

# Drains in surgery

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## Objectives



- Definition
- Principle & Types of drain
- Advantages & Disadvantages
- Specialist use of drains
- Drain removal - Principles

## Definition



- A drain is a tube to allow fluid or air that might collect at an operation site or in a wound to drain freely to the surface.
- The fluid to be drained may include –  
Blood, serum, pus, urine, faeces, bile or lymph.
- It can be used for longer or short periods.

## Why to Drain ?



- To allow wound irrigation in certain specific circumstances. ( reduce - haematoma formation )
- To prevent an excessive amount of blood and fluid that collects in the cavities of the body, and around organs that may delay wound healing.
- To consider it as prophylaxis – ES & therapeutic – ES.

## Principles of Drains



- **Open drains** that utilise the principle of gravity.
- **Semi-open drains** that work on the principle of the capillary effect.
- **Closed drains** systems that utilise suction.

## Criteria



- Septic wounds should be drained
- Aseptic wounds those having oozing vessels or large area
- Wounds with chances of more fluid collection inside
- Leaking wounds from anastomosis



## Advantages



- Removal of any intraperitoneal or wound collection of ascites, serum, bile, chyle, pancreatic or intestinal secretions.
- Act as a signal for any post-op. hge or anastomotic leakage.
- Provides a track for later drainage.

## Disadvantages



- Presence of a drain increases the risk of infection ( intra -abdominal & wound )
- Drains may induce an anastomotic leak
- Increase abdominal pain
- Increase hospital stay
- Decrease pulmonary function.



## Drainage Tubes – Types

- Open or closed
- Active or passive
- Tube drains
- Corrugated drains



# Types



## Open drains

- Include corrugated rubber or plastic sheets
- Drain fluid collects in gauze pad or stoma bag
- They increase the risk of infection

## Closed drains

- Consist of tubes draining into a bag or bottle
- They include chest and abdominal drains
- The risk of infection is reduced

# Types



## Active drains

- Active drains are maintained under suction
- They can be under low or high pressure

## Passive drains

- Passive drains have no suction
- Function by the differential pressure between body cavities and the exterior

# Types



## Active drains



## Passive drains



## Types of drainage systems



- \* **The closed drainage system** - is a system of tubing or other apparatus that is attached to the body to remove fluids in an airtight circuit that prevents any type of environmental contaminants from entering the wound or area being drained.
- \* **The open drainage system** - is a tube or apparatus that is inserted into the body and drains out onto a dressing.
- \* **The suction drainage system** - uses a pump or mechanical device to help pull the excessive fluid from the body.

## Special Drains

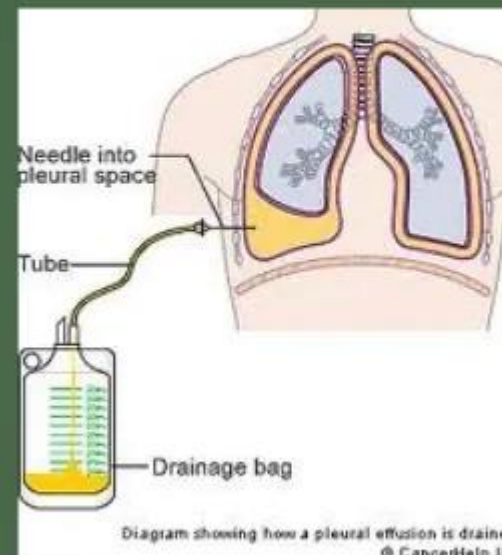


- Chest drains
- T- Tube drains
- Guided drainage

# Chest drains



- **Indications** – pneumothorax, pleural effusion, haemothorax, or to prevent collection of fluid or air after thoracotomy.
- Nelaton catheters
- Malecot catheters

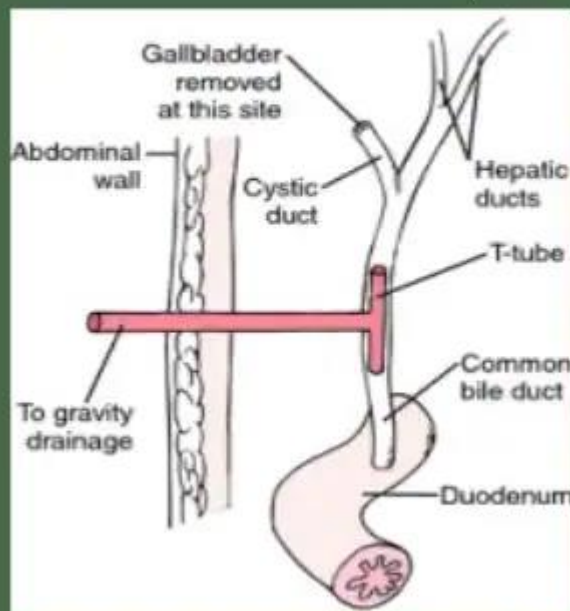




## T-Tube drains



- T-Tube drain is used for patients who have undergone gallbladder surgery.
- After exploration of the CBD, a “**T-TUBE**” is inserted into the duct to drain the bile.
- It resembles a T and drains into a collection bag.

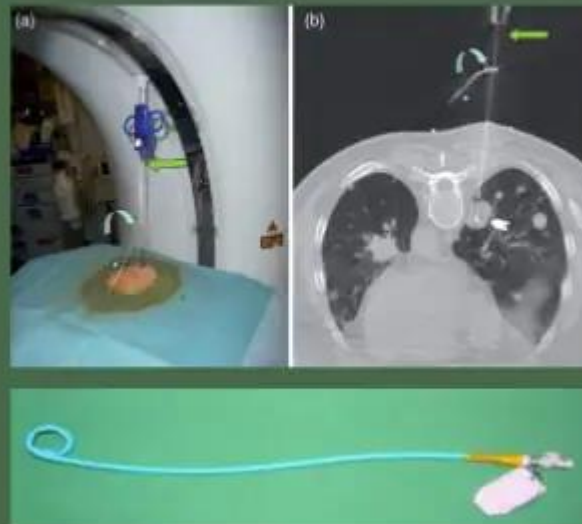




## Guided drainage



- Drains may be inserted under the guidance of CT / U/S in cases of intra - abdominal collections or abscess.
- In order to remain in site the end is often fashioned with a pig-tail to discourage inadvertant removal.



## Drain – Removal



- A Drain should be removed as soon as it is no longer required.
- By 7 days only 20% of drain are still functioning.



## Principles – Drain Removal



- To cover **peri-operative bleeding** – removed after 24 hrs. – Thyroidectomy
- To Drain **serous collection** – after 5 days – e.g. Mastectomy.
- Put in because of **infeccion** – left until infection is subsided or drainage is minimal.
- To cover **colo-rectal anastomosis** – removed at 5-7days.
- T- Tubes in cases to **drain CBD** should be removed after 10 days.

