The High-Risk Airway

Robert J. Vissers, MD
Common principles

- Assessment of ventilation difficulty
- Assessment of intubation difficulty
- Awake vs. induction and paralysis
- Calling for help
- Surgical airway is a potential endpoint
Difficult Airway Algorithms

*Important principles*

- Make a Plan
- Use a Checklist
- Share with the Team
Approach to the Emergency Airway

- Decision to intubate
- Near death? Unresponsive?
- Difficult Airway?
- Rapid Sequence Intubation

- Crash Airway
- Difficult Airway Techniques
- Failed Airway

Decision to intubate

Crash Airway? Cricothyrotomy?

Difficult Airway?

RSI

TIME

ANATOMY

Approach to the High Risk Airway

The Difficult Airway

MOANS

LEMON

RODS

SHORT

“The 4 Elements of Difficulty”

*The Difficult Airway Course: Emergency*
The Difficult Airway

“The 4 Elements of Difficulty”

* The Difficult Airway Course: Emergency
Assessment of Difficult BVM: MOANS

M ask seal
O besity/obstruction
A ge > 55
N o teeth
S tiff lungs

*The Difficult Airway Course: Emergency*
The Difficult Airway

DIFFICULT BAG AND MASK VENTILATION

DIFFICULT LARYNGOSCOPY AND INTUBATION

DIFFICULT RESCUE

DIFFICULT CRICOTHYROTOMY

“The 4 Elements of Difficulty”

* The Difficult Airway Course: Emergency
"LEMON" Law

L ook externally
E xamine (3-3-2)
M allampati grade
O bstruction
N eck mobility


LEMON: Look

Simple visual inspection often reveals obvious potential difficulties
LEMON: Examine 3-3-2

Assess oral opening - 3 fingers
Measure the mandible - 3 fingers
Position of larynx - 2 fingers
LEMON: Examine 3-3-2

Assess oral opening – should be able to accommodate 3 fingers
LEMON: Examine 3-3-2

Measure the mandible - should be able to fit 3 fingers between the mentum and the hyoid bone
LEMON: Examine 3-3-2

Assess position of larynx – should get 2 fingers between the thyroid cartilage and the mandible
LEMON: Obstruction?

1) Location?
2) Fixed or mobile?
3) Speed of progression?
LEMON: Neck Mobility

- Can the patient flex and extend the neck?
- Actively assess in the non-trauma obtunded patient.
- Cervical spine immobilization - remove anterior collar while c-spine is immobilized.
“LEMON” Law

Look externally
Examine (3-3-2)
Mallampati grade
Obstruction
Neck mobility
LEMON: Predictive?

- 156 ED patients requiring intubation
- Scored using LEMON
- Simple point system used (0 to 10)
- Compared to laryngoscopic view (Cormack–Lehane)
- Felt to be predictive, P<0.05

LEMON: Predictive?


Figure 2. Graph showing number of patients with each airway assessment score in both intubation difficulty groups.
The Difficult Airway

“The 4 Elements of Difficulty”

*The Difficult Airway Course: Emergency*
Airway alternatives

Nasal
Supraglottic:

BNTI
Fiberoptics

Infraglottic:

BVM
Intubating LMA®
Lightwand
Videolaryngoscope
Fiberoptics
Bougie
Combitube
King-LT

TTJV
Cricothyrotomy
Assessment of Difficult BVM: RODS

- R estricted oral opening
- O bstruction
- D isrupted or distorted
- S tiff lungs

* The Difficult Airway Course: Emergency
Rescue Devices

- Most require oral access
- Most are designed to deal with high anterior cords
  - I-LMA, King-LT, Combitube
  - Intubating stylet (bougie, frova, etc.)
  - Video – glidescope, C-mac, etc.
Agitated Burn Case

42-year-old woman set herself on fire in her car.

Uncooperative, yelling “let me die”.

70-80% burns, mostly 3°, to face, trunk, anterior arms and thighs.

Unable to get a BP or O2 sat.
Intubating Stylet/Bougie
Decision Making

**Question #1:**
Is Oxygenation “Adequate” Or “Inadequate?”
[Are $O_2$ saturations above or below 90%?]

**Question #2:**
Is The Airway “Normal” Or “Disrupted?”
Combitube
Video Laryngoscopy
Glidescope

GVL® Stat

Reusable Video Baton
Awake look/scopes

- Antisyalogogue – atropine or glycopyrrolate
- Anesthesia – lidocaine (2-4%), benzocaine
- Decongestant – oxymetazoline (afrin)
- Nebulize, atomize (MADgic®), viscous
- Sedation – ketamine, versed
The Difficult Airway

DIFFICULT BAG AND MASK VENTILATION

DIFFICULT LARYNGOSCOPY AND INTUBATION

DIFFICULT RESCUE

DIFFICULT CRICOTHYROTOMY

“The 4 Elements of Difficulty”

* The Difficult Airway Course: Emergency
Assessment of Difficult BVM: SHORT

Surgery or disruption
Hematoma
Obesity
Radiation
Tumor
No landmarks?

- The tongue is your friend – find it and follow it to the glottis
- Suction, suction, suction...
- 4-finger rule for the cricothyroid membrane
Cricothyroid membrane under the 4th finger
Septic Shock

- 24 yo woman
- Fever, delerium
- Purpuric rash
- Hypotensive 94/58
- T 41°, P 152
- RR 32, Pulse ox 100%
RSI in Septic shock

- Primary goal: avoid exacerbation of hypoperfusion
- Need to differentiate shock state
- Consider before intubation:
  - Assessment of volume status
  - IVFs as pretreatment before intubation
  - Vasopressor before intubation
  - A vs C: hemodynamic compromise vs hypoxia
My Favorite Pretreatment

- Consider volume status before intubation
- Avoid post-intubation hypotension
RSI in Septic shock

- **Acidosis** associated with compensatory respiratory alkalosis (tachypnea, kussmaul’s)
- Post intubation **ventilate at high RR**, “normal rate” may lead to transient worsening of acidosis
More airway?
Preparation

- Time-out
- Run the check-list
- Criticalpoints.net - course
Summary

- Organized, rapid, simple approach
- Assess for difficult ventilation
  MOANS
- Assess for difficult intubation
  LEMON
Summary

- Do I have TIME?
- Does the ANATOMY predict rescue?
- Anticipate PHYSIOLOGIC problems?
- What’s the PLAN?