

Airway Management

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is.muni.cz/el/1411/podzim2015/VLCP0521c/um/

Notes:

1) Do not REWRITE!!

2) Count 1 .. 5:

1; 1,5; 2; 2,5; 3; 4; 5

5kg, 10kg, 20 kg,
30kg, 50kg; 70 kg

3) www.vortexapproach.org/

<http://emedicine.medscape.com/article/80184-overview#a1>

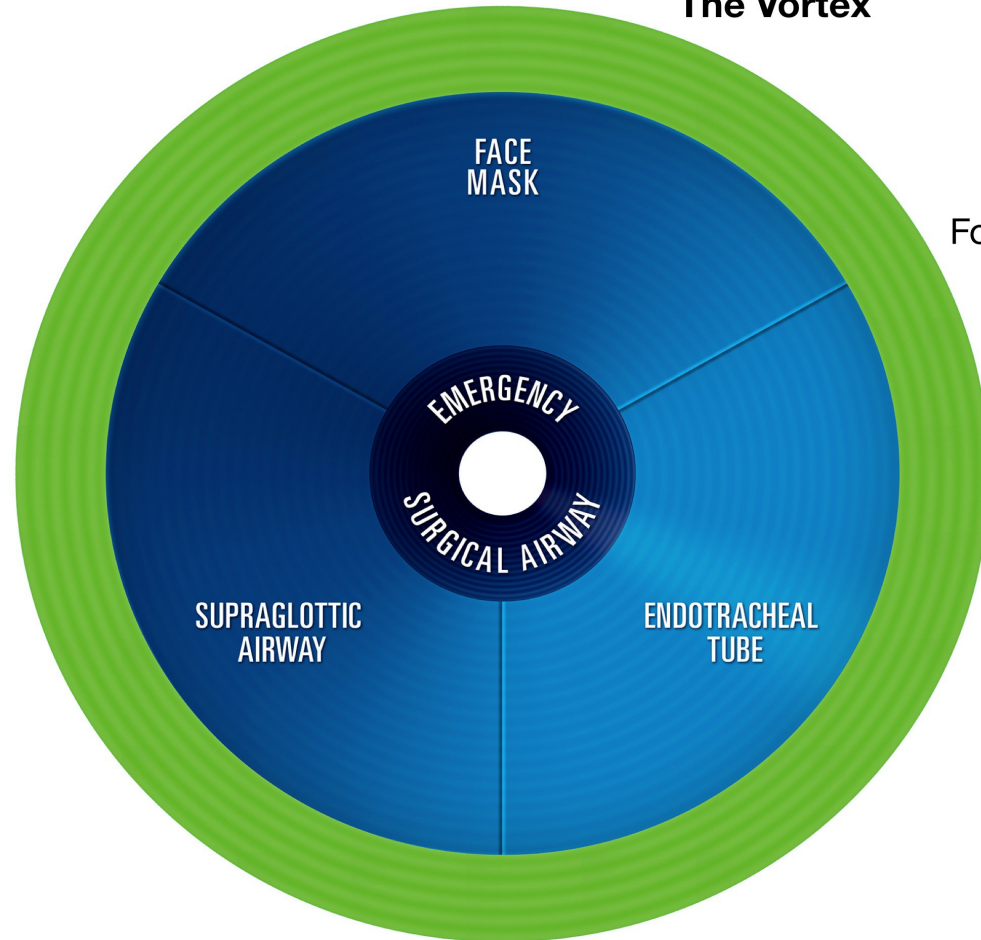
Airway Management

Exchange of gasses (O₂ in, CO₂ out)

- CPR
- Anesthesia (apnoe)
- Crisis:
 - Airway obstruction
 - anaphylaxis,
 - trauma
 - hypoxia

Only 3+1 ways of A.M.

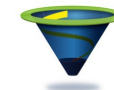
The Vortex



For Each NSA Technique Consider:

1. Manipulations:
 - Head & Neck
 - Larynx
 - Device
2. Adjuncts
3. Size/Type
4. Suction/O₂ Flow
5. Muscle Tone

**MAXIMUM THREE TRIES AT EACH NON-SURGICAL AIRWAY TECHNIQUE
AT LEAST ONE TRY SHOULD BE HAD BY MOST EXPERIENCED AVAILABLE CLINICIAN**



vortexapproach.org

Výukový cíl:

na konci cvičení budete **na modelu umět**
zajistit dýchací cesty alespoň 2 ze 4
možných

znát 3 nechirurgické + 1 chirurgický postup

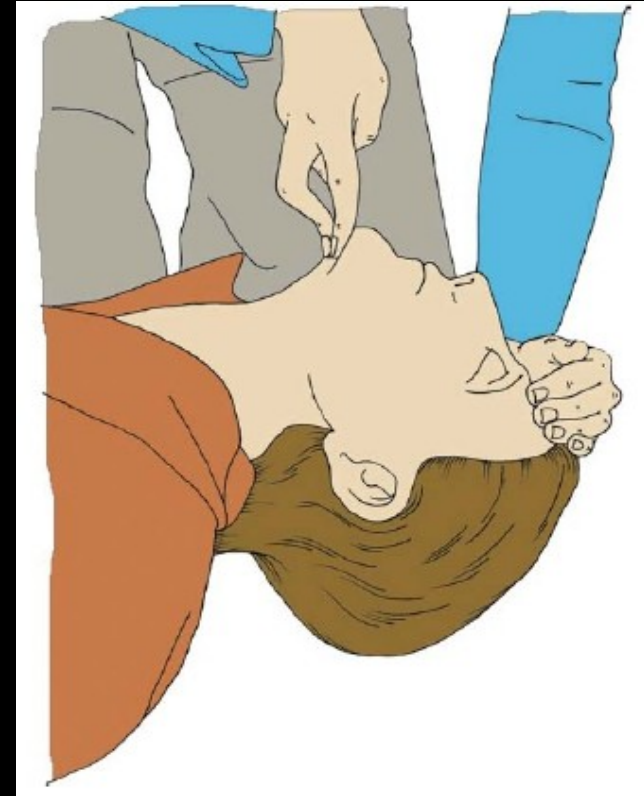
Maintaining airway

- Noninvasive
 - mask
 - airway
 - laryngeal mask
 - combitube
- invasive
 - OTI, NTI
 - coniotomy
 - tracheotomy

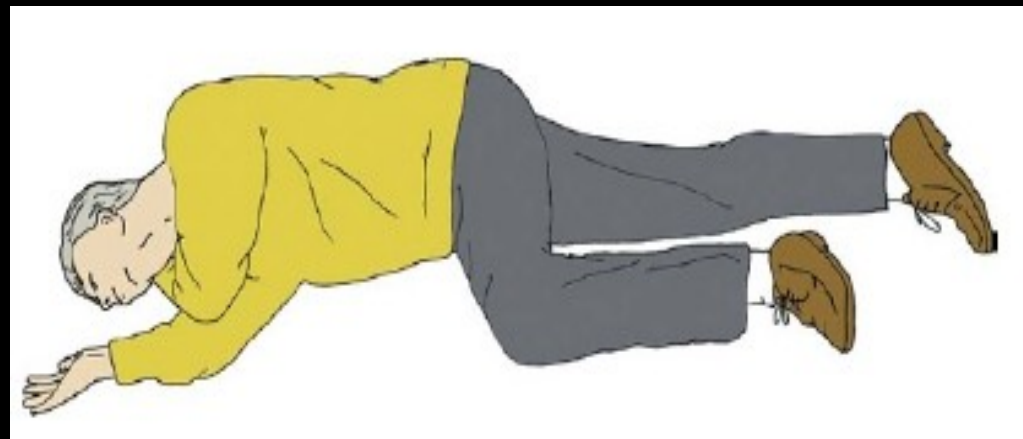
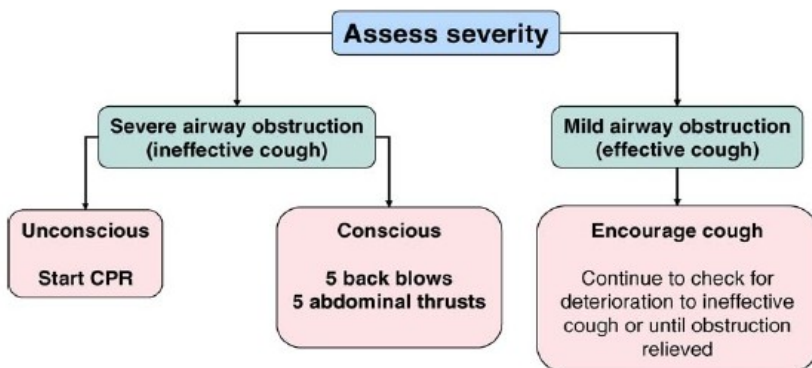


vocal
cords

First Aid - repetition



Adult FBAO Treatment



Monitoring of breathing

- Auscultation lung + neck
- SpO₂
- capnography / capnometry
- (arterial) blood gasses = Astrup
 - ... PV curve,
 - ... Resistance, Compliance, ...

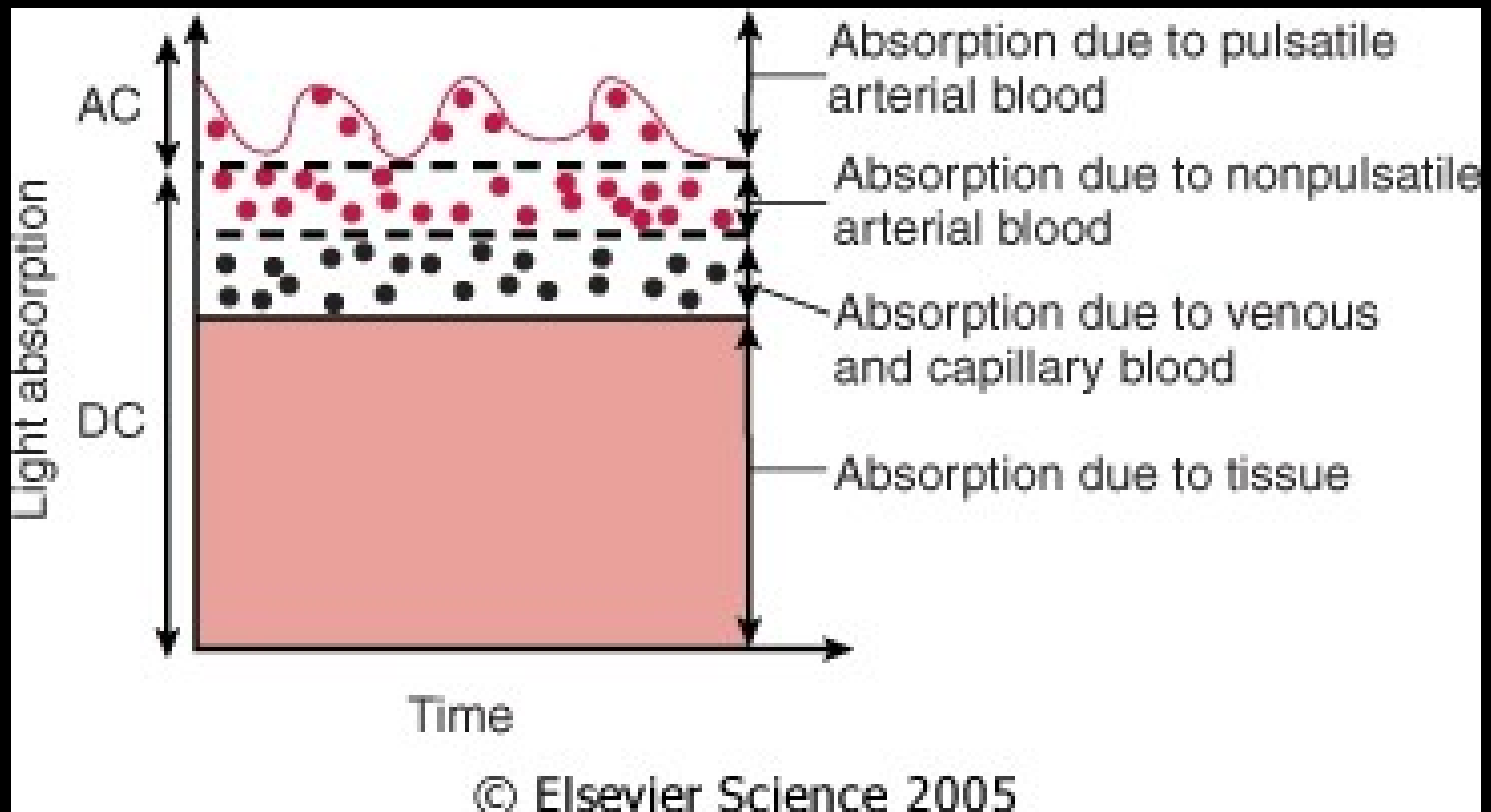


Physiology:

Respiratory rate 10..20 /min (newborn 30..40)

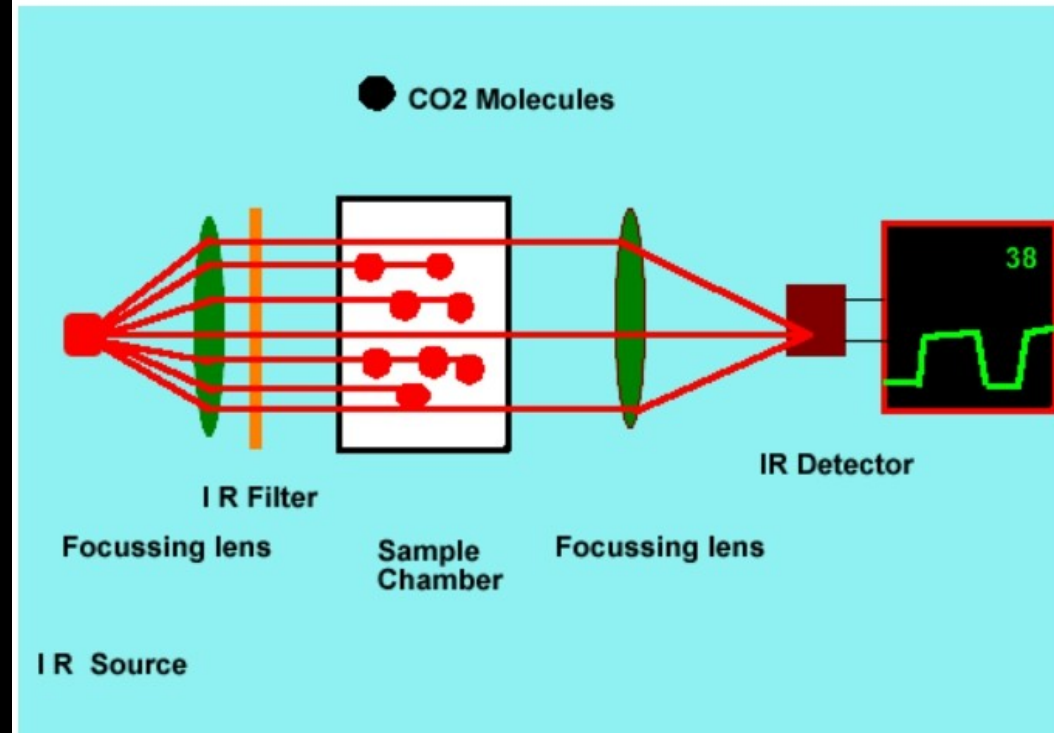
V_t 6 ml/kg; Dead space 2ml/kg

SpO₂ > 90%

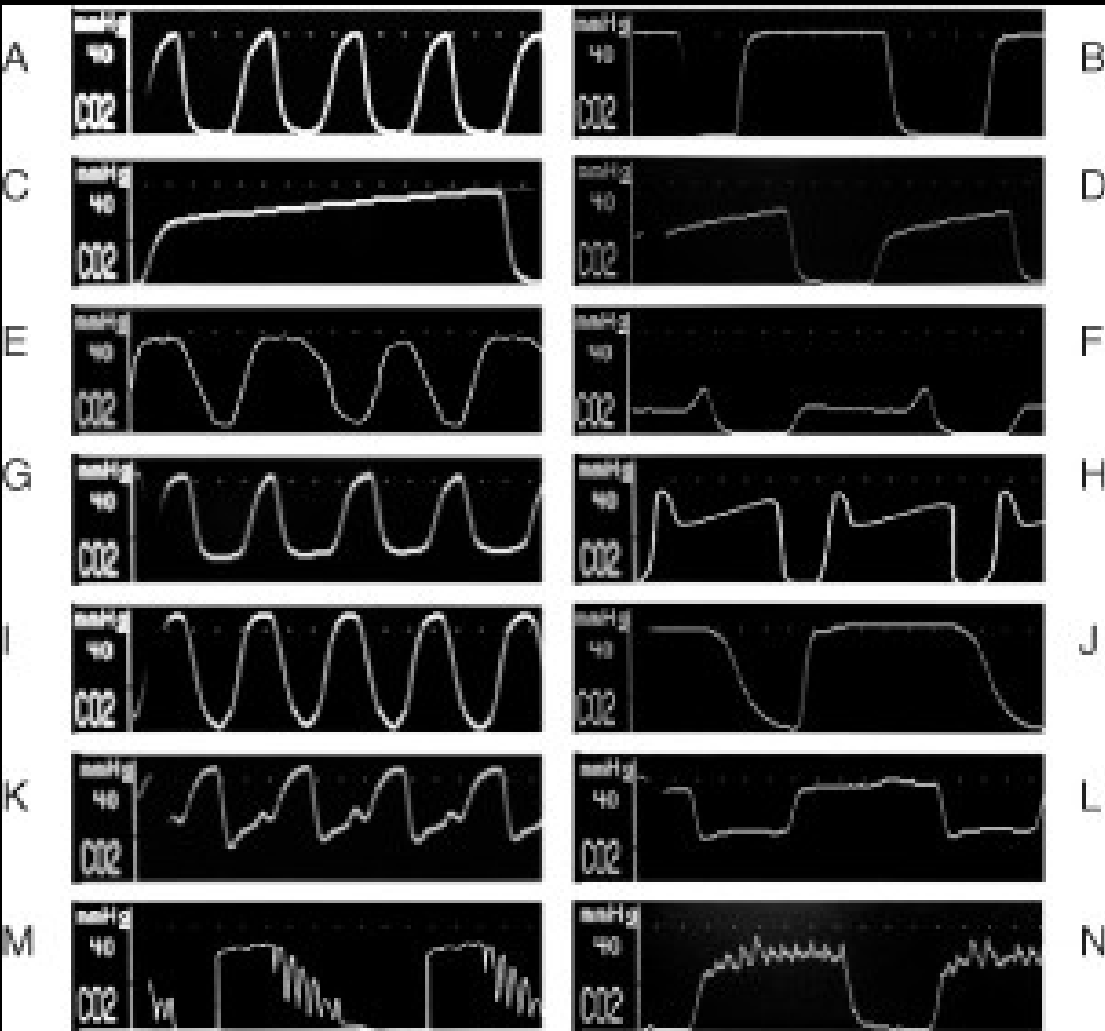


CO₂

CO₂ absorbs Infra red light at 4.3 μm



Capnography



Why it does NOT work?

flat line on the monitor

? sample line ?

M.D.,

Simulation 10/2015

Bag-valve-mask (BVM) ventilation



allows for oxygenation and ventilation of patients until a more definitive airway can be established

I: apnoe,
respiratory failure

essential:

- good seal
- patent airway

1 hand grip:

- C = 2 fingers
- E = 3 fingers

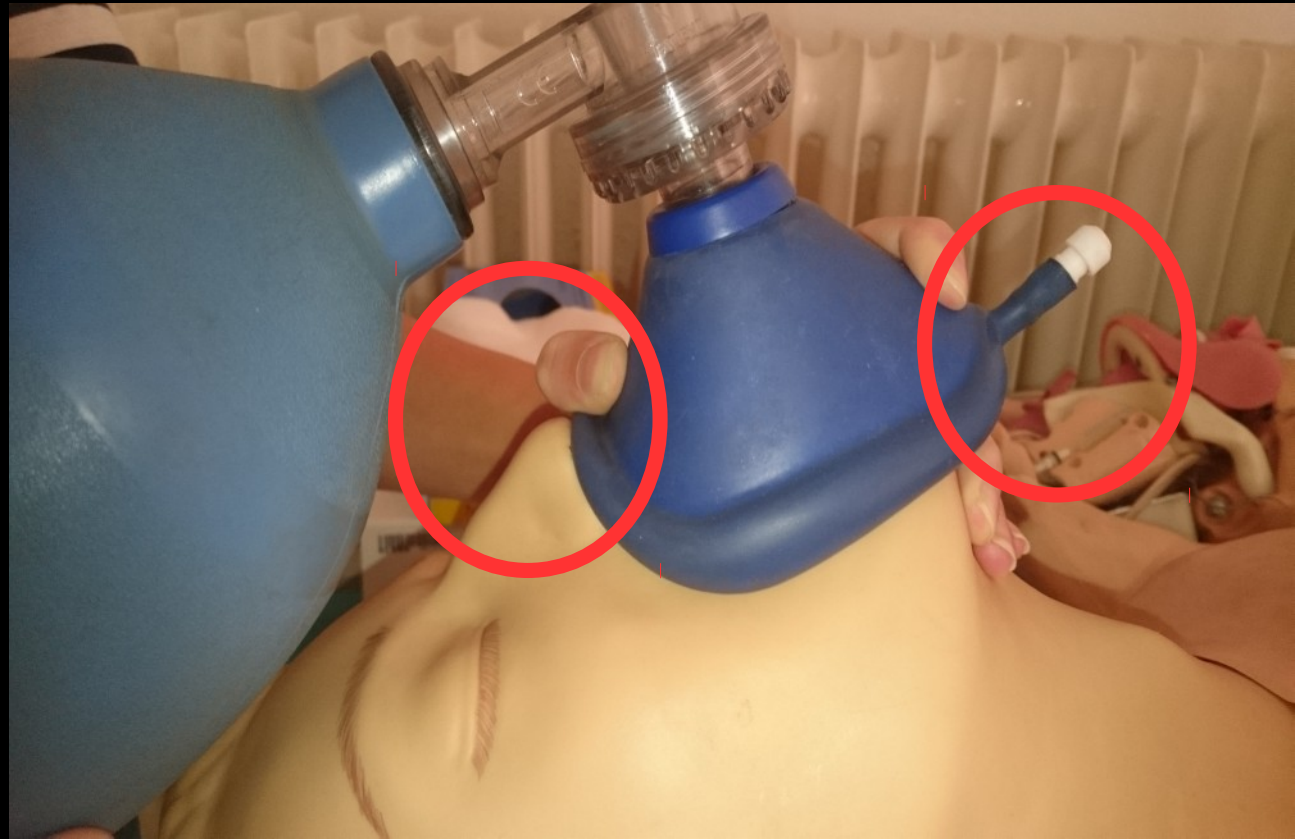
2 or 3 hands techni



BVM by students!

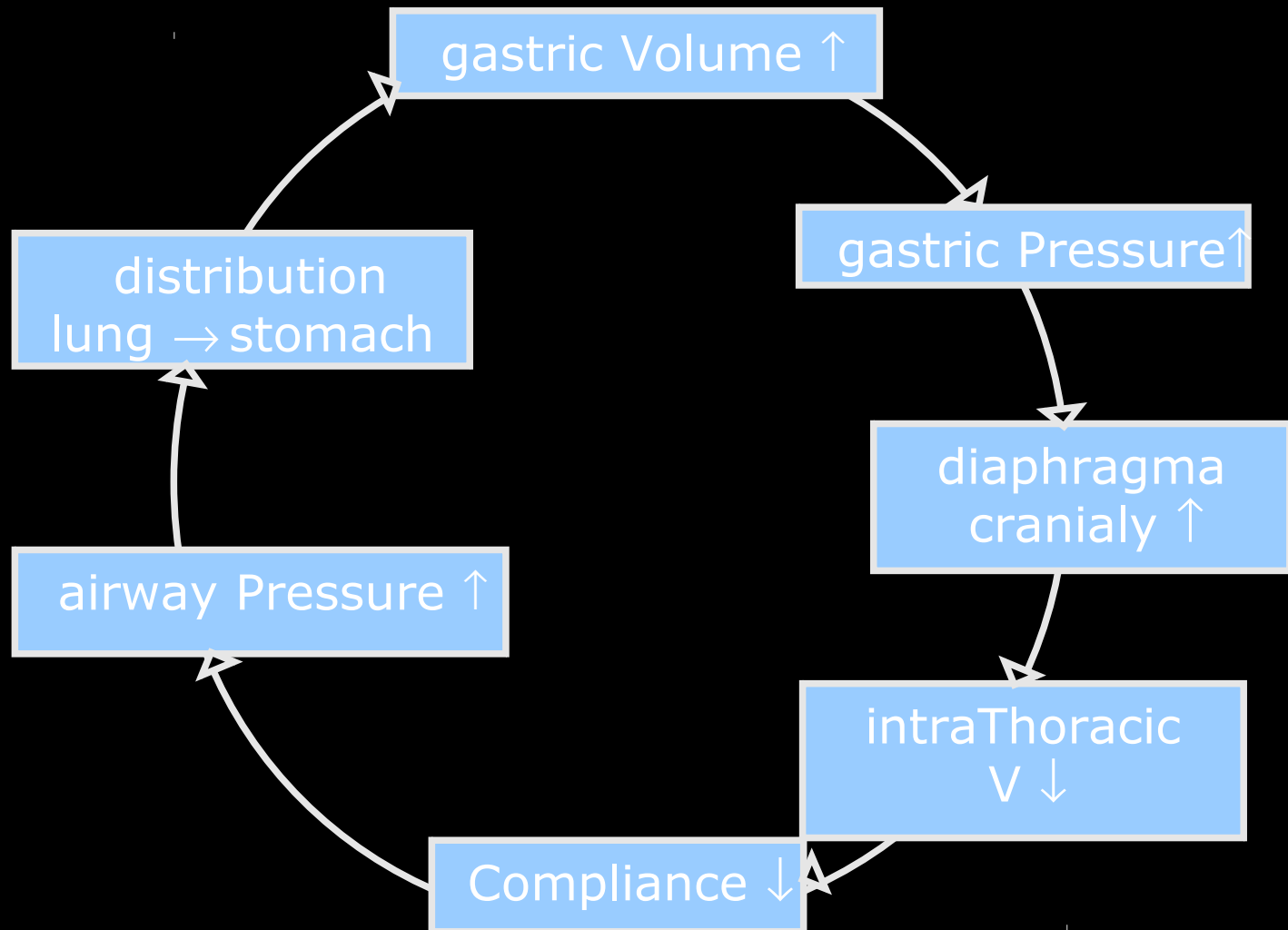


Real student of 5th (14.9.2015)

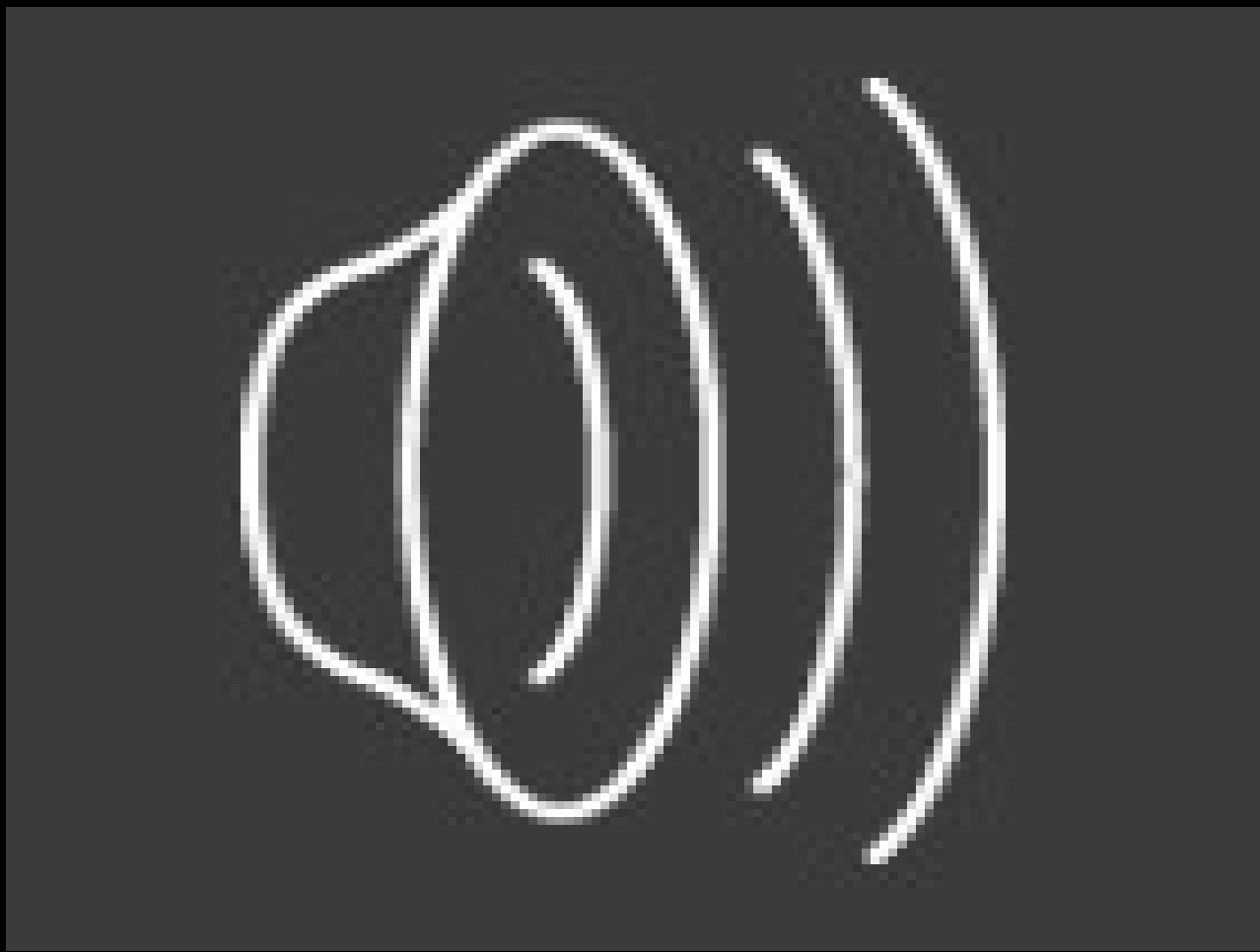


Difficult BVM Ventilation

Obtížná ventilace obličejovou maskou



Difficult facemask ventilation

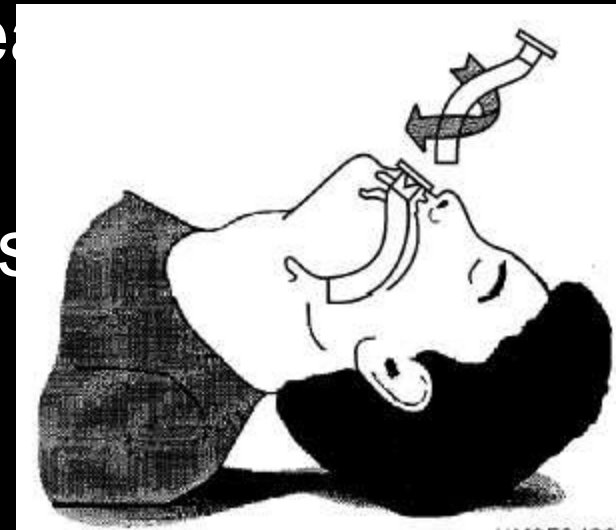


OroPharyngeal Airway

I: unconsciousness
+ airway obstruction with tongue

Correct size OPA:
distance angle of mouth --- ear

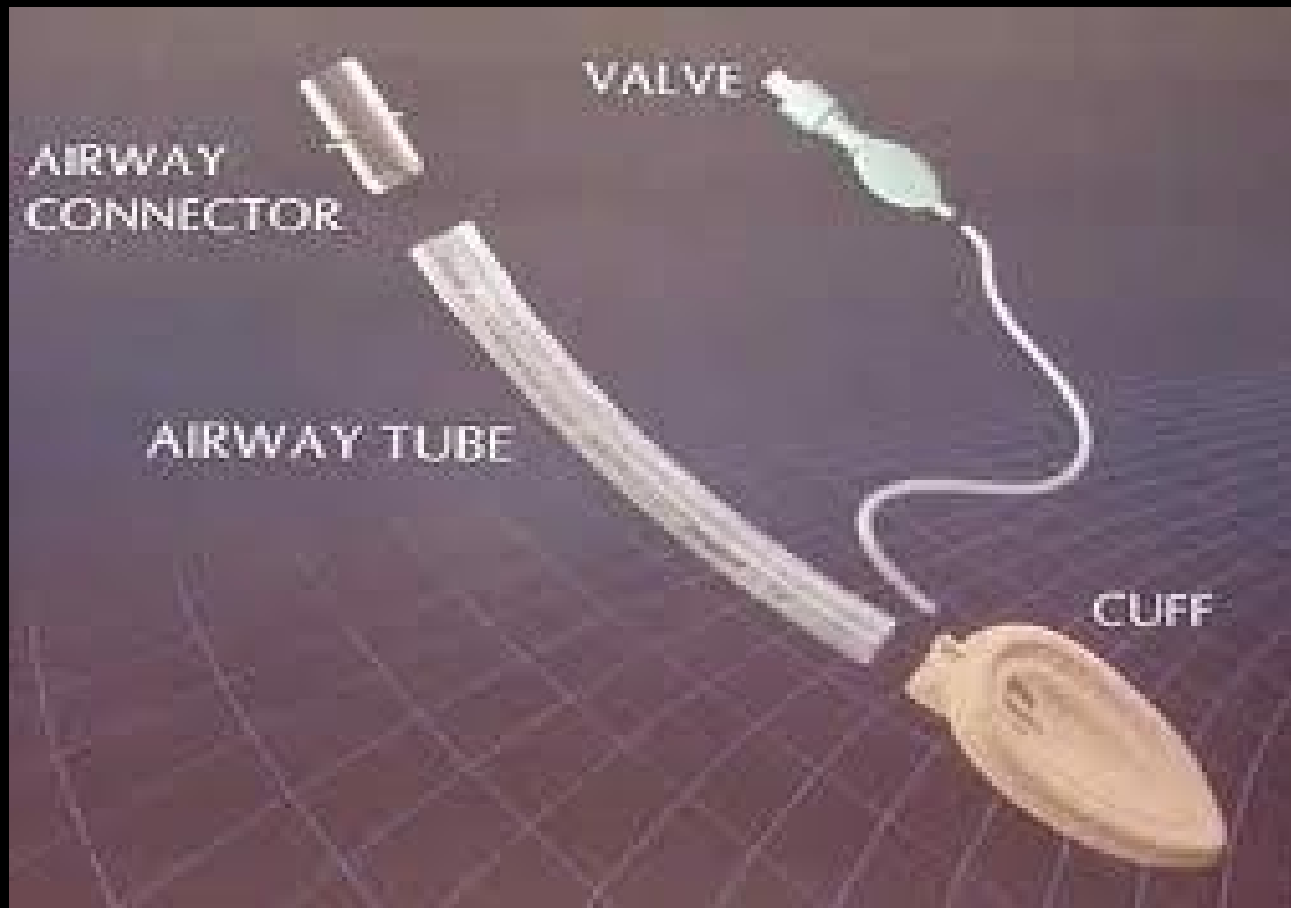
Risk in mild unconsciousness
vomitus + aspiration



LM



Components of LM



LM

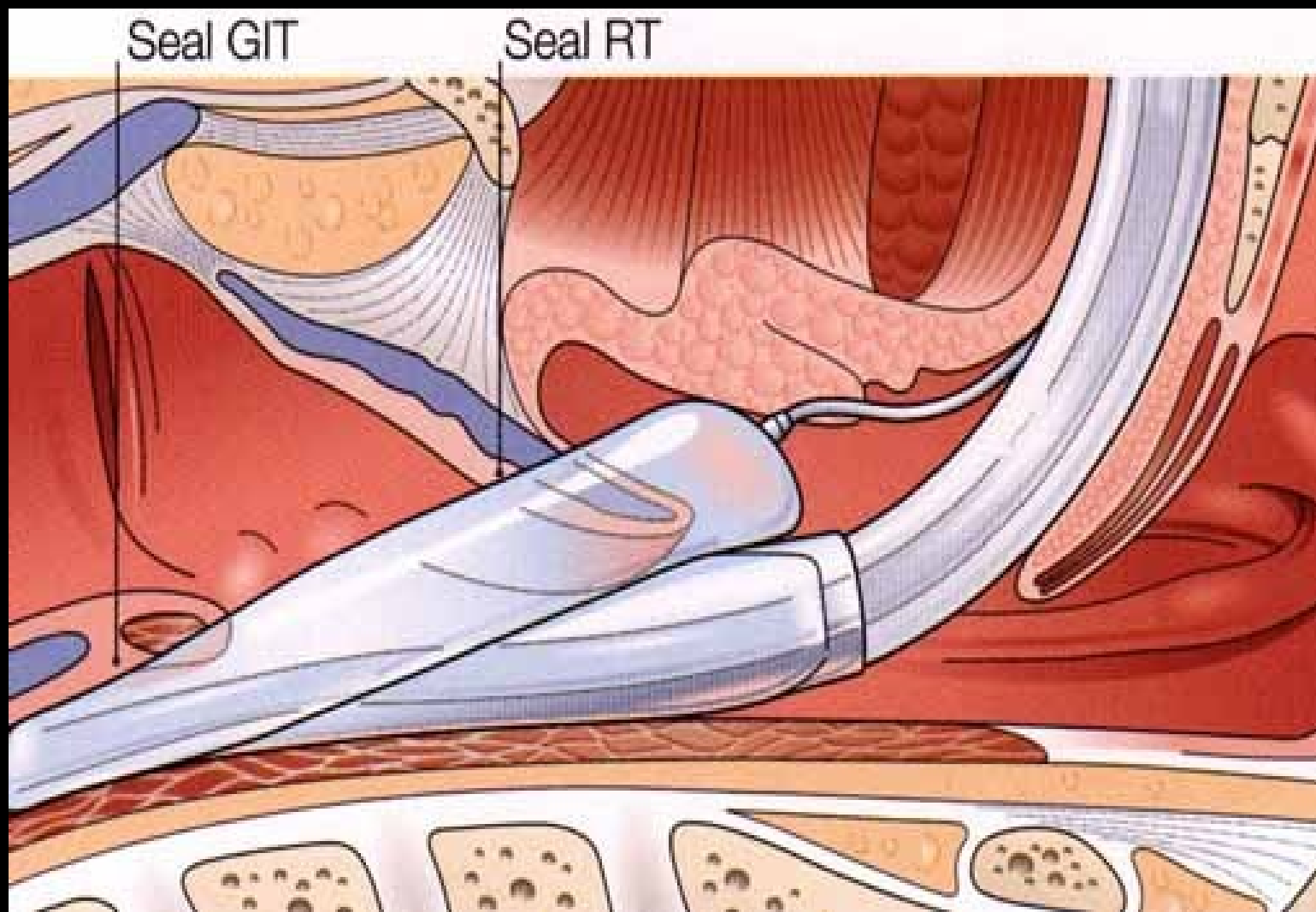
placed against glottis (radix of tongue, recessus piriformis, esophageal superior sphincter)

I: instead face mask, OTI, difficult airway

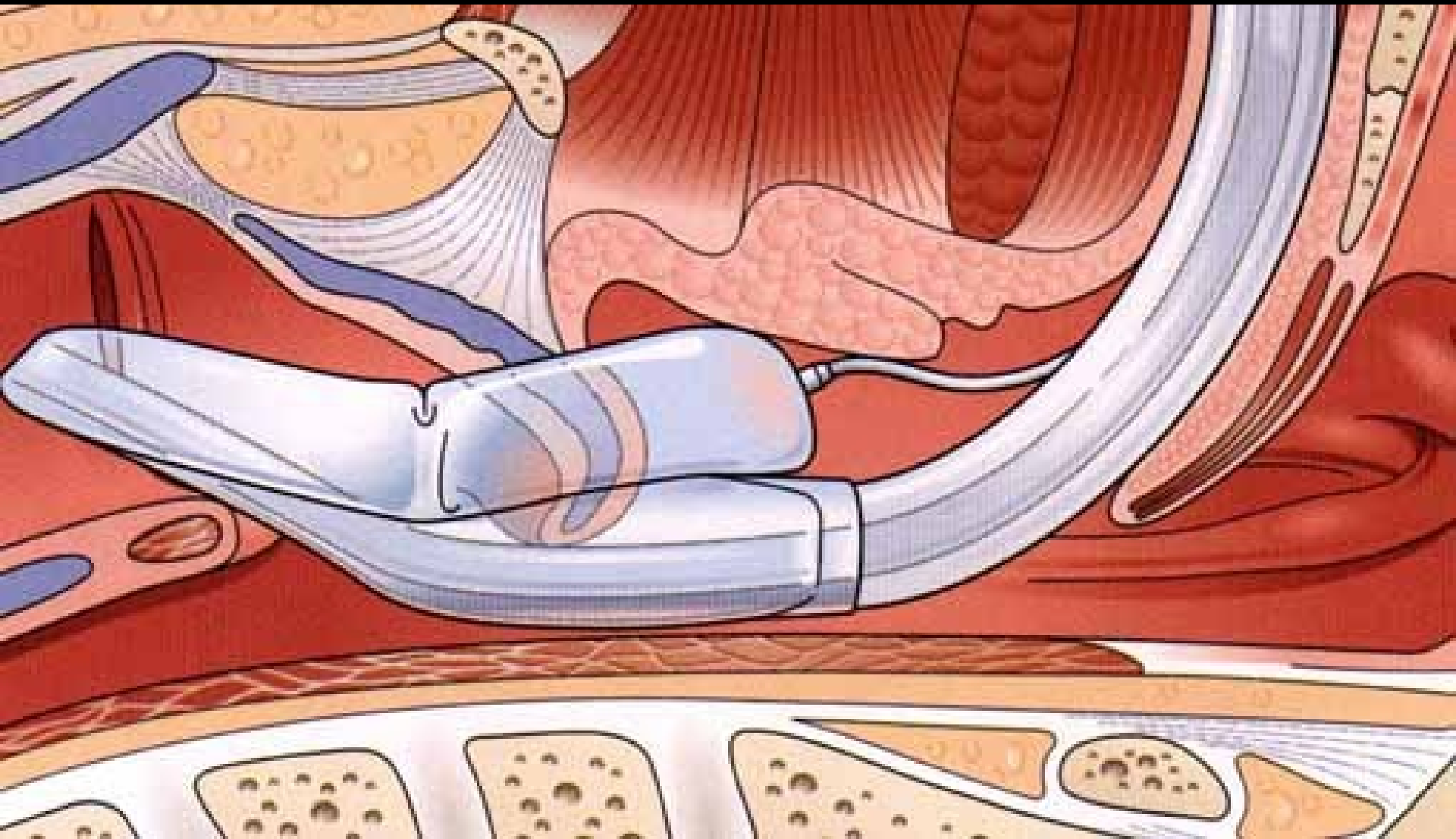
KI:

- full stomach
- gastro-esophageal reflux,
- high inspiratory pressure
- longer operation

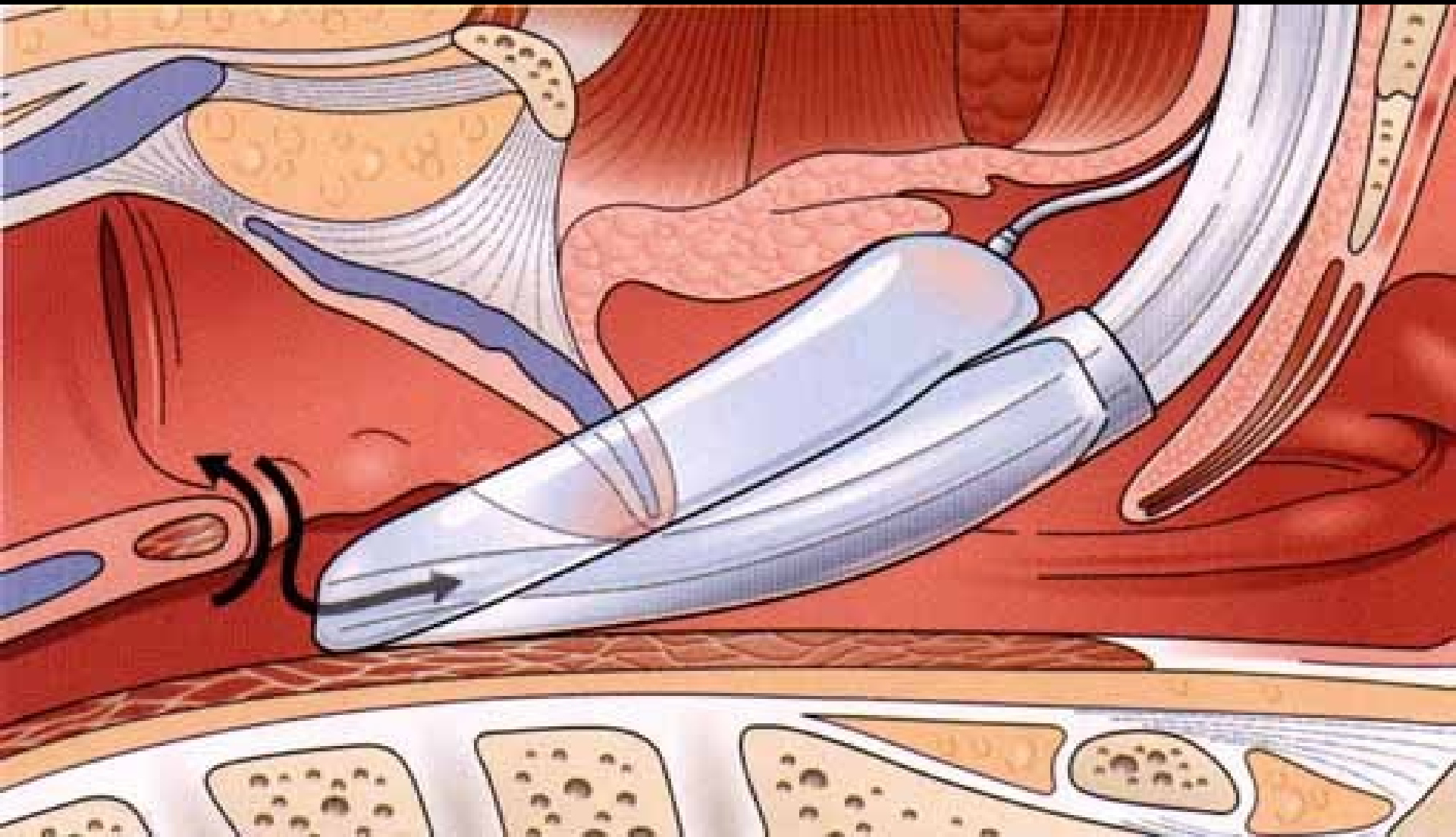
Correct seal



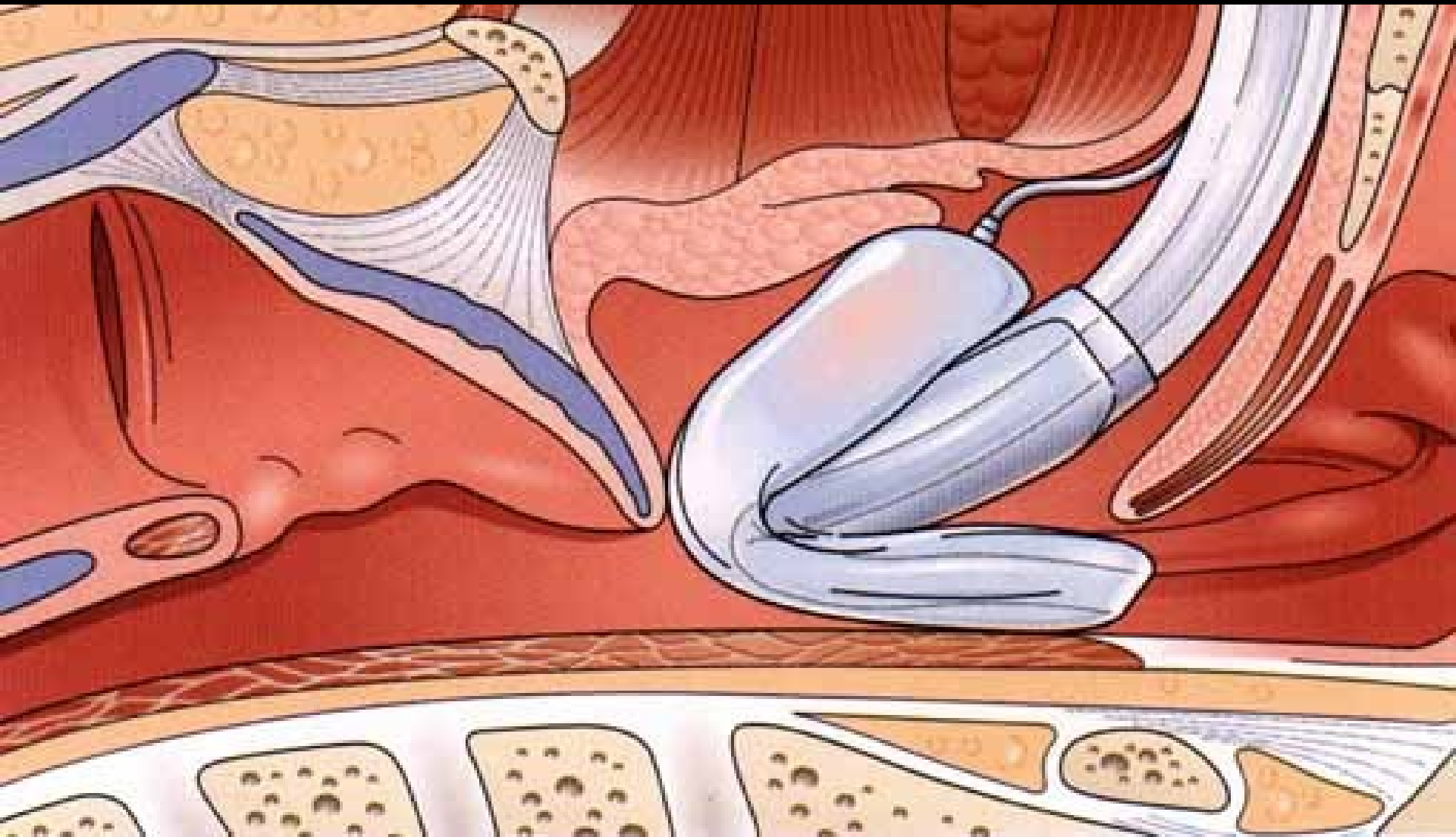
Malposition – glottis - total obstruction



Too superficially



Folding over cuff



LMA Supreme™



Size of LMA Supreme™

Velikost LMA Supreme	Ideální hmotnost	Maximální objem vzduchu	Max. velikost G sondy
1	Novorozenci do 5kg	5 ml	6 Fr
1.5	Děti 5-10kg	8 ml	6 Fr
2	Děti 10-20kg	12 ml	10 Fr
2.5	Děti 20-30kg	18 ml	10 Fr
3	Děti 30-50kg	30 ml	14 Fr
4	Dospělí 50-70kg	45 ml	14 Fr
5	Dospělí 70-100kg	45 ml	14 Fr

Technika zavedení Supreme ...



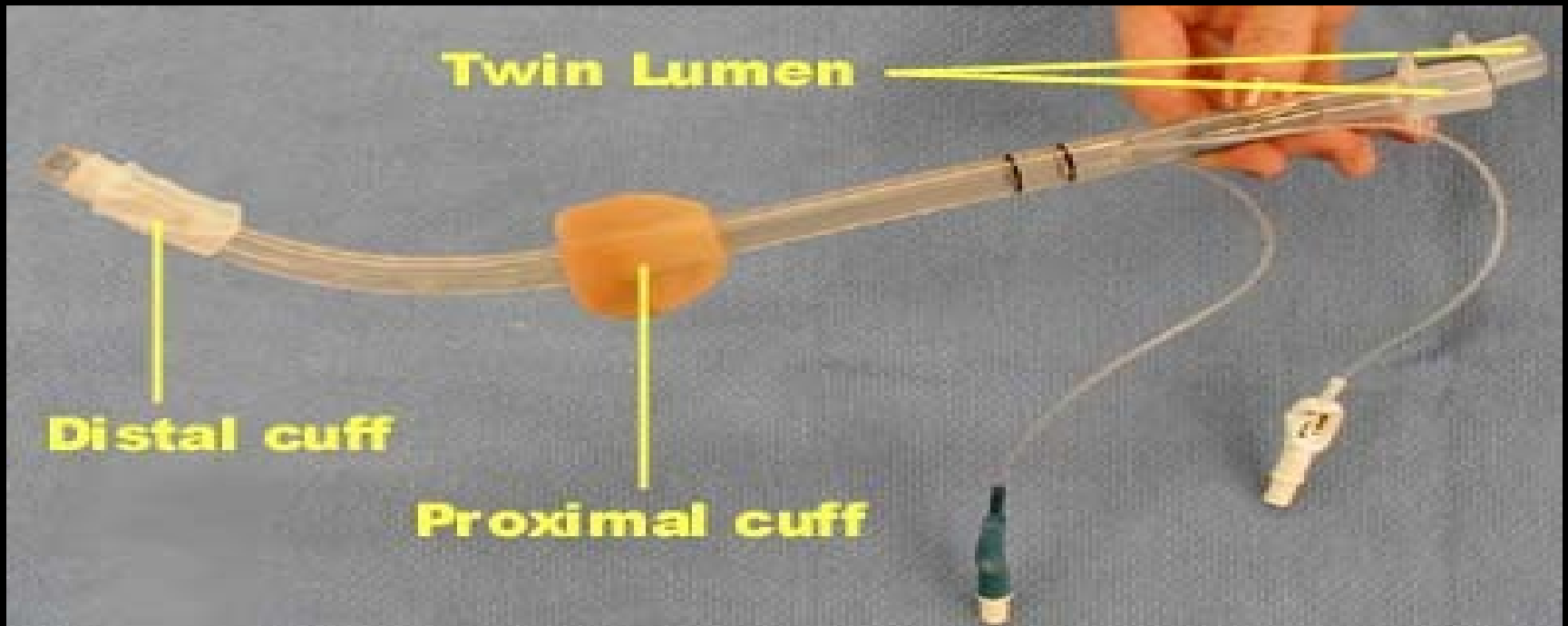
Další supraglottické pomůcky:

- CombiTube
- Laryngeal tube
- I-gel



Combitube

- emergency situations instead OTI
- I: difficult airway
- KI: stenosing process in pharynx /



Tracheal intubation

Def: Placing tube to trachea through mouth/nose and larynx.

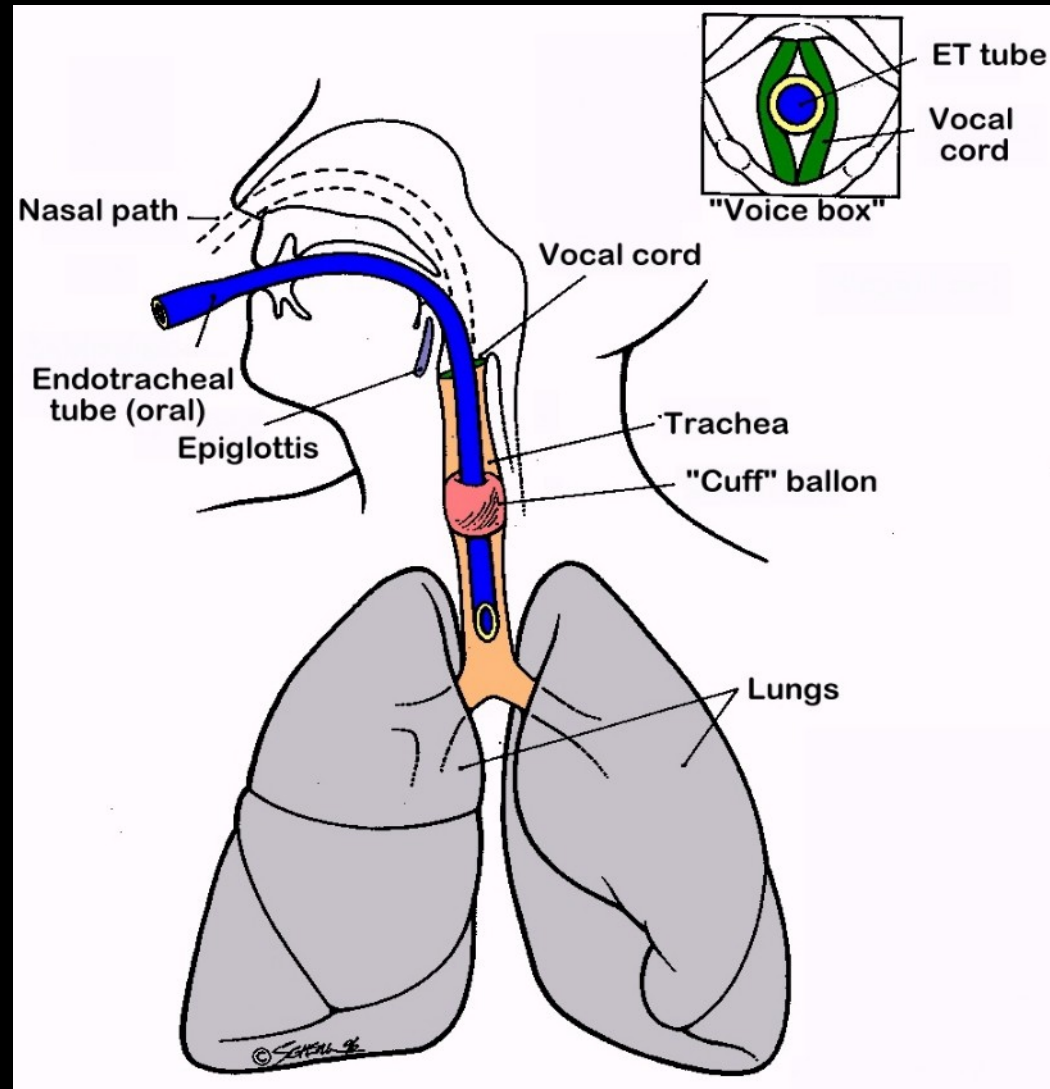
I:

- maintain open airway (GCS < 8)
- toilet (no cough)
- maintain ventilation (shock, hypoventilation)

narrowest place in airway – vocal cords
– subglottic space (<8let)

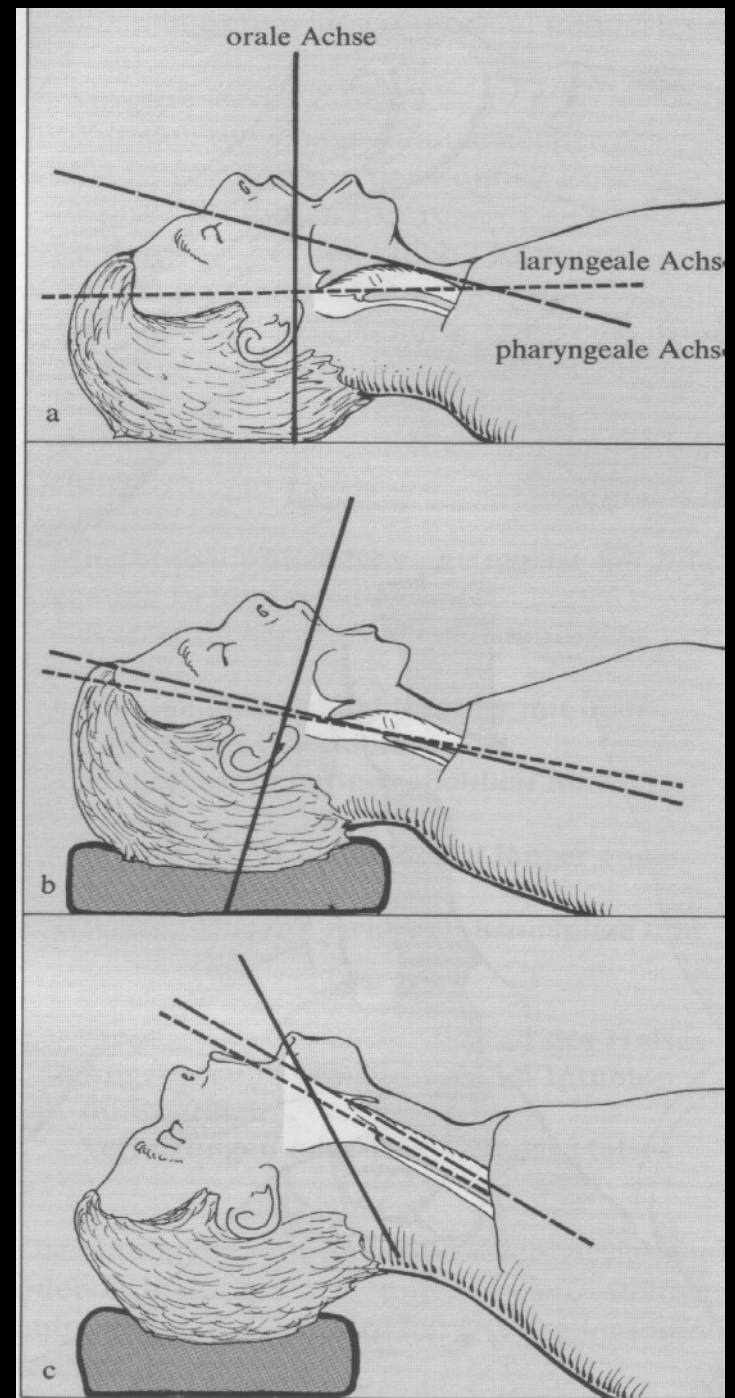
OTI, NTI - aids:

- laryngoscope
- Magill tongs
- tracheal tubes
- syringe
- lead

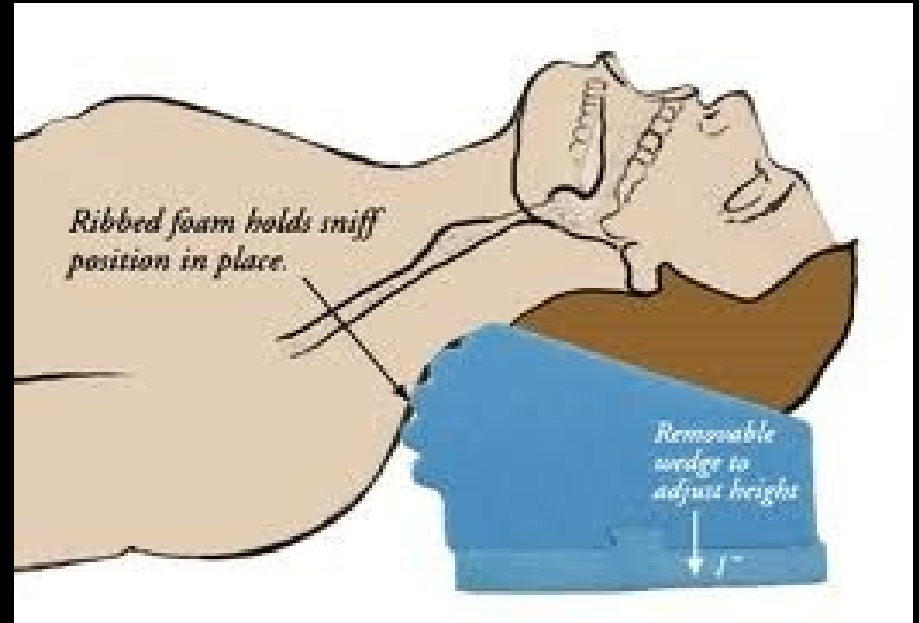


How to:

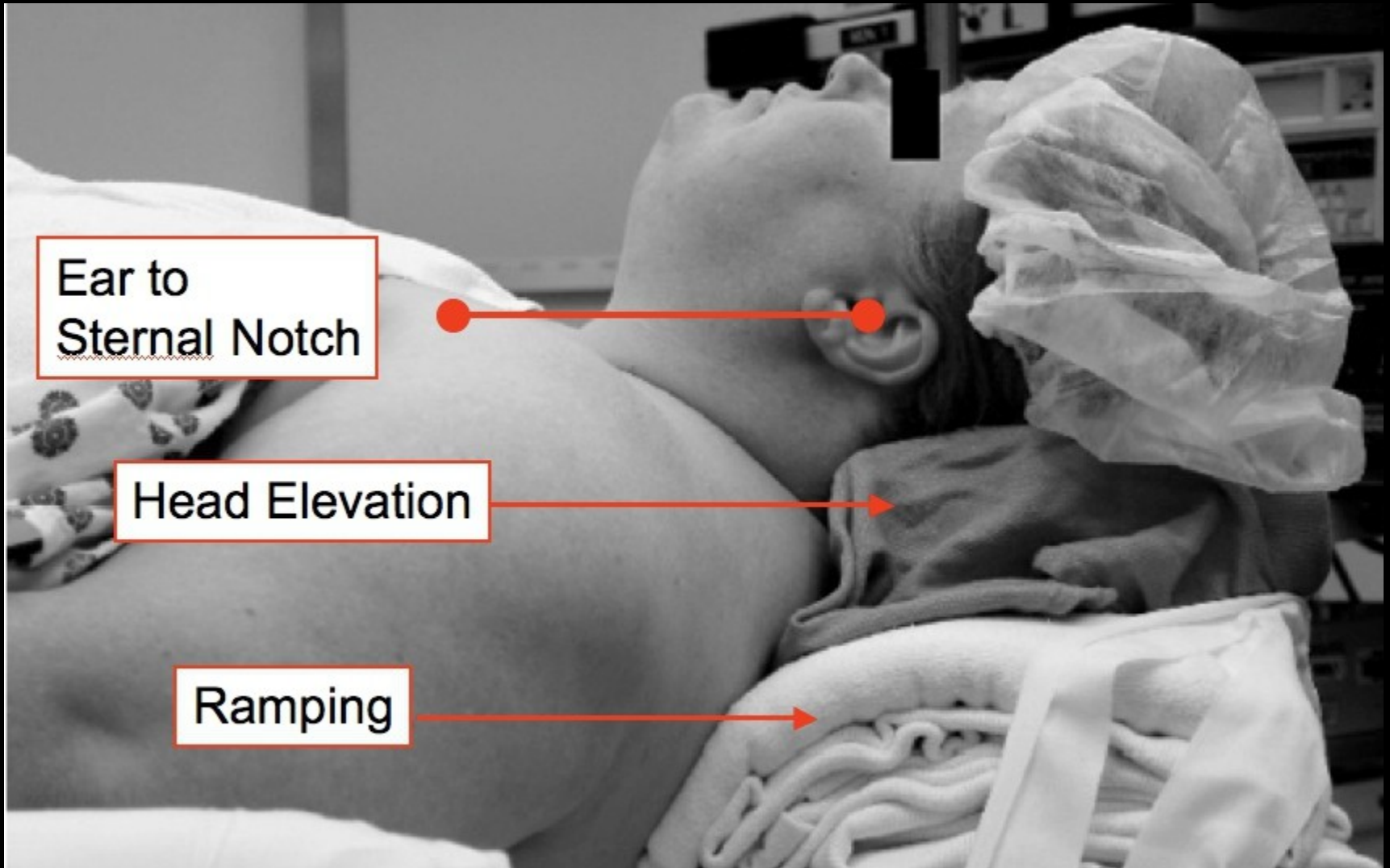
- prepare all aids, (ventilate)
- position of pat.
- LA, GA, coma
- direct laryngoscopy
- placing tube
- inflate cuff
- ensure position



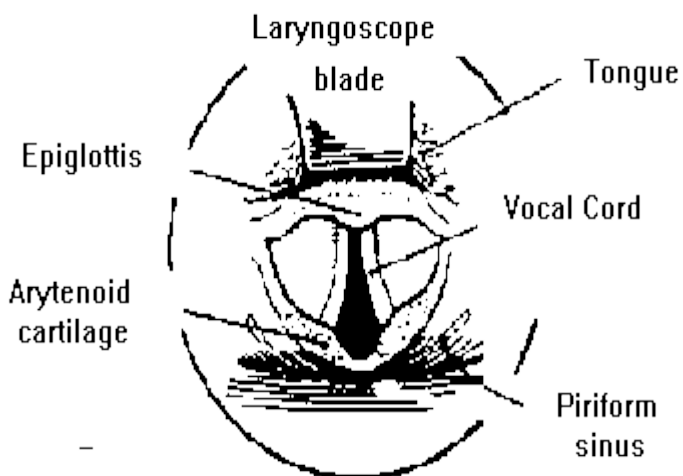
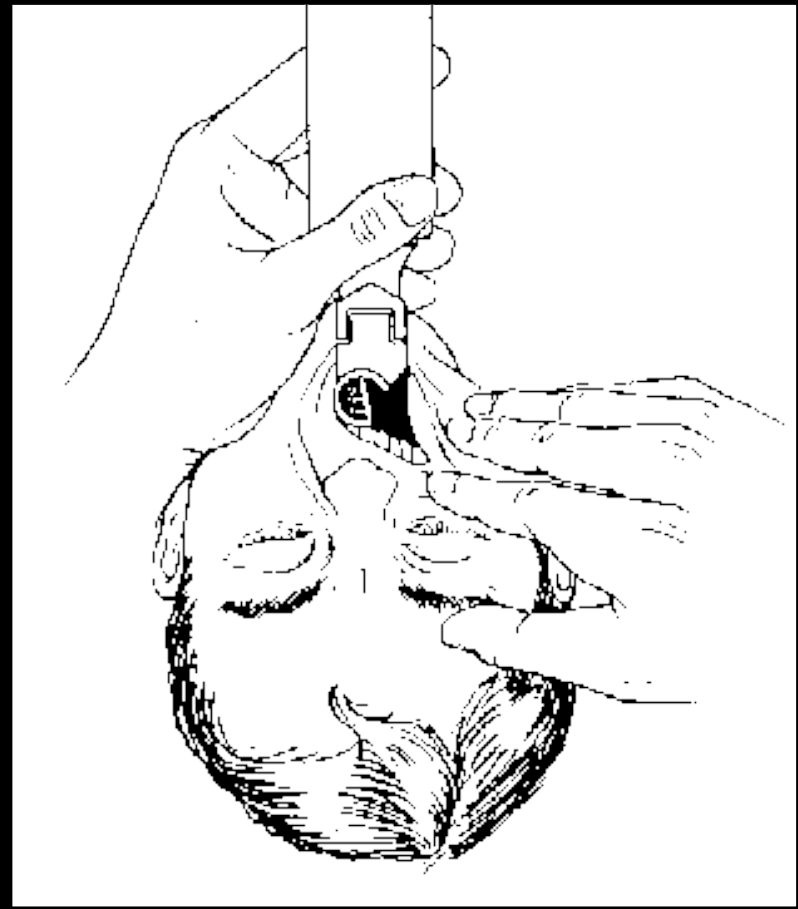
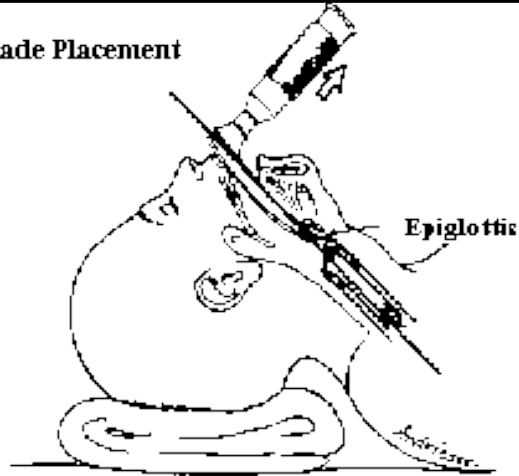
Head position



Position for intubation

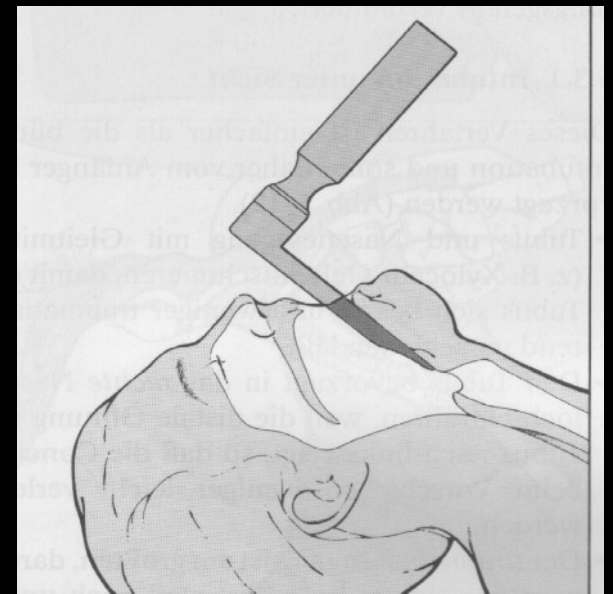
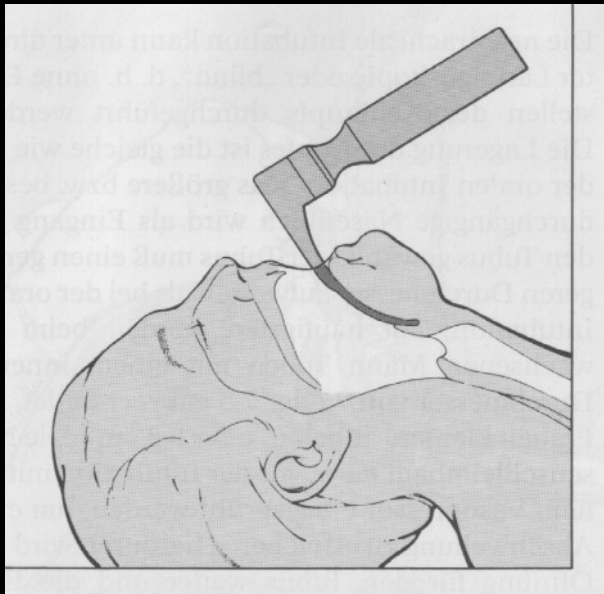
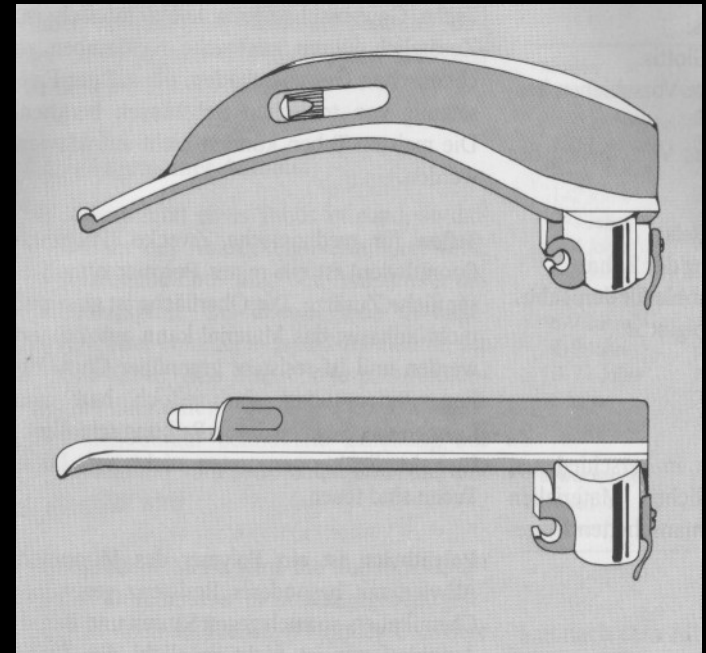


Straight Blade Placement

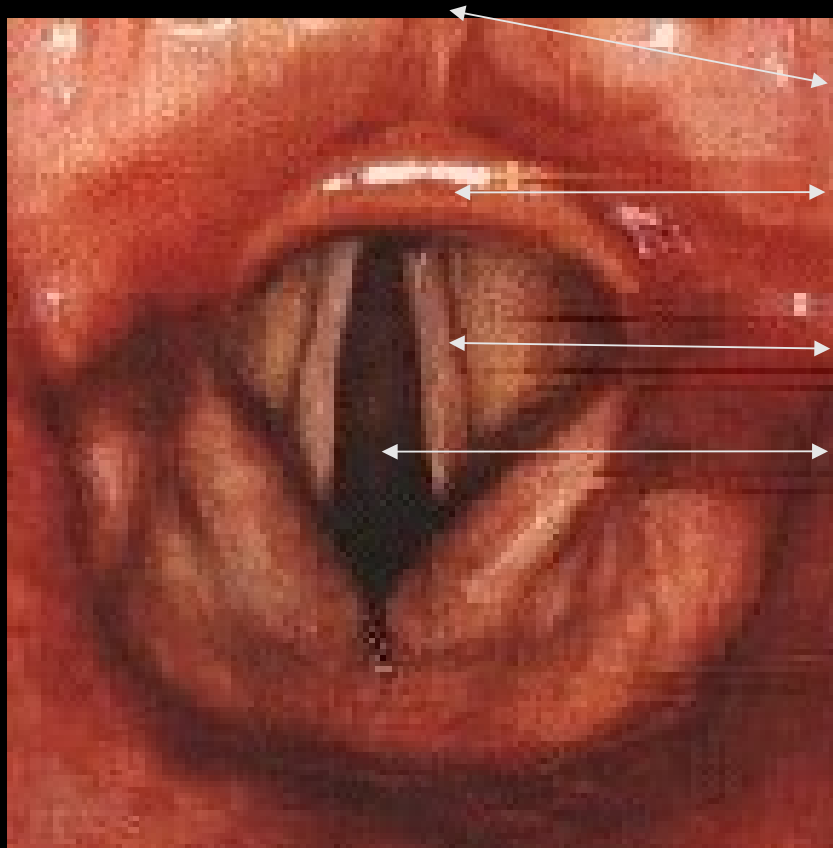


Laryngoscope:

- crooked spoon - Macintosh
- straight spoon - Miller



Laryngoscopic view:



radix of tongue

epiglottis

vocal cords

trachea

Always easy? (Cormac & Lehane)

Grade I



Grade II



Grade III



Grade IV

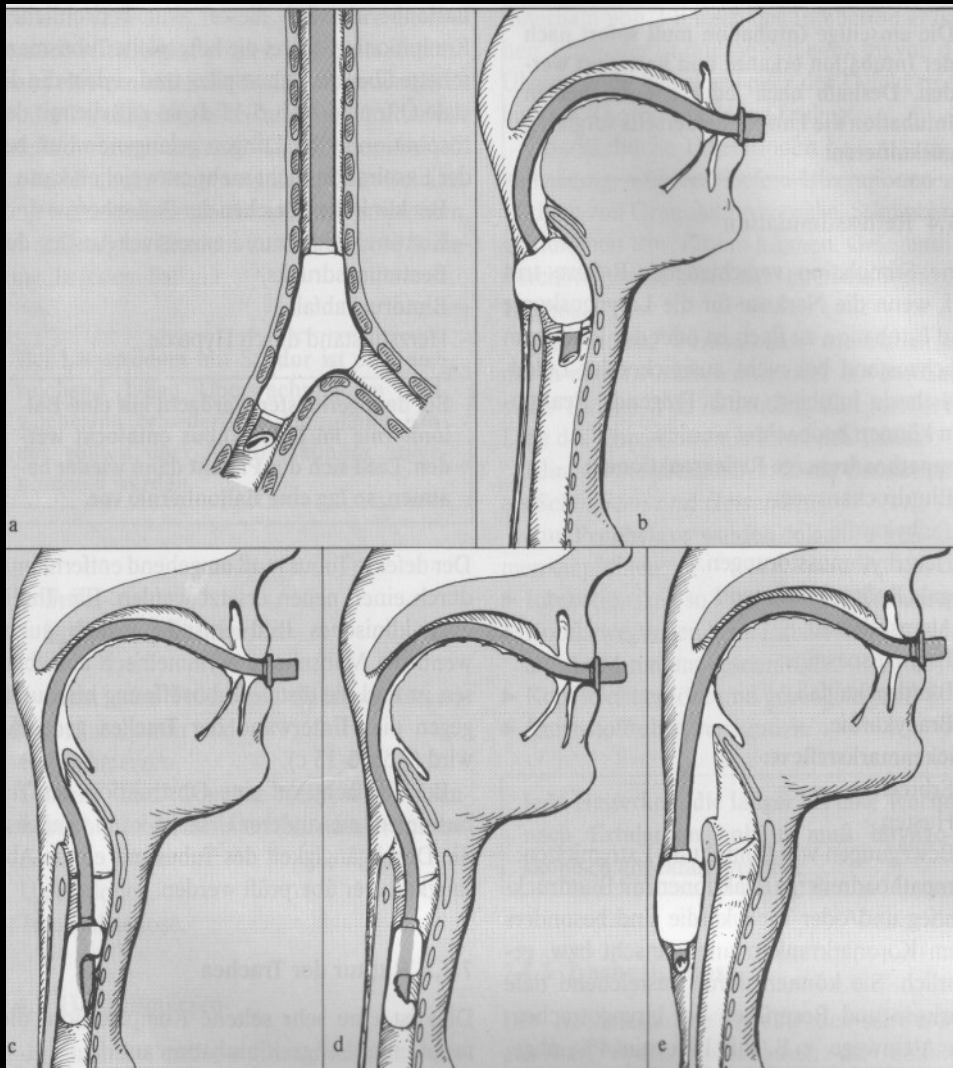


Verify placing of the tube

- auscultation
- End tidal CO₂
- fibroskopic view

Complications of TI - early:

- trauma of teeth, soft tissue
- placed to esophagus / endobronchialy
- aspiration
- cardiovascular -
↑BP, ↑f, arrhythmia
- ↑ICP
- laryngospasmus, bronchospasmus



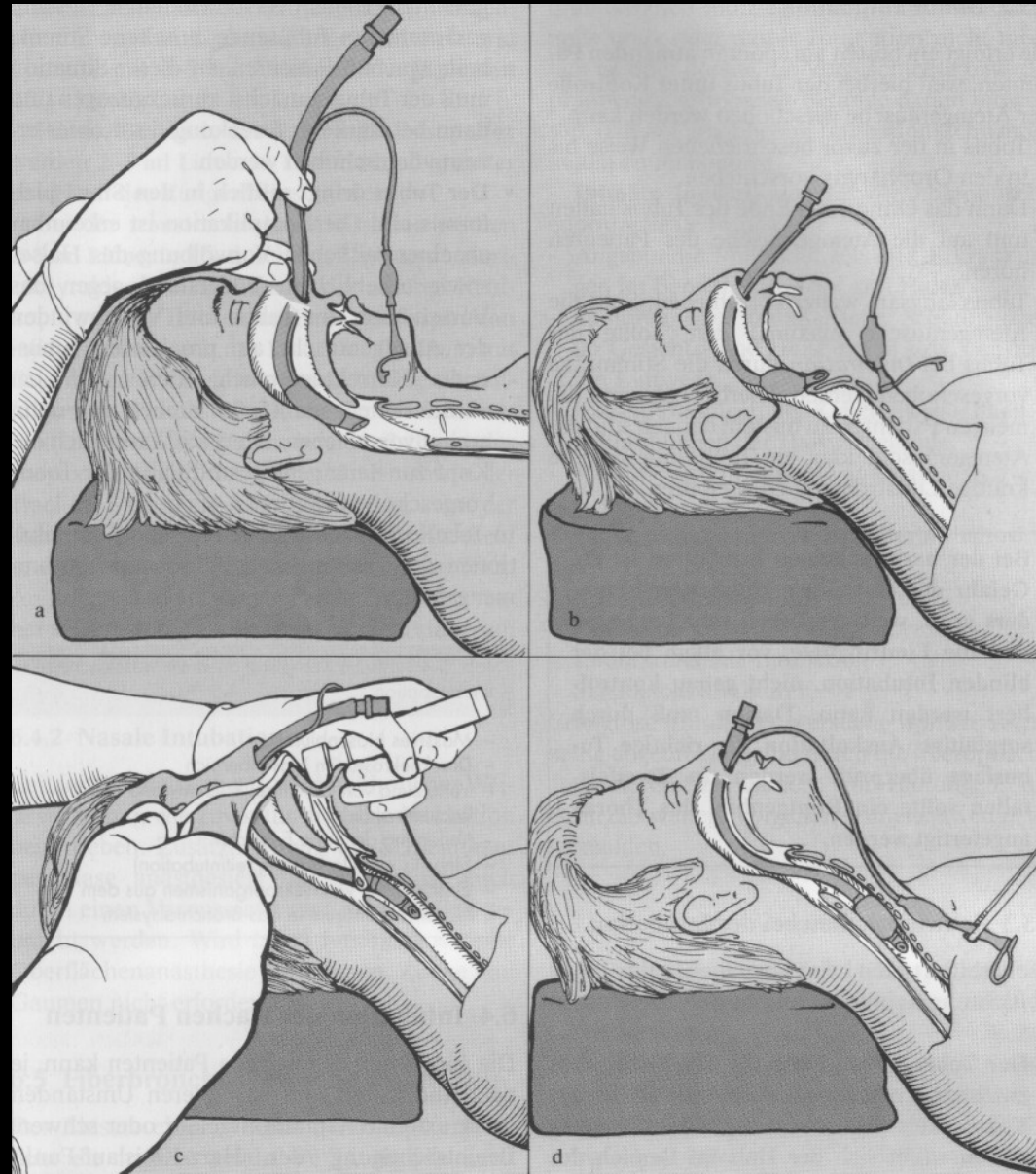
Complication of TI - later:

- damage of vocal cords, trachea
- sinusitis, otitis,
- decubitus – lip, nose
- obturation of tracheal tube by secret, blood

How to do NTI:

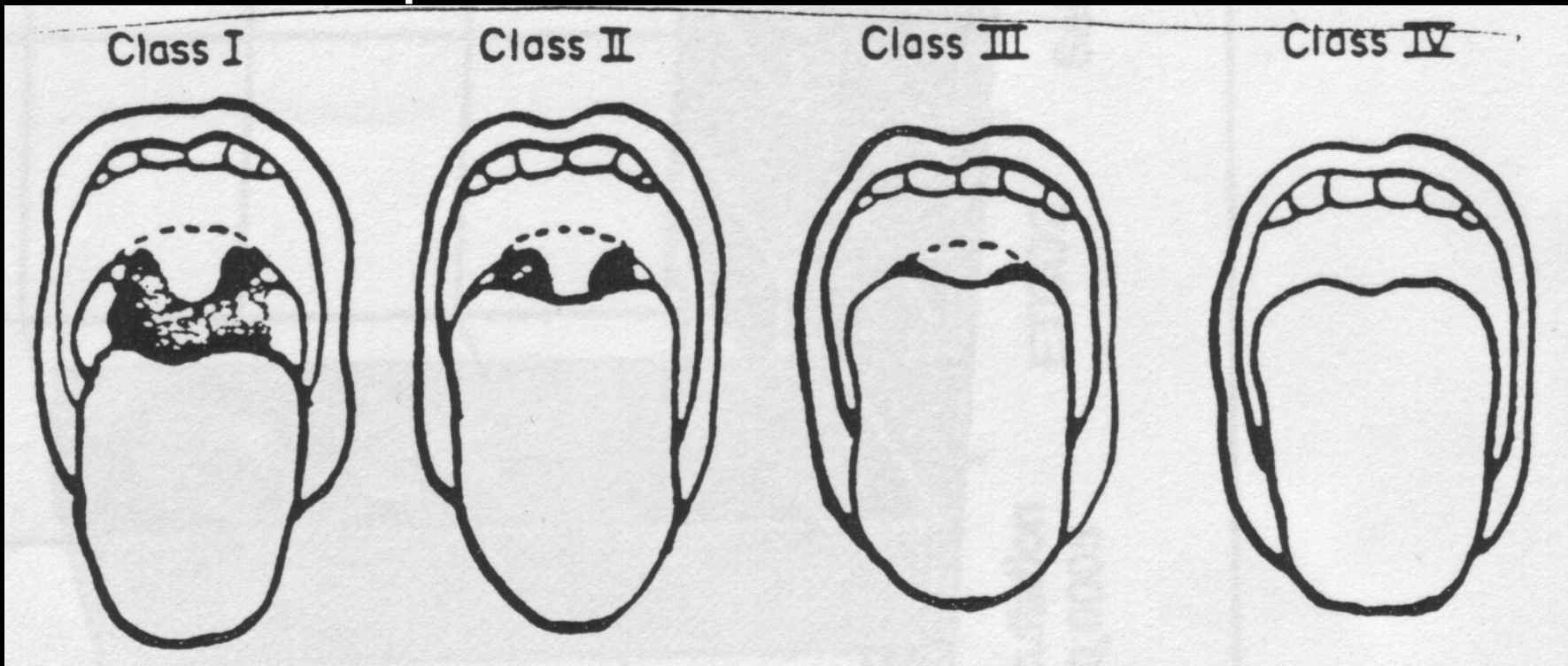
1. LA
anemisation of
nose
2. tube through nose
3. placing tube
under visual
control

CAVE:
deviation of
septum nasi



Check your neck

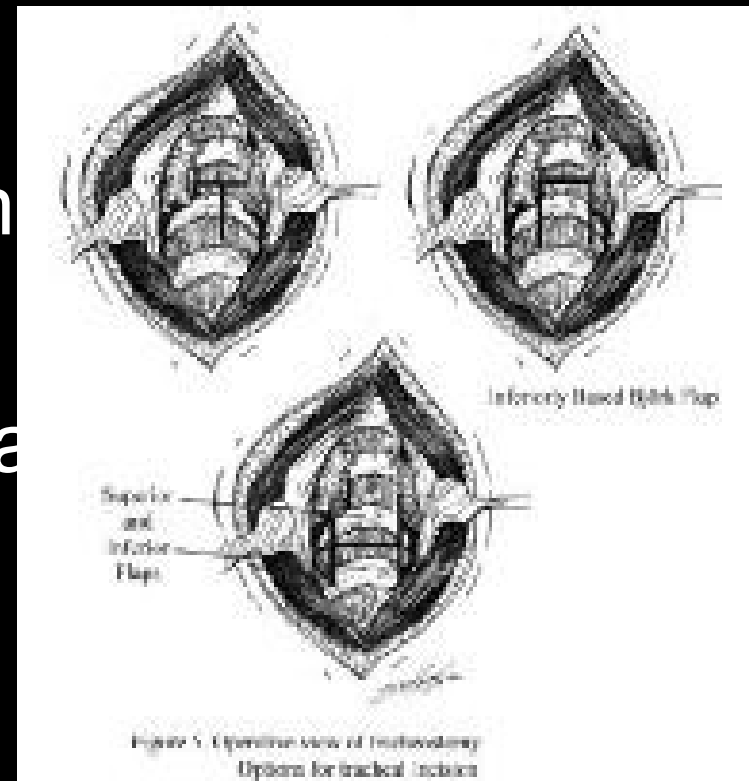
- Mallanpati



- 3-3-2

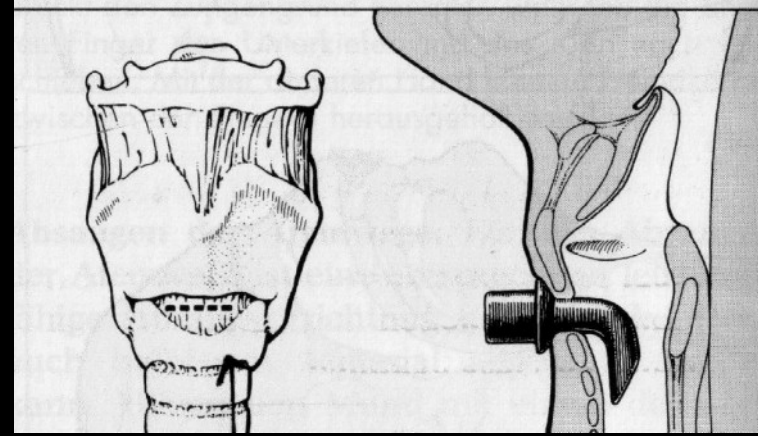
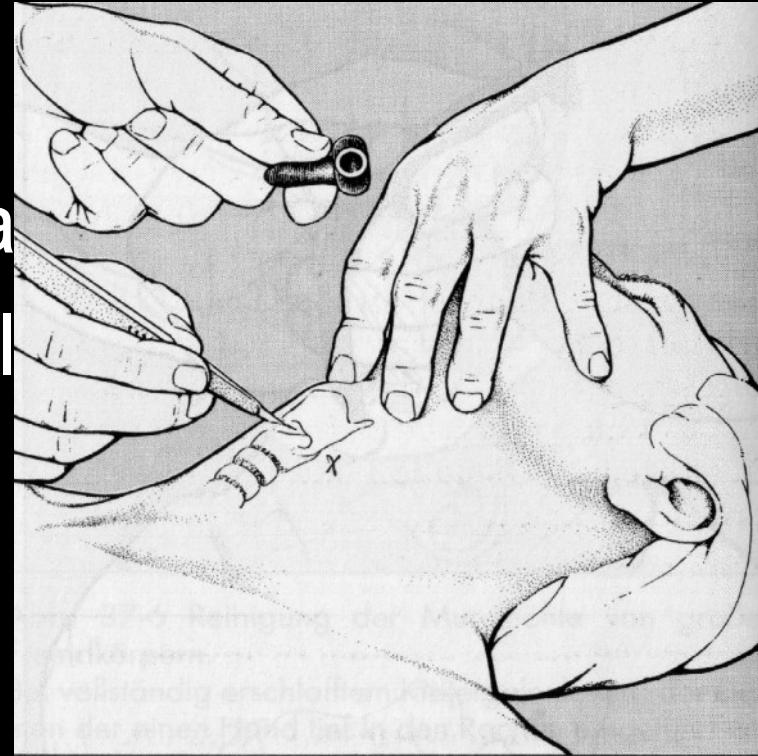
Tracheotomy

- surgical access to trachea
- puncture TS
- I: maintain AW long time
 - artificial ventilation
 - limitation of dead space

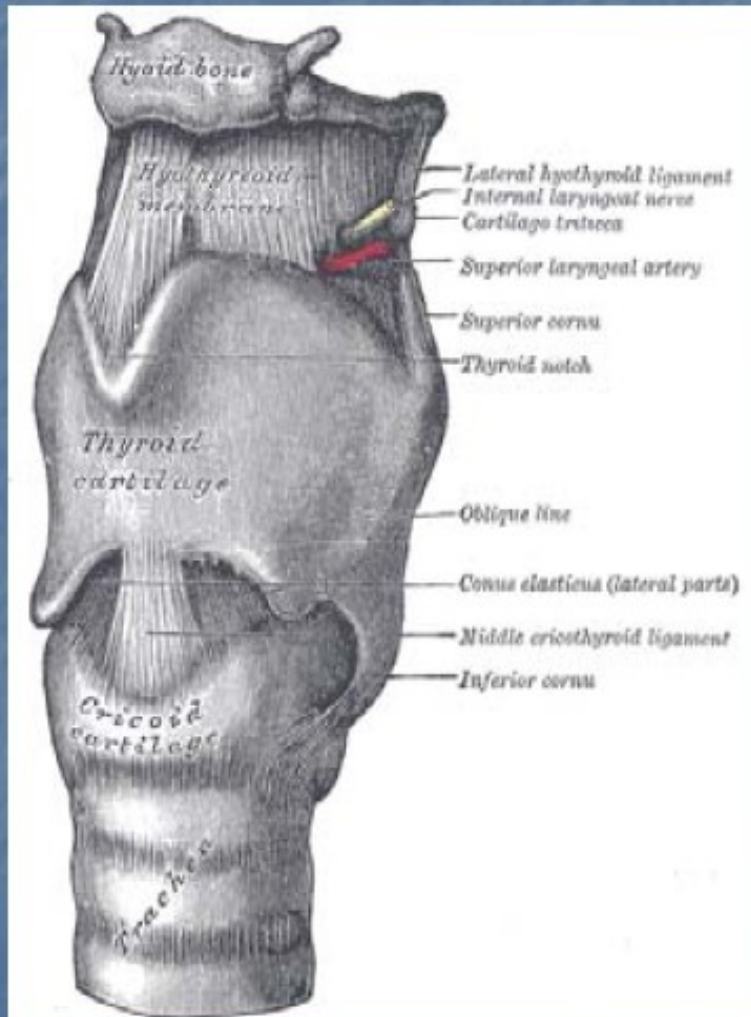


Coniotomy

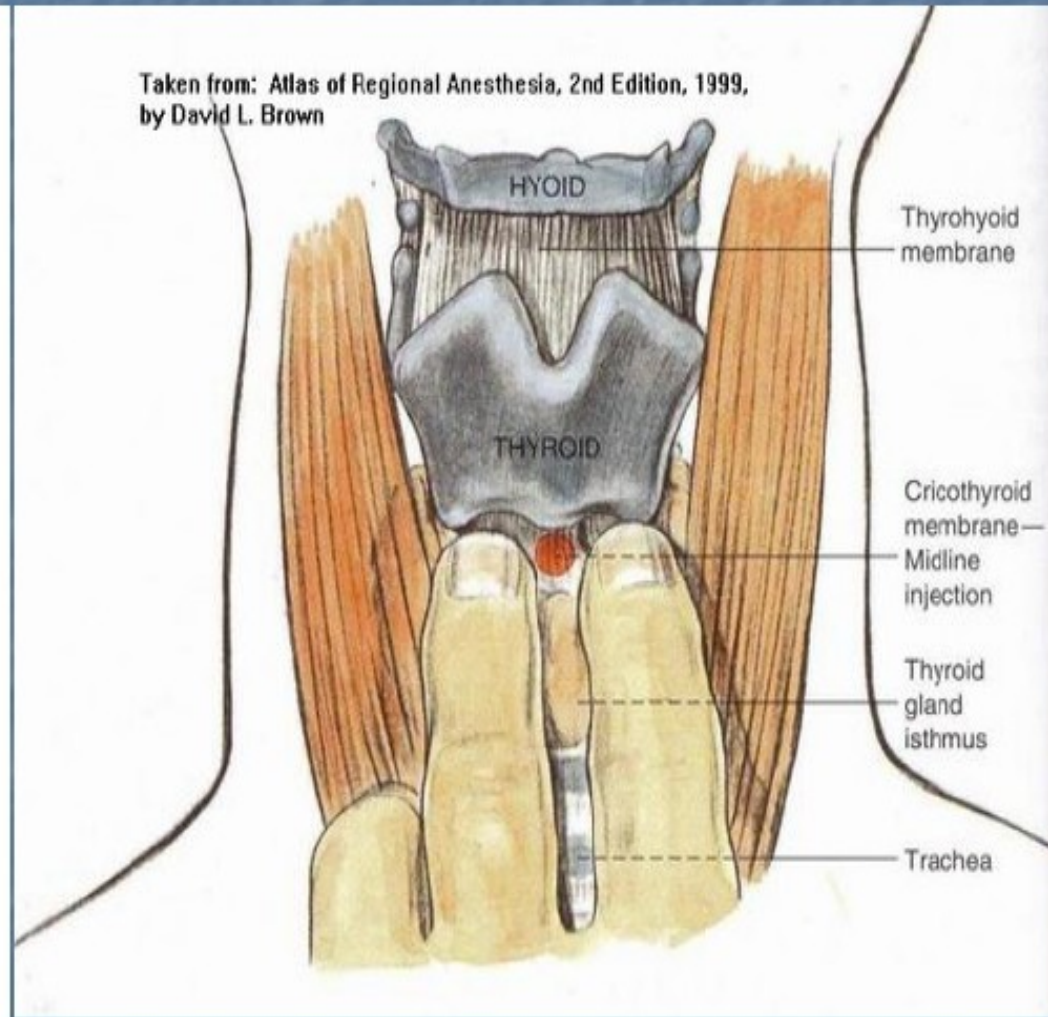
- urgent access to airway
- lig. cricothyreoideum (I)



Where is the Cric Membrane ?



Taken from: Atlas of Regional Anesthesia, 2nd Edition, 1999,
by David L. Brown



Coniotomy

- First try non surgical AM
- find the ligament
- DO it.



Koniopunkce

identifikace

místa

fixace

protnutí

zavedení

napojení



Koniotomie

identifikace
místa
fixace
protnutí
zavedení
napojení

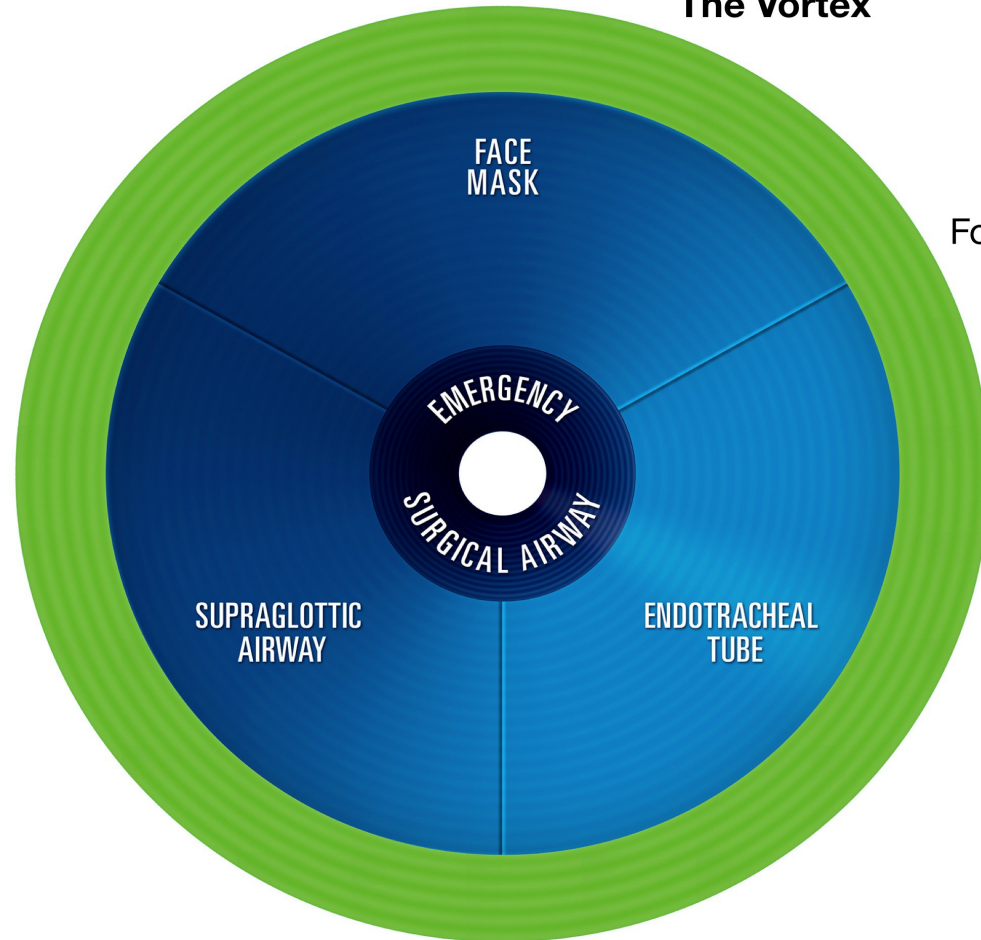


B.A.C.T. dr.Michal Otáhal, VFN Praha



Only 3+1 ways of A.M.

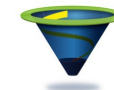
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