

Radioactivity can be detected by gamma camera which contains scintillating detector sodium iodide.

Recent isotopes are:

DTPA Tc 99 scan – functional aspect of kidney.

MAG3 has got better functioning capacity but costly.

DMSA Tc 99 scan – anatomical static images of kidney.

Captopril DTPA scan is used for renovascular hypertension.

HIDA scan/PIPIDA scan for cholecystitis

Thallium scan (Ga 67) for inflammatory conditions – half-life 78 hours.

Technetium 99m for leucocyte tagging.

Thallium 201 scan for cardiac imaging – 73 hours half-life.

Technetium 99m for thyroid scan in borderline toxicity / ectopic thyroid / follicular carcinoma thyroid secondaries / retrosternal goitre – half-life 6 hours.

Thallium – Tc 99 subtraction scanning is used to detect parathyroids. Sestamibi scanning is also used for parathyroid imaging.

MDP Tc 99 (Methylene DiPhosphonate) scan is used for bone. It is best for early detection of acute osteomyelitis.

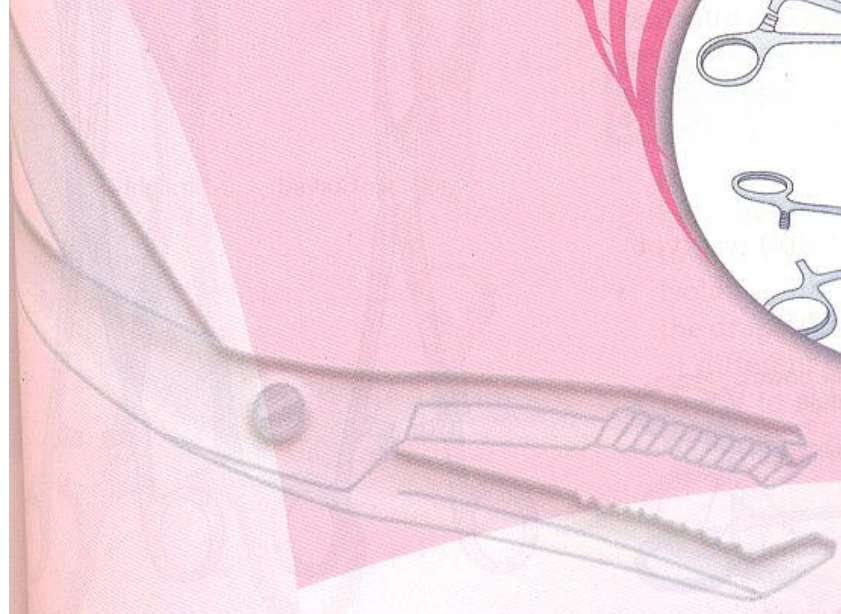
- Tc 99 sulfur colloid scan is used for reticulo-endothelial system in liver by making Kupffer cells to take up the isotope. It is sensitive in follicular nodular hyperplasia of liver.
- Radioisotope Tc 99 labeled RBC can detect bleeding as low as 0.1 ml/minute from GI bleed. It is more sensitive than angiography (detects 0.5 ml bleed/minute).
- Meckel's diverticulum can be detected by technetium 99 pertechnetate scanning:
- MIBG (Meta Iodo Benzyl Guanidine) scanning is useful in adrenal tumours.

### POSITRON EMISSION TOMOGRAPHY (PET)

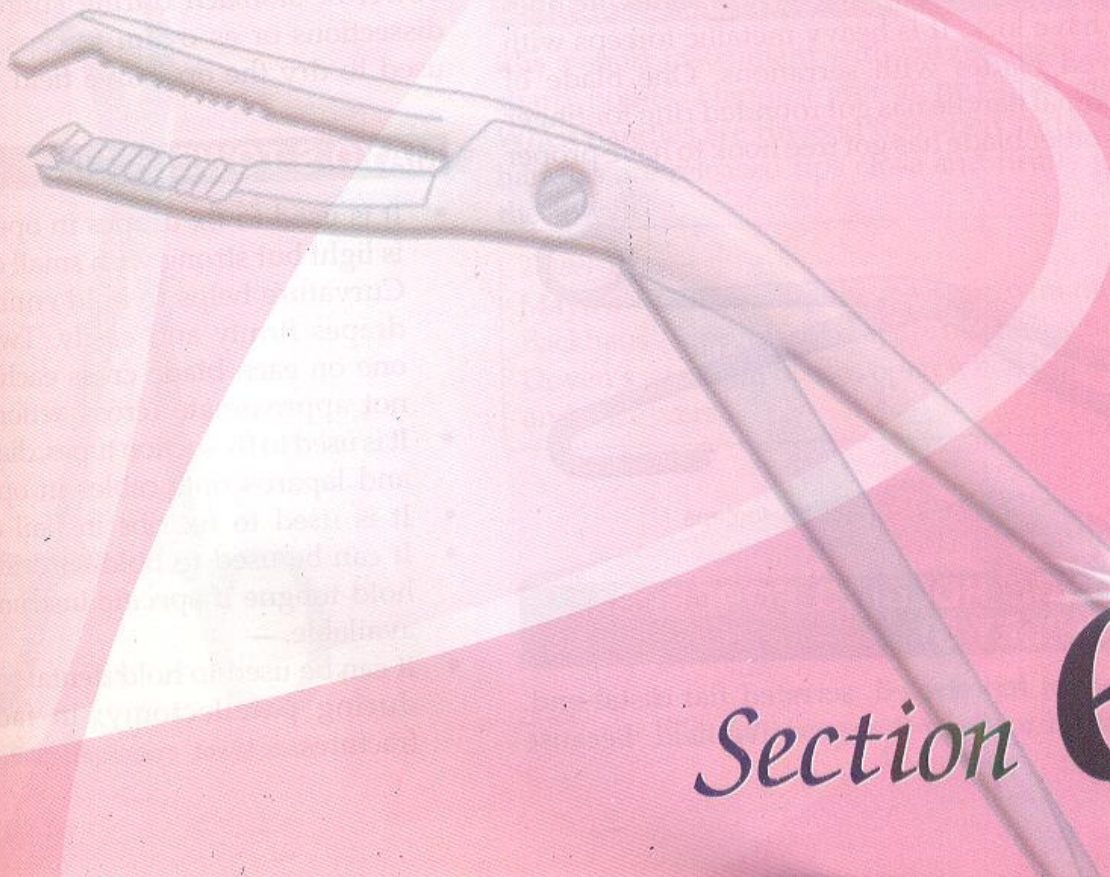
- It is a functional imaging method using 18 Fluorodeoxy glucose (18 FDG) for metabolic agent localizes tumour. Perfusion agents are labeled NH<sub>3</sub>, Rb-81. It is useful to distinguish between high grade tumours from low grade tumours and also from benign tumours.
- SPECT is Single Photon Emission Computed Tomography which gives three dimensional image as opposed to a planar image by routine radionuclide imaging.

**Note:** Most of the figures in this chapter are from Dr Raghavendra Bhat and Dr Ravichandra, Radiologists, Balmatta Scan Center, Mangalore.





# Instruments



Section **6**



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

Parts of an instrument –

- Two finger bows for holding.
- A ratchet or lock.
- A pair of shaft or body.
- Joint either box type (with a slot) or pivot (attached by a screw).
- Pair of blades at terminal part.

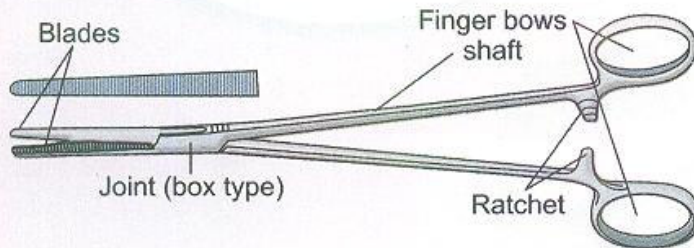


Fig. 6.1: Parts of an instrument.

### CHEATLE'S FORCEPS

It is used to pick sterilized articles like instruments and drapes so to avoid touching of the instruments while transferring them from one tray/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 serrations. One blade of proximal handle has got rounded ring for finger and other blade has got free hook to have proper grip.

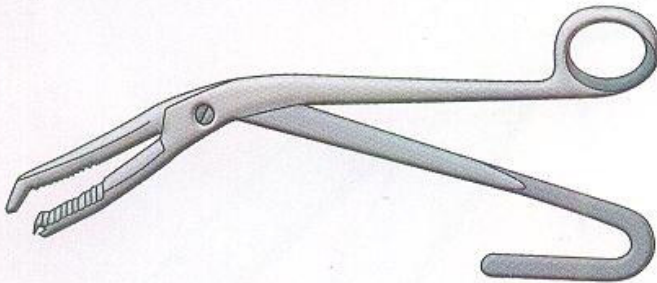


Fig. 6.2: Cheatle's forceps.

### SPONGE HOLDING FORCEPS (RAMPLEY'S)

It has got fenestrated, serrated flat distal end. It is used to clean the operative field. Because

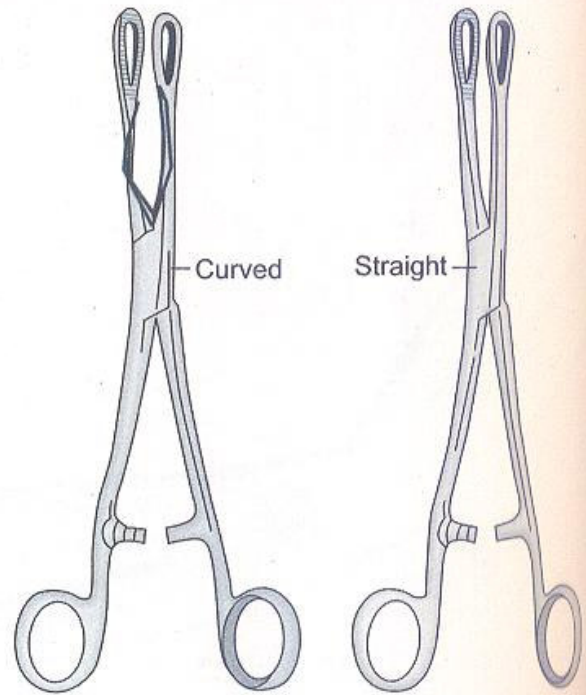


Fig. 6.3: Sponge holding forceps—(Rampley's) both curved and straight.

of the length, the surgeon's hand will not get contaminated while cleaning the patient. It is also used to swab the cavities, to mop the oozing area, to hold gallbladder or cervix or tongue or bowel or stomach during surgeries, for blunt dissections or as ovum forceps. It can also be used to dry the operative field using a gauze.

### MAYO'S TOWEL CLIP

- It is used to fix drapes in operative field. It is light but strong with small curved blades. Curvature helps to hold entire thickness of drapes firmly and easily. Two sharp teeth one on each blade cross each other but do not approximate (cross action tip).
- It is used to fix suction tubes, diathermy wires, and laparoscopic cables in operative table.
- It is used to fix ribs in flail chest.
- It can be used to hold cord in hernia or to hold tongue if specific instruments are not available.
- It can be used to hold dental wiring; patella during patellectomy; in faciomaxillary fractures.



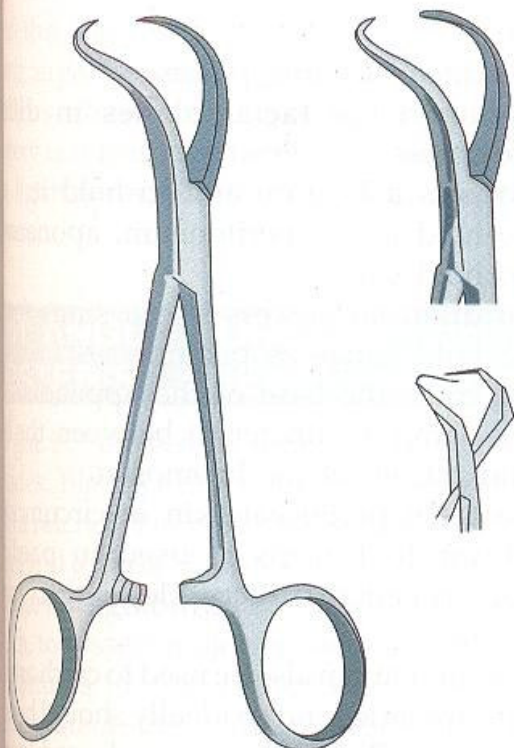


Fig. 6.4: Mayo's towel clip.

### BACKHAUS' TOWEL CLIP

It is got a ratchet catch, curved sharp ends approximate each other, but do not cross

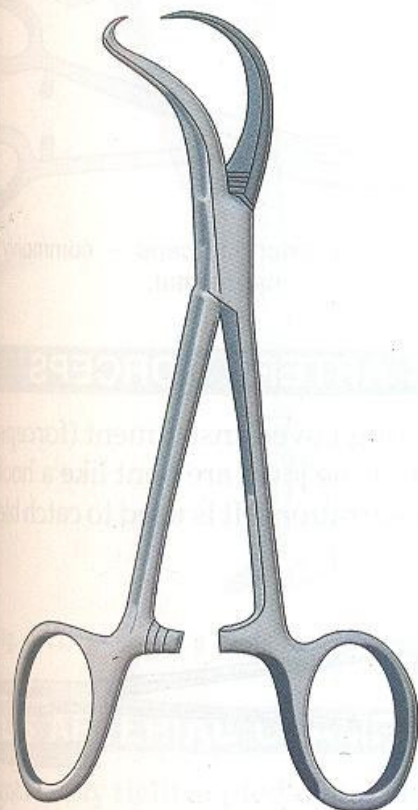


Fig. 6.5: Backhaus's towel clip.

each other (Approximating tip, but no cross action in tip).

### MOYNIHAN'S TETRA TOWEL CLIP/FORCEPS

- It is used to hold the cut skin edges of the incision to the four corners of the draped tetra towels so as to isolate the operative field.
- Isolation also can be achieved by suturing the drape margins to the subcutaneous tissue at different points or using adhesive plastic drape to skin and through the drape skin incision is made.

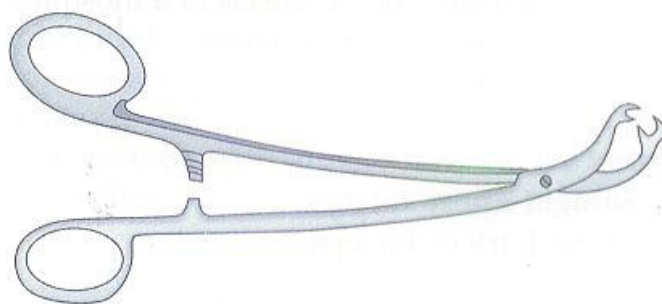


Fig. 6.6: Moynihan's tetra towel clip – it is with long blades with a curvature with two teeth in each blade (total four).

### DOYEN'S TOWEL CLIP

It is a short instrument with curved ends with sharp points. Handles join at proximal ends. When handles are pressed tips open and when handles are released tips close and firmly grip the towels.

*Towel clips –*

Mayo's – cross action tip; no approximation  
 Backhaus' – approximating tip; no cross action  
 Doyen's – tension blades open when pressed and vice versa

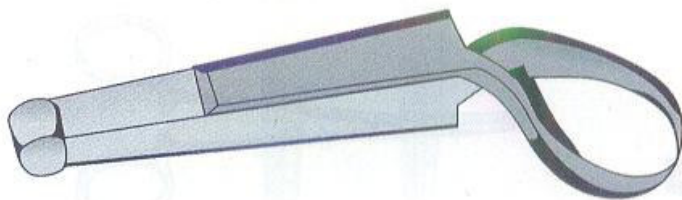


Fig. 6.7: Doyen's towel clip.