

# Surgical Drains



**By: Rahaf Melhem**

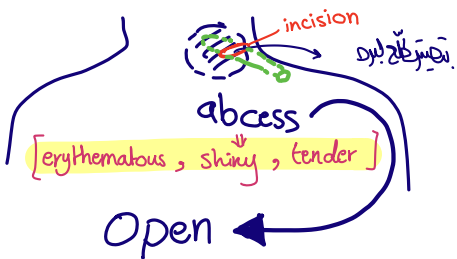
# Surgical drains

Chest tube

open

closed

Open



Incision & Drainage Procedure

\* يثبت tube حتى ما تسبح الجرح  
يسرّ ويقل drainage 100%

to prevent early Closure of wound edges

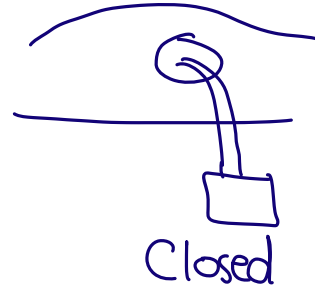
Packing of an abscess  
( ايرتاج فيلة حتى ما يسر )

( Penrose Drains )

( Gause فاسانة )



Closed



Passive  
by gravity

Active  
by suction device  
or wall suction

or

Redivac drain

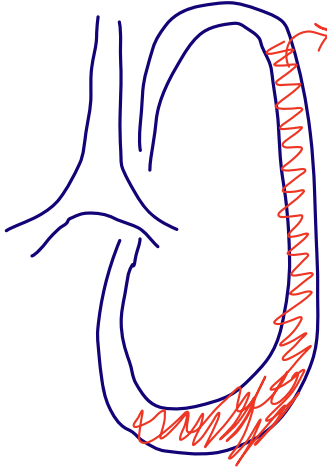


حالة جوع وسلكه الاصل بول  
Negative pressure  
فقبل suctioning لل Fluid



في حال حاله واجب علقه  
براي الوقت بكون Passive أو No Drain

# \* Chest Tube :



in the Pleural cavity:

\* Air → Pneumothorax

\* blood

\* effusion → Exudate  
transudate

\* empyema → pus

\* Chylothorax → lymph ⇒ leak from Thoracic duct

تسرب الليمف

1) Trauma

2) Iatrogenic → إصابة في الصدر  
Thoracic duct

\* esophageal perforation → saliva, food particles, ...

Chest tube = Under water seal = Thoracostomy tube

Q:

By Description ? Milk like fluid / Whitish fluid

What most probably it is ? Chyle / Lymph

most probable cause ? Chylothorax due to

Thoracic duct injury

Causes: ←

① Trauma

② Iatrogenic



## \* Mechanism of action :

\* Pleural cavity  $\rightarrow$  -ve pressure  
Outside  $\rightarrow$  +ve pressure

معناها لو حطينا Container  $\leftarrow$  يكون الانتقال من الخارج للداخل (الريئة) -ve  $\leftarrow$  +ve  
لكن التي بدنا اياها انتقال الـ Air او الـ Fluid من الداخل للخارج  
لذلك في Special components في الـ Chest tube بتساعد تحقيق هاد المطلوب وهي :

1- Container

2- Ventilator تهوية

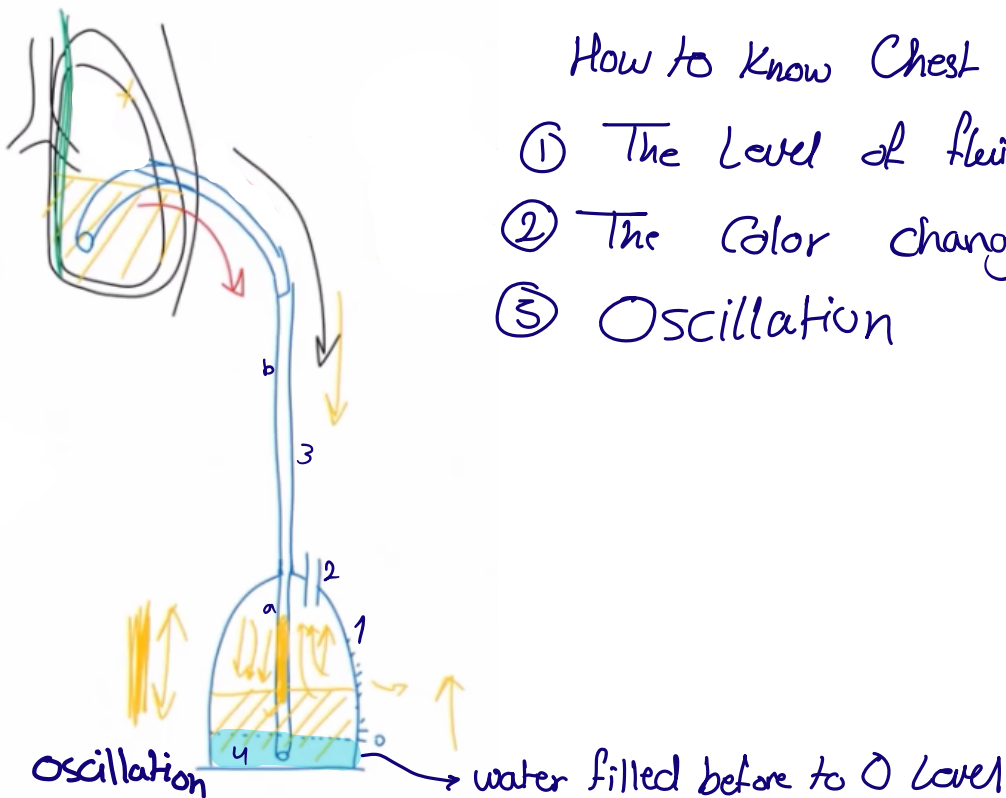
3- Tube (2 parts : a- central)  
b- Outer

4- Fluid (water) in the Container on level 0

## ① Fluid Drainage : By Gravity

How to know Chest tube is functioning?

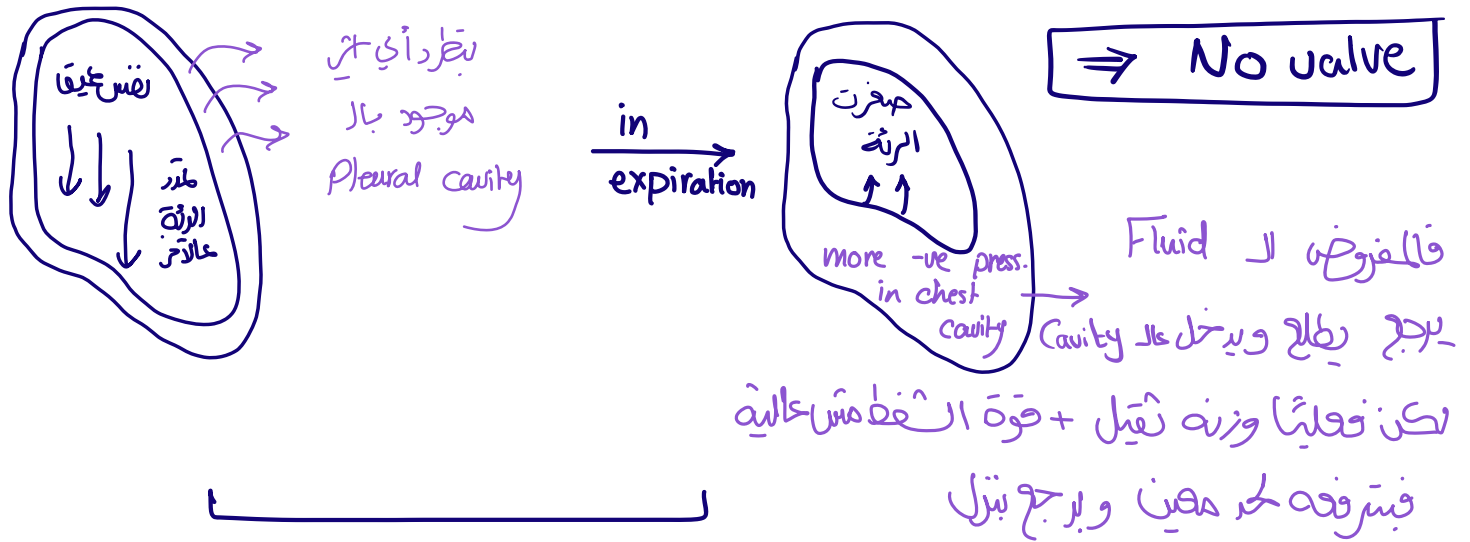
- ① The Level of fluid in container increased
- ② The Color changed
- ③ Oscillation





\* When there is Pus (thick) we need active pressure to drain it, how?

① Chest physio therapy : لرفعنا ياخذ نفس عميق ← نطبق على الصدر



هذا الكي بقل ريس عشان هيل  
 بقل يطاح ويتزل بال central tube

This movement is called → **Oscillation**

② Air Drainage : Can't by Gravity  
 need active press. ⇒ Full inflation

\* When the Patient take Full inflation ⇒ mostly all air will exit ⇒ Bubbles

\* When exp. → مستحيل الهوا يرجع لـ cavity لأنه  
 الماء الموجود بقل S Valve ← underwater seal  
 الماء يتطلع لنفوق شوي عادي ← Oscillation

\* mostly first 2 Respiration all the Air will be drained  
 the 3<sup>rd</sup> Respiratory movement → No bubbles  
 So Bubbles can be seen at the first only

\* if there is Continuous Bubbling ⇒ there is **Air leak**

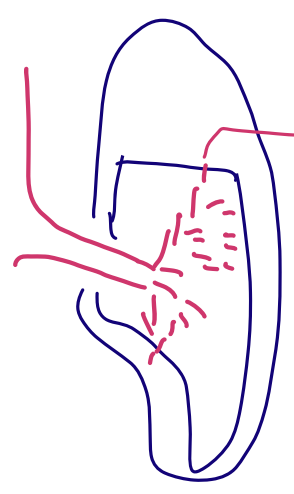
\* **Air leak :**

1) Systematic air leak → from the system itself  
 من الجهاز نفسه من Central tube, Chest tube "منه"

2) **Fistula** — Post op (after surg.)  
 — Trauma

**Bronchopleural fistula :**

in Upper Lung Lobectomy :



Bronchiole → stitch ⇒ خيط فاتح ما تسرّ ⇒ leak air to chest cavity

⇓  
 Pathologically formed opening ⇒ **Fistula**

Bronchilo pleural fistula  
 (Bronchopleural fistula) الاسم الحروف

ببابلنج عادةً بتسرّ كالمها. في أيام وبروحه

# \* Open vs Closed :

## ① Fluid Drainage :

Closed

Passive → by gravity

Active → effort by Pati.

No valve

(Bidirectional)

\* إذا حدث ارتفاع الـ Container لـ فوق مستوى  
Cavity الـ Fluid الـ حار يرجع الـ الـ  
حسب المبادئ، ولا غنى عن Vent  
open ← رجوع

## ② Air Drainage :

Closed

active

one way valve (water seal)

From surgical recall :

**Is the chest tube placed under or over the rib?**

**Over** to avoid the vessels and nerves

**What are the goals of chest tube insertion?**

**Drain** the pleural cavity

**Appose** parietal and visceral pleura to seal any visceral pleural holes

**In most cases, where should the chest tube be positioned?**

Posteriorly into the apex

**How can you tell on CXR if the last hole on the chest tube is in the pleural cavity?**

Last hole is cut through the radiopaque line in the chest tube and is seen on CXR as a break in the line, which should be within the pleural cavity

I Hope it was useful , Don't hesitate to contact me for any questions.

The Best of luck , Rahaf ♥