Surgical instruments

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Minor Surgery Tray
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\textsuperscript{rd} and 4\textsuperscript{th} 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 4th 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 4th 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
Periostal 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

[Image of surgical instruments]
Like other ringed instruments, the needle holder is held with the thumb and the 4th 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