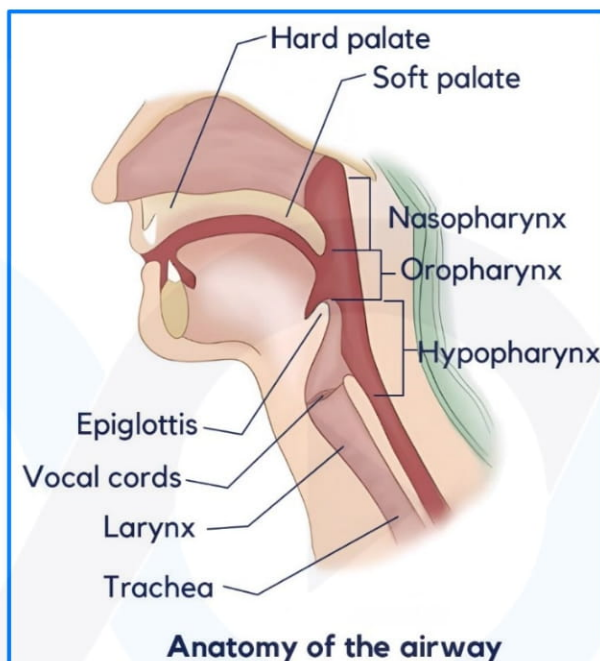


ANAESTHESIA MANAGEMENT

Airway

00:00:12

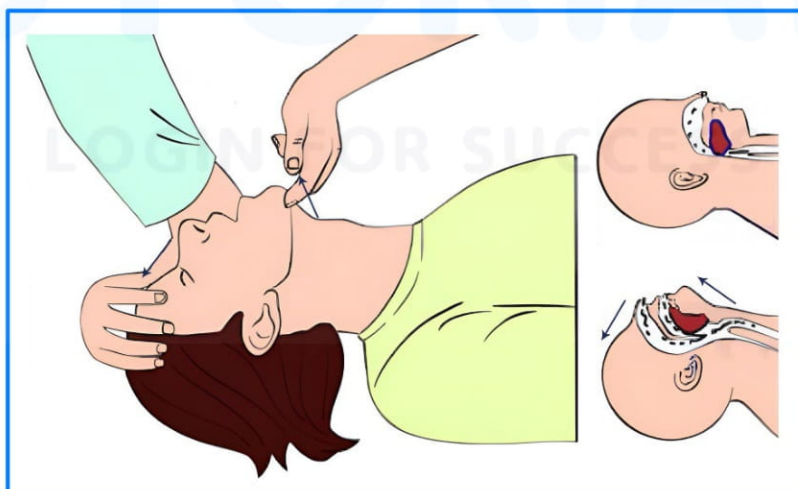
- Airway is natural path which is taken by the Atmospheric air from atmosphere to reach the alveoli
- When these airway gets obstructed. The air will not reach the alveoli is known as **Obstructed Airway**
- Whenever we put a device into a natural airway is called **Artificial (or) Advanced airway**



Basic Airway Management

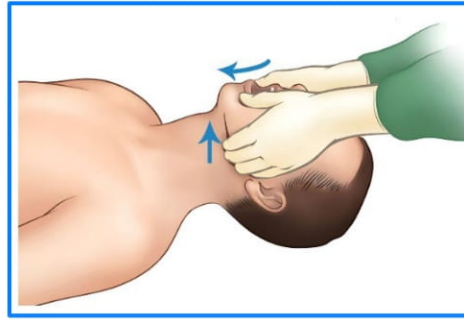
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- Basic airway management makes the obstructed airway into Unobstructed airway
 - Whenever, airway gets obstructed there is risk of Hypoxia
 - There are 2 maneuvers to make obstructed airway into Unobstructed airway
1. Head tilt Chin lift



- When we lift the head backward and lift the chin upward. Then the tongue gets lifted up and creating unobstructed airway to pass
- In Non-trauma victim, It is the maneuver of choice
- It is the superior maneuver which opens the airway in much better manner

2. Jaw Thrust



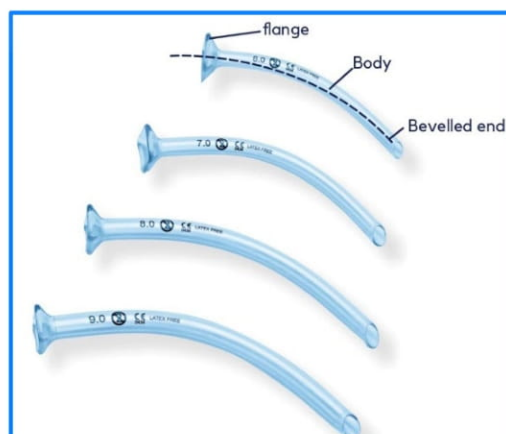
- In Jaw Thrust, Head & neck kept in Neutral position
- With both the hands, stabilize the Head & neck of the patient
- Lift the Jaw with the three fingers by putting the fingers on the Bony prominence
- In trauma victim, it is the maneuver of choice

OROPHARYNGEAL AIRWAY



- This device is inserted from oral cavity
- Curved part of the device lifts the tongue away from falling on the airway
- This device is made up of plastic and can stimulate airway in the conscious patients
- It is device of choice in Unconscious victim with obstructed airway
- Choose the correct size of oropharyngeal airway by measuring from Angle of mandible to Angle of mouth

NASOPHARYNGEAL AIRWAY

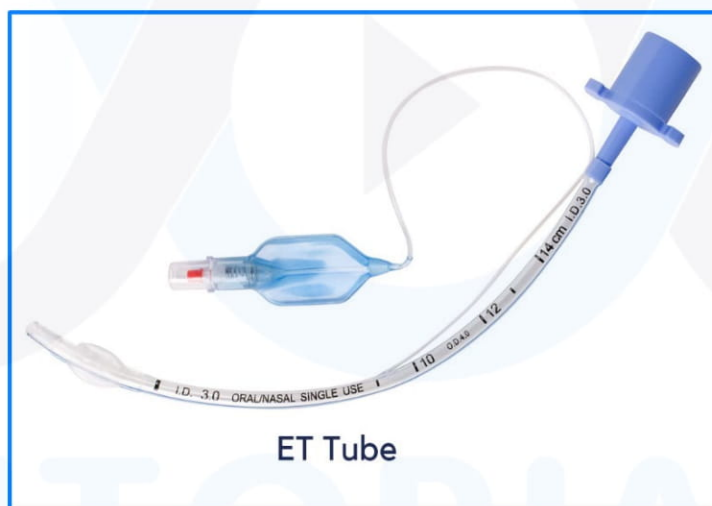


- It is inserted from the nasal cavity and remains in the pharynx
- It has a beveled end which opens the glottic opening and creates the airway to pass
- Nasopharyngeal airway does not have any markings
- It does not have a universal connector attachment
- Correct Size is measured from tip of nose to Ear lobule
- After choosing the correct size, lubricate the beveled end and then insert through the nares
- It is device of choice in conscious patients with obstructed airway

Oropharyngeal airway (Guedel's airway)	Nasopharyngeal airway
Lifts the tongue	Creates a channel for air to pass
Device of choice in Unconscious patients	Device of choice in conscious patients
Size measured from angle of mouth to angle of mandible	Size measured from Tip of nose to Ear lobule

Advanced Airway Management

00:11:37



- If the airway device is kept above the glottic opening is called Supraglottic airway device
- If the airway device crosses the glottic opening is called **Infraglottic airway device**

ENDOTRACHEAL TUBE

- It is Infraglottic airway device
- Parts of ET tube:-
 1. Beveled end (Left facing)
 2. Murphy's eye
 - Used for ventilation
 3. Cuff
 - Commonly used cuff is Low pressure High volume cuff
 - Cuff creates a seal in the trachea for positive pressure ventilation
 - Cuff prevents aspiration
 - For mechanical ventilation, Cuffed tube is used

4. Markings on Tube

- Tells distance of tube from the glottic opening

5. Universal connector attach

- It connects to the circuit

• How is ET tube inserted



- ET tube is inserted with the help of Laryngoscope
- Commonly used laryngoscope is Curved plate Laryngoscope (Mackintosh laryngoscope)

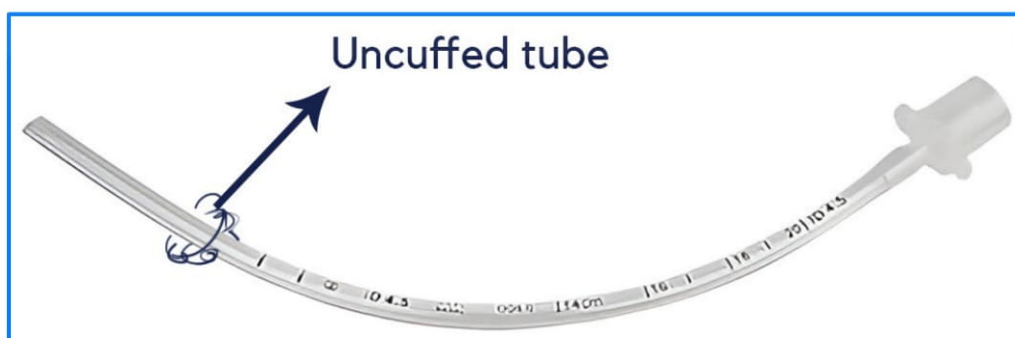
• Steps of Laryngoscopy

1. Position – Morning sniffing position (Neck flexed, Head extended)
2. Laryngoscope is inserted from right angle of mouth to middle and tongue is pushed from middle to left
3. Epiglottis is visible. Then locate vallecula
4. Hinge laryngoscope in vallecula and lift it
5. Glottic opening is visible
6. Hold the laryngoscope in left hand and introduce ET tube with right hand under full vision by leaving black mark over glottic opening
7. Take laryngoscope out and inflate cuff of ET tube and check for correct position in trachea by auscultation (or) capnography
8. Then fix the tube

Other Types of Tube

00:19:08

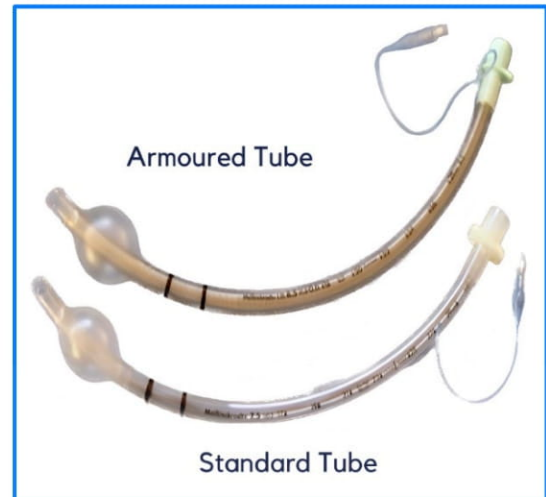
Uncuffed tube



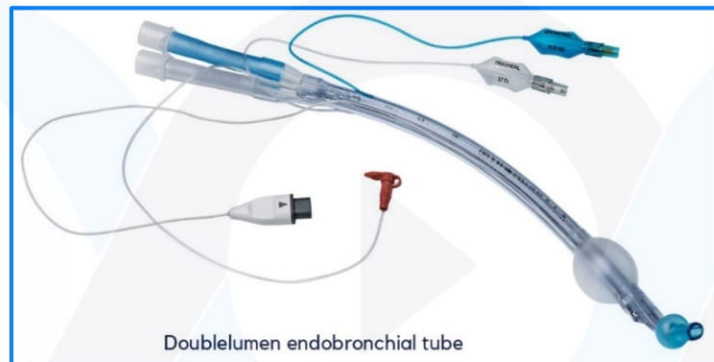
- It is used in pediatric age group (<5-7yrs) to prevent subglottic edema

Armoured tube

- It is Flexometallic tube
- Inner circumference is reinforced by Metallic wire. This makes tube kink resistant
- It is tube of choice in: -
 1. Neurosurgery
 2. Head & Neck surgery
 3. Dental surgery
 4. Patient in prone position



Double lumen tube



- It is used in Thoracic surgery
- Confirmation of correct position of double lumen tube is by Fibreoptic bronchoscopy

Two important physiological changes on ventilation

- Intubation decreases dead space
- Increases work of breathing by increasing resistance

Indications of Intubation

1. During General anaesthesia
2. For positive pressure ventilation
3. To protect airway from aspiration
4. For pulmonary toileting

Supraglottic Airway Device

00:25:40

1. Laryngeal mask airway (or) classical LMA



- Supraglottic device is designed by Dr. Archie Brain
- It is easy & fast to insert
- Drawback:- It cannot prevent aspiration

2. 2nd generation supraglottic airway device (or) LMA proseal

- It has openings :- Gastric opening & Airway opening
- It has 2 cuffs :- Dorsal & ventral
- It has 2 tubes :- Airway & Gastric tube
- Through the gastric tube, Ryle's tube can be inserted and aspirate the gastric secretions
- It is comparable to ET tube in preventing aspiration



3. I-gel airway device



- It is 2nd generation supraglottic airway device
- It has non-inflatable cuff
- It is made up of special polymer and inserted in oral cavity and it takes the shape of oral cavity
- It creates seal for positive pressure ventilation

Weight in Kg	Size of Classical LMA/ Proseal LMA/ I-gel
<5kg	1
5 – 10 kg	1.5
10 – 20 kg	2
20 – 30 kg	2.5
30 – 50 kg	3
50 – 70 kg	4
>70 kg	5
>100 kg	6

Intubating LMA (ILMA / Fast track LMA)

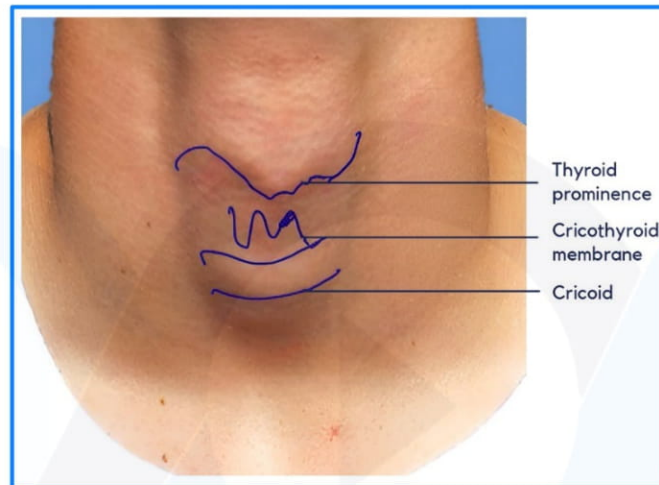
- It helps in Intubation
- Only 3,4,5 sizes are available

Invasive Airway Management

00:32:37

Types:-

1. Emergency :- It is done in cannot Intubate and cannot ventilate condition
 - In this case, Cricothyroidotomy is done



- In cricothyroidotomy, wide bore needle is inserted through cricothyroid membrane
 - Then needle is connected 2CC syringe and then connect it to the Resuscitating Bag
 - Cricothyroidotomy types:-
 - i. Needle Cricothyroidotomy
 - ii. Tube Cricothyroidotomy
2. Elective :- Tracheostomy
 - It is a procedure by which hole is created in the trachea between 2nd & 3rd Tracheal rings
 - Tracheostomy tube is inserted in that opening



- Indications of Tracheostomy
 - i. Prolonged Mechanical ventilation
 - ii. Pulmonary Toileting
 - iii. Upper airway obstruction

Tracheostomy Tube	Uses	Recommendations
Cuffed Tube  With disposable inner cannula  With reusable inner cannula	Used to obtain a closed circuit for ventilation.	• Cuff should be inflated when using with ventilators. • Cuff should be inflated just enough to allow minimal air leak. • Cuff should be deflated if patient uses a speaking valve. • Cuff pressure should be checked twice a day. • Reusable inner cannulas should be cleaned thoroughly before reinsertion.
Cuffless Tube  With disposable inner cannula  With reusable inner cannula	Used for patients with tracheal problems. Used for patients who are ready for decannulation (removal of tracheostomy).	• Patient may be able to eat and may be able to speak without a speaking valve. • Save the decannulation plug if the patient is close to getting decannulated. • Reusable inner cannulas should be cleaned thoroughly before reinsertion.
Fenestrated Cuffed Tube 	Used for patients who are on a ventilator but are not able to tolerate a speaking valve to speak.	• There is a high risk for granuloma formation at the site of the fenestration (hole). • There is a higher risk for aspirating secretions. • It may be difficult to ventilate the patient adequately.
Fenestrated Cuffless Tube 	Used for patients who have difficulty using a speaking valve.	• There is a high risk for granuloma formation at the site of the fenestration (hole).

- Metallic Tracheostomy tube
 - Not used for ventilation

ANAESTHESIA MANAGEMENT

Airway

- Definition — Natural path for air to alveoli
- Obstructed Airway — Air doesn't reach alveoli
- Advanced Airway — Device in natural airway

Basic Airway Management

- Definition — Convert obstructed airway to unobstructed
- Risk — Hypoxia
- Maneuvers
 - Head tilt
Chin lift
 - Lifts tongue to clear airway
 - Preferred for non-trauma victims
 - Jaw Thrust
 - Neutral head & neck position
 - Preferred for trauma victims

Airway Devices

- Oropharyngeal Airway
 - Inserted from oral cavity
 - Lifts tongue away from airway
 - For unconscious victims
 - Size: Angle of mandible to Angle of mouth
- Nasopharyngeal Airway
 - Inserted from nasal cavity
 - Opens glottic opening
 - For conscious patients
 - Size: Tip of nose to Ear lobule

Advanced Airway Management

- Definition — Placement above glottic (Supraglottic) or crossing glottic (Infraglottic)
- Endotracheal Tube
 - Infraglottic airway device
 - Parts: Beveled end, Murphy's eye, Cuff, Markings
 - Insertion Steps
 - Laryngoscope in morning sniffing position
 - Locate vallecula
 - Introduce tube with visualization
 - Inflate cuff and verify position
- Other Types of Tubes
 - Uncuffed Tube — For pediatrics
 - Armoured Tube — Kink-resistant, used in specific surgeries
 - Double Lumen Tube — For thoracic surgery, confirmed by bronchoscopy

ANAESTHESIA MANAGEMENT

Indications for Intubation

- General anaesthesia
- Positive pressure ventilation
- Aspiration protection
- Pulmonary toileting

Supraglottic Airway Devices

- Laryngeal Mask Airway (LMA)
 - Easy and fast insertion
 - Drawback: Aspiration risk
- 2nd Generation LMA Proseal
 - Gastric & Airway openings
 - Can insert Ryle's tube
- I-gel Airway Device
 - Non-inflatable cuff
 - Takes shape of oral cavity
- Intubating LMA (ILMA) — Assists in intubation

Invasive Airway Management

- Emergency Procedures — Cricothyroidotomy
 - Wide bore needle through cricothyroid membrane
 - Connect to Resuscitating Bag
- Elective Procedures — Tracheostomy
 - Hole between 2nd & 3rd tracheal rings
 - Insert tracheostomy tube
- Indications for Tracheostomy
 - Prolonged mechanical ventilation
 - Pulmonary toileting
 - Upper airway obstruction