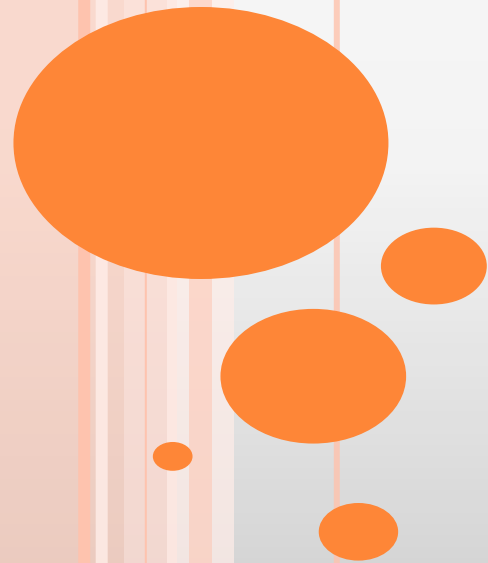




INSTRUMENTATION FOR BASIC ORAL SURGERY



Dr. Mohit Bindal
Senior Lecturer
Department Of Oral And Maxillofacial Surgery
Subharti Dental College & Hospital Subharti University
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Introduction

Armamentarium

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References



INTRODUCTION

- MYRAID OF INSTRUMENTS – ORAL SURGICAL PROCEDURES
- **VARIETY OF PURPOSES:**
 - HARD TISSUE
 - SOFT TISSUE



ARMAMENTARIUM

- Instruments for incising tissue
- Instruments for elevating mucoperiosteum
- Instruments for retracting soft tissue
- Instruments for controlling hemorrhage
- Instruments for grasping tissue
- Instruments for removing bone
- Instruments for removing soft tissue from bony defects



ARMAMENTARIUM CONTD..

- Instruments for suturing mucosa
- Instruments for holding mouth open
- Instruments for providing suction
- Instruments for transferring sterile instruments
- Instruments for holding towels and drapes in position
- Instruments for irrigation
- Dental elevators
- Extraction forceps
- Instrument tray systems

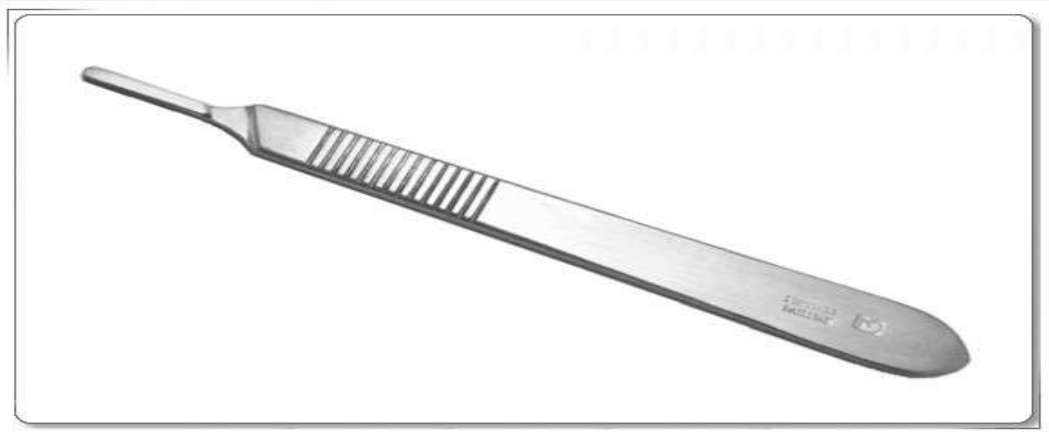


INSTRUMENTS FOR INCISING TISSUES

Most surgical procedures begin with incision

No. 3 Handle
Commonly used

No. 7 Handle
Longer, more slender



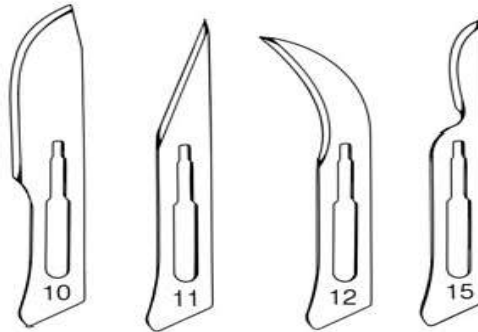


BLADES

Small stab incision

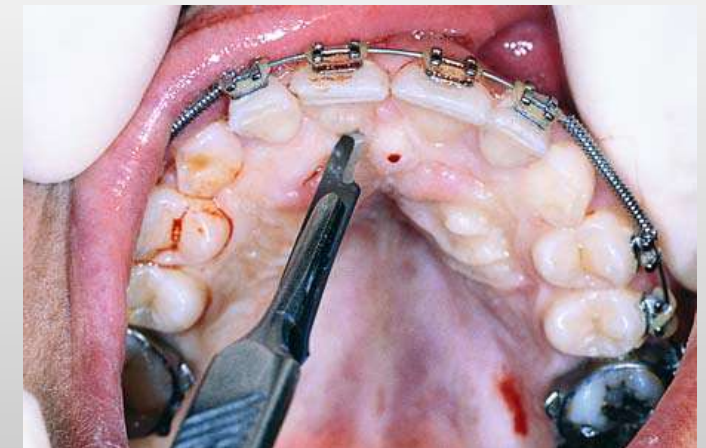


Used for large
skin incision



Mucogingival
procedures

Small-incision
around teeth &
through
mucoperiosteum





LOADING & UNLOADING BLADE



Correct way to load the scalpel blade on the handle

Unloading of blade





Using a Scalpel



- ◆ Held in pen grasp
- ◆ Maximal control of blade
- ◆ Mobile tissue should be held firmly to stabilize it
- ◆ Knife pressed down firmly in mucoperiosteal incisions



INSTRUMENTS FOR ELEVATING MUCOPERIOSTEUM

- Most commonly used ***molt no. 9 periosteal elevator***



- Sharp end – reflect dental papilla from between teeth
- Broad end – elevating tissue from bone
- Some surgeons prefer ***Round ended Molt periosteal elevator***



- ***No. 1 Woodson periosteal elevator***



- Small and delicate
- Release soft tissue around tooth



○ Methods of reflecting the periosteum from the flap

- Prying motion; pointed end used to reflect the dental papilla
- Push stroke; uses the broad end and the most efficient stroke to reflect the periosteum from underlying bone
- Pull stroke; Scrape stroke (most likely to tear the mucosa)





Howarth's Periosteal Elevator

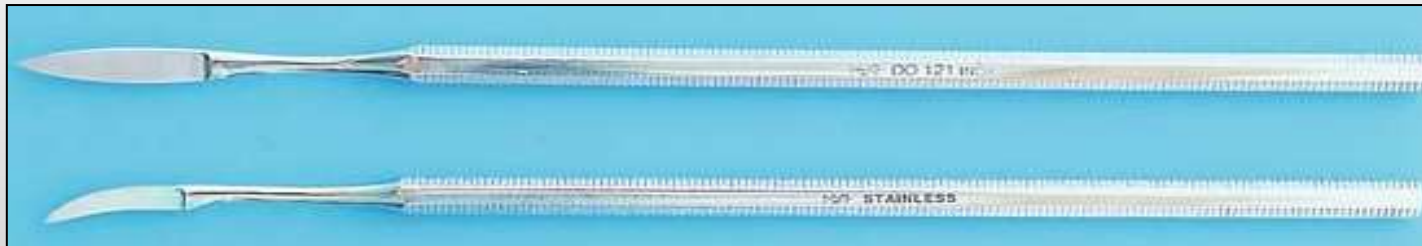
Designed to strip mucoperiosteum from bone

Used in pen grasp



Freer's Elevator

- Used for reflecting the gingiva surrounding the tooth before extraction
- Easy to use
- Has thin ends



Desmotomes

Are either straight or curved

Straight - used for the anterior teeth of the upper jaw

Curved - for the rest of the teeth of the upper & all of the teeth of the lower jaw.



INSTRUMENTS FOR RETRACTING SOFT TISSUE

- Provide good vision and access
- To retract cheek, tongue & mucoperiosteal flaps



C – shaped retractors

- For retraction of the cheek



Cheek Retractor

- For retraction of cheeks & lips





Austin's
retractor



Minnesota retractor

Periosteal elevator is often used to retract soft tissue

Seldin Retractor



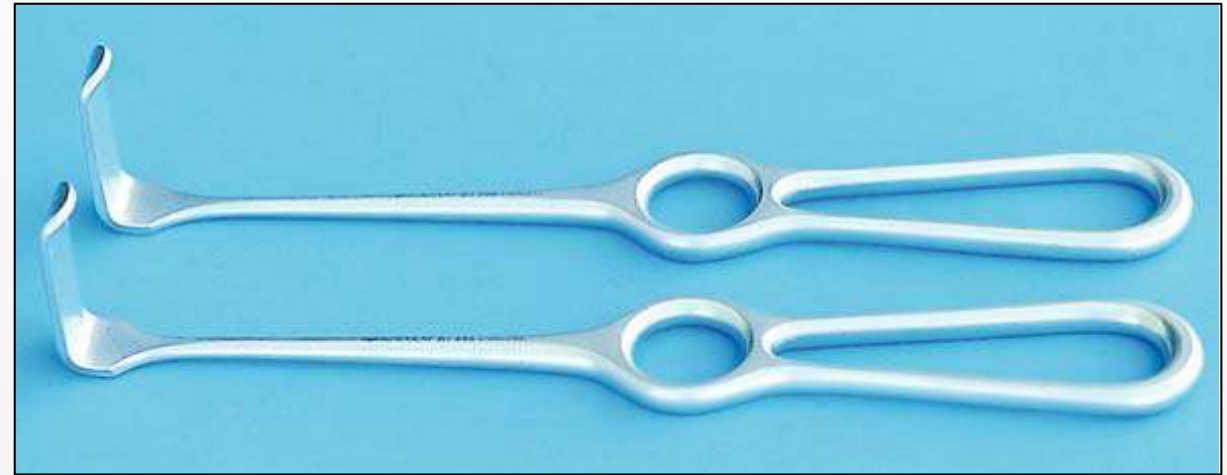
- Designed specifically to retract soft tissue flaps
- Looks similar to periosteal but end is dull



LANGENBECK RETRACTOR



- “L” shaped retractor with long handle.
- Used for retraction of the edges of a flap for improved visualization of the deeper layer and structures
- It comes in different sizes depending upon length of the handle and width of the blade.





Instruments used to retract tongue

- Mouth mirror
- Weider retractor
 - Broad, heart shaped
 - Serrated on one side to firmly engage tongue & retract it medially & anteriorly
- Tongue Depressor
 - ✓ It has broad, flat rounded blade.
- ✓ Towel clip
 - Biopsy in posterior aspects of tongue
 - L.A. should be given in the area of placing towel clip





Skin Hook

- Undesirable trauma to the skin during surgical procedures may be reduced to a minimum
- There will be a decreased incidence of wound infections and inflammations - better wound healing and more desirable cosmetic results



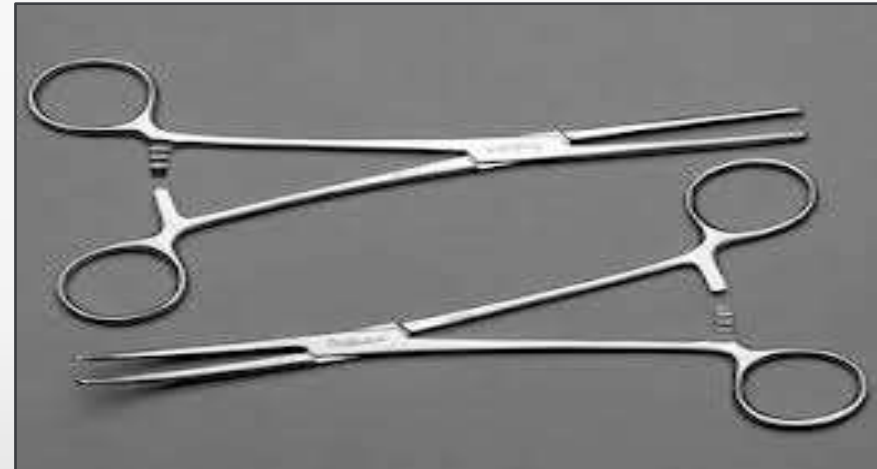


INSTRUMENTS FOR CONTROLLING HEMORRHAGE

- small arteries & veins are cut, requiring more than simple pressure
- Instrument used : **Hemostat**



Different Sizes



Straight or Curved



Face of hemostat has parallel grooves



- Hemostat has long delicate beak – grasp tissue
- Locking handle – allows surgeon to let go of instrument once the vessel is clamped



Uses of hemostat:

- Controlling bleeding
- Remove granulation tissue from tooth sockets
- Pick up small root tips, pieces of calculus, fragments of amalgam restorations or any other small particles that have dropped into mouth or wound area





Electro cautery/thermal cautery

- Current passed through a resistant metal wire electrode
- Heated electrode is then applied to tissue to achieve hemostasis
- Applied across the lesion until slightly pink to pale coagulation occurs
- Electrocoagulation uses monopolar or bipolar electrodes





Monopolar electrocautery

Parts :

- High frequency AC generator (over 20,000Hz)
- Regulator
- Foot control
- Active electrode
- Indifferent electrode
- The patient is part of the electrical circuit
- Interchangeable tips such as loops, fine tips, and needle tips.





Bipolar electrocautery

- Both active and return electrodes are incorporated into a single handheld instrument
- The current passes between the tips of the two electrodes and affects only a small amount of tissue





Precautions :

- Avoid point contact with indifferent electrode
- Avoid placement of indifferent electrode near bony ridges
- Ether, cyclopropane used for GA – risk of sparking
- Operator should wear rubber footwear
- Avoid contact of the tip with metal instruments



INSTRUMENTS USED TO DRAIN THE ABSCESS



Lister sinus forceps

○ Uses

- To open an abscess By Hiltons methods to break the loculae
- To hold the small gauze to clean the cavity
- To dissect out sinus, fistulous tract in soft tissues

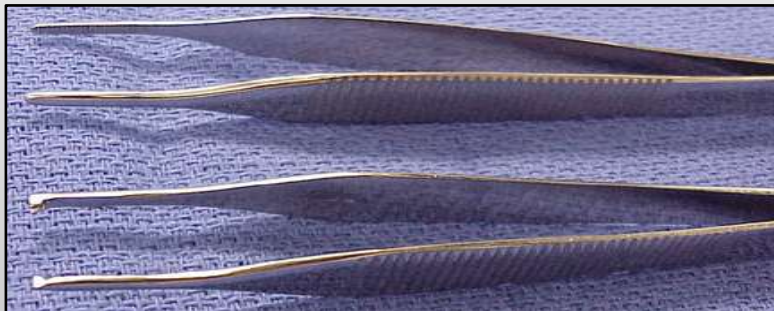




INSTRUMENTS FOR GRASPING TISSUE

During soft tissue surgery it is frequently necessary to stabilize soft tissue flaps

Tissue forceps commonly used – *Adson forceps*



For working in posterior part of mouth – *Stillies Forceps*

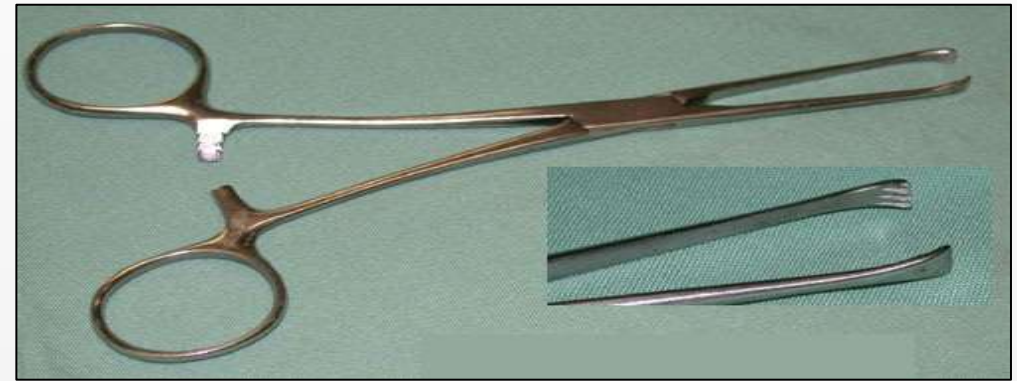
- Shape similar to Adson
- Longer(7-9 inches)





Allis Tissue Forceps

- Removing large amounts of fibrous tissue
- Has locking handles & teeth
- Used only on tissues to be dissected



Russian forceps

- Round ended tissue forceps
- Used to pick teeth that have been elevated from socket
- For placing gauze in mouth



BABCOCK'S FORCEPS



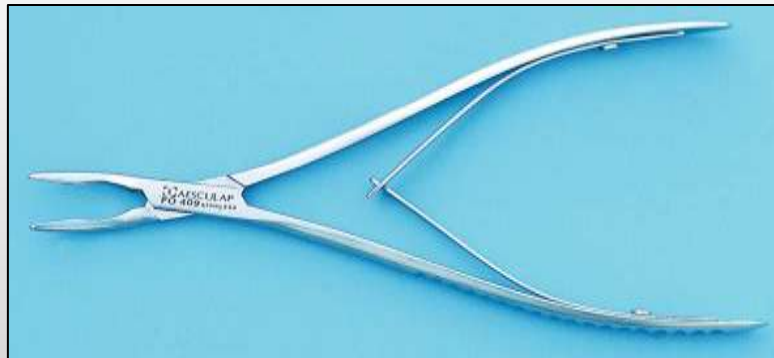
- Broad, flared ends with smooth tips.
- Used to atraumatically hold viscera , mucosa, lymph nodes.



INSTRUMENTS FOR REMOVING BONE

Rongeur Forceps

- Most commonly used
- Sharp blades – squeezed together by the handles
- Cutting or pinching through the bone
- Have leaf spring between handle – opens on release of hand pressure
- Two designs :



Side cutting Forceps



Maxilla



Mandible

Blumenthal Rongeurs



Chisel & Mallet

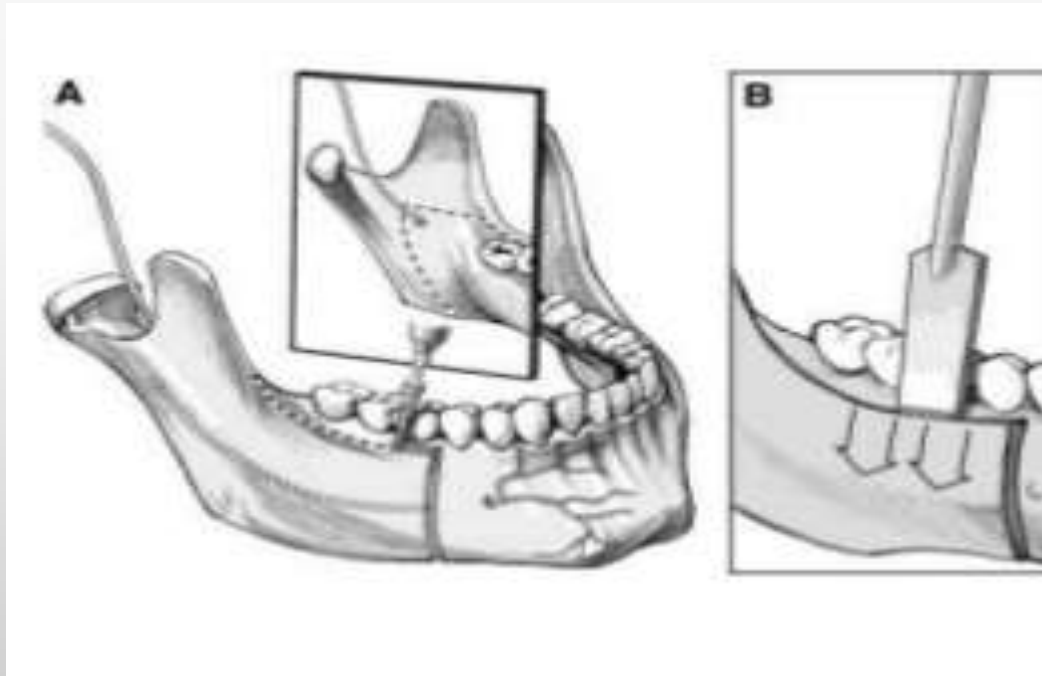
- Used to remove bone
- Monobevelled
- Success depends on sharpness of instrument
- Mallet with nylon facing
 - Imparts less shock
 - Less noisy
 - Recommended





Osteotome

- Bone splitting instrument
- Bibevelled

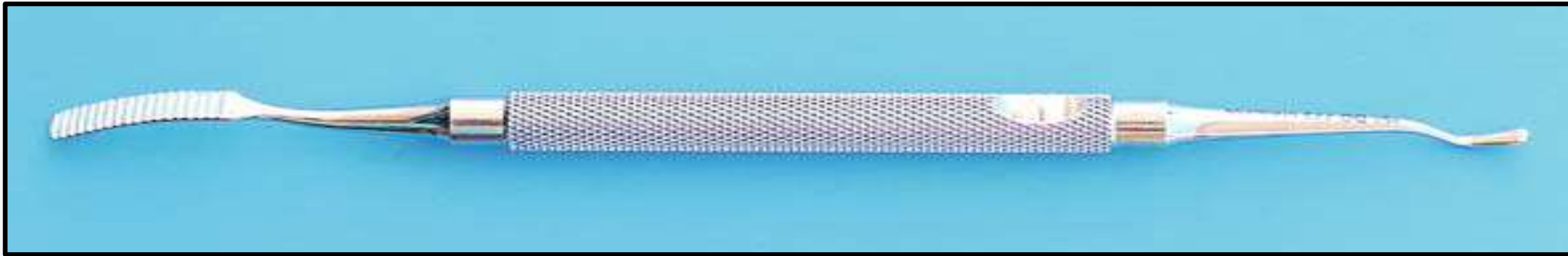


Osteotomy cuts: orthognathic surgery
/refracturing maluinted #

Osteoplasty/ bone reconturing



Bone File



- Final smoothing of bone before suturing
- Double ended – small & large end
- Remove bone only in pull stroke



Bur and handpiece

- This is the technique that most surgeons use while removing bone for surgical removal of teeth
- Relatively high speed handpieces with sharp carbide burs remove cortical bone efficiently
- Handpiece must not exhaust air into the field



No.557



No.703



No.8 round bur

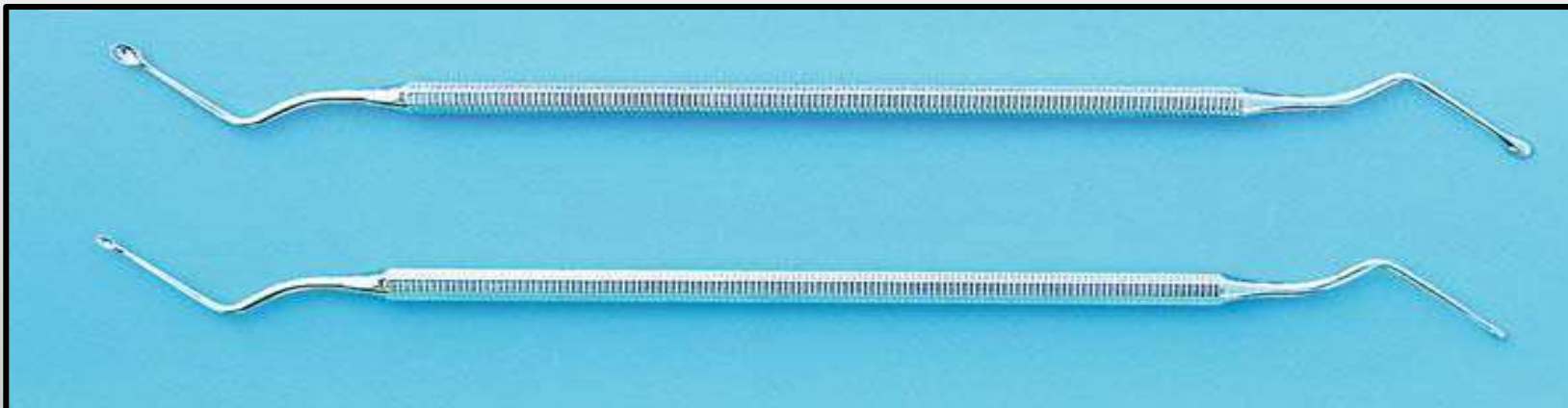




INSTRUMENTS FOR REMOVING SOFT TISSUE FROM BONY DEFECTS

Periapical Curette

- Angled, double ended
- Remove
 - Granulomas
 - Small cysts
 - Granulation tissue from socket





INSTRUMENTS FOR SUTURING MUCOSA



Needle Holder

- Has locking handle & short stout beak
- Intraoral – 6 inch needle holder recommended

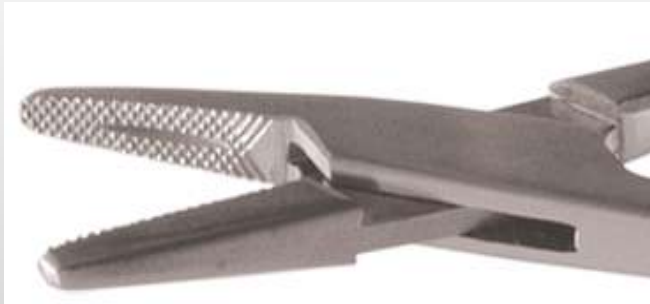




COMPARISON BETWEEN NEEDLE HOLDER & HEMOSTAT

Needle Holder

- *Beak is shorter & stronger*
- Face of the beak is cross hatched to permit a positive grip



Hemostat

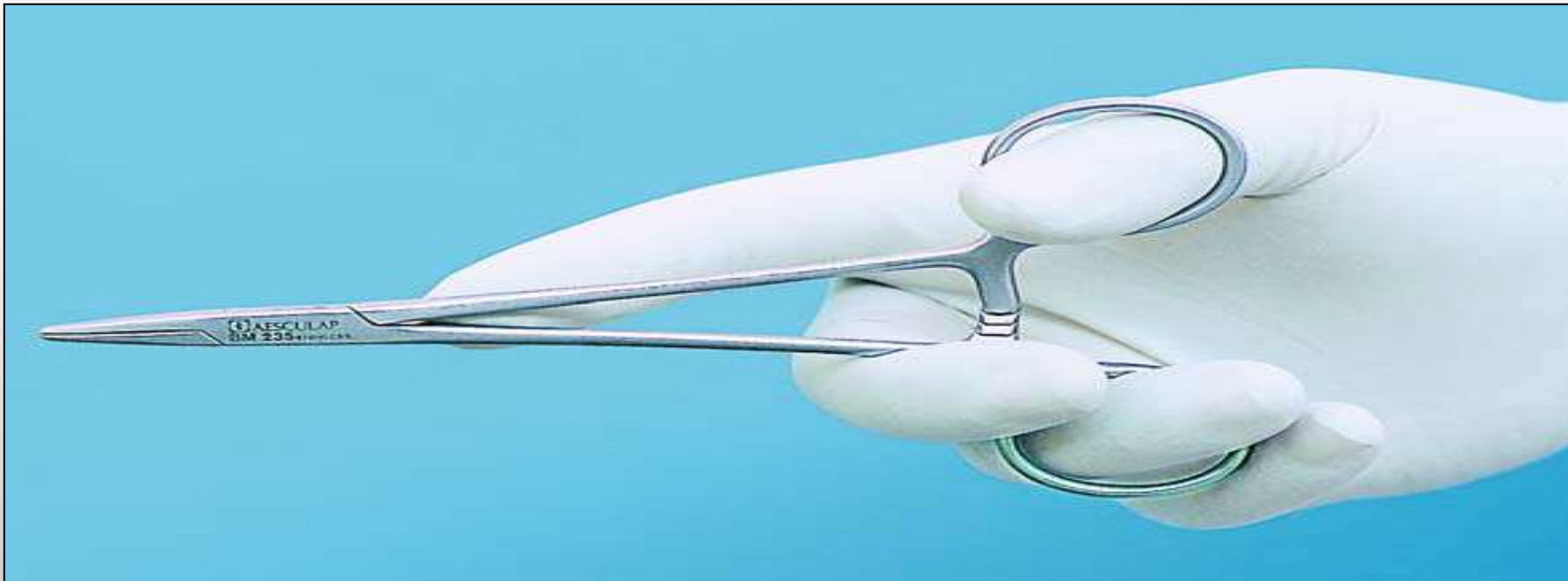
- *Long delicate beak*
- Has parallel grooves





Correct position of the fingers to hold needle holder

- Thumb & ring finger inserted through the rings
- Index finger held along the length to steady & direct it
- Second finger aids in control & locking mechanism





Scissors:

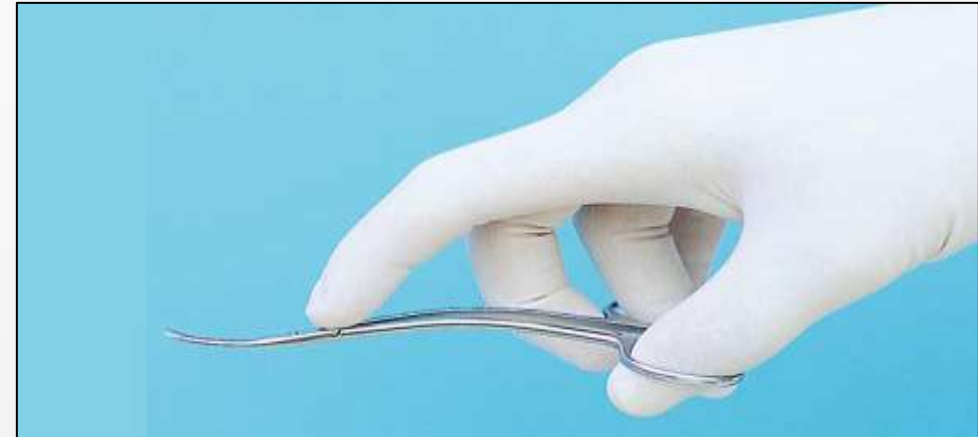
- Various types of scissors are used in oral surgery, depending on the surgical procedure

Suture scissors



Dean scissors

Have sharp cutting edges



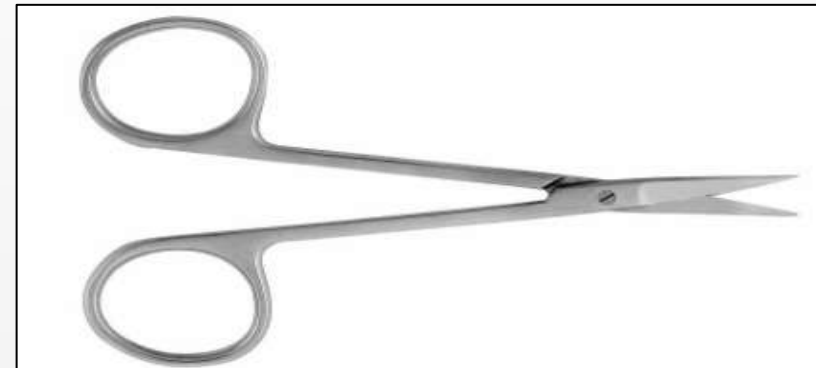
Suture scissors have relatively long handles and are held the same way as the needle holder



SOFT TISSUE SCISSORS



- Iris scissors & Metzenbaum scissors.
- Straight or curved blades.
- Iris : small, sharp pointed, delicate.
- Metzenbaum : undermining soft tissues & cutting; blunt nosed tips.
- Don't cut sutures : dull the edges- less effective & more traumatic
- Iris: very fine skin sutures





INSTRUMENTS FOR HOLDING MOUTH OPEN

Rubber bite block

- Bite blocks - it is a rubber block on which the patient can rest his teeth.
- If wider opening is required, bite block is positioned more to the posterior of the mouth.





SIDE ACTION ADJUSTABLE MOUTH PROPS



- Molt mouth prop or the side action mouth prop- is used by the operator to open the mouth wider if necessary
- Has ratchet type action, opening the mouth wider when the handle is closed





MOUTH GAG

- Forcefully open mouth :trismus
- Broad, serrated blades: rest on occlusal surface of molars: instrument opened: slow, gradual force
- Keep mouth open : procedures under G/A.





INSTRUMENTS FOR PROVIDING SUCTION

- To provide good visualization, blood, saliva, and irrigating solutions must be suctioned from the operating site

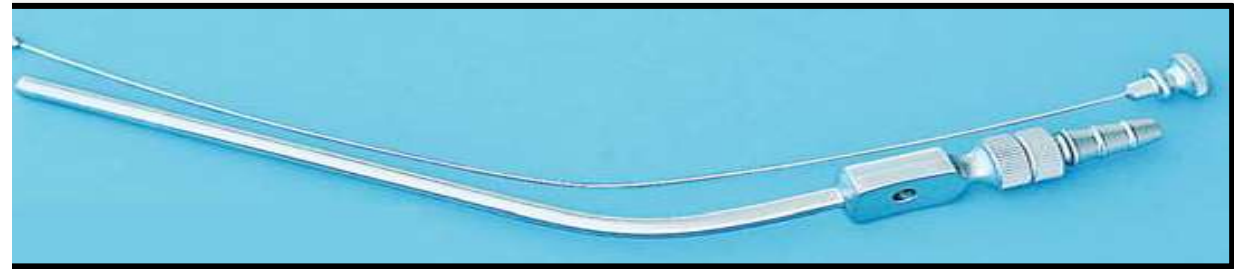




The surgical suction has a smaller orifice to facilitate suctioning of tooth sockets when needed



The Fraser suction has a hole in the handle portion that can be covered as the requirement dictates.



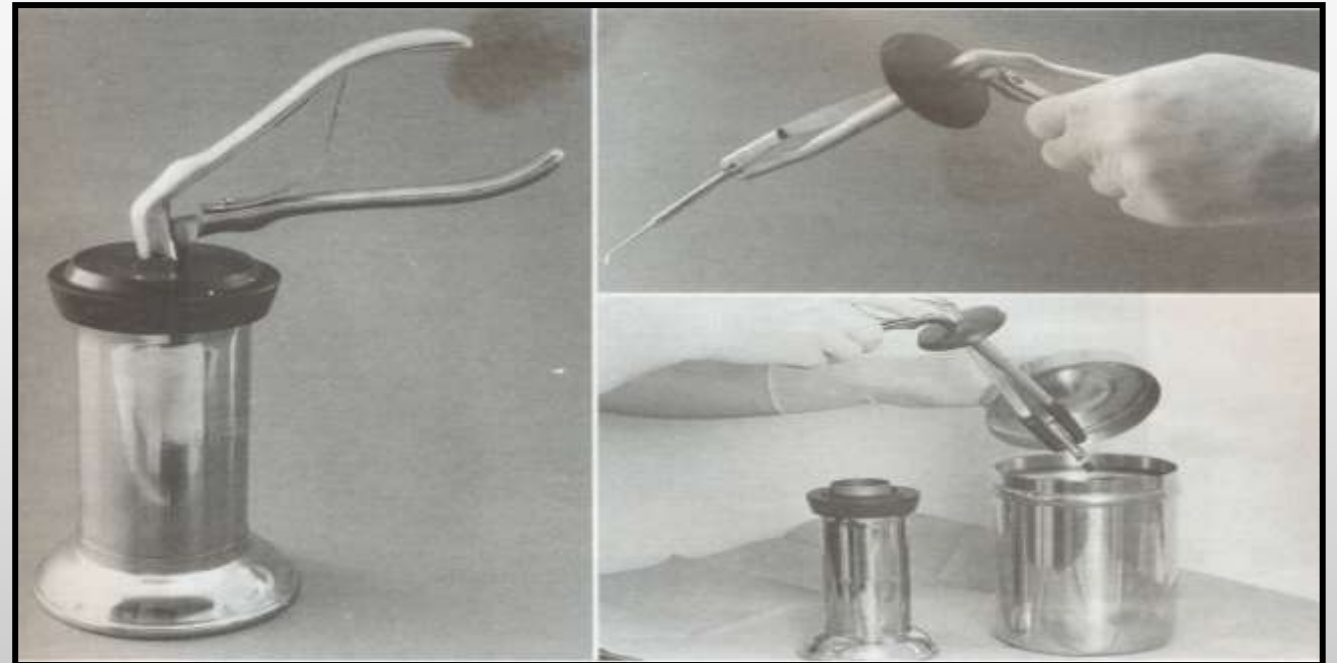
Plastic suction tips are also available





INSTRUMENTS FOR TRANSFERRING STERILE INSTRUMENTS

- The transfer forceps are heavy forceps used to move instruments from one sterile area to another
- These forceps are usually right angled forceps with heavy jaws, so instruments such as extraction forceps can be moved from one area to another and small items can be handled without dropping them





INSTRUMENTS USED FOR PREPARING THE SURGICAL FIELD

Swab holder

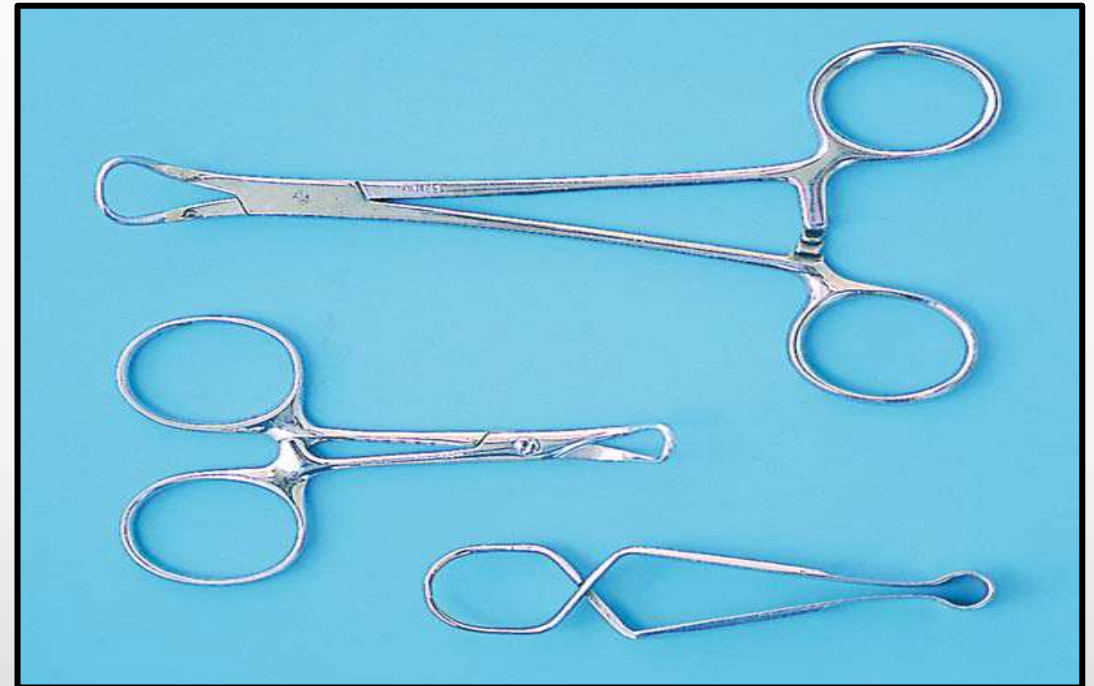
- Long blades, expanded at ends, forming an oblong tip
- Uses
 - To hold a swab and clean the area of operation
 - To swab the throat in unconscious patient or pt under GA
 - To press on the tonsillar bed to arrest haemorrhage
 - To hold the tongue in an unconscious patient



INSTRUMENTS FOR HOLDING TOWELS AND DRAPES IN POSITION



- Towel clip:
- Hold together, drapes placed around a patient
- Stabilizes suction tubes, micromotor etc.
- Hold & retract tongue: unconscious patient.
- Locking handle+ finger & thumb rings
- Sharp/ blunt action ends
- Curved points –penetrate towels & drapes

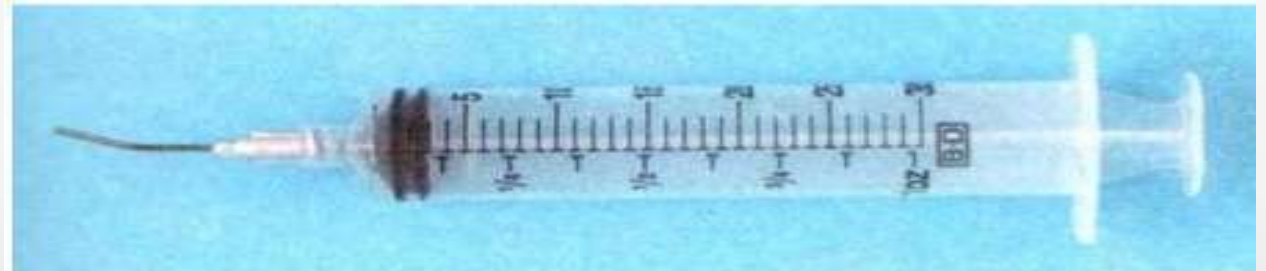




INSTRUMENTS FOR IRRIGATION

- Bone removal: steady stream of irrigation-sterile saline.
- Cools the bur
- Prevents bone- damaging heat build up
- Increases efficiency of bur:
 - Washes away bone chips
 - Lubrication
- Completion of procedure: before suturing

- Large plastic syringe +blunt 18 gauge needle





DENTAL ELEVATORS

One of the most important instruments used in extraction procedure is the dental elevator.

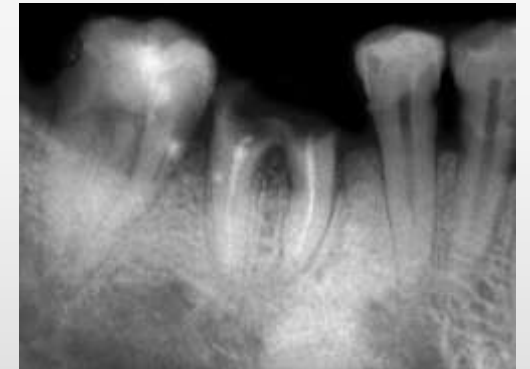
Parts of elevator

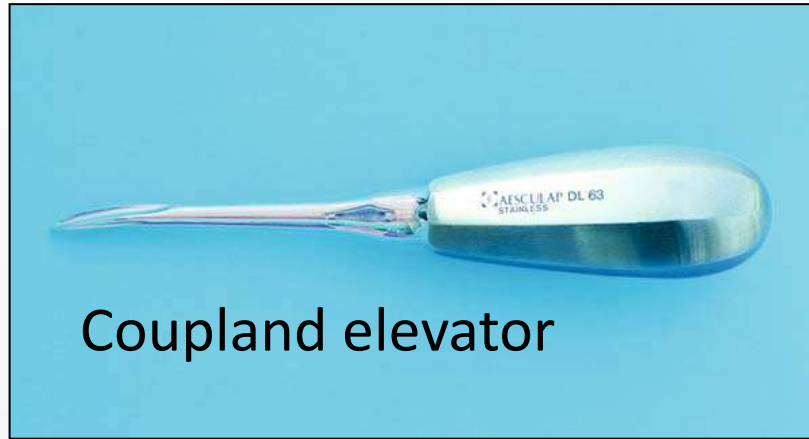




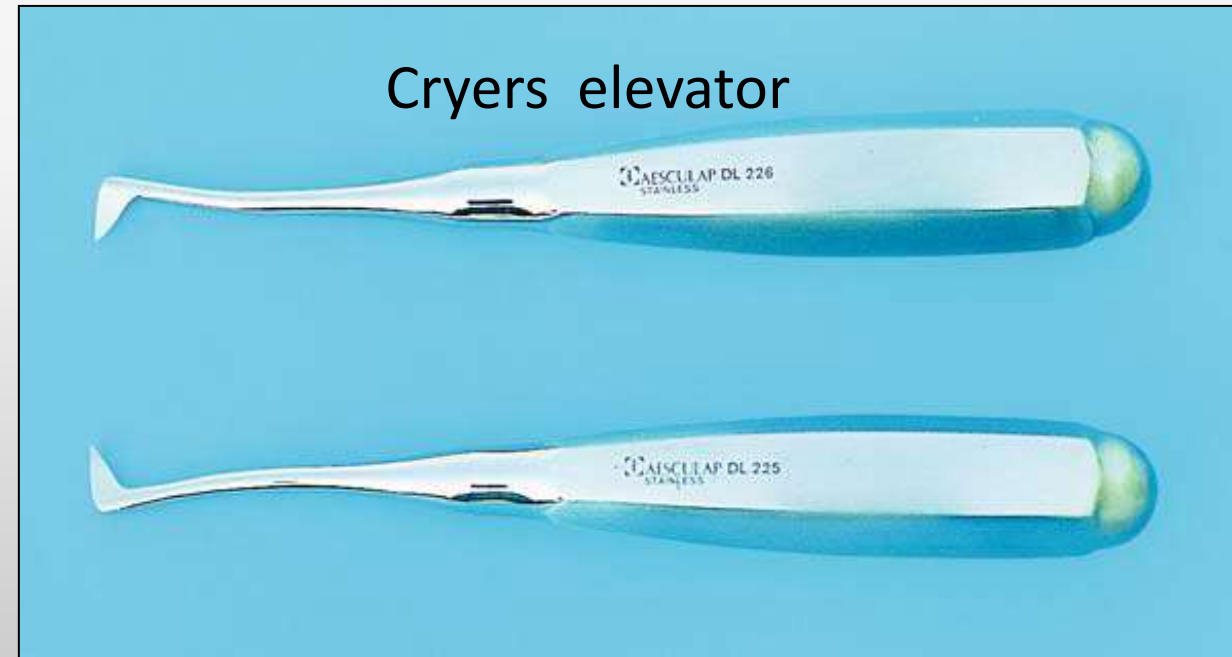
INDICATIONS

- To reflect mucoperiosteal membrane
- To luxate and remove teeth which cannot be engaged by the beaks of forceps.
- To remove roots, fractured or carious teeth
- To loosen teeth prior to application of forceps
- To split teeth which have grooves cut in them
- To remove intraradicular bone





Coupland elevator



Cryers elevator



Warwick James

Apexo elevator





Winters Crossbar



Crane pick

Root tip pick



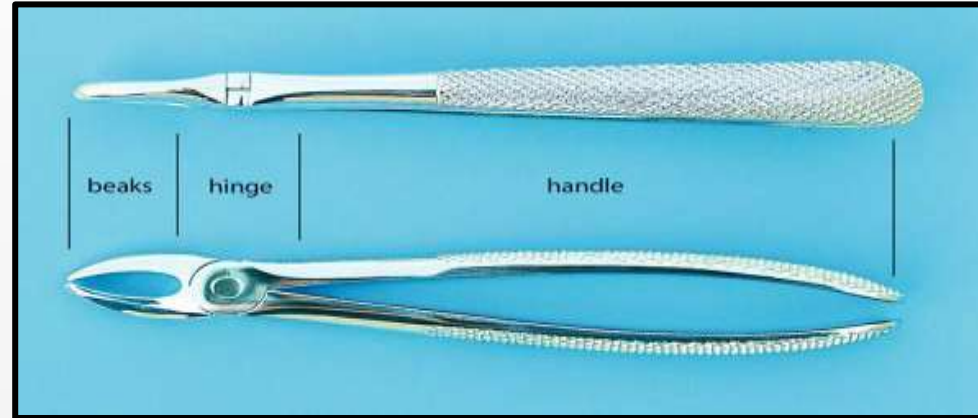


EXTRACTION FORCEPS

○ These instruments are used for removing the tooth from the alveolar bone

○ Components :

- Beaks
- Hinge
- Handle

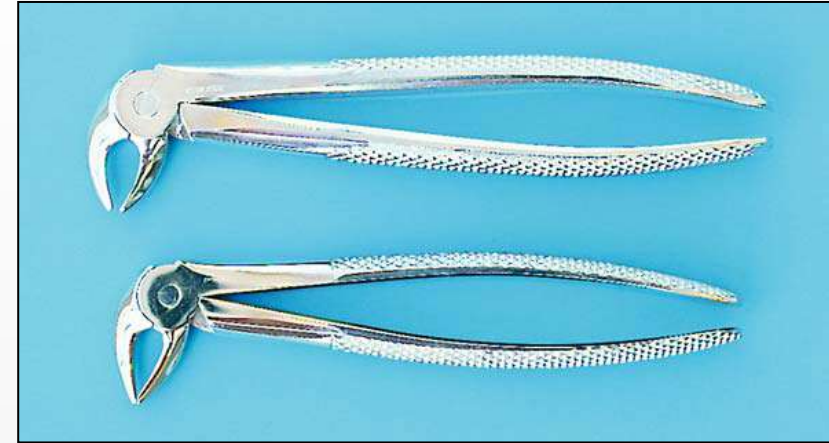


○ The handles of the forceps are held differently, depending on the position of the tooth to be removed





- Two different styles of forceps :
 - The American type
 - The British type



- The beak is designed to adapt to the tooth root at the junction of the crown and root.
- The width of the beaks also vary based on the teeth they are to be used on



MAXILLARY FORCEPS

- Single-rooted: incisors, canines, premolars
- 3-rooted: molars
- Maxillary universal forceps: no.150

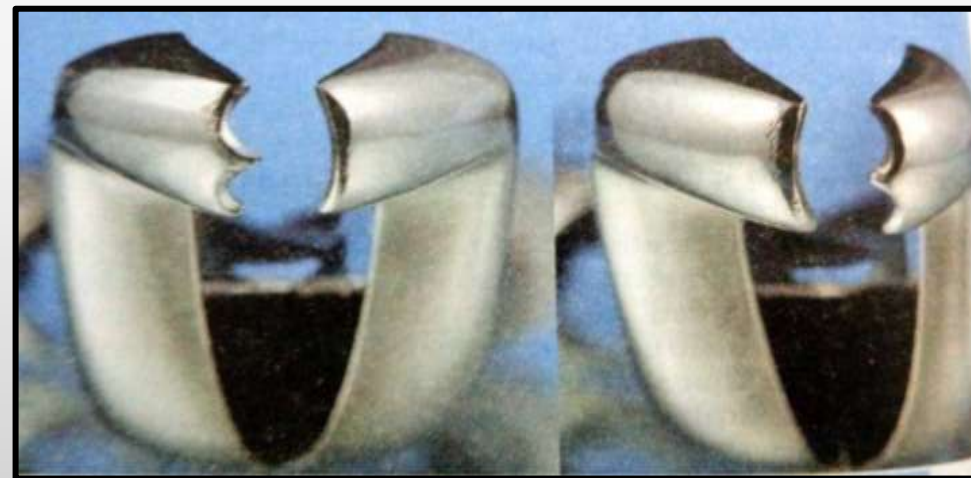
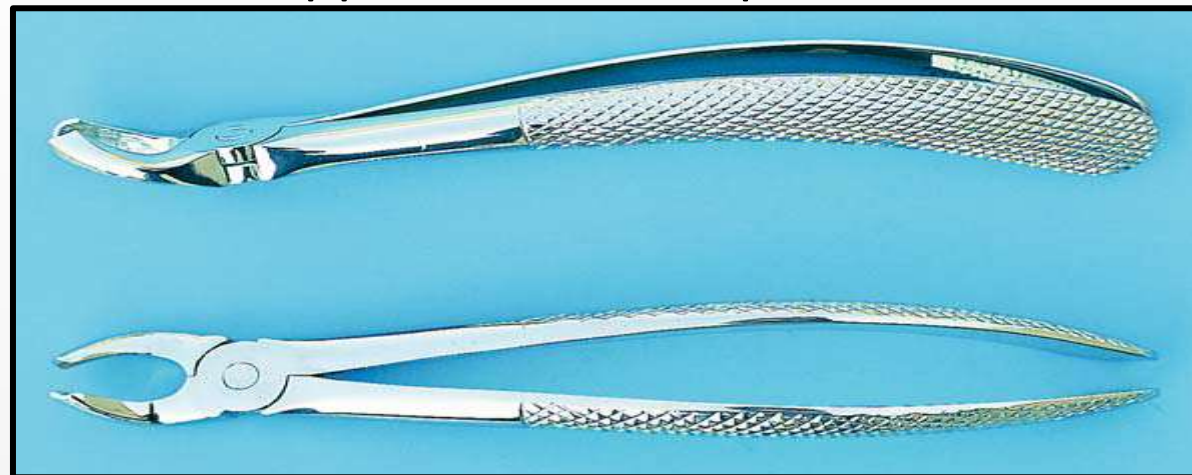




Maxillary Premolar forceps no. 150 A



Upper molar forceps no.53





Upper Third Molar Forceps



Bayonet Forceps



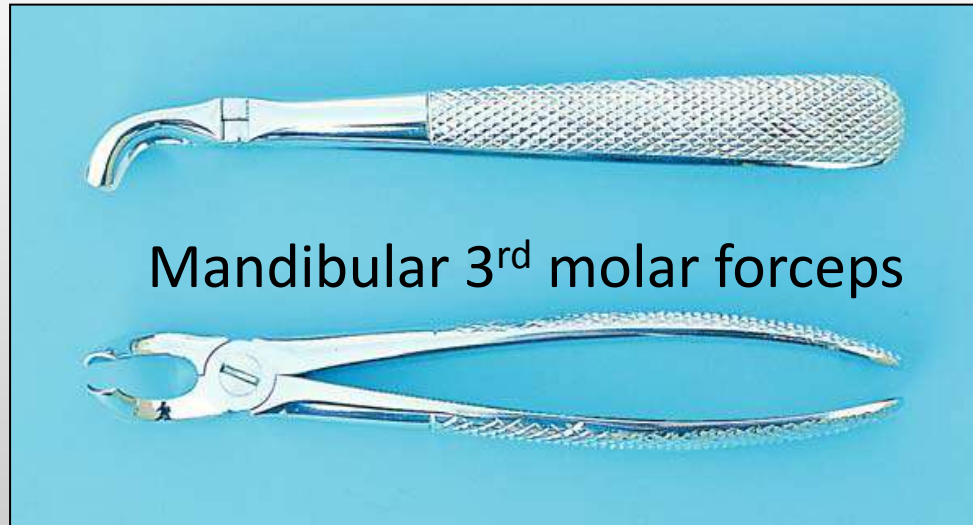
Upper Cowhorn Forceps no.88



Mandibular Anterior Forceps no.150



Mandibular Molar Forceps no.17





CONCLUSION

- *Surgeon must be well versed with the identification, indications for use as well as the techniques of using the different basic instruments .*
- *The quality of the instruments –as crucial as the knowledge & skill of the surgeon*
- *Use of good quality instruments is inevitable in ensuring the expected standard of care : expensive*
- *The surgeon and the assistant must handle , store and use the instruments with utmost care*



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