Perioperative Airway Management:

Update on Tools and Techniques

Toni Felberg, M.D., FAAP
Assistant Professor of Anesthesiology and Pediatrics
Baylor College of Medicine
Texas Children's Hospital
Houston, Texas

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Disclosures

- None

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Goals

- Gain a better understanding of the range of tools and techniques utilized by the anesthesiologist for perioperative airway management.
- Recognize how airway management impacts the post-operative care of the patient

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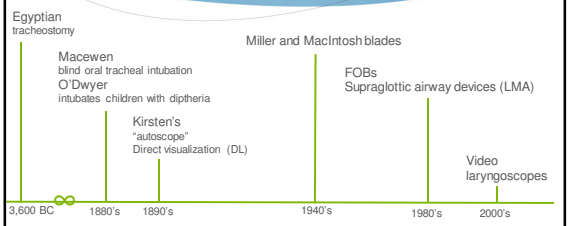
History of Airway Management

It's older than you think!



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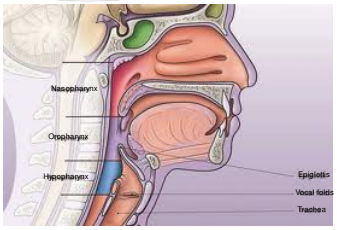
Anatomy of the Airway



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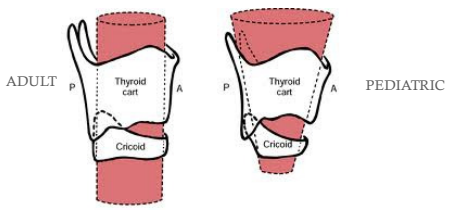
Anatomy of the Airway

Adult vs Pediatric



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Evaluation of the Airway

- All airway classification is trying to answer 2 questions:
- 1.) Can I mask ventilate?
- 2.) Will I be able to intubate?

"NO" to both = difficult airway

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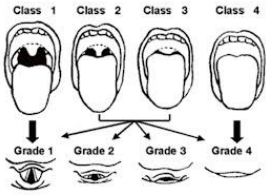
Evaluation of the Airway

Do you see what I see ?

Modified Mallampati classification



Cormack-Lehane laryngoscopic views

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Securing the Airway…

What does that mean ?

Most reliable is ETT between the vocal cords

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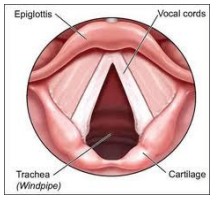
Securing the Airway

"Grade I" view of the larynx



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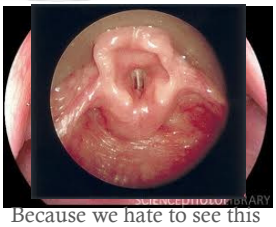
Securing the Airway

Why do we care ?



Because we hate to see this

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Airway Tools

- Direct Laryngoscopy (DL)
- Flexible Fiberoptic Bronchoscopy
- Airway Wands
- Video Laryngoscopy
- Supraglottic Airways
- MISC: retrograde wire, blind intubation, jet ventialtion, cricothryotomy

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Direct Laryngoscopy

Over 80 years old

- Described late 1800's, in clinical use since 1913. Miller and MacIntosh blades developed in 1940's still used in 2012.
- Simpliest, most common method of intubation.
- Indications: Placement of ETT when advanced airway support is needed. May be for surgical or medical reasons.
- Limitations: Patient position, oral opening, limited neck mobility, inability to align the airway axis's
- Nursing implications: sore throat, hoarseness, dysphagia, injury to teeth or soft tissue

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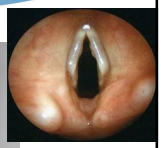
Flexible Fiberoptic Bronchoscopy

FOBs



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Flexible Fiberoptic Bronchoscopy

FOBs

- In medical use since 1966, it wasn't until the 1980's for intubation of the airway.
- Light source, insertion cord and handle. Visualization is at distal end of scope and transmitted via fiberoptic bundle to eyepiece. Can be performed awake or asleep, oral or nasal.
- Indications: difficult airway, limited oral opening, limited neck mobility, difficult DL but able to mask ventilate
- Limitations: copious blood and secretions, uncooperative patient
- Nursing implications: difficult airway?, assist with equipment, sore throat, hoarseness, dysphagia

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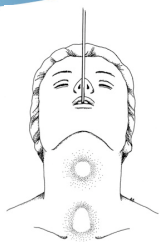
Airway wands

Traditional Light Wand

- Used as early as 1957, light at distal end of the device facilitates blind intubation technique, neck/larynx is illuminated. ETT is loaded over the stylet.
- Indications: limited oral opening, facial trauma, limited neck mobility, copious blood or secretions
- Limitations: no direct visualization of ETT placement, not used with suspected laryngeal trauma or hypoxic patient, obesity may limit transillumination.
- Nursing implications: difficult airway?, assist with equipment, trauma to airway from blind probing, hoarseness, dysphagia



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Airway Wands

Optical stylet

- Indirect visualization for the operator via eye piece, introduced in 1995
- Indications: limited oral opening, limited neck mobility
- Limitations: laryngeal trauma, hypoxic patient, copious secretions, lens may fog
- Nursing implications: difficult airway?, assist with equipment, sore throat, hoarseness, dysphagia

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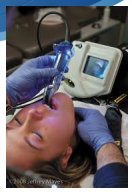
Video Laryngoscopy



- Introduced into clinical practice in 2001 combines the tools of DL with optics transmitted to a LCD monitor.
- Permits visualization of airway by others, FOB now have this capacity
- Indications: difficult airway, limited neck mobility, difficult DL but able to mask ventilate
- Limitations: copious blood and secretions, oral opening less than 2 cm, learning curve
- Nursing implications: difficult airway?, assist with equipment, sore throat, hoarseness, dysphagia

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Supraglottic Airway Devices

Does ≠ secure

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Laryngeal Mask Airway

LMA

- 1983 Dr. AJ Brain introduced the most innovative advance in airway management since DL. Placement of a mask into the hypopharynx and advanced to cover the laryngeal opening.
- Indications: provide patent airway in lieu of traditional mask ventilation, routine airway in the OR, difficult intubation, airway rescue
- Limitations: severe upper airway obstruction, patient position, full stomach, PPV with high peak airways
- Nursing implications: difficult airway?, airway is not "secure", nerve injury with resultant vocal cord dysfunction

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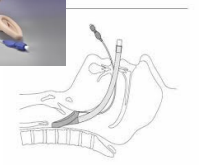
Laryngeal Mask Airway



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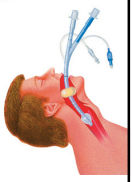
Esophageal-Tracheal Combitube

Combitube



- Conceived of in 1960's, introduced into clinical practice 1980's. Blind insertion of a double lumen tube to allow airway management
- Indications: primarily used in out of hospital by providers with limited airway training, difficult airway
- Limitations: esophageal, pharyngeal or laryngeal injury, supraglottic obstruction
- Nursing implications: device recognition

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Cuffed Oropharyngeal Airway

COPA

- 1990's saw the development of the COPA. Modified oral airway has a cuff at the distal end and a connector for an anesthesia circuit on the proximal end
- Indications: provide patent airway in lieu of traditional mask ventilation in SV patient
- Limitations: severe upper airway obstruction, patient position, full stomach, need for PPV
- Nursing implications: device recognition, not in common use

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Additional Anesthesia Tools

Airway Monitoring

- Oxygenation Pulse Oximetry
- Ventilation Capnography

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Risk Factors for Hypercapenia

- PMH
- Opiods
- Respiratory Impairment
- Positioning

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Additional Anesthesia Tools

Medications

- Sedatives/Narcotics
  - Dexmetatomidine
  - Remifentanyl
- Antiemetics
  - Ondansetron
  - Decadron

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Emergency Treatment of Laryngospasm

- Recognition
- Airway maneuvers
- Medications

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Conclusions

Implications for Perioperative Nurses

- Knowledge of the anesthesia tools used for your patient will enhance your care via anticipation of possible complications.
- Ask appropriate questions relating to the airway management used:
  - Was this a difficult airway?
  - What are the unique post op complications I can anticipate?
  - Does this patient need capnography in the PACU?
  - What is most appropriate unit for this patient post-op?

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Final Thoughts

- Nurses are a vital part of the perioperative team. You are charged with caring for the patient as she completes emergence from the anesthetic and therefore are an extension of the anesthesiologist throughout the PACU period.
- Collaboration with the anesthesia provider is mandatory to optimize care of the patient by knowing the airway management used and anticipating possible adverse events.

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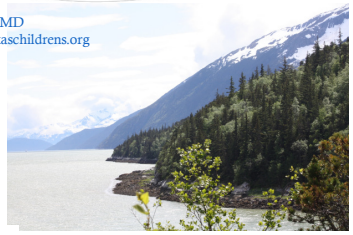
THANKS!

Toni Felberg, MD
mafelber@texaschildrens.org



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