Zajištění dýchacích cest

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ARK FNUSA

ZZSMSK - Třinec

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Jsou to „skills“

- ✓Praktický trénink
- ✓Opakování
- ✓Týmová jednotnost, sehranost
- ✓Zkušenosti

- ✓Minimum teorie
- ✓Zjednodušování

- ✓Reálně použiju jen techniky, které umím !

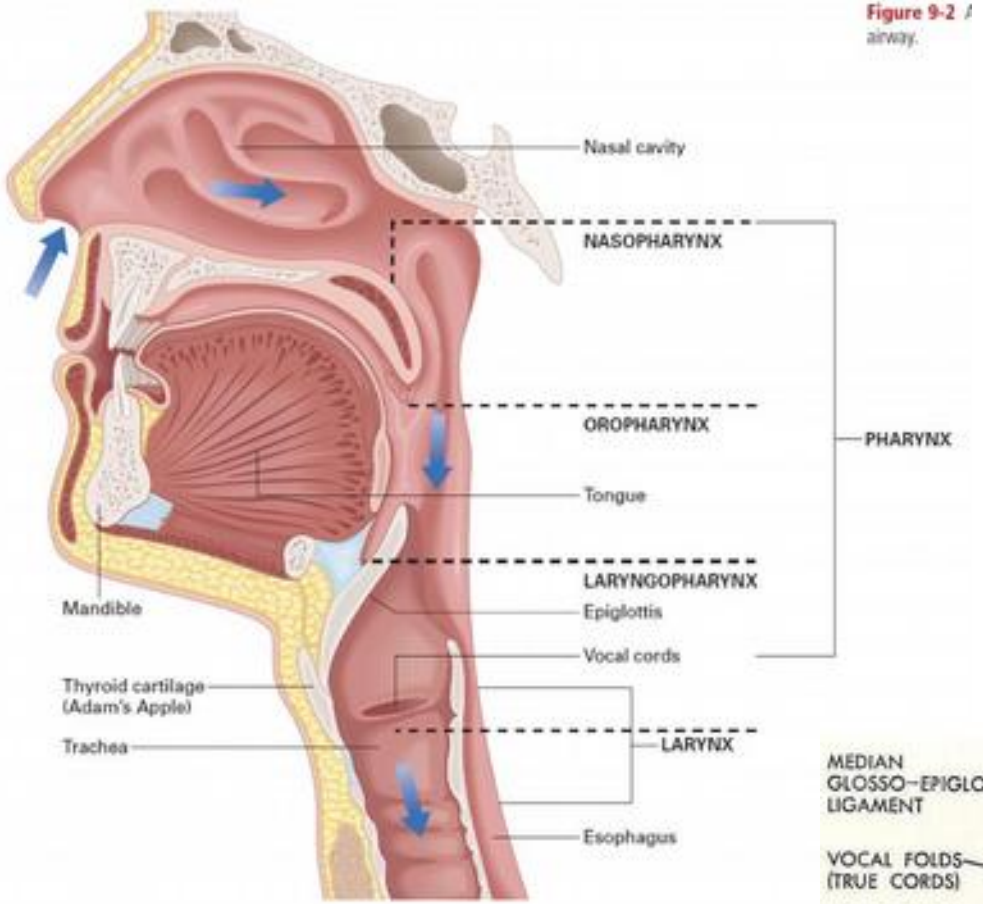
Na sále

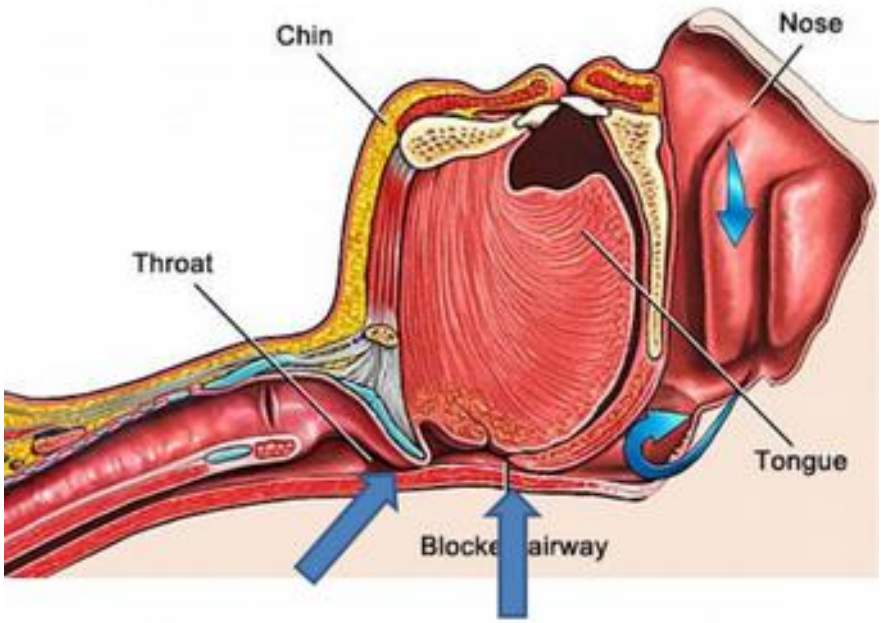
- ✓ Prostor k tomu určen
- ✓ Anesteziologická sestra + další personál
- ✓ Zkušenější kolega na blízku
- ✓ Pomůcky a léky
- ✓ Navazující péče

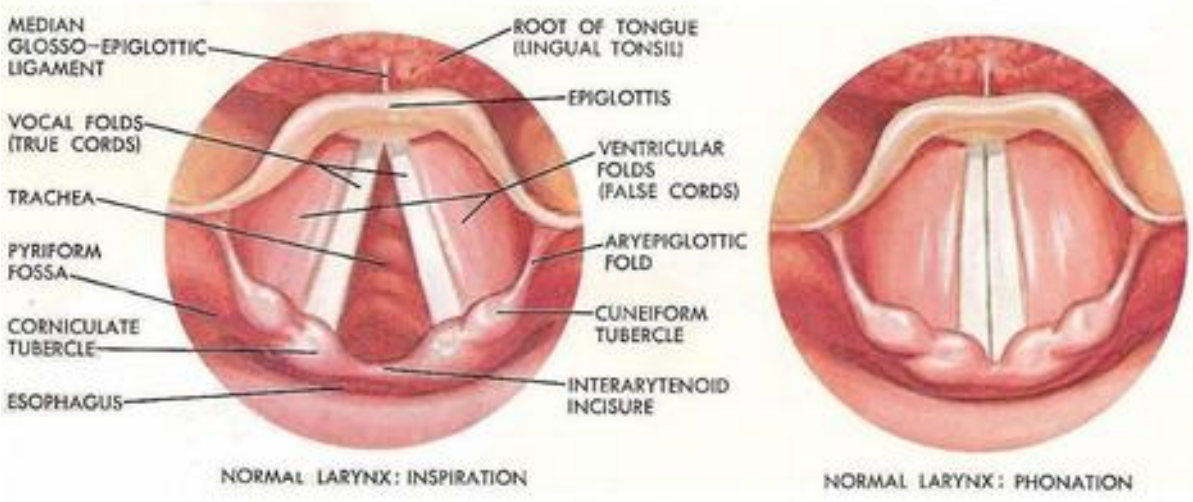
V PNP

- ❖ Nedostatek prostoru, nevhodný terén
- ❖ Nevhodná poloha pacienta
- ❖ Pouze záchranář, řidič
- ❖ Zkušenější kolega nikde
- ❖ Omezený výběr materiálu a léků

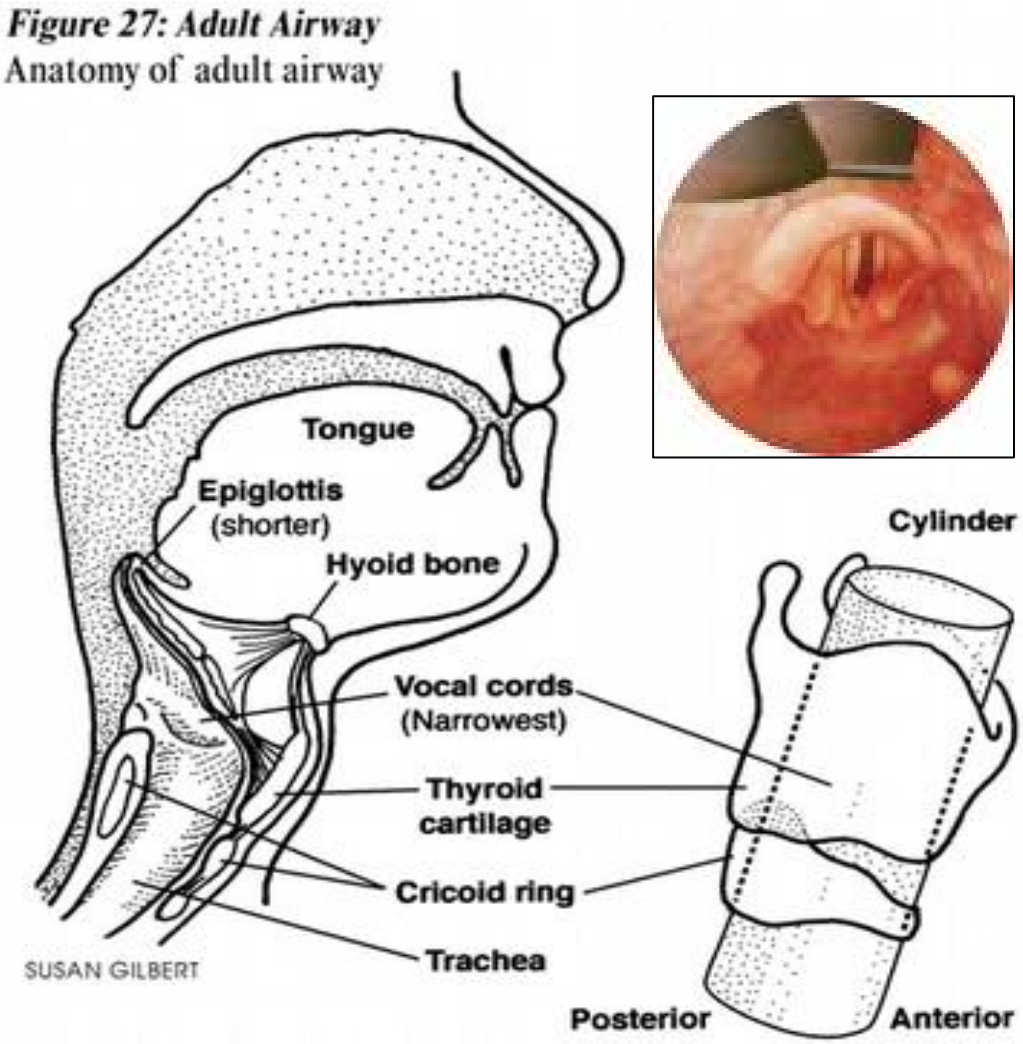
Trocha anatomie

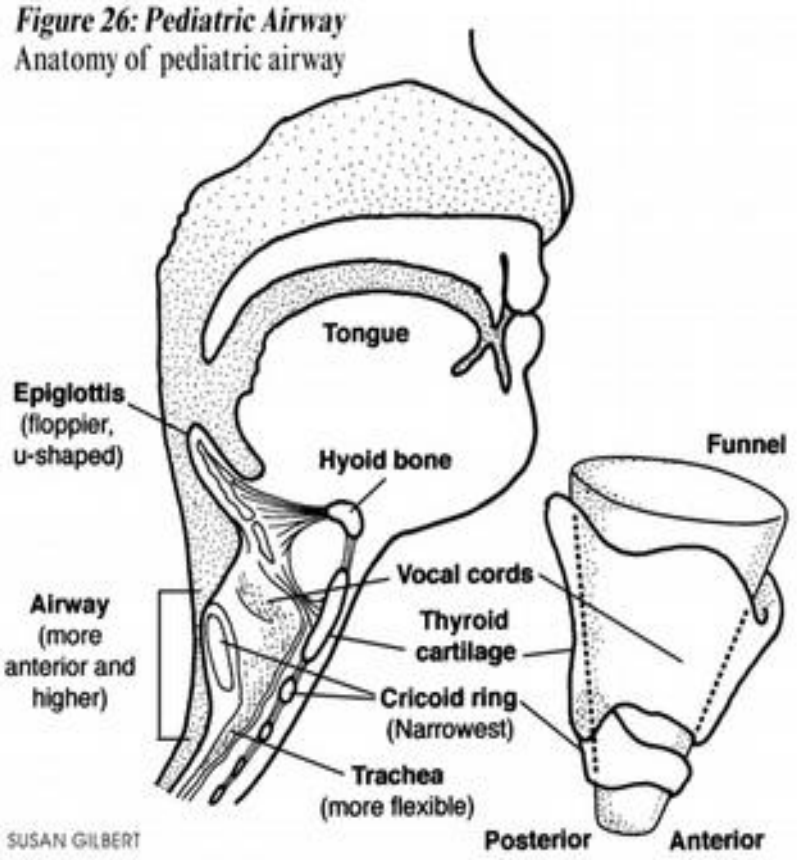






Nejužší místo dýchacích cest





Dospělý: glotis

Děti: subglotický prostor

Basic Life Support

Open the airways: head tilt & chin lift

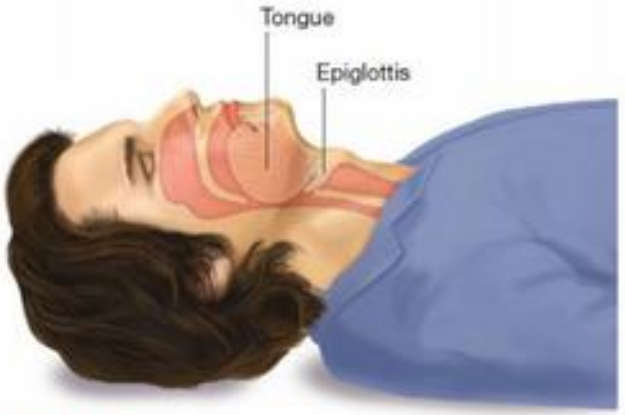


Figure 9-5a Anatomy of the adult in a neutral position.

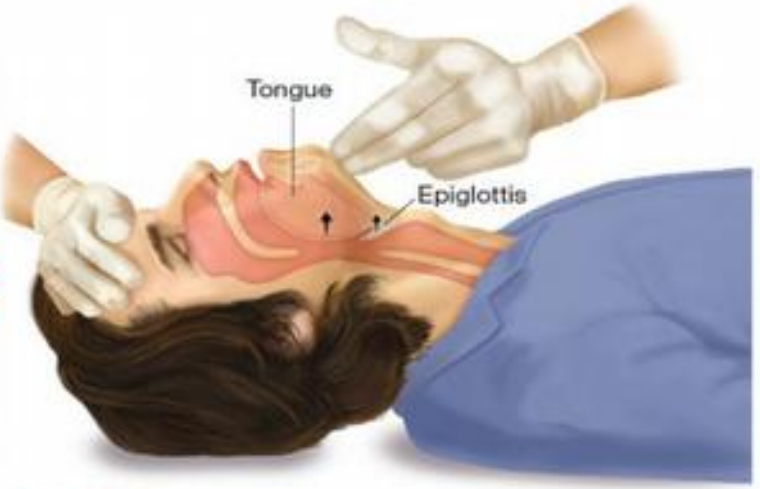


Figure 9-5b The head tilt-chin lift position; note the open airway.

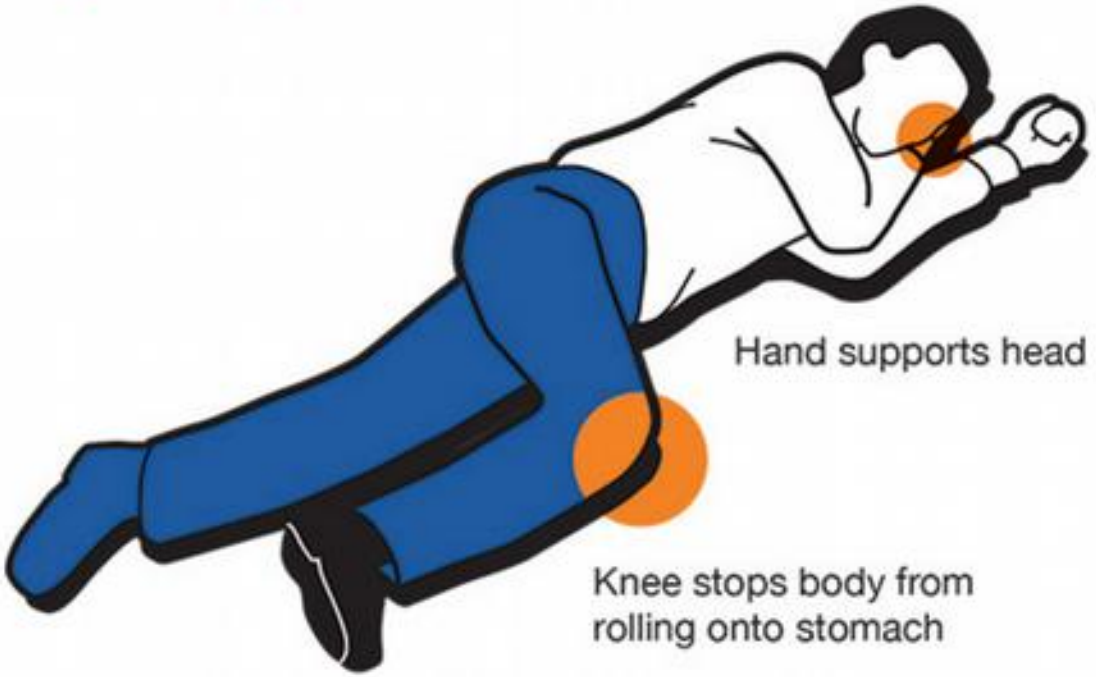
Head tilt and chin lift

The rescuer's hand is placed on the patient's forehead and the head gently tilted back; the fingertips of the other hand are placed under the point of the patient's chin, which is lifted gently to stretch the anterior neck structures (Fig. 4.3).[310–315]

Basic Life Support

The Recovery Position

Keep the Airway Clear



Stay with person. If you must leave them alone at any point, or if they are unconscious, put them in this position to keep airway clear and prevent choking.

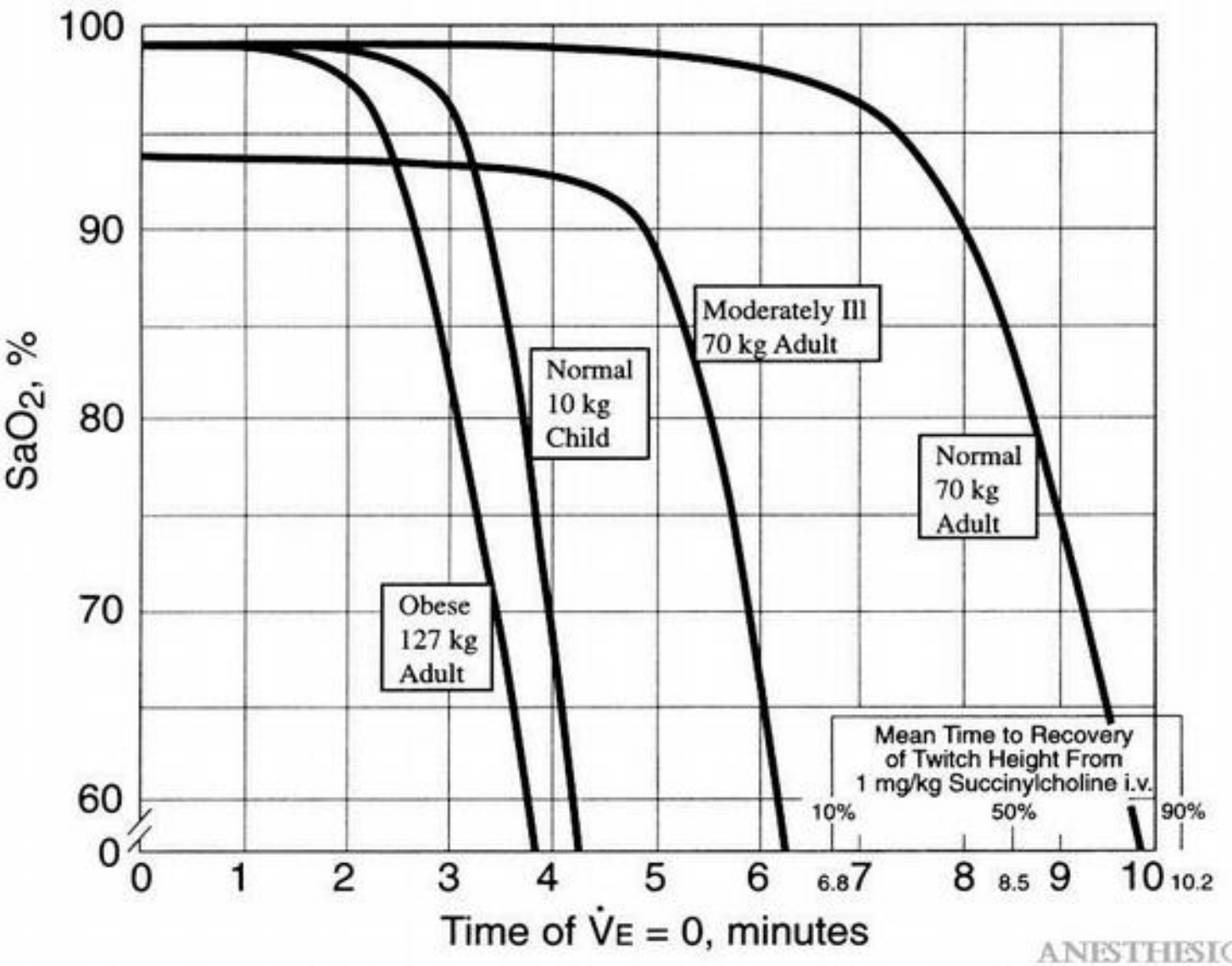
Zajištění dýchacích cest s pomůckami
3+1 technika

Preoxygenace

Ob

-

-



Ventilace obličejovou maskou

- správná velikost masky #1..#5

- správná poloha hlavy
  - záklon
  - trojhmat, C-hmat
  - ústní vzduchovod
  - ventilace 4 rukama

Ventilace obličejovou maskou

Technika držení:

1 rukou:

- palec + ukazováček
- 3 prsty - brada

2 rukama:

- palce drží masku
- prsty zvedají čelist

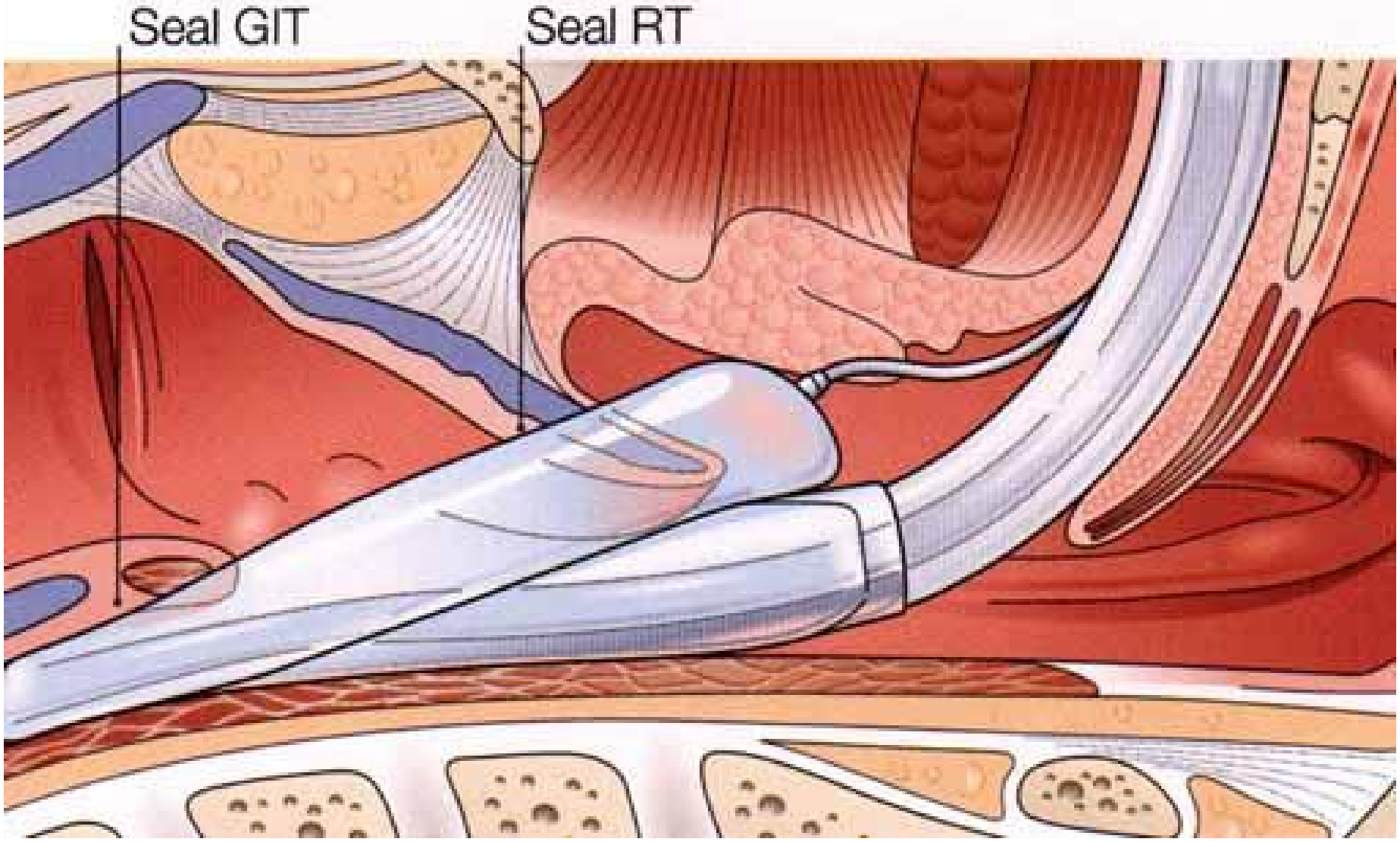
Ventilace 2 rukama

Cannot ventilate

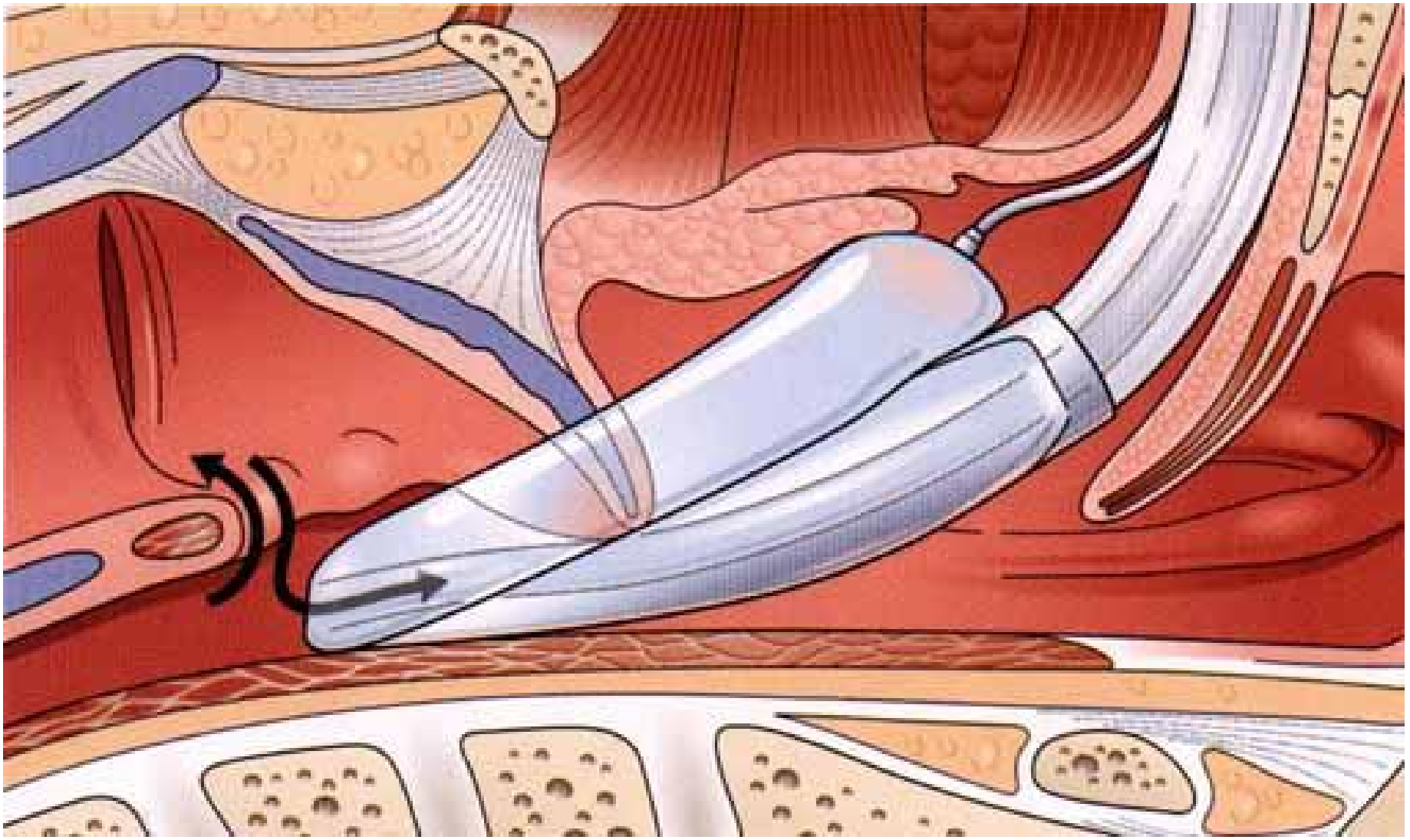
Laryngeální maska

LMA Supreme

Korektní uložení



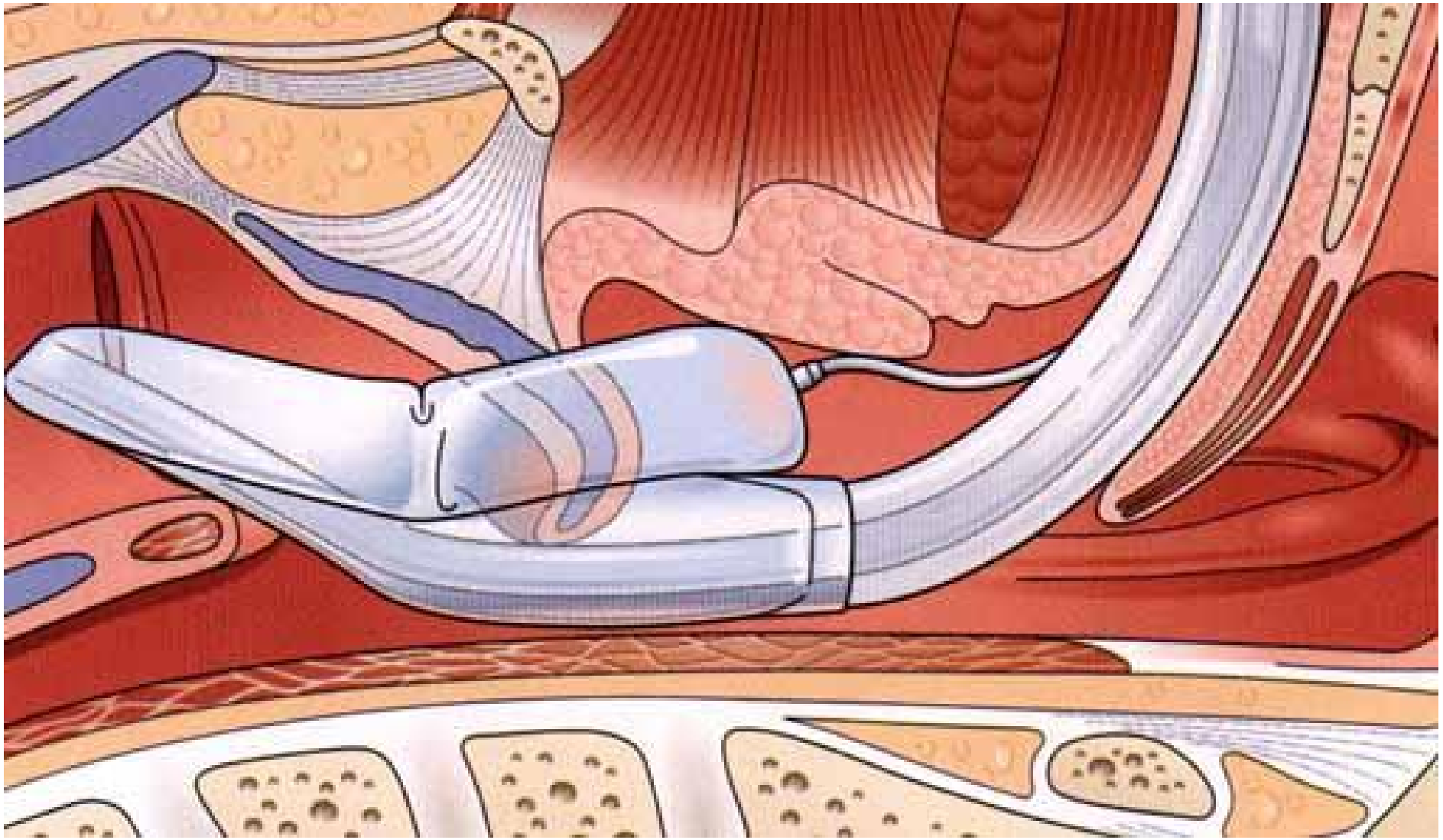
Malpozice I.



Distální manžeta v oropharyngu - není těsnost s respiračním a GIT.

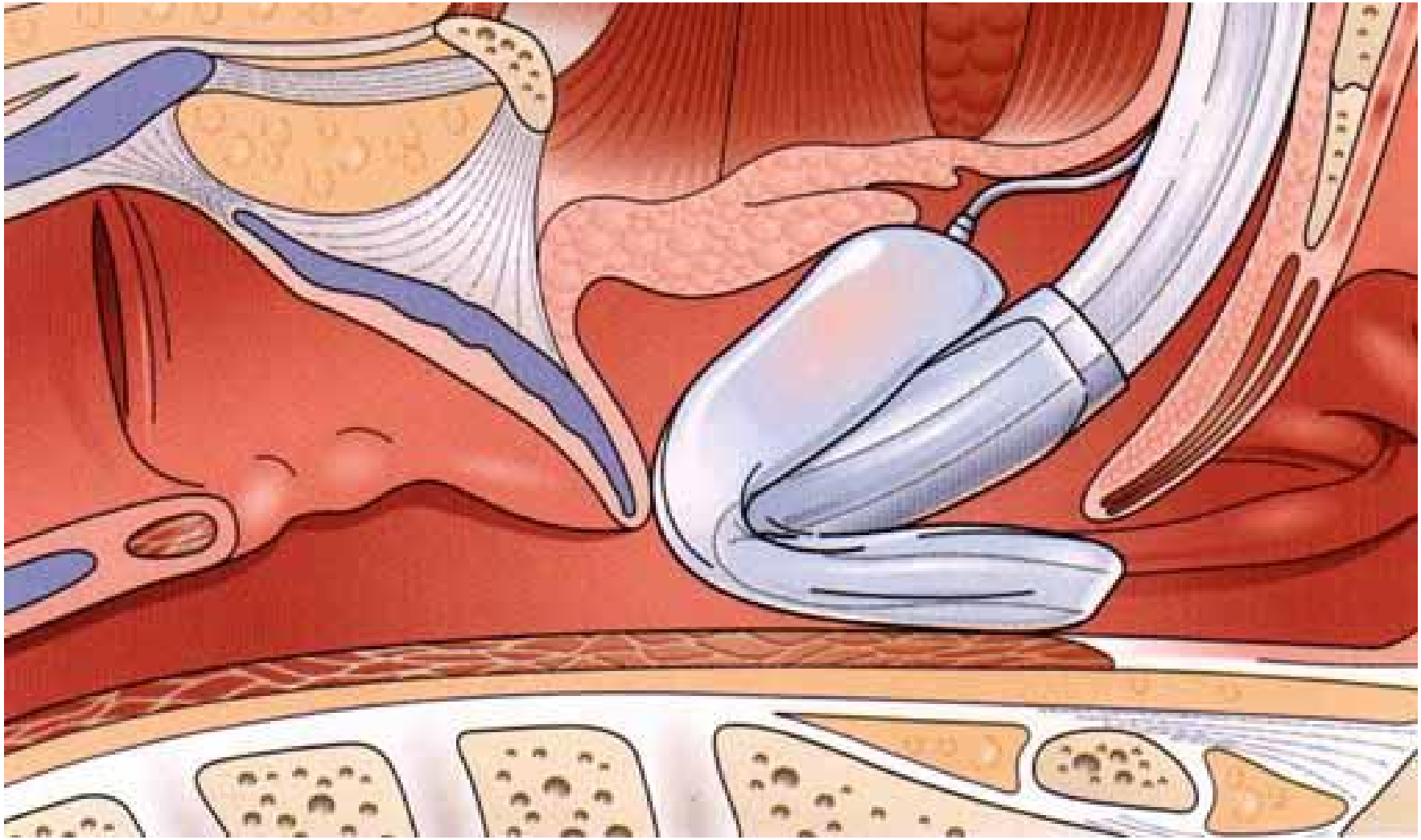
Co hrozí: Aspirace, obstrukce - epiglottis v dutině LMA, inflace žaludku

Malpozice II.



Distální část manžety v glottic inlet.
Totální obstrukce dýchacích cest

Malpozice III.



Distální část manžety v nasopharyngu:
Zavádění reversní Guedelovou technikou nebo v poloze chin to chest (ignorace sniffing position).
Může být slučitelná se zachováním průchodnosti dýchacích cest, extremní riziko aspirace - není ochrana před regurgitací distálním koncem manžety.

Velikost LM

Velikost odpovídá ideální hmotnosti

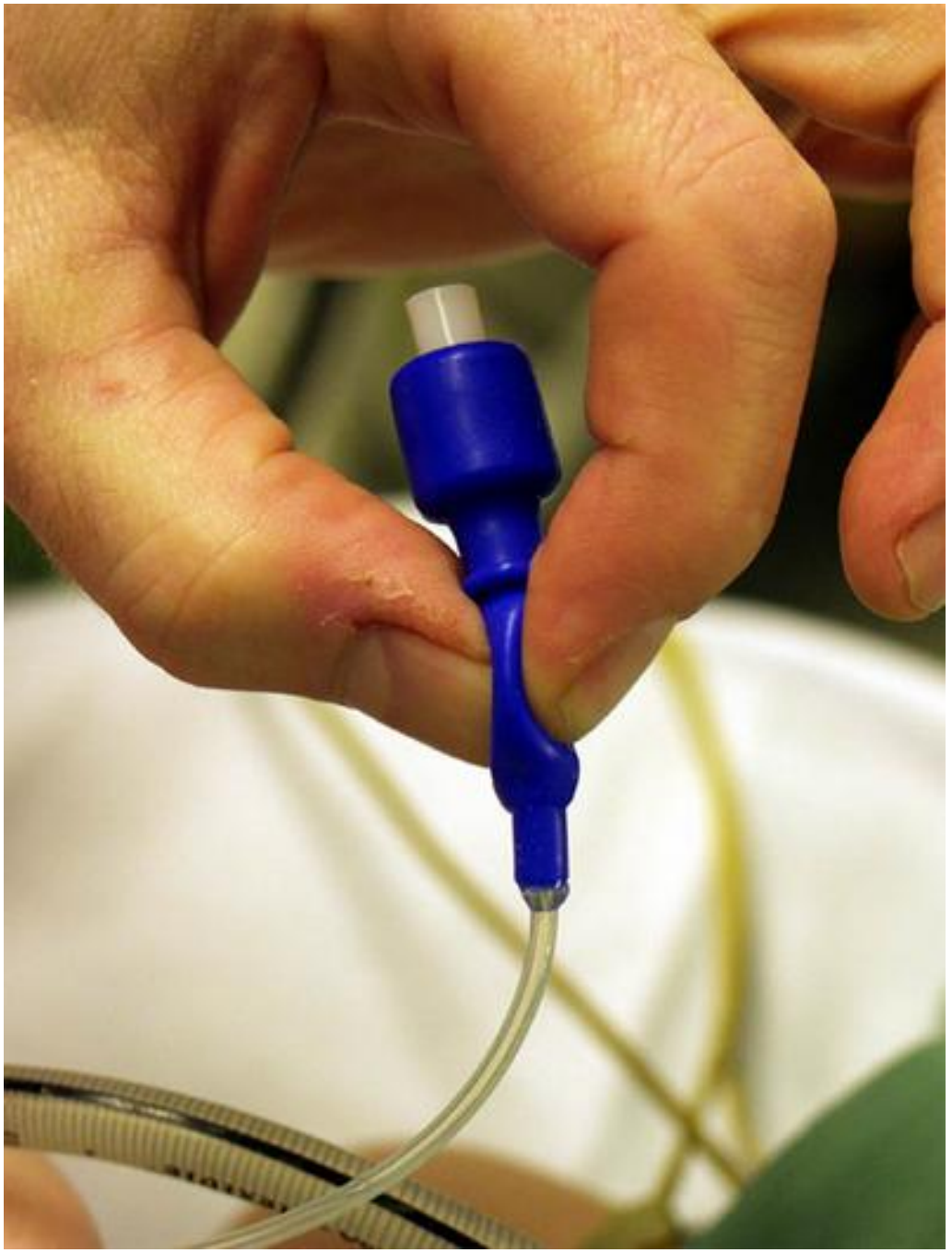
děti:

#1	do 5 kg
#1,5	do 10kg
#2	do 20 kg
#2,5	do 30 kg

dospělí:

#3:	30-50 kg
#4:	50-70kg (většina žen)
#5:	70-100kg (většina mužů)

Správný tlak (výrobcem doporučovaný) v manžetě je **pod 60 cm$H_2$0**



Fixace LMA do „X“ dvěma náplastmi

Zavedení LM

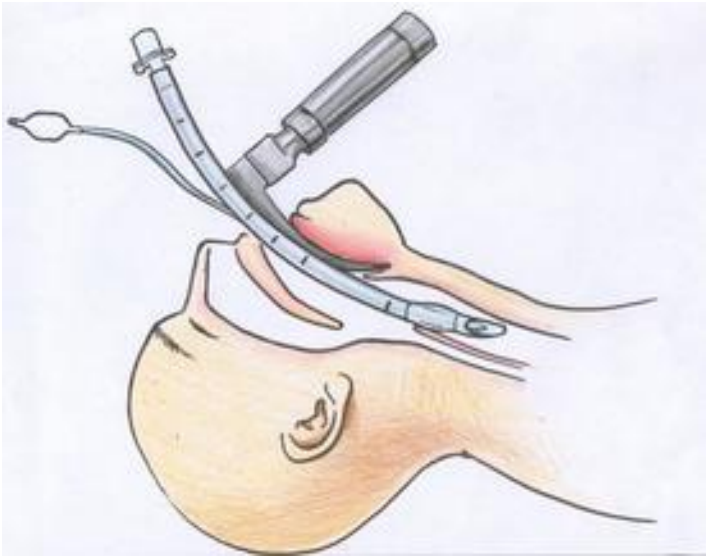
Tracheální intubace

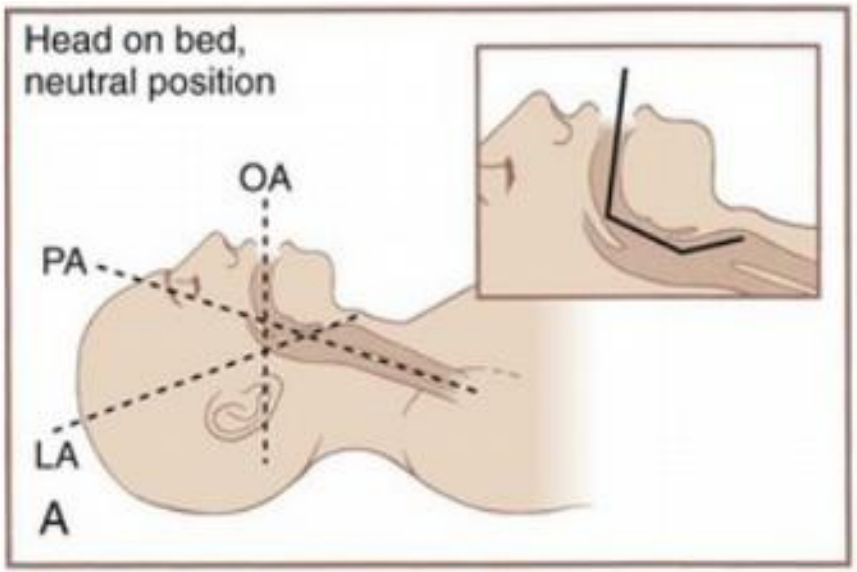
… tracheální rourka s manžetou je

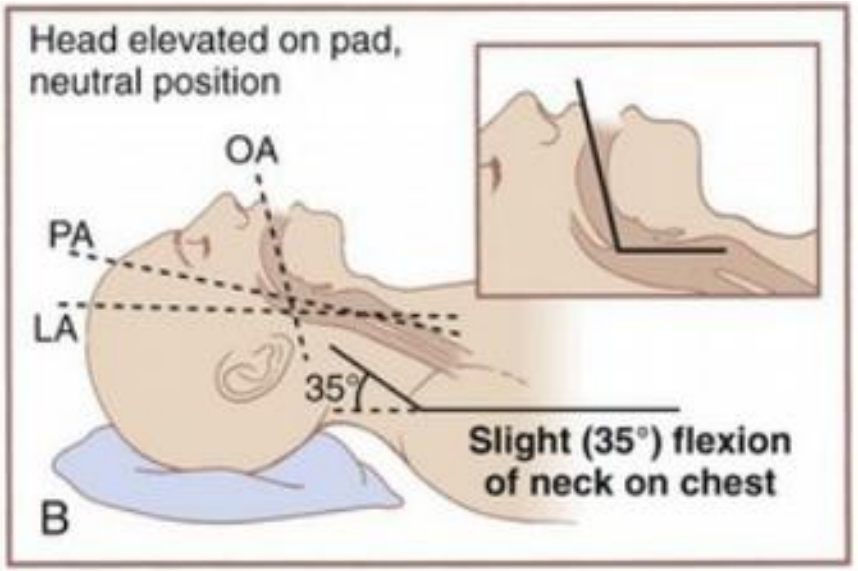
ZLATÝ STANDARD v zabezpečení dýchacích cest

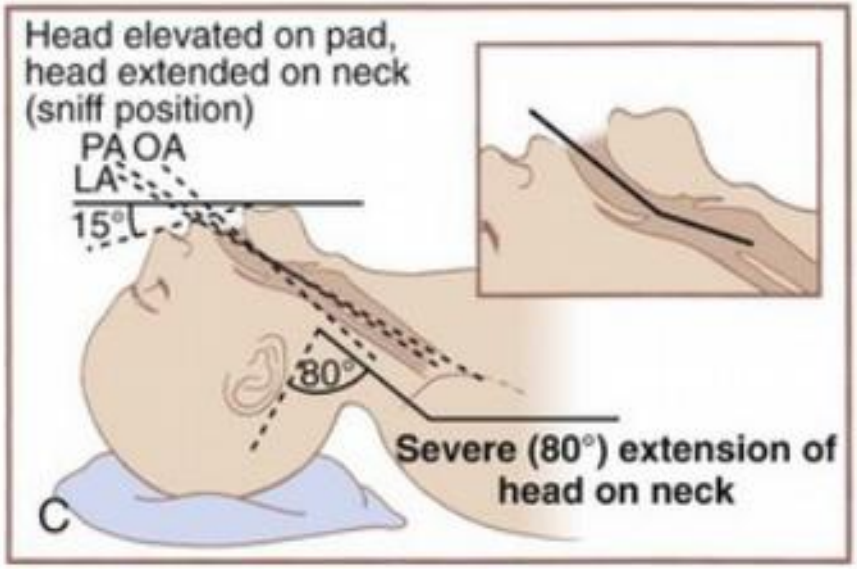
ale pouze je-li včas umístěna

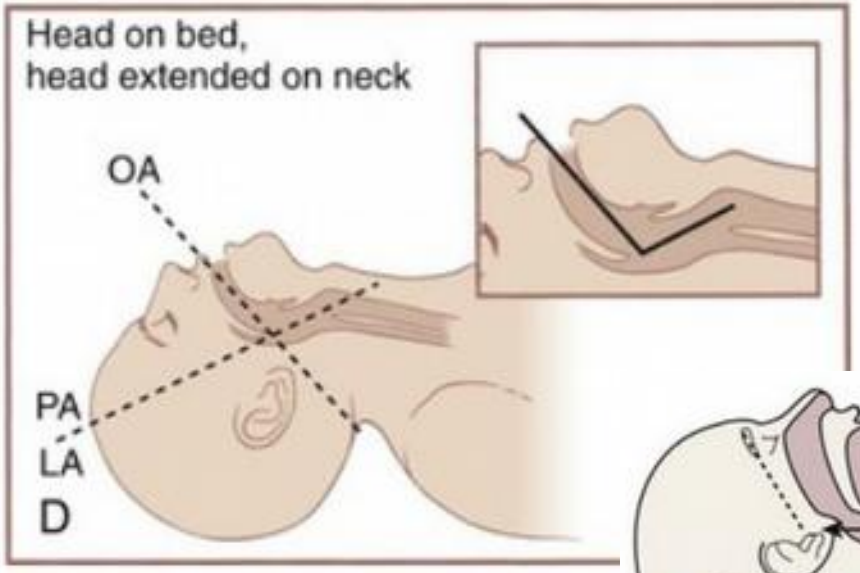
v průdušnici

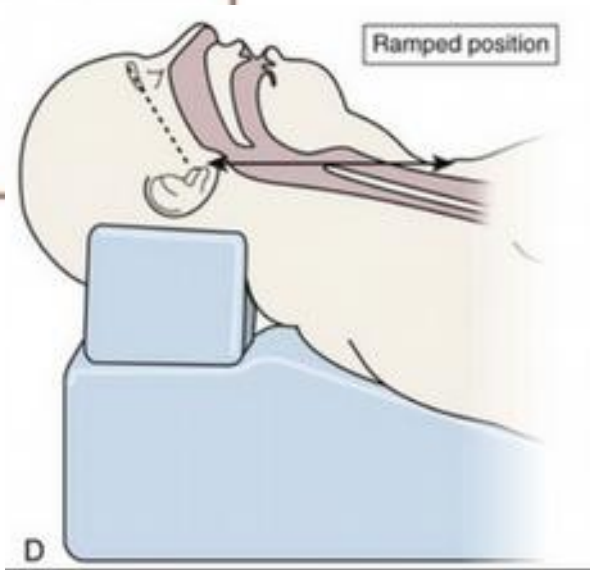






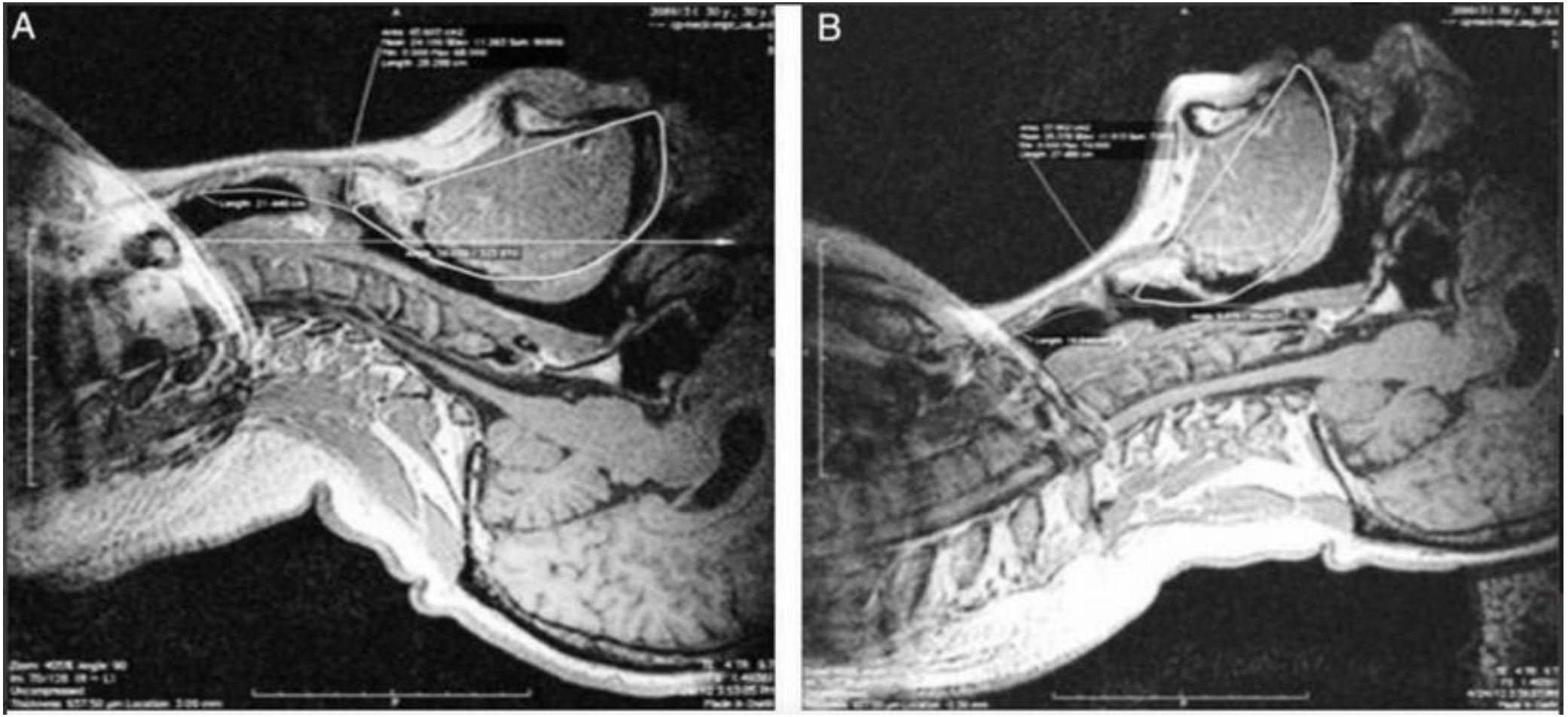




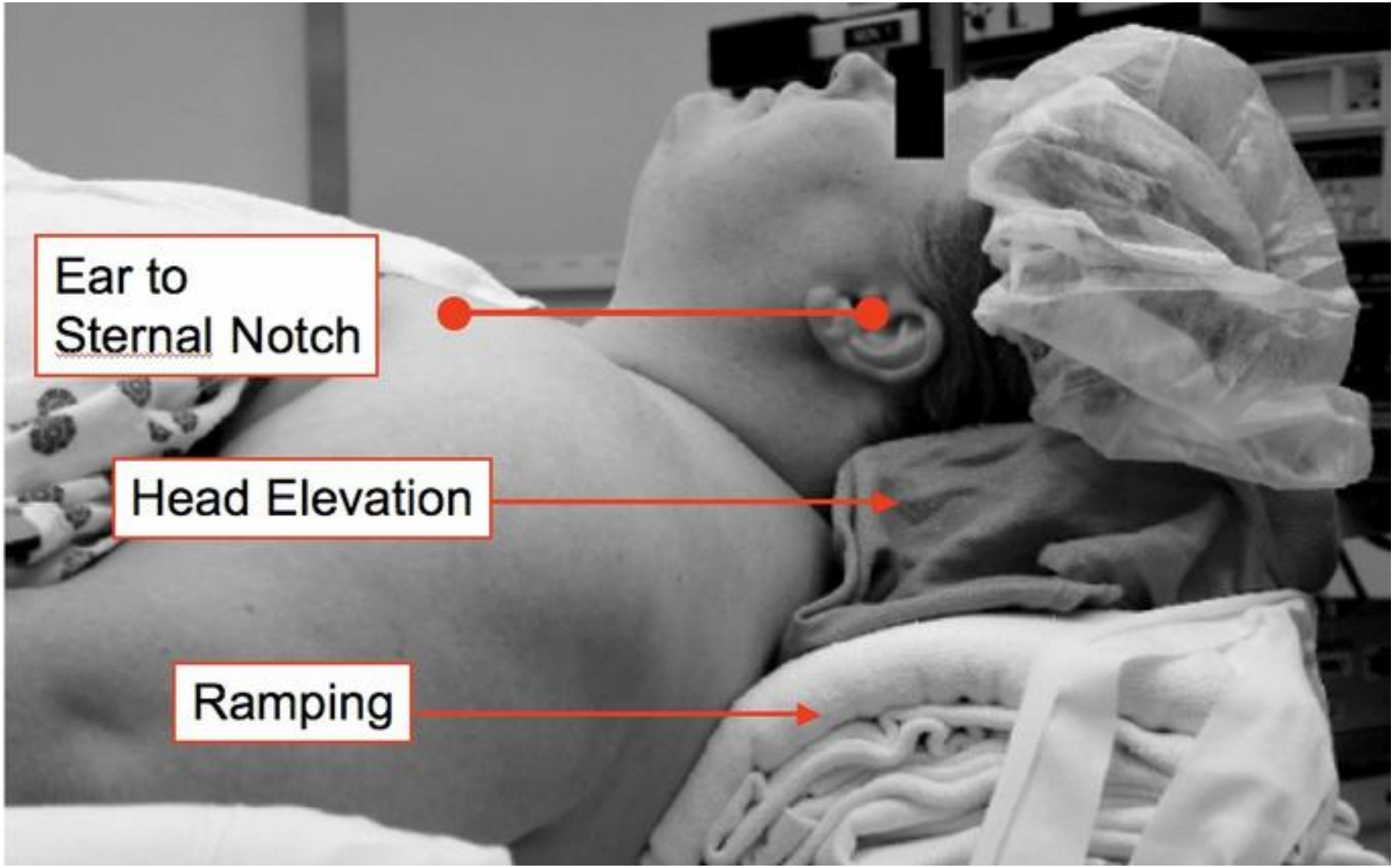


Polohování k intubaci

Hyperextenze krku

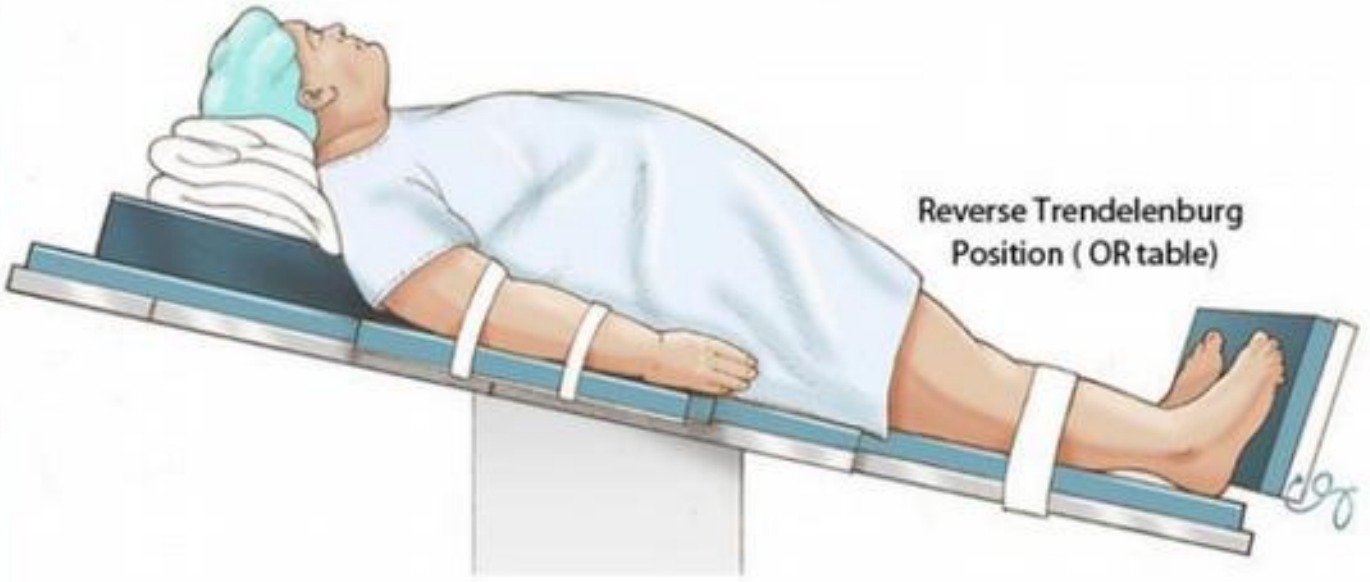


Sniffing position



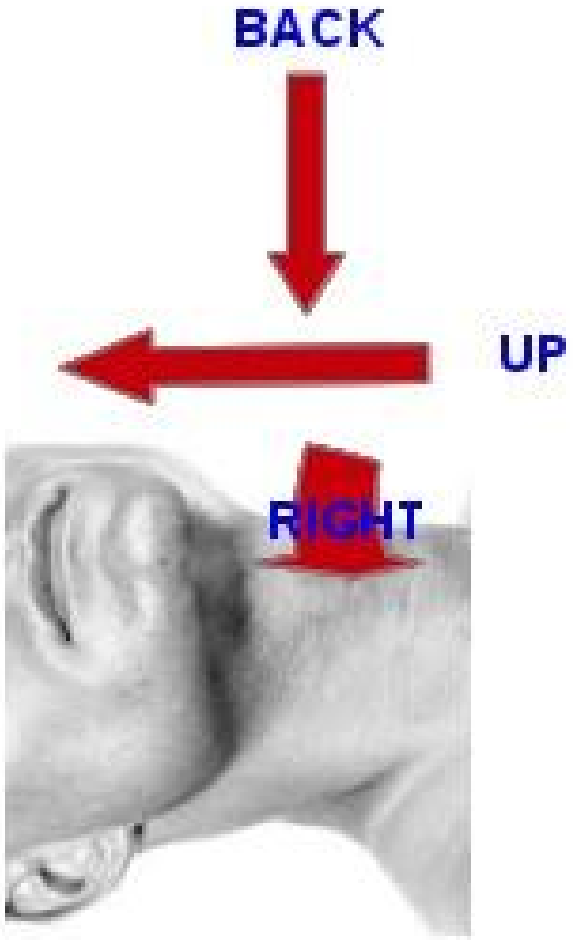
RSI in Morbidly Obese Patients

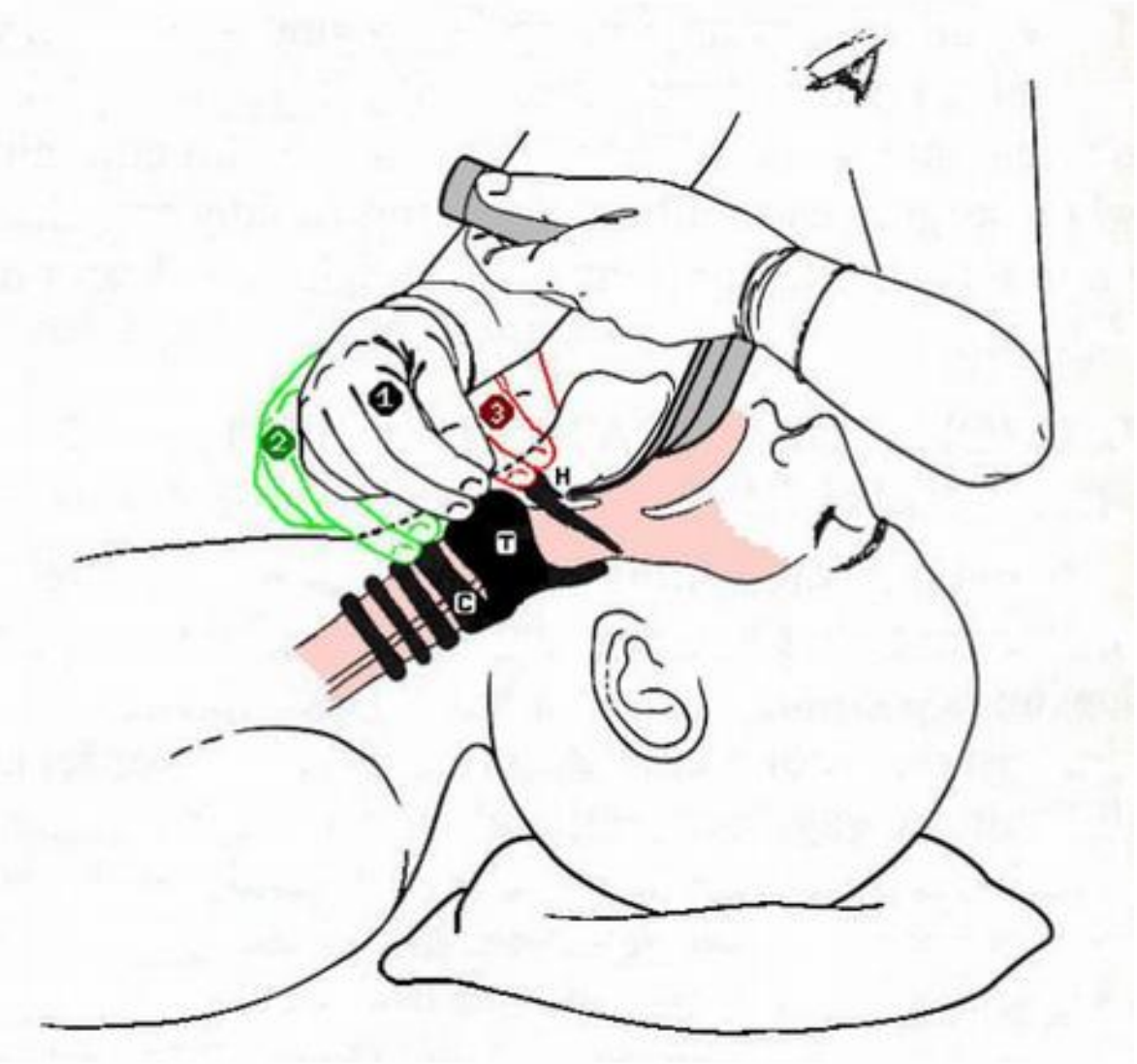
- Ramped position better than sniff position
- Reverse Trendelenberg position also helpful
- Ear-to-sternal-notch in same horizontal plane
- Patient's face parallel to the ceiling



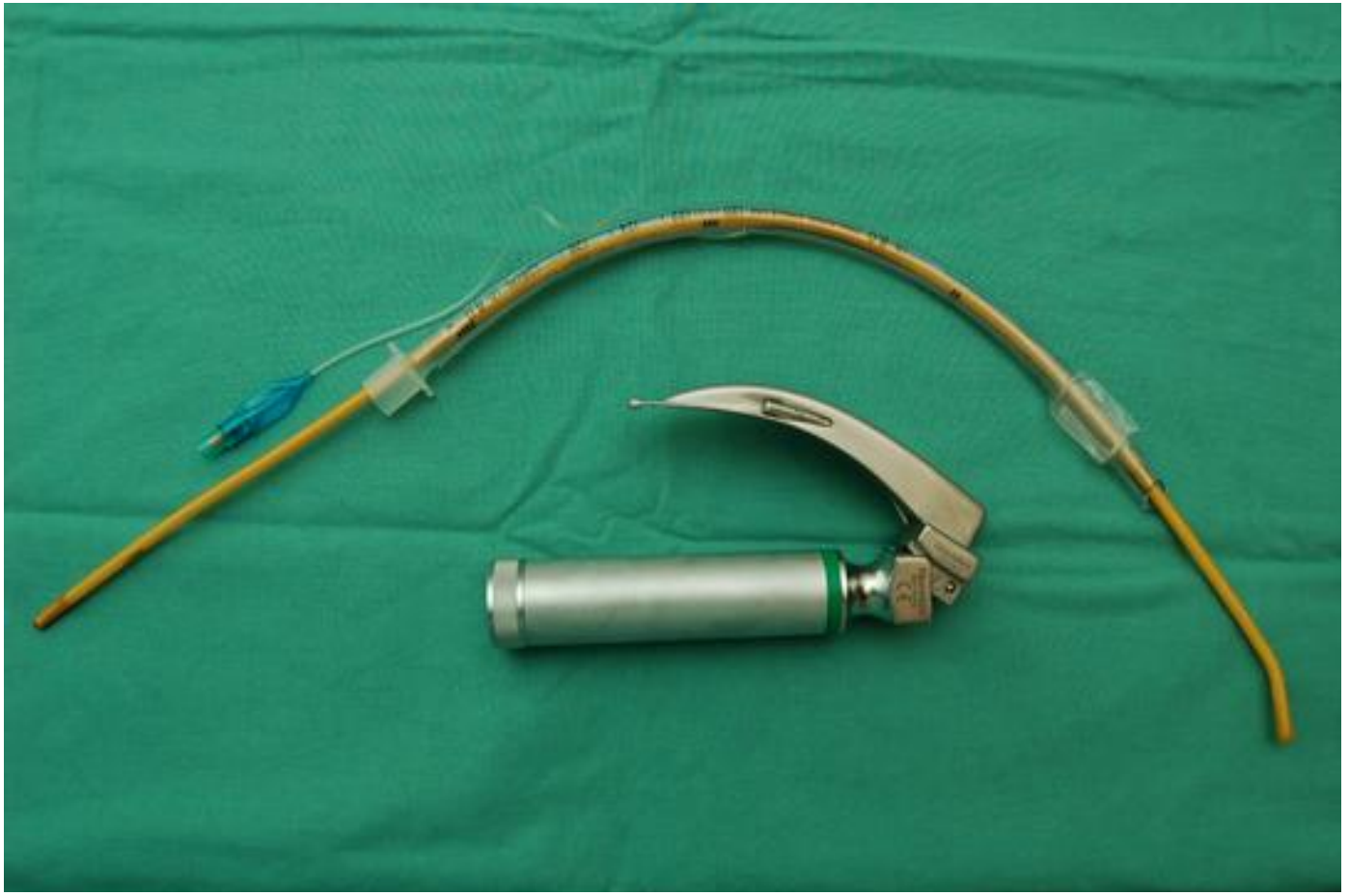
Back – Up- Right – Pressure:

BURP





Bužie




12Scm I.D. 8.0

Intubace s bužií

Difficult airway

Predikce difficult airway

- Anamnéza
-
-
-
-
-
- Vysoký věk, BMI >26, chrápání, ustupující brada, spánková apnoe

AMERICAN SOCIETY OF ANESTHESIOLOGISTS

DIFFICULT AIRWAY ALGORITHM

1. Assess the likelihood and clinical impact of basic management problems:

A. Difficult intubation

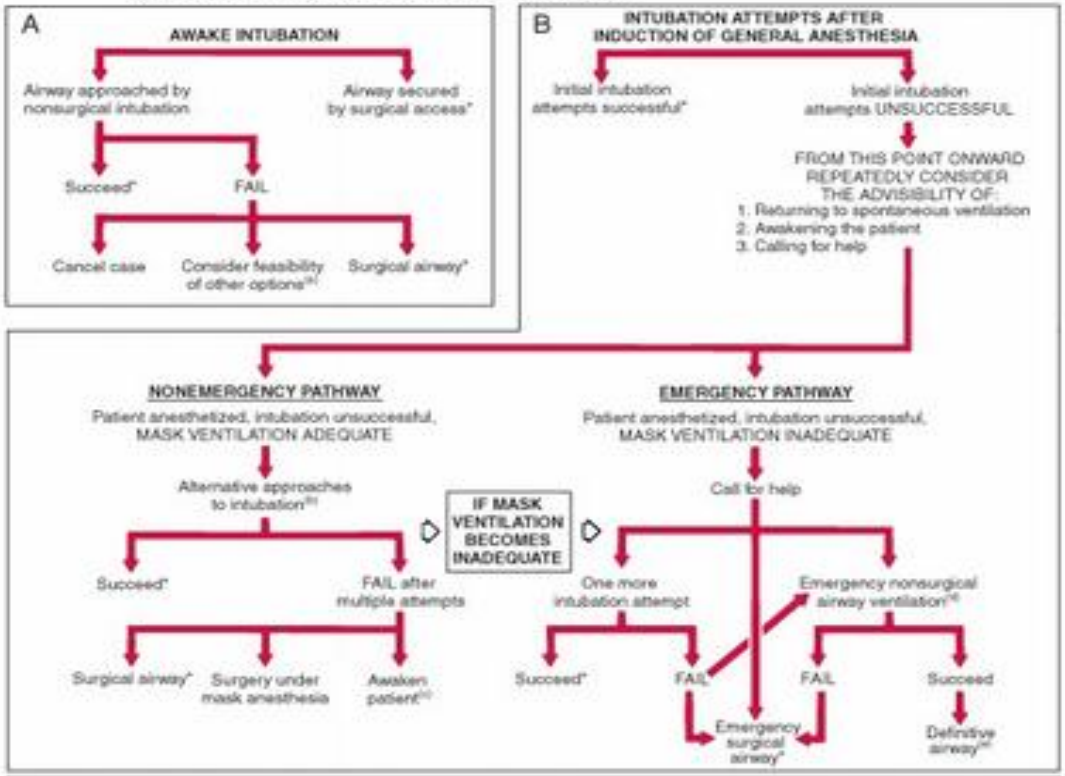
B. Difficult ventilation

C. Difficulty with patient cooperation or consent

2. Consider the relative merits and feasibility of management choices:

A	Nonsurgical technique for initial approach to intubation	vs.	Nonsurgical technique for initial approach to intubation
B	Awake intubation	vs.	Intubation attempts after induction of general anesthesia
C	Preservation of spontaneous ventilation	vs.	Ablation of spontaneous ventilation

3. Develop primary and alternative strategies:



* CONFIRM INTUBATION WITH EXHALED CO_2

(a) Other options include, but are not limited to: surgery under mask anesthesia, surgery under local anesthesia infiltration or regional nerve blockade, or intubation attempts after induction of general anesthesia.

(b) Alternate approaches to difficult intubation include, but are not limited to: use of different laryngoscope blades, awake intubation, blind oral or nasal intubation, fiberoptic intubation, intubating stylet or tube changer, light wand, retrograde intubation, and surgical airway access.

(c) See awake intubation.

(d) Options for emergency nonsurgical airway ventilation include, but are not limited to: transtracheal jet ventilation, laryngeal mask ventilation, or esophageal-tracheal combitube ventilation.

(e) Options for establishing a definitive airway include, but are not limited to: returning to awake state with spontaneous ventilation, tracheotomy, or endotracheal intubation.

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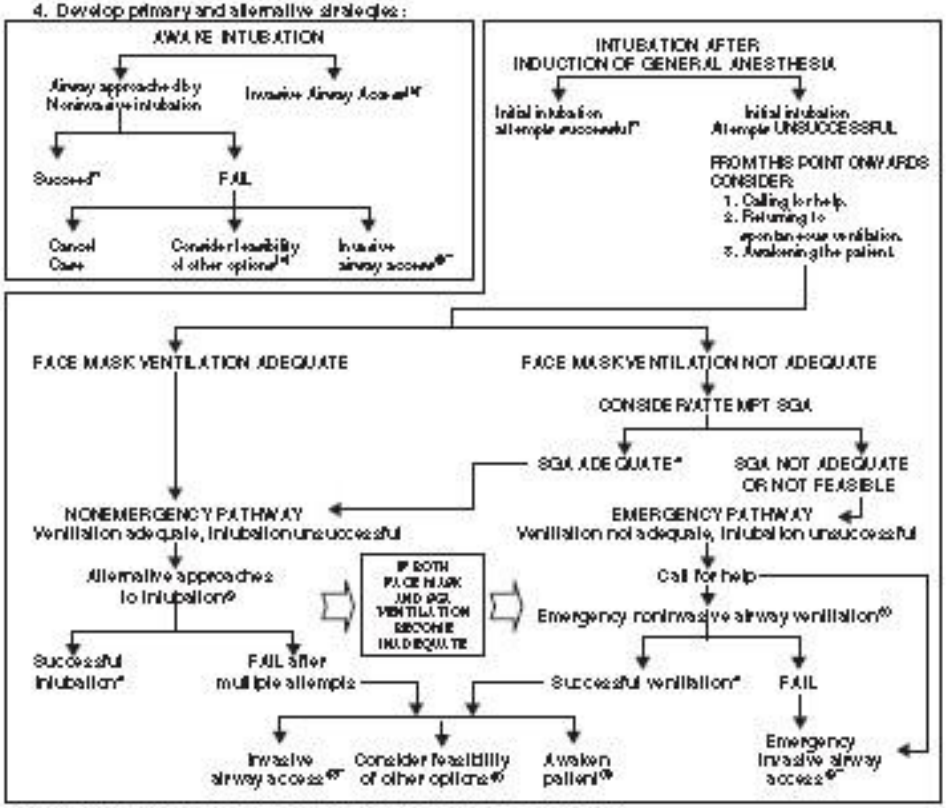
DIFFICULT AIRWAY ALGORITHM

1. Assess the likelihood and clinical impact of basic management problems:
   - Difficulty with patient cooperation or consent
   - Difficult mask ventilation
   - Difficult supraglottic airway placement
   - Difficult laryngoscopy
   - Difficult intubation
   - Difficult surgical airway access
2. Actively pursue opportunities to deliver supplemental oxygen throughout the process of difficult airway management.
3. Consider the relative merits and feasibility of basic management choices:
   - Awake intubation vs. intubation after induction of general anesthesia
   - Non-invasive technique vs. invasive technique for the initial approach to intubation
   - Video-assisted laryngoscopy as an initial approach to intubation
   - Preservation vs. ablation of spontaneous ventilation
4. Develop primary and alternative strategies:



*Confirm ventilation, tracheal intubation, or SGA placement with exhaled CO_2.

a. Other options include (but are not limited to): surgery utilizing face mask or supraglottic airway (SGA) anesthesia (e.g., LMA, ILMA, laryngeal tube), local anesthesia infiltration or regional nerve blockade. Pursuit of these options usually implies that mask ventilation will not be problematic. Therefore, these options may be of limited value if this step in the algorithm has been reached via the Emergency Pathway.

b. Invasive airway access includes surgical or percutaneous airway, jet ventilation, and retrograde intubation.

c. Alternative difficult intubation approaches include (but are not limited to): video-assisted laryngoscopy, alternative laryngoscope blades, SGA (e.g., LMA or ILMA) as an intubation conduit (with or without fiberoptic guidance), fiberoptic intubation, intubating stylet or tube changer, light wand, and blind oral or nasal intubation.

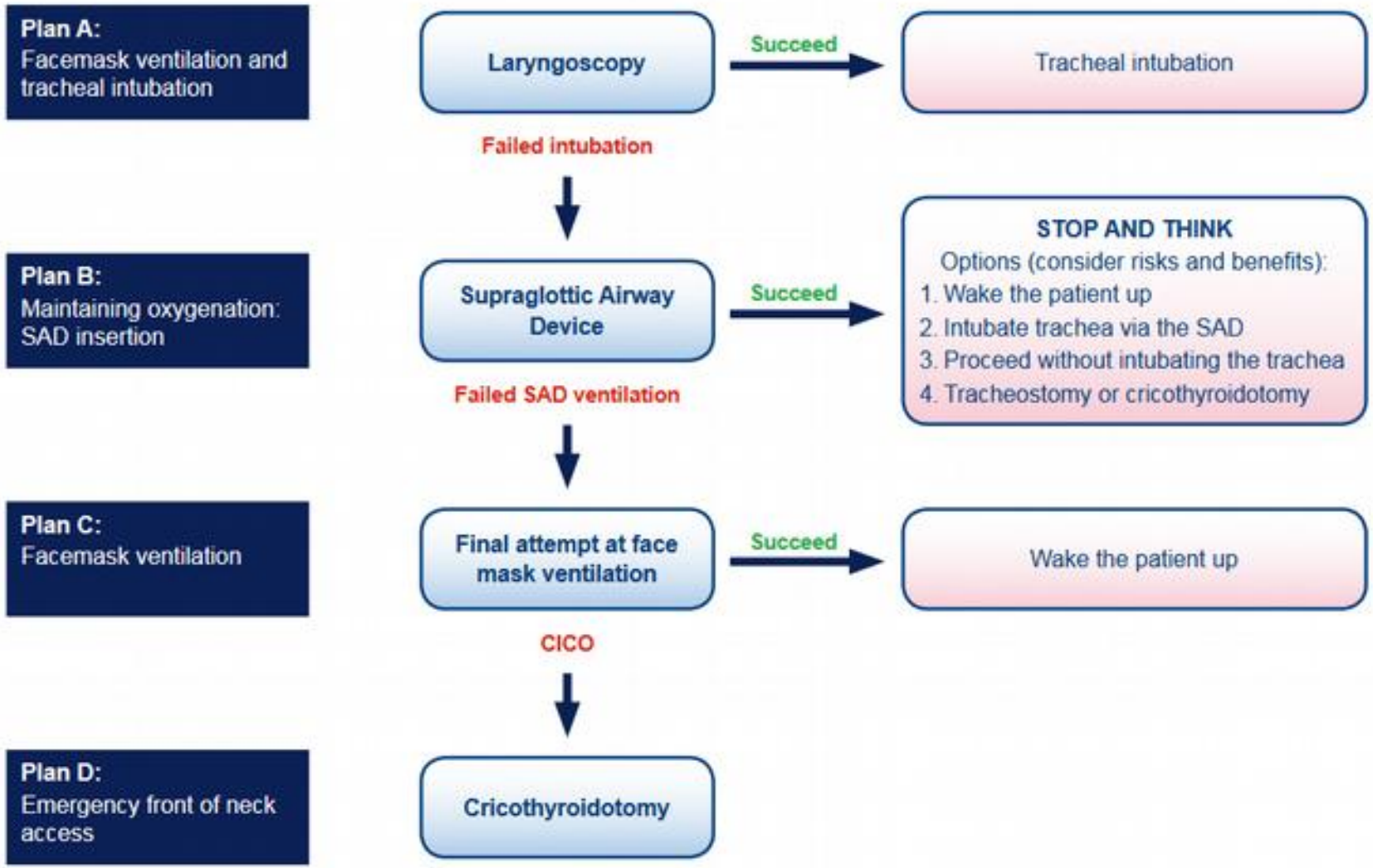
d. Consider re-preparation of the patient for awake intubation or canceling surgery.

e. Emergency non-invasive airway ventilation consists of a SGA.

Fig. 1. Difficult Airway Algorithm.

DAS Difficult intubation guidelines – overview

2015



Plan A
Intubation

Max 3 attempts
+1 EXPERT

video/alternative laryngoscope | bougie or stylet | ELM *relax cricoid* | rotate ETT *if hold up*

Position

Pre/nasal O_2

ET CO_2

NMB dose monitoring

Plan B
Oxygenation via SAD

Max 3 attempts

Declare failed intubation
Call for help

2nd generation SAD

Success

STOP THINK

Wake patient up

Keep SAD — easy ventilation, low aspiration risk

Fibreoptic, Aintree

RSI Remo

Plan C
Facemask ventilation

Declare failed SAD
Postpone surgery

2 person technique

Success **Wake patient up**

reverse NMB
consider Sugammadex
ATRACURIUM

Plan D
Stab, Twist, Bougie, Tube

Scalpel size 10 blade, rotate, bougie, size 6.0 ETT
Ensure paralysis

laryngeal handshake

transverse stab incision

rotate 90°

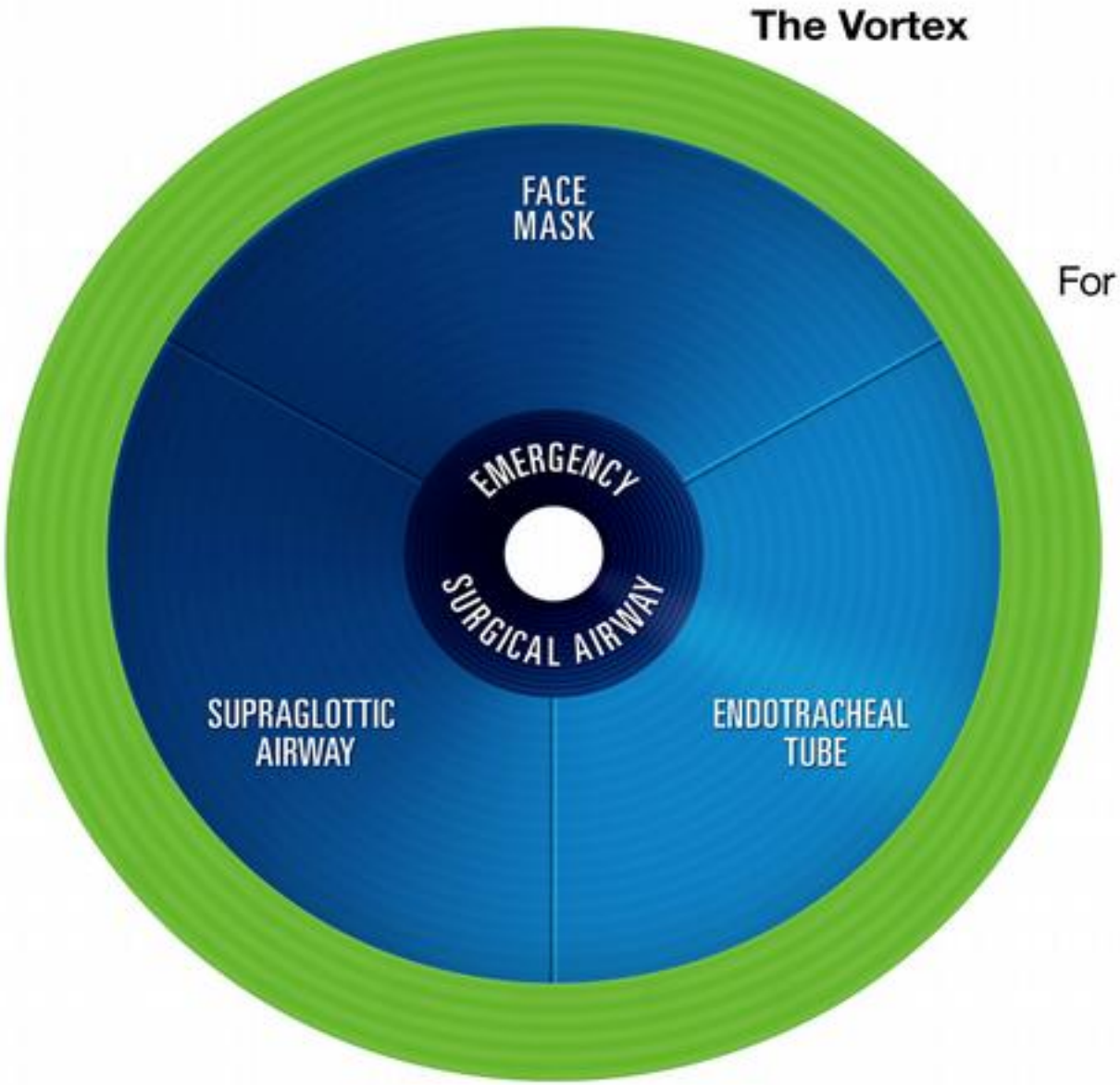
coude tip vertically down blade

ETT 6.0

Airway Rescue Trolley

VORTEX

Jsou jen 3+1 cesta



For Each NSA Technique Consider:

1. Manipulations:
   - Head & Neck
   - Larynx
   - Device
2. Adjuncts
3. Size/Type
4. Suction/O_2 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

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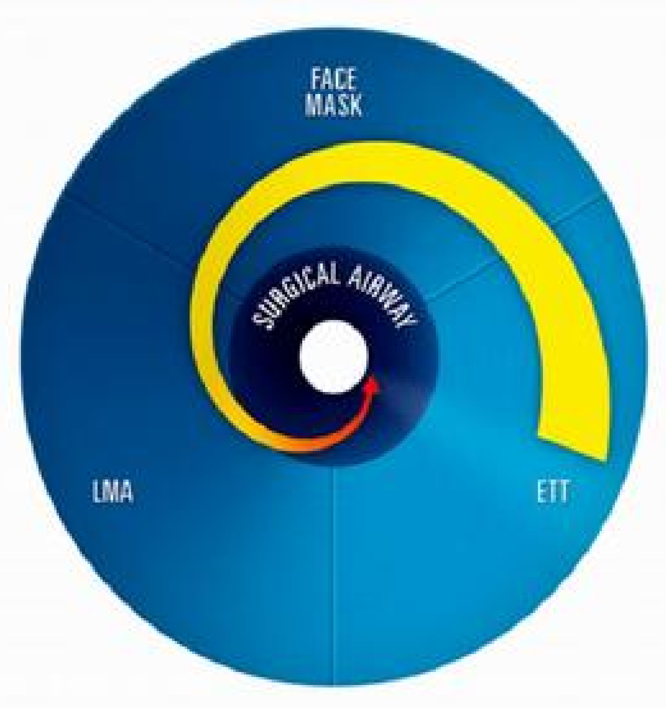
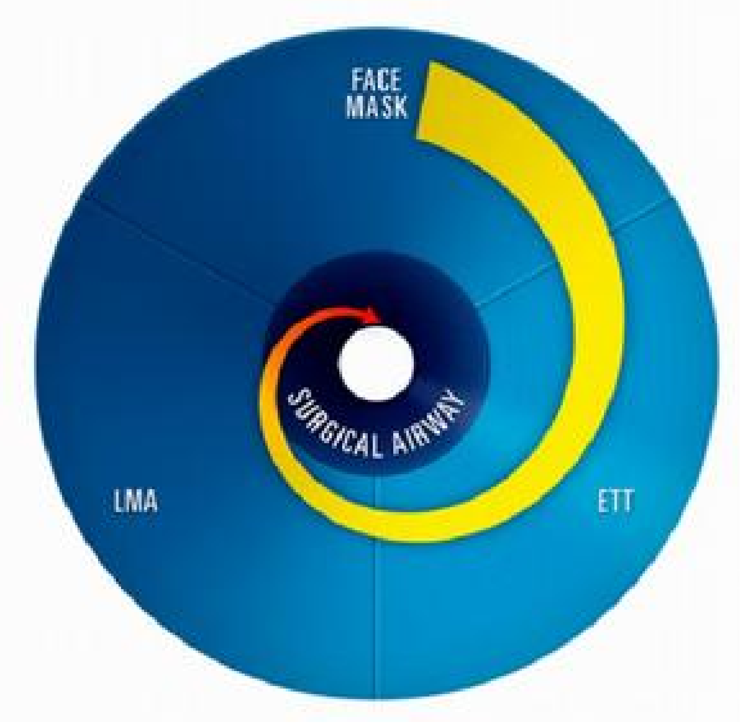
THE VORTEX


FACE MASK
SURGICAL AIRWAY
LMA
ETT


FACE MASK
SURGICAL AIRWAY
LMA
ETT


FACE MASK
SURGICAL AIRWAY
LMA
ETT

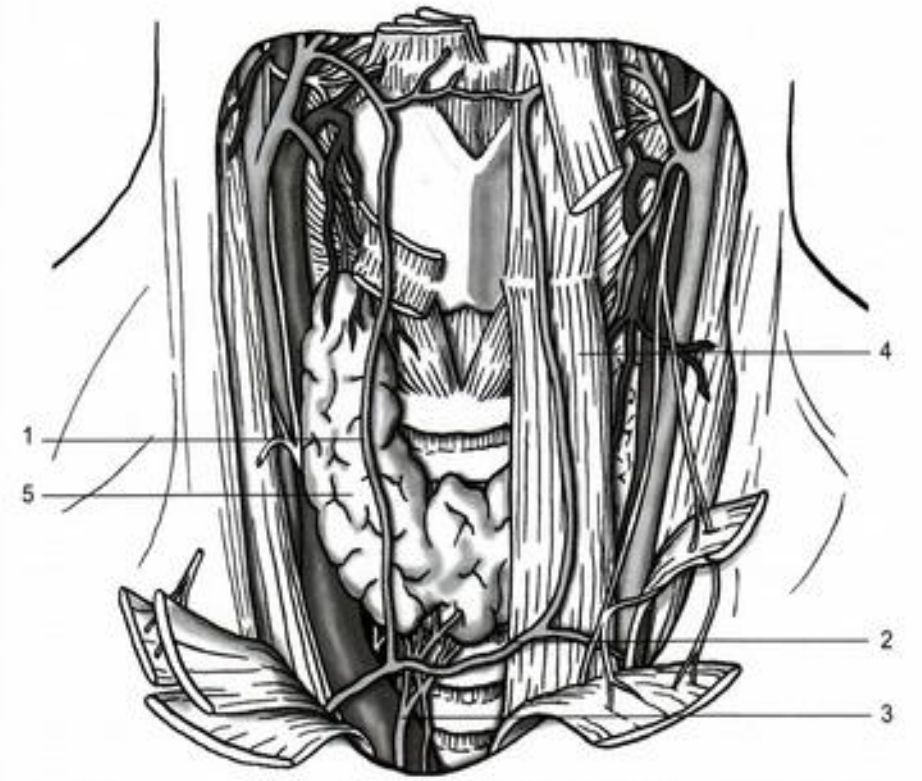
Na 2. pokus něco změň

VORTEX OPTIMISATION STRATEGIES

	FACE MASK	LARYNGEAL MASK AIRWAY	ENDOTRACHEAL TUBE
1. Manipulation Head & Neck	Sniffing Position/Jaw Thrust/Bed Height		
	Dentures In		Dentures Out
Larynx	Laryngeal Manipulation (incl. ease cricoid)		
Device	2 hands	Twist Cuff Inflation	Rotate
2. Adjuncts	OPA NPA	Introducer Bougie Laryngoscope	Stylette Bougie Magill Forceps
3. Size/Type	FM	LMA	Blade/Handle/VL ETT
4. Suction			
5. Pharyngeal Muscle Tone	Prospect of recovery: consider reverse BZD's, opioids, NMBD's GZ or No prospect recovery: consider adequacy anaesthesia/m. relaxation		

Koniopunkce, koniotomie

- ✓ lig. cricothyroideum,
  conus elasticus
  lig. conicum
- ✓ „to první měkké místo pod tím tvrdým“
- ✓ „V“ z prstů, fixace kůže a trachey
- ✓ Záklon hlavy
- ✓ řez / punkce ve střední linii



Obr. 4 ***Arcus venosus juguli a plexus thyroideus impar***
1 – v. jugularis anterior, 2 – arcus venosus juguli, 3 – plexus thyroideus impar, 4 – m. sternothyroideus, 5 – glandula thyroidea

Koniopunkce

QiuckTrach II

Koniotomie

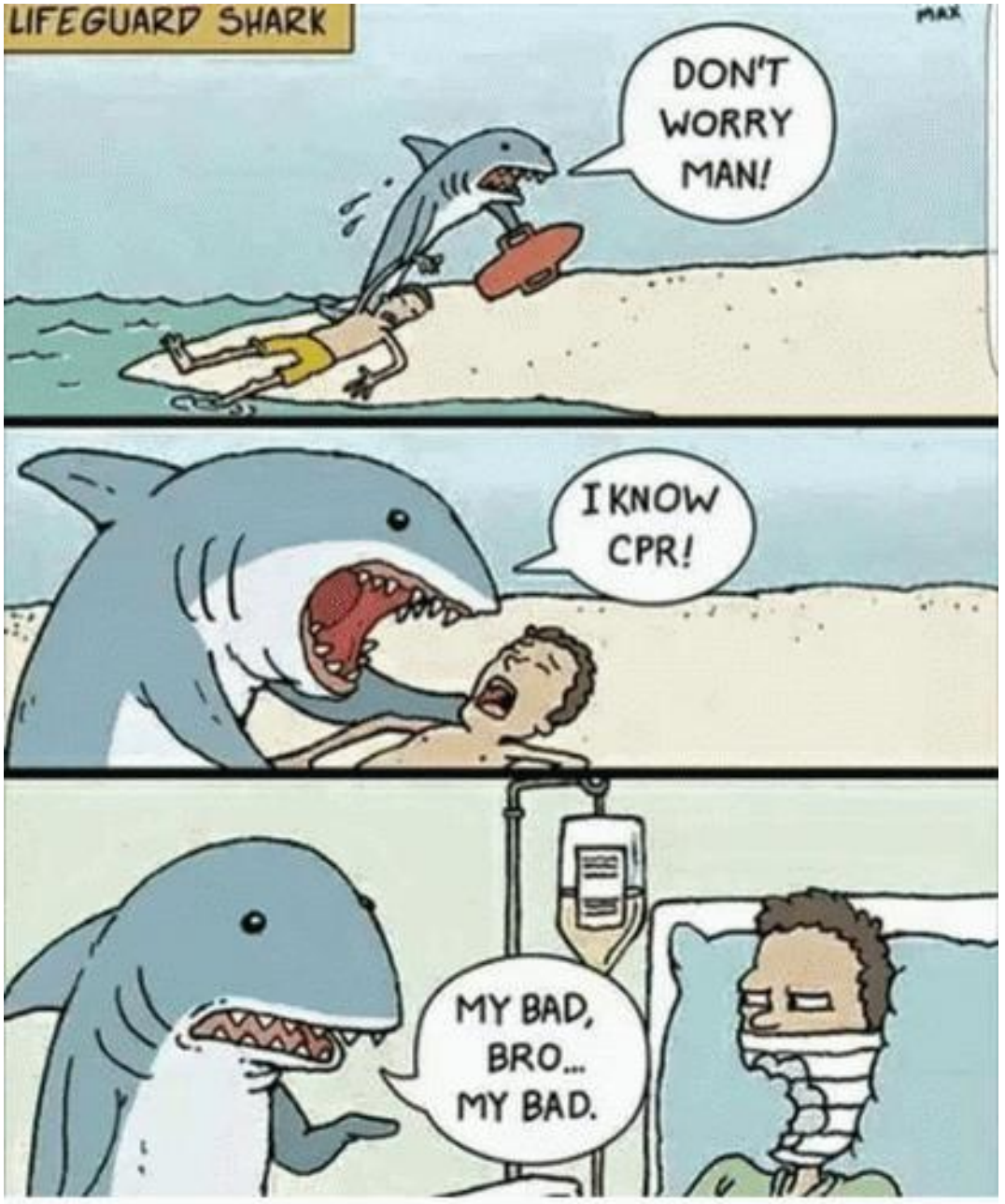
MiniTrach II

Koniotomie

B.A.C.T.

Bougie assisted CricoThyrotomy

Děkuji za pozornost



Děkuji za pozornost

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