

Lab Critical

ETT

*Definition: flexible tube inserted orally or nasally through larynx into trachea.

*placement: at the distal end 2–3 cm above bronchial .

*indications: 1.to maintain patent airway .

2.controlling mechanical ventilator .

3.facilitate remove secretion .

*Types: 1. with cuff (balloon) \Rightarrow for adult .

2.without cuff (balloon) \Rightarrow for children because they have narrow trachea .

* we inflate the balloon to prevent aspiration from secretion and fixation of the tube .

*contraindication :

1. orally : pt who has cervical or spinal injury or disorder .

2. nasally: #chronic sinusitis .

#obstruction.

bleeding disorder.

***INTUBATION** :insertion of ETT .

***Extubation**: removal of ETT .

* For insertion we need the stylet that facilitate intubation , and laryngoscope (an instrument that permits the doctor to see the upper portion of the trachea) also used to hold the tongue aside while inserting the tube .

* after insertion we inflate the cuff 10–15 cc of air .

*before fixation auscultation for breathing sound if bilaterally equal , observation for chest movement if bilaterally equal ,and chest x-ray should be done .

*all the procedure is under sterile technique, local anesthesia, no need for surgery.

*at the end we document the size and the length of tube ,and the date of insertion .

***COMPLICATION** :

1 .lip laceration

2.esophageal laceration

3.bronchospasm.

4.cardiac arrhythmia .

5.laryngeospasm.

6. infection.

* ETT stays for 2-3 weeks , then pt should be switched to tracheostomy in case of long term hospitalization .

Tracheostomy

*Definition: external opening into trachea.

*Indications : 1. long term intubation(more than 2–3 weeks).

2.upper airway obstruction.

3.facial trauma or paralysis.

*placement: under cricoid cartilage .

*Done by doctor under local or general anesthesia , need surgery

*Types: 1.with cuff (balloon) for adult.

2. without cuff (balloon) for children .

3. Fenestrated (has a hole for pt to talk)

4. plastic (disposable).

5. metal .

* care for pt with tracheostomy :

1. dressing .

2. monitor any signs and symptoms of infection .

3.auscultation the lunge

4.monitor respiratory rate and depth .

5. changing ties

6. do suction for pt . (under sterile technique)

*Complication :

1.hemorrhage in operation site .

2. tracheal necrosis from the pressure of the cuff.

3.infection

4.laryngo spasm .

5.broncho spasm

Chest tube / Drainage

Definition: flexible plastic tube inserted through the side of the chest into pleural space .

Purpose: 1. To remove air , fluids (blood , secretion) or pus .

2. Restore negative pressure of pleural space .

3. Re expand the lung .

4. After open heart surgery to prevent cardiac tamponade. (which is accumulation of blood around pericardial sac) .

#pleural space : 1. Parietal layer. 2. Visceral layer .

It has 5–15 cc of serous fluids to prevent friction rub , and maintain negative pressure that prevents lung from collapsed.

#clinical conditions :

1. pneumothorax (air in pleura space) may cause of penetration of lung .

2. Hemothorax (blood in pleural space) may cause by car accident

3. Empyema (accumulation of pus).

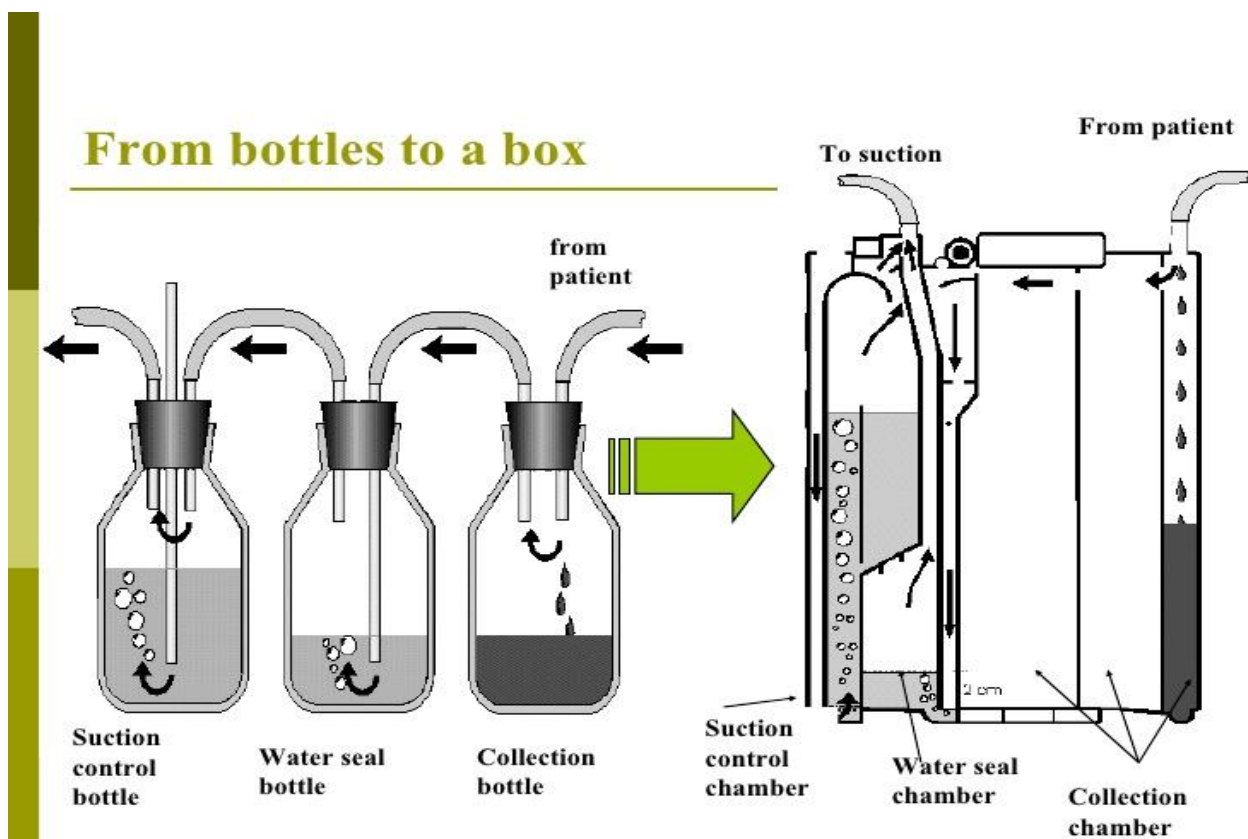
4. post op heart surgery

5. pleural effusion .

#Drainage system : 1. Collection chamber.

2. water seal chamber.

3. suction chamber.



#keep the chambers below the chest level to let fluids flow by gravity.

if the zero level in collection chamber is high we put some water until reaching it , cause we need to start measuring from 0 .

water seal chamber: we put 400ml of water in it to reach(- 2cm) .

*the rod should be immersed in the water .

* the air that comes from the pt will dissolve in water .

Air vent : opening in the chamber to get rid of the air .

-we will see intermittent bubbles .

During inspiration water level increase in water seal chamber , decreases during expiration. This called fluctuation . but in pt's with M.V will be the opposite (because of the +ve pressure) .

Suction chamber : we use it in case of a large amount of fluids .adding to this chamber suction regulator with pressure of -20 MMHG , could be between (-10 to -40) mmhg .

• إذا بردنا نزيد suction ونزيد قيمة السالب .

Insertion :

- assessment : chest x-ray should be done before ,during ,after the treatment.

Guiding CT-scan.

Physical exam : breathing sound , skin color tactile fremitus(if lung collapsed ..absent breathing sound absent tactile fremitus)

-the procedure is under sterile technique .

Placement :

- pneumothorax : (up) 2nd-3rd I.C.S midclavicular line. (the air has low density) .

- Hemothorax : (down)between 5th – 6th up to 9th I.C.S , midaxillary line .

- cardiac surgery : (middle) mediastinal area , under sternum , epigastric area.

semi fowler or high fowler position .

NURSING CARE :

-assess V/S , breathing sound , skin color . of pt, chest x-ray .

- assess the site for any signs and symptoms of infection , dislodgment , and subcutaneous emphysema (air in subcutaneous tissue)
- assess drainage system for any kinking , looping , and cracking .
- collection chamber : assess amount of fluids (if cardiac 50 - 200 cc/hr , if thorax 100-300 cc/hr) . ,color, and odor.
- color :blood, bloody then clear .
- water seal chamber: assess amount of water , bubbling .
- continuous bubbling is caused by air leak .
- absent bubbling is caused by obstruction of the tubes (tell pt to cough unless contraindicated , deep breathing excises , and milking) .
- suction chamber : check water level and suction pressure.
- dressing .
- change position every 2 hr's
- teach pt deep breathing exercise and cough if allowed .

Removal :

-open heart surgery ..after 1-3 days.

-thoracic surgery ..after 2-6 days.

-if amount is less than 100-50 cc after 24 hrs

We remove it when : -chest x-ray shows healing

Normal breathing sound . -

-absent bubbling.

-re expand the lung and become normal .

-P/E normal

-ABG'S normal .

#after removal teach pt to perform valsava maneuver .to keep negative pressure of the lung .

#Complication : air leak , subcutaneous emphysema , obstruction of the tube , infection , tension pneumothorax (excessive air enters the pleural space leads to hyper inflated of chest.)

Mechanical ventilator

Ventus:wind..رياح

It's a Machine that moves air in and out of the pt lungs

Indication:

- respiratory failure
- apnea :stop of breathing
- neuro-muscular disease(myasthenia graves)
- after cardiac surgery

-some times for COPD or Asthma pts

Types:

-1- negative pressure :not used / Iron lung..

Suction pulls the lungs outward so air enter from the mouth

-2- positive pressure .. Force gas into lungs

Parameters:

RR : Respiratory Rate

FiO₂ : fraction of inspired O₂ ...(21%-100%)

Tv or Vt : tidal volume... Amount of air inspired and expired in each breath

Tidal volume = pt weight *(10-15) cc/kg

Sensitivity : amount of pt effort to inhale breathing

Sigh: hyperoxegenation /intermittent inflation of lung with large volume of air

I.E ..inspiration to expiration

1:2. / 1:3 / 1:4

Modes

A/C : assist control... Pt is only initiate breathing **الباقى مع الجهاز**

CMV : continuous /complete/control -mandatory ventilation

when pt under sedation... All the cycle is mandatory to mech.Vent

SIMV: synchronise intermittent mandatory ventilation

CPAAP/ PEEP : **مداول يستخدموا لما حاله المريض تستقر و بدنا نزيل الجهاز**

CPAAP: continues positive airway pressure

positive flow المريض بقدر يتنفس تلقائيا لحاله بس الجهاز يعطيه

to prevent collapse of the aleviolies

PEEP : positive end expiration Pressure...

Positive flow at the end of exhalation.

Complications :

-barotrauma ..destruction of lung cells

-VAP : ventilator associated pneumonia

-Infection

Alaram:

-High pressure alarm

*secretions, kinked tube,

*pt bites the ETT

*pt fighting (breath against the ventilator)

*bronchospasm

*water in the tube

-low pressure alarm:

Any displacement or Disconnocion in the ETT ,or deflated cuff