SCHOOL OF MEDICINE
Department of Anesthesiology
UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

DENVER HEALTH
Level One Care for ALL

Comprehensive Airway Management Workshop 2017

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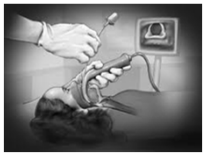
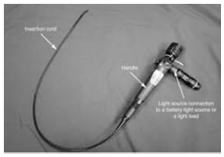
Workshop Objectives:

- Discuss tips on successful awake fiberoptic intubation
- Review tricks to troubleshoot a difficult video-laryngoscopy assisted intubation
- Hands-on demonstration & review of:
  - Lung-isolation options
  - Pediatric airway tools
  - Surgical airways
    - Ultrasound to identify cricothyroid membrane
    - Practice percutaneous cricothrotomy on lamb trachea
  - Supraglottic airways
  - Flexible bronchoscopes
  - Video laryngoscopes

Awake Fiberoptic intubation & Videolaryngoscopy assisted intubations





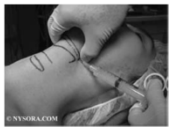
Tips for successful Awake Fiberoptic Intubation

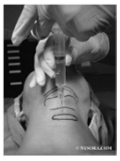
- **Dry the Airway** (Glycopyrolate 0.4mg or 20mg IM Benadryl) at least 20min prior!!
- Suction directly
- Use Gauze to dry oral pharynx/tongue
- Especially important with Ketamine

To Sedate or not to sedate???

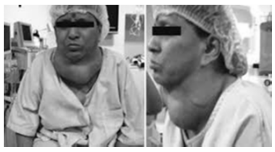
- If impending loss of airway--AVOID SEDATION! Topical only! (Even sedation with Dexmetomidine will depress respirations if in extremis)
- If sedation is appropriate, go light---you need a cooperative patient
  - **Dexmetomidine**: 0.5-1mg/kg over 10 min (start in PreOp). Draw up syringe from 4mcg/mL bag, give over 10 min. Loading dose is important & usually all that is needed
  - **Ketamine**: start with 0.2mg/kg
  - **Remifentanyl** 0.05-0.2mcg/kg/min
  - **Midazolam** (judicious)
  - **Fentanyl**? I usually avoid until ETT secure (AFOI is not painful)

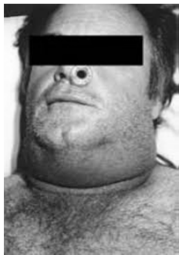
Topicalization Options…



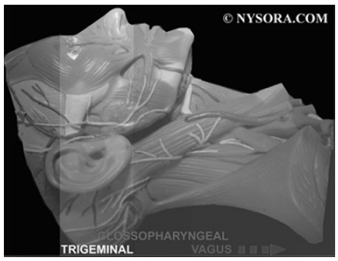


Needles work great but…



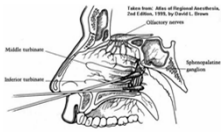


Needleless Topicalization 101



Nasal approach

- 4% cocaine works great (cotton Q-tips/pledgets) OR
- Nasal mucosa constrictor (Oximetazoline) plus:
- 4% lido (2-3mL) via IV catheter or nasal atomizer or
- 4% lido soaked cotton tips (2-3 stacked up in each)



Oral approach

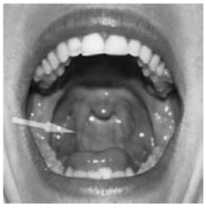
1st Topicalize oral pharynx (glossopharyngeal nerve)

Lots of Options:

- 2% viscous lidocaine gargle (& spit!)
- 4% lidocaine nebulized (encourage rapid/shallow breathing)
- Targeted Benzocaine spray

Targeting the glossopharyngeal nerve

- 4% lido cotton pledget to palatoglossal arch (3 min each)
- Advantage of low volume of local anesthetic



Base of tongue/Epiglottis

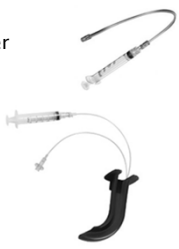
- Generous 2% lidocaine ointment on tongue blade or Ovassappien/Berman airway with 2% lidocaine ointment-advance as tolerated

OR

- 2-4% Lidocaine via Curved mucosal atomizer

OR

Atomizing oral airway



Base of tongue/Epiglottis

- "**Transoral Trickle":** drip 5mL-10mL of 2-4% topical lido via 14g IV plastic catheter very slowly while holding tongue forward to allow for aspiration of local anesthetic
- 0.5mL at a time, pause after 2mL but keep holding tongue to prevent swallowing
  (do not exceed 4mg/kg on this part)

Glottis/Trachea

SPRAY as you go

- 5mL syringe of 2-4% topical lidocaine
- Attach to insufflation port of flexible bronchoscope
- Advance bronchoscope until epiglottis & glottis are visualized
- Spray 3mL of local just above vocal cords, wait 15secs (allow coughing)
- Advance just below the cords, spray additional 2mL to anesthetize trachea, wait

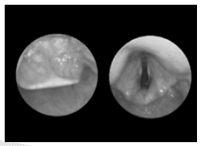
What do I personally do?

1. Glycopyrolate 0.4mg IV 20min before
2. Give 0.5-1mcg/kg of Dexmetomidine over 10 min (unless in extremis)
3. 15mL Viscous 2% Lidocaine Gargle & Spit (or 4% Nasal cocaine via cotton Q-tips)
4. "Transoral Trickle" 5mL of 2-4% Lidocaine while pulling tongue forward with gauze.
5. 5mL of 4% for "spray as you go" via FO scope (½ above, ½ below cords)

We are numb…now what?

Intubating the trachea

- Advance FO scope through glottis just until carina is visualized
- Do not advance the FO scope past mid-trachea or you may induce coughing
- Now advance the ETT over the scope into trachea



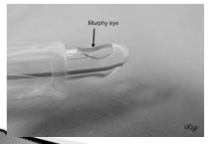
Scope is in, ETT won't pass

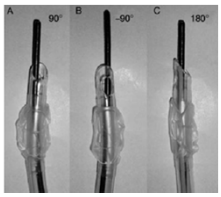
- Lubricate the outside of ETT, not the scope (only make your fingers slimy)
- Tell Patient to take a big breath then advance tube

Still stuck?

- Rotate ETT 90º counterclockwise so that Murphy eye faces anterior then advance
  AKA the "Cossham Twist"

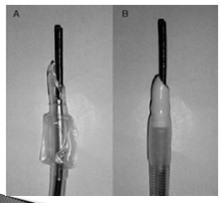
(Also a good trick for Bougie assisted intubation)





Other tricks

- Try using a flexible tip ETT (Parker Flex-tip)
- Try using an intubating LMA ETT (flexible)
- Try Aintree catheter-ETT combo

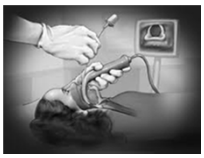


ETT in trachea

- Confirm +ETCO2 prior to induction meds or parylytics

Videolaryngoscope for difficult airways

- Anterior view of glottis
- C-collar
- Facial trauma
- Small mouth opening
- Obese



- Not great when excessive secretions/blood/emesis in airway

Tricks for Difficult Videolaryngoscopy

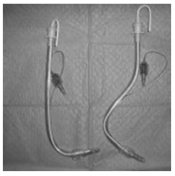
"I have a view, but can't get the tube in"

- Lubrication inside and outside (lubricate the stylet)
  (especially important for small tubes/Peds)
- Spin the tube on the stylet
- Make sure the Murphy eye is anterior
- Use a flexible tip ETT
- Try a Reinforced ETT

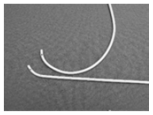
Other tricks

- 2 curve airway (Sigma shaped)

Once ETT tip thru cords, slowly remove stylet



- If using Bougie, let go of the bougie while advancing ETT (so it spins freely)
- Fiberoptic scope assisted (when time)



Our Airway Stations:

- Lung Isolation Dr. Abts
- Cricothyrotomy Dr. Shindell, Dr. Janik
- Pediatric Airway tools Dr. Zieg
- Ultrasound airway/Topicalization tools Dr. Benish
- Videolaryngoscopy
- Fiberoptic scopes
- Supraglottic airways

Our Faculty Presenters

- Dan Janik (UCH)
- Marina Shindell (UCH)
- Jennifer Zieg (TCH)
- David Abts (DHMC)
- Beth Benish (DHMC)