The Tough Stuff: Difficult Airway Management

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Some people will do anything for a tube.....
Things I’ve Learned From Children

- Garbage bags do not make good parachutes.
- When you hear the toilet flush and the words “Uh-oh,” it’s already too late.
- Super glue is forever.
- VCR’s do not eject PB&J sandwiches even though TV commercials show they do.
- A king size waterbed holds enough water to fill a 2000 sq. foot house 4 inches deep.
...So I said “Hey Ya’ll...watch this”..........
Goals

- Predict a difficult airway based on clinical criteria
- Plan for appropriate action in the difficult airway
- Initiate appropriate plans of attack with confidence in the “Can’t Ventilate/Can't Intubate” (CVCI) situation
- Become informed about airway options available.
What this class assumes:

- You already understand basic airway anatomy
- You already have a basic understanding of BLS airway maneuvers and ET Intubation by Oral and Nasal means
- That the concept and procedure of RSI is well understood
- You are familiar with needle and traditional surgical airway procedures.
- You are an experienced operator in the field of EMS.
As Such:

- I have skipped over some of the basics to fit new stuff in the time allotted.
- I have tried to entice your interest with some of the “Hot Topics” in airway management.
- Because:
“A mind once stretched by new Ideas never regains its original dimensions...”
Top 10 Lies told by Paramedics

1. It's not my fault, he kept moving.
2. This might hurt a little.
3. I did say clear first.
4. I know where I’m going.
5. It’s OK, I’ll cut along the seams.
6. The ambulance is clean.
7. It’s the flu, not a hangover.
8. The gloves are for your protection.
10. I’m in this for the money.
Why do we Intubate?

- Inability to protect and maintain patent airway.
- Failure of oxygenation or ventilation.
- Anticipated need based on clinical course
Ideal conditions for intubation

- Ideal Lighting, positioning, etc.
- Plenty of assistance
- Time to prepare, plan, discuss
- Option to Abort
- Empty Stomach
- Back up available.
Ideal Pt. for intubation

- Intact, clear airway
- Wide open mouth
- Pre-Oxygenated
- Intact respiratory drive
- Normal dentition/good oral hygiene
- Clearly identifiable and intact Neck and Face
- Big open Nostrils
- Good Neck Mobility
- Greater than 90 KG, Less than 110 kg.
Upper Airway Anatomy
If only they looked this good…
Pedi and Adult Normal Trachea
How many of our Pt’s are like That?
In Reality Our patients are:

- Immobilized
- Traumatized
- Compromised
- Prioritized
- Beer-n-Pizza-ized
They Tend to look like This:
And This:
And This (after failed ETT attempt)
Most of our Patients are already “difficult airways” by “OR” Standards. Why should EMS personnel try to further identify a difficult airway?
The American Society of Anesthesiology (AMA) has noted:

- “… there is strong agreement that preparatory efforts enhance success and minimize risk.”
- And “… The literature provides strong evidence that specific strategies facilitate the management of the difficult airway “
- Thus, identifying a potentially difficult airway is essential to preparation and developing a strategy.
What does this mean to us?

- Many Anesthesiologists have the option to “Abort” induction, or to work through a problem with as much assistance as needed.
- In the REAL WORLD of EMS that is seldom the case.
- However many of the BASIC principles are valid in the clinical evaluation of Patients, and thus valuable in our education as medics.
- Knowing these principles will improve our decision making process and patient care.
How can we further identify a difficult airway?

- PMHx
- Basic Physical Exam
- Thyromental Distance
- Dr. Binnions “Lemon” Law
- Mallampati Classification
- 4 D’s Rule
- “BONES”
- “OBESE”
Past Medical History

- Rheumatoid Arthritis
- Ankylosing Spondylitis: Painful Stiffening of the Joints
- Cervical Fixation Devices
- Klippel-Fiel Syndrome: Short wide neck, reduction in number of cervical vertebrae, and possible fusion of vertebrae.
- Thyroid or major neck surgeries
- Pierre Robin Syndrome: Small Jaw, Cleft Pallet, no gag reflex, downward displacement of tongue
- Acromegaly: Thickening of Jaw, soft tissue structures of the face, associated with middle age
Past Medical History (Continued)

- Reduced Jaw Mobility
- Epiglottitis
- Tumors, Known Abnormal Structures
- Previous Problems in Surgery
Basic Physical Exam

- Anything that would limit movement of the neck
- Scars that indicate neck surgeries
- Kyphosis
- Burns
- Trauma, especially instability of the facial and neck structures.
### Clues to Look For:

- Prominent incisors
- Limited jaw / mouth opening
- Short neck
- Big tongue
- Small mandible
- Limited cervical mobility
- Facial trauma
- Burns

- Neck injury
- Obesity
- Foreign bodies
- Children
- Infections
- Allergic edema
- Inhalation injuries
- Facial hair
ThyroMental Distance

- Measure from upper edge of thyroid cartilage to chin with the head fully extended.
- Short thyromental distance equates with an anterior larynx that is at a more acute angle and also results in less space for the tongue to be compressed into by the laryngoscope blade.
- Greater than 7 cm is usually a sign of an easy intubation
- Less than 6 cm is an indicator of a difficult airway
- Relatively unreliable test unless combined with other tests.
Dr. Binnions Lemon Law: An easy way to remember multiple tests...

- Look externally.
- **Evaluate** the 3-3-2 rule.
- Mallampati Scale
- Obstruction?
- Neck mobility.
L: Look Externally

- Obesity or very small.
- Short Muscular neck
- Large breasts
- Prominent Upper Incisors (Buck Teeth)
- Receding Jaw (Dentures)
- Burns
- Facial Trauma
- S/S of Anaphylaxis
- Stridor
- FBAO
E: Evaluate the 3-3-2 rule

- 3 fingers fit in the mouth
- Greater than three fingers from Jaw (chin) to Neck
- 2 fingers fit from mandible to top of thyroid cartilage (top of neck)
- Any less than those is considered difficult airway!
Checking for an Anterior Larynx

Distance from chin’s inner rim to hyoid bone should = 3 fingers breadth in adult. If you only fit 2 fingers, expect anterior airway.

From side, patients with less than 2 finger breadth often appear to have hypoplastic mandibles (receding chins).

Anterior larynx: larynx appears anterior to your field of view. Here you see the arytenoids. Often you see no landmarks, making intubation difficult.
**M: Mallampati classification**

- A Method used by Anesthesiologists, reliable to predict difficult direct Laryngoscopy (Cormack & Lehane grading)
- A Class I view is a Grade I Intubation 99% of the time
- A Class IV view is a Grade III or IV intubation 99% of the time
Mallampati Classification

Class I

Class II

Class III

Class IV
Tough to do when intubating, so let's take another look

- Or have your patient stick their tongue out at you before they go unconscious.
Cormack & Lehane Grading

Grade 1

Grade 2

Grade 3

Grade 4
O: Obstruction?

- Blood
- Vomitus
- Chicklets (Teeth)
- Epiglottis
- Dentures
- Tumors
- Impaled Objects
N: Neck Mobility

- Spinal Precautions
- Impaled Objects
- Lack of access
- See PMHx for others.
What do we do when we have a difficult airway?
FOUR D’s

- Distortion
- Disproportion
- Dysmobility
- Dentition
MNEUMONIC “BONES”

- Beard
- Obese
- No teeth
- Elderly
- Snoring (sleep apnea)
The Obese (body mass index > 26 kg/m²)

The Bearded

The Elderly (older than 55 y/o)

The Snorers

The Edentulous (without teeth)
STOP

- **S** = Skull (Hydro and Microcephalus)
- **T** = Teeth (Buck, protruded, & loose teeth. Macro and Micro mandibles)
- **O** = Obstruction (due to obesity, short Bull Neck and swellings around the head and neck)
- **P** = Pathology (Craniofacial abnormalities & Syndromes: Treacher Collins, Goldenhar's, Pierre Robin, Waardenburg syndromes)
The ASA calls a Failed/Difficult Laryngoscopy a:

- Any airway that takes more than 3 attempts.
- Any airway that takes more than 10 minutes to secure.
- No wonder they say they have a 90% success rate.
- If we had those standards our Pt’s would be dead.
So what do we do?

IF YOUR PATIENT IS HARD OF HEARING...
AVOID SUCH COMMENTS AS “BIG BREATHS”
A little pre-planning goes a long way...
Before intubation

- Is there another means of getting our desired results BEFORE we attempt Direct Oral ETT?
- CPAP?
- PPV with BVM or Demand Valve?
- Nasal ETT?
- Do we have all the help we need & all airway equipment with us? (Suction?)
What are we going to do if we don’t get the Tube?

- Plans “A”, “B” and “C”
- Know this answer before you tube.
Plan “A”: (ALTERNATE)

- Different Length of blade
- Different Type of Blade
- Different Position
Plan “B”: (BVM and BLIND INTUBATION Techniques)

- Can you ventilate with a BVM? (Consider two NPA’s and a OPA)
- Combi-Tube?
- EOA, EGTA?
- LMA?
- Retrograde Intubation?
What do we do when faced with a Can’t Intubate Can’t Ventilate situation?

- Plan “C”: (CRIC) Needle, Surgical.
Do YOU feel ready to enact Plans A, B, C at a drop of a hat?

- Feel familiar with all those tools and techniques?
Securing the Airway once you get it!

- Headblocks
- Collar
- Spineboard
- Commercial tube secure device
- Note position and depth
BREATH SOUNDS ARE CLEAR AND EQUAL BILATERALLY.
Prove you had the airway

- Confirm in 3 or more ways
  - Chest rise and fall
  - ETCO2-waveform or End Cap Detector
  - Lung Sounds
  - Absence of epigastric sounds
  - Mist in tube
  - O2 sat increase
  - Visualize through cords
  - ‘Turkey Baster’ Esophageal Detector Device (EDD)
  - Xray
OK, Here You Go!

- Mandibular Aplasia
The View
The ‘Real Thing’ View
Time to Play - Can you get the airway?

- Paul Bunyan
- Santa Claus
- Grizzly Adams
- Rory
Normal Cords
Pictures of Difficult Airways-Cords

Muscle Tension Dysphonia
Vocal Cord Polyp
Aretynoid Granuloma
Carcinoma
Acute Hemorrhage

Contact Ulcers

Vocal Cord Paralysis

Cyst
Large Granulomas

Laryngeal Paralysis

Laryngitis

Larynx Mass
Larynx CA

Larynx CA

Larynx CA

Larynx CA
Papilloma

Paralysis-CVA

Reinkes Edema

Superior Laryngeal Paralysis
Review

- Remember to have your tools ready
- Have alternatives ready
  - Combitube
  - LMA
  - BVM, OPA, NPA
- Remember your visual prediction tools.
  - LEMON
  - 332 rule
  - Mallampati
  - Lehane-Cormack
  - BONES
  - 4 D’s
Final page of the Medical Boards

BONUS QUESTION:
(50 points)
What's the name of that thing that hangs down in the back of our throats?
YES.... YOU IN THE BACK. YOU HAVE A QUESTION?
Contact info...

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Atlantic Life Safety Services

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