

# **Surgical instruments**

DR.EYAD ABOU ASALI







# Minor Surgery Instruments

- Lesions for minor surgery are generally small and readily accessible, thus minor surgery instruments are small.
- Although use of fine instruments does not ensure meticulous operative technique, it tends to encourage more careful handling of tissues.
- The quantity of each of the instruments required depends largely upon the number of minor surgical operations performed.



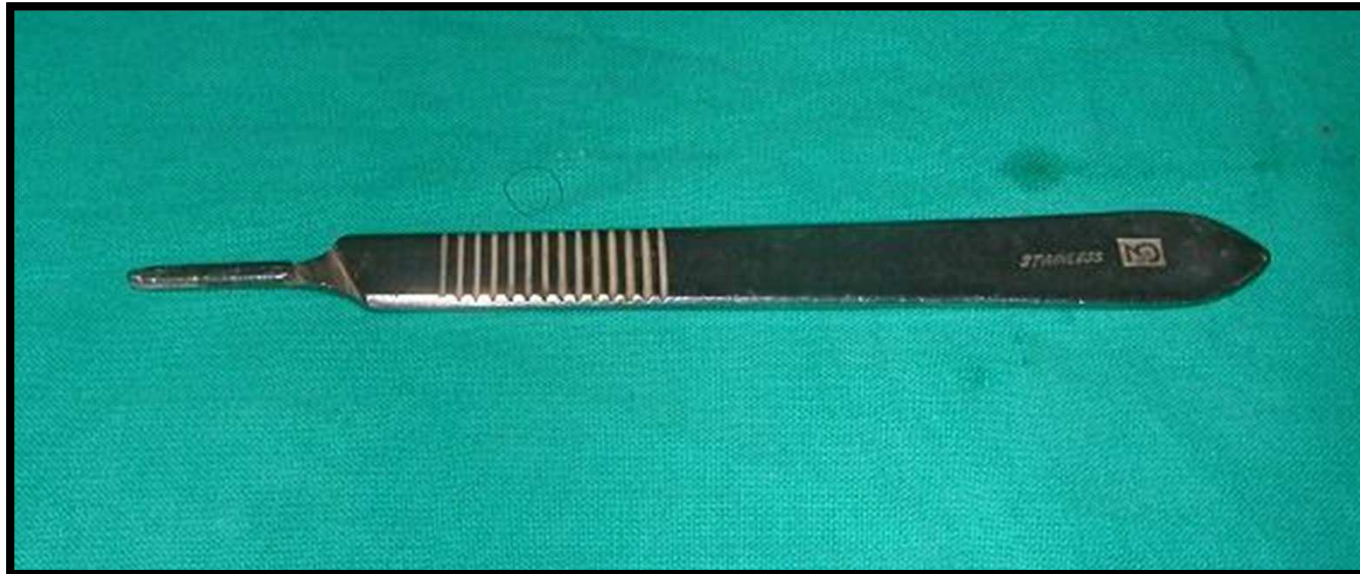
**Basic pack  
good quality instruments and no cheap  
instruments**



# Scalpel

- Best instrument for division of tissue
- Less traumatic to surrounding tissues
- Should be held in a way that will permit full control of the instrument and freedom of movement
- Composed of the blade and the blade handle
- Blades come in different sizes and shapes
- Size of the blade does not change the technique of its use

# Scalpel handle





# Bard-Parker #4 scalpel handle



- Disposable scalpel



- #4 handle – for larger blades (#20)
- #3 handle – for smaller blades (#10, 11, 12, 15); commonly used in plastic surgery
- #7 handle – ends of which are similar to #3 handle; commonly used in eye, ear, nose and throat work

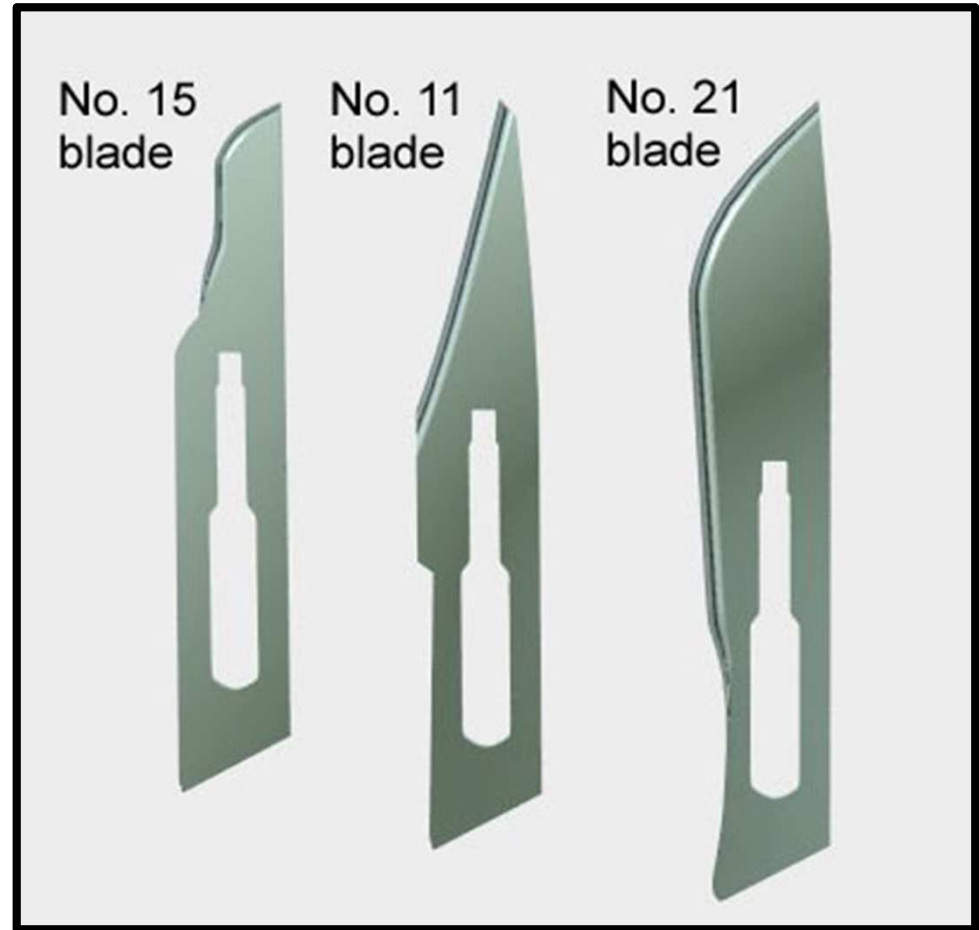
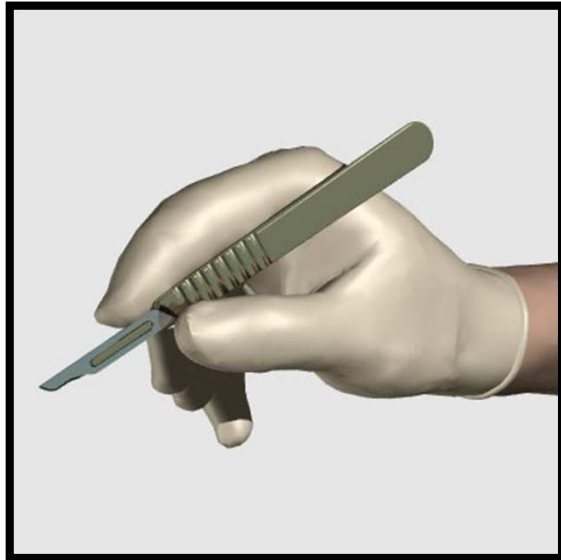


- Blades #10 is the most commonly used scalpel blade
- #15 is a smaller version of #10 and is used for more delicate incisions
- Blade #15
  - used in most procedures, especially plastic surgeries, allowing more precise turns when making the incision

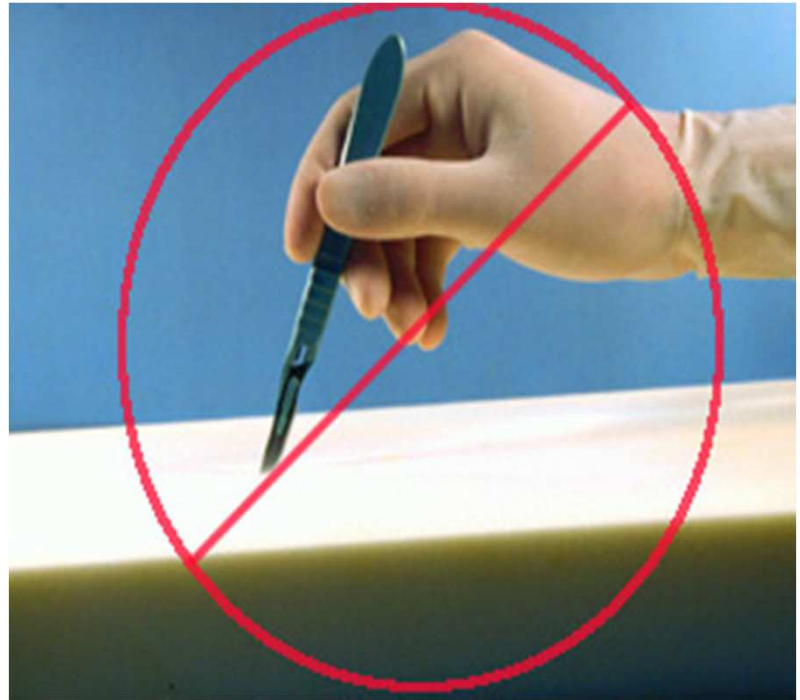
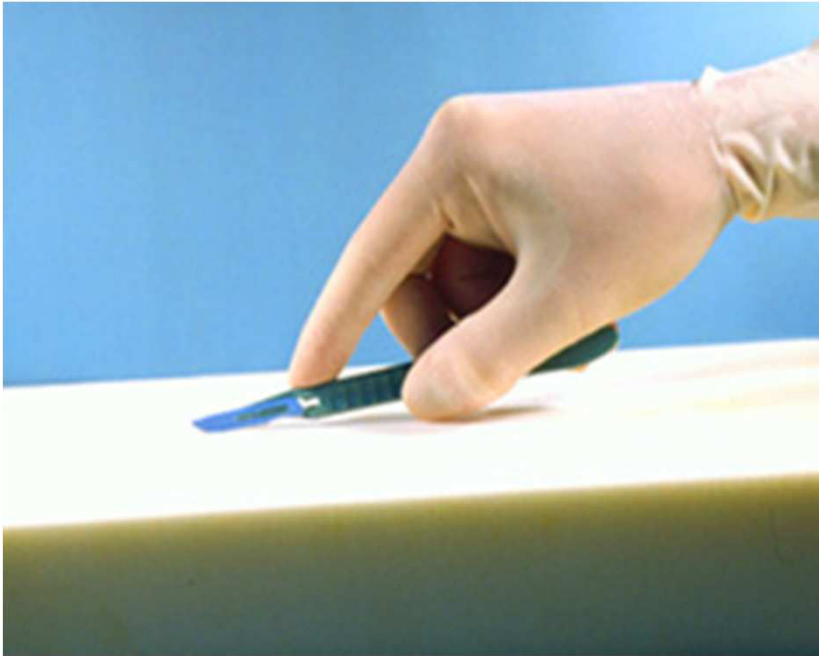
- Blade #11 (stab or bayonet)
  - Used for draining collections of pus by driving the point directly into the abscess and then sweeping the blade up through the tissue in an arc.
  - May be used in removing sutures

- Blade #12 (bistoury)
  - looks like a hook and used for draining infection of the middle ear; the tip sweeps through the drum in an arc
  - Can also be used in removing sutures





- The handle of the scalpel is grasped between the thumb and the 3<sup>rd</sup> and 4<sup>th</sup> fingers and the index finger placed over the back of the blade to provide firm control.
- For cutting, a smooth sweep is made with the rounded portion of the blade rather than the point.
- Since the blade is sharp, very little pressure is required; a light stroke over the tissue with the middle of the blade is adequate.
- Long gentle cutting strokes are less traumatic to tissue than short chopping motions





# Thumb Forceps

- Consist of two tines held together at one end with a spring device that holds the tines open
- Dressing forceps have smooth or smoothly serrated tips
- Tissue forceps have teeth to grip tissue
- Used to pick up tissue or hold tissue between the apposed surfaces
- When teeth are present in the apposing surfaces, the forceps can hold the tissue without slipping and without exerting undue pressure.

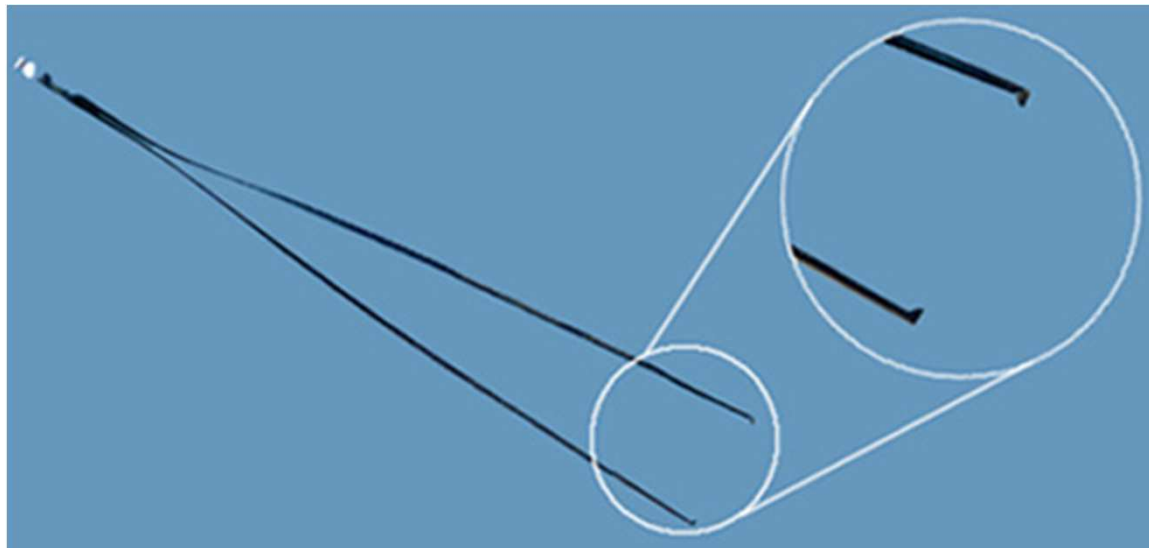
- Forceps to be used in handling vital structures, those which should not be perforated, should have no teeth; additional grasping strength is provided for by a wider head.
- Many forceps bear the name of the originator of the design, such as Adson tissue forceps.

- Tissue forceps

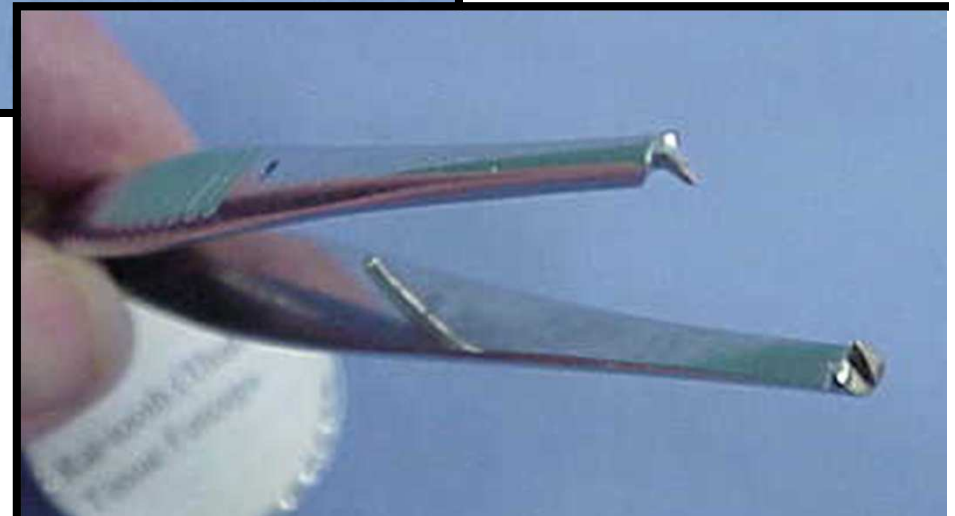
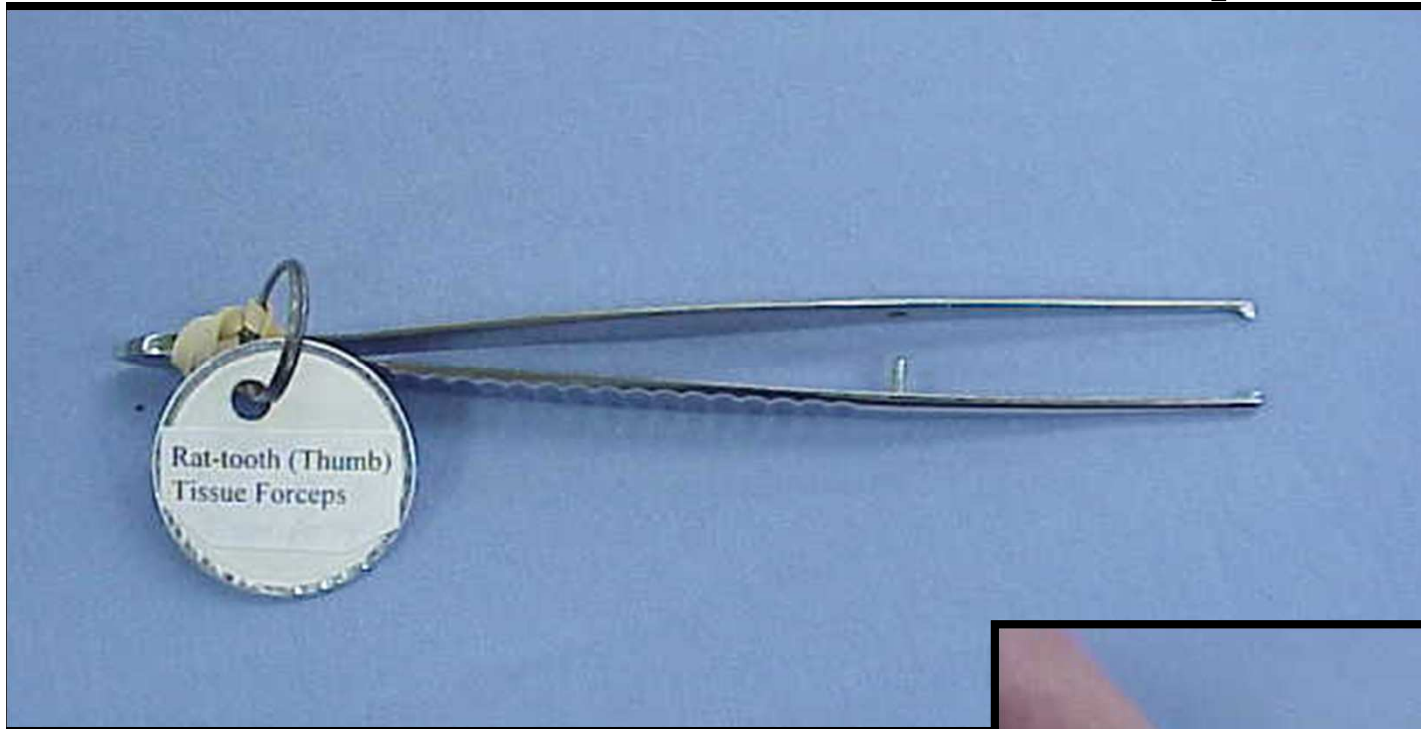
- Has teeth which prevents it from slipping
- Only a small amount of pressure is required to grasp the tissue firmly
- Teeth vary in number from one to a dozen and in size from very fine to fairly large
- Always used when handling skin

- Rat tooth

- Interdigitating teeth to hold tissue without slipping
- Used to hold skin/dense tissue



# Rat-tooth (thumb) tissue forceps





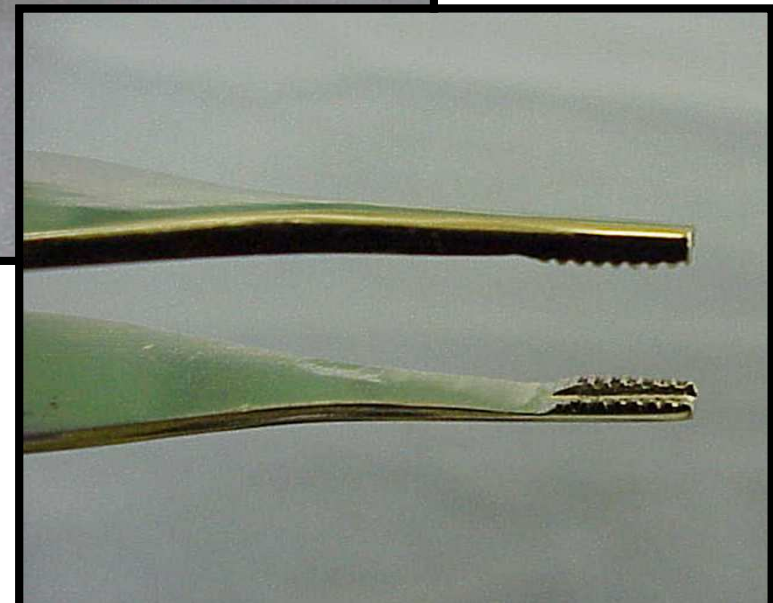
# Non-toothed forceps.



# Toothed forceps.

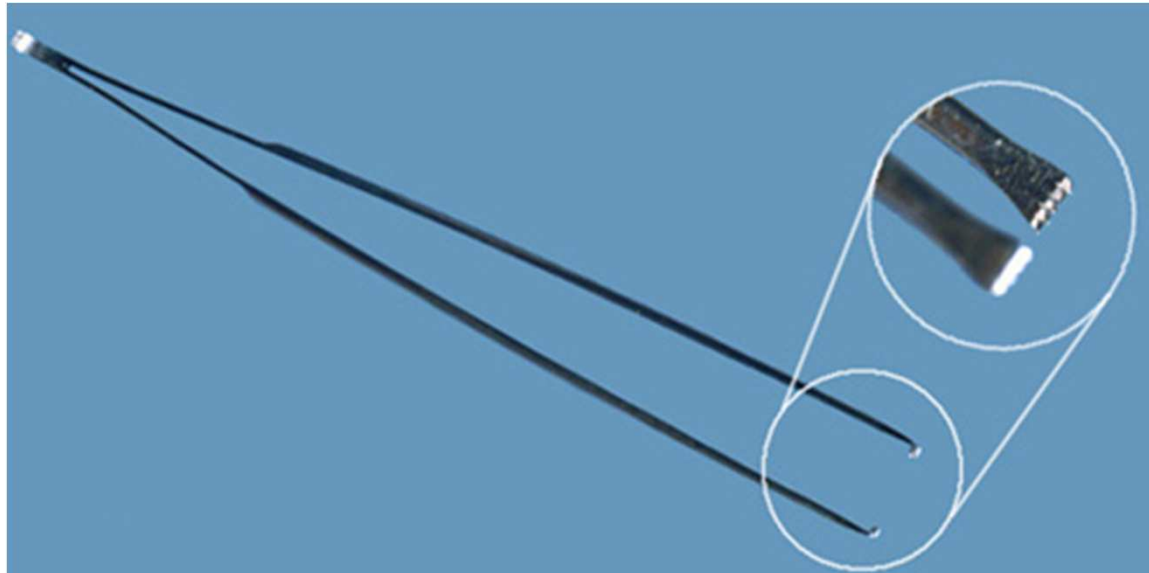


# Brown-Adson (thumb) tissue forceps



# Dressing and Tissue Forceps

- Adson tissue forceps
  - Small serrated teeth on edge of tips
  - Has delicate serrated tips designed for light, careful handling of tissue



# Thumb Forceps

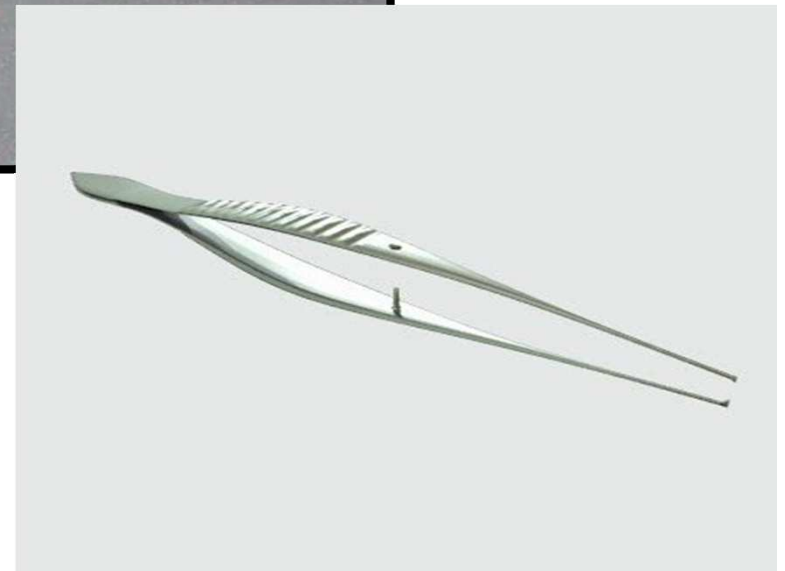
- Forceps to be used in handling vital structures, those which should not be perforated, should have no teeth; additional grasping strength is provided for by a wider head.
- Dressing forceps
  - Has a blunt end with coarse cross striations to give it additional grasping power
  - Used routinely in applying and removing dressings
  - Also used to handle a hollow viscus which might be punctured by a sharply pointed forceps
  - Not used to grasp the skin when putting in skin sutures; since there are no teeth on the grasping edges the force required to hold the skin firmly may be enough to cause necrosis.



# Thumb Forceps



# Dissecting forceps (twisors)

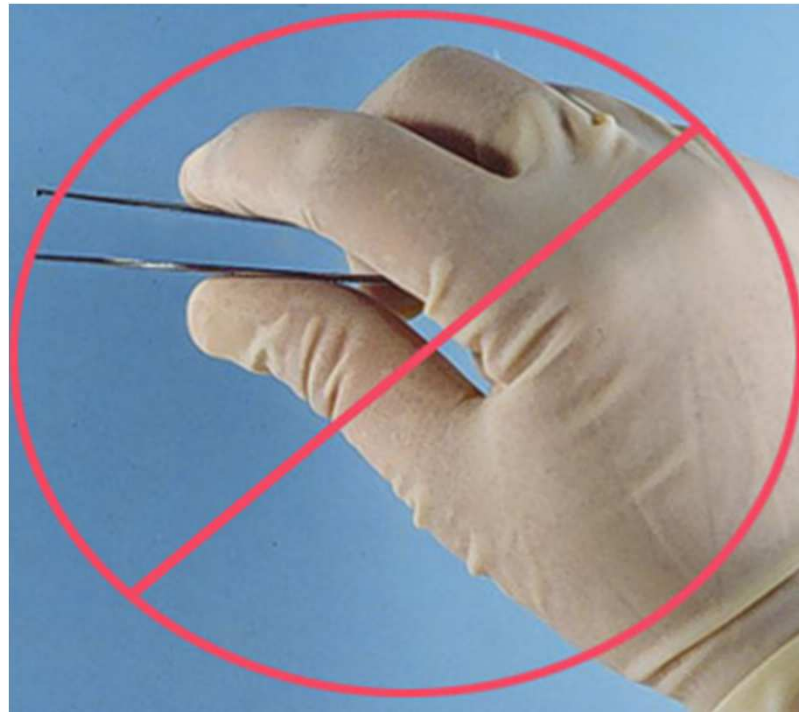


# Adson (thumb) tissue forceps





- The forceps is held between the thumb and the middle and index fingers of either hand (“like a pencil”).
- The forceps is not held like a knife.



# Grasping Forceps

- These instruments are designed primarily to take hold of tissues and allow one to exert traction.
- The apposing surfaces of the individual heads vary a great deal depending on the specific purpose.
- All have a set of finger rings and a locking mechanism.



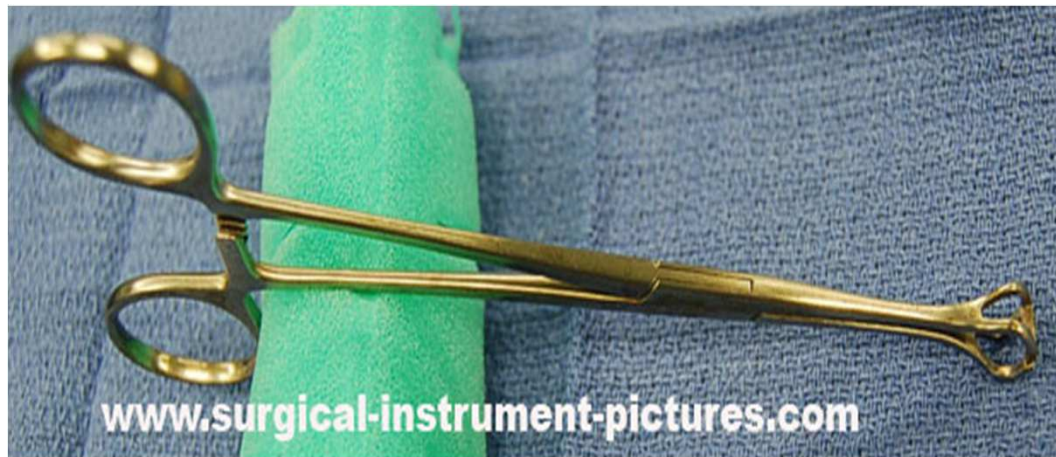
- Allis Forceps

- Its tip consists of apposing serrated edges with fairly short teeth
- Slightly traumatic
- Used for grasping fascia or breast tissue
- Used for traction on the skin; it is not applied directly to the skin but rather on the tissue immediately beneath the skin
- May also be used to hold wound drapes in place

# Allis



- Babcock Forceps
  - More delicate than Allis, less directly traumatic
  - Broad, flared ends with smooth tips
  - Used to atraumatically hold viscera (bowel and bladder)

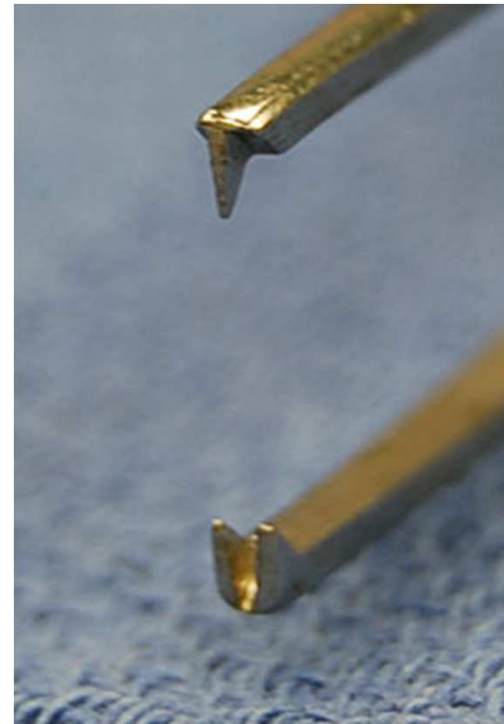


- Kocher Forceps

- The blades have transverse serrations running along the full length and long sharp points are found at the tips.
- Has considerable grasping power and allows one to exert a considerable amount of tension on tissues.
- Commonly used on heavy fascia or bone; the tissue is unlikely to pull free when grasped with this forceps.

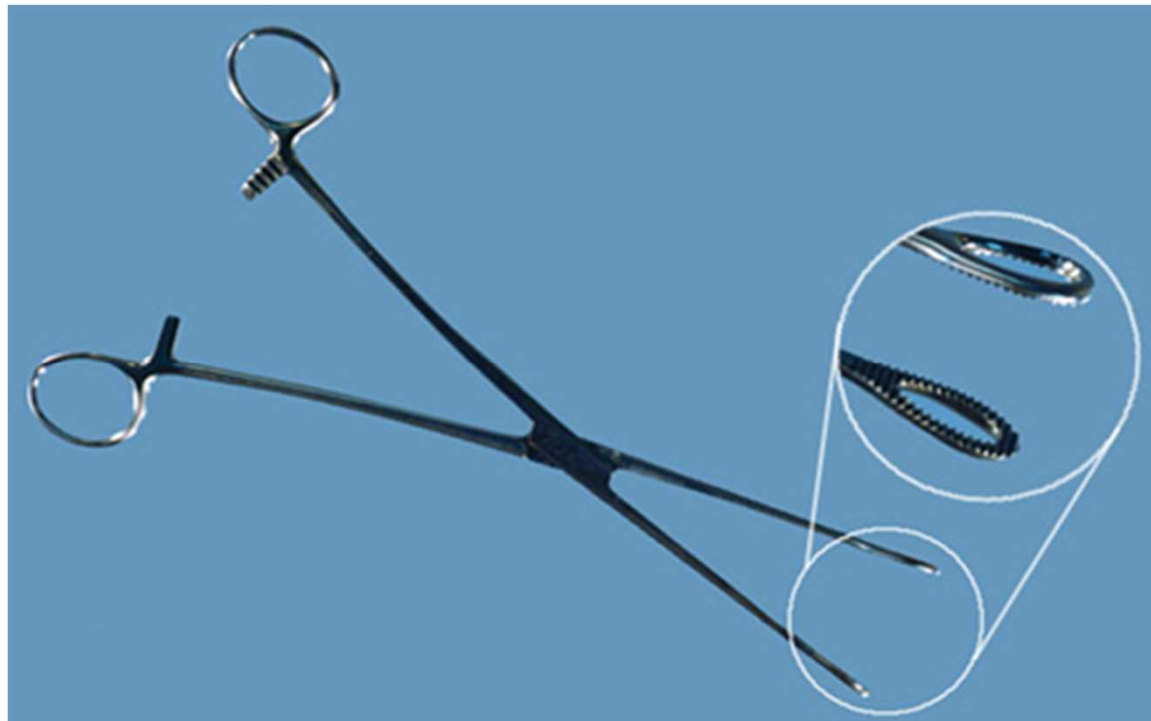


# Kocher





- Sponge (ovum) forceps
  - Can be straight or curved
  - Can have smooth or serrated jaws
  - Used to atraumatically hold viscera (bowel and bladder)
  - Used to hold the sponge when prepping



# Hemostatic Forceps

- Hinged (locking) mechanism
- Many bear the name of the designer (Kelly, Holstead, Crile)
- Used to clamp and hold blood vessels
- May be curved or straight

- Kelly and Mosquito Hemostats
  - Both are transversely serrated
  - Mosquito hemostats are more delicate, have smaller and finer tips than Kelly

# Mosquito



# Kelly



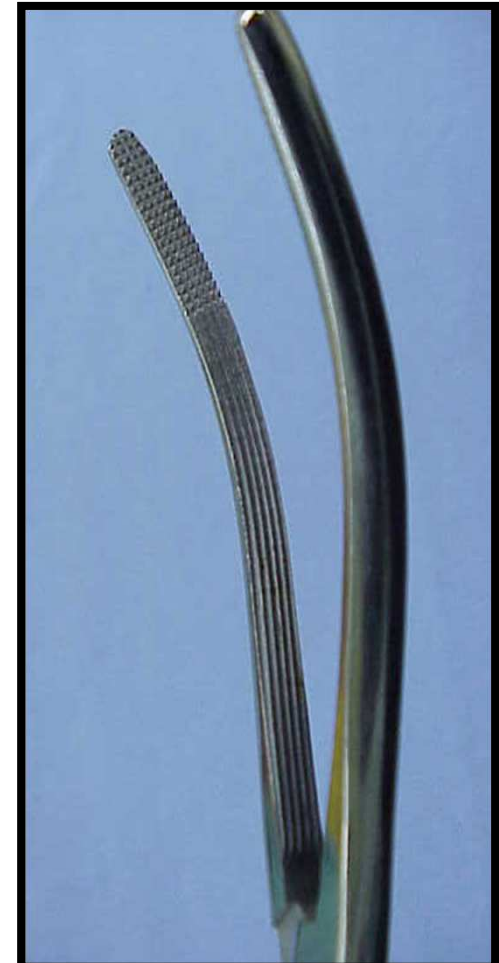


# Kelly hemostatic forceps (curved and straight)





# Carmalt hemostatic forceps (curved and straight)



# Artery clips



# Grasping Forceps

- To manipulate the grasping forceps, the thumb and the 4<sup>th</sup> fingers are inserted through the rings and the rings are apposed to lock.

# Scissors

- Used for division of tissues
- Also used to cut sutures and dressings
- Tissue scissors are usually lighter, have a finer cutting edge and smoother points than the suture scissors.
- Straight scissors are used for work on the surface; curved scissors are used deeper in the wound.
- Usually only the tip is used for cutting.
- When a tough structure must be cut, the heel or the back portion of the blade is used so as not to spoil the blade near the tip.

- To avoid injury to vital structures, the scissors should never be closed unless the tips of the blades can be seen clearly, as in cutting sutures.
- In cutting sutures, never attempt to cut a suture unless
  - You are in a good position
  - You have full control of the scissors
  - You can see the suture to be divided
  - You can see that you are not likely to cut any other structure

- **Curved Mayo Scissors**
  - Common to most surgical trays and used for cutting dense tissue where Metz scissors are too delicate.
- **Straight Mayo Scissors**
  - General purpose and suture cutting scissors, normally not used on tissue.



# Scissors



- Metzenbaum Scissors
  - Used for cutting delicate tissues
  - Have longer handle to blade ratio



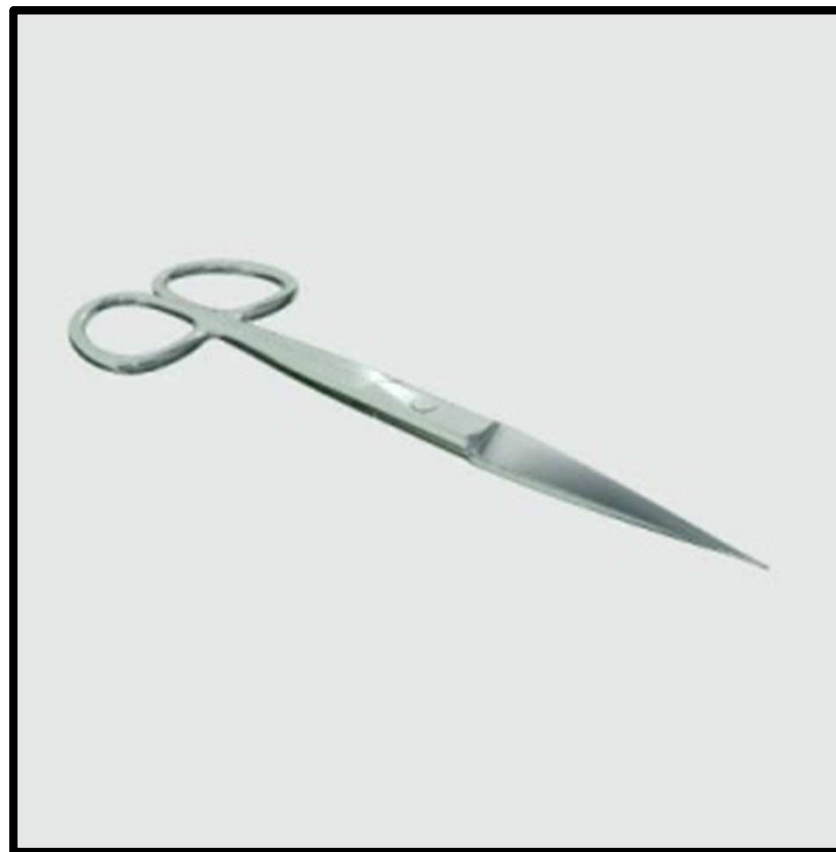


- Bandage Scissors

- Most common type has one blade with a flat blunt prow which can be inserted beneath a dressing and slid forward without fear of penetrating the skin.
- Used mainly in cutting bandages and rarely used in operating table.



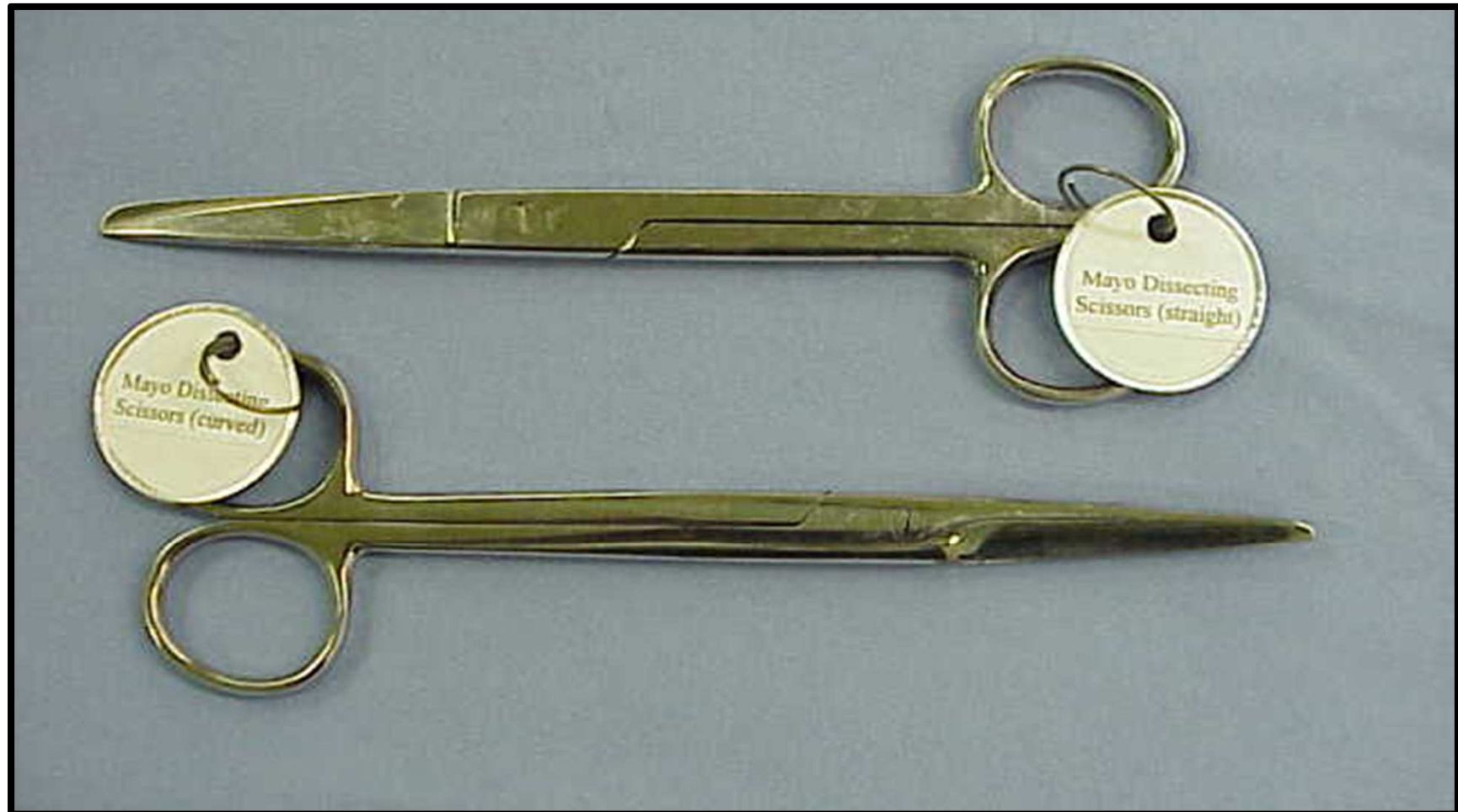
# Scissors



**Mayo dissecting scissor (top)**  
**Metzenbaum scissor (bottom)**



# Mayo dissecting scissor straight and curved





# Suture scissors (blunt blunt)

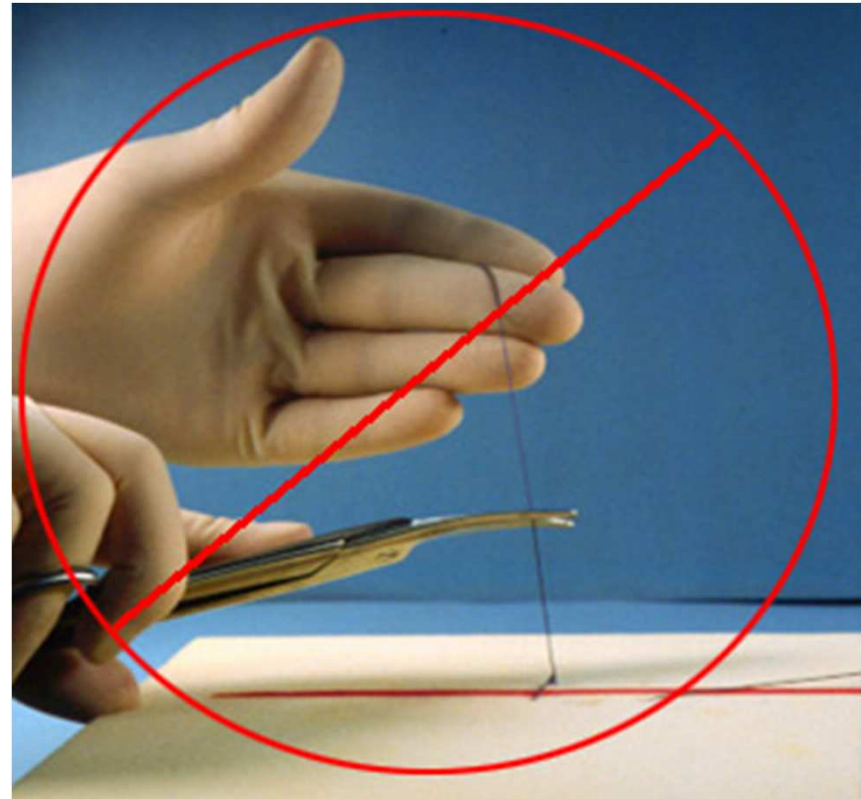
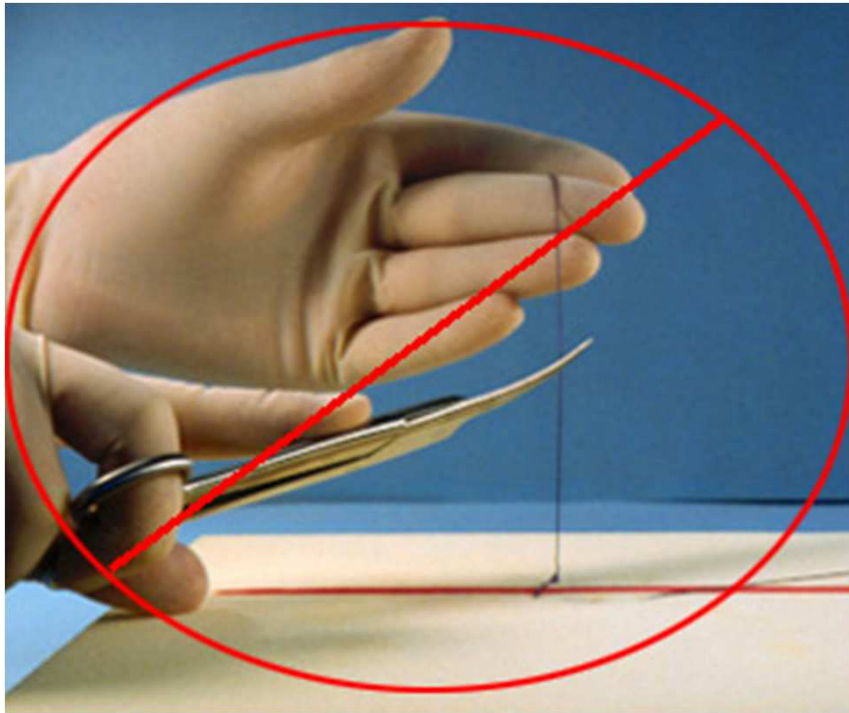


# Littauer suture scissors



- To hold the scissors, the thumb and the 4<sup>th</sup> fingers are inserted through the rings, the middle finger is rested in front of the ring finger and the index finger is set against the blades.
- The index finger placed well forward on the scissors provides more control of the instrument.
- The instrument should remain at the tips of the fingers for maximum control.

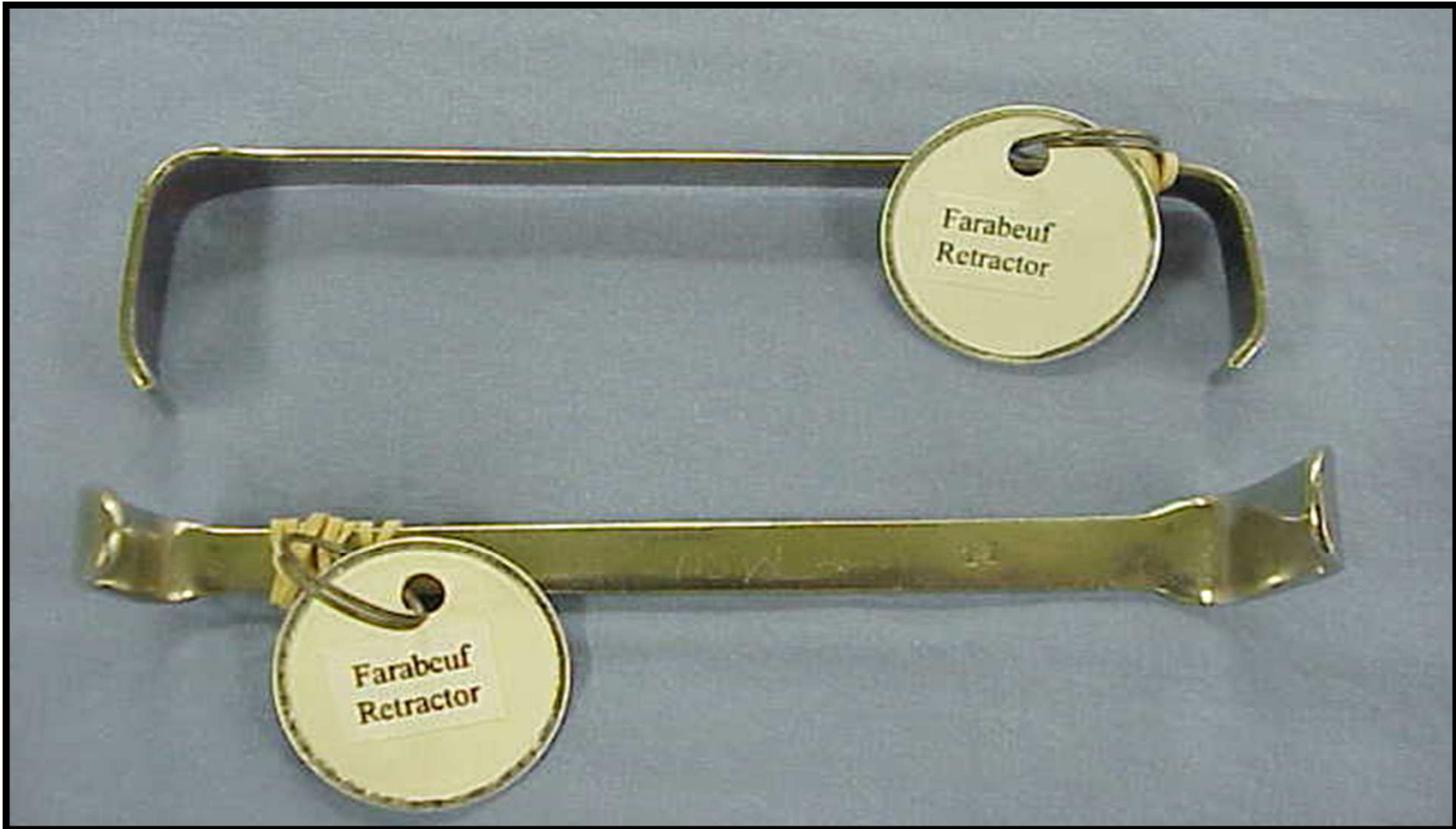
# Scissors



# Retractors

- May be hand held or self – retaining
- Aid in exposure of the tissue or lesion being dissected

# Farabeuf retractor





# Retractors



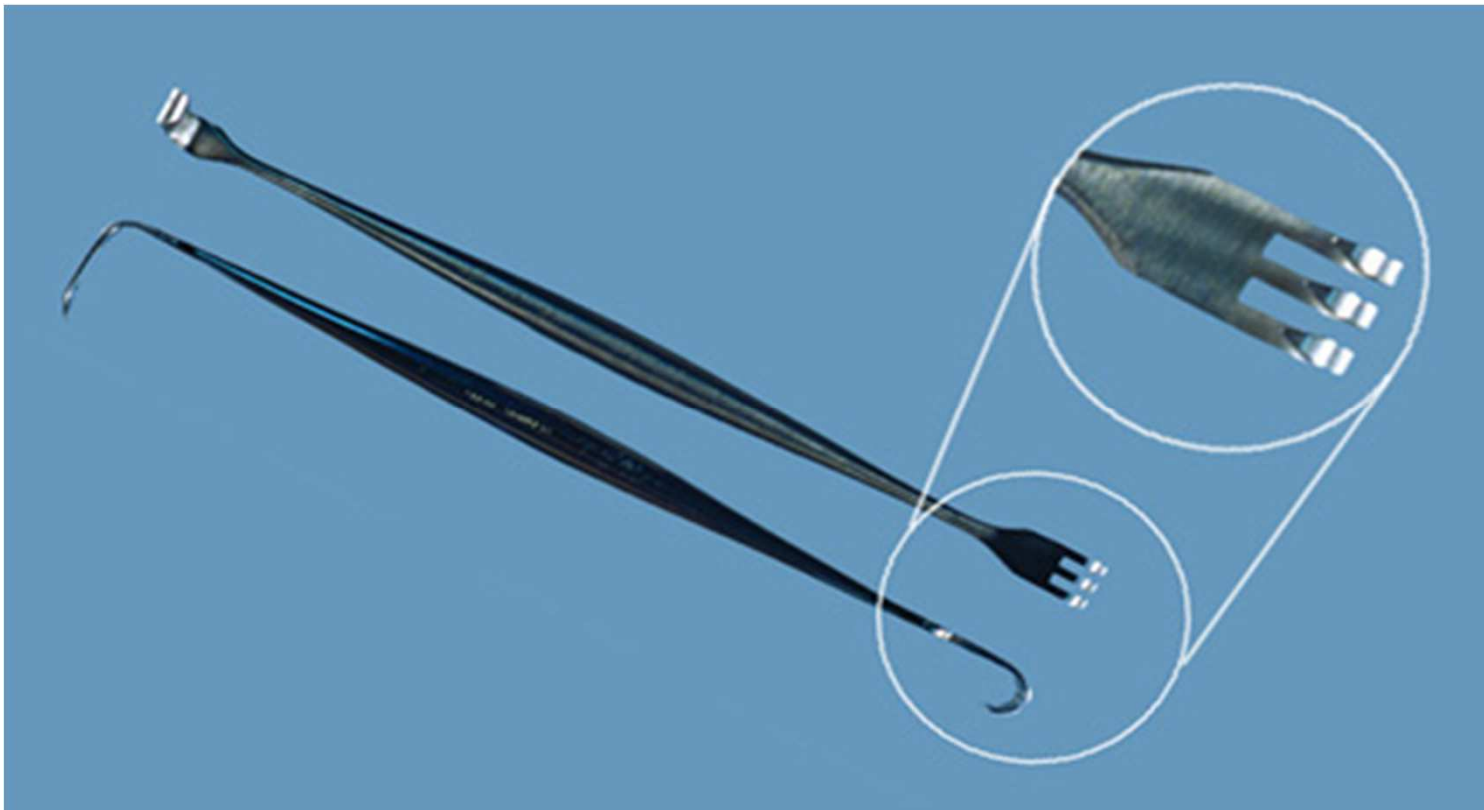
# Spay hook



- Hand Held Retractors:

- Zenn

- Blades at each end
    - Blades can be blunt (delicate) or sharp (more traumatic, used for fascia)





# Army Navy

- Blunt edges with different lengths used in most minor procedures

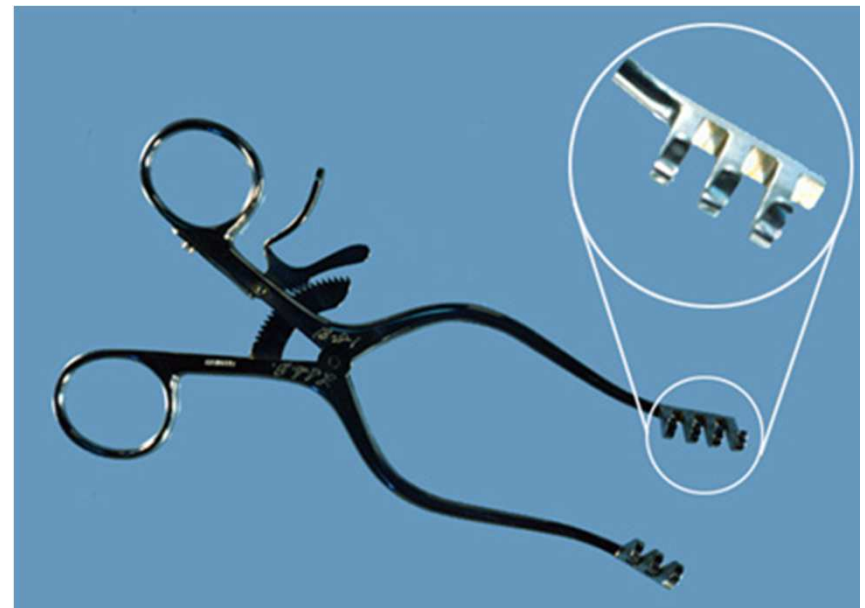


- Hand held Retractors :

Usually held by an assistant to aid the surgeon in the visualization of the lesion being dissected.

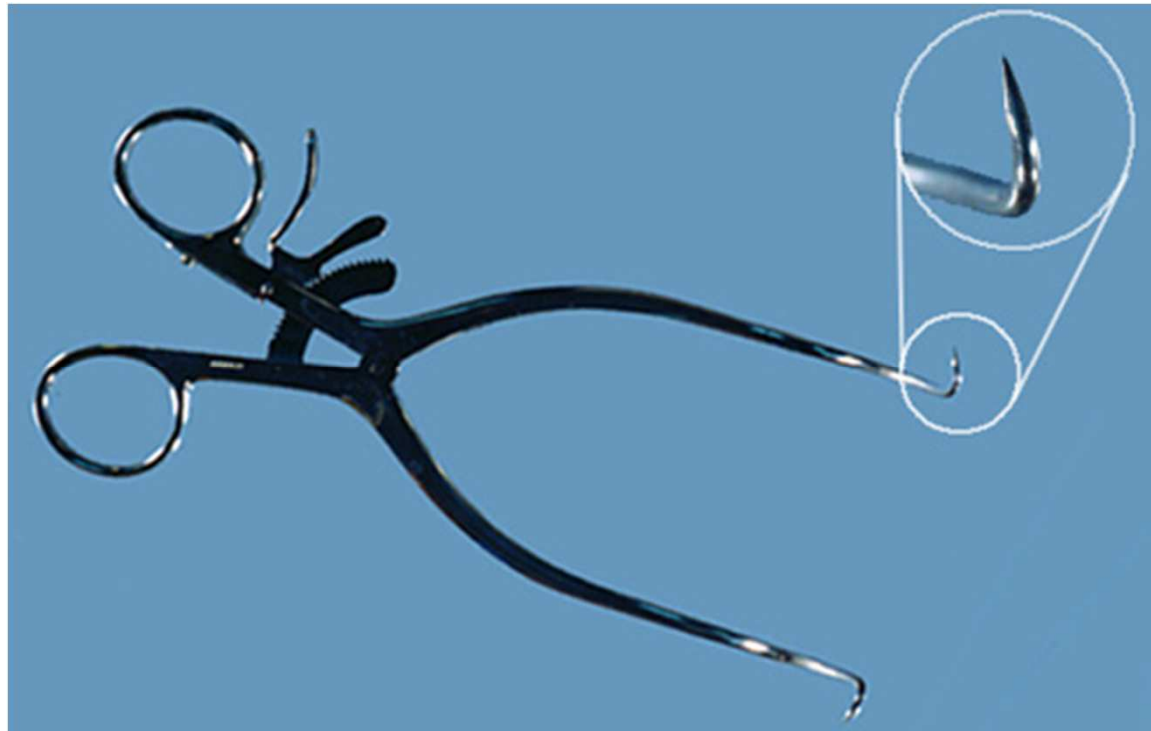


- Self retaining Retractors:  
Weitlaner
  - Ends can be blunt or sharp
  - Has rake tips
  - Ratchet to hold tissue apart

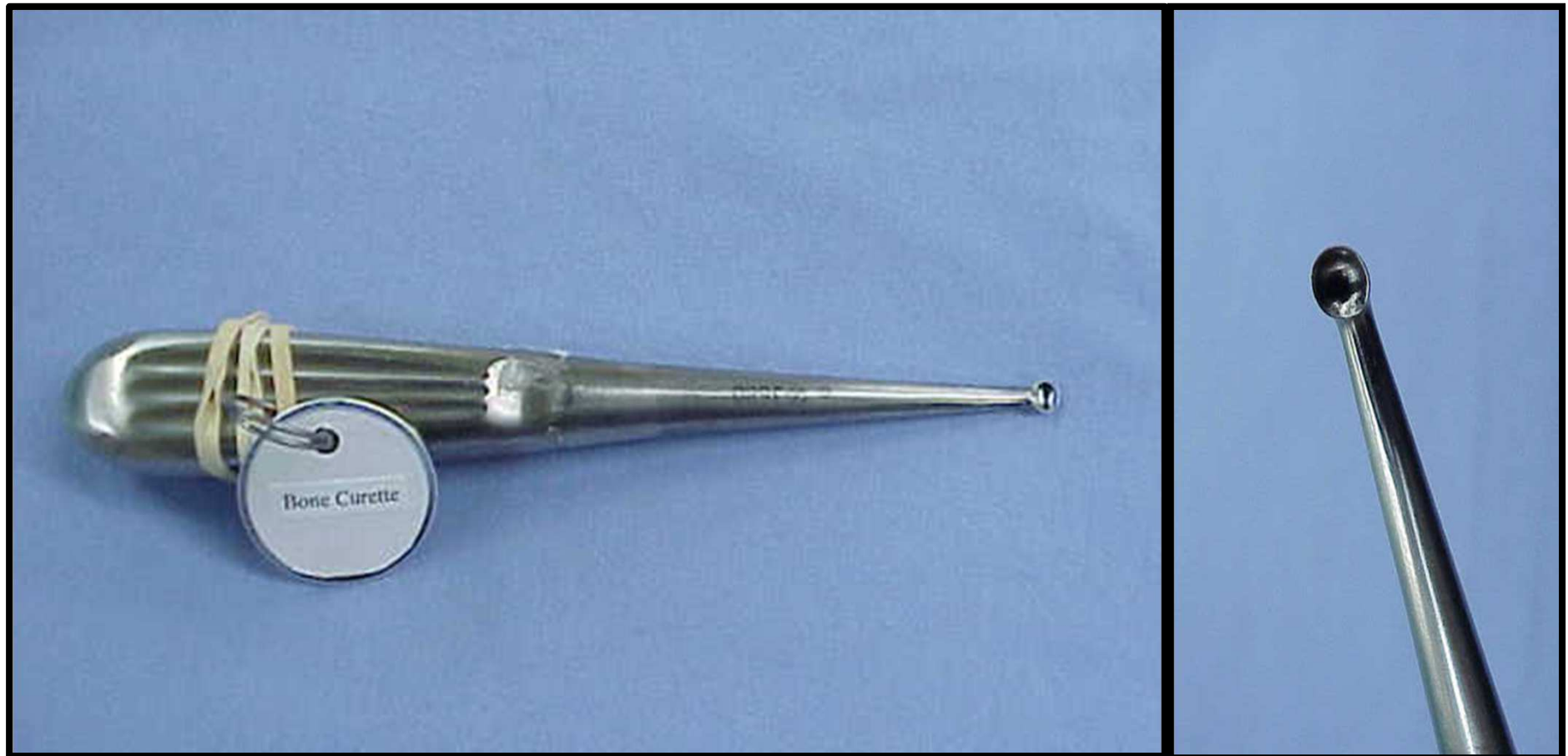


# Gelpi

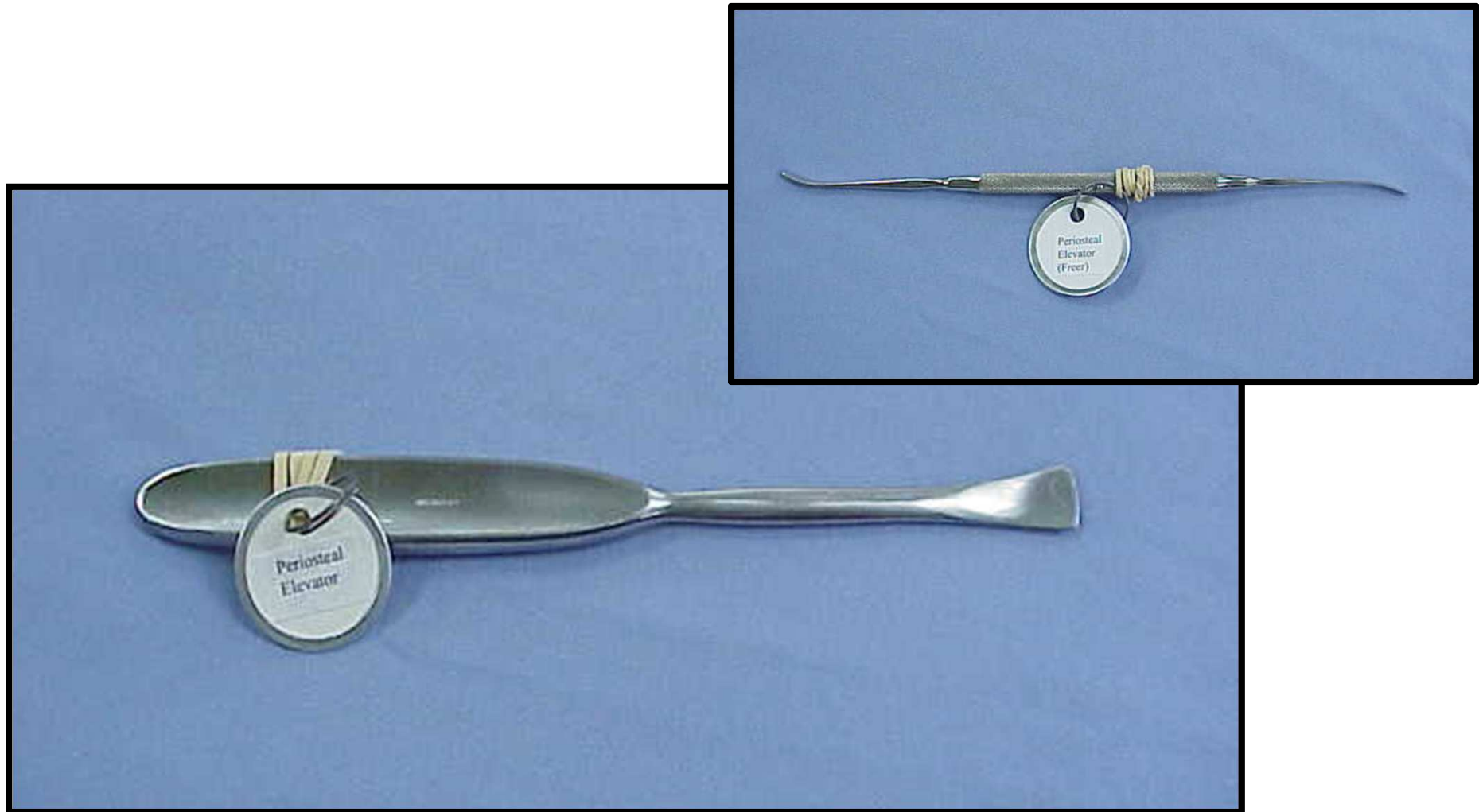
- Has single point tips
- Ratchet to hold tissue apart



# Curettes



# Periosteal elevator



# Needle Holder

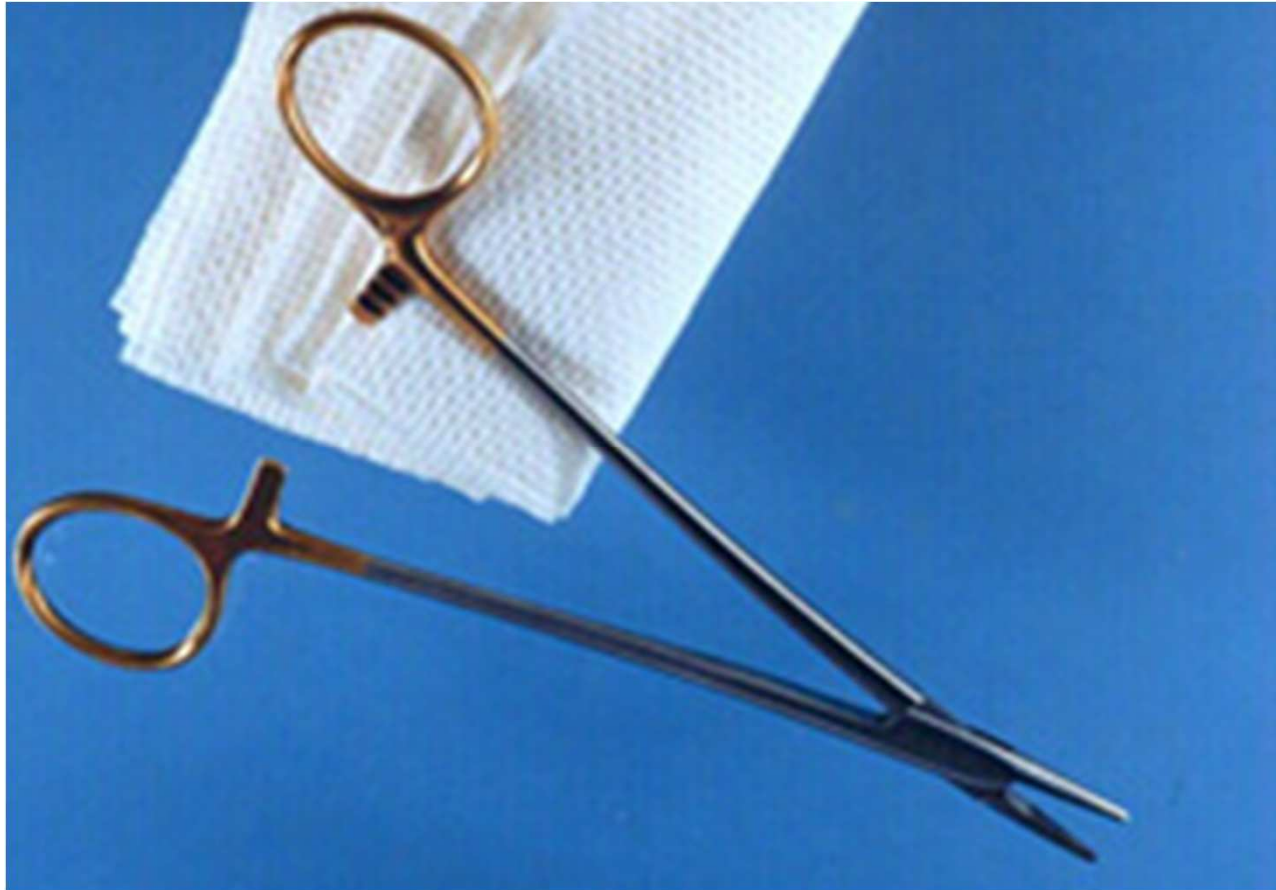
- Hinged (locking) instrument used to hold the needle while suturing tissue
- Good quality is ensured with tungsten carbide inserts at the tip of the needle holder







- Mayo – Hegar
  - Heavy, with mildly tapered jaws
  - No cutting blades



- Olsen – Hegar
  - Includes both needle holding jaw and scissor blades
  - The disadvantage to having blades within the needle holder is the suture material may be accidentally cut.



- **Castro – Viejo Needle Driver**
  - Common to vascular, ophthalmic and delicate cosmetic surgeries
  - Comes in locking and non – locking varieties depending on the surgeon's preference
  - Used for very fine suture in the 00000 and smaller range

# Castro – Viejo



- Like other ringed instruments, the needle holder is held with the thumb and the 4<sup>th</sup> fingers inserted through the rings, the middle finger is rested in front of the ring finger and the index finger is set against the handle.
- Castro – Viejo needle drivers are usually “palmed” with the curved portion of the locking mechanism held between the thenar and hypothenar eminences of the thumb and little finger, respectively.

# Towel clamps

- Secure drapes
- May also be used to hold tissue
- Backhaus towel clamp
  - Locking forceps with curved, pointed tips





2009 10 23