



Approach to the Difficult Airway

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Objectives



UCIRVINE



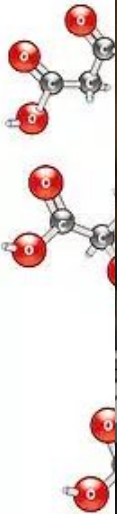
What is a Difficult Airway?

- What's not a difficult airway?
- Previous Anesthesia record
- Trach scar
- C spine mobility
- Jagged teeth (lacerate balloon)
- Syndromic features
- Medical history: H&N cancer, rheumatism, trauma, angioedema, burns, pregnancy



Assessment of Airway Needs

- General anesthesia
- Reversible intrinsic lung or neuromuscular disease
- Depressed neurologic exam (TBI, drug OD, Status epilepticus)
- Upper airway obstruction (head and neck cancer, neck abscess)
- Airway clearance needs (quadriplegic)
- Hemodynamic / acid-base abnormalities



alamy



Glucose

Pyruvate

No Oxygen :(

Oxygen :)

Lactic acid cycle

Krebs Cycle

2 ATP

36 ATP



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IRVINE

How did we get here?

Hypoxic respiratory failure

Many different support devices can be used (nasal cannula, face tent, ventimask, NRB, high flow)

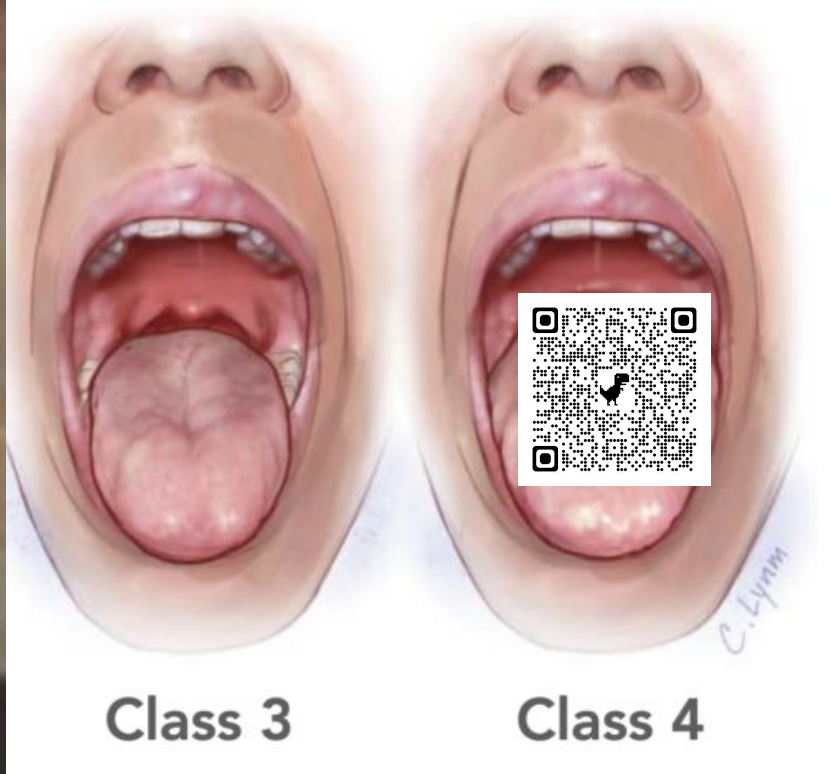
Hypercapneic respiratory failure

Device of choice for support is BiPAP

What is the status?

- Accessory muscle usage?
- Oxygen requirement?
- A-a gradient?





Class 3

Class 4



Induction

Etomidate

- 0.2mg/kg
- Adrenal suppression

Propofol

- 1mg/kg
- Loss of sympathetic tone



Neuromuscular Blockers

Succinylcholine

- 1 mg/kg, rapid onset, short half-life

- HyperKalemia

Rocuronium

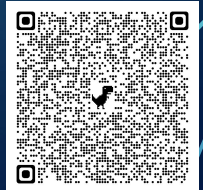
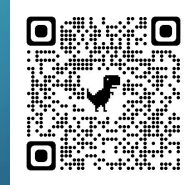
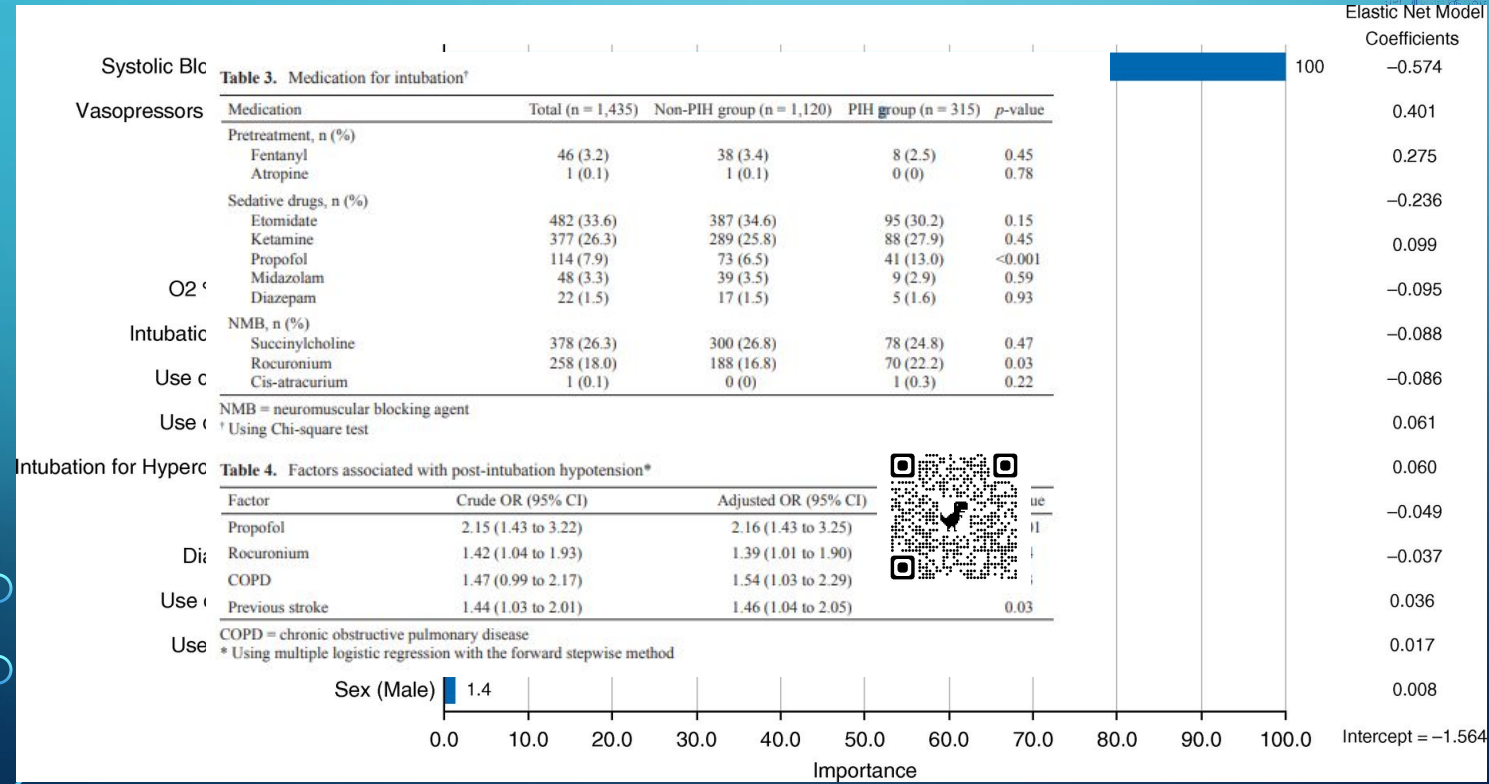
- 1 mg/kg, slower onset, longer half-life

Vecuronium

- 0.1 mg/kg, longest onset, longest duration of action



Hypotension



**WHEN YOUR
BLOOD GAS**



...IS NORMAL !!!





Clinical Case

79 year old woman whom you are called to the bedside for evaluation of SaO₂% 70% after self extubation

After a few bedside maneuvers she remains hypoxic

What is the next step in management?

Difficult intubation or difficult bagging?

Head tilt/jaw lift/ mouth opening

Insert oral or nasal airway

Use forceps to remove foreign bodies





Clinical case continued...

You are now able to successfully oxygenate your patient. You proceed to obtain an endotracheal airway but have are having difficulty.







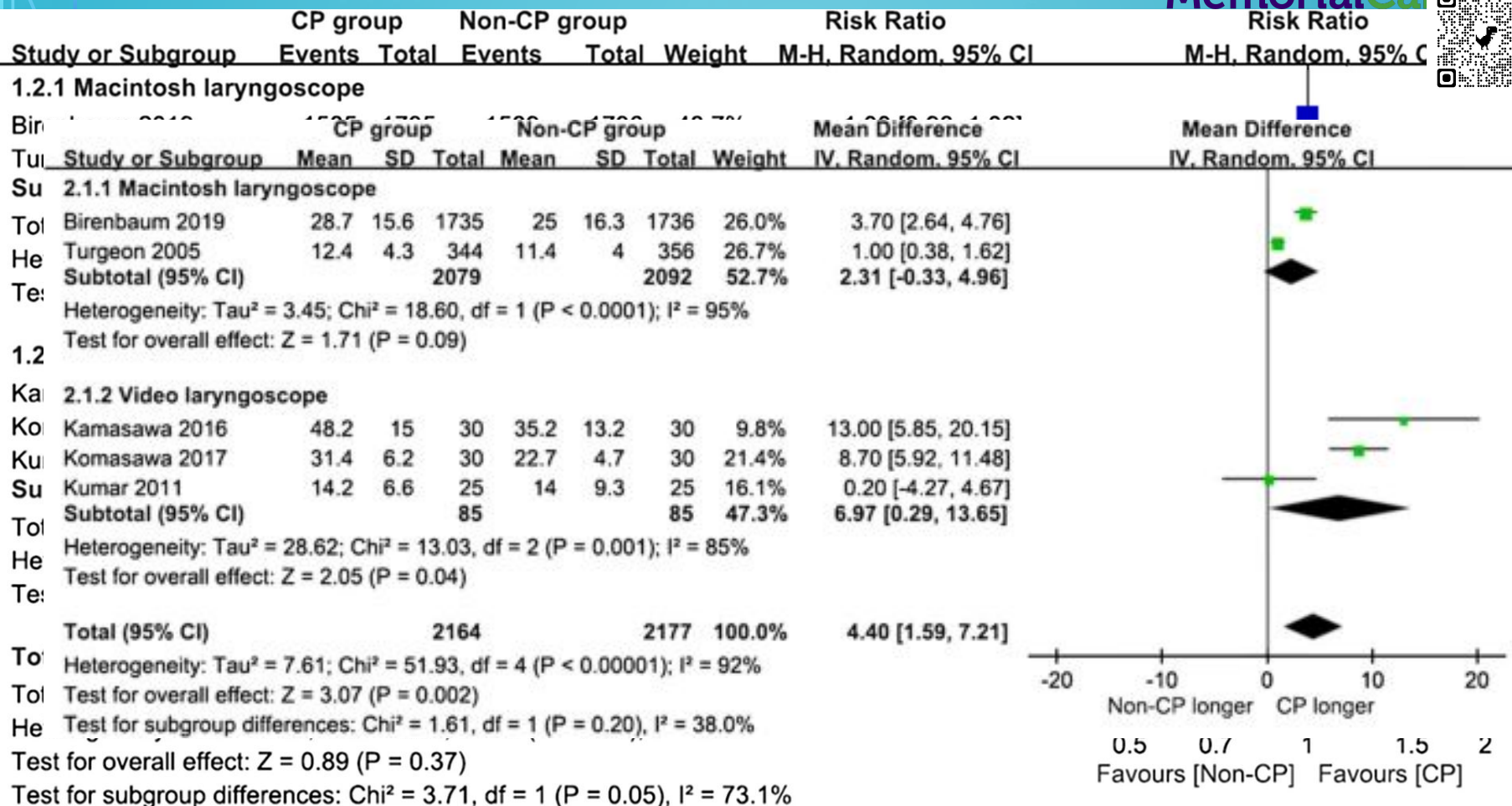
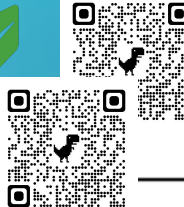
A Typical Day
For A
Respiratory Therapist



Clinical case continued...

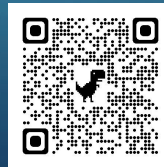
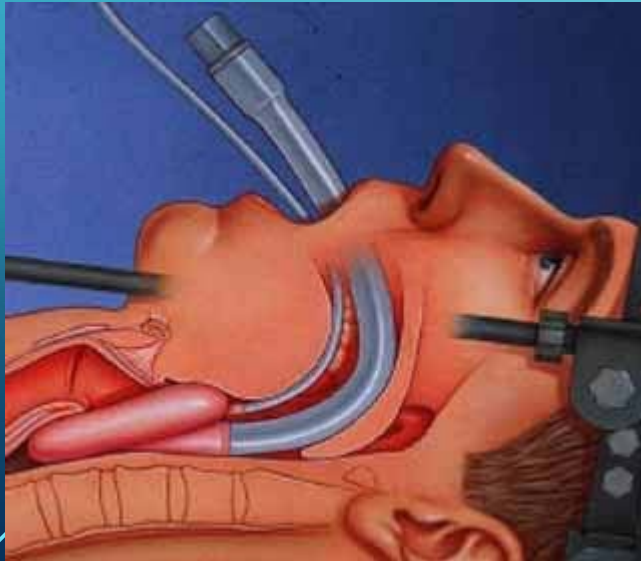
You have optimized your positioning and are still having trouble obtaining a good view



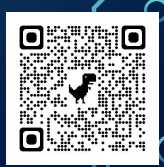
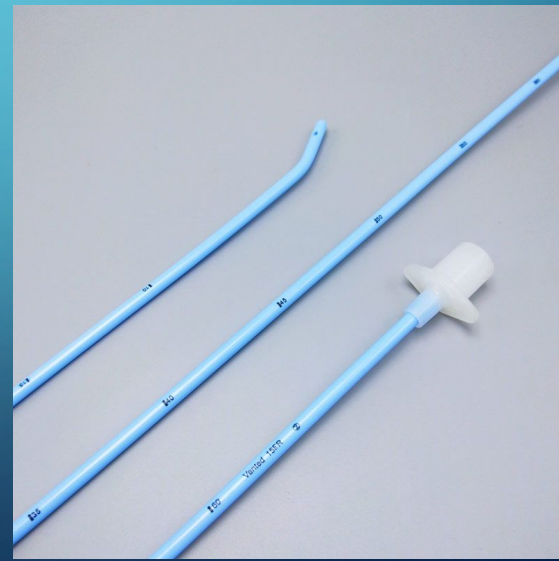


Do I need to place a rescue airway?

Supraglottic airway



Ventilating Bougie



Fastrach LMA

Reinforced LMA allows for passage of endotracheal tube

80-90% success rate



Fiberoptic Airway

Essentially a bronchoscopy

Can guide an endotracheal tube over the scope

Can also guide an airway exchange catheter over the scope

Can also place through an intubating LMA

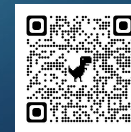
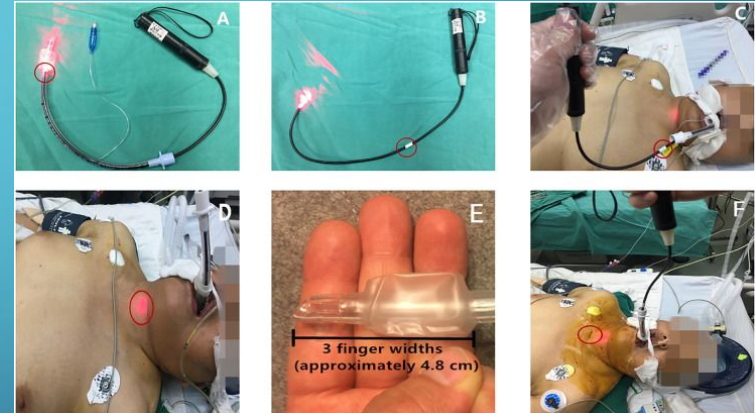


The Light wand

Transillumination of the trachea allows you to visualize the endotracheal tube passing through the glottis from the anterior neck

Minimal complications and good reported success in randomized trials

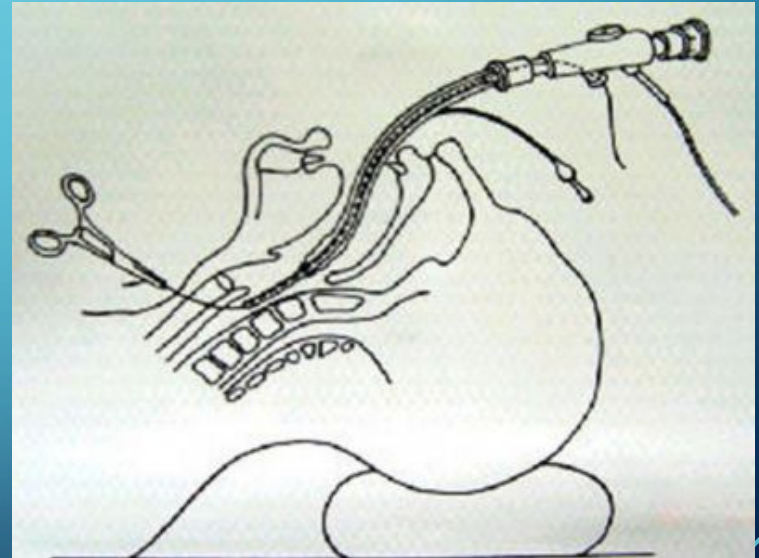
No direct visualization of the trachea



Retrograde Intubation

Needle insertion and passage of guidewire through the cricothyroid membrane in the anterior neck into the trachea and out of the oropharynx

Fiberoptic intubation with ET tube over wire




Combitube

- Emergency airway used mostly by paramedics for failed endotracheal intubation
- Ventilation confirmed through blind blue tube
 - Combitube is in the esophagus and salem sump can be placed through white tube
- Ventilation confirmed through white (clear) tube with patent distal end
 - Combitube is in the trachea and salem sump should be placed outside of combitube into esophagus
 - Fiber optic exchange can be accomplished through combitube
- Should be changed to endotracheal tube (ETT) or tracheostomy to prevent progressive airway edema
- Placement of combitube can produce significant airway trauma




Tracheotomy


MELKER PERCUTANEOUS CRICOTHYROTOMY

1 


Palpate the cricothyroid membrane and advance the needle at 45° angle in a caudal direction. Aspirate on the saline-filled syringe as you advance; air bubbles will enter the syringe when the trachea is entered.

2 

Advance the catheter over the needle and then remove the needle. Thread the guidewire through the catheter into the trachea. Once the guidewire is in place, remove the catheter.

3 

Make a small incision at the point of guidewire entry to facilitate passage of the dilator and airway catheter.

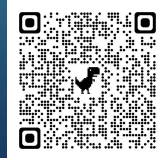
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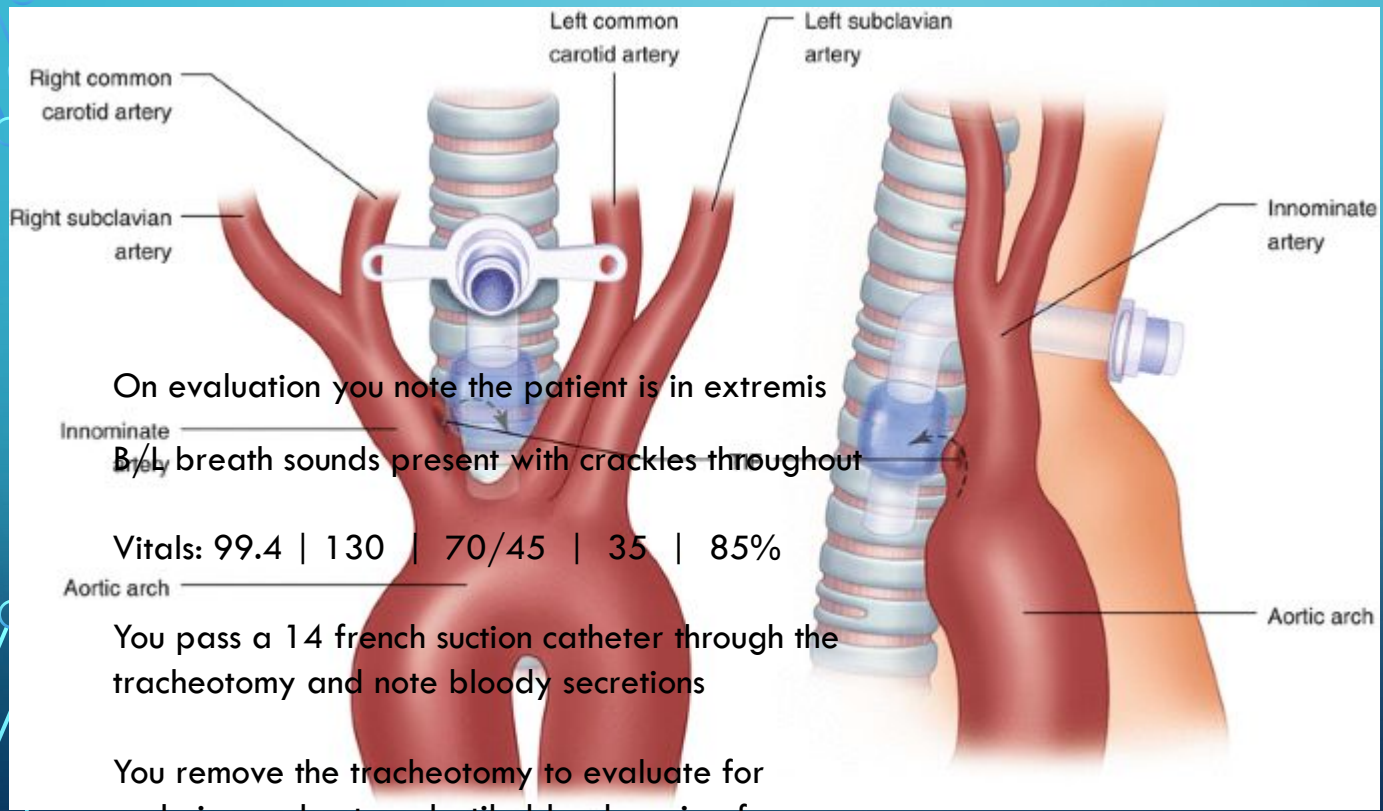
Place the dilator into the airway catheter and thread them over the wire as a unit until it is flush with the skin. Remove the guidewire and dilator, confirm placement, and secure.

Emergent airway through the cricothyroid membrane

Can be time consuming and carry significant bleeding risk

Low success rate in inexperienced operator





On evaluation you note the patient is in extremis

Innominate artery
B/L breath sounds present with crackles throughout

Vitals: 99.4 | 130 | 70/45 | 35 | 85%

Aortic arch

You pass a 14 french suction catheter through the tracheotomy and note bloody secretions

You remove the tracheotomy to evaluate for occlusion and note pulsatile blood coming from the ostomy



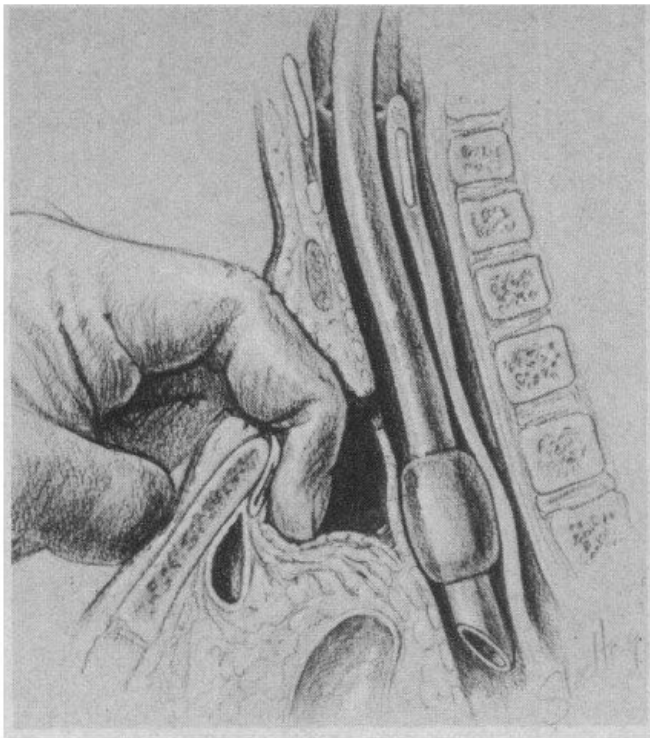
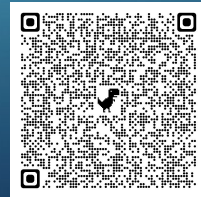


Fig 2.—Technique of occlusion of innominate artery by digital pressure against sternum. Procedure requires blunt dissection of artery from anterior wall of trachea.





Clinical Case

You obtain a mechanical airway and as you are handing out chest bumps with your colleagues in the hallway the patient goes into cardiac arrest and is pronounced deceased because of the 2 L of coffee ground emesis she had during the intubation.

Was there anything we could have done to prevent this?



d/Gen
/CH6
R50/M
/E/11
1.4 T
10.0
1
2
m

Summary

Risk stratify prior to approaching an airway

Have a plan with backup

“Cockpit” method

Pat yourselves on the back



Questions?

