Airway 2015
Updates in Emergency Airway Management

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Conflicts of Interest

- None to disclose
Objectives

• Using a case-based approach, at the end of this session, you will:
  – Be familiar with current airway equipment
  – Be able to discuss the management of the difficult airway
  – Understand the various protocols for airway management, including RSI and DSI
Airway Methods

• Assumes the decision to intubate has been made
• Old school way
  – Sedative +/- paralytic
  – Direct laryngoscopy
  – Don’t bag the patient prior to intubation attempts
  – Still adequate for most intubations
Where Are We Today

• Lots of advances in airway management in recent years
• Tools to assess difficult airway
• Many flavors of video laryngoscopy
• Changes in longstanding practices
  – Uncuffed pediatric ETT
  – Cricoid pressure downplayed
  – Changes in oxygenation/ventilation during intubation
So What’s the New Stuff?

• Induction
  – RSI vs DSI vs awake intubation
• Pre-oxygenation
  – Use of CPAP or high flow oxygen via NC throughout intubation
    • Passive or apneic oxygenation
• Sellick maneuver
• Video layngoscopy
• Adjuncts for the difficult intubation
  – Bougie
  – LMA
  – King LT
Why the Changes?

• Growing body of evidence in support of newer technology
  – Video laryngoscopy
• More difficult airways
  – Many more obese patients
  – Head & neck surgery
• More elderly/chronically ill patients
  – Less able to tolerate stress of airway management
Emergency vs Elective Airway Management

• Emergency
  – You get what you get
  – Need to rapidly assess and decide best steps for success
  – Usually have limited window for success/high cost for failure

• Elective
  – Difficult airways screened in advance
  – Patients NPO
  – Ability to cancel case if needed
Case Presentation 1

- A 58 yo f pt arrives via EMS
- Was in her USOH until earlier this evening when family found her somnolent
- EMS noted her to be lethargic with pulse ox of 77% RA
- They initiated duonebs, oxygen and CPAP enroute
Case Presentation 1

- PMH is COPD and CHF
- Multiple meds, inc inhalers, lasix, spironolactone, norvasc
- VS afebrile-sats 92% on CPAP-RR28-BP 178/98
- Responds to loud verbal stimuli or sternal rub with grunts
- Poor air movement
- 2+ pretibial edema
Case Presentation 1

- CXR shows cardiomegaly and clear lungs
- ABG pH 7.18/110/88/34
- CBC/BMP/trop no significant abnormalities
- EKG sinus tachycardia no ST-T changes
- BMI is 48
- Mentation not improving on CPAP
- What to do next?
Airway Assessment

• Lots of different mnemonics
  – LEMON, MOANS, RODS, SMART

• All slightly different takes on the same issues
  – Look for signs of difficult intubation externally
  – Look for predictors of difficult ventilation

• LEMON probably best known but any will be helpful
Difficult Airway Assessment

• LEMON
  – Look externally for problems
    • Obese, beard, thick neck
  – Evaluate the 3-3-2 rules
  – Mallampati Score
  – Signs of Obstruction (stridor, drooling, dysphonia)
  – Limited neck mobility (c collar, RA, Down Syndrome)
3-3-2

• Mouth able to open at least 3 finger widths
• Submental length at least 3 finger widths
• Angle of mandible to hyoid 2 finger widths
• Anything less suggests limited ability to get a blade and tube in
Mallampati

Class I

Class II

Class III

Class IV
MOANS

- Predicts difficult BVM
- Mask seal
  - Beard, facial trauma, vomit
- Obesity & obstruction
- Aged patient
  - Harder to bag due to limited neck mobility, poor dentition, poor physiologic reserve
- No Teeth
- Stiff chest
RODS

- Predicts difficult placement of an alternate airway (King LT, combitube)
- Restricted mouth opening
- Obstruction of the upper airway
- Disrupted or distorted airway
- Stiff lungs/spine
Break Time
So Back to Our Patient...

- She is obese
- Already has poor reserve (marginal sats when not on cpap)
- Best view you get is Mallampati IV
- Not cooperative for mouth opening but fails the other parts of 3-3-2
Induction

• More research now focused on *not* doing RSI in high risk patients

• Alternate methods being explored
  – Delayed sequence intubation
  – Awake intubation
  – Nasotracheal intubation
RSI

• Developed from anesthesia protocols for intubating non-fasting patient
• Plan for rapid induction of unconsciousness followed by short acting paralytic to facilitate intubation
• Use of etomidate/propofol/brevital/versed and succinylcholine (SCh) standard
Risks of RSI

• Biggest risk: CI/CV
  – Can’t intubate/can’t ventilate

• The so-called failed airway
  – Older algorithms had gone straight to surgical airway

• Many difficult intubations also difficult crichs
The Difficult Airway
Induction Alternatives

• Pre-oxygenation
  – In addition to NRM, add high flow oxygen (15 lpm) via nasal cannula
    • Continue nc until intubated
  – Use CPAP, even during induction
  – Bag if hypoxic
  – In kids, consider vapotherm
  – In adults, consider heliox
DSI

• Focus of much recent research
• Patient who needs intubation but has some time to optimize
•Protocols vary but generally combine sedating dose of ketamine with CPAP
• Goal is maximizing hemodynamics/oxygenation/ventilation
• Examples-septic shock, status asthmaticus
Difficult Airway Tips

• Suspected difficult tube
  – Check to make sure they bag easily
  – If difficult to bag, no paralytics
  – If easy to bag, can take a look after sedation and if view is adequate can go to full RSI
  – If difficult view, use assistive devices/backup airways
Difficult Airway Tips

• Anticipated difficult tube and difficult to bag
  – No paralytics
  – Consider underlying issues to determine next best path
  – Airway obstruction consider surgical airway
  – Anatomic difficulties
    • Use video scope (glidescope/King)
    • Use backup adjuncts
      – Bougie
      – King LT/Combtube
      – I-LMA
Awake Intubation

• No paralytics
• Patient ranging from wide awake to sedation while preserving ventilation
• Can nebulize lidocaine for airway anesthesia
• If fiberoptic scope available, can use it
• After adequate prep, standard oral laryngoscopy or nasal intubation +/- laryngoscopic assist
Adjuncts

• Bougie
  – Can insert fairly blind
    • Usually just need to see arytenoids
  – Feel bumps as it bounces off tracheal rings
  – Slide tube over it
Adjuncts

- King LT/Combitube
  - Updated versions of old EOA/EGTA
  - Works on indirect ventilation
    - Cuff to occlude esophagus
    - Air thereby directed into trachea
    - Combitube had tracheal tube but frequently hard to figure out where to hook up vent
    - All are short term (a few hours at longest) solutions
Adjuncts

• LMA
  – Can use intubating or standards
  – Comes in range of sizes
  – Easy to insert
  – Can bag for short term
  – Intubating LMA-can slip ETT through after it is place, designed to direct it to trachea
Adjuncts

• Gldescope/King Vision
  – Slide in blade and look at screen, not where the blade is
  – If lots of foreign matter or airway distortion may not help as much
  – Allows for viewing cords with minimal neck movement
    • Good for trauma/unstable c spine
Crichtothyrotomy

• Quick kits or home made
  – Need scalpel, trach hooks, 3.5 cuffed ETT
• Difficult if obese, neck infection, prior surgery or radiation
• Lack of experience can make this a longer than expected procedure
Special Situations

• C spine trauma
  – In line stabilization
  – Video laryngoscopy generally the least manipulation
Anatomic Airway Obstruction

• Angioedema, Malignancy, Ludwig’s
  – Consider awake intubation, use nasopharyngoscope
  – Crich if easily performed
  – Blind nasotracheal intubation is fallback
Back to Our Case

• You take the CPAP off and she bags easily
• You give a sedating dose of etomidate (0.15 mg/kg) and lay her back to take a look
• A volcanic eruption of goulash and beer fills her orophaynx
Vomiting

- If significant concern for emesis during induction
  - Drop OG
  - No bagging/CPAP
  - If time permits decompress stomach
  - All pregnant women > 20 wga at risk for vomiting
Vomiting

- Turn patient lateral recumbent
- Suction vigorously
- Attempt intubation as soon as airway seems clear
Back to Our Case

• Vomit vigorously suctioned
• Video scope shows partial cord view
• Tube passed successfully
• $O_2$ sats maintained using high flow nasal cannula
Conclusions

• Airway management a continuously evolving field
• Difficult airways becoming more common
• Use of predictive tools can help individualize that patient’s management
Questions?

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