

Airway management & Endotracheal intubation

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Defeniation

□ Airway management is the process of ensuring that:

- there is an open pathway between a patient's lungs and the outside world,
- the lungs are safe from aspiration.

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* Indications for airway protection

- 1 • Decreased level of consciousness
- 2 • GCS < 9.
- 3 • Cerebral injury.
- 4 • Anaesthesia. General with muscle relaxation.
- 5 • Medical problems.
 - ↳ Respiratory failure
 - ↳ cardiac problems.

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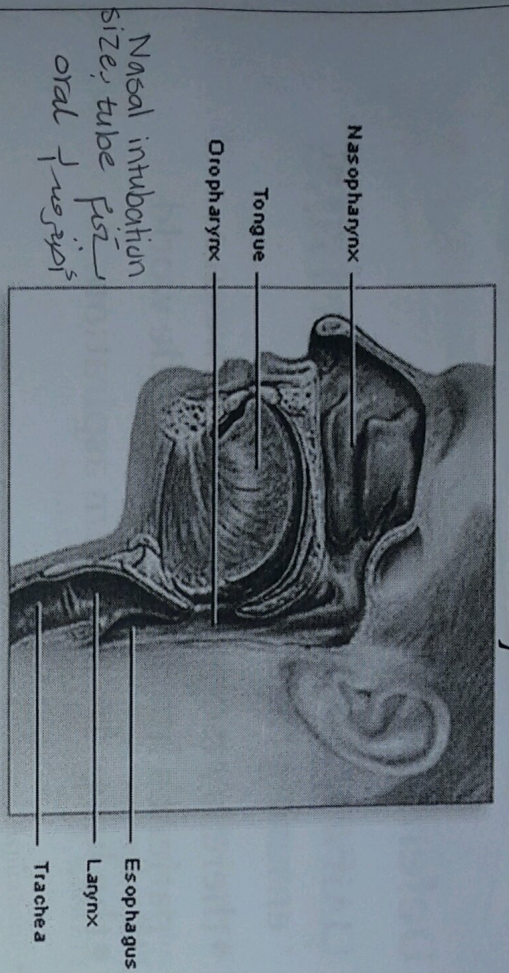
Potential causes of upper airway obstruction

- Tongue: ^{↳ the most common} under anesthesia or convulsions.
- Dentures: ^{شبهات الأسنان}
- Food stuffs.
- Vomit. ^{↳ during induction} post-operative: aspiration cause
- Blood → injury of mucosa, bleeding & clots. can cause obst.
- secretions

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(*) Mendelson's syndrome
caused by aspiration during anesthesia
Chemical pneumonitis

Anatomy



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ADAM

Air way assessment

> Patient History

- - Prior History of Difficult Intubation
- - Tumor of Head and Neck
- - Arthritis → limitation of head movement + mouth opening
- - Pregnancy → Edema of airways
- - Trauma - C Spine, Full Stomach

> Physical Examination

- - Tongue versus Pharyngeal Size
- - Atlanto - Occipital Joint Extension
- - Cervical Spine Mobility (normal 35 degrees)
- - Anterior Mandibular Space (3 fingers)
- - Thyromental distance - normal is 6 cm
- - Dental Examination (Loose Teeth, Prostheses)

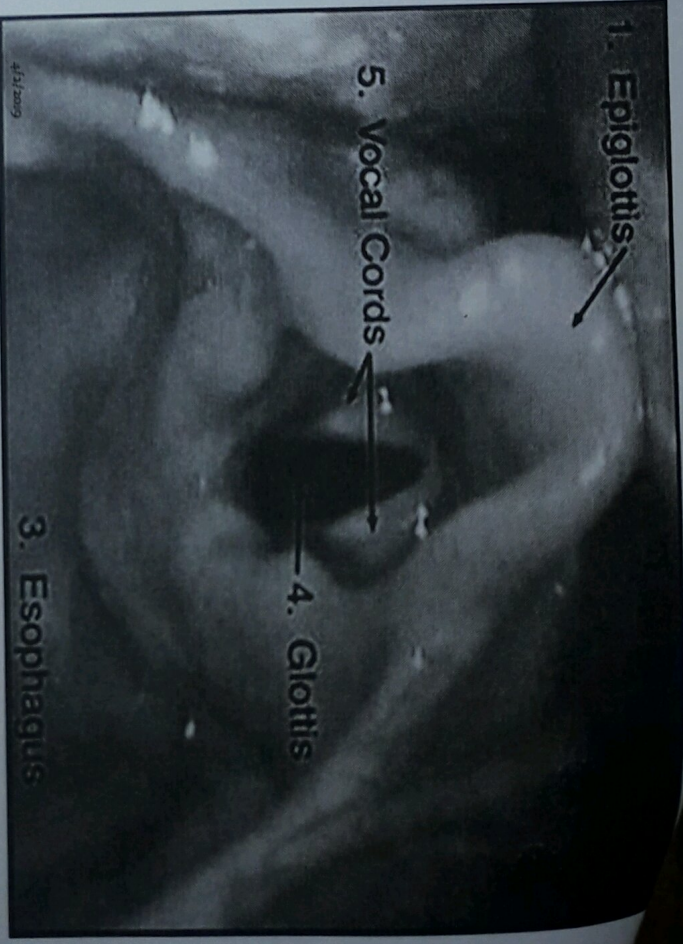
- mentohyoid distance

> 6 cm → Prognathism (acromegaly)

< 6 cm → micrognathia

Rapid sequence induction → best [cervical pressure] way! Antacids help ↓ acidity ↓ risk of aspiration

like cleft lip oral cavity is small intubation very difficult Down ↓ large protruded tongue



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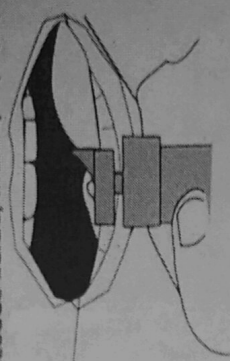
Checking for an Anterior Larynx



Distance from chin's inner rim to hyoid bone should $\approx$ 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 (preceding chins).



ARYTENOIDS

Anterior larynx: larynx appears anterior to your field of view. Here you see the arytenoids. Often 4/2/2009 you see no landmarks, making intubation difficult.

Checking for Mobility of Adult Jaw



Can she open her mouth wide enough for 3 fingers? If not, you won't have room to insert your laryngoscope blade and visualize the larynx. Trauma, arthritis, tumor, or infection can limit mouth opening.



Have her place lower teeth outside upper teeth to check for ability of jaw to glide forward. This ability is often lost in patient with arthritis, before ability to open the mouth.

Nasal

*blind intubation

Management of airway

* Manual stabilization

- Head tilt, chin left beware of C-spine injury
- Jaw thrust maneuver

* Instrumental

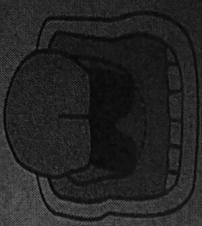
- Oro-pharyngeal air way
- Naso-pharyngeal air way

L.M.A

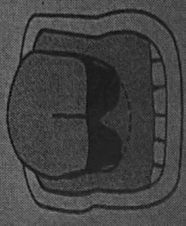
E.T.T

Surgical air way (cricothyroidotomy, tracheostomy)

Anterior Signs as Indicators of Difficult Intubation



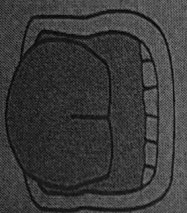
Class I: soft palate, uvula, fauces, pillars visible
No difficulty



Class II: soft palate, uvula, fauces visible
No difficulty



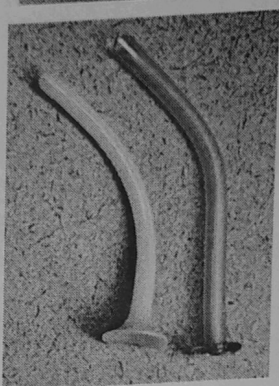
Class III: soft palate, base of uvula visible
Moderate difficulty



Class IV: hard palate only visible
Severe difficulty



Figure 5.3 Sizing of an oropharyngeal airway



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Equipment for endotracheal

intubation

- ^{more common} Suction apparatus: secretions, vomits.
- O₂ source.
- 2 working laryngoscopes with different plates.
- Appropriate Endo- tracheal tube (size & type).
- Styles (guide), Gumbe elastic buggy (for difficult int.).
- Magill forceps.
- Stethoscope.
- Fixing material (tape, gauze strip)
- Syringe (to inflate the cuff).
- Oropharyngeal air way. → size/ angle of mouth to tip of ear.

Macintosh (curved)
→ straight.

* Armored tube

* double lumen tube

* laser tube

* Nasopharyngeal

semi-conscious w/ 1st abd

guide reflexive w/ 2

S.A.L.T

obst, injury can size 1 abd 10

difficult intubate

no tongue & give air 6bd

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Technique for Endo- tracheal

intubation

- Concede every unconscious patient having cervical spine injury until proven otherwise.
- Patient's Head At The Level Of your Xiphoid.
- Sniffing Position.
- Laryngoscope In LEFT Hand. suction qe biopsy qe int, qe 10
- Open Mouth.
- Hold Tracheal Tube In Right Hand Like A Pencil.

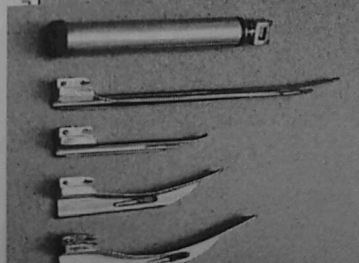
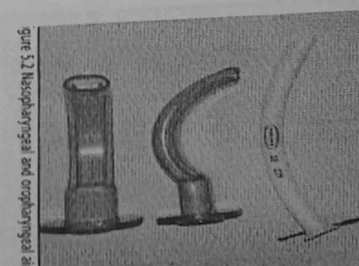
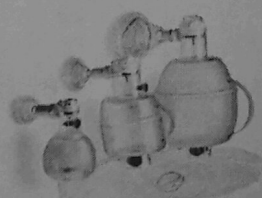
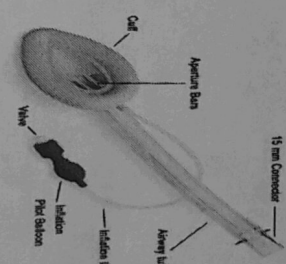


Figure 5.2 Nasopharyngeal and oropharyngeal air

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How to confirm that you are in the right place ?????

- Visual : tube inside vocal cords.
- Capnography (3-6 breathing circle)
- Monitor (pulse oxymetry ,).
- Chest movement .
- Auscultation : where and why .
- Colure of the patient .

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Complications (intupated patient).

- Tracheal Tube Obstruction .
- Barotrauma
- Accidental Disconnect
- Accidental Extubation
- Tracheal Mucosa Ischemia → Post operative

tube → high volume
low pressure

في 43 انا في tube في الجدار

4/2/2019 . ischemia في جدار

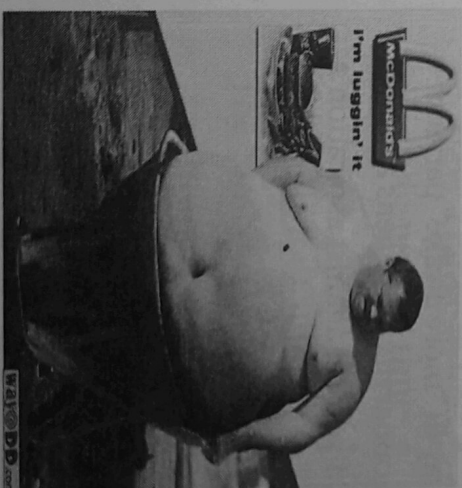
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Complications (during intubation) .

- Dental And Oral Soft tissue Trauma
- Aspiration
- Esophageal intubation
- Unilateral intubation
- Hypertension And Tachycardia
- Cardiac Dysrhythmias And Myocardial Ischemia
- Surgical emphysema → injury of trachea or submucosa
 cause ASAP do intubation or cricothyroidotomy
 then multiple punctures or incisions .

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Anesthesia surgical

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Oropharyngeal Airway/Guedel

- How to put it in:

Depress tongue

Slip over spatula with curve caudal direction

Place bite block between teeth

- NO TWISTING MOVEMENT

Oropharyngeal Airway/Guedel

Indications: •

➡ To open and maintain an airway in a patient with a depressed level of consciousness

- Contra indications:

Patient won't accept it

LOC (level of consciousness)

Risk of vomiting & aspiration

Nasopharyngeal Airway

- For maintaining airway in "more awake" patients

- Sits in nasopharynx and opens airway

- Does NOT protect against aspiration

Nasopharyngeal Airway

How to size it? •

Estimate by comparing to patients little

finger

How to insert it? •

Lubricate

Gently push posteriorly towards ear on same side

Fix with a safety pin

Nasopharyngeal Airway

Contra-indications: •

Base of skull fracture

Serious midline facial fractures

When definitive airway needed

LMA laryngeal mask airway

Advanced airway •

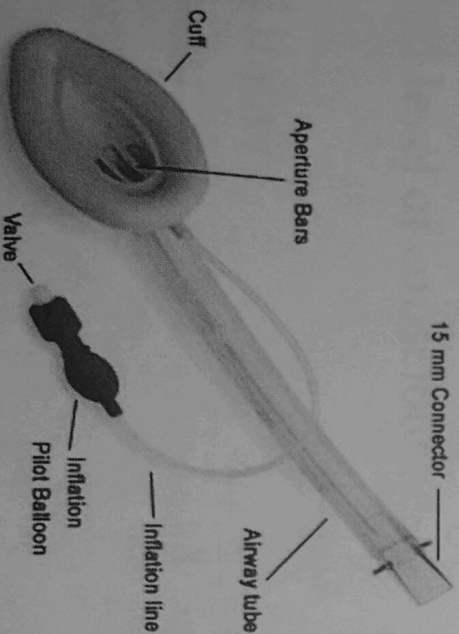
Useful alternative for "difficult intubation" •

Easy to use •

Sits on larynx - Protects lungs? •

* contra indication
- full stomach
↳ risk of aspiration.
High pressure cuff لاني لى عيب لى
Ventilation

LMA



LMA

Have a range in unit •

Re-use ? 20 times •

Part of kit •

Formula for Children: •

The combined widths of
the patient's index,
middle and ring fingers

SIZE	PATIENT
1	<5 kg
1.5	5-10kg
2	10-20kg
2.5	20-30kg
3	30-50kg
4	50-70kg
5	70-100kg
6	>100kg

LMA in Emergency Medicine

Indications: •

Unconscious or anaesthetized patients

AHA Guidelines for adults:

BLS: alternative to BMV

ACLS: Optional/alternative to BMV, failed ETT

- Aspiration? •
- Paediatrics? •

LMA in Emergency Medicine

Aspiration? •

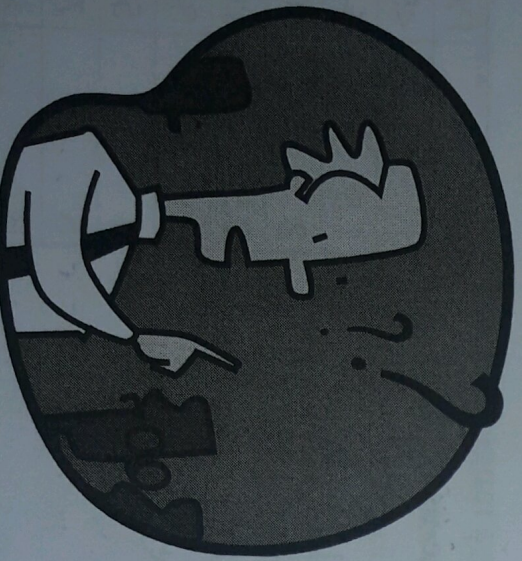
Less than with BMV

Supraglottic device

Aspirated from CPR or post LMA?

Cricoid pressure during CPR

Questions



size of tube → 8-9

* Male / female → 7-8

* Pediatric / adults

1 year - 14

size 2.5-3

1 year - 12 y

size = $\frac{age}{4} + 9$

size of little finger

→ external diameter → diameter of tube.

oral
nasal → size 31