatrics
Author 3:	Kumar Belani (belan001@umn.edu) Masonic Children's Hospital, Minneapolis, MN Professor of Anesthesiology

Session Title:	Do Infusion Pumps Prevent the Over-Administration of Intravenous Fluids During Pediatric Surgeries?
Session Number:	3472
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 20, 2019 04:30 PM America/Central
Status:	Submitted
Submitter:	Duncan Bowes (duncan.bowes@usask.ca)
Last Update:	Feb 20, 2019 04:30 PM America/Central

Abstract Body/Description:

Introduction: Intravenous (IV) fluids are drugs. Accordingly, their prescription requires the same precision in dosing afforded to other medications to maximize therapeutic benefit and avoid adverse events.[1] Although the harms of IV fluid over-administration are well recognized, the rate of IV fluid delivery by gravity drip devices is susceptible to imprecision due to numerous extrinsic variables.[2] The aim of this study was to compare the incidence of IV fluid over administration in pediatric anesthesia when IV fluid was delivered by an infusion pump or gravity drip device.

Methods: After receiving local research ethics board approval this prospective, analyst blinded control trial enrolled ASA I and II pediatric patients presenting for dental surgery. Participants were randomly assigned to IV fluid delivery via gravity drip device or infusion pump. Prior to each case, the anesthesiologistwas asked to prescribe an amount of maintenance IV fluid to be administered during the procedure based on patient weight, length of fast, and the estimated length of case. Standard IV fluid bags were weighed before and after the surgical case in order to determine fluid delivered intraoperatively. Unexpected fluid boluses were excluded from the final volume calculation. All cases were timed in order to account for unforeseen delays and fluid prescriptions were standardized in terms of cc/hr. The primary outcome of interest was the proportion of cases where IV fluid was over-administered, defined as the difference between fluid delivered and original prescription of greater than or equal to 10%. Statistical analysis was performed using the Pearson-Chi square test.

Results: In total 103 patients were enrolled, 53 in the gravity drip group and 50 in the infusion pump group. The average length of surgical case (in hours) was also similar between groups. 66% (35/53) of participants in the gravity driparm received fluid in excess of 10% of their original fluid prescription. By comparison IV fluid over-administration occurred in only 22% (11/50) of participants in the infusion pumparm. The relative risk of

	IV fluid over-administration was 0.33 (95% CI 0.19 to 0.58, p<0.001). Fluid prescriptions between groups were not different (p=0.922). **Discussion:**Intravenous fluid prescription practices are not subject to the same scrutiny as are other medications. This study demonstrates how frequently anesthetists over administer IV fluid when using gravity drip devices. Although different clinical scenarios may influence the attending anesthetist's vigilance as it pertains to maintenance fluids, this study provides evidence that infusion pumps are associated with a decreased incidence of IV fluid over-administration in pediatric dental surgeries. 1. Cunliffe M, Potter F. Four and a fifth and all that. Br J Anaesth [Internet]. 2006 Sep 1 [cited 2017 Feb 20];97(3):274–7. Available from: https://academic.oup.com/bja/article/97/3/274/273817/Four-and-a-fifth-and-all-that. 2. Pierce ET, Kumar V, Zheng H, Peterfreund RA. Medication and volume delivery by gravity-driven micro-drip intravenous infusion.Anesth Analg[Internet]. 2013 Mar 1 [cited 2017 Feb 22];116(3):614–8. Available from: https://www.ncbi.nlm.nih.gov/pubmed/23400996.
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Author 2:	Jon Gamble (j_gamble@yahoo.com) University of Saskatchewan Director of Research

Session Title:	Wireless Peripheral Nerve Stimulation Application in Management of Refractory Shoulder Pain
Session Number:	3436
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 12, 2019 03:07 PM America/Central
Status:	Submitted
Submitter:	Dustin Goetz (dustin-goetz@uiowa.edu)
Last Update:	Feb 12, 2019 03:07 PM America/Central

Abstract Body/Description:

Introduction

Persistent pain following shoulder surgery is a very common complication. The prevalence of chronic pain after primary shoulder replacement has been reported between 9-22% depending on the initial indication for surgery (2,3). Nerve injury has been estimated to occur in 0.6% to 4% of all cases (4). The pain commonly presents in either the proximal two-thirds and posterior shoulder (suprascapular nerve), anterior one-third of the shoulder (axillary nerve), or a combination the two. A significantly high displacement rate with placement of the generator distant to the electrode in conventional stimulators deters its use for peripheral nerves. With the incorporation of wireless technology, peripheral nerve stimulation has now become a more promising treatment for this pain. Wireless capabilities have provided more convenience for the patient, decreased the risk of generator pocket complications, and provided less concern about lead migration.

Case Report

Patient is a 76 year-old male who presented with right shoulder pain that began following a right shoulder arthroplasty 2 years prior. Pain was a consistent 9/10 throbbing and aching sensation located over the posterior and superior right shoulder. It was associated with significant loss of shoulder function, restricted to less than 30 degrees range of motion in each direction. The patient was emotionally distressed from pain and loss of societal functioning. He had tried Acetaminophen, Gabapentin, Duloxetine, Tramadol, and Oxycodone with minimal to no benefit, and could not take NSAIDs due to anticoagulation (warfarin and aspirin) for coronary artery disease/paroxysmal atrial-fibrillation. He had also failed extensive physical therapy & home therapy. Due to failed conservative measures a diagnostic suprascapular nerve injection was performed with 75% benefit in pain reduction. Given limited duration of benefit from the block, the patient was scheduled for a peripheral

	nerve stimulator implant of the suprascapular nerve. Under fluoroscopic and stimulatory guidance, a Stimrouter®electrode was placed near the suprascapular nerve at the suprascapular notch with paresthesia coverage in the painful shoulder region. It was then tunneled in the subcutaneous tissue. At his 2 week follow up, the patient demonstrated 100% pain relief with significant increase in range of motion with the ability to abduct his shoulder. This benefit has continued. **Discussion** Persistent pain after shoulder replacement is a major burden to many patients. It has a very high prevalence and is difficult to treat with conservative management. Peripheral nerve stimulation is a promising treatment for this pain. In the past this was a less viable option due to the high displacement rate. Beside negating the lead migration issue; wireless technology facilitates a relatively quick minimally invasive procedure, avoids future generator replacement surgeries, and improves patient convenience. **Conclusion** Given the high prevalence of chronic pain following shoulder surgery, and a large aging population, it can be assumed that the frequency of these patients presenting to a chronic pain clinic will continue to increase. Peripheral nerve stimulation is now a very promising and effective treatment for these patients. **References** 1.Bioness. Approaches to common peripheral nerves. Retrieved from https://www.bioness.com/Documents/Approaches_to_Common_Peripheral_Nerves_V2.pdf 2.Bjornholdt KT, Brandsborg B, Soballe K, Nikolajsen L. Persistent pain is common 1-2 years after shoulder replacement. Acta Orthop. 2015;86(1):71-77. 3.Van de Sande MA, Brand R, Rozing PM. Indications, complications, and results of shoulder arthroplasty. Scand J Rheumatol. 2006;35(6):426-34. 4.Wiater BP, Moravek J, JR, Wiater JM. The evaluation of the failed shoulder arthroplasty. J Shoulder Elbow Surg. 2014;23(5):745-58.
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Session Title:	Mexiletine for Dercum's Disease: An Uncommon Medication for the Treatment of a Rare Disease
Session Number:	3437
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 12, 2019 04:03 PM America/Central
Status:	Submitted
Submitter:	Dustin Goetz (dustin-goetz@uiowa.edu)
Last Update:	Feb 12, 2019 04:03 PM America/Central

Abstract Body/Description:

Introduction

Dercum's disease is a rare disorder of the subcutaneous tissue with unknown etiology, also known as lipomatosis dolorosa. It is characterized by generalized overweight or obesity and painful adipose tissue with possible palpable lipomas. The pain is located mainly in fatty areas of the trunk, upper arms, and legs and can vary from constant to paroxysmal spontaneous attacks. It is associated with sleep disturbances, cognitive dysfunction, and associated psychiatric disorders. It is 5-30 times more common in women than in men and usually appears between 30- 50 years of age. Given that it is a rare disease, there is sparse literature with extreme variation regarding treatment. Treatments described by case reports include liposuction, surgical removal of lipomas, calcium channel blockers, corticosteroids, methotrexate and infliximab, IV lidocaine, and Mexiletine.

Case Report

Patient is a 52 year-old female with fatty, painful lumps that have been present for 10-12 years. She describes her lumps as a burning sensation with random "jolting/lightning" pains. They are paroxysmal and sporadic in nature. The lumps will increase and decrease in size as well as disappear. Her past medical history was significant for hypothyroidism, hyperlipidemia, and overweight. Prior treatment had included physical therapy, several antidepressants, several anticonvulsants, opioids, and steroids. All of these either had no benefit, or made the pain worse. Her current medications consisted of Gabapentin and Cyclobenzaprine and were providing some benefit for her pain. After obtaining normal liver function tests (LFTs) and a negative cardiac history, the patient was started on Mexiletine for management of her pain syndrome. Mexiletine was slowly titrated up to 600mg per day. At her 6 month follow up, she

	was experiencing about a 70% reduction in pain with drastic reduction in random “jolting/lightning” pain. **Discussion** It is a rare disease with no definitive diagnostic criteria, and several confounding factors, that poses serious challenges in its management. Literature has shown positive results utilizing intravenous (IV) lidocaine and oral Mexiletine. Mexiletine is an oral analogue of IV lidocaine and thus has the potential to provide similar benefit and avoid IV infusions. Secondary to the side effect profile of Mexiletine, LFTs should be monitored prior to starting and throughout treatment. Contraindications to starting this medication include: cardiogenic shock, 2ndor 3rddegree AV block. Other warnings include proarrhythmic effects and blood dyscrasias. **Conclusion** Dercum’s disease is mainly characterized by painful adipose tissue in overweight or obese patients. With proper diagnosis, medication management can be beneficial. Mexiletine, in particular, has proven very beneficial for patients with this disease. **References** 1.Hansson E, Henry S, Hakan B. Review of dercum’s disease and proposal of diagnostic criteria, diagnostic methods, classification and management. Orphanet Journal of Rare Diseases. 2012;7-23 2.Steiner J, Schilz K, Heidenreich F, Weissborn K. Dercum’s disease-a frequently overlooked disease picture. Nerve- narzt. 2002;73:183-187. 3.Dercum’s Disease., [http://www.rarediseases.org/rare-disease-information/rare-diseases/byID/490/viewAbstract
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Session Title:	Enhanced Recovery after Ambulatory Orthopedic Surgery
Session Number:	3444
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Feb 13, 2019 08:17 PM America/Central
Status:	Submitted
Submitter:	Elizabeth Fouts-Palmer, MD (eaf2004@med.cornell.edu)
Last Update:	Feb 13, 2019 08:17 PM America/Central

Abstract Body/Description:	Enhanced recovery after surgery (ERAS®) programs have been widely adopted in efforts to decrease patient length of stay, improve patient comfort, and encourage early ambulation and return of function after a variety of procedures, including major orthopedic procedures such as joint replacement surgery (E. Soffin, 2016). Many ERAS® programs are focused on shortening inpatient admissions, but opportunities also exist to improve patient experiences in the ambulatory surgery setting. We implemented an enhanced recovery pathway for ambulatory patients having orthopedic procedures at our institutions, with a goal of promoting consistent use of preemptive multimodal analgesia and anti-nausea measures. In November of 2017, we implemented an enhanced recovery pathway for patients having ambulatory orthopedic procedures at our community hospital, and in April of 2018 we expanded the scope of that pathway to include procedures at a new ambulatory surgery center. A year later, we have conducted a retrospective review of our electronic medical records to evaluate the effectiveness of this initiative and identify opportunities to further improve our patients' experiences. Here we evaluate the success of our pathway in terms of compliance with our protocol and analyze the effects on PACU length of stay and post-operative IV opioid requirements. We also discuss challenges involved in the practical implementation of a program to ensure a consistently excellent patient experience across several different facilities with a variety of providers. Our experience will be relevant to anyone seeking to implement ERAS® protocols in an ambulatory population, and we hope to spark discussion about the future of these initiatives in the ambulatory setting. **Works Cited**

	E. Soffin, J. Y. (2016). Enhanced recovery after surgery for primary hip and knee arthroplasty: A review of the evidence. *British Journal of Anaesthesia, 117*, iii62-iii72
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Session Title:	Comparison of Metoclopramide and Promethazine for the Treatment of Postoperative Nausea and Vomiting in the Post-Anesthesia Care Unit
Session Number:	3453
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 14, 2019 09:07 AM America/Central
Status:	Submitted
Submitter:	Emily Zoe Barney (emily.barney@duke.edu)
Last Update:	Feb 14, 2019 09:07 AM America/Central

Abstract Body/Description:

Introduction

Treatment of postoperative nausea and vomiting (PONV) in the post-anesthesia care unit (PACU) is ideally achieved with an effective antiemetic that has no sedative side effect, especially in ambulatory patients. While Ondansetron is widely used for PONV prophylaxis due its favorable side effect profile and lack of sedation, repeat dosing of ondansetron for the treatment of established PONV is no more effective than placebo [1]. Promethazine is effective in treating ondansetron failures, though its sedative side effect can delay PACU discharge [2]. Metoclopramide does not have sedating side effects; however, the 10 mg dose has limited efficacy for PONV prophylaxis and higher doses are needed for this purpose but are associated with extra-pyramidal side effects [3]. While for some antiemetics such as ondansetron doses lower than those required for prophylaxis are effective for the treatment of PONV, it is not clear if the 10 mg dose of metoclopramide would be effective for the treatment of established PONV in PACU [4]. We therefore performed this retrospective study to compare the efficacy of metoclopramide versus promethazine for the treatment of PONV in PACU in patients who received prior PONV prophylaxis.

Methods

We searched the perioperative database (starting June 2013 through August 2017) for patients aged >18 years who received general, regional or monitored anesthesia care for a variety of procedures. We included patients who received PONV prophylaxis, required treatment for PONV in PACU, and received metoclopramide or promethazine as the first antiemetic rescue. “Failure” was defined as the need for subsequent doses of any antiemetics during PACU stay. Since the number of patients receiving metoclopramide was small, we constructed our cohort by

matching patients who received metoclopramide to those who received promethazine in a 1:2 ratio based on history of PONV, gender, smoking status, surgery type, and surgery duration. Chi square test was used to compare success rate between the groups. P< 0.05 was accepted as statistically significant.

Results

1049 patients met the inclusion criteria and were included in the analysis. Of those, 82 received metoclopramide (10 mg). From the 967 patients who received promethazine (6.25 mg) as the first agent for the rescue treatment of PONV in PACU, 163 were matched to those receiving metoclopramide. There was a significantly higher failure rate in the metoclopramide group compared to the promethazine group (40.2 vs. 25.2%, P =0.0184, odds ratio [95% CI]= 2.00

[1.14, 3.53]). The results are summarized in the Table.

Conclusion

Promethazine was significantly more effective than metoclopramide for the treatment of established PONV in PACU. Higher doses of metoclopramide might be required for effective treatment of PONV.

1. Kovac, A.L., et al., *Efficacy of repeat intravenous dosing of ondansetron in controlling postoperative nausea and vomiting: a randomized, double-blind, placebo-controlled multicenter trial.* J Clin Anesth, 1999. **11**(6): p. 453-9.
2. Habib, A.S., et al., *A comparison of ondansetron with promethazine for treating postoperative nausea and vomiting in patients who received prophylaxis with ondansetron: a retrospective database analysis.* Anesth Analg, 2007. **104**(3): p. 548-51.
3. Wallenborn, J., et al., *Prevention of postoperative nausea and vomiting by metoclopramide combined with dexamethasone: randomised double blind multicentre trial.* Bmj, 2006. **333**(7563): p. 324.
4. Tramer, M.R., et al., *Efficacy, dose-response, and safety of ondansetron in prevention of postoperative nausea and vomiting:*

	a quantitative systematic review of randomized placebo-controlled trials. Anesthesiology, 1997. **87**(6): p. 1277-89.

Author 1:	Emily Zoe Barney (emily.barney@duke.edu) Duke University Department of Anesthesiology
Author 2:	Matthew Fuller (matthew.fuller@duke.edu) Duke University Health System Biostatistician
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Session Title:	COOK CATHETER ASSISTED EXTUBATION IN PATIENT RECOVERING FROM DRUG INDUCED ANGIOEDEMA
Session Number:	3442
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 13, 2019 03:58 PM America/Central
Status:	Submitted
Submitter:	Eric McDaniel (McDan051@umn.edu)
Last Update:	Feb 13, 2019 03:58 PM America/Central

Abstract Body/Description:

Eric McDaniel, M.D., Ramprasad Sripada, M.D.

University of Minnesota – Minneapolis, MN

Introduction: Drug induced angioedema is most often caused by angiotensin-converting enzyme (ACE) inhibitors which can be life threatening, however many classes of medications such as immunologic's have the potential to potentiate angioedema as well. ACE inhibitors are common medications, and adverse reactions may occur years after starting the treatment. This presents as an abrupt onset of non-pitting, non-pruritic swelling that involves the mucosal layers that involve the face, oropharynx, larynx, extremities, or genitourinary tract. The effects may last between 72 to 96 hours.

Case Description: A 64-year-old male with a past medical history significant for CKD stage 3, h/o CML previously treated with Imatinib, h/o partial right nephrectomy s/p stage 1 RCC and hypertension (on Lisinopril for past 15 years), who recently switched to Dasatinib after outpatient workup with oncology showed concern for loss of molecular response. 24 days later he presented to the Emergency Department for facial and throat swelling concerning for Lisinopril induced angioedema. The patient was nasally intubated in the ED and was transferred to the medical ICU and medically managed. After three days of intubation while attempting to wean from sedation the patient began coughing and gagging on ETT and desaturating, anesthesia was called and successfully visualized the tube at the level of the vocal cords and re-advanced to a proper depth. The anesthesia team then deflated the ETT balloon, a leak was appreciated, and a cook exchange catheter was subsequently passed through the nasal ETT. The nasal ETT was removed while leaving the

	cook catheter in place in the event of failed extubation. The patient was monitored for a few hours breathing spontaneously with 100% oxygenation. The cook catheter was then removed successfully and the patient was later discharged home. **References**: Marques A, Retroz-Marques C, Mota S, Cabral R, Campos M. Postanesthetic Severe Oral Angioedema in Patient's Taking Angiotensin-Converting Enzyme Inhibitor. *Case Rep Anesthesiol*. 2014;2014:693191
Author 1:	Eric McDaniel (McDan051@umn.edu) University of Minnesota

Session Title:	centra anticholinergic syndrome in ASC
Session Number:	3464
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 14, 2019 04:22 PM America/Central
Status:	Submitted
Submitter:	fatima ahmad (fatimaahmad@yahoo.com)
Last Update:	Feb 14, 2019 04:22 PM America/Central

Abstract Body/Description:

Title: CENTRAL ANTI-CHOLINERGIC SYNDROME IN ASC

Author: Ahmad, F., M.D. (Professor, Department of Anesthesiology, Loyola University

Medical Center, Maywood, IL)

Safa Arfeeh (Medical student, Rush Medical College, Chicago, IL)

Introduction:

According to a recent survey, approximately 3-6 million cataract surgeries are performed in a year in the U.S. and are usually low risk procedures.

We present a case report of a patient who developed central anticholinertgic syndrome (CAS) after administration of cycloplegic eye drops.

Case Report:

A 61 year-old patient presented for right cataract surgery with history of hypertension, asthma, hypercholesterolemia, depression, unspecified transient cerebral ischemia, sickle cell trait, and GERD. Her blood pressure was 136/77 on arrival. In preparation for the procedure, the following eye drops were administered per opthalmology protocol: cyclopentolate, ketorolac, moxifloxacin, phenylephrine and tetracine.

Twenty minutes after administration of eye drops, patient developed acute mental status changes including aphasia, torticollis, and shaking of right lower extremity. She tried to communicate, was agitated and never lost consciousness. EKG was normal and BP increased to 185/103. She was immediately transported to E.D. There was no facial droop or weakness. BP was 154/73. CT head and CT angiogram were normal. Patient's symptoms were completely resolved within two hours. MRI of brain was completely normal. Differential diagnosis included drug related effect.

Discussion:

CAS occurs in response to a decrease in the inhibitory acetylcholine activity in the brain. This happens when central cholinergic sites are occupied by specific drugs and also as a result of an insufficient release of acetylcholine. CAS after emergence from anesthesia is essentially a diagnosis of exclusion and can be confirmed after resolution of symptoms with physostigmine (0.03-0.04mg/kg). When untreated, symptoms may take 2-8 hours to resolve. There are case reports of this syndrome occurring after administration of cycloplegic eye drops. Synthetic belladonna alcoloids such as cyclopentolate are used to obtain mydriasis and cycloplegia in eye surgery. When cycloplegic eye drops are applied at over the recommended doses or anti-cholinergics are administered systemically, CNS effects can be seen. It has antimuscarinic effects and a tertiary amine structure. Cyclopentolate eye drops may enter systemic circulation via absorbtion from the eye mucosa and nasolacrimal duct. Acute psychosis is one of the CAS signs and can be seen after topical anticholinergic application. Symptoms of the CAS might appear 20–30 minutes after eye drop instillation, and continue for 2-8 hours, occasionally recovering uneventfully.

Our case report is also one such case in an adult patient.

The varied presentation of the syndrome ranging from somnolence, confusion, amnesia, delayed recovery, stupor, agitation, hallucinations, dysarthria, speech disorders, ataxia, torticollis makes it difficult to diagnose accurately so other diagnoses have to be ruled out. Our patient had symptoms of agitation, confusion, aphasia, and turning head to one side i-e torticollis.

Physostigmine is considered to be a safe drug with no serious side effects and it can be repeated at 10 -30 minute intervals if needed. By administering physostigmine to a patient without CAS no harm is done whereas, if it is CAS it would be resolved and save the cost of unanticipated E.D. admission and extensive diagnostic workup. We recommend that all ASC's where eye surgery is performed should have physostigmine easily available.

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6.	
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Session Title:	SEVOFLURANE VERSUS DESFLURANE FOR DAY CARE ANAESTHESIA : A COMPARISON OF RECOVERY PROFILE AND AIRWAY RESPONSES
Session Number:	3458
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 14, 2019 01:04 PM America/Central
Status:	Submitted
Submitter:	Gaurav Kuthiala (chetnagaurav@yahoo.com)
Last Update:	Feb 14, 2019 01:04 PM America/Central

Abstract Body/Description:

Abstract

Inhaled anaesthetics allow rapid emergence from anaesthesia because of easy titrability with inherent neuromuscular blocking effects that make them more suitable for day care anaesthesia. Sevoflurane has become the drug of choice even in day care surgery when a rapid emergence and recovery is sought. The low blood gas solubility coefficient of Desflurane also supports fast track general anaesthesia, even in obese patients.However, Desflurane has airway irritant properties and there is controversy as to whether these are worse than or similar to those of other volatile anaesthetics (Sevoflurane, Isoflurane) or to a Propofol-based anaesthesia.

In comparison to an endotracheal tube (ETT), a laryngeal mask airway (LMA) reduces intraoperative and postoperative airway related complications in patients undergoing surgery under general anaesthesia. Whether Desflurane's property of rapid onset/offset can be advantageously utilized during day care surgery with a laryngeal mask airway and spontaneous respiration is still not well documented.

Therefore, we designed a prospective, randomized study to compare the recovery profile (i.e. early and intermediate recovery characteristics) and airway responses while using Desflurane and Sevoflurane for maintenance of anaesthesia in patients undergoing day care surgeries with spontaneous respiration using I-gel, a second generation LMA.

Methods : The study was conducted on 100 ASA grade 1 & 2 patients (18 years – 75 years) undergoing elective short day care surgeries, divided randomly into two groups of 50 each.

	Group D: Patients receiving Desflurane for maintenance of anaesthesia Group S: Patients receiving Sevoflurane for maintenance of anaesthesia After induction of anaesthesia with propofol appropriate size i-gel was inserted and anaesthesia was maintained with either Desflurane or Sevoflurane, according to the group allocated, delivered in a mixture of 33% O_2 in N_2O, at a MAC of 0.7 – 1.0 . Supraglottic airway device was removed after the surgery while the patients were still in deeper anaesthetic plane . All the episodes of adverse respiratory events (i.e. coughing, laryngospasm and breath holding) were recorded during intra operative period, during removal of i-gel and during the immediate post operative period . Assessment of recovery times for determining time to eye opening, first appropriate response to command (protrusion of tongue) and orientation to time, place and person were assessed by a blinded anaesthesiologist at 1 min intervals after discontinuing the volatile anaesthetics. In recovery room, recovery characteristics were recorded every 15 minutes with the help of Modified Aldrete Scoring system. The times to sitting, standing, ambulating without assistance and tolerating oral fluids were assessed at 15 minutes intervals in the recovery room by a blinded anaesthesiologist. A blinded interviewer contacted the patients by telephone at home 24 hours after discharge and enquired about ability of the patient to resume their normal activities of daily living (e.g. household activities, ability to take short trips outside home) and their level of satisfaction. Statistical analysis of data was done by SPSS (version 17) statistics package software. Data were expressed as mean ± standard deviation (SD) or percentage. Statistical analysis of data among the groups was done by Student's *t* test for parametric data, and for categorical value, Chi square test was applied. For non-parametric data, Mann–Whitney U test was used. *P* value <0.05 was considered as statistically significant. Results : Early recovery characteristics recorded in the form of time to eye opening, time to first appropriate response (tongue protrusion) and time to orientation to time, place and person after discontinuation of inhaled anaesthetic agent were significantly faster(p value< 0.05) in Desflurane group than in Sevoflurane group (Tables 1,2,3). There was no significant difference between the two groups with respect to

	the times to sitting, standing, ambulating unassisted or first oral intake (Tables 4.5.6.7) In addition, the length of recovery room stay did not differ between the two groups (Table 8). There was no difference between the two groups in the incidence and severity of adverse airway responses (coughing, laryngospasm and breath holding) during the intra operative and immediate post operative period. All the patients resumed their daily normal activity of living (e.g. household activities, ability to take short trips outside home) 24 hours after discharge (Table 9) and there was no significant difference in the level of satisfaction of the patients. Conclusion : Desflurane is a viable alternative to Sevoflurane for day care surgery in spontaneously breathing patients via Igel with respect to faster early recovery characteristics and similar airway response as Sevoflurane .

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Session Title:	Pharmacological intervention for pain in adults undergoing ambulatory surgery: a systematic review and network meta-analysis
Session Number:	3425
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 09, 2019 07:14 AM America/Central
Status:	Submitted
Submitter:	Geunjoo Choi (pistis23@naver.com)
Last Update:	Feb 09, 2019 07:14 AM America/Central

Abstract Body/Description:

Background:

Adequate postoperative pain control is an essential part of ambulatory surgery. Insufficient analgesia after ambulatory surgery can link to delayed discharge and undesirable condition after discharge. Although many medications for the pain management after ambulatory surgery are available, the relative efficacy of several analgesics remains unknown. Therefore, we performed a network meta-analysis to quantify and rank order the efficacy and safety of analgesic medications for various clinically important outcomes.

Methods

We searched multiple databases, each from inception until December 2018. We used random-effects network meta-analysis. Randomized controlled trials of any analgesic alone or any combination of analgesics compared with placebo or another analgesic, which were administered before the end of surgery, in adults undergoing ambulatory surgery under general anesthesia or sedation were included. Outcome considered included pain scores, recovery time, quality of recovery, and complications. We defined the optimal modality as the one that best balanced pain score in the initial 24 postoperative hours. We extracted available outcomes from three steps after surgery, phase I and phase II recovery and recovery at home.

Results

132 trials (8,942 patients) assessing analgesic alone or in combination were included. For pain scores at phaseI and II recovery period, comparisons with placebo were over-represented. Few trials assessed combinations of two analgesics and none the combination of three or

	more. Based on the surface under the cumulative ranking curve, the best three for pain score at phase I recovery were indomethacin, ketorolac, and fentanyl/ketorolac. For pain at phase II recovery, the best three were ibuprofen, ketorolac, and paracetamol/codeine. For pain at recovery at home, the best three were ketorolac, bethametasone, and oxycodone. Considering relative ranking at three periods, ketorolac seemed relatively best. **Conclusion:** Ketorolac showed superior rank to most analgesic used alone over recovery period including the time after discharge in reducing pain after ambulatory surgery. More comparative data are required for more appropriate evidence of the efficacy of analgesics used before the end of ambulatory surgery.
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Session Title:	Perioperative Psychogenic Non-epileptic Seizure at an Ambulatory Surgery Center: A Case Report
Session Number:	3456
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 14, 2019 12:27 PM America/Central
Status:	Submitted
Submitter:	Gregory M Dodson (dodson-gregory@cooperhealth.edu)
Last Update:	Feb 14, 2019 12:27 PM America/Central

Abstract Body/Description:	Pseudoseizure has been given several names in psychiatry literature, such as psychogenic non-epileptic seizure (PNES), stress-related seizure, or functional seizure; however the presentation to the anesthesiologist, untrained in psychiatric disorders, is anything but “pseudo”. We present a perioperative case of PNES at an ASC for gynecological procedure that resulted in intubation and hospital transfer. A 52 year old female with past medical history of irregular uterine bleeding, mild OSA, asthma, and anxiety presents for dilatation and curettage and hysteroscopy. During preoperative PAT RN phone call, the patient reported a history of two perioperative complications. The patient possessed no records of these events, nor able to relate additional information beyond that she required PACU reintubation following ACDF, and more worrisome, CPR was administered following outpatient shoulder surgery. Interestingly, she had two subsequent uneventful anesthetics at our center since these events for similar gynecologic procedures with a now-retired gynecologist. During preoperative evaluation by the anesthesiologist she appeared appropriately anxious with negative review of symptoms and essentially normal exam aside from questionable airway due to mildly limited neck mobility and mallampati III view. Intraoperatively, the patient received anxiolysis with midazolam 2mg. Propofol infusion was started at 100mcg/kg/min, and subsequently reduced after mild obstruction. Upon completion, the gynecologist noted excessive bleeding. Upon completion, propofol was ceased to begin emergence, however her respiratory effort became labored and audible. It was no longer obstructive in nature as air movement was adequate, however the patient remained unarousable despite profound body movements lifting herself from the OR table. This progressed to lengthy breathe-holding apneic spells punctuated by desaturation which prompted brief bag-mask ventilation. This pattern repeated for several cycles without change in patient arousability despite increasing levels of

	stimulation from voice to sternal rub. Thirty minutes after cessation of propofol, the surgical team and circulating nurse reported hysteroscopy fluid deficit had approached 3000mL's. A normal serum electrolyte panel was drawn & eliminated hyponatremia as the cause of irregular emergence. Upon lab draw, dramatic tonic-clonic appearing extremity movements abruptly started with brief tachycardia to >150BPM. Midazolam was given for presumed seizure causing immediate cessation of seizure-like activity. A second episode minutes later heralded a decision to intubate and transport to nearest ED for evaluation. Notably, upon pushing rocuronium, the patient let out an audible moan presumably from painful injection. The intubation and transportation proceeded uneventfully. The patient was seen by neurology in ED where she had several additional episodes. A negative video EEG was performed in overnight ICU setting and discharged POD1 with diagnosis of pseudoseizure. Although rare, PNES in an ASC setting places stressors on the patient, family and OR staff and schedule. Preoperative recognition of at risk patients may help not only determine patients unfit for ASC care to avoid patient morbidity & unnecessary hospital transfer, but may allow proper prevention methods utilizing multi-modal anxiolysis and specialist intervention preoperatively. Education of anesthesiologists will hopefully result in reduction of typical anti-epileptic interventions and related morbidity.
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Session Title:	Management of Intraoperative Acute Air Embolism During ERCP
Session Number:	3452
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 14, 2019 07:50 AM America/Central
Status:	Submitted
Submitter:	Iryna Chugaieva (iryna@umn.edu)
Last Update:	Feb 14, 2019 07:50 AM America/Central

Abstract Body/Description:

Management of Intraoperative Acute Air Embolism During ERCP –

Not An Uncommon Problem And Requiring Preparedness During Ambulatory Surgical Care

Iryna Chugaieva, MD. , Weinkauf, Julia Lyn, MD

University of Minnesota Medical Center - Minneapolis, Minnesota.

Venous Air Embolism (VAE) is a well-known and potentially fatal complication of Endoscopic Retrograde

Cholangiopancreatography (ERCP) with an incidence of approximately 2.4% (1). The insufflated air or

CO_2 used to improve visualization during ERCP dissects through necrotic or inflamed tissues that encase

the portal vein (2,4). Patients with biliary obstruction and metal stents are not exempt and a few

documented cases of VAE have been reported (*4*). The big diameter of metal stents and their potential

for vascular injury facilitates gas entry into the venous system (4). Approximately 50% of patients

experience hemodynamic instability during VAE and the choice of insufflation gas appears to play a

significant role in the severity of the instability. Patients insufflated with CO_2 are less likely to

demonstrate hemodynamic instability because it is absorbed faster than nitrogen during VAE (1,2).

Although this case was done in an inpatient setting, this report describes a serious consequence of VAE

during ERCP and since this procedure is commonly done during ambulatory surgical care, early

recognition and a plan of care are emphasized in this update.

Report of a Case : We describe a 62 year old male with PMH significant for duodenal ampullary

adenocarcinoma s/p Whipple and chemoradiation, complicated with biliary strictures (s/p stenting) and

radiation enteritis. He presented for ERCP for removal of biliary metal stents and clearance of the biliary

tree. He was in septic shock secondary to pneumonia, requiring vasopressors, intubation, and

mechanical ventilation. On arrival to the O.R. he was hemodynamically stable with SpO2 in the high 90s

on 100% Oxygen. Shortly after removal of first stent the patient became hypertensive and severely

hypoxic with pink frothy secretions from the ETT. Several hundred ml of fluid were suctioned from the

ETT with a soft tipped catheter. Lungs were examined with fiberoptic bronchoscopy and no mucus

plugging was noticed. EKG converted from normal sinus rhythm transiently to atrial fibrillation followed

by ectopy with rates into the 170s. Vasopressor infusions were stopped and the procedure aborted. TEE

was performed intraoperatively and upon insertion of probe, the right ventricle (RV) was dilated

	suggesting an acute strain. The RV size gradually improved. Patient was given furosemide, was started on milrinone and briefly on Nitroglycerin infusion. After stabilization, second stent was removed without complications. He was then returned to the SICU for recovery. Discussion. We feel that this patient developed acute VAE during ERCP. The hemodynamic and metabolic instability with the dilated RV with gradual improvement suggests that this was the case. In a free-standing ambulatory surgery center the anesthesia care team must be prepared to handle this not uncommon occurrence during ERCP. There must be a plan and protocol in place to provide the required urgent care and transfer the patient to a higher care facility when necessary. References: 1. Afreen LK, et al. Incidence of venous air embolism during endoscopic retrograde cholangiopancreatography. Anesth Analg. 2018; 127:420–423. 2. Prielipp RC . Anesth Analg. 2018; 127(2): p 333–335 3. Rabe C, et.al (2006) Endoscopy; 38(6): 648-650 4. Jow AZ, et al. Gastrointestinal Endoscopy, 2012-01-01, Volume 75, Issue 1, Pages 220-221
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Session Title:	Severe Emergence Delirium in a Schizophrenic Patient Undergoing Outpatient Wrist ORIF with Regional Anesthesia and Sedation
Session Number:	3408
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Jan 19, 2019 06:10 PM America/Central
Status:	Submitted
Submitter:	Jacquelyn K Francis, MD (jacqufra@montefiore.org)
Last Update:	Jan 19, 2019 06:10 PM America/Central

Abstract Body/Description:

Introduction

Emergence delirium (ED) is a transient state of marked irritation and disassociation after the discontinuation of anesthesia unresponsive to consoling. Risk factors include rapid emergence from volatile anesthetics, untreated post-operative pain, ENT surgeries, extremes of age, and pre-operative anxiety. Incidence varies immensely, between 4% and 31% [1]. Patients on antipsychotics have a decreased incidence of ED, however Kudoh et al revealed an increased incidence in the schizophrenic population when chronic treatment is discontinued [2]. As outpatient and ambulatory centers may not have personnel equipped to handle patients who display emergence delirium, it is imperative that these patients be screened and managed carefully by anesthesiologists. We report an unusual case of extreme emergence delirium in a patient with known schizophrenia and bipolar disorder after receiving regional anesthesia and sedation for ORIF wrist repair at an ambulatory surgery center.

Case

A 40-year-old male with past medical history of schizophrenia, bipolar disorder, and asthma presented to the outpatient surgery center for elective wrist ORIF. The patient had stopped taking lithium for his psychiatric disorders 6 months prior due to side effects. Physical examination and lab work were otherwise non-contributory.

During preoperative check-in, the patient used inappropriate language with the nurses and was aggressively agitated. He calmed down and apologized with redirection by the anesthesia team. He agreed to proceed with the surgery under regional anesthesia and IV sedation.

	He received incremental injections for sedation (total: 6mg midazolam and 100 mcg Fentanyl) prior to supraclavicular block under ultrasound guidance using 20 ml of 0.5% preservative-free Ropivacaine. Propofol at 100 mcgs/kg/min was used for sedation. OR course was uneventful. The surgery was completed in under one hour. Within five minutes of arriving to PACU, patient awoke suddenly and jumped off the stretcher, demanding his clothing, screaming and threatening staff, and demanding to go home. He ripped out his IV and refused any monitors. He began swinging his fist at anyone who came near him and sustained multiple mechanical falls while running and looking for the exit. He was unable to be restrained by multiple strong men and broke out of physical restraints that were applied. A family member was unable to calm him. After calling security and 911, he was escorted out of the PACU to an elevator and exited the building with security, staff, and 911 responders. The team convinced the patient to go to a local hospital. He went willingly. The following day, the patient stated he had blacked out and did not remember any of the events that had occurred. He was extremely apologetic. Discussion This case report highlights many critical issues pertaining to ambulatory surgery centers including careful screening of psychiatric patients for ambulatory surgery, proper security, and de-escalation training for staff. Although ED may be unpredictable, practitioners should be prepared to manage such challenging situations with communication and teamwork. All staff should be aware of the safety protocols if outside help is needed.

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Session Title:	Intravenous Acetaminophen is associated with reduction of opioid requirements following Laparoscopic Surgeries- A Systemic Review and Meta Analysis
Session Number:	3473
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 21, 2019 04:11 AM America/Central
Status:	Submitted
Submitter:	Jagan Devarajan (jagan.devarajan@gmail.com)
Last Update:	Feb 21, 2019 04:11 AM America/Central

Abstract Body/Description:

Laparoscopic surgeries are safe and effective procedures with minimal trauma to the tissues[1]. They often result in smaller scar and improved cosmetic appearance[2]. They are associated with improved surgical outcomes and cause less post operative discomfort, which in turn facilitate early discharge[3]. Hence it reduces overall cost of hospitalization. However they do cause moderate to severe discomfort in the early post operative period. Post operative pain management after laparoscopic out- patient surgeries could be challenging as the analgesic effect of opioids have to be balanced against the risk of post operative nausea and vomiting. Both pain and PONV are associated with significant delay in discharge or result in increased risk of hospital admission following laparoscopic out-patient surgeries. Opioid based post operative management is associated with nausea and vomiting and drowsiness and respiratory depression. Multimodal pain management is being increasingly used to provide analgesia in order to minimize the side effects from opioids. Acetaminophen is one of the most commonly used analgesic[4]. It is started to being dispensed in intravenous formulation in 2010 and is approved by FDA for treatment of mild-to-moderate pain as sole analgesic and moderate-to-severe pain along with adjunctive opioid analgesics[5]. Intravenous acetaminophen has been reported to reduce the pain scores and improve the patient satisfaction. By facilitating early

discharge, it tends to reduce the cost of hospitalization. However the effect depends of the nature of surgeries. The effectiveness of acetaminophen has to be weighed against the increased cost associated with it. Though it reduces pain scores and opioid consumption following bariatric surgeries, it is no more effective in reducing pain scores following laparotomy. Laparoscopic surgery causes moderate to severe pain in the initial post operative period where intravenous acetaminophen may be an ideal adjunct to provide analgesia and facilitate early discharge. Mixed results have been reported in the literature regarding the effectiveness of intravenous acetaminophen for laparoscopic surgeries. Hence we decided to conduct systemic review and meta analysis of the effect of acetaminophen on the laparoscopic surgeries. This is performed in accordance with Preferred Reporting items for Systematic Reviews and Meta-analyses (PRISMA).

Methods:

We conducted a literature search with the keywords used: “acetaminophen” or “laparoscopic surgery” or “multimodal analgesia” or “opioid reduction” or “analgesia for laparoscopy”. We searched in the Pubmed, Medline, EMBASE, Cochrane Library, and Web of Science up to December 2018. We excluded trials that were not in English. We also excluded the trials where intravenous acetaminophen is compared with other forms of analgesia such as epidural or other medications such as NSAID or ketamine or dexmedetomidine. We included studies which involved comparing intravenous acetaminophen against placebo saline for any laparoscopic surgery. Both prospective and retrospective trials were included. We also excluded studies that were mainly focused on TAP block or subcostal block. The following data were extracted. 1) Identification and characteristics of the studies including the author and year of publication, 2) characteristics of surgery, 3) characteristics of the study population, 4) the study methodology including the choice of postoperative analgesia, 5) post operative pain scores and 6) postoperative opioid requirements converted into morphine equivalents.

Statistical Analysis:

Meta-analysis was conducted on two similarly reported outcomes. A funnel plot is used to evaluate a publication bias..

Results:

We included 16 studies for comparing early pain scores. Total sample size was 1750. In all the studies, Intravenous acetaminophen is utilized preoperatively and continued every 6 hourly for 24 hours. Hence we compared the results of mean pain scores at 6 hours and 24 hours following surgery. We also compared the cumulative opioid requirements upto 24 hours following surgery in terms of morphine equivalents. Though intravenous acetaminophen is found to reduce early pain scores at 6 hours (Fig-1), it is no more effective than placebo in reducing late pain scores at 24 hours following surgery (Fig-2). It also is associated with reduction in post operative opioid requirements as calculated by standard mean difference of 5.97 mg morphine equivalents. (Fig-3).

Conclusion:

The systemic review and meta analysis shows that intravenous acetaminophen is associated with reduction in pain scores in the early post operative period.. Though some studies have reported early discharge, it is not uniformly reported across all the studies. Since the results are not available in all the studies, we could not confirm whether it is associated with early discharge , which has the potential to reduce overall cost of hospitalization. However the findings suggest that it may be effective in laparoscopic surgery which are associated with intense early post operative pain compared to that of later period. Moreover it is associated with

	reduction of opioid requirements in the first 24 hours following surgery. The study findings can be used as a rational to include intravenous acetaminophen as part of "Early Recovery After Surgery" protocols[6]
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Session Title:	Use of a Simple Modified Infant Face Mask to Provide Immediate Pressure-Controlled Nasal Ventilation and Prevent Oxygen Desaturation in a Super-Obese Patient with OSA during Ambulatory EGD
Session Number:	3413
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Jan 27, 2019 04:05 PM America/Central
Status:	Submitted
Submitter:	James Tse (james.tse@rutgers.edu)
Last Update:	Jan 27, 2019 04:05 PM America/Central

Abstract Body/Description:

Background: Patients routinely receive IV sedation and O_2 via a nasal cannula (NC) during esophagogastroduodenoscopy (EGD). The NC O_2 reservoir is lost when the mouth is kept open by a bite block. Over-sedation or airway obstruction may cause severe desaturation, especially in obese patients with obstructive sleep apnea (OSA). They may require nocturnal continuous positive airway pressure (CPAP) or bi-level PAP (BiPAP). While under sedation, they may require frequent chin-lift, jaw-thrust or a nasal trumpet to maintain a patent airway. A simple nasal CPAP mask assembly using a pediatric face mask has been shown to maintain spontaneous respiration and improve oxygenation in deeply sedated OSA patients (1-4).

We used a modified pediatric face mask to provide pressure-controlled nasal ventilation (PCV) in a super-obese patient with OSA during EGD.

Case Description: A 46-year-old male, 5'11", 400 lb, BMI 55.8 kg/m^2, with h/o HTN and severe OSA requiring nocturnal CPAP presented for outpatient screening EGD prior to bariatric surgery.

The patient was fitted with an infant mask (size #2) modified by squeezing the mask for 1-2 minutes. He gave his consent for photography and case report.

The modified infant mask was secured over his nose with elastic head straps to obtain a tight seal. It was connected via an adult breathing circuit to the anesthesia machine. The patient breathed comfortably with the APL valve adjusted to deliver CPAP (6-8 cm H_2O) and 4 L/min fresh O_2 flow.

After nasal CPAP pre-oxygenation, his SpO_2 increased from 97% to 100%. Deep sedation was then titrated with 100 mg of lidocaine and propofol boluses (50 mg x 3) and propofol infusion (150 mcg/kg/min). He maintained spontaneous ventilation and 100% SpO_2. However, he reacted

	to somewhat difficult insertion of the endoscopic probe. Following an additional 50 mg of propofol was given, his airway was obstructed and his SpO_2 decreased to 95%. He was immediately supported with nasal PCV (PIP 40 cm H_2O, PEEP 12 cm H_2O and RR 12/min) and he maintained 97% SpO_2. The procedure was accomplished without interruption. After removing the bite block, his nasal PCV settings were reduced (PIP 20 H_2O, PEEP 5 H_2O, RR 12/min) for a few minutes. He was then supported with CPAP (6-8 cm H_2O) until fully awake and maintained his 97-99% SpO_2 with NC O_2 (4 L/min) and a simple face tent (1). He was elated that the procedure was over so quickly and without complication. He was discharged home without delay. **Discussion:** This simple modified infant face mask provided nasal CPAP and PCV (BiPAP) and maintained oxygenation in a super-obese patient with OSA during EGD. It takes 1-2 minutes to modify a tear-drop shaped infant face mask to a rounded triangular nasal mask that fits most adult noses. It prevents severe desaturation and procedure interruption in obese patients with OSA and may improve patient safety and increase efficiency at a low cost. **References:** 1. www.tsemask.com; 2. SAMBA 28th AM, 2013; 3. NYSSA 67th PGA: MCC7189, 2013; 4. IARS AM: MCC668, 2014
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Session Title:	Use of a Modified Pediatric Face Mask and a Mapleson C Circuit to Maintain Spontaneous Nasal Ventilation and Oxygenation in Obese Patients during Ambulatory EGD and Colonoscopy
Session Number:	3426
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 10, 2019 11:27 AM America/Central
Status:	Submitted
Submitter:	James Tse (james.tse@rutgers.edu)
Last Update:	Feb 10, 2019 11:27 AM America/Central

Abstract Body/Description:

Background: Patients routinely receive IV sedation and O_2 via nasal cannula (NC) or a simple face tent[1-2] during ambulatory GI endoscopy. Over-sedation and/or airway obstruction may cause severe O_2 desaturation, especially in obese patients with OSA. They may require frequent chin-lift, jaw-thrust or nasal airways to maintain patent airway.

A simple nasal mask circuit assembly has been shown to provide CPAP to maintain spontaneous nasal breathing and improve oxygenation in sedated obese patients using existing anesthesia equipment and machine.[2-5] However, many endoscopy centers do not always have an anesthesia machine. A pediatric face mask connected to a self-inflating bag has been used to improve oxygenation during TEE or emergency intubation in remote anesthesia locations without anesthesia machine.[6-7]

We used a modified pediatric face mask and a Mapleson C circuit to maintain spontaneous ventilation and oxygenation in two patients during GI endoscopy.

Case Description: Case 1: An obese 73 year-old male, 5'10", 264 lb, BMI 37.8 kg/m^2, with NIDDM, HTN, CAD s/p stent x 1, prostate and bladder cancer, OSA requiring nocturnal CPAP and history of colon polyp presented for ambulatory colonoscopy. He had a Mallampati III airway and history of dysphagia.

A modified infant mask assembly with a flexible connector and a Mapleson C circuit was secured over his nose with elastic head-straps. The circuit was connected to the O_2 supply meter. NC was placed in his nostrils and connected to O_2/CO_2 monitoring system.

The patient breathed comfortably with a closed relief valve and 8 L/min fresh O_2 flow. After pre-oxygenation, his SpO_2 was improved from 98% to 100%. Propofol was titrated to provide deep sedation during

	colonoscopy. He maintained spontaneous ventilation as indicated by movement of an inverted reservoir bag and capnography, He maintained 100% SpO_2 throughout the procedure and was discharged home without complication. **Case 2**: A 51 year-old female, 5'7", 190 lb, BMI 29.8 kg/m^2, a former smoker with hypothyroidism, and GERD presented for ambulatory EGD. A modified infant mask assembly with a flexible connector and a Mapleson C circuit was secured over her nose with elastic head-straps. The circuit was connected as described in case 1. NC was placed by the bite block for O_2/CO_2 sampling. She breathed comfortably with a closed valve and 10 L O_2/min. After pre-oxygenation, her SpO_2 was improved from 97% to 99-100%. Propofol was titrated to provide deep sedation during EGD. She maintained spontaneous ventilation as indicated by movement of an inverted reservoir bag and capnography, She maintained 99-100% SpO_2 throughout the procedure and was discharged home with problem. **Discussion:** Using this simple modified infant face mask, a flexible connector, a Mapleson C circuit and the O_2 supply meter to provide CPAP to maintain spontaneous nasal ventilation and oxygenation in patients during EGD and colonoscopy. It takes 2-3 minutes to assemble using existing equipment and can be used in locations without an anesthesia machine. It can also be used to provide immediate assisted nasal ventilation without interrupting the procedure. It may improve patient safety at a low cost. **References:** 1. Anesthesiology 102: 484, 2005; 2. www.TseMask.com; 3. SAMBA 28th AM, 2013; 4. NYSSA 67th PGA: MCC7189, 2013; 5. IARS AM: MCC668, 2014; 6. SASM AM: MCC, 2013; 7. ASA AM: MC1215, 2015
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Session Title:	Use of a Modified Pediatric Face Mask to Provide Nasal Pressure-Controlled Ventilation (BiPAP) and Oxygenation in a Super-Obese Patient with Severe OSA during Ambulatory Colonoscopy
Session Number:	3418
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Jan 29, 2019 02:30 PM America/Central
Status:	Submitted
Submitter:	Janak Bhatt (janak.bhatt@rutgers.edu)
Last Update:	Jan 29, 2019 02:30 PM America/Central

Abstract Body/Description:	**Background:** Patients undergoing colonoscopy routinely receive IV sedation and O_2 via a nasal cannula (NC). Over-sedation and/or airway obstruction may cause desaturation, especially in obese patients with obstructive sleep apnea (OSA). In severe cases, the procedure has to be interrupted in order to resuscitate the patient. A plastic sheet has been used to convert NC to an effective face tent which delivers >0.6 FiO_2 with 4L NC O_2/min.[1] However, obese OSA patients may require chin-lift, jaw-thrust or a nasal trumpet to maintain a patent airway. A simple nasal mask assembly using a pediatric face mask has been shown to provide CPAP to maintain spontaneous ventilation and improve oxygenation in deeply sedated OSA patients.

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Session Title:	Anaphylactic shock caused by iopromide during transcatheter aortic valve replacement: a case report
Session Number:	3429
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 11, 2019 05:55 AM America/Central
Status:	Submitted
Submitter:	Jaewon Baik (neptuneseye@gmail.com)
Last Update:	Feb 11, 2019 05:55 AM America/Central

Abstract Body/Description:	Anaphylaxis is a severe form of hypersensitivity reaction that can be fatal. The common clinical manifestation of immediate hypersensitivity includes anaphylaxis, urticaria, angioedema, dyspnea, and hypotension. Most anaphylaxis is recovered with epinephrine, but if accompanied by cardiovascular collapse or compromised airway, it may lead to death despite aggressive resuscitation. The use of radiocontrast media is increasing due to the rapid growing in imaging studies, and more than 70 million radiologic examinations with contrast are conducted worldwide every year. The radiocontrast media is also increasingly used in the field of anesthesiology. Interventional cardiology and interventional radiology procedures are often performed with anesthesia care. Here, we present the first case of anaphylactic shock caused by non-ionic radiocontrast media, iopromide, administered intra-aortic during transcatheter aortic valve replacement with monitored anesthesia care. We induced monitored anesthesia care with bolus intravenous injection of midazolam and dexmedetomidine loading, followed by the continuous infusion of dexmedetomidine and target-control infusion of remifentanil using an infusion pump. The anesthetic depth was monitored with bispectral index monitor. After femoral artery catheterization, non-ionic radiocontrast, iopromide, was administered via a catheter tip located in the sinus of valsalva. Intra-aortic injection of radiocontrast media resulted in acute and catastrophic anaphylaxis including whole body skin rash and cardiovascular collapse. Immediate transthoracic echocardiography, angiography review and institutional intraoperative physiological data recording system review were able to diagnose the left ventricle free wall rupture due to the catheter followed by cardiovascular collapse. To manage hypotension and to prevent non-immediate hypersensitivity reaction, epinephrine, norepinephrine, dexamethasone and chlorpheniramine was administered, followed by rapid infusion of crystalloid. There was no further leakage in the angiography, so the patient was monitored in the intensive care unit. However, after few hours, the patient underwent emergency operation due to the aggravated

	cardiac tamponade. As a result of exploration, 10mm sized perforation was observed on lateral free wall of left ventricle and it was repaired with multiple pledgetted sutures under cardiopulmonary bypass assist. This case suggests the importance of the cardiologists and anesthesiologists to suspect and consider anaphylaxis after administration of potential antigen during perioperative period. When anaphylaxis is suspected, radiocontrast media should be considered along with other potential antigens and their types should be identified. It is also necessary to inform the patient that premedication have to be given when undergoing further radiologic examination, but cannot completely prevent anaphylaxis. Anaphylaxis, a life-threatening hypersensitivity reaction, can cause acute cardiovascular collapse and compromised airway particularly when injected intra-aortically, so an attending transcatheter aortic valve replacement team should always monitor the patients precisely and should be prepared for adequate airway management and hemodynamic stability.
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Session Title:	Spine Surgery in the Ambulatory Care Setting: What Nerve Block Can You Do?
Session Number:	3433
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Feb 11, 2019 01:48 PM America/Central
Status:	Submitted
Submitter:	Jeff Xu (jeff.xu@wmchealth.org)
Last Update:	Feb 11, 2019 02:22 PM America/Central

Abstract Body/Description:

Spine Surgery in the Ambulatory Care Setting: What Nerve Block Can You Do?

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Problem-Based Learning Discussions (PBLD) for SAMBA annual meeting, May 2019

Disclosures: This presenter has no financial relationships with commercial interests.

Key Words: Spine surgery, ambulatory surgery, pain management, perioperative pain management, regional anesthesia, peripheral nerve block, opioid free, multimodal analgesia

Learning Objectives

After participating in this activity, the learner will be able to:

1. Identify appropriate candidates for spine surgery at an ambulatory care center
2. Understand the options for analgesia after spine surgery in the ambulatory setting
3. Formulate an anesthetic plan for fast recovery after spine surgery

4. Categorize the limitations and advantages of regional anesthesia techniques for spine surgery
5. Assess the need for novel, truncal nerve block techniques such as thoracolumbar interfascial plane (TLIP) block for back surgery

Stem Case

A 38 year-old Female, with PMHx of disc herniation is scheduled for L3-L4 microdiscectomy. She takes over-the-counter NSAIDs for back pain PRN and no other medications. Her BMI is 30 and she has previously received general anesthesia (GA) for an emergent C-section. At your institution, this surgery has been performed in the main teaching hospital with patients staying at least overnight before discharge. The surgeons report that patients have had significant postoperative pain which has been difficult to control and which sometimes necessitates an extended hospital stay. Your institution has just opened a new ambulatory surgery center (ASC) which has sparked interest in performing more same day surgeries. As a result, your surgical colleagues approach you about the possibility of same day surgery for lumbar spine interventions. Before you respond, you want to consider several aspects of the suggestion.

Discussion Questions:

1. What explains the increase in ambulatory surgery vs. hospital surgery?
2. One of your orthopedic surgery colleagues has had a couple patients rejected for surgery at the ASC and asks you to identify who is an appropriate candidate for surgery at an ASC. How do you respond?
3. Your anesthesia colleague at the ASC has concerns about the safety of lumbar spinal surgery at the ASC and is worried about the increased risk of complications and of hospital admission. How can you reassure him?
4. The director of the ASC wants to know if same-day spinal surgery is possible in revision surgery. What is your recommendation?

The first patient who had same-day spine surgery at the ASC had to be transferred to the adjacent hospital for 24 hours due to severe postoperative pain. The director of the ASC asks you to develop a protocol for these same-day spinal surgeries.

1. What analgesic options exist for acute pain management in the same-day perioperative setting?
2. What other considerations apply in protocol preparation??

	As part of the efforts to enhance efficiency at the ASC, an acute pain and regional service is now available at the facility. 1. What regional anesthesia techniques exist for pain control after spine surgery? 2. What characteristics would be desirable in choosing a regional technique as part of your protocol for same-day lumbar spinal surgery? 3. Can Thoracolambar Interfascial Plane (TLIP) block help? 4. After choosing an appropriate regional technique, how can adjuvants be used to optimize your intervention? What about liposomal bupivacaine preparations? The director of the ASC approaches you and asks you if this particular case could be done under MAC as he believes it could further improve turnover time and throughput. 1. What do you say? 2. After considering all the acute pain options, what final protocol will you present to your anesthesia and surgical colleagues? How do you get patients to agree with same-day spine surgery?
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Session Title:	Point-of-care Ultrasound Evaluation of a Neck Mass Before Ambulatory Anesthesia in a Toddler
Session Number:	3460
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 14, 2019 02:10 PM America/Central
Status:	Submitted
Submitter:	JONATHON H NELSON (JNELSON@CNMC.ORG)
Last Update:	Feb 14, 2019 02:10 PM America/Central

Abstract Body/Description:	A 2-year old 11kg boy presented to an outpatient surgery and imaging center for magnetic resonance imaging of the orbit, face and neck under general anesthesia. His past medical history included an innocent murmur and occasional snoring. A new mass was recently noted in his right neck that necessitated the MRI. Upon history taking and examination, the anesthesiologist was concerned about the appropriateness of anesthetizing this patient in an ambulatory outpatient facility. The family attempted to get an ultrasound exam of the mass at adult facility without success. The only information the parents were given was the mass may be on the anterior part of the neck. Upon conferring with otolaryngology and radiology colleagues, the anesthesiologist decided to utilize point-of-care ultrasound to evaluate the airway prior to MR imaging, with the assistance of radiologist. Ultrasound of the neck showed a heterogeneous, mildly hyperechoic mass deep to the right internal jugular vein and internal carotid artery. Most importantly, point-of-care ultrasound suggested no airway extension, tracheal deviation or displacement. The patient was induced uneventfully with nitrous oxide and sevoflurane. An IV and oropharyngeal airway were inserted, and the anesthetic was converted to a propofol infusion with oxygen supplementation by nasal cannula. The patient emerged and recovered in the PACU without complication. Final radiology reports described a 3.2 x 2.0 cm heterogeneous and vascular mass displacing the right submandibular gland anteriorly. Differentials included carotid body tumor, vagal schwannoma or vascular neuroblastoma. One month later, the patient underwent nuclear medicine whole body tumor localization under a similar uneventful general anesthetic. The mass avidly took up the nuclear tracer, without evidence of metastasis. Unfortunately, the patient was then lost to subsequent follow-up.

	In an ambulatory setting, ultrasound is a useful tool that is often widely available, relatively low-cost, and safe. This is especially important with pediatric patients, as ultrasound evaluation is painless and rarely needs sedation. Now widely utilized for vascular access and regional anesthesia, this tool is increasingly being used by anesthesiologists for perioperative evaluation under uncertain patient conditions. Most commonly, pediatric neck masses are thyroglossal duct cysts, followed by reactive lymph nodes. In evaluating the masses, a thorough history and physical can usually provide the diagnosis. Imaging should begin with ultrasound. An excisional biopsy is generally recommended over fine needle aspiration biopsy in pediatric neck masses. The case above highlights a potentially risky airway for ambulatory anesthesia, due to unknown tracheal deviation or compression. Utilizing higher frequency probes, ultrasound can generally visualize the majority of the frontal and lateral walls of nearly all upper airway segments. This includes the floor and lateral wall of the oral cavity. However it may miss deeper structures or masses that distort the posterior portion of the oral pharynx like this mass. The thyroid and cricoid cartilages are clearly visible as well. Below these structures, visible air can be seen in the ring-shaped trachea, allowing for quick evaluation of compression, deviation, or distortion. Scanning the neck mass and its surrounding anatomy can provide the anesthesiologist confidence in evaluating the risks inherent in anesthetizing the patient, especially if in an ambulatory or outpatient setting.
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Session Title:	The Association of Body Mass Index and Same-Day Hospital Admission, Postoperative Complications, and 30-day Readmission Following Day-Case Eligible Joint Arthroscopy: A National Registry Analysis
Session Number:	3427
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 10, 2019 01:03 PM America/Central
Status:	Submitted
Submitter:	Jonathan Mazer (jonmazer@gmail.com)
Last Update:	Feb 10, 2019 01:03 PM America/Central

Abstract Body/Description:

Background: There are no clear guidelines that provide an optimal body mass index (BMI) cut-off for outpatient surgery case selection [1,2]. While obesity may be associated with both increased rates of intra- and post-operative complications, there is limited evidence that BMI alone should be used to exclude orthopedic, specifically joint arthroscopy patients, from receiving outpatient surgery. An important metric for day-case eligible surgeries includes unanticipated hospital admission. However, there is currently no literature addressing this population. Here, we examined the association of BMI with hospital admission, same-day complications, and 30-day hospital readmission following day-case eligible joint arthroscopy (knee, hip or shoulder) using a national database.

Methods*:* Using the American College of Surgeons National Surgical Quality Improvement Program 2012-2016 dataset, we performed a retrospective cohort study in which we created 7 cohorts based on BMI: 1) normal ($\geq$20kg/m^2 and <25kg/m^2, reference variable), 2) underweight (<20kg/m^2), 3) overweight ($\geq$25kg/m^2 and <30kg/m^2), 4) Class 1 & 2 obese ($\geq$30kg/m^2 and <40kg/m^2), 5) Class 3 obese ($\geq$40kg/m^2 and <50kg/m^2), 6) ($\geq$50kg/m^2 and <60kg/m^2, and 7) $\geq$60kg/m^2. All cases with unknown BMI, unknown hospital length of stay, and American Society of Anesthesiologists Physical status (ASA PS) class $\geq$ 4 were removed (**Table 1**). The primary outcome was hospital admission, defined as having a hospital length of stay > 1 day. Secondary outcomes included same-day postoperative complications and 30-day hospital readmission. We performed multivariable logistic regression including BMI and covariates including race, sex, age, preoperative dyspnea, chronic obstructive pulmonary disease, congestive heart failure, cancer, functional status, diabetes, smoker, chronic steroid use, hypertension, ASA PS score, surgery location (knee, hip, or shoulder arthroscopy), primary anesthesia

type, use of regional anesthesia, and case duration. We reported odds ratios (OR) and their associated 95% confidence interval (CI) and considered a p-value of <0.05 as statistically significant.

Results: There were 99,410 patients included in the analysis, in which 23.7% had a BMI ≥ 40kg/m^2. Compared to normal BMI, only those with BMI between 50 kg/m^2 and 60 kg/m^2 (OR 1.52, 95% CI 1.12 – 2.02, p=0.005) and those ≥ 60 kg/m^2 (OR 1.15, 95% CI 1.02 – 1.30, p=0.018) had increased odds of hospital admission **(Figure 1)**. There were no differences in 30-day hospital readmission. Only the BMI ≥ 60 kg/m^2 (OR 4.10, 95% CI 1.28 – 15.41) cohort had increased odds for same-day postoperative complications.

Discussion: A significant proportion of day-case eligible joint arthroscopy cases consists of patients who are at least morbidly obese. Currently, there are no standard for eligibility regarding BMI for this outpatient surgery. We found only those with BMI ≥ 50 kg/m^2 had increased odds for same-day hospital admission, while only those with BMI ≥ 60 kg/m^2 had increased odds for same-day complications. There were no differences in 30-day hospital readmission. We recommend that BMI alone should not be used to exclude patients from outpatient joint arthroscopies. Literature suggests that patients with a BMI <40 kg/m^2 may be eligible for ambulatory surgery, while patients with a BMI between 40 and 50 kg/m^2, may be eligible if their comorbid conditions are controlled [1]. There is still controversy whether those with BMI >50 kg/m^2 should be eligible since there is a higher incidence of comorbidities leading to perioperative complications [2,3]. Future studies should focus on cost-benefit analysis of excluding severely obese patients from the ambulatory setting for this surgical category.

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4.

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Session Title:	Experience of operating an anesthesia preoperative evaluation clinic: assessment of surgeons' satisfaction
Session Number:	3416
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Jan 28, 2019 08:54 PM America/Central
Status:	Submitted
Submitter:	Ju Yeon Park (monojp@naver.com)
Last Update:	Jan 28, 2019 09:42 PM America/Central

Abstract Body/Description:

Introduction:

Anesthesia pre-operative evaluation clinic (APEC) based-on outpatients is known to:

1) enable the anesthesiologist to meet with the patient in the earlier process of evaluation before surgery;

2) promote pre-operative interviews;

3) facilitate communication between medical staff and patient;

4) facilitate the participation of anesthesiologists in clinical protocol development;

and 5) advocate post-operative care to reduce pain, complications, morbidity and mortality.

In the majority of hospitals in South Korea, preoperative anesthetic evaluation for surgical patients is performed in hospitalized patients. The surgeon generally consults the anesthesiologist for pre-anesthesia evaluation and preparation on the day before surgery for patients in the ward.

Despite the known advantages of the outpatient-based anesthesia pre-evaluation system, it is limited in Korean hospitals is due to the following factors:

1) Lack of anesthesiologist

	2) Lack of awareness of the surgeons and hospital executives of the necessity for outpatient based anesthesia pre-evaluation system. From an anesthesiologists' perspective, Continuous Quality Improvement (CQI) has recently attracted much attention. The surgeon is an important customer of the anesthesiologist along with patients, students, and hospital executives. And thus, it is critical to include surgeons' satisfaction as an effort to achieve CQI. The surgeons' attitude and satisfaction to anesthetic services are an important component affecting patient perception as well. Although advantages and clinical benefits of an APEC have been reported in previous literature, there has been no report on the attitudes and satisfaction of the medical staff (surgeons). We aimed to improve efficiency of the institution's APEC through the questionnaires. Methods: After approval of the institutional review board, a two-page survey was distributed to all specialists and resident physicians involved in surgery at Pusan National University Yangsan Hospital during a 3 month period. A five-point Likert scale of agreement examined perceptions of APEC. Data were analyzed with SPSS (ver. 21 for Windows; SPSS Inc., Chicago, IL). Noncontinuous data were analyzed with the chi-square test. $P < 0.05$ was considered statistically significant. Results: A total of 123 questionnaires were distributed and 67 surveys were collected over a 3-month period with a 54.5 % collection rate. The questionnaire had 14 questions, and the mean number of answers was 13. The surgeons' perceptions of APEC are summarized in figure 1. Conclusion: The surgeons' attitude and satisfaction to anesthetic services including anesthesia pre-operative evaluation clinic (APEC) are an important component of achieving Continuous Quality Improvement. Continuous assessment and feedback may improve efficiency of the APEC and affect patient perception as well.
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Session Title:	It's Just Sinus Surgery, an Anesthesiologist's Perspective
Session Number:	3465
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 14, 2019 04:22 PM America/Central
Status:	Submitted
Submitter:	Julius Pawlowski, M.D. (jpawlow@lumc.edu)
Last Update:	Feb 14, 2019 04:22 PM America/Central

Abstract Body/Description:

Introduction:

Endoscopic sinus surgery (ESS) is a procedure designed to treat paranasal sinus infections. These surgeries are mostly performed in an Ambulatory Surgery center (ASC). Some examples of severe complications include perforation of the anterior skull base; dura lesions; injuries to the frontal lobe; orbit; optic nerve; and internal carotid artery. Severe complications pose unique challenges for anesthesiologists doing cases in an ASC. This case report describes a patient who underwent ESS and had an intraoperative injury to the internal carotid artery.

Case Presentation:

The patient is a 63 year-old male who underwent revision ESS. Past medical history included hypertension, GERD, and obesity (BMI 30.4). Past surgical history included knee arthroscopy, tonsillectomy, septoplasty, and bilateral ESS. It was noted in the chart that he had a left sided post-op bleed 3 weeks after his ESS after flying. The patient was brought to the operating room, pre-oxygenated then general anesthesia was induced using propofol, fentanyl, and succinylcholine. Airway secured with an endotracheal tube. The patient was maintained with sevoflurane and a remifentanil drip. The ESS was started and assisted with a VTI computerized CT scan. The left sphenoid sinus was blocked; opened up using punch forceps and a microdebrider. A whitish mass was noted, questionable cyst. An attempt to open this cyst with the microdebrider caused a massive hemorrhage to occur. At this time, it was felt that an internal carotid injury had occurred. A code was called and the surgeon attempted to pack the nose to control the bleeding. The anesthesia team resuscitated the patient by giving fluids; starting a large bore IV and an arterial line. Another anesthesiologist responding to the code suggested packing the nose with a foley catheter to help control the bleeding. A foley catheter was placed bilaterally in the nose which controlled the bleeding. The patient was transferred directly to the neurosurgical endovascular suite in main hospital. An angiogram was

	performed revealing a large aneurysm of the carotid artery extending forward to the left sphenoid sinus. A coiling of the aneurysm was performed preserving the perfusion to the internal carotid artery. The patient was transferred to the Neuro ICU intubated, extubated the following morning, and discharged 2 days after initial event with no neurologic deficits noted. **Discussion:** ESS is a surgical technique that is a safe and effective treatment for paranasal sinus disorders and preformed daily in an ASC. Complications can occur which can potentially be associated with high rates of morbidity and mortality. Injury to the ICA can lead to massive hemorrhage which can be difficult to control, as the visual field becomes quickly obscured with blood, and access to the sphenoid sinus is limited. Thinking "outside the box," foley catheters were placed bilaterally in the nasal cavities. In less than 30 minutes the patient was stabilized, bleeding under control, and transferred to the main hospital where the neurosurgical endovascular team was waiting. Getting definite therapy in a timely manner and coiling of ICA injury was paramount in the successful outcome in this patient.
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Session Title:	Stellate Ganglion Block: A Therapeutic and Prognostic Tool for Refractory Neurocardiogenic Syncope Coexisting with Postural Orthostatic Tachycardia Syndrome
Session Number:	3428
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 10, 2019 08:26 PM America/Central
Status:	Submitted
Submitter:	Jun Xu (jun-xu@uiowa.edu)
Last Update:	Feb 10, 2019 08:26 PM America/Central

Abstract Body/Description:	Neurocardiogenic syncope (NCS), a disorder of autonomic cardiovascular regulation, is a common cause of syncope. Postural orthostatic tachycardia syndrome (POTS) is a constellation of symptoms caused by autonomic dysregulation including lightheadedness, palpitations, orthostatic intolerance, but rarely syncope. A group of patients have overlapping NCS and POTS. This condition is considered to be caused by late-phase parasympathetic overactivity and/or sympathetic suppression leading to cardioinhibitory and/or vasodepressor response. Sympathectomy is a logical option to treat NCS and POTS in theory as sympathetic dysregulation is believed to be the primary underlying defect. We report the successful use stellate ganglion block for a patient with debilitating NCS coexisting with POTS which was refractory to alternative therapies. A 67 year old female with history of NCS, POTS and Prinzmetal angina was admitted due to recurrent syncopal episodes and worsening vasospastic angina. She underwent placement of dual-chamber pacemaker (PM) with closed loop stimulation (CLS) algorithm due to recurrent syncope and no response to conventional treatments such as volume expansion and multiple medications. But her symptoms recurred despite of the functional PM. She was unable to get out of bed for 6 days due to lightheadedness, diaphoresis, pallor and syncope upon upright position and was referred to our clinic. A left stellate ganglion block was performed under fluoroscope targeting at the C7 transverse process. Ten mins after procedure, the patient was able to stand for 2 mins without any symptom, significant heart rate variability, or hypotension. She was able to ambulate by herself with no recurrent syncope and less angina on the same day. Approximately 60 hours post procedure, patient had a recurred syncope on assuming an upright position. A second stellate ganglion block with same technique and medication was performed to re-confirm the efficacy of possible sympathectomy. The second block re-produced the same effects as the first block. She was able to mobilize again after 2

	weeks' bed restriction since the recurrence of syncope after the first block. Patient subsequently underwent surgical sympathectomy of left T2-4 ganglion a few days later and was discharged with resolution of her NCS and POTS symptoms. Management of NCS can be challenging due to the heterogeneity of the syndrome as well as its poorly explored pathophysiology. An overlapping syndrome with conflicting clinical features brings even more difficulties for the treatment of NCS. As in our case, the subgroup of NCS with prominent bradycardia and hypotension coexists with POTS with prominent postural tachycardia. Our patient is an extreme case of NCS refractory CLS pacing. For the first time, a left stellate ganglion block has been shown to eliminate refractory neurocardiogenic syncope coexisting with POTS for short-term. The elimination of syncope with stellate ganglion block and thoracic sympathectomy suggests sympathetic dysregulation as the underlying pathology of neurocardiogenic syncope. However, more detailed mechanism remains to be explored. This case supports further investigation into the use of stellate ganglion block as a prognostic tool to delineate this subgroup of NCS and assess the safety and efficacy of planned ablative or surgical sympathectomy.
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Session Title:	Comparison between oral midazolam and oral dexmeditomidine in facilitating ease of induction prevention of Emergence Delirium and early discharge in paediatric ENT surgeries under Sevoflurane anaesthesia.
Session Number:	3471
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 20, 2019 07:28 AM America/Central
Status:	Submitted
Submitter:	Kamal Fotedar, Foted (kamal.fotedar@gmail.com)
Last Update:	Feb 20, 2019 07:28 AM America/Central

Abstract Body/Description:

INTRODUCTION:

The preoperative period is stressful for most people undergoing surgery, in particular children. Effective premedication minimizes emotional trauma, reduces preoperative anxiety, facilitates separation from parents, improves mask acceptance, decreases the incidence of emergence delirium (ED) and facilitates early discharge from Post Anaesthesia Care Unit (PACU)

AIM:

Compare the efficacy of oral midazolam versus oral dexmeditomidine in pre operative sedation score, in facilitating ease of induction (separation from parents, mask acceptance), prevention of emergence delirium (ED), time to discharge from PACU , in paediatric (2-12 Yrs) patients undergoing ENT surgeries under sevoflurane anaesthesia.

METHODOLOGY:

Hundred patients of ASA I-II grade aged 2-12 years were randomly allocated in two groups (Group M { Midazolam} and Group D {Dexmeditomidine}) to recieve 0.5 mg/kg oral midazolam and 2 mcg/kg oral dexmeditomidine as premedication 45 minutes before induction of General anaesthesia.

Preoperative sedation, parental separation ,face mask acceptance, hemodynamic parameters , additional opioid requirements, time to extubation , ED scores, time of PACU stay, were measured and compared between the two groups.

RESULTS:

	The ease of induction as seen by preoperative sedation, parental separation and mask acceptance score was better in Group M as compared to Group D. For preoperative sedation(Ramsay sedation score) it was (2.28±0.607 vs 1.94±0.240) , for parental separation it was (1.02±0.141 vs 1.44±0.577), and for mask acceptance it was (1.06±0.314 vs 1.88±0.961) respectively. These values were statistically significant ($p<0.001$). However, ED score at 0,1,5,15 min. was ($M_0$13.36±2.229, $D_0$11.10±1.787, $M_1$13±14.29, $D_1$8.66±1.451, $M_5$7.70±2.206, D_5 5.40±1.578, M_{15} 4.98±1.857, D_{15} 2.82±1.289) respectively. ED was lesser in Group D as compared to Group M and was statistically significant($p<0.001$). The heart rate (HR) in Group D was less as compared to Group M, This was statistically significant.16 patients in Group D had bradycardia, which was statistically significant(p value= <0.001).The mean blood pressure of both the groups were statistically comparable. The time to extubation (Time gap between switching off of the inhalational agent and time to extubation) was comparable in Group D and Group M (10.52±5.304 and 11.92±4.856 p =0.172) respectively. The duration of PACU stay in min. in Group D and M was (43.56±8.825, 56.00±8.519) respectively & p value was significant <0.001. The mean dose of additional intra operative fentanyl requirement was less in Group D (n=29) than Group M (n=50) (12.07±4.123, 22.20±7.900) respectively and was statistically significant.($p<0.001$). **CONCLUSION:** We thus conclude that oral midazolam is superior to oral dexmeditomidine in providing better induction environment (parental separation and mask acceptance) when used as premedication. On the other hand, oral dexmeditomidine was superior to midazolam in reducing the incidence and severity of ED and patients had reduced perioperative analgesic requirement and reduced duration of PACU stay and therefore early dischargeability from PACU.
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Session Title:	Optimizing ERAS Fluid Management: Association of intraoperative fluid volume and recovery following colorectal surgery
Session Number:	3403
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Dec 27, 2018 08:28 AM America/Central
Status:	Submitted
Submitter:	Kapil Gupta, clinical fellow (kapgup11@yahoo.co.in)
Last Update:	Dec 27, 2018 08:28 AM America/Central

Abstract Body/Description:

BACKGROUND: Enhanced Recovery after Surgery (ERAS) guidelines are advocated for colorectal surgeries to shorten length of hospital stay (LOS). A central component of ERAS guidelines is restriction of intraoperative fluids.

OBJECTIVES: The primary objective of this study was to determine association of volume of intraoperative fluids with prolonged LOS in colorectal surgeries. The secondary objectives were to determine patient and surgical factors associated with prolonged LOS.

DESIGN: This is an observational study

SETTINGS: Conducted at fifteen academic tertiary care hospitals in Ontario, Canada

PATIENTS: Patients who were scheduled for colorectal surgery and followed ERAS guidelines were recruited.

MAIN OUTCOME MEASURES: Data collected included patient demographics, perioperative compliance with ERAS guidelines and patient outcomes, including readiness for discharge from hospital and postoperative complications. Multivariable analysis was used to examine the relationship between patient and surgical variables with prolonged LOS and postoperative complications.

RESULTS: Data was collected from 2,798 patients participating in the IERAS program between September 2012 and April 2015. Patients with LOS $\leq$ 5 days received 1,742 $\pm$ 982 ml of fluids intraoperatively; whereas, those who stayed > 5 days received 2470 $\pm$ 1346 ml. A prolonged LOS was associated with greater volumes of intraoperative fluid (OR: 1.54 per L of fluid administered, p= 0.001), a higher comorbidity score (Charleson co-morbidity scores >3, OR: 1.6, p<0.008), preoperative anemia (OR: 1.6, p<0.001) and increased duration of surgery (OR: 1.5, p <

	0.001). Oncology cases were less likely to have a prolonged LOS (OR 0.54, 95% CI: 0.44 to 0.67). **LIMITATIONS**: This is an observational study with all inherent limitations. **CONCLUSIONS:** Administration of larger amounts of intraoperative fluids is associated with a prolonged LOS in patients undergoing colorectal surgery and following ERAS guidelines.
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Session Title:	Optimizing ERAS Fluid Management: Association of intraoperative fluid volume and recovery following colorectal surgery
Session Number:	3404
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Dec 29, 2018 11:00 AM America/Central
Status:	Submitted
Submitter:	Kapil Gupta, clinical fellow (kapgup11@yahoo.co.in)
Last Update:	Dec 29, 2018 11:00 AM America/Central

Abstract Body/Description:

BACKGROUND: Enhanced Recovery after Surgery (ERAS) guidelines are advocated for colorectal surgeries to shorten hospital length of stay (LOS). A central component of ERAS guidelines is fluid therapy and in our protocol, fluid was restricted to 2 ml/kg/h and fluid boluses were given to avoid hypotension, tachycardia and reduced cardiac output.

OBJECTIVES: The primary objective of this study was to determine the association of intraoperative fluid volume with prolonged LOS in colorectal surgery. The secondary objectives were to determine patient and surgical factors associated with prolonged LOS.

DESIGN: This is an observational study

SETTINGS: Conducted at fifteen academic tertiary care hospitals in Ontario, Canada

PATIENTS: Patients who were scheduled for colorectal surgery and followed ERAS guidelines were recruited.

MAIN OUTCOME MEASURES: Data collected included patient demographics, perioperative compliance with ERAS guidelines and patient outcomes, including readiness for discharge from hospital and postoperative complications. Multivariable analysis was used to examine the relationship between patient and surgical variables with prolonged LOS and postoperative complications.

RESULTS: Data was collected from 2,798 patients participating in the ERAS program between September 2012 and April 2015. Patients with LOS ≤ 5 days received 1,742 (982) ml of fluids intraoperatively; whereas, those who stayed > 5 days received 2470 (1346) ml. A prolonged LOS was associated with greater volumes of intraoperative fluid (OR: 1.54, 95% CI: 1.36 to 1.75) per L of fluid administered, p= 0.001), a higher comorbidity score (Charleson co-morbidity scores >3, OR: 1.59, 95% CI:

	1.13 to 2.23, p<0.008), preoperative anemia (OR: 1.58 95% CI: 1.36 to 1.82, p<0.001) and duration of surgery (OR:1.55 95% CI: 1.27 to 1.89, p < 0.001). Oncology cases were less likely to have a prolonged LOS (OR 0.54, 95% CI: 0.44 to 0.67, p<0.001). **CONCLUSIONS:** In patient undergoing colorectal surgery within a comprehensive ERAS protocol the administration of increasing amounts of intraoperative fluids is associated with a prolonged LOS (> 5 days).

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Session Title:	Perioperative care of a lactating ambulatory surgery patient presenting for cystoscopy and transurethral resection of bladder tumor: Implications for perioperative medication usage
Session Number:	3422
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 08, 2019 09:52 AM America/Central
Status:	Submitted
Submitter:	Kara Barnett, Anesthesiologist (karambarnett@yahoo.com)
Last Update:	Feb 08, 2019 09:52 AM America/Central

Abstract Body/Description:

Background

As breastfeeding rates rise in the United States (1), more actively lactating women may be scheduled for surgery. Knowledge of how to manage them during the perioperative period is important. This is particularly true for lactating ambulatory surgical patients who present in settings lacking the support of in-house lactation consultant services, such as ambulatory surgery centers, non-operating room anesthesia sites, and office-based anesthesia locations.

We developed a multidisciplinary Lactation Task Force (LTF) to address the perioperative care of lactating patients presenting to our cancer center. Approximately 39% of our lactating perioperative patients undergo ambulatory anesthesia for a wide variety of procedures (Tables 1,2). We previously described our approach to perioperative care of lactating patients in recent articles (2, 3), however there is a lack of literature describing ambulatory surgery patients.

It is uncommon to encounter lactating patients presenting for bladder cancer interventions since the average age of bladder cancer diagnosis is 73 (4). We therefore present a rare case report describing the ambulatory anesthetic and perioperative medication management for a lactating patient who presented for cystoscopy and transurethral resection of bladder tumor (TURBT).

Case Report

A 32-year old lactating woman presented for cystoscopy and TURBT. Preanesthesia evaluation revealed a history of bladder cancer treated with TURBTs and intravesical immunotherapy. Through review of

systems screening during the presurgical clinic visit, the patient was identified as breastfeeding a 5-week old healthy infant, triggering a LTF alert.

A LTF anesthesiologist performed a targeted lactation evaluation during a preoperative telephone call and formulated a preanesthesia plan to address perioperative urologic and anesthetic agents and any indications for breastfeeding interruption ("pumping and dumping") postoperatively. The LTF anesthesiologist consulted well-known references to determine the effect of common urologic drugs including belladonna and opium suppository (B & O), pyridium, and oxybutynin. A plan was formulated to avoid B & O and offer oxybutynin, if needed, for postoperative bladder pain. Short term use of pyridium was found to be compatible with lactation (5,6).

General anesthesia proceeded uneventfully with the use of an LMA and desflurane and intravenous administration of lidocaine, propofol, fentanyl, and rocuronium as paralysis was requested by surgeon and was reversed with neostigmine and glycopyrrolate. Additional medications administered included acetaminophen, dexamethasone, ondansetron, phenylephrine, ephedrine and cefazolin.

When the patient was awake and alert in the PACU, she expressed breast milk via her breast pump to be safely used later. She resumed her usual breastfeeding schedule and required only oral acetaminophen on returning home that day.

Discussion & Clinical Pearls:

- Preoperative patient identification & education and multidisciplinary team collaboration contribute to optimal ambulatory anesthesia care of lactating patients (2,3).
- Most perioperative medications used in the ambulatory setting do <u>not</u> require postoperative breastfeeding interruption, assuming acute, short-term maternal use of standard doses (Table 3). Breastfeeding may typically be resumed once the mother achieves an awake, alert state for a healthy, full-term non-neonate.
- For uncommonly-used or newer perioperative medications, information pertaining to compatibility with lactation may be obtained by consulting resources such as ‘‘LactMed" and the "InfantRisk Center" (5,6).

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7.

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Session Title:	Safety of the Sufentanil Sublingual Tablet 30 mcg by BMI sub-group for the treatment of acute post-operative pain
Session Number:	3455
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 14, 2019 11:54 AM America/Central
Status:	Submitted
Submitter:	Karen DiDonato, MSN, RN (kpdidonato@gmail.com)
Last Update:	Feb 14, 2019 03:46 PM America/Central

Abstract Body/Description:

BACKGROUND: As the number of overweight and obese people in the general population increases, outpatient surgery providers are confronted with an ever challenging patient population. Obese patients have a greater risk of wound complications, infections, increased time in the operating room and a greater need for pain management after surgery.[1] The Sufentanil Sublingual Tablet 30 mcg (SST 30 mcg; DSUVIA®) was recently approved by the U.S. Food and Drug Administration for the management of acute pain in adults severe enough to require an opioid analgesic and for which alternative treatments are inadequate.[2] SST 30 mcg is administered only by a healthcare practitioner, with use restricted to certified medically supervised settings such as hospitals, surgical centers, and emergency departments. Safety data from over 800 clinical study patients, with BMI ranging from 15.8 kg/m^2 to 67 kg/m^2, was used to support product approval. The primary objective of this subgroup analysis was to examine comprehensive safety results by Body Mass Index (BMI) across all clinical trials.

METHODS: Six SST 15 mcg and three SST 30 mcg late phase trials were included in the analysis. Five of the studies were randomized and placebo-controlled in post-operative patients, three were open-label and one was an active-comparator against IV PCA morphine. Adverse event data from all active patients enrolled in the SST 30 mcg studies were incorporated as well as a select group of patients in SST 15 mcg studies, if they received a second dose administered within 20 to 25 minutes after the first dose (30 mcg equivalent).

RESULTS: Across all studies, there were 464 patients with a BMI < 30 kg/m^2, 282 patients with a BMI 30 kg/m^2 – 40 kg/m^2 and 54 patients with a BMI > 40 kg/m^2. Age range was 18-87 years. Adverse events were experienced by 63.6%, 57.3% and 55.3% of SST 30 mcg patients with a BMI < 30 kg/m^2, 30 kg/m^2 – 40 kg/m^2 and > 40 kg/m^2, respectively. Nausea (29.8% - 38.9%,) headache (6.8% - 12.9%) and vomiting (6.4% - 8.8%) were the most commonly reported AEs across all

	three BMI sub-groups, but rates were approximately equivalent between cohorts and demonstrated no statistical difference from placebo. **DISCUSSION/CONCLUSION:** SST 30 mcg has shown benefit across all BMI categories as a non-invasive analgesic modality for short-term management of acute post-operative pain. While all patients should be monitored closely following ambulatory surgery, results from these late-phase studies suggest SST 30 mcg is well-tolerated in both obese and non-obese patient populations.
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Session Title:	A Probable Fatal Argon Gas Embolism During an Open Resection of a Cutaneous Biliary Fistula
Session Number:	3419
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Jan 31, 2019 01:27 PM America/Central
Status:	Submitted
Submitter:	Karlyn Powell (Karlyn_Powell@yahoo.com)
Last Update:	Jan 31, 2019 01:27 PM America/Central

Abstract Body/Description:

Introduction:

The argon beam coagulator (ABC) has increased in popularity by surgeons for achieving hemostasis during outpatient procedures. However, potential adverse outcomes of its use may not be fully appreciated as the majority of the anesthesiologists at our institution were unaware of the ABC causing argon gas embolisms. Most case reports describe possible argon gas embolisms in laparoscopies and occasionally in laparotomies (1-7). This case report describes a possible argon gas embolism during an open resection of a cutaneous biliary fistula with possible transpulmonary passage of the embolism.

Case description:

A 49-year-old male with a history of recurrent cholangiocarcinoma status post partial hepatectomy, hepatojejunostomy, and roux-en-Y surgeries presented for resection of a right biliary cutaneous fistula as an outpatient procedure. Within 10 minutes of surgical incision, the end tidal CO2 tracing was lost with the patient abruptly becoming bradycardic with subsequent arrest. The 1.5 cm long incision was located in the midclavicular line inferior to the right rib cage. Surgery performed a right chest tube thoracostomy given the close location of the procedure to the lungs but there was insignificant air or blood output. The patient was coded with a return of systemic circulation in 28 minutes. Central venous access was obtained through the right femoral vein and arterial line was placed in the left femoral artery. Transesophageal echo after resuscitation demonstrated a dilated right ventricle with poor function and gas bubbles in the left ventricle. For the rest of the case the patient required inotropic and vasopressor support. Exploratory laparotomy did not reveal any obvious injuries. Postoperatively, the patient required ECMO and remained dependent upon inotropes and vasopressors. He was also

	acidotic and anuric prompting placement on continuous renal replacement therapy. The patient remained comatose and anoxic brain injury was suspected. Attempts to wean off of ECMO were unsuccessful. Care was withdrawn on POD4. Discussion: This patient most likely experienced an argon gas embolism during an open resection of a cutaneous biliary fistula with possible transpulmonary passage of the embolism whereas most reported argon gas emboli have occurred during laparoscopies. Intraoperative diagnosis was a pulmonary embolism given the patient's cancer history. Air in the left ventricle was thought to be caused by air entering open vasculature during chest compressions. However, event occurrence within minutes after the initial use of the ABC leads to the suspicion of an argon gas embolism. Risk factors for an embolism in this case include: (1) the ABC setting on high gas flows of 10L/min instead of the lowest flow possible (8-9), (2) the probe tip position may not have been maintained at least 3 mm away from the tissue, at a 45 to 60 degree angle during ABC activation, and away from tissue between activations (9), (3) the patient had altered biliary and hepatic anatomy due to his previous surgery which might have increased his susceptibility to an embolism. This case supports the belief that a high degree of suspicion should be maintained for an argon gas embolism during ABC use in laparoscopic, open and cutaneous surgeries.
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Session Title:	Risk Factors For Bleeding with Surgical Dilation and Evacuation
Session Number:	3430
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 11, 2019 09:13 AM America/Central
Status:	Submitted
Submitter:	Katie Bridges, M.D. (bridgek@musc.edu)
Last Update:	Feb 11, 2019 09:13 AM America/Central

Abstract Body/Description:	*Objective*: The objective of this study was to identify perioperative and patient factors associated with bleeding for surgical dilation and evacuation (D&E). *Study Design*: This retrospective, cohort study utilized CPT codes to identify patients undergoing operative D&E procedures in a 50-month period. The primary outcome was estimated blood loss (EBL). Data collection included demographic (age, race, BMI), medical history, obstetric (parity, gestational age, prior cesarean delivery), intraoperative (anesthetic type, uterotonic administration, blood loss), laboratory (pre- and postoperative hemoglobin and/or hematocrit), transfusion (volume and type of products administered), and need for readmission. Associations between blood loss with perioperative and patient factors were examined using a series of linear regression models. A multiple linear regression model of blood loss was also examined. Secondary outcomes included rates of perioperative transfusion and readmission. *Results*: 383 women underwent operative D&E. The majority of the subjects (54.1%) had less than 250ml EBL (median 200ml; range 0-10,000ml and IQR 400 mL). EBL exceeding 1000ml (8.1%) or 500-999ml (17.7%) was less common. Increased blood loss was associated with increased gestational age (P <0.001) and preoperative anemia (hemoglobin ≤ 10g/dL or hematocrit ≤ 30g/dL; P = 0.002) but not patient age (P = 0.610), race (P = 0.138), history of prior cesarean delivery (P = 0.517), or parity (P = 0.534). A one week increase in gestational age was associated with a 16% increase in EBL (P <0.001, 95% CI: 13.3 to 18.6%). Patients who had preoperative anemia had an 88% increase in EBL relative to other subjects (P = 0.002, 95% CI: 25.5 to 180.7%). General anesthesia technique (inhalation versus intravenous) did not impact blood loss in univariate and multivariable analyses. Perioperative transfusion (5.2%) and readmission for bleeding (5%) rates were low.

	Conclusion: While increased gestational age is associated with increased bleeding, blood loss remains low for patients undergoing D&E, and the majority of patients do not require transfusion. As the likelihood of greater blood loss increases with later gestation, providers should have the ability to provide cross-matched blood in anemic patients in their second trimester.
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Session Title:	Marijuana Use and the Role of Dronabinol Perioperatively
Session Number:	3451
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 14, 2019 12:50 AM America/Central
Status:	Submitted
Submitter:	Keleigh McLaughlin (keleigh.mclaughlin@ucdenver.edu)
Last Update:	Feb 14, 2019 03:41 PM America/Central

Abstract Body/Description:	Introduction: Reported marijuana use in the adult U.S patient population was estimated to be approximately 33 million in 2015 (1). Anesthetic considerations regarding chronic marijuana use include an observed increased tolerance to opioids and increased intraoperative anesthetic requirements (2). Dronabinol, a synthetic form of tetrahydrocannabinol (9-THC) has received more attention for its use perioperatively. We report on a 46 year old female, chronic marijuana user, who underwent bilateral carpal tunnel release a month apart, receiving multimodal analgesia pre-operatively, including dronabinol, during her first procedure but not second with significant differences in postoperative pain scores. Case: A 46 year old female with a history of bilateral carpal tunnel syndrome presented for carpal tunnel release, approximately a month apart. Her other past medical history included hypothyroidism, chronic migraines, and chronic marijuana use, reporting daily use. For her first procedure, the patient received 500 mg of acetaminophen, 75 mg of pregabalin, 10 mg of dronabinol, and 2 mg of midazolam pre-operatively. Intraoperatively, patient had intravenous regional anesthesia (IVRA) performed with 45 mL of lidocaine 0.5% with 15 mg of ketorolac. Sedation was maintained with fentanyl 50 mcg IV and propofol infusion at 50 mcg/kg/min. Tourniquet time was 26 minutes and patient was taken to the PACU reporting no pain and was discharged to home approximately 30 minutes after arrival to PACU. During her second procedure, the patient received 2 mg of midazolam pre-operatively. Intraoperatively, the patient had IVRA with 45 mL of lidocaine 0.5% with 15 mg of ketorolac. She received two doses of fentanyl 50 mcg for sedation and was maintained with propofol at 50 mcg/kg/min. Tourniquet time was 32 minutes and patient was taken to the PACU reporting 10 out of 10 pain. She then received two doses of

	fentanyl 50 mcg, reporting improvement to 7 out of 10 pain. 10 mg of oxycodone, 75 mg of pregabalin, and 1000 mg of acetaminophen were then administered with improvement to 6 out of 10 pain. The patient was discharged to home approximately 1 hour after arrival to PACU. Discussion: Chronic marijuana use has been shown to increase opioid and anesthetic requirements (2). Dronabinol has been studied in patients undergoing total hip and knee arthroplasty, demonstrating decreased length of stay and morphine equivalents postoperatively (3). Another study using oral cannabinoids found a decrease in postoperative pain scores and rescue analgesia in patients receiving 10 to 15 mg (4). The significant difference in postoperative pain scores between our patient's two procedures and need for rescue opioids, raised the question of dronabinol's effectiveness in multimodal analgesia for chronic marijuana users. Lack of preoperaitve multimodal analgesia for her second surgery, differing tourniquet times, and variable duration of IVRA may have contributed to her disparity in pain scores, but the reported difference in pain scores seems more exaggerated than one would expect. More research is certainly warranted, investigating the role of cannabinoids in multimodal analgesia for chronic marijuana users as marijuana continues to become legalized in many states and reported use increases.
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Session Title:	Laryngeal Papillomatosis and Difficult Airway in Outpatient Surgery
Session Number:	3462
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 14, 2019 03:33 PM America/Central
Status:	Submitted
Submitter:	Konstantin Kravchenko (Kkravchenko@uwhealth.org)
Last Update:	Feb 14, 2019 03:33 PM America/Central

Abstract Body/Description:	We present a case of a 52 year old female with a history of anxiety, reflux, obesity, cervical spine fusion, previously difficult airway and aggressive laryngeal papilomatosis who presented for emergent laser KTP treatment. The patient had more than ten prior treatments for her laryngeal papilomatosis under general anesthesia which were done in the outpatient surgery center at UW Health with laryngeal mask airways, jet ventilation, or intubation. The several times that this procedure required intubation, the patient was not an easy airway. She was a grade iib view in the past with a mac 3, mac 4, and miller 2 and several different providers had difficulty passing ETT through cords due to an edematous airway and papillomas on airway structures including the epiglottis. Multiple attempts were needed by anesthesiologists and ENT surgeons with the fiberoptic flexible scope. The patient was a successful glidescope intubation with a grade I equivalent view in the past however this required external anterior pressure, an anterior bend to the stylet, and small 5.0 ETTs. The patient presented to the ENT clinic with worsening shortness of breath and tightness in her throat and was scheduled the next morning for KTP laser treatment. Due to her worsening respiratory status, history of difficult intubation, and possible respiratory complications after surgery, it was decided with the surgeons to do a pretracheotomy in the operating room prior to securing the airway. The patient was then successfully intubated after induction via an LMA and Arndt exchange catheter under flexible fiberoptic and glidescope visualization. There has been an increase in the volume of patients in outpatient surgery centers with comorbidities including obesity and COPD. It is highly likely that a practicing anesthesiologist will encounter expected and unexpected difficult airway in the ambulatory setting. Communication with the surgeons is key as well as following the difficult airway algorithm. Modern airway technology and equipment such as video laryngoscopy

	has made it safer and more cost effective to manage difficult airways in the ambulatory setting.
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Author 2:	George Arndt
Author 3:	Jeff Lee

Session Title:	Non-Intubated Thoracic Surgery: Back to the Future
Session Number:	3449
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 13, 2019 10:53 PM America/Central
Status:	Submitted
Submitter:	Madhuri Rao (mvrao@umn.edu)
Last Update:	Feb 13, 2019 10:53 PM America/Central

Abstract Body/Description:	**Objective**: Recent advances in anesthesia, pain management and minimally invasive thoracic surgery have made it possible to perform thoracoscopic procedures in spontaneously breathing patients, avoiding general anesthesia with its inherent risks in complex patient populations. We report our early experiences: the indications, short term outcomes and our protocol. Our goal is to do these patients as ambulatory same day procedures. **Methods**: We conducted a cohort review of patients who underwent thoracoscopic procedures with sedation and local or regional anesthesia from April 2017 to May 2018. Patient selection involved a rigorous screening process by the surgery and anesthesia care teams. The included patients were those requiring simple thoracoscopic procedures as below. Exclusion criteria were: BMI >35, significant cardiac history, neuropsychiatric issues and anticipated difficult airway. Respiratory co-morbidities were evaluated case-by-case. A single anesthesiologist evaluated all patients preoperatively. Pain management was either by paravertebral block or intra-operative intercostal block with local anesthetics. Intraoperative anesthesia care focused on maintenance of adequate oxygenation and ventilation, minimizing patient discomfort and optimizing surgical conditions by titrated IV sedation. **Results**: Of eleven procedures, 9 were wedge resections for: diagnosis of interstitial lung disease (n=6); resection of indeterminate nodule (n=1) and metastasis (n=2). The other two procedures were a para-aortic lymphadenectomy and a pleurodesis. The procedures were done with one (n=9) or two ports (n=2). Average operating time was 75.5 minutes (range 36 to 136 min). Two cases longer than 120 minutes had significant adhesions. There were no conversions to general anesthesia. Most were discharged on day 0 (n=6) or day 1 (n=2). Three patients had later discharges due to air leaks or co-morbidities. There were no 30-day readmissions related to the procedures.

	Conclusions: Non-intubated thoracic surgery practiced centuries ago due to the lack of advanced anesthesia, is now resurfacing in a more refined way in several centers. In well selected patients, it is a safe and feasible alternative to general anesthesia. Developing a standardized protocol and practice can help with gaining wider acceptance. This should facilitate care being provided as same day procedures and amenable in ambulatory surgical centers. Careful evaluation by the surgery anesthesia team is important for determining eligibility.
Author 1:	Madhuri Rao (mvrao@umn.edu) University of Minnesota This user is currently missing the following information from their user profile: **Phone**. Please click here to update this profile information.
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Session Title:	The efficacy of oral acetaminophen in reducing pain and complications after transvaginal oocyte retrieval
Session Number:	3475
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 21, 2019 11:18 AM America/Central
Status:	Submitted
Submitter:	Marjorie Gloff (marjorie_gloff@urmc.rochester.edu)
Last Update:	Feb 21, 2019 11:18 AM America/Central

Abstract Body/Description:

1. Introduction

Transvaginal oocyte retrieval (TOR) is performed to assist in conception, fertility preservation and oocyte donation. Our institutional standard is to perform this outpatient procedure under deep sedation with a propofol infusion, balanced with fentanyl, antiemetics and ketorolac if indicated. TOR involves multiple transvaginal follicular aspirations and results in mild to moderate postoperative pain which is treated with heating pads and oral or intravenous opioids as needed. The American Society of Anesthesiologists recommends that acetaminophen or non-steroidal anti-inflammatory drugs be used for all surgery, if not contraindicated, to improve postoperative pain control and reduce opioid side effects.[1]

Acetaminophen reduces pain through activation of serotonergic inhibitory pathways as well as through COX pathways.[2] Acetaminophen has been found to improve postoperative pain control and decrease the use of opioids and has minimal side-effects.

We studied the association between the preoperative acetaminophen and the postoperative pain after TOR. We also examined the association between preoperative acetaminophen and perioperative opioid use prior to discharge home, opioid side effects (nausea, vomiting or dizziness) and discharge time.

2. Materials and Methods

We conducted a retrospective study for patients who had TOR at the Strong Fertility Center, associated with the University of Rochester, between August 1, 2015 and January 31, 2018. Patients were excluded that received a paracervical block or did not receive a propofol infusion. RSRB approval at the University of Rochester Medical Center was given on February 16, 2018.

	Data were retrieved from the electronic medical record (EPIC). The pain scale was 0 – 10 (with 10 the most painful) and the opioids used were converted to hydromorphone equivalents. Please see the flow diagram for our inclusion and exclusion data. Preoperative acetaminophen was given to no patients prior to November 8, 2016 and to all but two patients after November 7, 2016 (these two patients were included in the no acetaminophen group for analysis). 3. Results The primary analysis revealed no significant association of receiving preoperative acetaminophen and pain score on arrival to PACU ($p = 0.155$) and highest PACU pain score ($p = 0.543$). Secondary analysis revealed that there was no significant association in patients who received acetaminophen with total opioids used ($p = 0.657$) nor the opioid associated side effects of nausea, vomiting, or dizziness ($p = 0.660$). Acetaminophen was not significantly associated with less postoperative pain medications (odds ratio = 0.725, 95% CI 0.485-1.084, $p = 0.117$) although ketorolac was associated with less postoperative pain medications (odds ratio = 0.254, 95% CI 0.157 – 0.411, $p < 0.0001$). 4. Discussion In this minor outpatient procedure, oral acetaminophen did not improve pain scores, opioid-associated side effects or opioids provided; however, patients provided ketorolac had a significant decrease in opioid use. Further study is needed to define which perioperative adjuncts reduce opioid use and their associated side effects for a variety of surgical procedures.
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Session Title:	Pain Management for Open Abdominal Hysterectomy: Systematic Review of Literature and PROSPECT Recommendations
Session Number:	3431
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 11, 2019 09:42 AM America/Central
Status:	Submitted
Submitter:	Mark Jones (mjones13@bidmc.harvard.edu)
Last Update:	Feb 11, 2019 09:42 AM America/Central

Abstract Body/Description:	Background and Objectives: Despite the growing prevalence of laparoscopic techniques, open abdominal hysterectomy remains a frequent gynecological procedure which has in recent years increasingly been performed as a fast-track procedure with many patients discharged the same day or after a single night of observation. Ambulatory clinicians should therefore maintain familiarity with the optimal pain analgesic regimen. The aim of this systematic review is to give evidence-based recommendations for the management of pain after open abdominal hysterectomy, updating the previous PROSPECT recommendations published in 2004. Strategy and Selection Criteria: Randomized controlled trials evaluating postoperative pain after hysterectomy published between January 2004 and October 2018 were retrieved according to PRISMA guidelines, from the EMBASE and MEDLINE databases, and the Cochrane register of controlled trials. Efficacy and adverse effects of analgesic techniques were assessed. Results: Of the 350 studies screened, 109 were included. Of these, 93 assessed analgesic or anesthetic interventions, and 16 assessed surgical techniques. Acetaminophen and nonsteroidal anti-inflammatory drugs exert analgesic and opioid-sparing effects. This should be coupled with wound infiltration, or regional blocks (transverse abdominis plane or quadratus lumborum) per clinician and institutional preference. Alternatively, intraperitoneal local anesthetic infusion improves analgesia and reduces opioid requirements. Analgesic adjuncts that can be considered are gabapentinoids and alpha-2 agonists. Strong opioid rescue should be provided. Conclusions: The baseline analgesic regimen for open abdominal hysterectomy should include acetaminophen, a non-steroidal anti-inflammatory drug, and opioids as rescue analgesics. This should be coupled with a loco-regional technique (wound infiltration or regional anesthesia). Other interventions with benefit are gabapentinoids, and alpha-2 agonists.

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Author 2:	Richard Urman
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Session Title:	The Impact of Opioid-Related Adverse Events on Spine Surgery
Session Number:	3461
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 14, 2019 02:40 PM America/Central
Status:	Submitted
Submitter:	Mark Jones (mjones13@bidmc.harvard.edu)
Last Update:	Feb 14, 2019 04:00 PM America/Central

Abstract Body/Description:

BACKGROUND

Opioid use following spine surgery can be associated with opioid related adverse drug events (ORADEs). As many spine surgeries trend towards the ambulatory realm with fast-track, same day discharge, understanding the incidence and economic impact of ORADEs may expedite changes to postoperative pain management that could improve patient outcomes, reduce complications, and facilitate fast-track discharge.

METHODS

This retrospective study used the Center for Medicare/Medicaid Services administrative claims database to identify potential ORADEs in 189,328 Medicare discharges who underwent spine surgery (DRG 460-520) between April, 2016 and March, 2017. Hospital resource consumption in patients with and without an ORADE, including impact on LOS and hospital daily Medicare revenue, were analyzed.

RESULTS

For the 19 spinal surgery DRGs analyzed, potential ORADEs occurred in 14.1%. Mean hospital length of stay was longer in patients with a potential ORADE versus without (5.35 days vs. 3.65 days). The patient populations most at risk to suffer an ORADE were those with previous episodes of shock (10.72%), septicemia (7.22%), pneumonia (7.16%), acute myocardial infarction (5.27%), and gastrointestinal hemorrhage (3.83%). Mean hospital Medicare revenue per day for all analyzed DRGs was less in patients with an ORADE compared to those without an ORADE ($5,014.29 vs. $6,985.51). The average net difference in revenue/day between patients with and without an ORADE was $1,971.22.

DISCUSSION

	Potential ORADEs occur frequently following spinal surgery procedures and are associated with increased LOS and reduced daily revenue. Adopting postoperative pain management strategies that reduce ORADEs may improve patient outcomes, reduce complications, and expedite the adoption of ambulatory spine surgery.
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Author 2:	Richard Urman
Author 3:	Nikhilesh Rao
Author 4:	Ethan Brovman
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Session Title:	Acute Tubular Necrosis after Single Dose of Ketorolac for Myringotomy
Session Number:	3412
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Jan 25, 2019 01:51 PM America/Central
Status:	Submitted
Submitter:	Megan Elizabeth Rodgers McCormick (megan.rodgersmccormick@uhhospitals.org)
Last Update:	Jan 25, 2019 01:51 PM America/Central

Abstract Body/Description:

Introduction: Pain is common in perioperative care and effective multimodal pain management during the intraoperative time can help reduce pain and decrease rescue medications in PACU. Ketorolac is frequently used due to its favorable side effect profile and effectiveness in pain control. There is very little literature on healthy children developing ketorolac-induced nephropathy. We describe postoperative, reversible acute tubular necrosis in a healthy 13-year-old female after receiving one dose of intravenous ketorolac during anesthesia for myringotomy and PE tubes.

Case Report: A previously healthy 39.1 kg, 13-year-old female with a medical history of chronic middle ear effusions was scheduled for myringotomy and ear tube placement. Preoperatively an IV with lactated ringers solution was placed. During her 5-minute surgery, she received 2mg midazolam, 50 mcg Fentanyl, 500 mg IV Acetaminophen, 4 mg Ondansetron, 19 mg of Ketorolac, Sevoflurane, and 200 milliliters of lactated ringers. The patient had an uneventful course and was discharged to home from PACU after meeting criteria. 2 days postoperatively she complained of back pain and nausea. She was taken to the emergency room and was admitted with diagnosis of acute kidney failure and proteinuria. A renal biopsy revealed diffuse acute tubular necrosis. Her renal function panel continued to rise on postoperative day 5 with creatinine of 4.28 and postoperative day 6 with BUN 50. A hemodialysis catheter was placed, but labs improved, never requiring dialysis. 5-day hospitalization treatment included Solumedrol and IV fluids. Her labs remained elevated for 8 days postoperatively but by day 13, her labs were at baseline. Labs remained stable 5 months later.

Date

BUN

	Creatinine 7/14/18 26 3.44 7/15/18 32 4.28 7/16/18 50 3.54 7/17/18 50 2.83 7/18/18 29 1.38 7/23/18 18 0.8 7/30/18 11 0.7 9/18/18

15

0.68

12/27/18

10

0.65

Discussion: Despite myringotomy surgery being brief, there can be significant pain. Several pediatric studies indicate that nonsteroidal anti-inflammatory drugs (NSAIDS) are effective analgesics in the management of mild and moderate pain[1]. Ketorolac is a NSAID with potent analgesic effects and a low incidence of adverse effects. Ketorolac does not depress ventilation, and is not associated with nausea, vomiting, urinary retention, or sedation[2]. A combination of fentanyl and ketorolac are frequently administered together for myringotomy surgery and studies have shown to be associated with superior PACU analgesia, reduced need for narcotic rescue, reduced recovery time, and no increase in emesis[3]. Literature is limited regarding healthy children without contraindications to ketorolac that develop acute kidney injury after one dose.

Conclusion: Ketorolac is a NSAID with potent analgesic effects and low incidence of side effects used frequently in children for pain management. This is a case report in which a healthy individual received an appropriate one-time dose of Ketorolac and developed renal failure postoperatively requiring hospital admission and treatment. It is important to recognize that renal function may be impaired even in healthy individuals from the combination of NPO status and NSAID administration.

References:

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2. Forrest, JB, Heitlinger, EL, Revell, S. Ketorolac for Postoperative Pain Management in Children. *Drug Safety*. 1997;16(5):309-329. doi: 10.2165/00002018-199716050-00003
3. Stricker, PA, Muhly, WT, Jantzen, EC, et al. Intramuscular Fentanyl and Ketorolac Associated with Superior Pain Control After Pediatric Bilateral Myringotomy and Tube Placement Surgery: A Retrospective Cohort Study. *Anesthesia & Analgesia*. 2017;124(1):245-253. doi: 1213/ane.0000000000001722

4.	
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Session Title:	Standardizing practice for septorhinoplasty and similar surgeries in an ambulatory setting
Session Number:	3415
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Jan 28, 2019 05:59 PM America/Central
Status:	Submitted
Submitter:	Melanie J. Donnelly, M.D., (mdonnelly4@gmail.com)
Last Update:	Jan 28, 2019 05:59 PM America/Central

Abstract Body/Description:

Introduction: Many procedures are performed each year in the United States to treat nasal septal deviation, nasal turbinate hypertrophy, and other nasal disorders. The majority are conducted in an ambulatory setting (1). There is limited published evidence on best anesthetic practices for these surgeries. In March 2017, our group implemented an anesthetic protocol for septo-rhinoplasties and similar nasal surgeries (SRP+). We did this to reduce variability among providers and establish a baseline for practice from which to begin improvement efforts. This protocol was derived from generally accepted evidence-based practices (2). Figure 1 outlines this protocol. This is our first attempt at analyzing our practice change and assessing the outcomes of compliance, pain, nausea and recovery room time.

Methods: This is a quality improvement project aimed at assessing standardization of care and resultant outcomes. The protocol was implemented in March 2017. Charts of patients having SRP+ between January 2016 and April 2018 were reviewed. No patients were excluded. Descriptive statistics were performed. Patients with extended recovery room stays (>90 minutes), and those who were defined as having "compliant" anesthetics were examined separately. Compliance was defined as having celecoxib, acetaminophen, remifentanil and no pregabalin or midazolam.

Results: The demographics and medication utilization are presented in Table 1. Table 2 outlines the results of the analysis. Figure 2 is a control chart depicting recovery room times pre and post protocol implementation. Compliance with the main features of the protocol was 65%. Slightly improved trends were seen in pain, nausea and opioid

	utilization amongst the "compliant" group. Relaxant was used sparingly in 10% (n=7) of the pre-protocol cases and 17% (n=14) post-protocol. Discussion: The data demonstrate good, but imperfect, compliance with our protocol. This is likely due to slow adoption of the protocol, specific patient conditions, and a brief remifentanil shortage. Recovery times did not markedly change, though the control chart shows a very gradual decline(Figure 2). Pain scores and nausea rates trended towards a lower value post-protocol. The nausea rate pre- and post-protocol (9-12%) compare favorably with the 34-56% rate quoted in the literature (2). When examining patients in the protocol group with prolonged stays, there were no notable differences in care or demographics to explain this outcome, though higher initial pain scores are likely to be the primary reason. Oxycodone use postoperatively was higher in the post-protocol group. The heavier use of pregabalin, hydromorphone and fentanyl may explain this difference. Conclusion: These data demonstrate that we are showing early success implementing a protocol for care of our SRP+ patients. Next steps will be identifying strategies to decrease the post-operative nausea rate, pain scores, and recovery room times. By standardizing care of these patients we will be able to examine how changes in our protocol can impact the quality of our anesthetic and recovery profiles. 1. Bhattacharyya N.Ambulatory Sinus and Nasal Surgery in the United States: Demographics and Perioperative Outcomes. The Laryngoscope, 120:635-638;2010. 2. Nguyen BK, Yuhan BT, Folbe E, et al. Perioperative Analgesia for Patients Undergoing Septoplasty and Rhinoplasty: An Evidence Based Review. The Laryngoscopy, 00:1-13;2018.
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Session Title:	Local Anesthetic Systemic Toxicity Prior to Ambulatory Surgery: Should the Surgery Proceed?
Session Number:	3446
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 13, 2019 10:01 PM America/Central
Status:	Submitted
Submitter:	Michael O'Rourke, MD (miorourke@lumc.edu)
Last Update:	Feb 13, 2019 10:01 PM America/Central

Abstract Body/Description:

Introduction:

Regional anesthesia using local anesthetics is a common method for controlling pain for outpatient surgery. Local Anesthetic Systemic Toxicity (LAST) is an uncommon but known complication of performing regional anesthesia with local anesthetics. We present the case of a patient who experienced LAST prior to a scheduled outpatient surgery and subsequently had uneventful surgery and was discharged home.

Case Description:

A 22 year old female presented for removal of a left ganglion cyst at our outpatient surgical center. She weighed 59kg and was healthy with no significant medical history. The surgeon requested regional anesthesia for postoperative pain control. After informed consent, the patient was placed on standard monitors and oxygen administered via nasal cannula. A timeout was performed. The patient received midazolam 2mg IV and an ultrasound probe was placed for an infraclavicular brachial plexus block. The cords of the brachial plexus surrounding the axillary artery were identified. After skin infiltration with 1% lidocaine, the block needle was positioned adjacent to the posterior cord and 20mL of 0.5% bupivacaine with 1:200,000 epinephrine was administered. Local anesthetic spread was visualized in real time on the ultrasound. The needle was then repositioned next to the medial cord and additional local anesthetic was injected. After injection of 5mL, no spread of local anesthetic was identified on the ultrasound and then injection was stopped. Within a minute the patient exhibited tachycardia and became confused. This was immediately recognized and the infusion stopped. Lipid emulsion was immediately administered and the patient's vital signs remained stable other than the tachycardia. The patient exhibited restlessness and drowsiness but no unconsciousness or cardiac signs. After the patient

	fully recovered a discussion was held with her and her family and ultimately a decision to proceed with her elective surgery was made. **Discussion:** Local anesthetic systemic toxicity (LAST) is an uncommon but known complication of regional anesthesia. If a patient experiences LAST, there are no guidelines as to whether an elective procedure should subsequently proceed. Our patient exhibited CNS but no cardiac effects of LAST. After administration of lipid emulsion, the CNS signs completely resolved. In our case, the patient had surgical anesthesia of her left hand and wrist after resolution of the LAST event. We discussed the option of postponing surgery or proceeding with the scheduled case. For our case the patient had adequate regional anesthesia for the case. The patient made the decision to proceed with surgery with the agreement of surgeon and anesthesiologist. Our case highlights that elective outpatient surgery can proceed after a LAST event. However, the decision to proceed with elective outpatient surgery after a LAST event must be individualized to the patient and scheduled surgery.
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Session Title:	Kool Aid or blood: Incidental discovery of Iron deficiency anemia in an infant leading to a process improvement
Session Number:	3438
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 13, 2019 07:17 AM America/Central
Status:	Submitted
Submitter:	Niraja Rajan, MD (nrajanmd@yahoo.com)
Last Update:	Feb 13, 2019 07:17 AM America/Central

Abstract Body/Description:	Background: Iron deficiency anemia (IDA) has been associated with detrimental effects on neurological development, cognitive function, exercise tolerance, immune function, school performance and more recently with stroke, in infants and children. (1-4) The World Health Organization reports that the overall rate of infant and childhood (six to 59 months of age) anemia in the United States in 2011 was 6% with the exception of low-income families in whom it was 14.6 %.(5) This is a case of severe IDA in an infant which was incidentally diagnosed during elective outpatient surgery. Case Description: A nine month old presented for circumcision at our ASC. Past medical history was significant for prematurity and IUGR. He was born at 34 weeks gestational age, spent 3 weeks in the NICU for low birth weight, discharged home on no monitors and had no issues currently related to prematurity. A recent pediatrician well-visit documented appropriate growth and development. Physical examination revealed a happy, playful baby. His apparent pallor was attributed to lighting and the fact that he “resembled mom”. Anesthetic induction, caudal placement and intraoperative course were uneventful. The surgeon commented that the blood looked like “Kool Aid” on the field which prompted the anesthesia team to check a CBC. The hemoglobin was 3.5 g/dl. (Figure 1) The patient was transferred to the ED postoperatively and admitted to the hospital where he received two PRBC transfusions of 5 ml/kg. Discharge hemoglobin was 7.6 g/dl. His lab values were consistent with iron deficiency anemia. (Table 1) Discussion: This case illustrates the “Swiss cheese model” of a near-miss event. At the 9 month visit the pediatrician had noted that the baby looked pale but in accordance with the AAP guidelines, intended to check a hemoglobin at the 12 month visit. Preoperative labs are not routinely obtained for elective surgery in healthy pediatric patients. Both the surgical and anesthesia teams were reassured by the child’s well appearance and attributed his pallor to other causes. This baby had several

	risk factors for IDA: prematurity, IUGR, predominantly breast fed with very little supplemental feeding. Upon discharge the parents were educated about supplemental nutrition and the baby was started on iron drops. We recommend checking a hemoglobin level in high risk infants presenting for elective surgery. 1. Lozoff B, Wolf A, Jimenez E. Iron-deficiency anemia and infant development: effects of extended oral iron therapy. J Pediatr. 1996;129:382-389. 2. Lozoff B, Jimenez E, Hagen J, Mollen E, Wolf AW. Poorer behavioral and developmental outcome more than 10 years after treatment for iron deficiency in infancy. Pediatrics. 2000;105:E51. 3. Sandoval C, Berger E, Ozkaynak F, Tugal O, Jayabose S. Severe iron deficiency anemia in 42 pediatric patients. Pediatr Hematol Oncol. 2002;19:157-161. 4. Maguire JL, deVeber G, Parkin PC. Association between iron-deficiency anemia and stroke in young children. Pediatrics. 2007;120:1053-1057. 5. World Health Organization. The global prevalence of anaemia in 2011.
6.	
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ession Title:	Implementing outpatient total joint program at an ambulatory surgical center after a pilot project at a tertiary main hospital
Session Number:	3459
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Feb 14, 2019 01:41 PM America/Central
Status:	Submitted
Submitter:	Olga Nin, MD (onin@anest.ufl.edu)
Last Update:	Feb 14, 2019 01:41 PM America/Central

Abstract Body/Description:	Introduction: Outpatient total joint arthroplasty (TJA) is projected to continue to grow and eventually represent more than 50% of all TJA by 2026.[1]A pilot study of 105 total joint patients was done at our tertiary care academic medical center to optimize an outpatient arthroplasty protocol before implementing this protocol at our outpatient surgical center.[2]The most common reasons for failure included (in descending order) orthostatic hypotension, patient decision, urinary retention, and nausea (Figure 1). Significant leg buckling and pain occurred in less than 3% of the study group. Complication rates were lower than for the equivalent inpatient group, and readmission for pain management was zero. Methods: The outpatient arthroplasty protocol was updated based on findings and lessons from the pilot study and before implementation at our outpatient surgical center. This was done via a multidisciplinary workgroup. Before arrival at the outpatient surgical center, all patients went through a total joint replacement educational day, in-person anesthesia preoperative appointment, physical therapy evaluation, and a session with the same therapist that would see them on the day of surgery and for an average of 15 sessions postoperatively. Patients received two dedicated outpatient educational videos describing their surgical day experience and pain control plan that they would watch during their in-person anesthesia preoperative appointment. Intraoperative anesthetic comprised total intravenous general anesthesia, continuous femoral nerve block (CPNB) home catheter, infiltration between popliteal artery and capsule of the knee, multimodal pain control, and limited opioid administration. We reviewed a consecutive series of the first 14 outpatient total knee arthroplasty procedures at the outpatient surgery center and their total preoperative time, block time, total operating room time, surgical time, post-anesthesia care unit (PACU) time, physical therapy time, home discharge success, readmission, and complications.

	Results: Though this was a review of the first 14 TJAs at our ambulatory surgical center, 100% of patients were successfully discharged home compared to 87.5% of patients from our pilot study. We have had no readmissions, urinary retention, or known complications. One patient required postoperative knee manipulation post-operatively. Our average PACU length of stay was 137 minutes compared to 351 minutes in our tertiary care academic center. Conclusion: Performing a pilot study at our tertiary center provided an important opportunity for optimization and implementation of our institution's outpatient arthroplasty protocol at our ambulatory surgical center. PACU length of stay is almost 3.5 hours less than at our tertiary center. Ambulatory CFNB provided an excellent option to accomplish early mobility and early discharge for outpatient TJA procedures. Preoperative physical therapy consults and dedicated same-day therapist appointments at our ambulatory center have been significant factors in the decrease in length of stay. We will continue to grow our outpatient total joint program and continue to optimize our outpatient arthroplasty protocol.

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Session Title:	Brainstem Anesthesia after Retrobulbar Block in Outpatient Surgery Center
Session Number:	3466
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 14, 2019 04:28 PM America/Central
Status:	Submitted
Submitter:	Rahel Selassie (rahelss@gmail.com)
Last Update:	Feb 14, 2019 04:28 PM America/Central

Abstract Body/Description:

Introduction:

In the United States, more than one million retrobulbar blocks are performed annually (1) to achieve surgical anesthesia/akinesia. Life and sight threatening complications are rare, but highly vigilant and properly trained anesthesia providers need to recognize, intervene, and treat these complications when they occur (1).

Background:

A 77yo male with a history of atrial fibrillation, hypertension, CVA, and diabetes presenting for retina surgery under MAC anesthesia with Retrobulbar Block(RBB). In preparation for the RBB, 1mg midazolam, 25mcg fentanyl and 20mg propofol given for sedation. Ophthalmologist performed RBB. Patient remained unconscious with minimal respiratory effort after the block. Sellinger maneuver was initiated, but no respiratory effort detected. O2 sats dropped precipitously and resuscitation ventilation with Jackson Reese performed resulting in an increased O2 saturation. However, patient never regained spontaneous respirations or consciousness. Help was called to the OR. Patient became hypotensive, bradycardic, and pulse was faintly palpable. Ephedrine was administered for BP support. Reversal agents administered to rule out residual anesthetic effects with no improvement. Blood glucose checked was normal. Patient was intubated. Decision was made to transfer patient to a hospital. However, prior to the transfer, patient regained spontaneously breathing, met extubation criteria and was successfully extubated. Postoperatively, head CT was negative, patient returned to baseline mental/physical status, and he was discharged the following day with diagnosis of brain stem anesthesia from RBB.

	Discussion: Major complications from RBB are rare but include retrobulbar hemorrhage, optic nerve atrophy, IV injection, seizures, globe perforation, oculocardiac reflex, respiratory arrest, trigeminal nerve block, acute neurogenic pulmonary edema, and inadvertent intrathecal injection resulting in brainstem anesthesia. When unexpected complications occur in the OR, calling for help, anesthesia availability, properly equipped facilities, and ACLS trained staff are imperative. Early recognition of mental status changes and failure to resume spontaneous respirations are essential to prevent cascade of events resulting in death. Differential diagnosis and methodical ruling out of potential causes are important. Treatment for potential brainstem anesthesia after RBB is supportive, including adequate ventilation and supportive measures preventing hypoxia, bradycardia, and cardiac arrest. Patient regained respiratory effort and motor function within an hour, which made post retrobulbar apnea syndrome from intrathecal local anesthetic injection the most likely cause. We transferred the patient to ER to rule out other causes. Full workup at ER was negative and a final diagnosis of brain stem anesthesia and post retrobulbar apnea syndrome from the RBB was made. Conclusion: While brainstem anesthesia after RBB is extremely rare, the incidence of this complication in literature ranges between 0.27% to 0.79% (2). RBB is done as a blind technique; the use of ultrasound guided RBB could potentially help decrease the risk of complications due to direct visualization(4). Regardless of techniques, early suspicion, detection, and intervention of lethal complications is essential. All surgery center staff should follow ACLS protocols for resuscitation, and facilities should be properly equipped to handle these rare but deadly complications (3).
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Session Title:	Paravertebral, Serratus, and PECS: Outcomes of an Evolving Practice of Chest Wall Blocks for Patients Undergoing Bilateral Mastectomy with Reconstruction in an Ambulatory Surgery Center
Session Number:	3414
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Jan 28, 2019 12:30 PM America/Central
Status:	Submitted
Submitter:	Rebecca Twersky, MD (twerskyr@mskcc.org)
Last Update:	Jan 28, 2019 12:30 PM America/Central

Abstract Body/Description:

Introduction

There has been a rising trend of tissue expander reconstruction after mastectomy (MTE) performed in the outpatient setting[1], tasking clinicians with incorporating regional blocks when feasible as part of a multimodal opioid-sparing analgesic strategy. While the paravertebral (PVB) is considered the gold-standard regional anesthetic for breast surgery, novel interfascial plane blocks are increasingly being performed and may provide an alternative approach that is easy, safe, and effective in the outpatient setting.

When our ambulatory surgery facility opened in 2016, we performed only PVBs for MTE. As our practice evolved, we incorporated serratus and PECS1 blocks as alternatives. While PECS and serratus blocks have been described since 2011, they are not well-studied in the MTE population. This retrospective review sought to describe analgesic consumption and other clinical outcomes by block type to help identify the optimum block for this population.

Material and Methods

Following IRB approval, a retrospective chart review of patients undergoing bilateral MTE from April 2017 to December 2018 was performed. Patients were grouped by PVB, serratus, PVB + PECS1, and serratus + PECS1.

All blocks were placed preoperatively under ultrasound-guidance by one of seven anesthesiologists. Block selection was at the discretion of clinician. 0.375-0.5% bupivacaine or ropivacaine, 15-20mL/side was administered for PVB or serratus blocks and 0.25-0.375%, 10-15mL/side for PECS1. Injectate included clonidine and/or dexamethasone. All patients received GA with standardized analgesic and antiemetic medications.

Multivariable logistic regression was used to test the association between block type and probability of requiring a postoperative narcotic adjusting for intraoperative narcotic and age and probability of requiring a rescue antiemetic adjusting for Apfel score, age and operative time. Amount of postoperative narcotics was categorized by quartiles (low, moderate, high and very high amounts) and its association with block type was tested using multivariable ordinal regression adjusting for age and intraoperative narcotic. P-values < 0.05 were considered significant.

Results

Of the 754 patients who underwent bilateral MTE with a block, PVB was the most common (78%; **Table 1**). Patients who received Serratus +/- PECS1 tended to have higher BMI, age, ASA score, and longer operations (all p-values<0.001). 11% of patients declined a block. Amount of intraoperative fentanyl was significantly associated with type of block with serratus recipients tending to receive more fentanyl (**Table 1;** p<0.0001). There were no differences among groups in the amount of intraop ketorolac or acetaminophen given.

10% of block recipients did not receive any postoperative narcotic. Although we found no evidence of association between block type and probability of requiring postoperative narcotic (simultaneous Wald test; p=0.9), our confidence intervals around zero were very wide (**Table 2)**. We did not find that the quartile of postoperative narcotics differed based on block type (p=0.3; **Table 3**).

	No differences in antiemetic rescue, time to ambulation or hospital transfers related to block types were found. **Discussion** Our retrospective analysis suggests minimal differences among block type and periop analgesic requirements in MTE patients. In order to provide more precise estimates, and mitigate selection bias, a randomized trial is needed to help guide clinicians in the optimal regional anesthetic approach for breast cancer patients. **References** 1. Miller AD et al HCUP Statistical Brief #228, 2017

2.

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Session Title:	Reduction of Femoral Nerve Block Administration for Arthroscopic Anterior Cruciate Ligament Reconstruction
Session Number:	3401
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Dec 02, 2018 07:45 PM America/Central
Status:	Submitted
Submitter:	Robin Leopold (rleopold@med.unc.edu)
Last Update:	Feb 12, 2019 06:41 PM America/Central

Abstract Body/Description:

Background:

Femoral nerve blocks (FNB) are commonly performed for pain control in patients undergoing anterior cruciate ligament reconstruction (ACL-R). FNBs may be performed either pre- or post-operatively, dependent upon institutional norms, clinical predictors of post-operative pain, or other patient factors. Although effective at reducing pain, FNBs are not benign procedures. In addition to the rare risks of permanent nerve injury and local anesthetic toxicity, FNBs more commonly result in significant quadriceps group weakness; resulting in increased time to full strength recovery and a transient increase in fall risk. In pediatric athletes, FNBs have been shown to increase the return to play time. For the elite academic or professional athlete, such limitations are a source of concern and potential for lost opportunity or employment.

The University of North Carolina Hospitals altered practice from administering FNBs preoperatively in most patients undergoing ACL-R to instead offering preoperative oral multimodal (acetaminophen, celecoxib and pregabalin) medications and FNB postoperatively on an as needed basis and analyzed risk factors leading to a postoperative FNB.

Methods:

Via a retrospective case-control study, we examined six months of patient charts prior to the institutional change to establish a baseline frequency of FNBs in patients undergoing ACL-R. We then reviewed 21 months of patient charts during dates after which FNBs were offered primarily as a postoperative PRN option. We investigated factors that would potentially increase the need for a postoperative FNB. In this cohort, any patient who received FNB preoperatively was excluded. Patient factors that were analyzed included age, sex, smoking status, BMI, and preoperative opioid use. Surgical variables analyzed were graft site (specifically autograft vs. allograft), primary vs. revision surgery, concurrent meniscal repair, and

	concurrent chondral repair. Variables were analyzed for statistical significance between cases and controls via Chi-square test for discrete variables and Wilcoxon-Mann-Whitney test for continuous variables. **Results:** Charts were examined to establish a baseline of FNBs prior to institutional change, revealing that 89% of patients had received an FNB prior to their ACL-R. Of patients reviewed after institutional change, 172 patients undergoing ACL-R qualified for the study, with an incidence of 32.5% (n=56) requesting a postoperative block. Females requested blocks more frequently than males (female 48.7%, n=37/76; male 19.8%, n=19/96; $p<0.0001$). Younger patients were less likely to require FNB, with average age requesting a block being 27.6 years vs. 24.0 years for no block requested. No relationship was shown between rates of postoperative FNB and BMI, smoking status, preoperative opioid use, concurrent meniscal or chondral revision, nor with revision surgery. **Discussion:** An institutional change from administering FNBs preoperatively at practitioner's discretion for ACL-R to instead offering preoperative oral multimodal medications and only administering FNBs postoperatively on a patient-guided PRN basis reduced the rate of FNB from 89% to 32.5%. The largest reduction was seen in male patients, with FNB requested 19.8% of the time postoperatively. This analysis supports that preoperative FNBs for ACL-R are mostly unnecessary. By allowing the procedure to be driven primarily by postoperative patient request, we can anticipate a clear reduction in the rate of both undesirable adverse events and rare complications secondary to FNB.
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Session Title:	Prolonged Spinal Following Routine Administration of Intrathecal Bupivicaine
Session Number:	3410
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Jan 23, 2019 07:39 AM America/Central
Status:	Submitted
Submitter:	Ruchir Gupta (guptar2005@yahoo.com)
Last Update:	Jan 23, 2019 07:39 AM America/Central

Abstract Body/Description:

The patient was a 61-year-old female with HTN, DM, and a colonic mass undergoing right laparoscopic hemcolectomy. The preoperative biochemical and laboratory parameters as well as vital signs were normal. The patient was placed in sitting position. Under sterile conditions, the L3–4 level subarachnoid space was accessed with a single puncture, using 25-G Whitacre spinal needle. The accurate placement was confirmed by the free flow of cerebrospinal fluid (CSF) before and after injecting 2 cm3 of hyperbaric 0.75% bupivacaine with 100 mcg of hydromorphone and 200 mcg epinephrine. Initial post-placement vitals were stable. A T8 level of anesthesia was achieved and surgery commenced. PAtient was induced with 100 mg of lidocaine, 150 mg of propofol, and 50 mg of rocuronium and intubated with a 7.0 ETT. The procedure last 3.5 hours and finished uneventfully.

Four hours postspinal placement, the sensory anesthesia level remained at T10 level. Three hours after that (7 hours postspinal placement) the level was T12-L1 with no gross movement. Ten hours postspinal placement, the sensory dermatomal level was at L1 and there was minor gross movement of the great toe. Fourteen hours postspinal placement, the was able to raise both legs with resolution of sensory level. Neurologic tests were deferred during this time because of partial progressive regression of the spinal. The patient had full functioning of lower extremities at 18 hours post spinal placement.

Discussion

We used a dose of 15mg of bupivicaine, 10 mcg of fentanyl, and 200mcg of epinephrine. The local anesthetic, bupivacaine, used for the spinal anesthesia in our patient lasted about 4 times the expected block duration for a standard bupivacaine dose of 7.5mg to 15mg (2). Clinicians favor bupivacaine for spinal anesthesia due its lower incidence of transient neurologic symptom (TNS).

The opioid adjunct used was fentanyl. It has been shown to have rapid onset, short duration of action with minimal cephalic spread, which favors a decreased risk of respiratory depression and enhanced analgesia without prolonged hospital stay (3,4).

The intrathecal epinephrine was chosen to improve both quality and duration of the spinal anesthesia. Studies have shown that recovery time can be increased up to 40% (4). This definitely added to the prolongation of our block, but should not fully explain the reason for the exaggerated block duration.

Some other possible explanations could have been a spinal hematoma, TNS, and anterior spinal artery syndrome. A spinal hematoma was unlikely as the patient had no known coagulopathies and had an atraumatic spinal anesthetic. TNS was unlikely as the patient did not complain of the pain pattern (pain in the back and down the lower extremities) that characterizes this condition. In addition, the local anesthetics typically associated with TNS, lidocaine and mepivacaine, were not used (5). Anterior spinal artery syndrome was unlikely as the flaccid paralysis of the lower extremities and the loss of bowel and bladder function that characterize the disorder did not occur.

There have been 2 others cases reports of prolonged spinal anesthesia (one as high as 36 hours) using similar doses to what this patient received (6, 7). One possible reason for the prolonged duration in all of these patients was hypothesized in a study that showed the CSF volume is inversely correlated to block regression. The thought being that increased CSF volume leads to increased dilution of the injected spinal anesthetic. The inverse being that decreased CSF volume leads to decreased dilution of the injected spinal anesthetic, which would clinically correlate to a prolonged block duration (8). Neither imaging studies nor testing of the patient's CSF was done to help support this hypothesis.

In all, increased block duration can occur with regular dosing of spinal anesthesia. Clinicians should be aware of this, but should take care to closely monitor patients to avoid irreversible neurologic damage.

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Session Title:	Management of Patient with Scleroderma
Session Number:	3423
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 08, 2019 10:45 AM America/Central
Status:	Submitted
Submitter:	Ruchir Gupta, M.D. (guptar2005@yahoo.com)
Last Update:	Feb 08, 2019 10:45 AM America/Central

Abstract Body/Description:

Case History

A 55-year-old, 72 kg, male presented for a left below the knee amputation (BKA) secondary to diabetic gangrene. The patient also had a history of scleroderma. Medical clearance stated the patient has chronic dyspepsia secondary to the scleroderma and also congestive heart failure (CHF) with an EF of 40%. Preoperative PFTs showed a restrictive lung defect. On examination, the patient has shiny, tight skin consistent with scleroderma along with flexion contractions in the fingers. Preoperative vitals: heart rate 110 bpm, RR 14, BP 90/65 mmHg, O2 Sat 98% on RA. The anesthesia team debated the merits of general anesthesia vs. peripheral nerve blockade vs. neuraxial technique. A decision was made to perform a combined spinal/epidural (CSE) for the case. After infusion of 500 ml of LR, 15 mg of 0.5% bupivacaine were placed intrathecally and an epidural catheter was placed in the epidural space. An additional 8 ml of 0.5% bupivacaine was administered via the epidural catheter during the case. The patient received low dose propofol sedation during the case and the case lasted 45 minutes.

Discussion

Our patient's history of scleroderma presented us with unique challenges. On the one hand, the patient has dysphagia which would make securing the airway a priority. However, the patient's severe lung disease along with the history of CHF make GA less appealing. A peripheral nerve blockade is less than ideal in these patients because scleroderma results in fibrosis and hypertrophy of tissues that can raise the compartment pressure. A neuraxial techniques, especially a CSE allowed us to avoid placing the patient on a ventilator while also allowing for adequate analgesia. The short duration of the case was also a factor in our decision making process.

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Author 1:	Ruchir Gupta, M.D. (guptar2005@yahoo.com) Stony Brook University

Session Title:	Unrecognized Aortic Stenosis in a Patient with Williams Syndrome
Session Number:	3424
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 08, 2019 10:47 AM America/Central
Status:	Submitted
Submitter:	Ruchir Gupta, M.D. (guptar2005@yahoo.com)
Last Update:	Feb 08, 2019 10:47 AM America/Central

Abstract Body/Description:	A 16-year-old boy weighing 55 kg was scheduled for removal of dental carries. Patient has a past medical history of Wiiliams Syndrome (WS) which is characterized with developmental delay, overly friendly affect, and failure to thrive. On physical exam, the patient has the typical features of WS: elfin facies, upturned nose, wide mouth, full lips, and widely spaced teeth. His vital signs are heart rate of 80 bpm, bp 88/66 mmHg, RR 12 and SpO_2 99% on room air. The patient had a history of mouth breathing and mild snoring. Airway examination was otherwise insignificant. Laboratory investigations and chest radiograph are within normal limits. After preoxygenation with 100% O2, the patient is induced with 100 mcg of fentanyl 100 mg of lidocaine, 150 mg of propofol and 40 mg of rocuronium. Immediately after induction, ST segment elevation are noted on the EKG. The patient is intubated and a repeat blood pressure is 60/40 mmHg. Phenylephrine is administered and fluids opened wide with improvement of ST elevations. A follow up bp is 100/60 mmHg. A 12 lead EKG is shows presence of Q waves with no ST changes. A decision is made to place a tranesophageal echocardiogram probe in the patient to assess the myocardium. The TEE shows: severe aortic stenosis, mild mitral regurgitation, normal ejection fraction of 55%, and pulmonary stenosis with peak gradient of 30 mmHg. A right radial a-line is placed and the patient connected to a phenylephrine drip to maintain SVR throughout the case. The case proceeds uneventfully for 1.5 hours. Patient is extubated and transported to the PACU and referred to cardiothoracic surgery for evaluation of possibly aortic valve. **Discussion** Patients with Williams Syndrome have changes in the aortic or pulmonary arteries. The possibility of coronary artery compromise can exist through different mechanisms including thickening of the aortic wall. In patients with aortic stenosis, maintenance of SVR is paramount in order to promote coronary backfill. In our patient it appeared the

	patient had old MIs which are evidenced by the presence of Q waves on the EKG. Thus, we noticed ST changes when the SVR was lowered via the use of propofol. This prompted us to place an a-line to monitor the BP closely while titrating in a vasoconstrictor that would increase the SVR. Administration of our vasoconstrictor (phenylephrine) allowed resolution of ST segment changes and the patient was able to proceed safely with the plan. Patients with Williams syndrome should receive close BP monitoring which can include, but is not limited to, placement of a continuous BP monitor with strict control of BP upon induction and emergence. References: 1. Burch TM, McGowan FX Jr., Kussman BD, Powell AJ, DiNardo JA. Congenital supravalvular aortic stenosis and sudden death associated with anesthesia: What′s the mystery? Anesth Analg 2008;107:1848-54. 2. Pober BR, Johnson M, Urban Z. Mechanisms and treatment of cardiovascular disease in Williams-Beuren syndrome. J Clin Invest 2008;118:1606-15. 3. Urbán Z, Zhang J, Davis EC, Maeda GK, Kumar A, Stalker H, *et al.* Supravalvular aortic stenosis: Genetic and molecular dissection of a complex mutation in the elastin gene. Hum Genet 2001;109:512-20.
Author 1:	Ruchir Gupta, M.D. (guptar2005@yahoo.com) Stony Brook University

Session Title:	Effect of Deep versus Moderate Neuromuscular Blockade on Peak Airway Pressures
Session Number:	3441
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 13, 2019 12:00 PM America/Central
Status:	Submitted
Submitter:	Ruchir Gupta, M.D. (guptar2005@yahoo.com)
Last Update:	Feb 13, 2019 12:00 PM America/Central

Abstract Body/Description:

Background

Neuromuscular blockade (NMB) is frequently utilized in laparoscopic procedures to improve surgical conditions[1] by relaxing the abdominal muscles and thus facilitating insufflation with CO_2 to optimize surgical view. While studies have investigated the effects of neuromuscular blockade on surgical conditions and abdominal insufflation pressures, to our knowledge, little is known about the benefit, if any, a deep NMB blockade will have over a moderate NMB on airway pressures. To test our hypotheses, we conducted a two period cross-over study by randomizing patients undergoing laparoscopic surgery into 2 different groups: group 1 in which patients will receive “deep neuromuscular blockade” in the beginning portion of the surgery followed by a period of “moderate blockade” , and group 2 in which patients will receive “moderate neuromuscular blockade” in the beginning portion of the surgery followed by a period of “deep blockade”. The deep neuromuscular block will be defined as post tetanic count of 1 to 2 and the moderate neuromuscular block will be defined as 1-2 twitches.

Methods

This was be a single-center, prospective, randomized, two-period crossover controlled trial. Subjects were randomly assigned to one of two study groups :

Group 1 DàM: After induction and intubation, the patient was maintained in a “deep” (post-tetanic count, one or two twitches) neuromuscular block (NMB). For the next 20 minutes of surgery during which a “deep” NMB was maintained, peak airway pressure, heart rate, and blood pressure was

collected every minute. After completion of the deep NMB 20 minute period, a “transition period” of approximately 10-15 minutes was begun (T_1). Once the patient achieved a “moderate” NMB state (one to two twitches), data collection was begun again. For the next 20 minutes of surgery during which a “moderate” NMB was maintained, peak airway pressure measurements (as well as other relevant secondary outcome measurements) were collected every five minutes.

Group 2 MàD: After induction and intubation, the patient was maintained in a “moderate” (post-tetanic count, one or two twitches) neuromuscular block (NMB). For the next 20 minutes of surgery (during which a “moderate” NMB is being maintained), peak airway pressure measurements, heart rate, and blood pressure were collected. After 20 minutes, a “deep” NMB was initiated. For the next 20 minutes of surgery (during which a “deep” NMB is maintained), peak airway pressure measurements (as well as other relevant secondary outcome measurements) were collected.

Results

We expect to complete our data analysis by mid April. We will be analyzing the effects of our primary outcome (PAP) based on which group the patient was randomized too as well as by “moderate” or “deep” blockade. We also intend to look at our secondary outcomes based both on the “group” allocation and the moderate vs. deep arm.

Discussion

Current literature is limited on the effect of deep versus moderate blockade on PAP in laparoscopic cases. While this has been studied in patients undergoing one-lung ventilation, it remains unclear if those results are generalizable to the two lung ventilated laparoscopic case. Our results should shed light on this issue and offer incite into future research in this area.

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recovery than train-of-four count at corrugator supercilii. Br J Anaesth 2007; 99:376Ð9.

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Session Title:	Anesthetic Management of Treacher Collins in an Oupatient Surgical Center
Session Number:	3421
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 06, 2019 05:20 PM America/Central
Status:	Submitted
Submitter:	Sanjay Mohan, MD (sanj.mo@gmail.com)
Last Update:	Feb 06, 2019 05:20 PM America/Central

Abstract Body/Description:

Treacher-Collins syndrome (TC) is a condition that impairs bone and soft tissue development in the face. Common features include micrognathia and underdevelopment of the zygomatic arch without developmentally delay[1,2]. The primary anesthetic concern is a difficult airway. Mask ventilation and visualization for endotracheal intubation can be challenging and Cormack-Lehane (CL) grade worsens as patients with TC age[3,4].

We describe a case performed at our Outpatient Surgical Center (OSC) on a patient with TC. A 15-year-old male with TC presented to our Comprehensive Pre-anesthesia Assessment Center (COMPAC) for preoperative evaluation for bilateral autologous midface fat grafting. Photographs from the ENT plastic surgeon showed the appearance of a milder ophthalmologic/otologic phenotype, although there were no photos of the patient's airway. A literature review showed over 40% of patients required another technique to secure ETT other than direct laryngoscopy. LMA placement was demonstrated as an effective airway tool, with zero incidence of inability to ventilate. After discussion with the ENT surgeon, several anesthesiologists and the medical director of our OSC, the patient was deemed appropriate for outpatient surgery with general anesthesiaA plan was made to use an LMA, with a fiberoptic scope and video laryngoscopy available in the room prior to induction. The surgeon and a senior resident/fellow would also be prepared for a surgical airway in the event of failure.

On the day of surgery, the patient had a Grade II Mallampati score, with an oral opening and thyromental distance > 3 fingerbreadths. He was given 2mg of IV midazolam for anxiety. A combination IV/inhaled induction was performed with propofol and nitrous oxide/sevoflurane. Mask ventilation was easy without airway adjuvants. Video and direct laryngoscopy were performed for documentation and educational purposes showing Grade 1 views. A size 3 i-Gel LMA was placed and appropriate seal was achieved without complications. The remainder of

the patient's course was uncomplicated; the LMA was safely removed on emergence with no postoperative events.

Managing patients with TC requires a comprehensive preoperative evaluation and anesthetic plan. Integration of surgical, nursing, and anesthesia service lines determines the patient's appropriateness for surgery at an OSC. Immediate availability of different airway devices in the OR along with effective communication between the anesthesia team, surgeons and intra-op staff mitigates the risk of a difficult airway. Thorough literature review helps establish standards of safety for airway management. A case review studying 240 anesthetics performed on TC patients at various institutions concluded that the LMA was "a good choice of airway when endotracheal intubation is not needed"[4,5]. Video assisted laryngoscopy (glidescope and fiberoptic) was shown to consistently improve CL grade[6,7]. LMAs have been documented as effective conduits for fiberoptic placement as a possible first step in airway management[8-12]. Given the proliferation of improved airway techniques, it would be prudent to further investigate whether these classically challenging cases might be viable in ambulatory settings.

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Session Title:	Succinylcholine – A Great Drug For Ambulatory Surgery Centers But Not Without Drawbacks
Session Number:	3448
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Feb 13, 2019 10:27 PM America/Central
Status:	Submitted
Submitter:	Sathappan Karuppiah (skaruppi@umn.edu)
Last Update:	Feb 13, 2019 10:27 PM America/Central

Abstract Body/Description:

Introduction:

Succinylcholine is an inexpensive, rapid onset, short duration, spontaneously metabolized depolarizing muscle relaxant with a reasonable safety profile but not without serious events. It can cause muscle discomfort and transiently increase creatinine kinase and serum potassium levels and rarely trigger malignant hyperthermia in susceptible individuals. In children it can cause sinus bradycardia and rarely transient asystole and other cardiac rhythm abnormalities. However, asystole and cardiac arrest in adults in not very common. Here we report a case of succinylcholine-associated cardiac arrest in a young healthy female presenting for middle ear surgery.

Case report:

A 58-year-old **f**emale, American Society of Anesthesiologists (ASA) II patient weighing 60 kg with BMI 23 was presented for right canal wall down tympano-mastoidectomy with facial nerve monitoring for osteonecrosis. She had undergone ablation for wolf Parkinson white syndrome, resection of a neuroblastoma followed by chemoradiation and several other surgical procedures (hysterectomy, cholecystectomy) without adverse anesthesia events. Preoperative work up was within normal limits. On the day of surgery she was given anxiolysis with midazolam (1 mg). ASA recommended monitors were attached and she was induced intravenously after preoxygenation with lidocaine 60 mg, propofol 140 mg and succinylcholine 60 mg. Post administration of succinylcholine she progressed from a normal sinus rhythm to cardiac asystole with loss of the pulse oximetry wave and absent exhaled carbon dioxide (ETCO2) on easy mask ventilation. Cardiopulmonary resuscitation (CPR) with manual chest compression was immediately instituted and 1 dose of epinephrine (100 mcg) given. Return of

	spontaneous circulation (ROSC) and ETCO2 and pulse oximetry was observed within 2 minutes of resuscitation. Mask ventilation was continued until she emerged from induction medications. Her immediate post resuscitation workup including electrolytes, troponin, liver function test, X ray chest, EKG and Echocardiogram were unremarkable. She was latter transferred to the medical intensive care unit to be observed for a day and discharged uneventfully. One month later the patient returned for the same procedure that was successfully accomplished without the use of succinylcholine. **Discussion**: Intraoperative cardiac arrest following anesthesia induction is a rare but serious event. However, the outcomes are superior to when compared to such events occurring outside the operating room[1]. This is because the common anesthesia-related causes that can be quickly identified and treated[1]. We believe that in this case the cardiac asystole was related to succinylcholine administration and its direct effect on the sino-atrial node[1,2]. Although anaphylaxis can occur with succinylcholine it is rare and we did not observe bronchospasm or other evidence for an anaphylactic response. We also do not believe that this response to succinylcholine was due to a hyperkalemia because our patient did not have any predisposing factors. Smaller doses of succinylcholine are more likely to result in sinus bradycardia and sinus arrest especially in patients with a high vagal tone[3,4]. Propofol also has a vagal effect and the combination may have caused this uncommon occurrence in our patient. Ambulatory surgery centers need to be prepared for such an event and a transfer protocol needs to be in place for further care and follow up when required.
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Session Title:	Intravenous versus oral acetaminophen in ambulatory surgical center laparoscopic cholecystectomies: a retrospective analysis
Session Number:	3439
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 13, 2019 10:03 AM America/Central
Status:	Submitted
Submitter:	Scott Daniel Perry, MD (scott.d.perry@uth.tmc.edu)
Last Update:	Feb 13, 2019 10:03 AM America/Central

Abstract Body/Description:

Study Objective:

The primary aim of this analysis was to compare postoperative pain scores in laparoscopic cholecystectomy patients receiving intravenous (IV) or oral (PO) acetaminophen (APAP) as part of a multimodal analgesic regimen to examine if oral APAP is non-inferior.

Design:

Retrospective analysis

Setting:

Ambulatory surgical center (ASC) in an academic setting

Patients:

579 patents (18-70 years of age), ASA physical status I-III, undergoing laparoscopic cholecystectomy

Interventions:

Patients received 1000 mg of IV acetaminophen intraoperatively (n= 319) or 1000 mg PO acetaminophen preoperatively (n= 260).

Measurements:

The primary outcome was the median difference in end post anesthesia care unit (PACU) pain scores between the two groups. Median pain scores were also compared upon admission to PACU, at 15, 30, 45, and 60 minutes. Additional outcome measures included PACU rescue analgesia consumption, time to first PACU rescue analgesia, intraoperative opioid and nonopioid analgesic use, PACU length of stay and PACU rescue nausea and vomiting therapy.

Main Results:

The median end PACU pain score was 2 in both the IV and PO acetaminophen groups. The 90% confidence interval (CI) for the difference in median pain scores between IV and PO acetaminophen was [0, 0] with the upper limit of CI being below the non-inferior margin of 1 pain score point, indicating non-inferiority of PO to IV acetaminophen. There were no statistically significant differences in the percentages of patients receiving PACU hydromorphone equivalents between IV and PO acetaminophen (75% vs. 77%, p=0.72) or the mean dose received (0.5mg vs. 0.5mg, p=0.66).

Conclusion:

Single-dose oral acetaminophen is non-inferior to intravenous acetaminophen for postoperative analgesia in ASC laparoscopic cholecystectomy patients. The value of single-dose intravenous acetaminophen in this population should be further explored.

Keywords:

Multimodal analgesia, acetaminophen, ambulatory surgical center, laparoscopic cholecystectomy, postoperative pain, single-dose acetaminophen

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Session Title:	Intravenous Versus Oral Acetaminophen in Ambulatory Surgical Center Laparoscopic Cholecystectomies: a Retrospective Analysis
Session Number:	3468
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 15, 2019 11:40 AM America/Central
Status:	Submitted
Submitter:	Scott Daniel Perry, MD (scott.d.perry@uth.tmc.edu)
Last Update:	Feb 15, 2019 11:40 AM America/Central

Abstract Body/Description:

Study Objective:

The primary aim of this analysis was to compare postoperative pain scores in laparoscopic cholecystectomy patients receiving intravenous (IV) or oral (PO) acetaminophen (APAP) as part of a multimodal analgesic regimen to examine if oral APAP is non-inferior.

Design:

Retrospective analysis

Setting:

Ambulatory surgical center (ASC) in an academic setting

Patients:

579 patents (18-70 years of age), ASA physical status I-III, undergoing laparoscopic cholecystectomy

Interventions:

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Measurements:

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Main Results:

The median end PACU pain score was 2 in both the IV and PO acetaminophen groups. The 90% confidence interval (CI) for the difference in median pain scores between IV and PO acetaminophen was [0, 0] with the upper limit of CI being below the non-inferior margin of 1 pain score point, indicating non-inferiority of PO to IV acetaminophen. There were no statistically significant differences in the percentages of patients receiving PACU hydromorphone equivalents between IV and PO acetaminophen (75% vs. 77%, p=0.72) or the mean dose received (0.5mg vs. 0.5mg, p=0.66).

Conclusion:

Single-dose oral acetaminophen is non-inferior to intravenous acetaminophen for postoperative analgesia in ASC laparoscopic cholecystectomy patients. The value of single-dose intravenous acetaminophen in this population should be further explored.

Keywords:

Multimodal analgesia, acetaminophen, ambulatory surgical center, laparoscopic cholecystectomy, postoperative pain, single-dose acetaminophen

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Session Title:	Creation of a Designated RN Regional Block Coordinator Role to Improve Efficiency Via Increased First Case On-Time Starts
Session Number:	3463
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Feb 14, 2019 04:09 PM America/Central
Status:	Submitted
Submitter:	Shanthi Reddy (shanthi.s.reddy@gmail.com)
Last Update:	Feb 14, 2019 04:09 PM America/Central

Abstract Body/Description:

Title: Creation of a Designated RN Regional Block Coordinator Role to Improve Efficiency Via Increased First Case On-Time Starts

Shanthi S. Reddy, Ashley M. Shilling, Leanne Davis, Alicia White

Disclosures: S.S. Reddy: None, **A.M. Shilling:** None

Background:

Utilization of multimodal analgesia has led to a rise in the number of peripheral nerve blocks (PNBs) performed perioperatively. Studies show that regional anesthesia (RA) improves pain scores, decreases narcotic use, and lowers the incidence of post-operative nausea and vomiting[1]. Thus, more patients can be discharged home in less time with high satisfaction. In the ambulatory setting, regional anesthesia has been shown for multiple surgical procedures to either decrease PACU length of stay or completely bypass it altogether[2]. PACU bypass and reduced hospital admissions associated with PNBs translates to cost savings for hospitals.

However, a lack of standardization in the perioperative nerve block procedure process will delay surgical start times. A breakdown in communication among clinicians is a major cause for these operative delays. Perioperative nurses are frontline staff members that are uniquely positioned to confront these communication gaps.

Hypothesis:

The addition of one full time RN designated to coordinate perioperative regional anesthesia PNBs will increase the number of first case on-time starts (FCOTS).

Methods:

The Outpatient Surgical Center (OPSC) implemented an RN role of regional anesthesia nerve block coordinator in April 2017. The coordinator communicated with anesthesia and surgical teams and maintained a visual management board to track the block schedule, delays and reasons for late starts. FCOTS data was collected between Jan 2017 and December 2018, both before and after implementation of the new position.

During this time, the PNB coordinator worked closely with nursing and physician leaders to identify opportunities for enhanced care through quality improvement. They rapidly designed and implemented strategies for improved efficiency.

Results:

In January 2017, at the start of data collection, patients who received nerve blocks in the preoperative unit experienced an average First Case On-Time Start (FCOTS) rate of 57%. In May 2018, the FCOTS rate for the same population increased to 82%, which represented a 25% improvement. By December 2018, the FCOTS rate increased to 95%, demonstrating a 38% improvement.

Conclusions:

Time is an OR's most valuable resource. A delay in the first case, even for just a few minutes, creates a domino effect that cascades through the rest

	of the days' procedures. OR costs range from $22 to $133 per minute, depending on the complexity of the procedure, with an average cost estimated at $62 a minute[3]. The per-minute cost of an OR procedure translates approximately dollar to dollar into an equivalent cost for a surgical delay. The addition of a regional anesthesia PNB coordinator role demonstrated a significant increase in the number of FCOTS at the outpatient surgical center, which directly translates to a cost savings for the hospital system. **References:** 1. Anesthesiology Clin 28 (2010) 251–266 doi:10.1016/j.anclin.2010.02.009. 2. Clin Orthop Relat Res. 2014 May; 472(5): 1427–1433. 3. J Cosmetic Surg 2005;22[1]:25-34. **Appendix A:**

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Session Title:	Preoperative Estimated Glomerular Filtration Rate and Perioperative Adverse Events
Session Number:	3467
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 14, 2019 08:14 PM America/Central
Status:	Submitted
Submitter:	Sher-Lu Pai, MD (pai.sherlu@mayo.edu)
Last Update:	Feb 14, 2019 08:14 PM America/Central

Abstract Body/Description:

Introduction

Chronic kidney disease (CKD) affects 5% of the population (1, 2). Reduced estimated glomerular filtration rate (eGFR) has been recognized as an independent risk factor for perioperative cardiovascular events, such as myocardial infarction and stroke, with increased mortality rate (3, 4). . The goal of this study was to find correlations between preoperative severity of CKD and perioperative adverse events.

Methods

After institutional research board approval, a retrospective chart review was conducted on patients undergoing elective surgeries between January 2010 and June 2011. Patients under the age of 18 years were excluded. Patients with a history of CKD resolved by kidney transplant were also excluded. Patients with CKD were identified via an electronic query using ICD-9 diagnostic codes for chronic kidney disease (N18 to N18.9). Using the preoperative eGFR result within 30 days of the surgery date, patients were classified into five corresponding CKD stages. Patient demographics, preoperative hemoglobin, preoperative serum creatinine, preoperative serum glucose, preoperative blood pressure measurements, the amount of intraoperative intravenous fluids (IVF) received, postoperative serum creatinine, postoperative eGFR, and perioperative complications were reviewed. Complications such as new diagnosis of acute kidney injury (AKI), deep vein thrombosis (DVT), myocardial infarction (MI), infection, death, and readmissions within 30 days of discharge were documented.

Results

A total of 850 patients were identified with a preoperative diagnosis of CKD. After excluding patients with kidney transplants, 763 patients were classified into five corresponding CKD stages (Table 1).

Of the 763 patients, 260 (34%) received postoperative eGFR and serum creatinine screening, and all of them presented with postoperative decreased eGFR and increased serum creatinine. Table 2 shows the perioperative complications by stages of CKD. Preoperative hemoglobin <11g/dl showed significant association with postoperative AKI and infection in patients with CKD stages 3 and 4 (OR, 1.46; 95% CI, 1.23 to 1.74; p<.0001 and OR, 1.17; 95% CI, 1.01 to 1.35; p 0.0267). An association was identified between low intraoperative fluid (IVF) and perioperative AKI (OR, 1.52; 95% CI, 0.24 to 9.3; p 0.0096). Intraoperative IVF 0.09±0.10 (mean±SD) mL/kg/min administration showed an association with postoperative AKI. No statistically significant associations were identified between preoperative hemoglobin, serum glucose, and blood pressure with perioperative MI, DVT, death, and readmission rate.

Discussion

In this single-center CKD patient population, we identified associations between preoperative anemia and perioperative AKI and infection. Lower intraoperative IVF administration was associated with increased incidence of perioperative AKI. In the patients with postoperative eGFR and serum creatine values, a significant decrease in postoperative renal function was identified. This study may suggest that management of preoperative anemia and adequate intraoperative IVF administration may decrease adverse perioperative events in CKD patients.

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5.

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Session Title:	Practice Change to Improve Perioperative Glucose Management
Session Number:	3409
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Jan 22, 2019 09:55 AM America/Central
Status:	Submitted
Submitter:	Sher-Lu Pai, MD (pai.sherlu@mayo.edu)
Last Update:	Jan 22, 2019 09:55 AM America/Central

Abstract Body/Description:

Introduction: Hyperglycemia is commonly found in the setting of known diabetes, undiagnosed diabetes, and acute medical illness. More than 30 million people in the United States have Diabetes Mellitus (DM); however, 1 out of 4 do not know they have DM.[1] Evidence suggests that hyperglycemia is associated with worse preoperative outcomes regardless of a DM diagnosis.[2] Elevated preoperative hemoglobin A1C (HbA1c) is associated with higher mortality and morbidity rates irrespective of previous diabetic status.[3] In the ambulatory surgery setting it is recommended to avoid hyperglycemia and maintain adequate plasma glucose control.[4] It is also recommended that surgery for these patients be delayed until adequate glycemic control is achieved, ensuring better outcomes and patients safety.[3] In 2017, the Mayo Clinic Florida Preoperative Evaluation (POE) Clinic identified the following problems prompting practice change:

1. DM patients were not routinely receiving preoperative HbA1c screening.
2. DM patients with HbA1c ≥8.5% were not routinely receiving adequate preoperative DM management.
3. Patients without prior DM diagnoses, but with random blood glucose ≥200 mg/dL, were not receiving preoperative HbA1c screening.
4. Patients without prior DM diagnoses, but with HbA1c ≥6.5%, were not routinely referred for appropriate preoperative management.

Methods: A retrospective review was conducted on patients who underwent evaluation and medical optimization at the POE Clinic from January 2017 to July 2018. We reviewed the documented history of DM, preoperative random plasma glucose, preoperative HbA1c, and glucose management. Comparisons between pre- and post-intervention were made and as a result, the following practice changes were implemented in December 2017:

	1. DM patients should have their HbA1c checked within 3 months of their scheduled surgery date. 2. DM patients with an HbA1c ≥8.5% will trigger an Endocrinology referral. 3. Mayo Clinic Florida Laboratory will automatically perform an HbA1c test when random blood glucose ≥200 mg/dL. 4. Patients without a prior DM diagnosis but with HbA1c ≥6.5% will trigger an Endocrinology referral. **Results:** Figure 1 depicts patients presenting with random glucose ≥200mg/dL, history of DM, HbA1c above normal limits, and perioperative glucose managements initiated by the POE Clinic during the pre- and post-intervention periods. DM interventions reduced the percentage of patients presenting with random blood glucose ≥200 mg/dL but without HbA1c test from 2.9% (n=13) to 1.0% (n=2). The percentage of patients who did not receive appropriate DM management when their HbA1c levels were above normal limits decreased from 5/9% (n=19) to 2.6% (n=5). **Discussion/Conclusion:** Additional education and communication processes regarding these practice changes are required for POE Clinic providers and laboratory staff. At this time, this intervention has not been implemented for all patients;however, the it has increased the percentage of patients who received appropriate preoperative DM management. Because this study is a pilot, it possesses the limitations of small patient numbers. With the new perioperative glucose triage process (Figure 2), patients undergoing elective procedures at our institution will benefit from improved outcomes as a result of earlier DM diagnosis and adequate perioperative plasma glucose control. **References** 1. www.cdc.gov/diabetes/basics/quick-facts.html 2. Ann Surg, 2013. 257(1): p. 8-14 3. Interact Cardiovasc Thorac Surg, 2013. 17(6): p. 1000-8 4. Anesth Analg, 2010. 111(6): p. 1378-87
More Information URL:	http://www.cdc.gov/diabetes/basics/quick-facts.html
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Session Title:	Knowledge, Attitudes, and Practices regarding opioid use in outpatient surgery: A cross sectional survey from the Wellstar East Cobb surgery center
Session Number:	3450
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Quality Improvement Project
Initial Submission:	Feb 13, 2019 10:59 PM America/Central
Status:	Submitted
Submitter:	Shireen Haque (shireen.haque@gmail.com)
Last Update:	Feb 13, 2019 10:59 PM America/Central

Abstract Body/Description:

Knowledge, Attitudes, and Practices regarding opioid use in outpatient surgery: A cross sectional survey from the Wellstar East Cobb surgery center

Background: According to data compiled by the Atlanta Regional Commission[8], the 10 counties that make up metro Atlanta have experienced an accelerated prescription opioid death rate from 2013 to 2016 with current estimates at 6.2 per 100,000 metro Atlanta residents. The area most affected in the state is a section dubbed the heroin triangle north of Atlanta stretching across Cobb, Fulton, Gwinnett, and Dekalb counties.[6,7,8] Cobb county reported the highest number of prescription opioid deaths in a single county with 61 deaths in 2016. [7,8]The Wellstar East Cobb surgery center is an outpatient facility that serves this high-risk population. In August of 2018, a multidisciplinary team of surgeons, anesthetists, anesthesiologists, pharmacists, and perioperative nurses formed the Collaborative for Opioid Sparing Recovery (CORE) with the intent of reducing opioid use throughout all phases of the perioperative process. A key component of the program included the development of specific multimodal protocols aimed at reducing postoperative pain. Standard instructions with scheduled non narcotic pain medications were also given at the time of discharge. The team completed a series of formal and informal educational sessions highlighting the fundamental components of opioid sparing care including the physiology of pain and the pharmacology of non narcotic pain management. With January 2019 marking the 6 month benchmark, the staff engaged in a survey to evaluate barriers to compliance with CORE and areas for further education.

Methods: We developed an anonymous 24 question survey to evaluate the knowledge, attitudes, and practices of perioperative providers at our surgery center.[2,5] The primary objective was to assess if a targeted opioid sparing program could positively influence beliefs about opioid monotherapy and reduce opioid administration at all phases of care. A secondary outcome was to identify areas for further education. The target audience consisted of staff members directly involved in the CORE program and acute pain management - anesthetists,

anesthesiologists, preoperative nurses, and post anesthesia care (PACU)nurses. The survey was distributed with a web-based link.
RESULTS: The results of this study show that the educational component of CORE had a positive impact on provider knowledge of multimodal pain management. Post intervention scores on the understanding of non narcotic medications increased from 44% to 70%. In addition, the percentage of providers counseling patients on the use of non narcotic medications improved from 24% to 68%. Despite the majority of providers (67%) reporting the belief that multimodal protocols reduce postoperative pain, only 28% always combined 2 or more non narcotic pain medications prior to incision.
Conclusion: The results of this survey indicate a gap in the translation from knowledge to practice behaviors with regards to opioid sparing perioperative care. While the CORE program improved knowledge and understanding, additional training is needed to increase the delivery of non narcotic acute pain management in the setting of outpatient surgery.

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Session Title:	Hidden Risks: An Unusual Case of OR Fire
Session Number:	3407
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Clinical Demonstration/Case Report
Initial Submission:	Jan 04, 2019 09:12 AM America/Central
Status:	Submitted
Submitter:	Simon Lee (simon.lee@emory.edu)
Last Update:	Jan 04, 2019 09:12 AM America/Central

Abstract Body/Description:	A patient was brought into the operating room for a lipoma excision from the back of her neck. A chloroprep was used to clean the surgical site and was allowed to dry for 3 minutes. The case proceeded routinely. One hour into the case an electro-cautery was used by the surgeon and subsequently a fire developed causing burn injuries to the patient, due to chrloprep solution that was not completely dry in the patient's hair. Despite following all recommendations for safe use of chloroprep, an OR fire occurred due to a clump of hair that retained chloroprep and did not completely dry. We are not familiar with similar descriptions of fire occurring in this circumstance an hour after initial application of chloroprep.

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Session Title:	Implementation of an Enhanced Recovery After Surgery (ERAS) Program for Patients Undergoing Same Day Outpatient Elective Minimally Invasive Transforaminal Lumbar Interbody Fusion (MIS TLIF).
Session Number:	3470
Track:	SAMBA 34th Annual Meeting Abstract Submissions
Session Type:	Original Research
Initial Submission:	Feb 18, 2019 11:21 AM America/Central
Status:	Submitted
Submitter:	Uhuru Smith MD (druhurusmith@aol.com)
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Abstract Body/Description:	Introduction: Enhanced Recovery After Surgery (ERAS) programs for improving spinal fusion surgery are possible and necessary. To date no programs have been described for minimally invasive transforaminal lumbar interbody fusion (MIS TLIF), to allow same day discharge in a safe and effective manner. In this report the authors review the development of an outpatient ERAS program for MIS TLIF. Methods: The first 14 consecutive patients in which the ERAS program was implemented for elective one and two level MIS TLIF with bilateral pedicle screw instrumentation were reviewed. A synergistic protocol including preoperative medication, intrathecal anesthesia combined with general and local anesthesia, and postoperative medication was implemented. Data collection was performed by review of medical records. Number of levels fused, age, operative time, time to discharge, visual analog pain (VAS) level at discharge, readmission rate, after hours call to office, wound complications, postoperative narcotic use till first postoperative visit and rates of postoperative urinary retention were recorded. Summary of Results: 10 one level and 4 two level MIS TLIFs were performed. Mean age was 48 years (Range 36 - 64), mean operative time 114 minutes (Range 70 – 227), mean time to discharge was 182 minutes (Range 101 – 321), mean VAS was 3.2 (range 0 – 5). There was no premature refill of narcotic, no readmission, no calls to office or premature return to office related to pain, no postoperative urinary retention, and no wound complications. Conclusion: This report describes the first ERAS protocol for MIS TLIF. Pre-, intra- and postoperative interventions resulted in effective same day discharge with no reported complications and no readmissions.

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Session Title:	A SIMULATED REPORT ON THE CLINICALLY AVAILABLE DANTROLENE FORMULATIONS
Session Number:	3454
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Abstract Body/Description:

Introduction: Malignant hyperthermia (MH) is a life-threatening genetic disorder of skeletal muscles triggered by volatile anesthetics or depolarizing neuromuscular blocking drugs occurring during or after anesthesia. Mortality of an acute MH episode has been significantly reduced because of the availability of the antidote IV dantrolene. The standard, less-expensive dantrolene involves cumbersome preparation, the administration of several vials, and requires multiple medical staff for vial mixture. A potential improvement in the form of a novel nanocrystalline dantrolene sodium suspension (DSS), which is 150 times more concentrated (50 mg/ml) than the standard dantrolene sodium solution (0.33 mg/ml), has been demonstrated to be very effective in a pig model[1]. In this report we analyze the cost, the potential morbidity and mortality, and practical logistics of this drug in comparison to the standard dantrolene sodium preparations.

Methods and Findings: For purposes of this report, we will assume a MH susceptible patient weighing 70 kg. Both Dantrium and Revonto come as lyophilized powder in 60 ml vials containing 20 mg dantrolene each (Table) and Ryanodex is available as 250 mg nanocrystalline powder. For administration, distilled water needs to be added to the vials as shown in the table. The initial dose of dantrolene is approximately 2.5 mg/kg requiring 9 vials of the lyophilized dantrolene or 1 vial of the nanocrystalline product. The nanocrystalline product requires 5 ml of diluent and this can be accomplished within 30 seconds and made available for administration without any additional support staff. For the lyophilized dantrolene product, an IV bag of diluent with tubing is required and will take about 90 seconds to set up. Each vial will require 60 ml of saline and take an approximately 30 seconds to mix and another 10 seconds to draw and administer each 20mg vial. Thus, the initial dose time will be approximately 90s + (40 x 9 s) = 450 seconds with a reconstitution volume of 540 ml under ideal conditions. It is not uncommon to require an additional 4 doses of dantrolene to treat a severe episode. This requires significant time demand. The process can be sped

	up by recruiting additional qualified staff (see Table) but at an increased cost. A large diameter IV would facilitate a faster administration of the lyophilized dantrolene. **Discussion and Conclusion**: Prompt reconstitution and administration of IV dantrolene is critical for managing an acute MH crisis. The time to administration of dantrolene during an acute MH crisis has been shown to influence mortality[2]. The administration of a single vial of nanocrystalline dantrolene will quickly achieve therapeutic dosing and will eliminate the need for additional manpower. The extensive preparation time of lyophilized dantrolene and consequential delay of therapeutic dosing may impact mortality and morbidity leading to increased complications and length of hospital stay. The ease of using a one vial system during a potential chaotic crisis may warrant the higher cost for nanocrystalline dantrolene. **References:** 1. Schütte, JK et al. Comparison of the therapeutic effectiveness of a dantrolene sodium solution and a novel nanocrystalline suspension of dantrolene sodium in malignant hyperthermia normal and susceptible pigs. Eur J Anaesthesiol. 2011 Apr;28(4):256-64 2. Larach MG, et al. Clinical presentation, treatment, and complications of malignant hyperthermia in North America from 1987 to 2006. Anesth Analg. 2010 Feb 1;110(2):498-507
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Session Title:	Case Report: Music Therapy in a 3rd Trimester Patient undergoing an Orthopedic Surgery
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Abstract Body/Description:	**Introduction**: Music therapy has been shown to alleviate the stress and anxiety in the preoperative setting. Listening to music during regional anesthesia for hand surgery has shown to improve patient mood, positive experience and less anxiety after the procedure.[i] A meta-analysis suggested that introducing music therapy in the perioperative setting help significantly reduce anxiety while music therapy in the recovery room provide some anxiolytic properties but mostly reduce pain level.[ii] In our case, we were given a task to care for a pregnant woman in her 3rd trimester. Limiting any sedative properties, a neuraxial technique and music therapy using an over the ear noise canceling headphone were our anesthetic care plan. **Case Report**: 35 year old female with a history of obesity (BMI 36), depression, anxiety, panic disorder and bipolar disorder who present with a left Lisfranc fracture from a fall at work. It was documented that she was 33 weeks pregnant with mild gastroesophageal reflux during her pregnancy course. The initial radiological imaging demonstrated a joint widening from the 1st and 2nd metatarsal. The base of the second metatarsal is minimally subluxed laterally with respect to the middle cuneiform. The findings were suspicious for Lisfranc ligament injury. Since the patient had an unstable Lisfranc injury, the orthopedic suggested an open reduction internal fixation of the injury. The obstetric plans were to monitor fetal heart tones throughout the procedure and perform a nonstress test (NST) pre and post procedure to access fetus viability. For postoperative pain relief, the regional acute pain service performed a left popliteal block using 0.25% bupivacaine with 1:200,000 epinephrine under ultrasound guidance in the perioperative setting. In the operating room theater, 9mg of hyperbaric bupivacaine spinal was given and an adequate surgical sensory/motor block was tested up to T10 dermatome. Due to her high anxiety, she was instructed to use her noise cancellation headphone and listen to music that was relaxing and soothing after the spinal and until she arrived to PACU. The patient was placed in a right semi-lateral position for maximum exposure. The procedure took 30

	min and she was hemodynamically stable during and after the procedure. She was taken to the recovery room and a radiography image was taken to ensure adequate alignment. **Conclusion**: The operating room theater can be a very stressful environment especially for those who are highly anxious individual. Furthermore, pregnant patients who require a non-obstetric procedure can complicate the anesthetic care plan and require the anesthesiologist to come up with clever solution. Our patient was highly anxious and fearful of hearing anything related to the procedure. Due to her body habitus and high risk for aspiration, we did not want to sedate her and compromise the patient airway. In fact, we choose to allow her to listen to her music of choice using her noise cancellation headphone. Using music therapy as part of our anesthetic care plan allowed her to be less anxious, detach from reality, and be unaware of her surroundings. In the postoperative care, she was quite satisfied with her care and enjoyed her experience. Similar cases can be extrapolated to other patient who may be at high risk for sedation. Music therapy as an anesthesia adjunct plan can be highly effective if the appropriate patients are selected. This would ensure patient satisfaction, safety and a speedy recovery [i] Sven-Olof Trängeberg Ö, Stomberg MWJ Perianesth Nurs. "Listening to music during regional anesthesia: Patients' experiences and effect on mood. 2013 Oct;28(5):291-7 ii A. Y. R. Kühlmann, A. de Rooij, L. F. Kroese, M. vanDijk, M. G. M. Hunink and J. Jeekel. "Meta-analysis evaluating music interventions for anxiety and pain in surgery". *BJS* 2018; 105: 773–783
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