

Surgical drains

Drains may be used for several reasons:

- To remove existing abnormal collections of fluid, blood, pus, air (e.g. drainage of a subphrenic abscess, removal of a pneumothorax).
- To prevent the build up of either normal bodily fluids (e.g. bile after surgery to the bile duct) or potential abnormal fluids or air (e.g. bloody fluid in the pelvis after rectal surgery).
- Occasionally used to prevent or warn of potentially serious or life-threatening complications (e.g. neck drains after thyroid surgery, chest drains after chest trauma in patients undergoing general anaesthesia).

Principles of drains

- 1) Must not be too rigid
- 2) Must not be too soft
- 3) Not of irritant material
- 4) Wide bore enough to function
- 5) Left for sufficient time so that when drain removed there is minimal drainage
- 6) When used prophylactically e.g. duodenal stump or anastomotic leak, the drain should be left in situ as long as the danger of perforation exists, i.e. for 10 days, until a fibrous track is formed which will act as an external fistula (with a safety-valve action).
- 7) To minimize the infection rate: drain from a separate wound, use closed system and the shortest duration used.

Drains have potential complications that should be balanced against their use:

- During insertion structures may be damaged, particularly if inserted under radiological guidance (CT or ultrasound-guided), e.g. risk of injury to spleen in subphrenic abscess drainage, haemorrhage from abdominal vessels in operative drains.
- Drains provide a potential route of introduction of infection, especially external drains that remain for longer than a few days.
- Damage to structures close to the drain, e.g. pressure injury to bowel if subjected to high pressure suction drainage.
- Drains do not always drain the substance required as expected and may give a false sense of security, e.g. failure to drain bleeding after thyroid surgery or failure to drain faecal fluid after anastomotic leakage in rectal surgery.

There is no place for routine use of drains after surgery unless there is a clear indication.

Types of drain

Materials used include latex مطاط rubber (e.g. T tubes), silastic rubber (e.g. long-term urinary catheters), polypropylene (e.g. abdominal drains), polyurethane (e.g. nasogastric tubes).

Types of drains

Open passive drains

These provide a conduit *القناة* around which secretions may flow

- Corrugated drain (after subcutaneous abscess drainage)
- Penrose tube drain
- Drainage setons placed in anal fistulas
- Wick drain

Closed passive drains

These drain fluid by gravity (siphon effect) or by capillary flow

- Robinson tube drain (after intraabdominal abscess drainage)
- Nasogastric tube
- Ventriculoperitoneal shunt
- Chest drain (tube thoracostomy)

Closed active drains

These generate active suction (low or high pressure)

- Exudrains®, Redivac drains®, Minivac®, Jackson Pratt drains (after pelvic or breast surgery)

Advantages of the closed drains

- ✚ Can calculate the amount.
- ✚ No risk of infections.
- ✚ No need for frequent dressing.