



Cases From the Real World

Moderator: Michael T Walsh, MD Assistant Professor Mayo Clinic Rochester, MN

Panelists:
Kara Barnett, MD, FASA Associate Attending / Director of Anesthesia Services, MSK Monmouth Department of Anesthesiology and Critical Care Medicine
Gustavo Lozada, MD, M.S.Ed. Clinical Director of Massachusetts Eye And Ear at Longwood Instructor, Harvard Medical School
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Disclosures:

- Michael T Walsh, MD - none
- Kara Barnett - none
- Gustavo A. Lozada, MD - none
- Carey Brubaker, MD - none

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1st Case



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73-year-old Male for Mediport Insertion With Sedation at a Freestanding ASC



- **PMH:**
 - Hypertension
 - High Cholesterol
 - CAD s/p CABG 2009 & 2010
 - Hyperthyroid
 - GERD
 - Anxiety
- **PSH (additional):** hernia repair, T&A, knee arthroscopy
 - 1 month earlier: tolerated EUS/bs with deep propofol sedation
- **Cancer History:**
 - Newly Diagnosed Metastatic Pancreatic Cancer; gemcitabine/ taxol the day before
 - Recurrent Prostate Cancer s/p brachytherapy 2019
 - Non-Hodgkins Lymphoma s/p pelvic resection, ChemoRT 2007
 - Basal Cell Carcinoma s/p resection

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Medications



- Aspirin 81 mg PO qd
- Bicalutamide 50 mg PO qd
- Clopidogrel 75 mg PO qd
- Esomeprazole 20 mg PO qd
- Evolocumab 140 mg/mL SQ q2 weeks
- Isosorbide mononitrate ER 60 mg PO qd
- Levothyroxine 50 mcg PO qd
- Lisinopril 10 mg PO qd
- Lorazepam 0.5 PO prn
- Metoprolol tartrate 25 mg PO BID
- Misc supplements: B12, D3, turmeric

What else do you want to know?

If asymptomatic and achieves 4 METS do you need anything else?

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Pre-Surgical



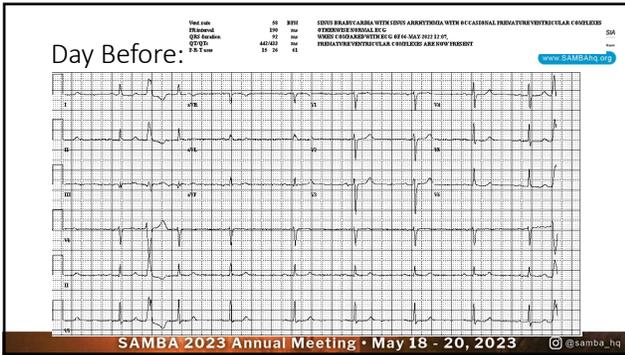
- Unremarkable echo 1 year earlier
- Labs: Hgb 11 g/dL, plt 124, electrolytes unremarkable
- BP 147/70, HR 54, O2 100%, RR 20, 98.2 degrees F
- Denied CP or SOB
- Flight of stairs without stopping

Anything else?

- Assigned ASA Class 3 for a MAC propofol sedation with lidocaine local injection

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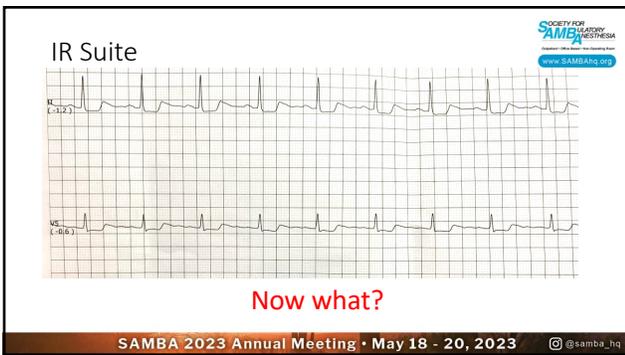
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IR Suite

- Moved self over to IR table
- Monitors placed
- 3L NC oxygen placed
- 2 mg IV midazolam
- About to start propofol BUT...

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IR Suite

- Attending talked to patient who was asking for more sedation
 - Denied CP, SOB, cardiac symptoms
 - Other vitals stable
- Found that ST depression actually present since patient placed on monitors

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What Now?

- Low risk
- Quick procedure
- Denied cardiac complaints
- Stable CAD based on history
- Needed for cancer treatment

- Higher risk patient with h/o CAD
- Ischemia? What's going on?

Anyone want to get an EKG?

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What Now?

- Decision to proceed
- Changed anesthetic plan to remimazolam sedation
 - Less CV effects than propofol
 - Postop EKG

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Case # 2

- 81 yo female presented for bilateral Dacryocystorhinostomy (DCR) with tubes and bilateral nasolacrimal duct cannula insertion
- 4'11" 72.6 Kg (BMI 32.2)
- Vitals: BP 171/70 HR 68 Temp 36.6 RR 20
- Requesting general anesthesia with endotracheal intubation

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| | |
|---|--|
| <p>PMH</p> <ul style="list-style-type: none"> • MI with PCI (RCA BMS in 2003) • HTN • Hyperlipidemia • Obesity • Asthma • A-fib • Tobacco former 20 pack year history • OA • Depression | <p>PSH</p> <ul style="list-style-type: none"> • DCR • Knee replacement • Appendectomy • Hysterectomy • Breast lumpectomy |
|---|--|

MEDS

- Amiodarone 200 mg QD
- Advair Diskus
- Carvedilol 12.5 mg QD
- Furosemide 20 mg QD
- Irbesartan 75 mg QD
- Sertraline 50 mg QD
- Apixaban 5mg BID

What else do you want to know?

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| | |
|---|---|
| <p>Labs</p> <ul style="list-style-type: none"> • WBC 7.54 • HGB 12.6 • HCT 39.6 • PLT 221 • PT 13.1 • Na 139 • K 4.0 • Cl 103 • BUN 25 • CRT 0.9 | <p>Concerns?</p> <ul style="list-style-type: none"> • ECG <ul style="list-style-type: none"> • Sinus Rhythm, HR 65 • Echo (2 months ago) <ul style="list-style-type: none"> • EF 55-60% • NL LV systolic function • NL PA systolic pressure • Trivial MR and TR • Airway: MP III, Neck with FROM, NL Mouth opening, NL TM Distance |
|---|---|

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- Easy mask ventilation and intubated with a GlideScope
 - (anesthesiologist's preference)
- Uneventful surgery
- Extubated without issues
- Uneventful PACU course
- **UNTIL.....**

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- At time of PACU discharge, as the patient stood up to leave, profuse epistaxis developed
- The surgeon was called to assess. Pressure was applied for 10 minutes. The surgeon reassessed.
- Decided he needed to take the patient back to the OR for EUA and cautery

How would you manage induction/intubation?

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- RSI with a GlideScope. Airway secured after one attempt.
- Surgeon gets to work
- After about 45 minutes of cauterizing, surgeon still not certain about the source of bleeding
- ENT surgeon called in to assist
 - Seem to control the bleeding but was not certain if the bleeding had completely stopped or if it could continue once in PACU
- Noted that there was possible CSF in the surgical field

What do you want to do now?

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- Now the patient's BP is requiring support. The patient required multiple 40 mcg boluses of phenylephrine to keep SBP > 100
- Started in a phenylephrine gtt, ranging from 20-40 mcg/min
- EBL estimated at this time: 250 cc
- Total IV fluids administered: 1300 cc LR

What now?

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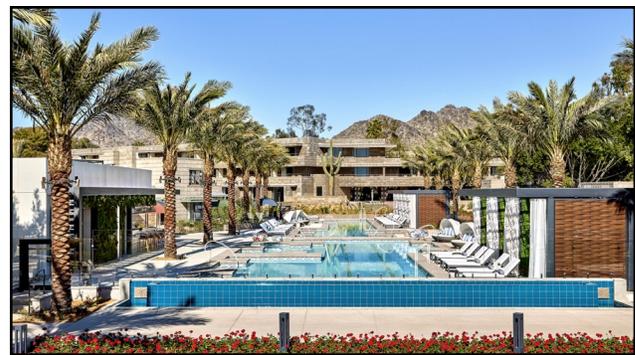
- Given the patient's history, the surgical findings, and that she was requiring BP support. The decision was made to transfer the patient to the hospital intubated
- But.....
 - The regular BLS ambulance would not take a patient intubated and on pressors. They arrived and left.
 - ACLS EMS would have required someone from anesthesia to travel with them

Now what?

Do you accompany the patient?

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Case #3

- A 21-year-old college student presents to the ambulatory surgery center for ACL reconstruction and meniscal repair
- Childhood asthma which he "grew out of" however carries an inhaler during pollen season
- Prior anesthetic history of a tonsillectomy as a child and states that he is unaware of any family history of adverse reactions to anesthesia

Anesthetic Plan?

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- **Preop:** patient received an adductor canal block preoperatively with 20cc 0.5% ropivacaine with midazolam, fentanyl, and dexmedetomidine administered for sedation. He also received 1000mg of acetaminophen
- **Induced** with propofol; LMA was placed
- **Maintained** with sevoflurane and ventilated with pressure support
 - 2g of cefazolin prior to incision

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- BP, HR, and RR began to increase which was treated with fentanyl and “deepening” the anesthetic with modest improvement
- After 200mcg of fentanyl and ↑ 2.5% sevoflurane, the pt’s HR remained in the 120s, SBP around 160, and RR was 25-30
- 1mg of IV hydromorphone for incisional and tourniquet pain
- Remained tachycardic, hypertensive, and tachypneic about 1 hour after incision and tourniquet inflation

Thoughts?

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- Patient’s EtCO2 tracing started to show baseline elevation
 - The ventilator was still registering a RR of 30 and a minute ventilate of 15 L/min with a EtCO2 of 55
- Fresh gas flows were increased and a new absorbent requested
- Anesthetist requested the surgeon temporarily let down the tourniquet while prepping the quadriceps graft on the back table
- After tourniquet release, the EtCO2 rose above 60mmHg however the baseline EtCO2 had returned to normal with new absorbent

Normal tourniquet response?

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- EtCO2 began to approach 80mmHg

Differential diagnoses?

- Temperature of 36.2 to 38.5 degree



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- Patient remained tachycardic and hypertensive and the surgeon began to complain that there was difficulty in manipulating the knee joint as it felt “stiff”
- Patient’s temperature now 39 degrees!



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- MH protocol initiated!

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Case # 4

- 50 year old female for robotic hysterectomy
- PMH DM2, HTN, OSA and obesity (BMI=38 kg/m²)
- History of GERD but improved after new medication

What else do you want to know?

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- Labs essentially normal
- Meds: metformin, HCTZ, pregabalin, oxycodone 5 mg PRN, and tirzepatide (Mounjaro) 12.5 mg/0.5 mL pen injector injection

How do you evaluate GERD?

Anyone pre-treating patients?

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- NPO status:
- Had dinner night before: scrambled eggs
- Of note she had carrots and homemade pizza with olives 3 days prior to surgery (2/25), chili with beans 2 days prior and chicken noodle soup with carrots for lunch day prior to surgery.
- Uneventful induction
- OG tube placed



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- Uneventful surgery
- Began vomiting upon emergence
 - ETT still in place! (thank goodness)
 - Chunks of solid material- beans, carrots, olives, other unidentified organic matter

Extubate?

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British Journal of Anaesthesia, 126 (3): 567–571 (2021)
doi: 10.1016/j.bja.2020.10.023
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Preoperative considerations of new long-acting glucagon-like peptide-1 receptor agonists in diabetes mellitus

- Delayed gastric emptying has been reported
 - Effects decrease over time with ongoing treatment because of tolerance and tachyphylaxis
- Given the potential cardiovascular benefits and negligible risk for hypoglycemia, there is growing interest in continuing this class of medications without perioperative interruption

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British Journal of Anaesthesia, 126 (3): 567–571 (2021)
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Preoperative considerations of new long-acting glucagon-like peptide-1 receptor agonists in diabetes mellitus

- The Society of Perioperative Assessment and Quality Improvement recommends holding GLP-1 receptor agonists on the day of surgery
 - BUT....long half-life of most medications within this class
- “.....may be prudent to re-evaluate traditional fasting guidelines in these patients”

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GLP 1 receptor agonists = full stomach?

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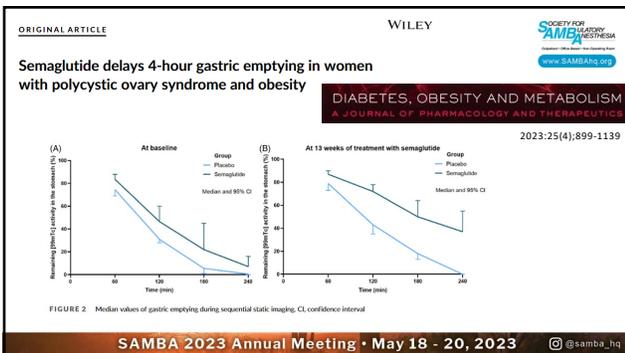
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Dear ASA Member,

We are asking members of the American Society of Anesthesiologists (ASA) to complete this short survey titled [Practice patterns of anesthesiologists for the perioperative management of patients taking glucagon-like peptide 1 \(GLP-1\) agonists](#).

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Original Contribution

Relationship between perioperative semaglutide use and residual gastric content: A retrospective analysis of patients undergoing elective upper endoscopy

InJ Clin Anesth (in progress) Aug 2023

Table 2
Summary of propensity weighted analysis.

| | Propensity weighted analysis (A) | | |
|---|----------------------------------|------------|---------|
| | Estimate (PS) | 95% CI | P-value |
| Semaglutide use | 5.15 | 1.92-12.92 | <0.001 |
| Digestive symptoms | 3.56 | 2.2-5.78 | <0.001 |
| Colonoscopy combined with upper endoscopy | 0.25 | 0.16-0.39 | <0.001 |

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“Semaglutide, delayed gastric emptying, and intraoperative pulmonary aspiration: a case report”

- 42-yr-old male with gastroesophageal reflux and Barrett’s esophagus
 - Hx of obesity (body mass index = 37), obstructive sleep apnea
- EGD - fifth procedure in last 2 two years (all with deep sedation)
 - Last 4 months ago
- Two months prior, he started semaglutide for weight loss (1.7 mg sq)
 - Was also on omeprazole, famotidine, paroxetine, bupropion, and bupirone
- No GI symptoms day of surgery. NPO >18 hours
- At endoscopy – stomach “full” and aspirated (liquid and solid material)

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- Mayo Clinic “Guidelines”
- Recommendations:
 - Patients should be instructed to continuing weekly dosing as scheduled before surgery.
 - Patients should be instructed to hold daily use forms on the day of surgery. Procedures should not be delayed or cancelled if taken the day of surgery.
 - Clinicians should be aware of the increased risk for food in the stomach when following standard fasting guidelines.
 - In cases that are traditionally performed under sedation/monitored anesthesia care (MAC), general anesthesia with an endotracheal tube may be indicated. Consider early consultation with anesthesia.
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