ENHANCING YOUR CRITICAL THINKING SKILLS

SCENARIOS
I CAN’T BELIEVE YOU
GOT PLASTIC SURGERY!!!
SCENARIO 1
• 26 y/o male
  – 5’2”, 156lbs, BMI 28.7

• PM/PSH:
  • Goldenhar Syndrome
  • B/L cleft lip & palate (s/p repair in infancy)
  • Non-ischemic Cardiomyopathy – EF 20%
  • Class I Heart Failure
  • History of Mural Thrombus
  • Thrombotic CVA (no residual deficits)
  • AICD
Pre-Op Medications

- Quinipril 40mg po daily
- Hydrochlorothiazide 12.5mg po daily
- Carvedilol 12.5mg po bid
- Warfarin 6mg po qhs or dose to maintain INR 2-3

Was taken off Warfarin 5 days prior to planned surgery and transitioned to Enoxaparin 1mg/kg bid per cardiology recommendations
SURGICAL PROCEDURE

• Le Fort 1 with bone grafting
  – Donor site L iliac crest
• Placement of oral splint
• Intra-operative GU consult for urethral stricture
  – Cude´ catheter placed by GU in OR
Thoughts?

Concerns?
Post Op Plan

• Monitored unit overnight
• Continuous pulse oximetry/telemetry
• Standard HOB elevation
• IVF: RL @ 75ml/hour
• Sips of clear liquids
• Warfarin to restart evening of operative day
• Enoxaparin 60mg SQ to be given at 12 midnight (per cardiology recommendations)
What are your thoughts?

What are your concerns?
3A – RN called resident to report
Increased facial swelling and oozing from nose

IS THIS TO BE EXPECTED?
WHAT CONCERNS WOULD/DO YOU HAVE?
5A – patient began coughing up blood with clots

CONCERNS?

WHAT WOULD YOU DO?
Findings
• Emergently returned to OR
• Emergent tracheostomy on arrival to OR
  – Decreased O2 saturation to 50%
  – Heart rate decreased 30’s requiring epinephrine drip
• Evacuation of B/L facial hematomas
• Hospitalized total 9 days post op
• Heparin drip started POD #3, coumadin resumed slowly
• Discharged home POD #9 on therapeutic coumadin (INR 2.3), remained trached
SCENARIO 2
• 60 Y/O Female with facial aging presented for elective face/neck lift
  – 5′4″, BMI 23

• PM/PSH:
  – Hypertension
  – Hyperlipidemia
  – Tonsillectomy (childhood)
  – C-section x 2
• NKDA

• Medications:
  – Enalapril 5mg po daily
  – Atorvastatin 10mg po daily

• Vital signs:
  • Heart rate: 78, regular
  • RR: 18
  • BP: 128/72
  • Saturation: 99% - room air

• Patient was cleared for surgery by her medical doctor.

• Took her morning dose of Enalapril prior to surgery.
• Underwent face and neck lift in office OR under general anesthesia – 1\textsuperscript{ST} CASE.
• Procedure: 4 hours
  – EBL <100ml
  – Received 1 gm Ancef in OR for prophylaxis
• 2 posterior neck drains placed under circumferential head wrap
• Extubated in OR, transferred to PACU without event
• Discharged home accompanied by husband with instructions including head elevation, drain management, diet and BP monitoring
Discharge Medications

- Cephalexin 500mg po q8h x 5 days
- Percocet 5/325mg po q4-6 hours prn pain
- Valium 5mg po q8h prn
- Clonidine 0.1mg po q12h prm SBP >150 x 24 hours

- Patient to follow up next am for drain removal
What would be some of Your concerns?
Prior to discharge, patient pointed out an ‘itchy’ spot on anterior chest.

THOUGHTS?
• 7PM: Surgeon called patient for follow up
  – Spoke with husband who reported patient to be resting comfortably.
  – Ate soup, drinking tea and water
• 10PM: Patient given scheduled dose Cephalexin and 1 Percocet tablet for pain.
• 10:30PM – Husband called answering service reporting itchy rash over his wife’s body.
  – Gave patient 1 OTC benadryl capsule (25mg)
• 10:35PM- Surgeon returned call
  – Husband reported swelling of eyes and lips
911 called & patient transported to ED

THOUGHTS?

What should have been done? Why?

What would you have done differently?
What’s your conclusion?

How would you treat this patient?
Anaphylaxis Treatment Algorhythm

- Benadryl PO/IV
- Epinephrine
- Possible steroid administration
- IV fluids
- Airway management
- Allergy documentation in medical record
- Patient education
Scenario 3
• 40 y/o RHD male construction worker sustained traumatic laceration to R thumb from table saw.
  – Circumferential laceration over distal 1\textsuperscript{st} metacarpal. Distal Blood supply maintained.
• No prior PM/PS History
• Non-smoker
• NKDA
• Weight 70kg
• Received tetanus prophylaxis in ED
• To OR on day of injury
  – Exploration of wound, fracture repair, possible nerve repair and wound closure
• Anesthesia: R infraclavicular block with sedation
• VS at start of case:
  – T- 98, HR 74, regular, RR-16, BP 128/76, Sat 99% room air
3 hours into the case, the patient became bradycardic and hypoxemic
HR 40’s, O2 Saturation 80’s

What do you think is going on?
Patient was intubated by anesthesia for airway control

Bradycardia persisted. Patient began having muscle twitching

What do you think is going on?
Error in dosing intraclavicular block

Intraclavicular block dosed as follows:
2% Lidocaine at 10ml/hour through the block x total 3 hours

2% Lidocaine = 20mg/ml

10ml/hour x 3 hours = 30ml x 20mg/ml = 600mg Lidocaine Administered

Maximum Lidocaine dosing is 4mg/kg

70 kg x 4mg/kg = 280mg

Patient received 2.1X maximum safe dose
What could have been done Differently?
Scenario 4
16 y/o female presented to private plastic surgery office accompanied by parents

Planned procedure: **Rhinoplasty**

No prior medical/surgical history

Family history – unavailable (patient adopted in infancy)

NKDA

Medications: Acne face wash bid

Height 5’7”

Weight 115 lbs (52.3Kg)

VS: T- 98, BP: 110/70, HR: 70 (regular), RR- 16, O2 Sat: 100% room air
Consented for closed rhinoplasty by attending surgeon

Seen by anesthesia in office - consent obtained. History reviewed with patient and family.
Exam – airway patent & clear – Mallampati class I

IV line inserted in holding area. Patient brought to OR
Positioned on table, supine with appropriate padding.
Anesthesia Induced with:  Fentanyl 75mcg
Propofol 150mg
Succinylcholine 100mg (2mg/kg)

Easy airway/easy intubation – confirmed with auscultation & Capnography.

Ventilator settings:  Volume controlled Ventilation:
FIO2: 30%, TV 450ml, RR-10, Peep +5

Anesthesia maintained with 2% Sevoflurane
Any thoughts?

Any concerns?
20 minutes into case – heart rate increased 120’s
Additional Fentanyl 50mcg administered.

No noted decrease in heart rate

Thoughts?

Concerns?
Steady increase in ETCO2 noted.

Ventilator settings reviewed: RR increased to 15, TV increased 475

Thoughts?

Concerns?
ETCO2 continued to rise.

Surgeon notified

Rapid increase in temperature to 38c

Warmer turned off
What would you do next?
WHAT’S NEXT???

- Call for HELP!
  — Extra staff/helping hands

- Call MH 24 hour Emergency Hotline:
  • 800-644-9737
IF YOU NEED TO MANAGE AN MH CRISIS RIGHT NOW:

Please Call MH Hotline at:
1-800-644-9737

Be prepared to give your name, number, facility and email, in the event the call is dropped.
(outside of the US: 209-417-3722)

View our Managing an MH Crisis Page

MH Hotline Information

As a medical professional, knowing about Malignant Hyperthermia is important to save lives. MHAUS.org
What’s Next?  
Who does what?

- Anesthesia
  - Stop Sevoflorane or other offending agent
    - Hyperventilate with 100% Oxygen
  - Maintain on TIVA - total iv anesthesia (fentanyl/propofol)
  - Maintains airway/treats arrhythmias
  - Place A-line/additional IV lines

  - Start Dantrolene **ASAP**
    - **2.5mg/kg IV push**
Who does what?

• Surgeon:
  – Terminates case as quickly and as safely as possible
  – Doesn’t panic
  – Talks to the family
  – Transfer to tertiary care hospital for continued treatment once stabilized.
Circulator

• Calls for additional help
• Notifies other anesthesia providers
• Assists surgeon to close/pack for possible transfer
• Delegates tasks to others
Dantrolene Nurse

• Obtain crash cart or MH cart
• Mixes Dantrolene
  – 2.5/kg initial dose
    • Mix with sterile water without preservative
    • Shake
    • Rapid IV push
• Organizes assistants
• Accurately records dose
  – Organize empty vials to send with patient for transfer when appropriate
Dantrolene

- **Ryanodex:**
  - Each 250mg vial: reconstitute with 5ml sterile water
  - Shake to ensure orange-colored uniform color
  - Opaque suspension is normal

- **Dantrium:**
  - Each 20mg vial: reconstituted with 60ml sterile water
  - Shake until solution is clear
Medication Nurse

- Assists Anesthesia in managing medical issues:
  - Hyperkalemia
  - Acidosis
  - Cardiac Arrhythmias
- Be prepared to administer:
  - Sodium bicarb
  - Dextrose
  - Regular Insulin
  - Lidocaine/Amiodarone

- Recorder:
  - Time medications given
  - Dose
  - Response to medication
  - Nursing interventions
  - Cooling measures
Cooling Nurse

- D/C warming blanket/change to cooling
- Monitors Temperature
- Gather cooling supplies
- Apply ice packs
  - Groin/axillae/head
- Lavage
  - Stomach/bladder
Transfer Protocol

• Transfer is at the discretion of anesthesia
• Signs of patient stability:
  – End tidal CO2 decreasing
  – Stable heart rate/no arrhythmias
  – Dantrolene administered/in progress
  – Temperature decreasing
  – Muscle rigidity resolving
KEEP CALM AND BE PREPARED