

INSTRUMENT/DEVICES

PRESENTED BY -

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Modern Surgical Instruments

- ▶ **Programme Outcome** – train students in safe handling, sterilization, and application of surgical instruments in operation theatre practice.
- ▶ **Course Outcome** – classify instruments, identify and explain uses (scissors, forceps, retractors, sutures), understand sterilization and infection control, apply in OT practice.
- ▶ **Learning Objectives** – list and classify instruments, identify parts and functions, explain indications and uses, demonstrate safe handling techniques in surgical procedures."*

Introductions -

- Surgical instrument are essential for any surgery whether minor or major.
- All instruments should be sterilized prior to use to prevent infection.

Classification of instrument- 4 Basic categories

1. Cutting and dissecting
 2. Grasping and holding
 3. Clamping and occluding
 4. Exposing and Retracting
- Suturing and stapling.
Suctioning and Aspirating
Dilating and probing

Parts of an instrument

- Two Finger bows for holding
- Shaft or body
- Ratchet or lock
- Joint or pivot
(Attached by a screw)
- Pair of blades at terminal part.
- Tip

ARTERY FOCEPS

(HEMOSTAT)
Based on size

Small(mosquito)

Medium

Large

Based on shape –Straight
curved

Features –Distal blades are having
transverse serration lock in proximal part.

Uses ;

To catch bleeding points

To open facial planes in different surgeries

To pass a ligature and hold it.

To crush base of appendix

To hold prepuce in circumcision



Artery forceps



SCISSORS - various purpose –Dissection, cutting tissue cutting, suture material ,cutting bandage etc. It can be straight curved, small ,medium, long scissor.
Different scissors-Mayo's scissors,
Heath suture cutting scissor
Lister's bandage/dressing cutting scissor



Surgeon's scissors

- Mayo's dissecting scissors



Fig. 41-43 Different *scissors* used in surgical practice.

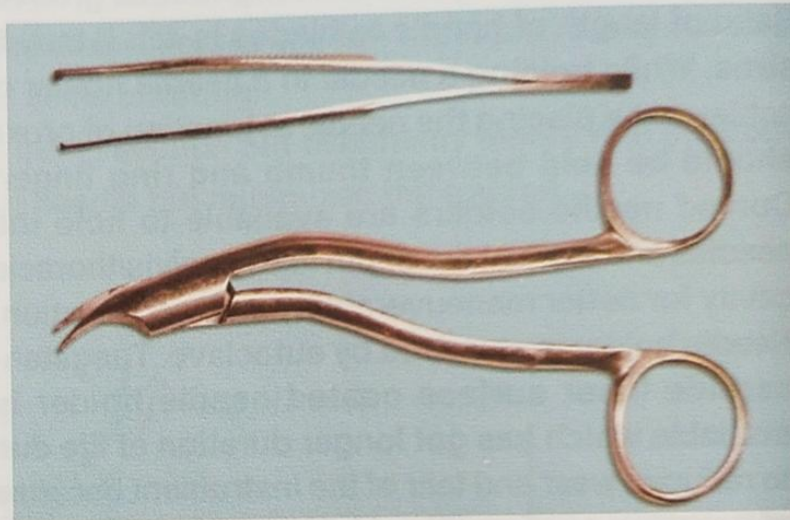


Fig. 41-44 *Heath's scissor with toothed forceps.*

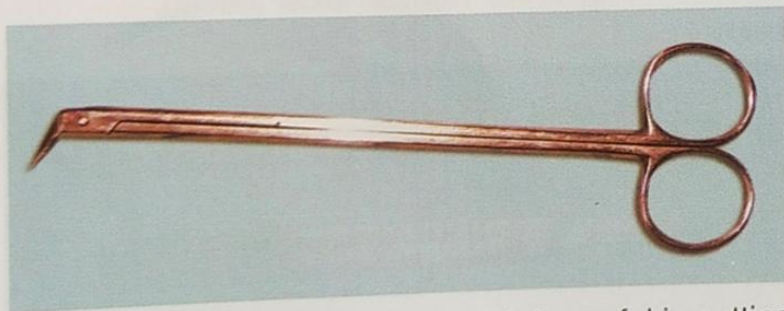
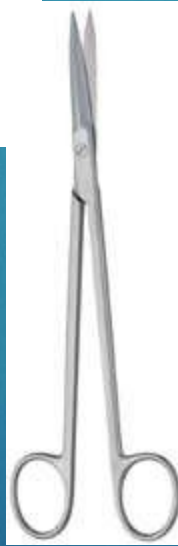


Fig. 41-45 *Pott's Smith scissor.* It is useful in cutting tubular structures like ureter, bile duct, vessels in various surgeries. Its angulation makes it easier to cut as per need.



Fig. 41-46 *Lister's bandage cutting scissor.*





Sponge holding forceps It has got fenestrated, serrated flat distal end. (Rampley's)

Use-

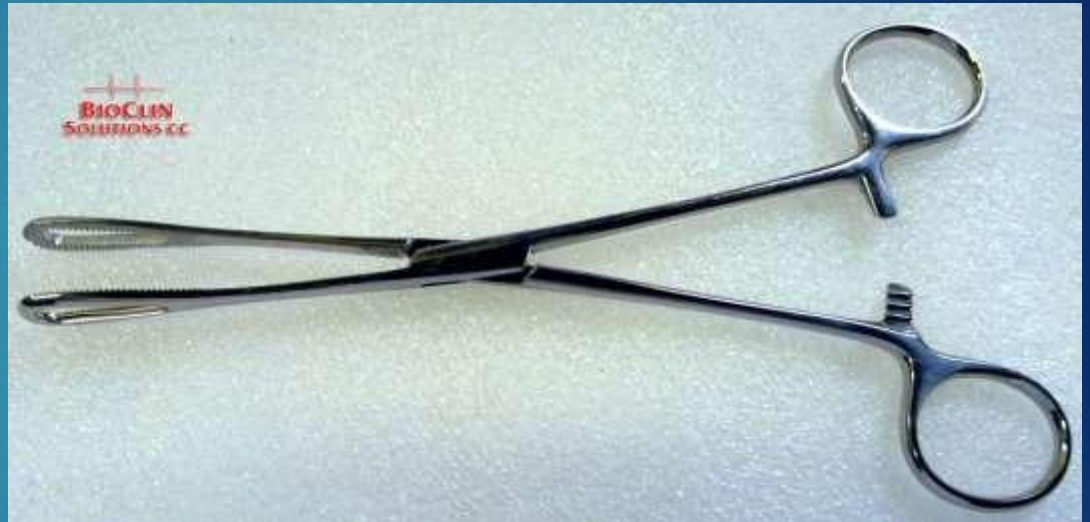
Used to clean operative field

To swab cavities

It is used to mop the oozing area.

To hold gall bladder, cervix or stomach ,tongue, during surgeries.

It can also be used to dry the operative field using gauze.



Cheatele's forceps

–It is used to pick sterilized article like

instruments and drapes so to avoid touching of the instruments.

Transferring them from one try/table to other.

It is kept dipped in antiseptic solutions like savlon/cidex.

It does not have lock.

It is heavy metallic forceps with curved blades with serration.



TOWEL CLIP

- Use to fix drape in operative field
- Use to fix suction tubes and diathermy wire
- Use to fix rib in flail chest
- It can be used to hold cord in hernia or to hold tongue
- It can be used to hold dental wiring.



KOCHERS FORCEPS

It has got serration in the distal blades and apposing tooth in the tip.
It holds the tissues pedicle well and tough structures
It used to hold fibrous structure in sole/ palms/scalp .



ALLIS Forceps

Distal blades are not apposing each other .

Tip has got teeth in each blade which are apposing.

It has got lock.

USE-

For holding flap of skin, facial, fibrous tissue aponeurosis and other tough tissues



Babcock's

forcep

Blades have triangular fenestrations which allow tissues to bulge out.

Tip is non-traumatic.

Use - To hold bowel, appendix, urinary bladder, ureter, lymph node



DISSECTING FORCEPS

Non-toothed is for holding soft friable tissue like peritoneum, bowels, nerves and vessels

Toothed is for holding tough structures like fascia or aponeurosis

They are used to steady needle during suturing.



Sinus forceps — It has got straight ,long blades with serrations in the tip.

It has not have lock. Tip is broad

Use —It is used to drain pus from abscess cavity.

It is called as sinus forceps because it is initially originated to pack the sinus cavities.

It is used to pack nasal cavity and ear.

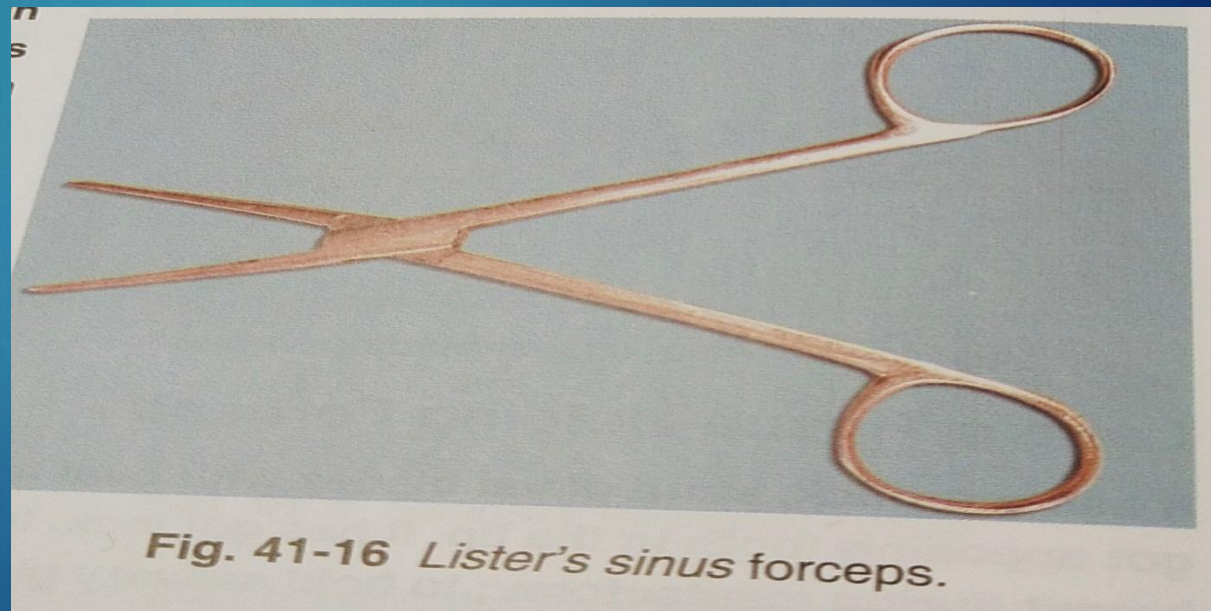


Fig. 41-16 *Lister's sinus forceps.*

NEEDLE HOLDER



BARD PARKER HANDLE

(scalpel handle)

- BP handle is a flat stainless steel instrument with slot on narrower side on both surfaces to attached scalpel blade.
- Scalpel blades 10,11,12,15 fit into BP handle 3,5,7.
- Scalpel blades – 18,19,20,21,22,23,24 – BP in number 4.



SURGICAL BLADE –Number 11 blade –Incision and drainage of abscess.

Number 12 blade – curved one used for tonsillectomy.

Number 15 blade – Used in plastic surgery, head and neck surgery, face surgeries.

Number 20,22,24 –Used in incisions of major surgeries like laparotomy, Thoracotomy, Incision in limb.

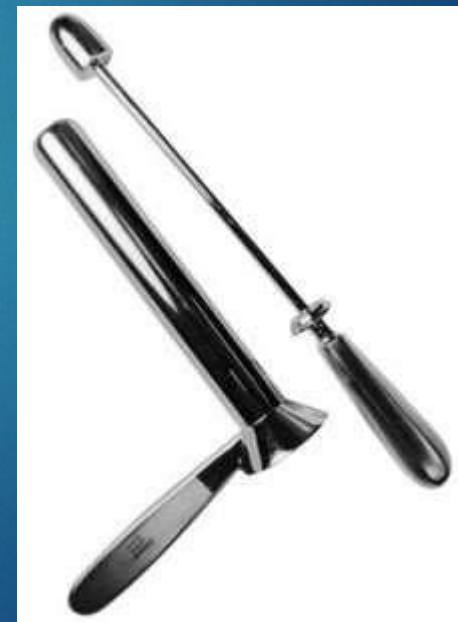




PROCTOSCOPE

INDICATION;

- Diagnostic
 - Hemorrhoides, fissure in ano, polyps, stricture, fistula in ano, for biopsy of tumour.
- Therapeutic
 - Injection therapy, cryotherapy, polypectomy
- Types ; illuminating or non- illuminating
- Parts ; proctoscope (outer sheet) and obturator(inner part)



Suture materials –

► Feature of ideal suture material-

- Good knot holding property.
- Adequate tensile strength.
- Should be least reaction.
- Easy handling property.
- Should have less memory.
- Should be easily available and cost effective.

□ Suture material can be -

1. Natural –Cat gut , silk ,cotton, linen.
2. Synthetic- Vicryl, Dexon, PDS, Polypropylene, polyester, polyamide.



❑ Absorbable –

- **Catgut** – Derived from the submucosa of jejunum of the sheep or serosa of beef.

It is absorbed by inflammatory reaction and phagocytosis.

Plain cat gut is yellow in colour.

Absorption time is 7 days.

Used – for subcutaneous tissue , muscle , circumcision in children.

- **Chromic catgut**- catgut mix with chromic acid salt
its absorption time is 21 days.

used –suturing muscle , fascia, external oblique, ligating pedicle.

- **vicryl (polyglycolic acid)**- it is synthetic and absorbable.
it is absorbed in 90 days, absorption by hydrolysis.

It is violet in color.

► It is good suture material for bowel anastomosis, suturing muscle, closure of peritoneum.

► Polyglycolic acid like vicryl

► Polyglyconate/maxon soft tissue and skin.

► Polydioxanone.

□ Non absorbable suture –

○ SILK- Natural multifilament, braided, non absorbable suture.

Derived from cocoon of silk worm larva.

It is black in color, coated from vegetable dye.

○ Cotton – Is twisted multifilament natural absorbable.

It is white in colour.

Infection rate is high

Linen-Derived from bark of cotton tree

white in colour, multifilament,

commonly used as ligature.



- ▶ Polyamide- can be used in presence of infection.

- ▶ Polyethylene- black in color.

- ▶ Polypropylene- Monofilament,

 - It is blue in color.

 - It has got high memory.

(Prolene mesh used for hernioplasty it is white in color.)

Suture material can be

- Braided – Polyester, Polyamide, Vicryl, Dexon and silk.
- Twisted-cotton, linen.

Suture material can be –

- Monofilament- Polypropylene , Polyethylene, PDS , Catgut.
- Multifilament –Polyester, polyamide, vicryl, dexon, silk, cotton.

Suture material can be –

- Coated.
- Uncoated.

SUTURE



Surgical needles

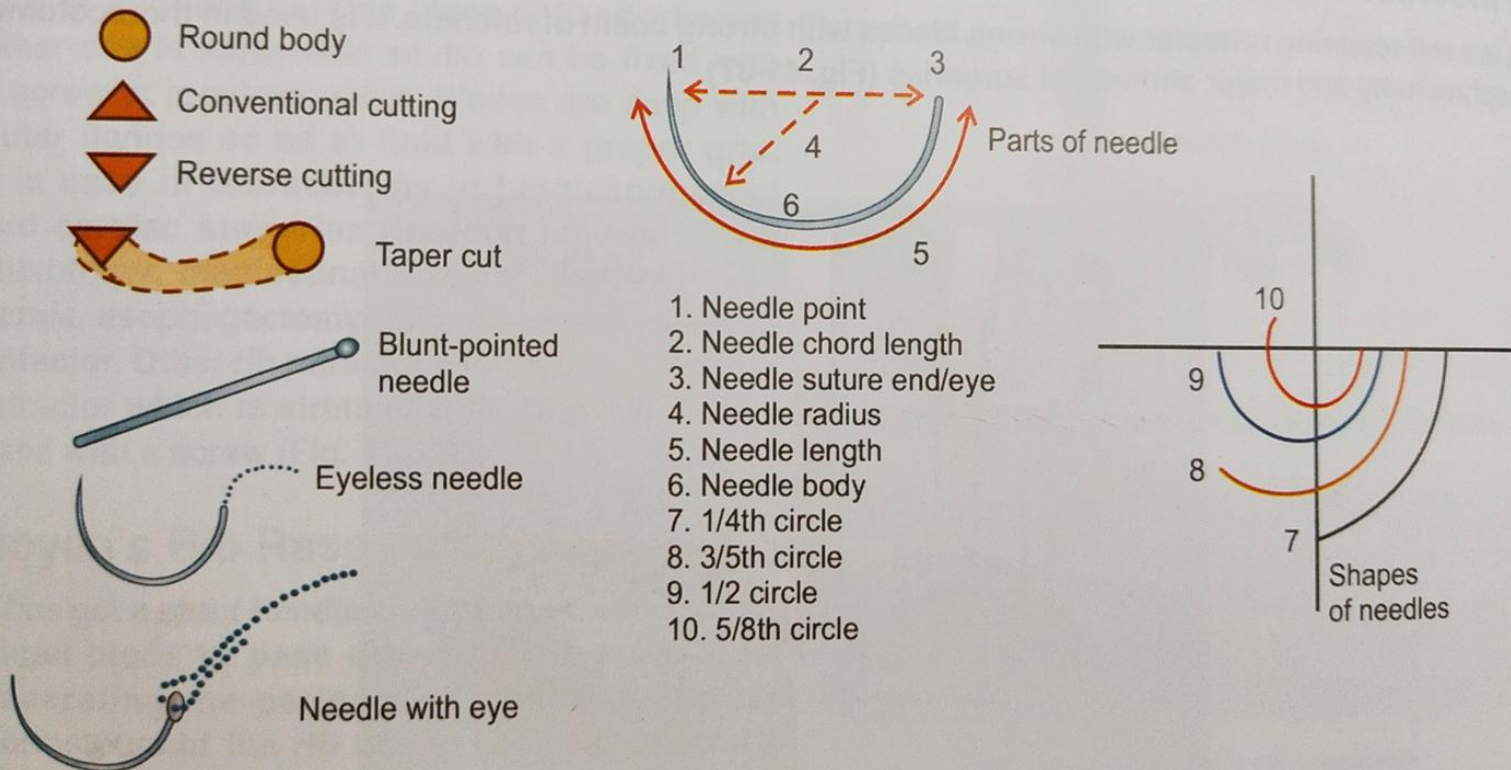


Fig. 41-39 *Different types of needles.* Diagram also shows the eyeless/eyed needles and gives the meanings of 1/4th, 1/2, 3/8th and 5/8th circle needles.

► Surgical needles –

It is classified as – Traumatic needle.

Atraumatic needle.

Traumatic needle- Eye area is wider than the body of the needle and so tissue trauma is more.

This needle are re usable.

Round body needle – Is an eyed needle.

Use – Suture soft tissue , Muscle , Tendon , Vessels , Intestine etc.

Cutting body – Triangular on cross section with apex facing inward.

used for suture tough structures , aponeurosis , skin.

Reverse cutting needle-Triangular on cross section with apex outward.

Uses-To suture mucoperiosteum.

► Atraumatic – These needle have no eye.

Suture is attached to the needle by process called swaging.

Tissue trauma is less size of suture material and that needle is same

Needle once used is disposed (not reusable)

It is available as sterilized pack.

Use – Is used in suturing vessels

To repair a small tear in the bowl etc.

RETRACTORS

Plain

Self-

retaining Use

To retract cut edges of
tissues To hold important
structures

To avoid inadvertent injury to
tissue

LANGENBER RETRACTOR



MORRIS RETRACTOR



DEAVER'S RETRACTOR

Atraumatic for liver, spleen and
other
abd visera



www.surgical-instrument-pictures.com

DOYENS RETRACTOR

Pelvic surgeries



Cairo University - Gynecology and Obstetrics

BALFOUR'S



JOLL'S

RETRACTOR

For thyroid and parathyroid
surgeries



MILLIN'S RETRACTOR

Bladder retraction

Open
prostatectomy



MASTOID RETRACTOR

Mastoid surgery, scalp surgery, laminectomy. It is hemostatic



URETHRAL SOUND (bougie urethral dilator)

Urethral dilatation- partial
stricture

Locate site of stricture

Complications;

Trauma

Infection

False passage



DRAIN

Define and classify drains
Properties of ideal drain
When do you remove a drain

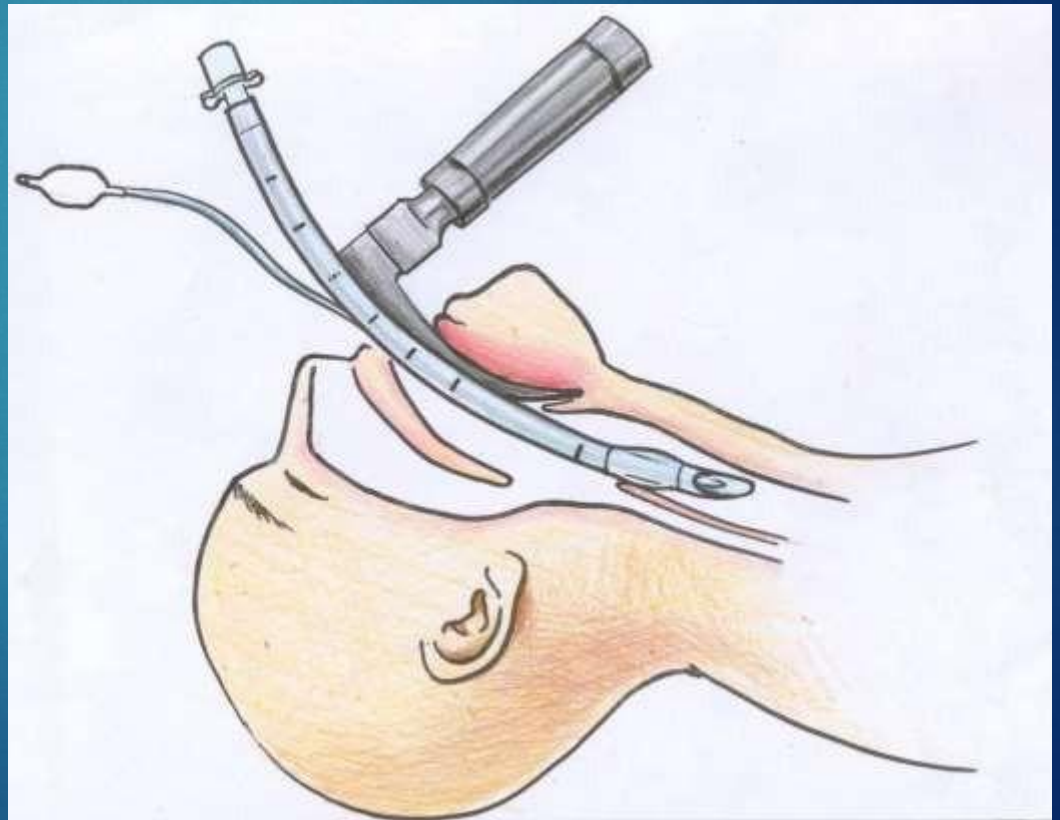
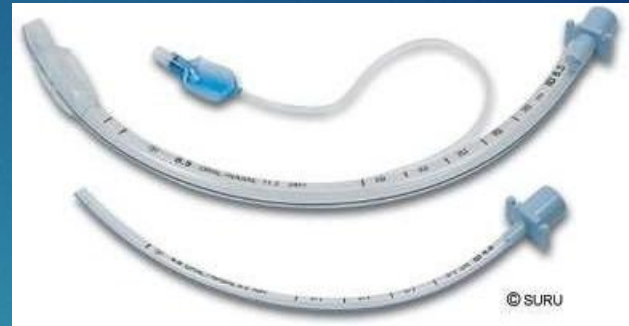
Corrugated rubber drain
(below) Redivac drain (right)



TRACHEOSTOMY TUBE



ENDOTRACHEAL TUBE



OROPHARYNGEAL TUBE



URETHRAL CATHETER

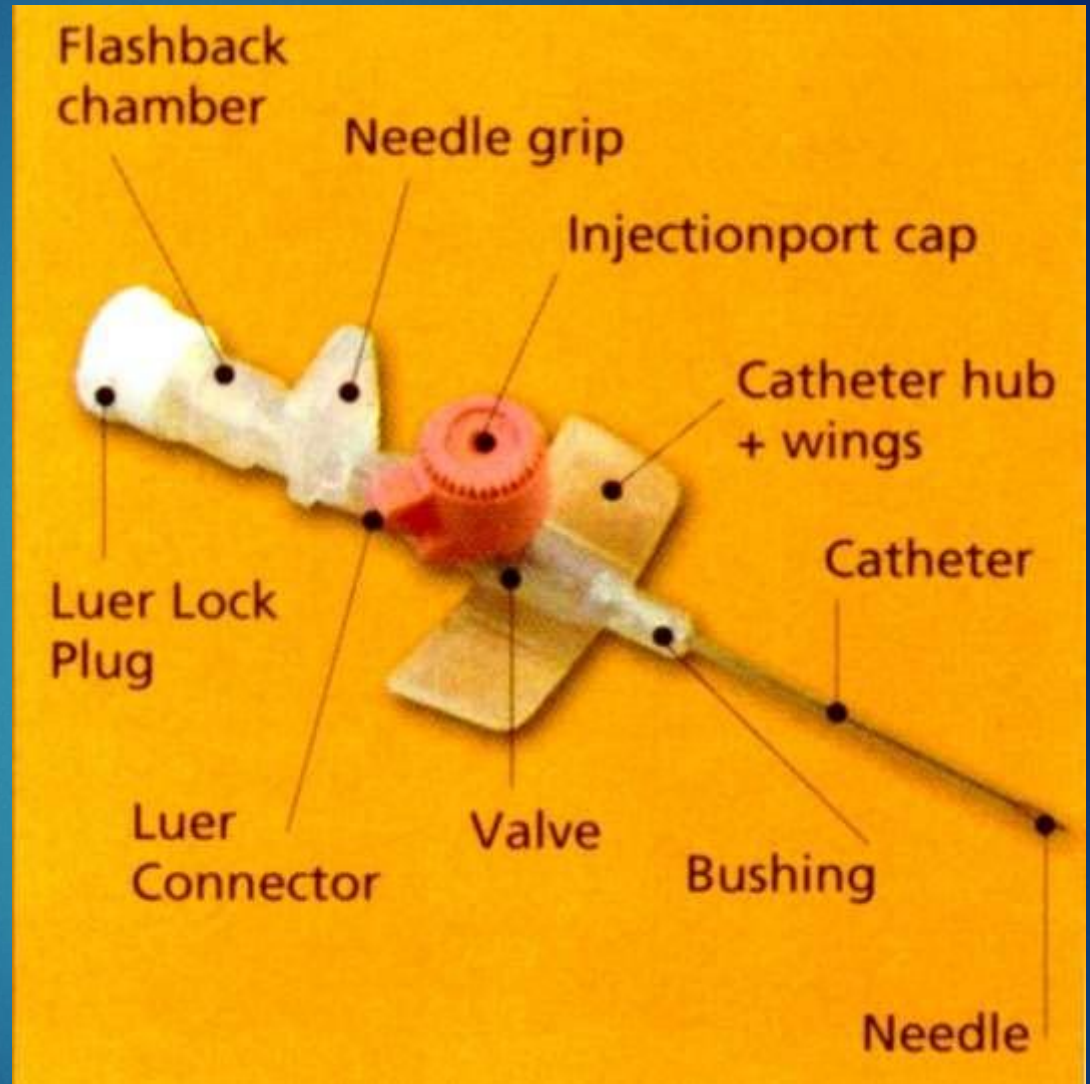
Types

Indications

Complications



IV CANNULA



OSTEOTOM E



MALLECT



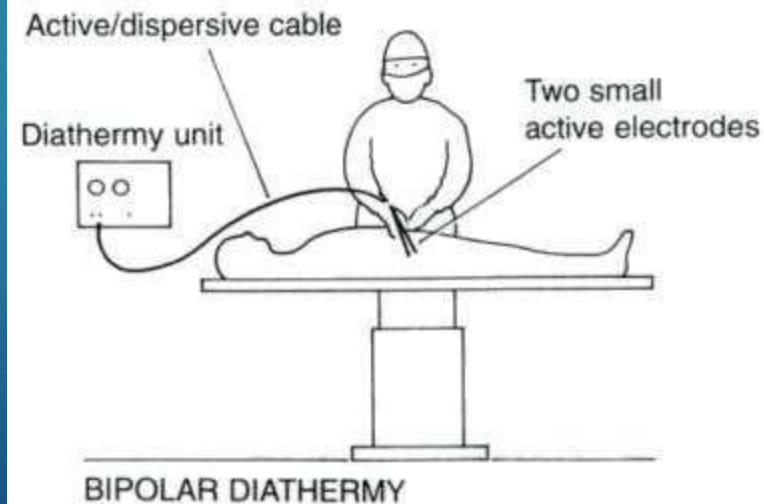
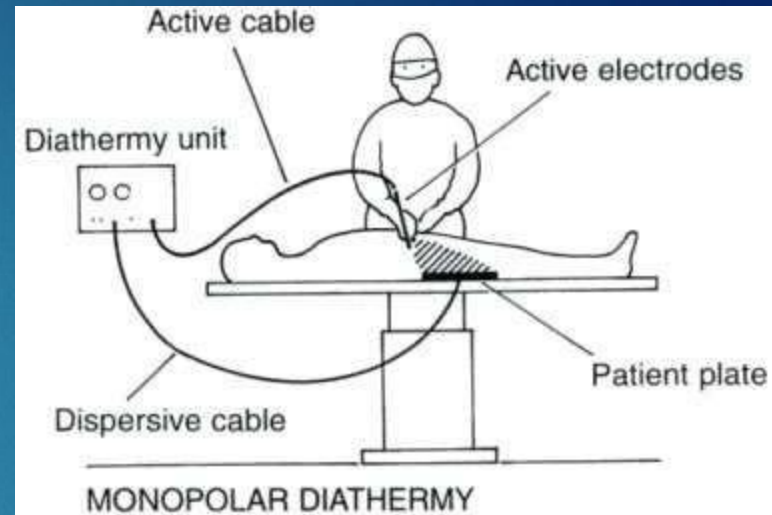
FACE MASK



AMBU BAG



DIATHERMY



CHEST TUBE



SUCTION TIP

YANKAUER'S



SUCTION TIP

POOLE'S



QUESTIONS

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