BASIC SURGICAL TECHNIQUES

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SKIN INCISIONS

- should be made with a scalpel,
- with the blade being pressed firmly down at right angles to the skin
- then drawn gently across the skin in the desired direction to create a clean incision

- **Blades for skin incisions** :usually have a curved cutting margin, while those used for an arteriotomy or drain-site insertion have a sharp tip .

- **Scalpels** :be passed in a kidney dish rather than by a direct hand-to-hand process because the latter can lead to injury.

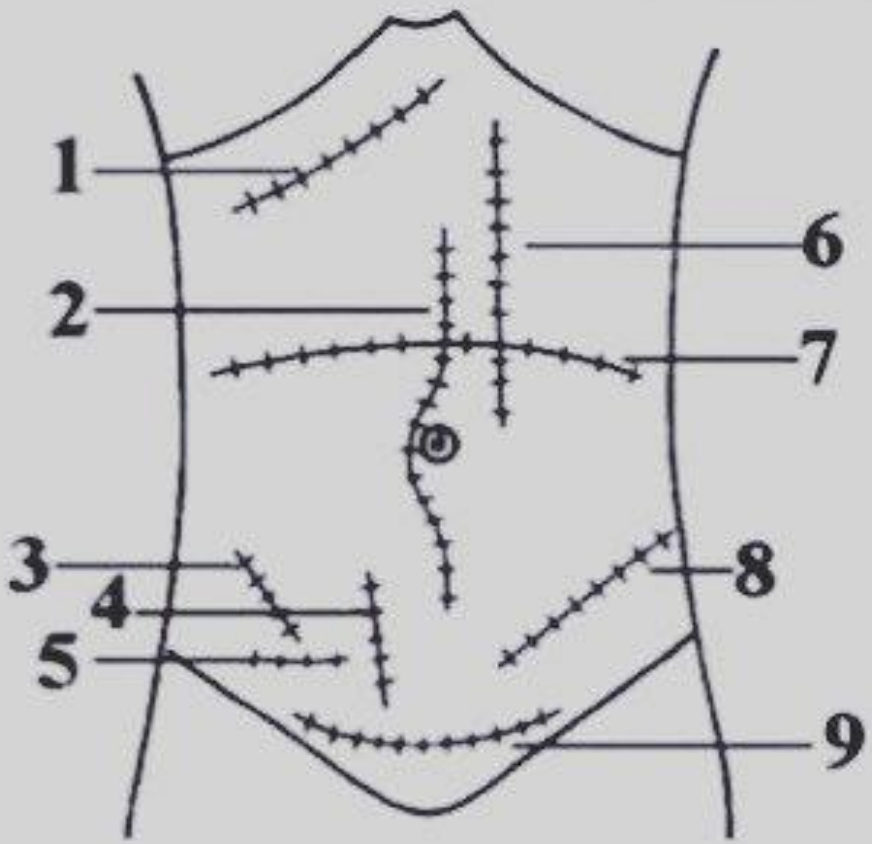
- **Diathermy, laser, harmonic scalpels** and combination devices can be used instead of blades when opening deeper tissues

  can reduce blood loss and save operating time, and may reduce postoperative pain

Abdominal incisions

- should be planned in advance
- **transverse incisions**; tend to be associated with fewer respiratory complications and a better cosmetic outcome.

Choice of incision



1- Kocher incision
2- Midline incision
3- Mc Burney incision
4- Battle incision
5- Lanz incision
6- Para median incision
7- Transverse incision
8- Rutherford Morrison incision
9- Pfannenstiel incision

- **Mass closure** of the abdominal wall :advocated using large bites and short steps in the closure technique
- non-absorbable (e.g. nylon or polypropylene) or very slowly absorbable suture material (e.g. polydioxanone suture (PDS)).
- length of the suture material should be at least four times the length of the wound to be closed to minimise the risk of abdominal dehiscence or later incisional hernia.

WOUND CLOSURE

- Take into consideration site and tisssues involved
- no ideal wound closure technique
- **Delayed primary closure, or tertiary intention**: utilised when there is a high probability of the wound being infected.
- wound is left open for a few days and, heal by primary intention.
- **Skin grafting**: another form of tertiary intention healing

- **Clean uninfected wounds** with a good blood supply: heal by primary intention

- **wound left open:** heals by secondary intention through the formation of granulation tissue,

TYPES OF WOUND HEALING

- **Primary intention**: Clean wound
- **Secondary intention:** Healthy granulation tissue Overexuberant granulation tissue Infected sloughy wound Black eschar
- **Tertiary intention:** Delayed closure Skin graftin

Suture techniques.

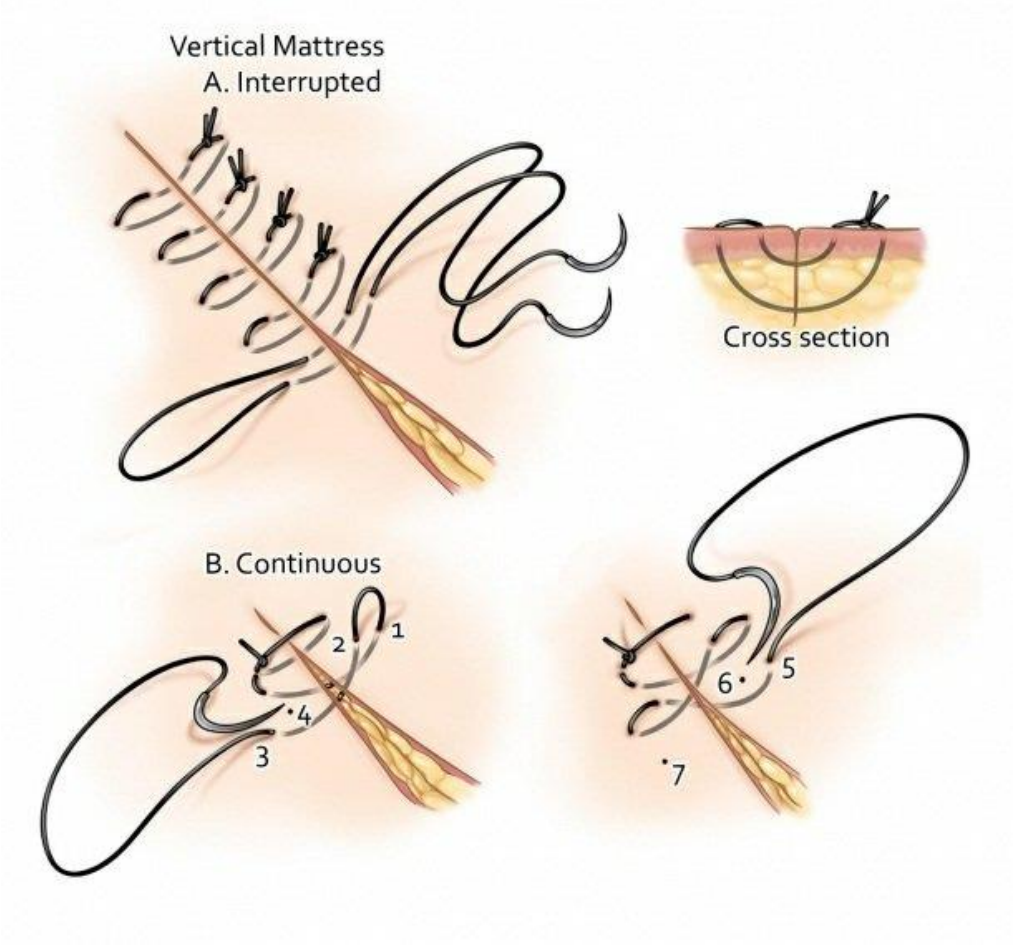
- **1) Interrupted sutures:**
  require the needle to be inserted at right angles to the incision and then to pass through both aspects of the suture line and exit again at right angles

- 2)**Continuous sutures**:

  first suture is inserted in an identical manner to an interrupted suture, but the rest of the sutures are inserted in a continuous manner until the far end of the wound is reached

Mattress sutures

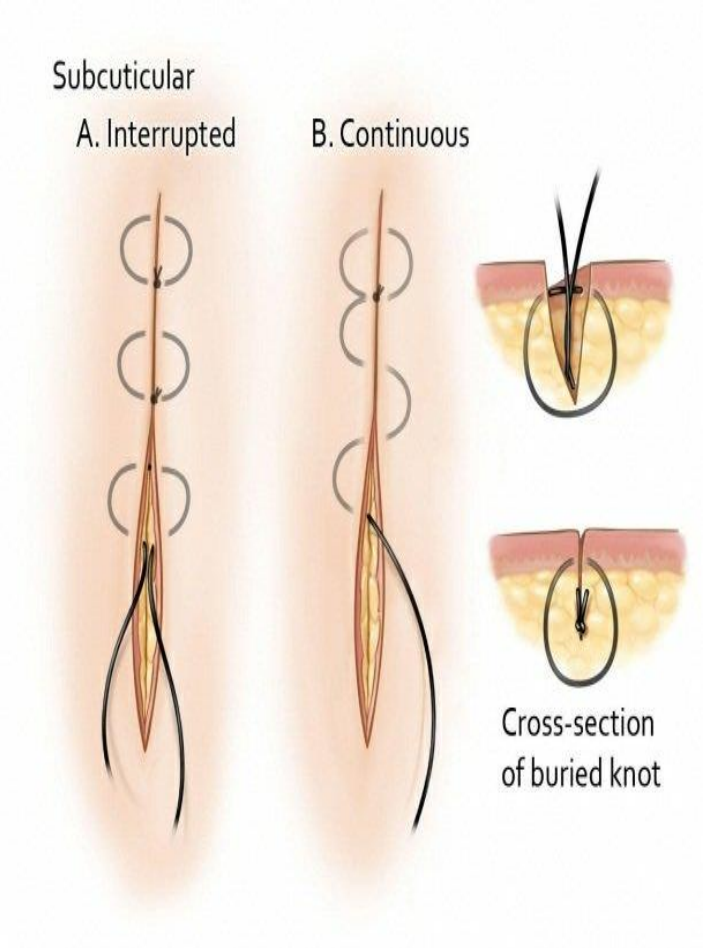
- may be either vertical
- or horizontal
- tend to be used to produce either eversion or inversion of a wound edge
- The initial suture is inserted as for an interrupted suture, but then the needle moves either horizontally or vertically, and traverses both edges of the wound once again


Vertical Mattress
A. Interrupted
Cross section
B. Continuous
1
2
3
4
5
6
7

- . Such sutures are very useful in producing accurate approximation of wound edges, especially when the edges to be anastomosed are irregular in depth or disposition

Subcuticular suture

- used in skin where a cosmetic appearance is important
- where the skin edges may be approximated easily
- either absorbable or non-absorbable suture.



Knotting techniques

- most fundamental techniques in surgery

The general principles behind knot tying include:

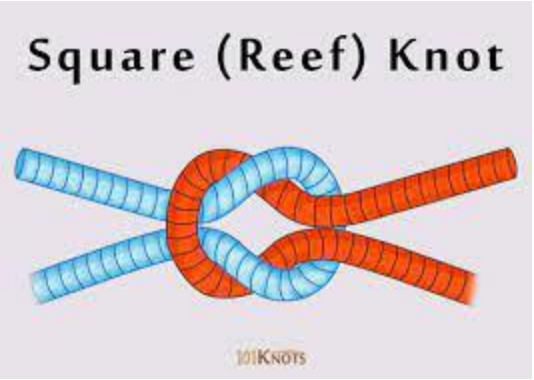
- The knot must be tied firmly, but without strangulating the tissues.
- The knot must be unable to slip or unravel.
- The knot must be as small as possible to minimise the amount of foreign material.

- The knot must be tightened without exerting any tension or pressure on the tissues being ligated, i.e. the knot should be bedded down carefully, only exerting pressure against counter-pressure from the index finger or thumb.

- During tying, the suture material must not be ‘sawed’ as this weakens the thread.
- The suture material must be laid square during tying
- When tying an instrument knot, the thread should only be grasped at the free end, as gripping the thread with artery forceps or needle holders can damage the material and again result in breakage or fracture

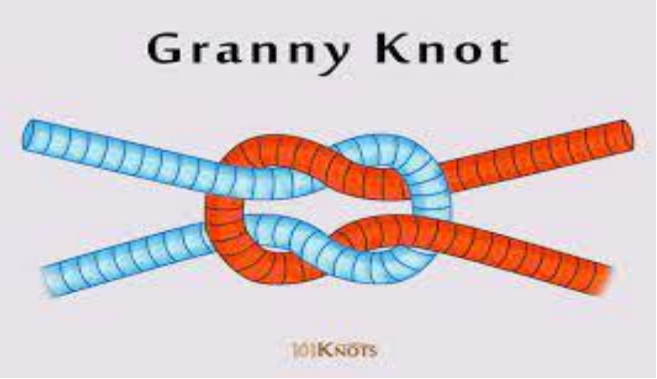
reef knot :

- standard surgical knot (with a third throw for security
- with monofilament sutures, such as used for vascular surgery, six to eight throws are required for security.



granny knot

- involves two throws of the same type of throw and is a slip knot.
- may be useful in achieving the right tension in certain circumstances,
- must be followed by a standard reef knot to ensure security



Alternatives to sutures

SKIN ADHESIVE STRIPS

- For the skin, may be used
- where there is no tension and not too much moisture, such as after a wide excision of a breast lump.
- may also be used to minimise ‘spreading’ of a scar.

Tissue glue

- based upon a solution of n-butyl-2-cyanoacrylate monomer.
- When it is applied to a wound, it polymerises to form a firm adhesive bond.

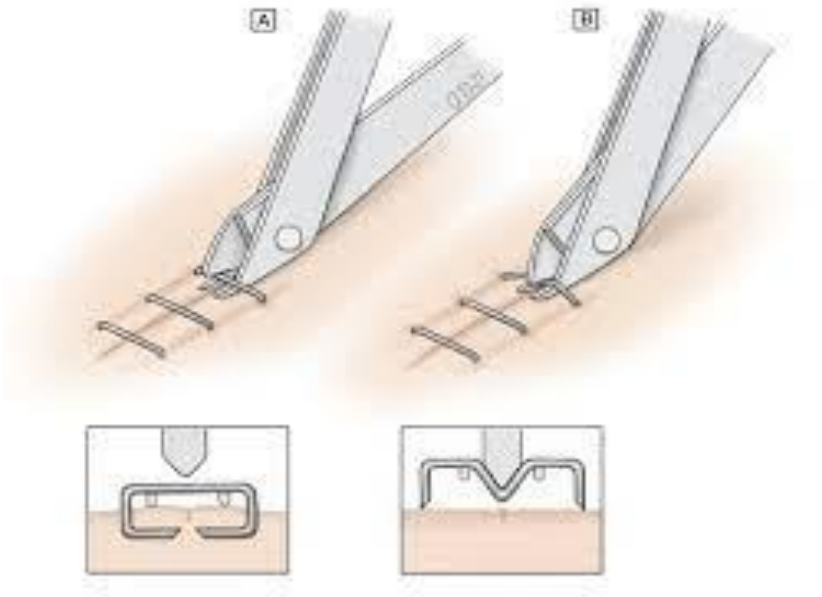
- **Laparoscopic wound closure** generally 3–12 mm in length.
- Skin closure can be carried out with sutures, using curved or straight needles, or glue, and can be further secured with adhesive strips.

Staples

- Linear
- side-to-side
- end-to-end stapling devices
- can be used both in the open surgery setting and laparoscopically.
- Most are disposable
- relatively expensive

STAPLING DEVICES

- In the gastrointestinal tract:stapling devices tend to apply two rows of staples, offset in relation to each other, to produce a sound anastomosis



DRAINS

- inserted to allow fluid or air
- that might collect at an operation site or in a wound
- to drain freely to the surface.
- may also allow wound irrigation in certain specific circumstances.
- The adequate drainage of fluid collections prevents: development of cavities or spaces that may delay wound healing.
- Their use can be regarded as prophylactic in elective surgery and therapeutic in emergency surgery.

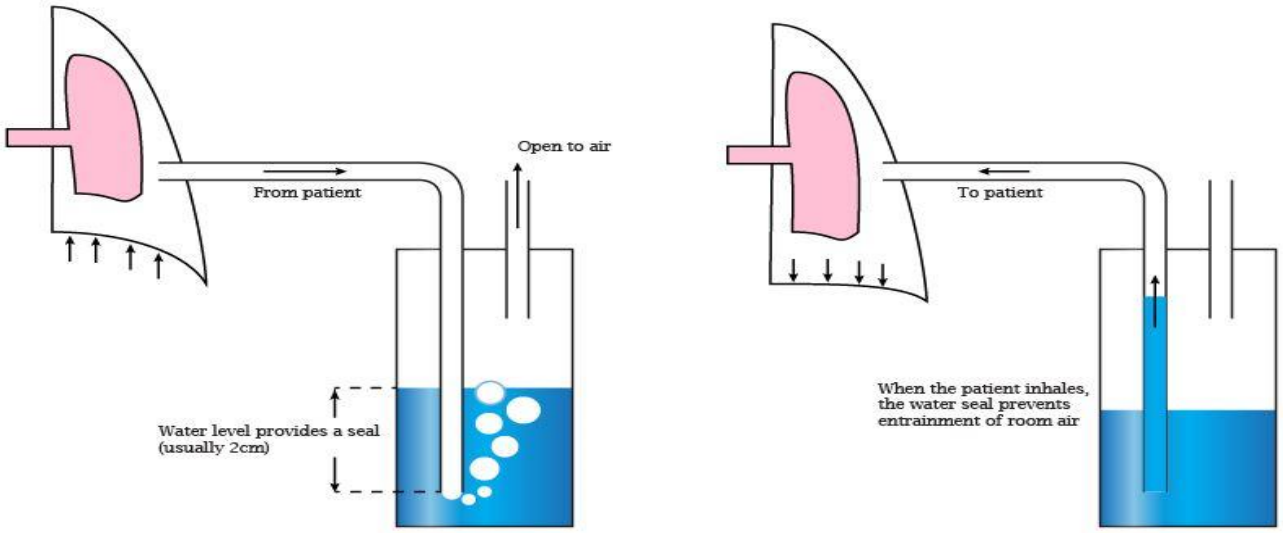
- Three basic principles apply in the use of drains:
- 1 **Open drains:** utilise the principle of gravity
- 2 **Semi-open drains** :work on the principle of the capillary effect
- 3 **Closed drain systems** :utilise suction.

Surgical Drains and their types

- may be placed through the wound
- or through a separate incision

Chest drains

- indicated for a pneumothorax, pleural effusion, haemothorax or to prevent the collection of fluid or air after thoracotomy.
- Once the drain has been inserted, it should be connected to an underwater sealed drain



T-tube drains

- After exploration of the common bile duct, it may be inserted into the duct which allows bile to drain while the sphincter of Oddi is in spasm postoperatively.
- Once the sphincter relaxes, bile drains normally down the bile duct and into the duodenum

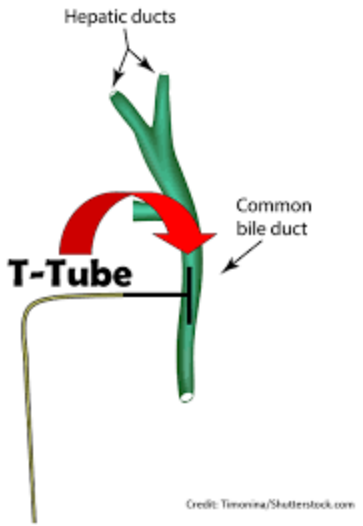


Image guided drainage

- For intra-abdominal collections
- or abscesses,
- may be inserted under ultrasound
- or computed tomography (CT) control.

Removal of drains

- should be removed as soon as it is no longer required
- if left in, it can itself predispose to fluid collection as a result of tissue reaction.
- Drains put in to cover perioperative bleeding: may usually be removed after 24 hours, e.g. thyroidectomy.
- Drains put in to drain serous collections: usually can be removed after 5 days, e.g. mastectomy.

- **put in because of infection** should be left until the infection is subsiding or the drainage is minimal.
- **Drains put in to cover colorectal anastomoses** should be removed at about 5-7 days.

  Common bile duct T-tubes should remain in for 10 days.

THE PRINCIPLES OF DIATHERMY: ELECTROSURGERY

- Diathermy can be used for three purposes:

  1 **Coagulation**: the sealing of blood vessels.

  2 **Fulguration:** the destructive coagulation of tissues with charring.

  3 **Cutting:** used to divide tissues during bloodless surgery

Bipolar electrosurgery devices

- fuses the vessel walls to create a permanent seal
- uses a combination of pressure and energy to create vessel fusion which can withstand up to three times the normal systolic pressure.

- THANK YOU