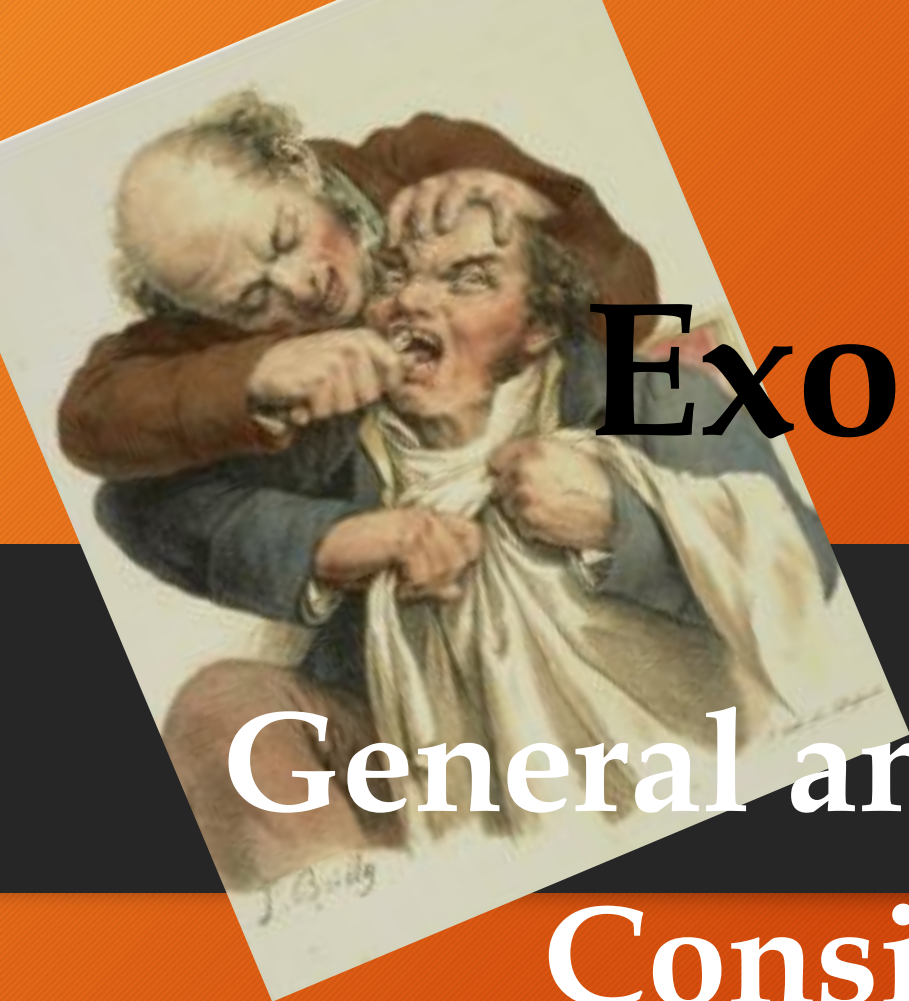


Exodontia

General and Anatomical Consideration

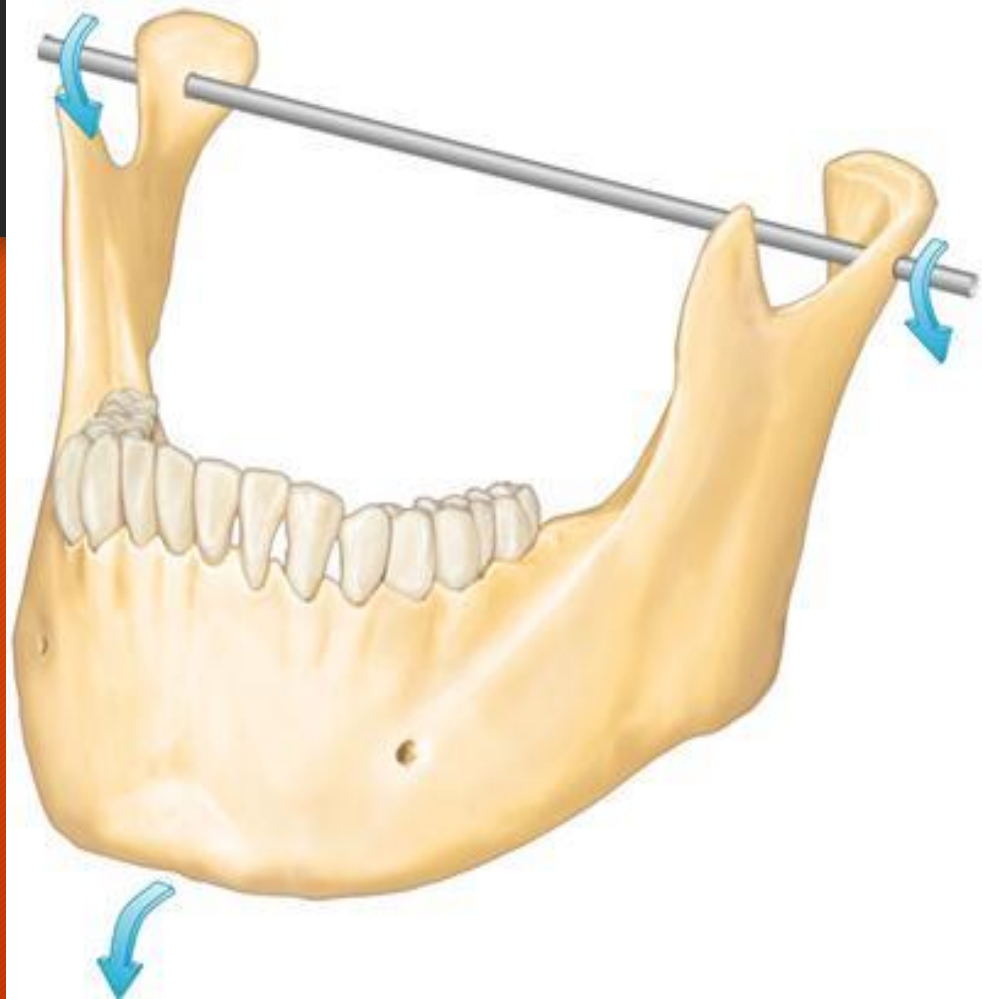
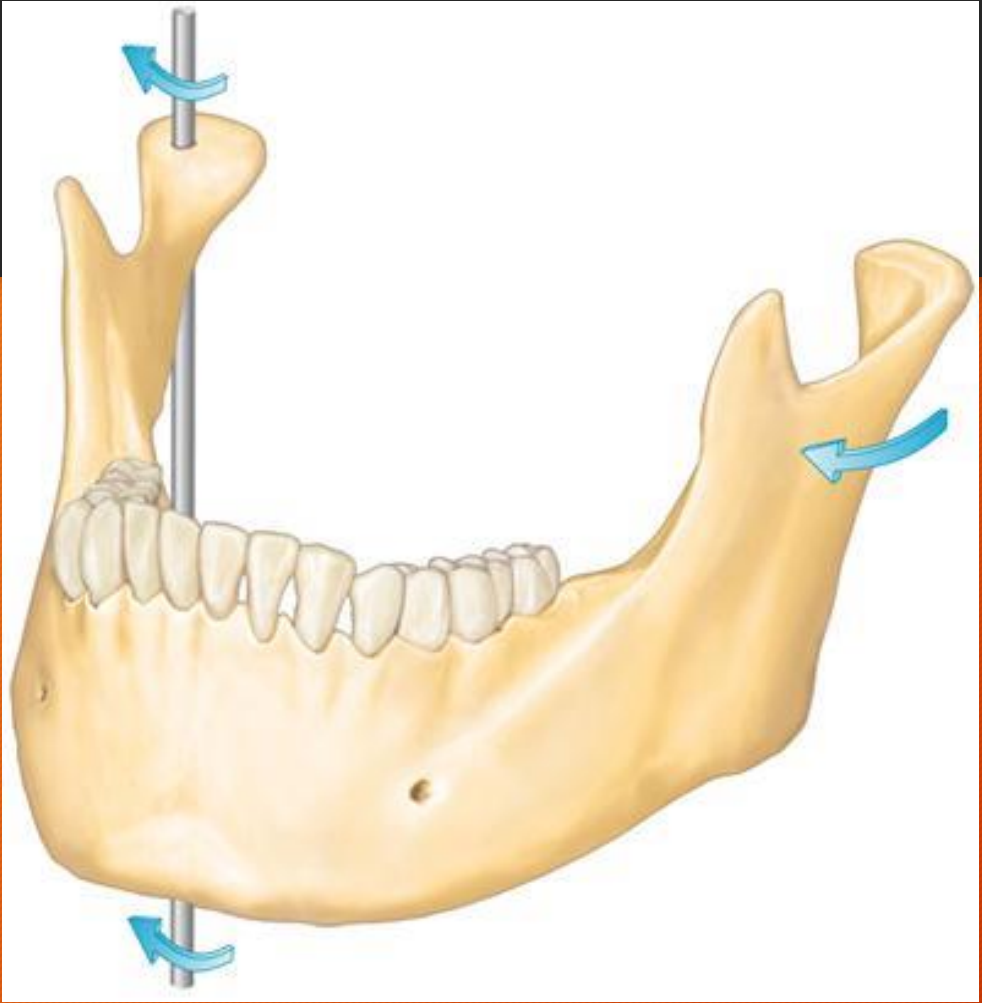


- *Tooth Extraction*: it`s a painless removal of the whole tooth, or tooth root, with minimal trauma to the investing tissues and communicating structures, so that the wound heals uneventfully and no postoperative prosthetic problem is created.

Factors complicating tooth extraction

- Extreme care and respect is important to the following factors to avoid complications:
 1. Restriction of the oral cavity by lips and cheeks (microstomia).
 2. Size and movement of the tongue (macroglossia).
 3. Mandible is a mobile bone. It's a hinged structure moving on TMJ bilaterally.





4- Oral cavity communicates posteriorly with the pharynx and nasal cavity. Pharynx opens into oesophagus and larynx so any foreign body like a tooth , tooth part or filling part can be aspirated or swallowed.

5- Oral cavity is flooded with saliva (1,000 to 100,000 bacteria living on each clean tooth surface.

while less clean mouths can have between 100 million and 1 billion bacteria on each tooth) which makes the patient more prone to infection.





6. Floor of the mouth, soft and hard palate, the tongue and pharyngeal structures might be endangered.
7. Mouth is close to vital structures like brain and base of skull.
8. During extraction, anesthesia of adjacent structures (not only the tooth to be extracted) due to extraction pressure which may cause pain.
9. Profound local anesthesia will cause loss of pain, temperature and touch sensations but not the proprioceptive fibers of the involved nerves so *Pressure is felt.*



INDICATIONS FOR EXODONTIA

1. Deep non-restorable caries or severe abrasion.
2. Pulpal pathology → endodontic ttt is contra-indicated .
3. Periodontal disease causing irreversible mobility and excessive bone loss.
4. Pathological lesion (cyst, some benign and all malignant tumors).





5. Radiation therapy: tooth extraction should be done at least 15-21 days before to avoid osteoradionecrosis.

6. Malposed and crowded teeth: as third molar eruption in severe buccal version and hypereruption of a tooth with opposing tooth extracted.



7. Impacted teeth

8. Orthodontic reasons

9. Cracked or fractured tooth/root (ex endontic ttt)

10. Supernumerary teeth

11. Teeth in the line of fracture jaw
(delayed/interfering with reduction)

12. Financial issues





CONTRAINDICATIONS FOR TOOTH REMOVAL

Relative - Temporary

• Systemic

- a) Severe uncontrolled metabolic diseases.
- b) Uncontrolled hemostasis.
- c) Bone disease.
- d) Wide spread uncontrolled malignancy.
- e) Cardiac patients as IHD, recent cardiac embolism , uncontrolled cardiac dysrhythmia and malignant hypertension.
- f) Recent stroke.
- g) pregnancy

- Local

- History of radiotherapy
- Teeth related to tumor area as extraction may lead to tumor metastasise.
- Severe inflammation or infection.

Clinical Examination Before Dental Extraction

- The decision of performing oral surgery should be the culmination of several diagnostic steps.

I. Clinical evaluation of teeth

II. Radiographic examination

Clinical Evaluation Of Teeth

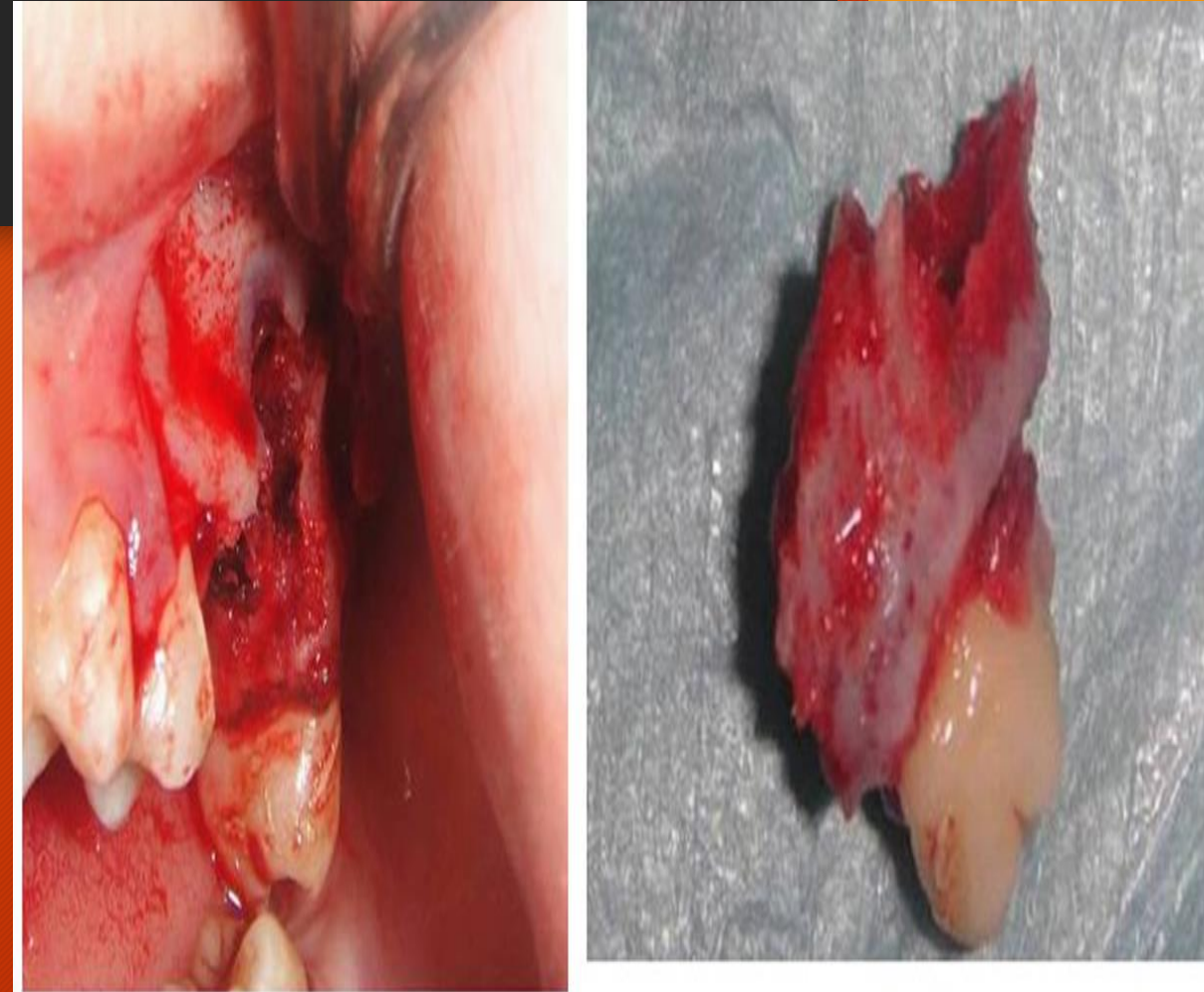
1. Examine all the upper and lower teeth on the side of complain. Pain may be caused by more than one tooth in one or both jaws. Patient may complain of toothache on one jaw which may contain a painless necrotic pulp in badly broken tooth or root while the painful tooth is in the opposing jaw (**referred pain** مهم جدااااا).



2- Condition of the crown: anatomy, depth of caries, remaining part of tooth structure (likelihood of crushing), presence of large restorations (likelihood of fracture), endodontically treated tooth (desiccated & brittle), calcular accumulations (interferes with forceps grip, ^gingivitis, ^dry socket & infection). Also, oral hygiene, inflammatory or pathologic conditions.

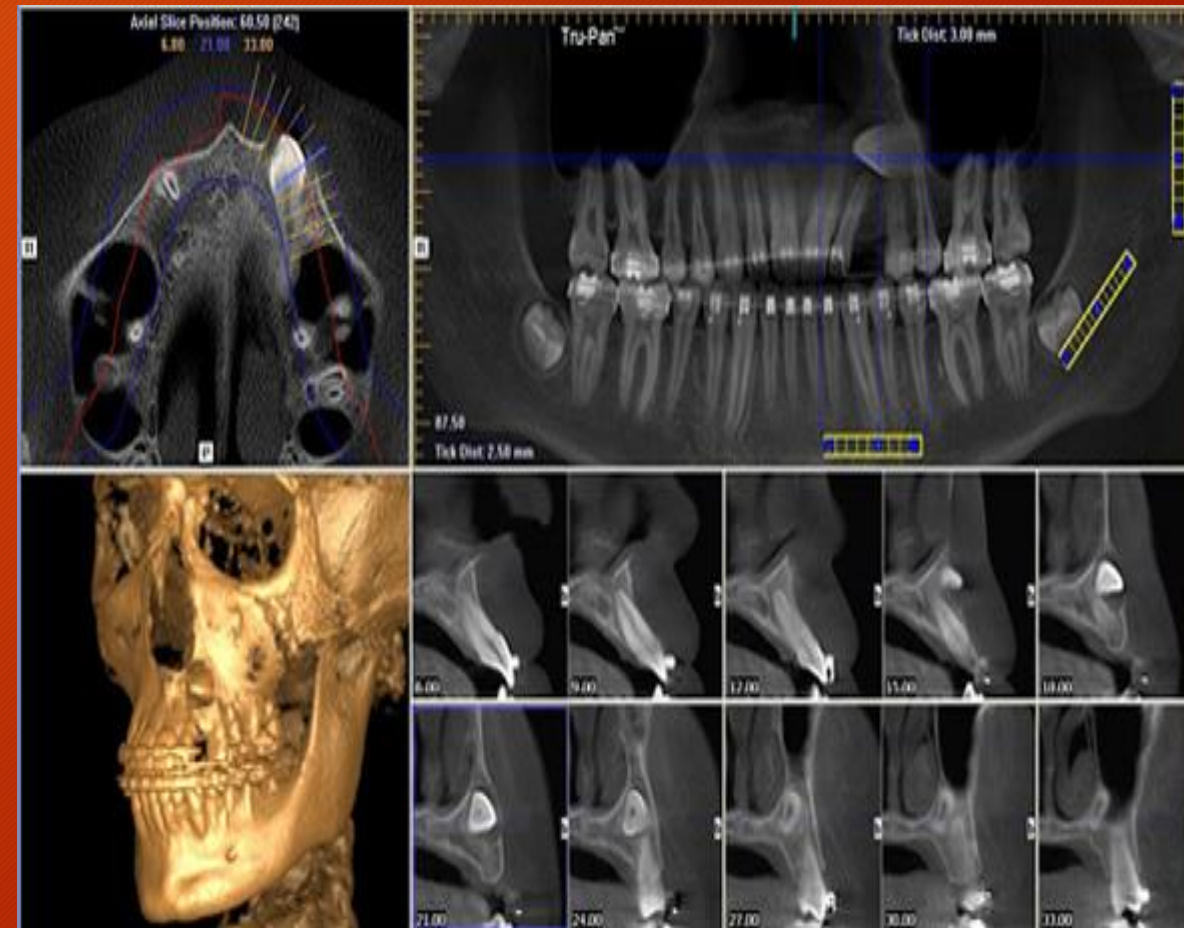


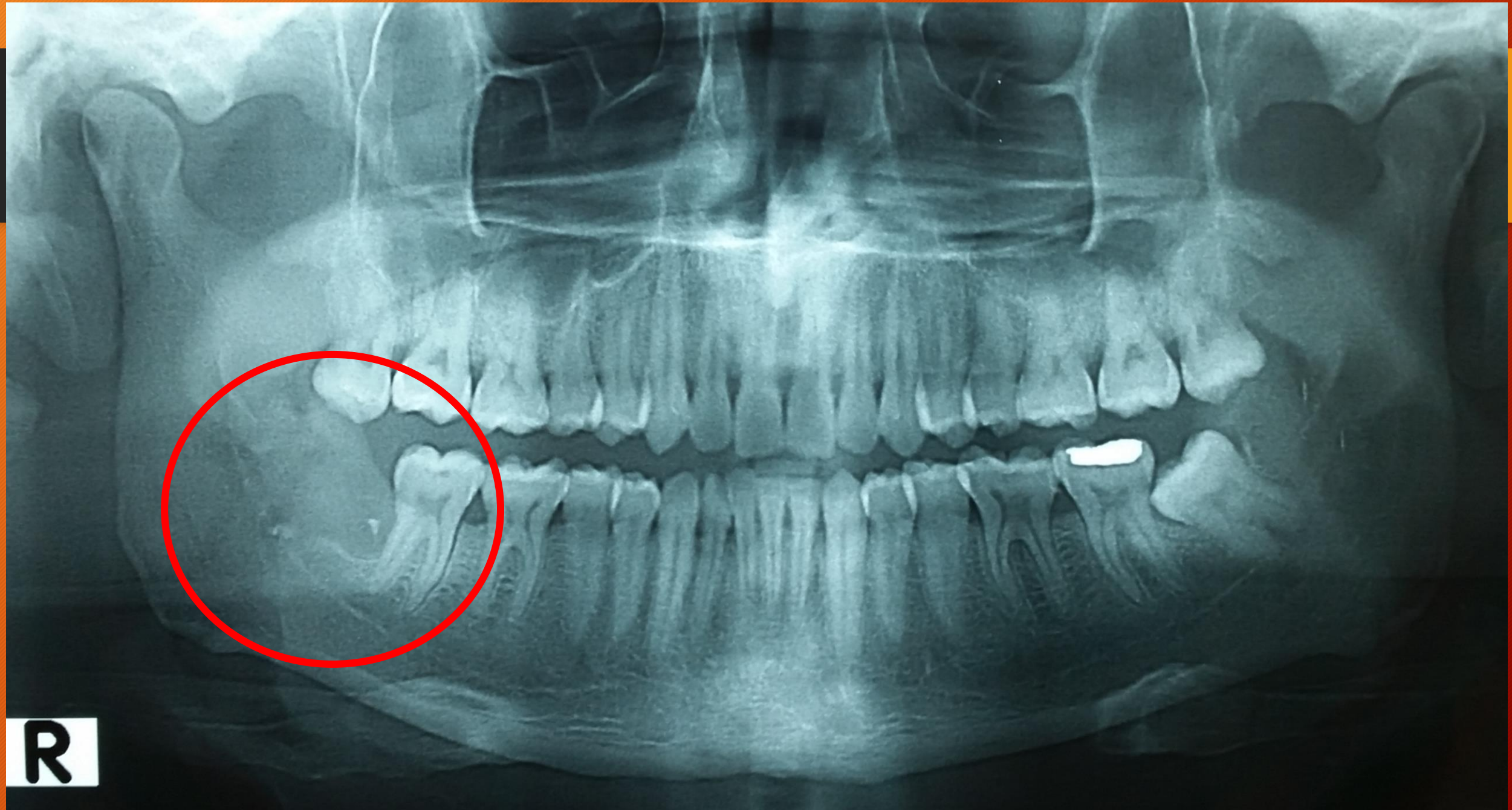
3. Tooth mobility: hypermobility (more than normal) in severe periodontal disease or fractured root. Hypomobility (hypercementosis or ankylosis).
4. Relation of extracted teeth to the adjacent teeth and vital structures like maxillary sinus and mandibular canal. Also presence of large filling or crown in the neighbouring tooth.
5. Access to the tooth: tooth position and alignment in the dental arch plus mouth opening.



Radiographic Examination

- Proper radiographs must be taken of any tooth to be extracted.
- Most used intraoral radiograph is the periapical, while the extraoral panoramic, lateral, poseroantreior radiographs and Cone beam CT.
- It can give information about roots configuration (number and shape), relation to vital structures and condition of surrounding bone.





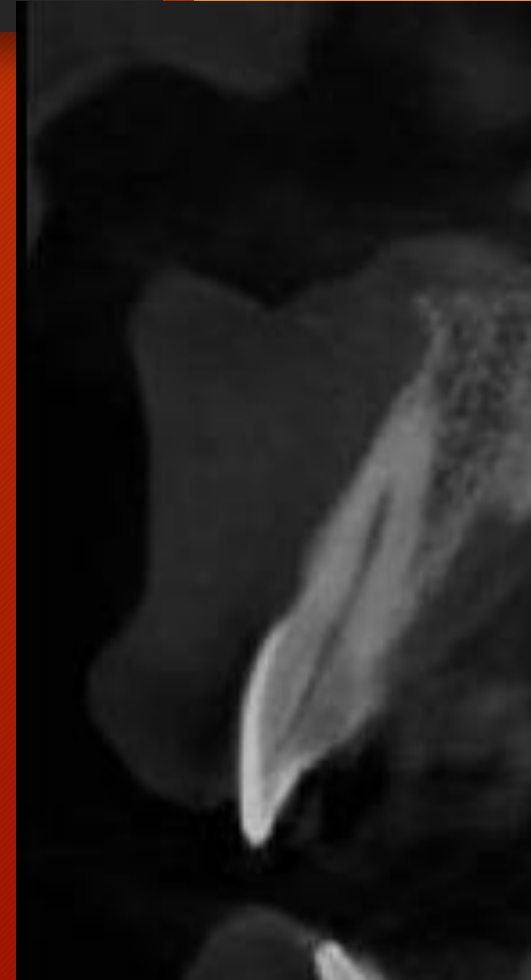
R

Anatomical Considerations

- It`s important to review teeth anatomy with reference to tooth form, shape, investing structures and relationships to important anatomical structures to:
 - **Execute correctly the extraction movements.**
 - **Avoid complications**

Maxillary Central Incisor

- Root is single, straight, conical and rarely have a groove at the distopalatal surface.
- Labial alveolar bone is thinner than palatal alveolar bone as the long axis of the tooth is more vertical than the alveolar process. Labial bone is thin and compact while palatal bone is wedge shape area of spongy bone.
- Root apex is related to nasal floor.



Maxillary Lateral Incisor

- Single, flattened and often with a distal curvature.
- Root diameter is narrower mesiodistally than labiolingually.
- More constricted cervix than central incisor.
- Palataly placed than central incisor and canine, so that palatal bone around the root is thinner than labial bone. Root frequently show palatal curvature at apical 1/3.
- Not frequently related to the nasal floor.



Maxillary Canine

- Single, longest and strongest root of all human dentition.
- Mesial and distal surfaces of the root are broad, flat and usually grooved.
- Relationship of the root to labial and palatal plates are essentially the same like central incisor.
- Prominent vestibular bulge related root (*CANINE EMINENCE*).
- Root apex usually occupy a neutral position between nasal and sinus cavities.



Maxillary First Premolar

- About 50% have two roots, buccal and palatal. Roots are slender, tortuous and divergent.
- If single rooted, the root is usually flattened buccopalatally and may be bifurcated.
- Buccal alveolar plate is thin and compact while the palatal alveolar plate is thick and is formed of spongy bone mostly.
- Apex may be related to the maxillary sinus



Maxillary Second Premolar

- Single root in 85%, deeply grooved on mesial and distal surfaces. May be bifurcated.
- Broad bucco-palataly, with the shape of the buccal and palatal alveolar plates like first premolar.
- Intimate relation to the maxillary sinus than first premolar



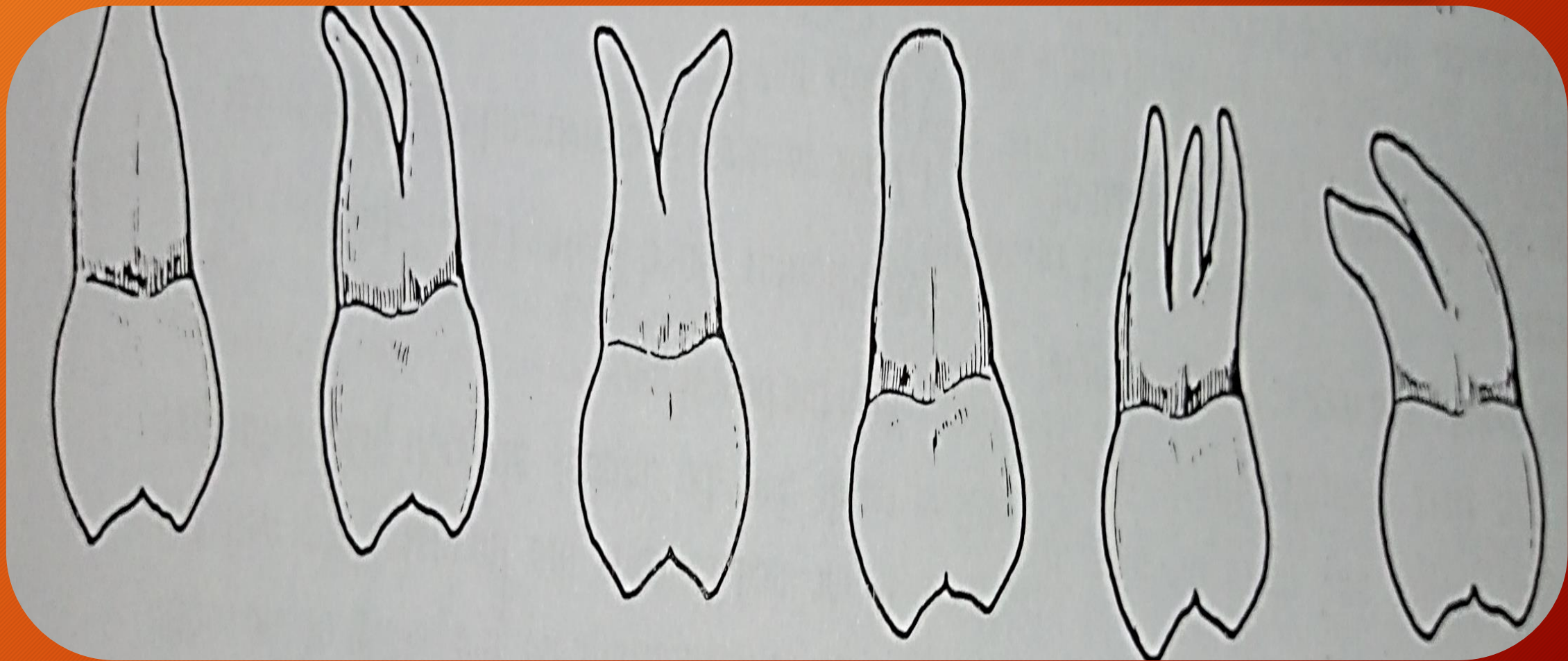
Maxillary First and Second Molars

- Largest teeth in the maxilla, each has 2 buccal and one palatal roots.
- Usually roots are straight and widely divergent in the first molar, while in the 2nd molar the roots are less divergent and mesiobuccal root may be fused to the palatal.
- Bony resistance is more at the 1st molar due to widely divergent roots and root of zygoma - mostly compact bone (zygomatic buttress) lies above
- Both have a close proximity to the maxillary sinus floor.



Maxillary Third Molar

- Wide variations in crown and root forms.
- Wide variations in root number.
- Shape of the alveolar process is the same as 1st and 2nd molars.
- Frequent malalignment and impaction.
- Sinus approximation depends on the level of the tooth in the alveolar process.
- Close proximity to maxillary tuberosity and pterygoid plates



Maxillary Sinus Relation

- The mean distance from the floor of maxillary sinus to apex of root was shortest for the mesiobuccal root of maxillary first molar and the palatal root of second premolar

Maxillary first premolar		Maxillary second premolar		Maxillary first molar			Maxillary second molar		
B	P	B	P	MB	DB	P	MB	DB	P
6.9	6.06	2.8	2.7	0.77	0.97	1.19	0.85	2.1	2.23

B: Buccal, P: Palatal, MB: Mesiobuccal, DB: Distobuccal

Mandibular Central and Lateral Incisor

- Smallest permanent teeth
- Single, straight, broad and flat root at the mesial and distal surfaces.
- Alveolar bone proper fuses to the inner and outer compact layers of bone along the entire root, and thus spongy bone is limited to interdental areas.



Mandibular Canine

- Root is single, shorter and weaker than it`s maxillary counterpart.
- Distal curvature of the root apex is common.
- Alveolar process is similar to incisor teeth.



Mandibular First Premolar

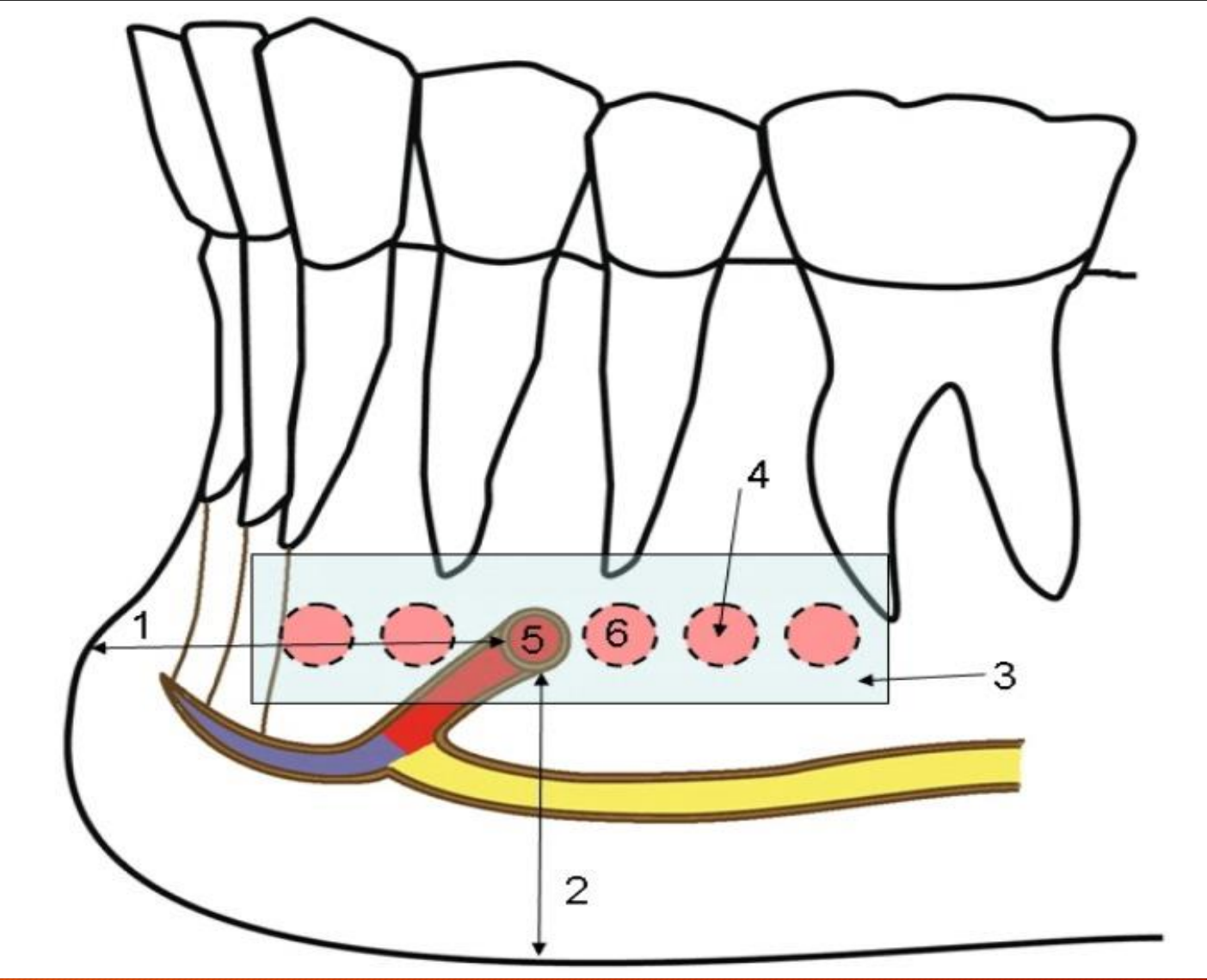
- First premolar root is single, oval in cross-section, with possible bifurcation and/or distal apical curvature.
- Bony socket is inclined toward buccal surface thus making the outer alveolar plate thinner than lingual.



Mandibular Second Premolar

- Root is single, circular and larger than first premolar. Straight with rare bifurcation.
- Similar alveolar bone like first premolar.
- Mental foramen is in close proximity to the apex of both bicuspids.
- The mental foramen may be oval or round and is usually located apical to the second mandibular premolar or between apices of the premolars. However, its location can vary from the mandibular canine to the first molar.





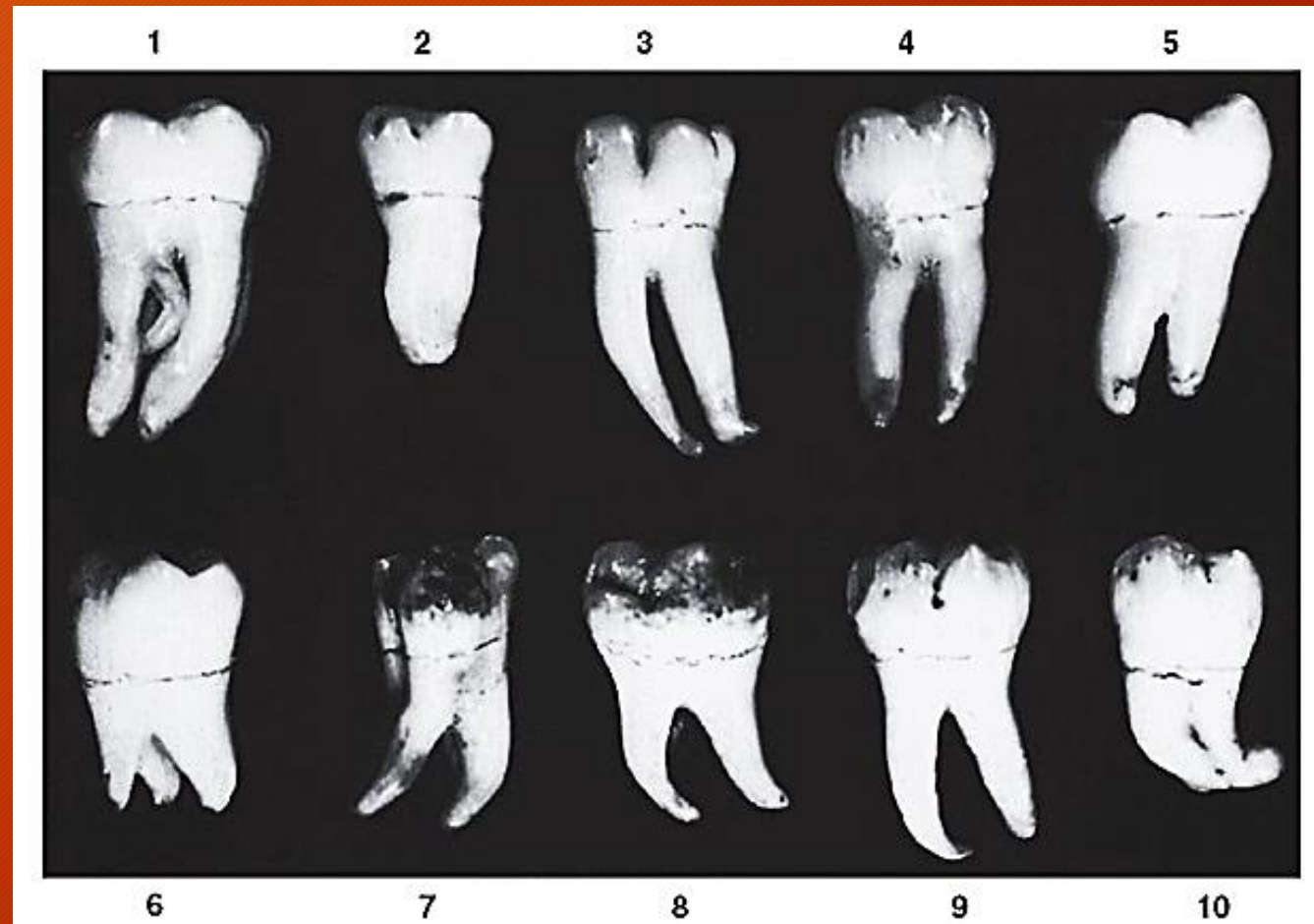
Mandibular First and Second Molar

- Both have 2 roots, mesial and distal roots. Narrow mesiodistal and broad buccolingual diameters.
- Alveolar process at the first molar is similar to that of the premolars area, while in the second molar the socket is inclined to the lingual plate and the lingual plate is thinner than the buccal.



Mandibular Third Molar

- Wide variations in crown and root forms.
- Roots may be single conical, curved in medial or distal directions, multiple divergent. Either of the roots is straight and the other is curved

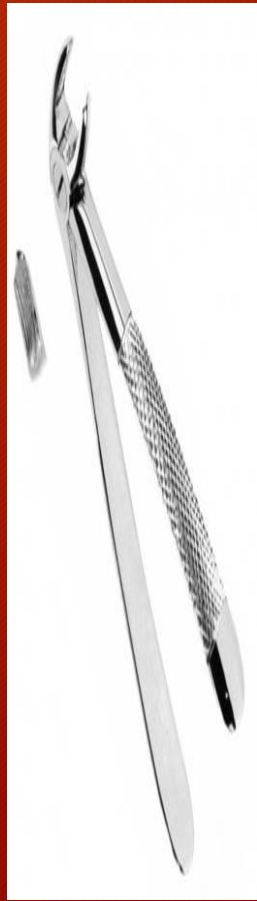


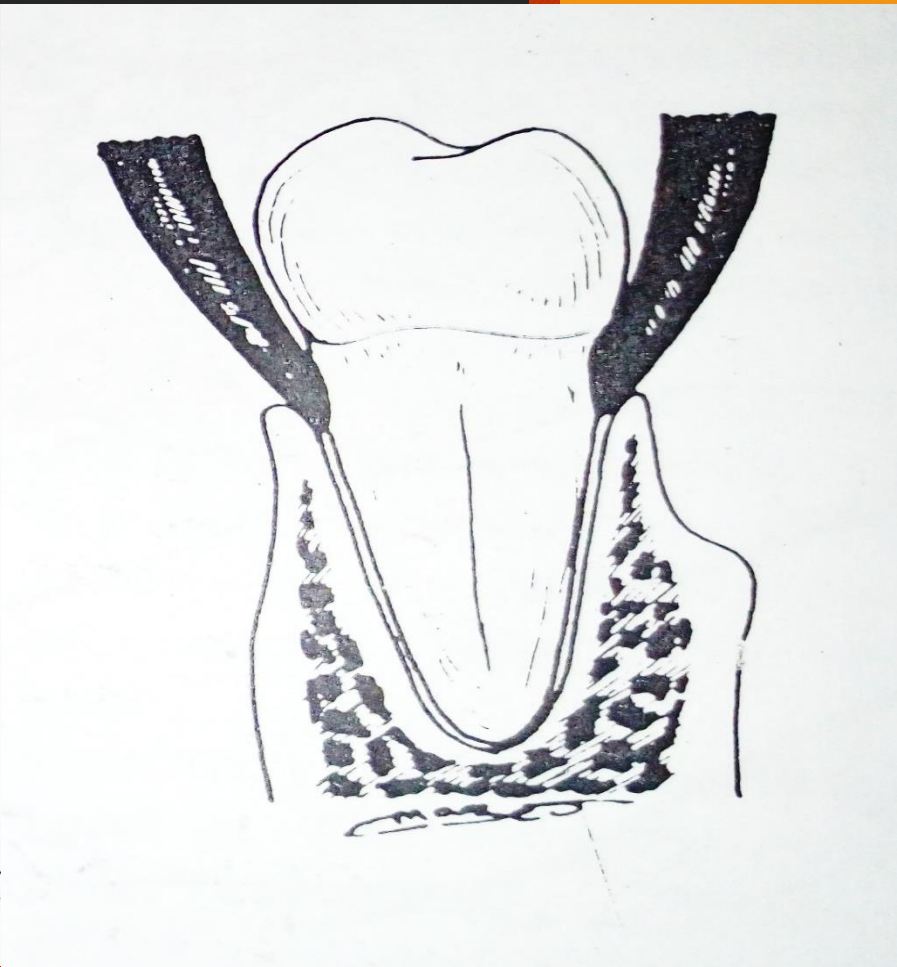
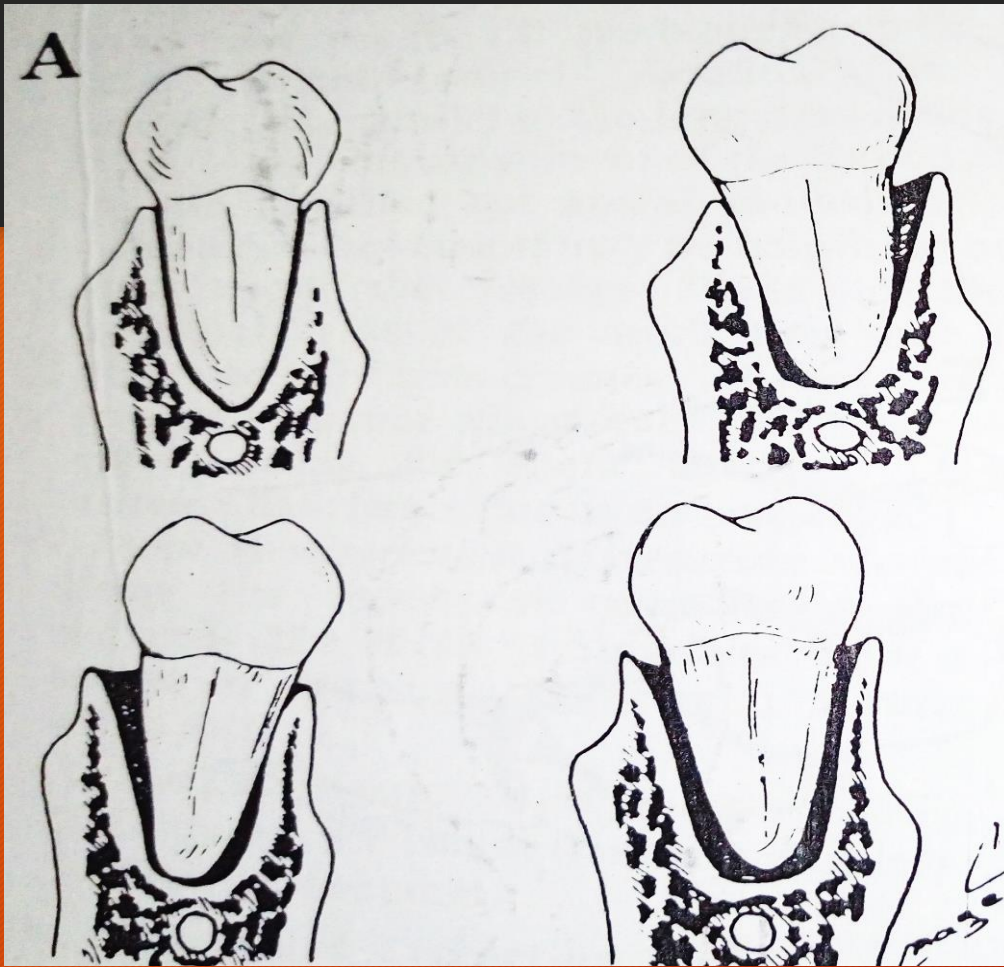
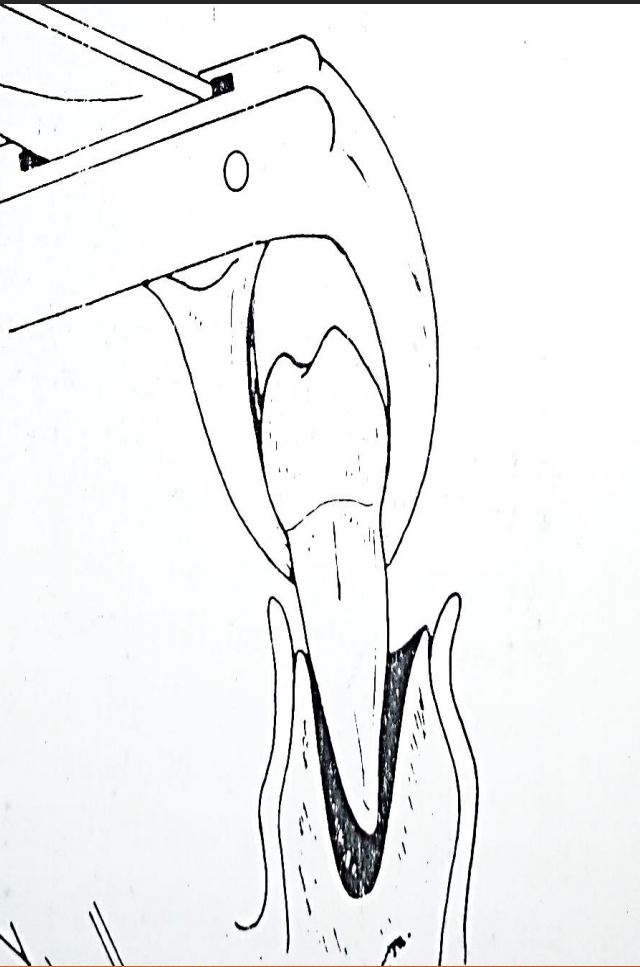
- Shape of the alveolar process is the same as 2nd molar with more lingual position and thicker buccal plate
- Frequent malalignment and impaction.
- Inferior alveolar canal is very close and may run between the two roots



Principles Of Elevators And Forceps Use

- Primary instruments to remove a tooth or a root are the elevators and extraction forceps.
- Forceps and elevators use will lead to:
 - Cutting the periodontal attachments
 - Separate the tooth from bony walls
 - Dilatation of bony socket
 - Luxation
 - Removal of tooth from socket

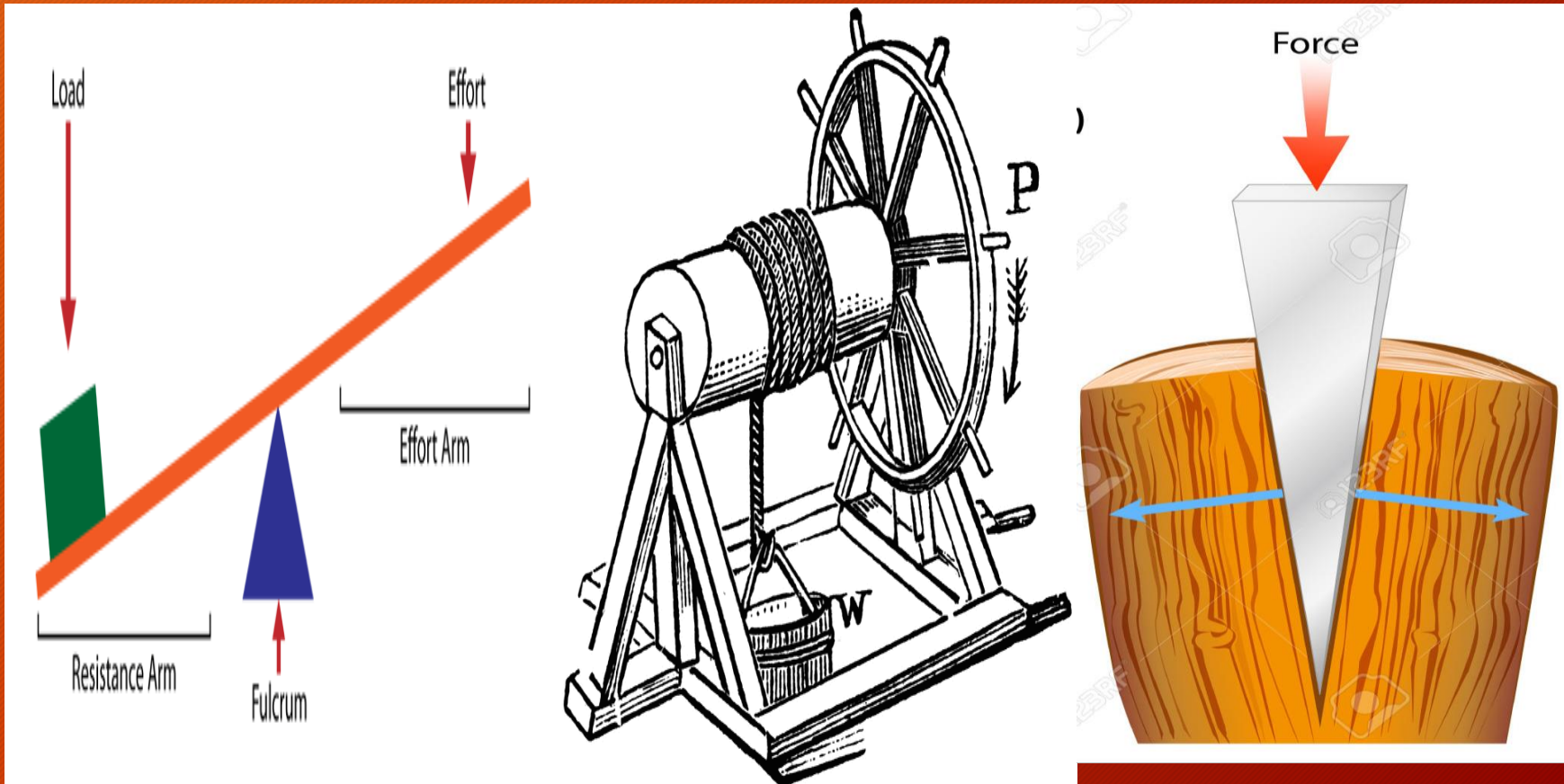




Mechanical Principles

- 3 Mechanical Principles Are Employed:

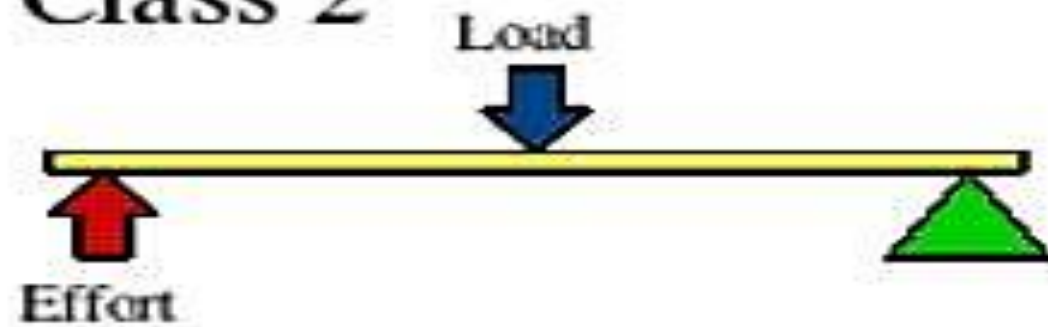
- The lever
- The wheel and axle
- The wedge.



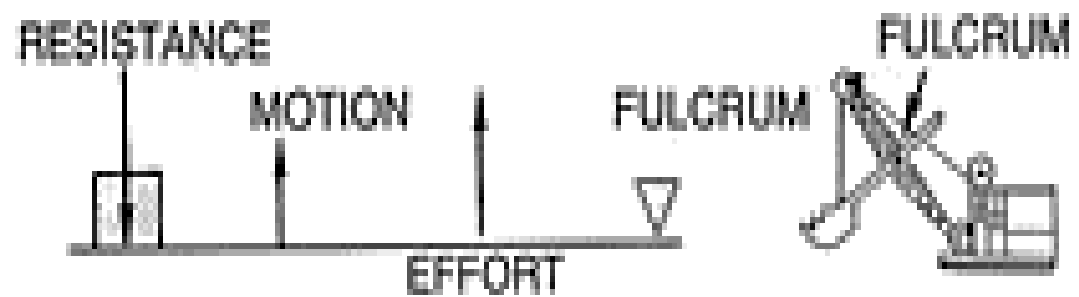
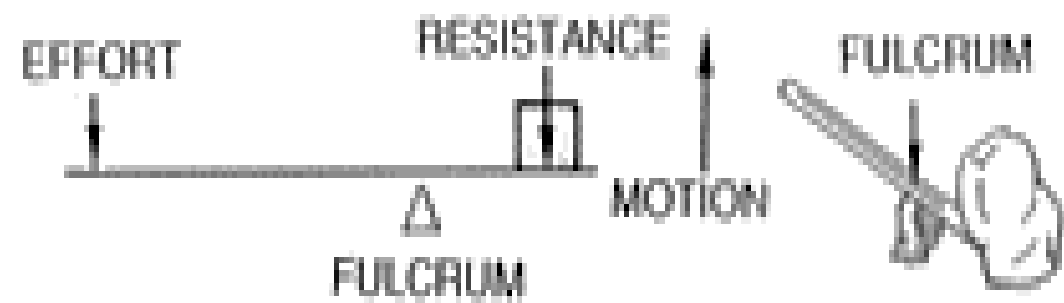
Class 1



Class 2



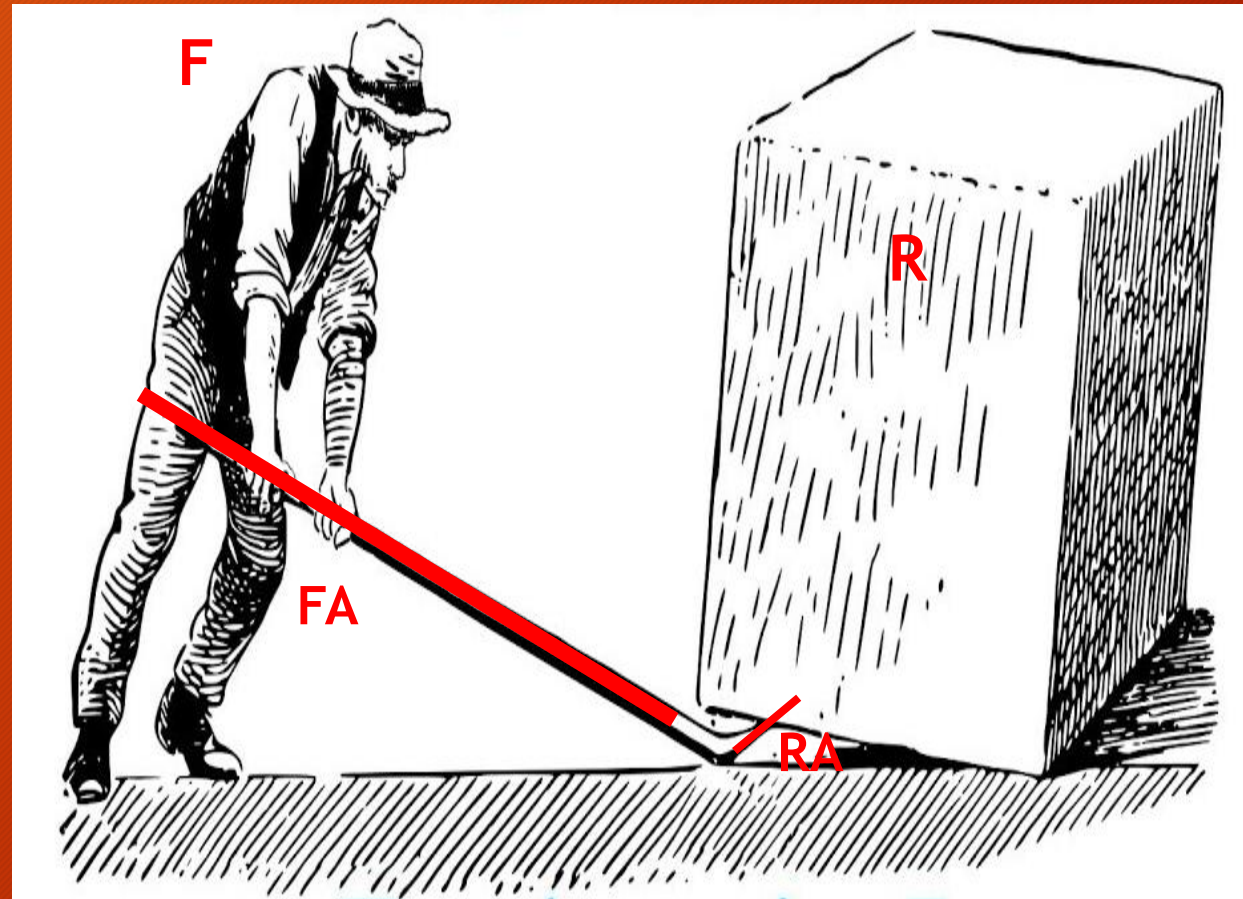
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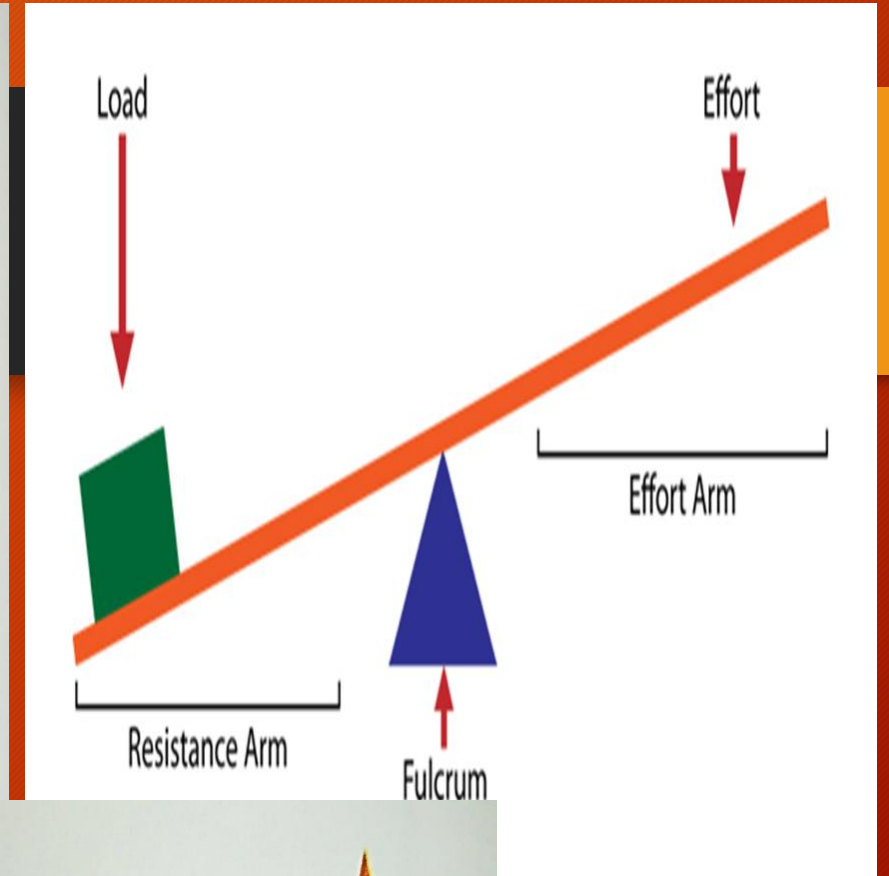
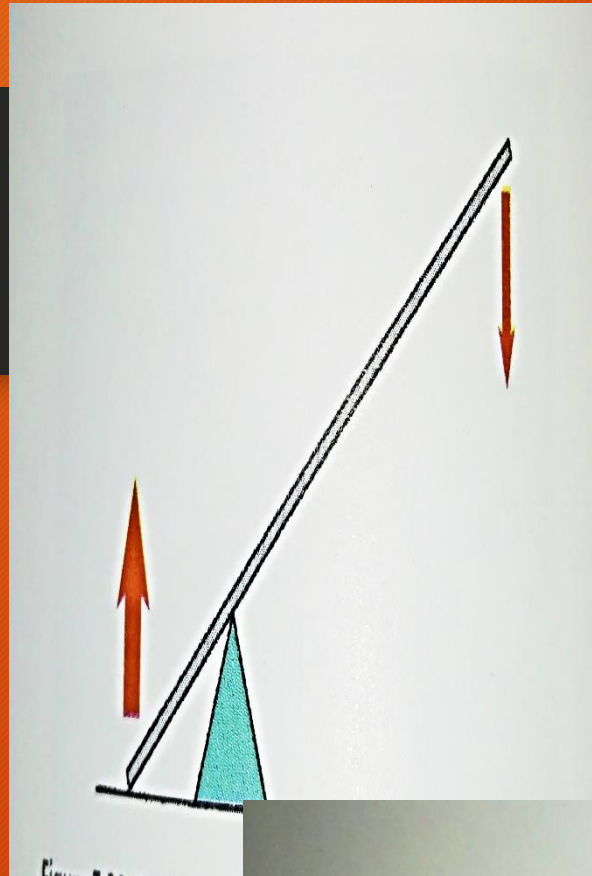
How levers work ?

- $F \times FA = R \times RA$

So increasing the force arm and decreasing the resistance arm will increase the force and decrease the resistance.



- **Elevators** are used primarily as levers. Modest force (with the mechanical advantage of long lever arm and short effector arm) leading to a small movement against great resistance. Different elevators can be applied at a point in a tooth to elevate it.

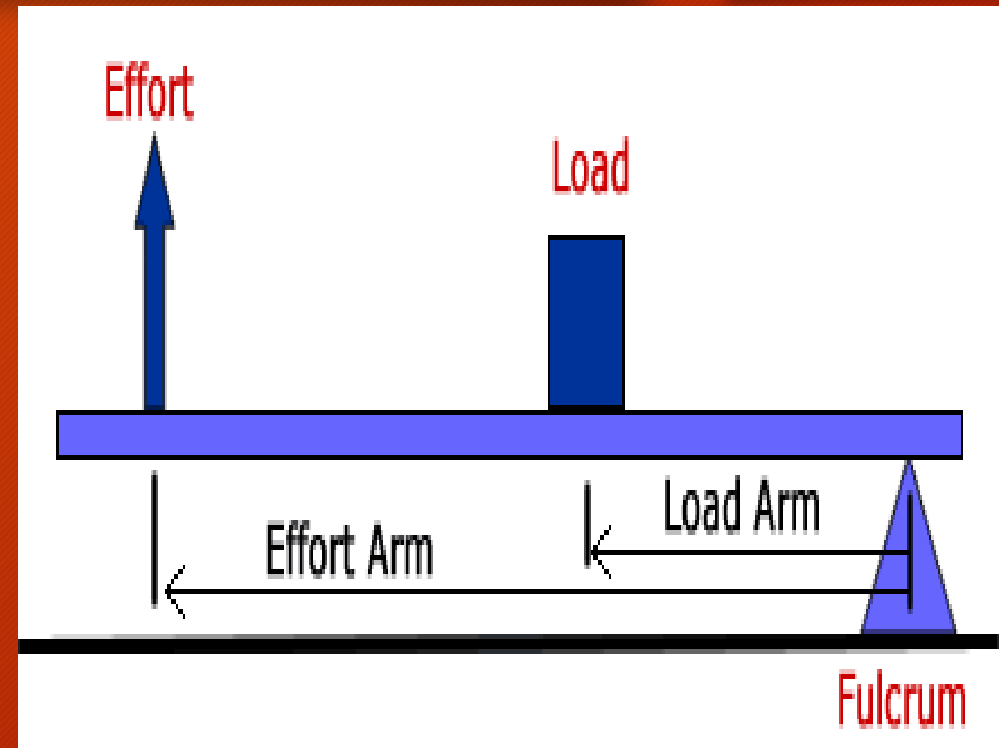


- **Forceps** are used as levers also.

- **Force**: is composed of operators forearm and the forceps.

- **Resistance**: extracted tooth.

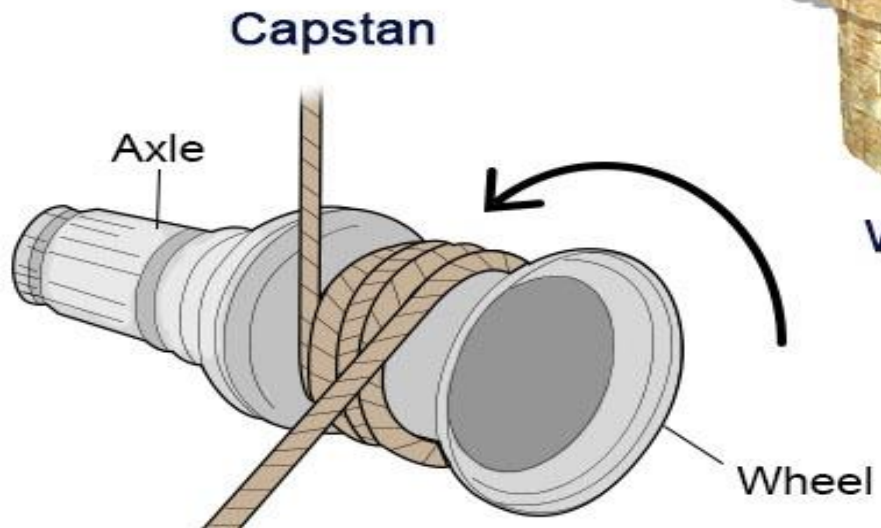
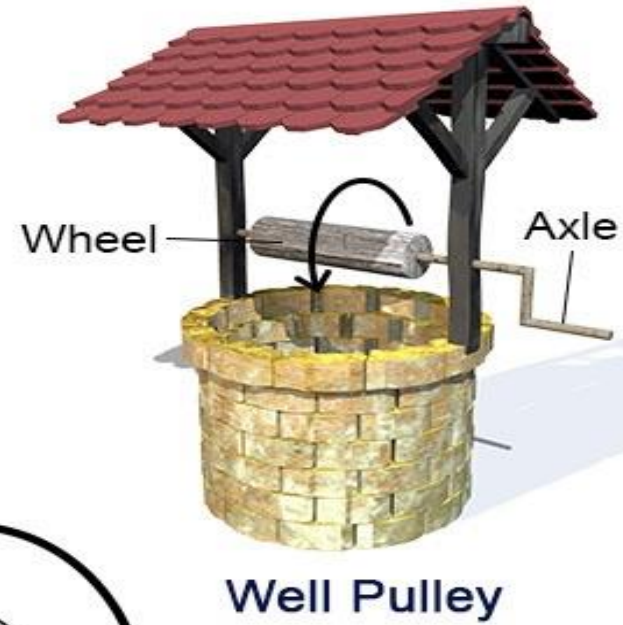
- **Fulcrum**: is the alveolar bone on both sides of the tooth





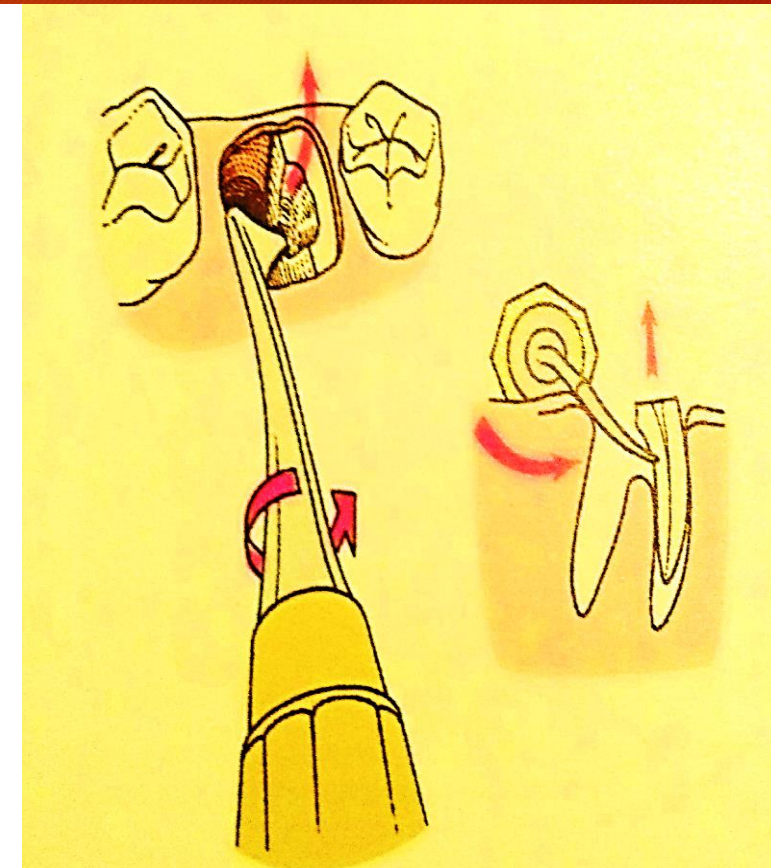
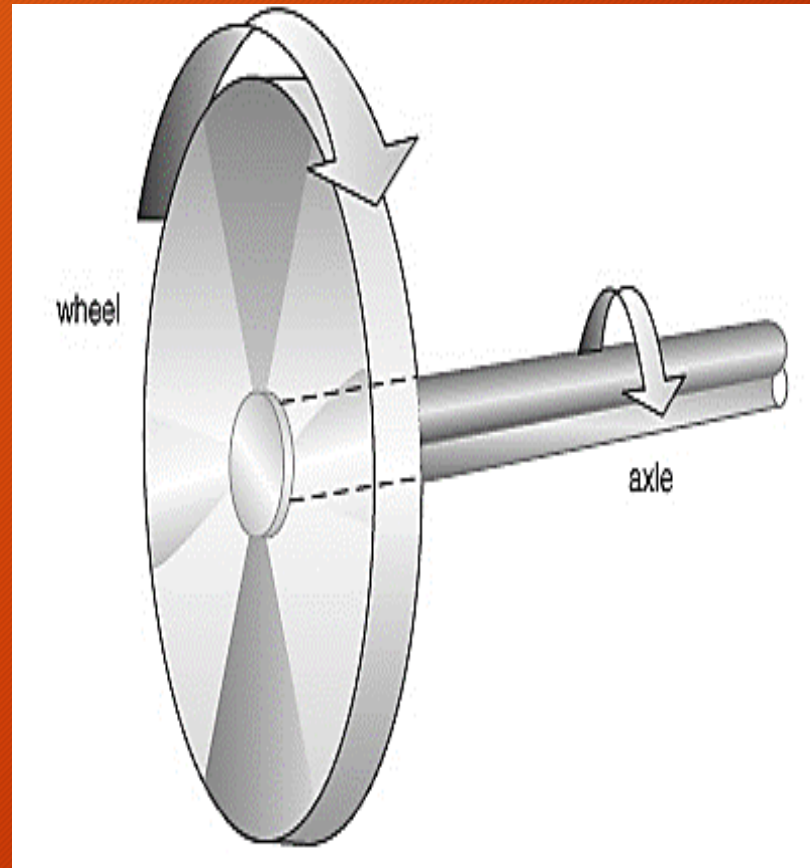
Wheel and Axle





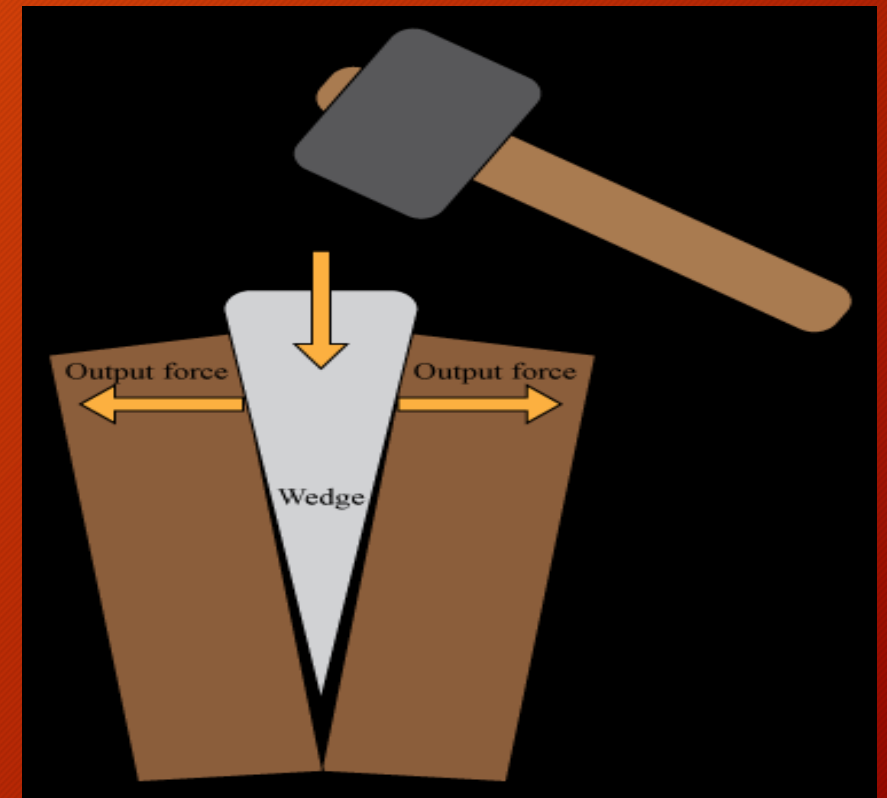
The Wheel and Axle

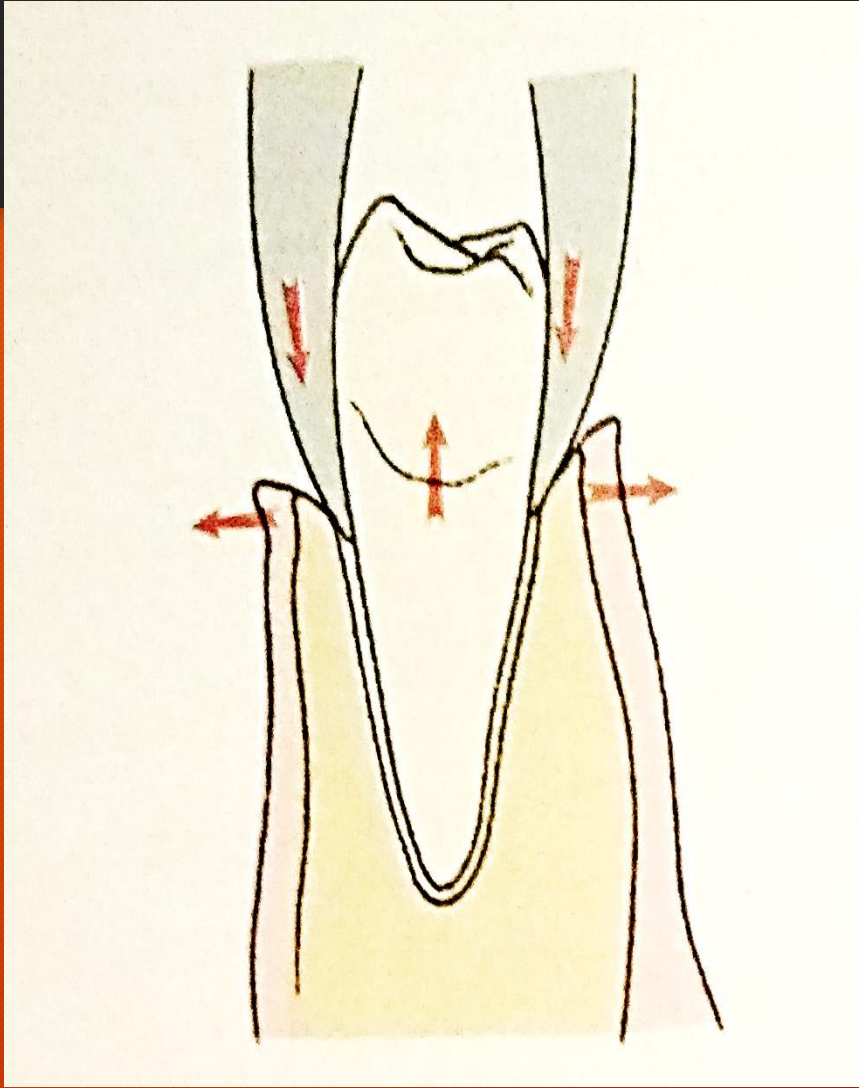
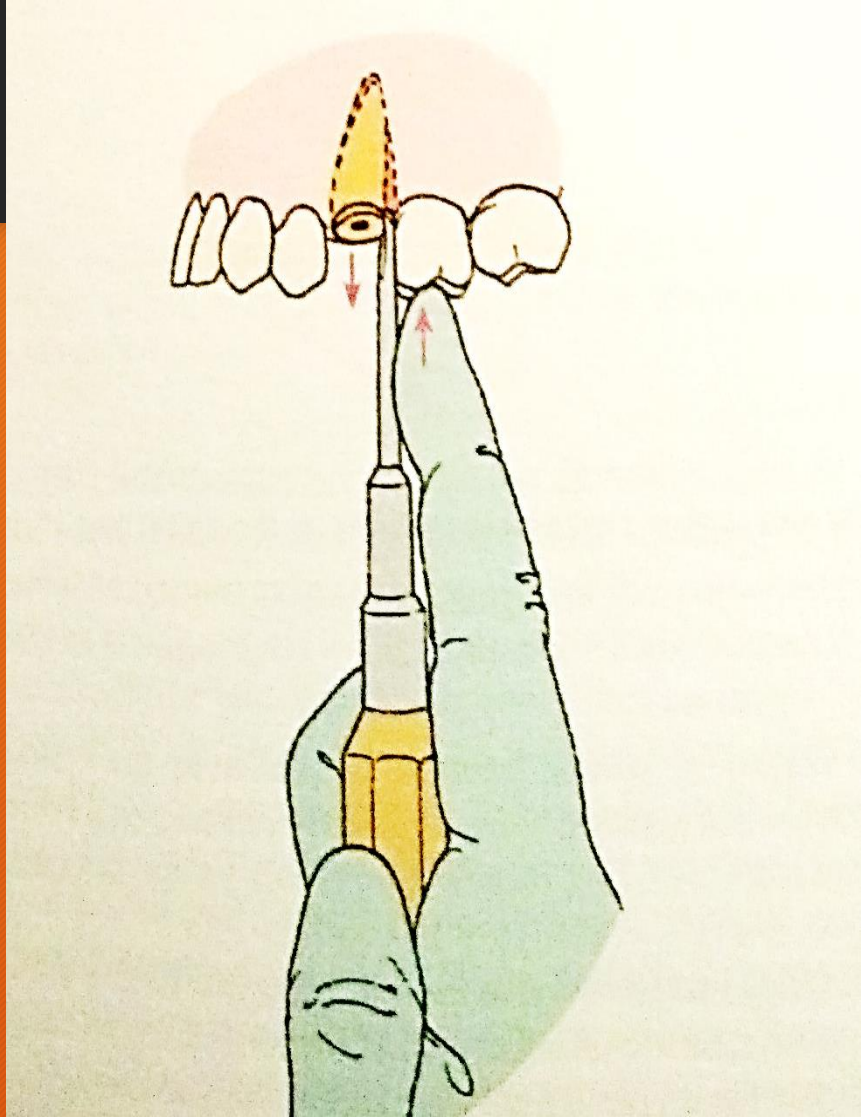
When one root of a multirooted tooth is left in the socket, an elevator (Cryer) can be used by positioning in the socket and turning



The Wedge

- It helps during extraction by:
 - The beaks of extraction forceps is wedged into the periodontal ligament space at the alveolar bone crest to tear the periodontal attachment, expand the bone and force the tooth out of the socket.
 - Elevators use wedge principle as when to wedge a small elevator into periodontal ligament space which displaces the root toward occlusion





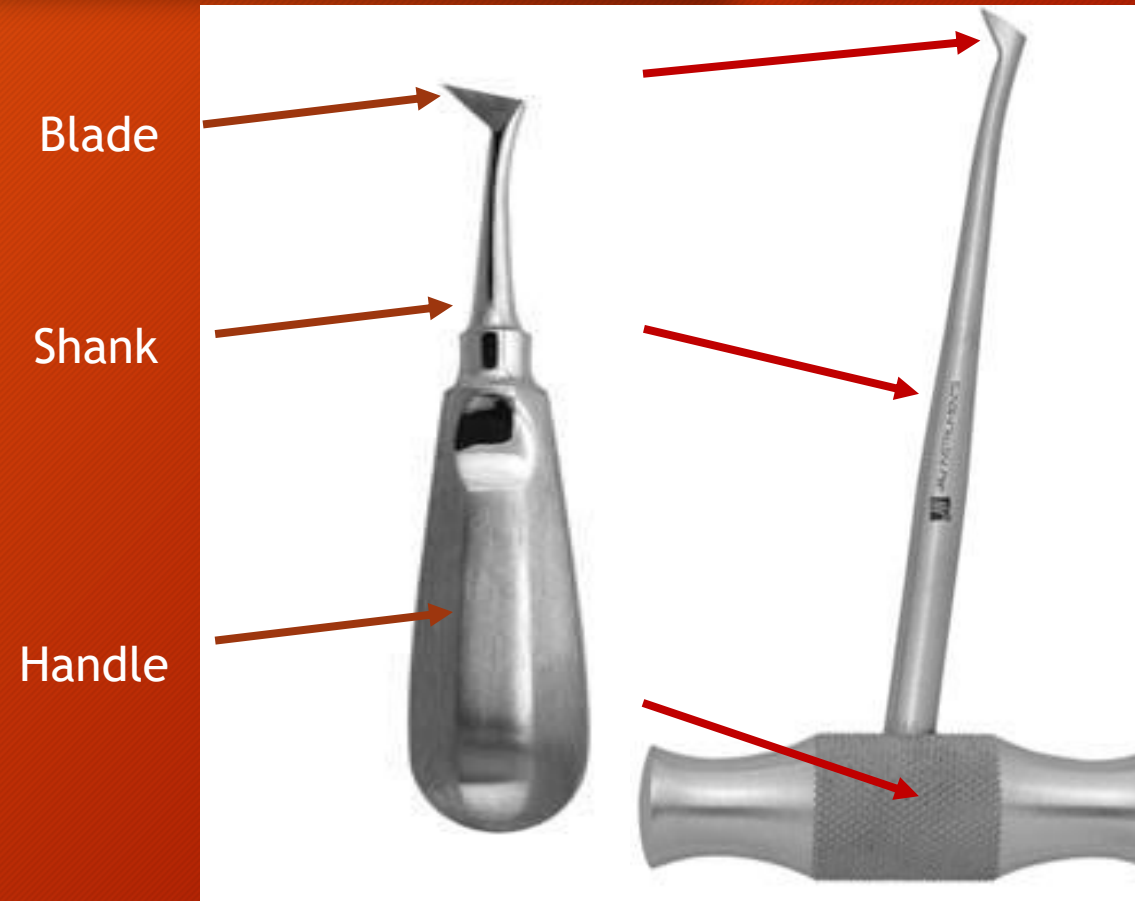
Dental Elevators

- Consist of:

I. **Handle** is usually in line with the shank and is enlarged to be grasped. Handle can be perpendicular to the shank(cross-bar).

II. **Shank** connects the handle to the blade.

III. **Blades** can be straight, curved, triangular, or pointed



Forms of Elevators

Blade

Shank

Handle



Straight



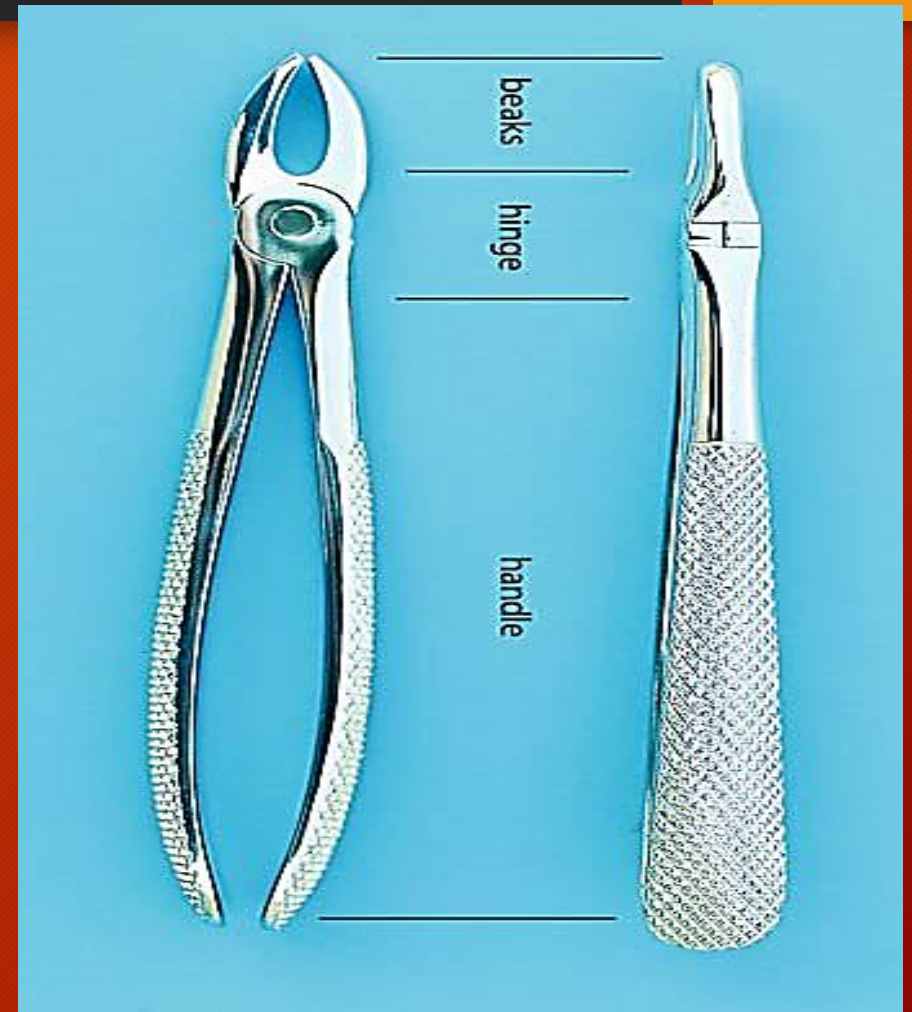
Curved



Cross Bar

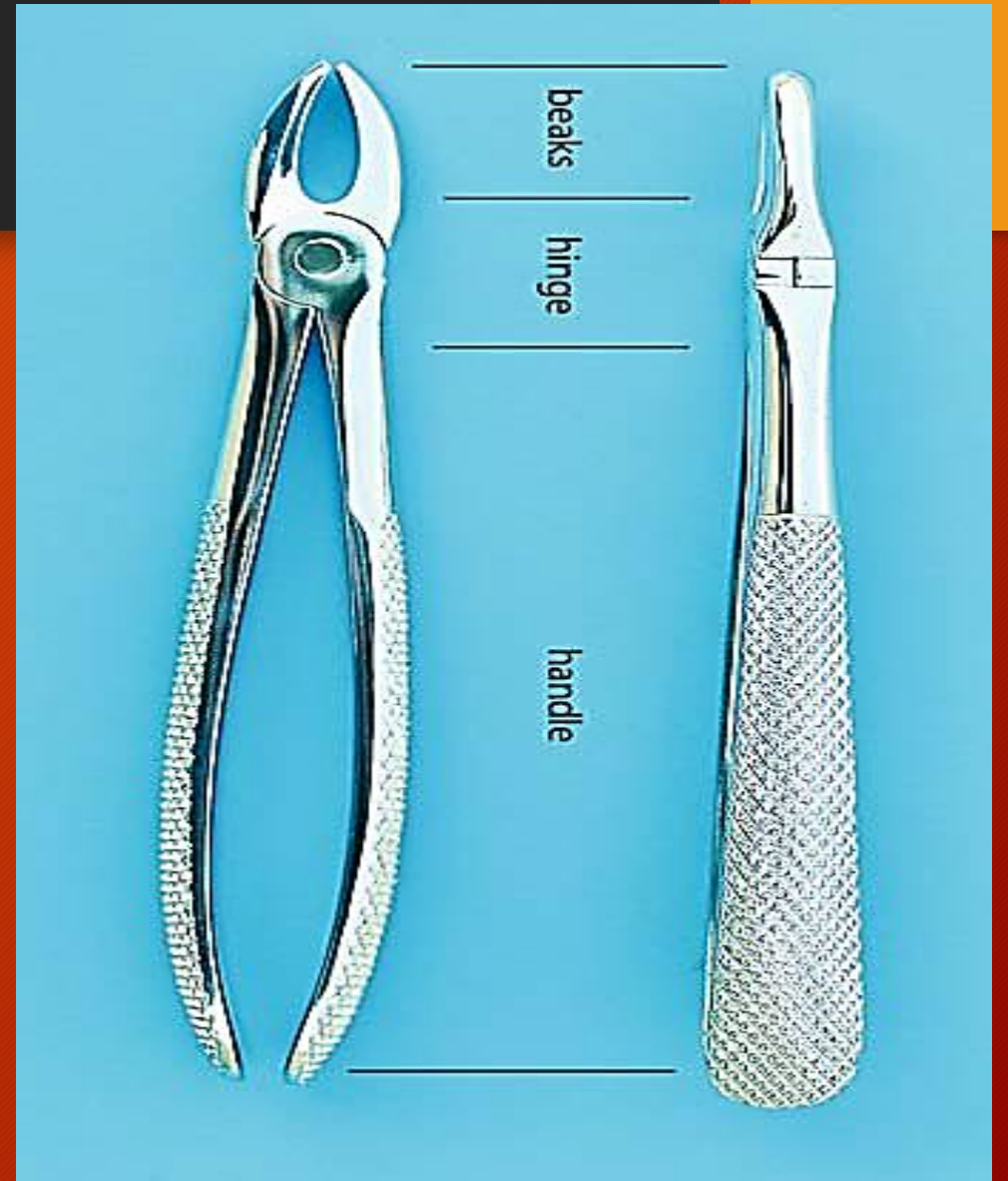
Dental Forceps

- Consist of :
 - I. Handle: serrated to avoid slipping, suitable size, suitable shape and design to suit the area of extracted tooth to not harm the adjacent tissues like cheek, lips, gingiva or opposing teeth



2- Blades: sharp enough, no pressure on neighbouring tooth during extraction, engage the tooth at the cemento-enamel junction in a line parallel to the long axis.

3- Joints: must be heavy, strong and stable.



- Forceps for extraction of maxillary teeth are different in design than those of mandibular teeth.
- In order to drive the forceps blade straight up the long axis of the tooth, the shape of the handle is different.
- Mandibular forceps have handles at right angle to the blade, while maxillary teeth forceps are straight, cranked for the posterior teeth and for maxillary wisdom tooth the beaks and the handle are bent.



Beaks Only
Touch at Tip



Straight Handle

Horizontal Hinge

Vertical Hinge

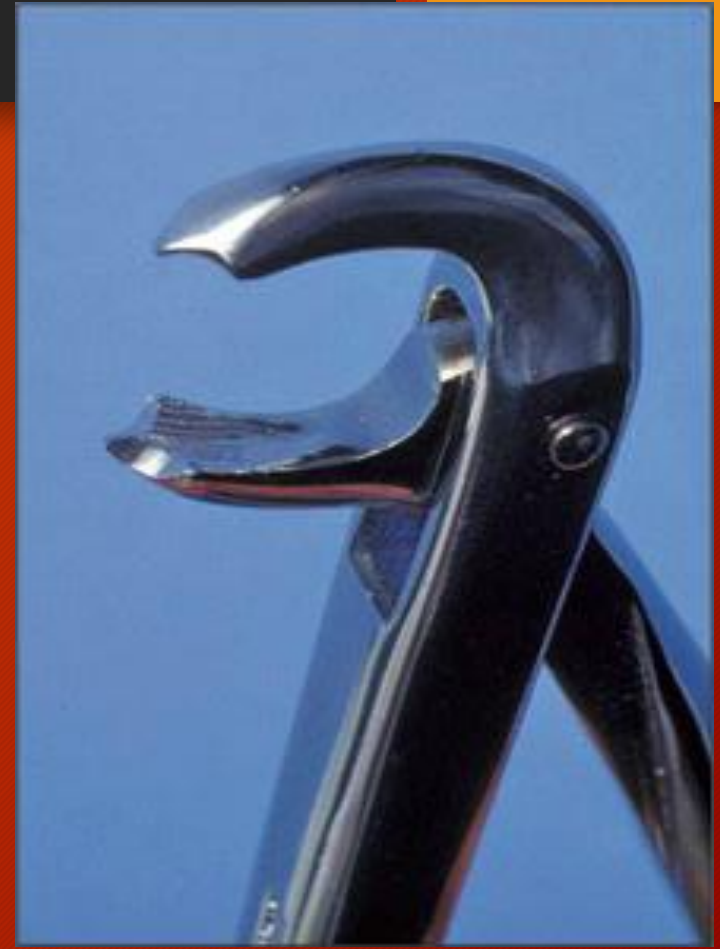


Beaks at Right Angle
to Handle

Serrated Handle







TECHNIQUE OF EXODONTIA

I. INTRA-ALVEOLAR (CLOSED TECHNIQUE).

II. TRANS -ALVEOLAR (OPEN TECHNIQUE).

Forceps Extraction

TEETH EXTRACTION IS A SURGICAL OPERATION

It is based on an anatomical appreciation of the tooth attachment to the jaw. **First**, soft tissue of the gingival attachment and periodontal membrane are cut. Then **socket is dilated** by moving the root to expand the socket (as alveolar bone is plastic tissue that yields under pressure). **Finally**, tooth is drawn out of the alveolus.

Technique of Forceps Extraction

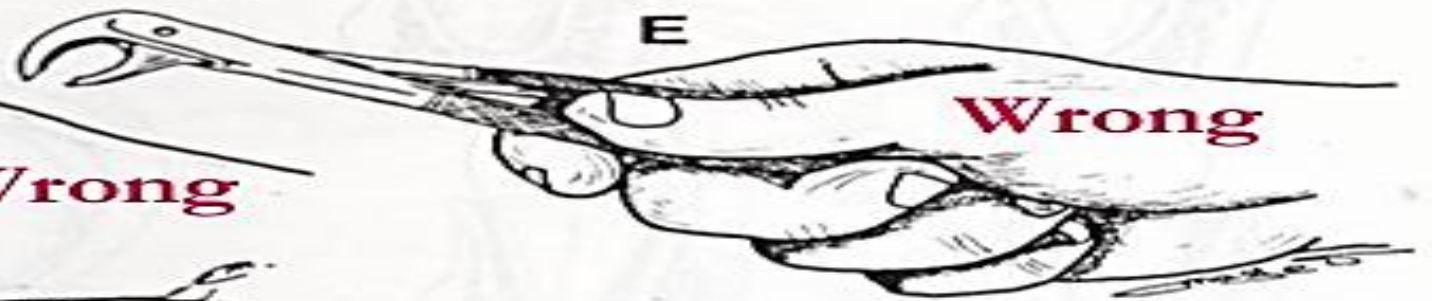
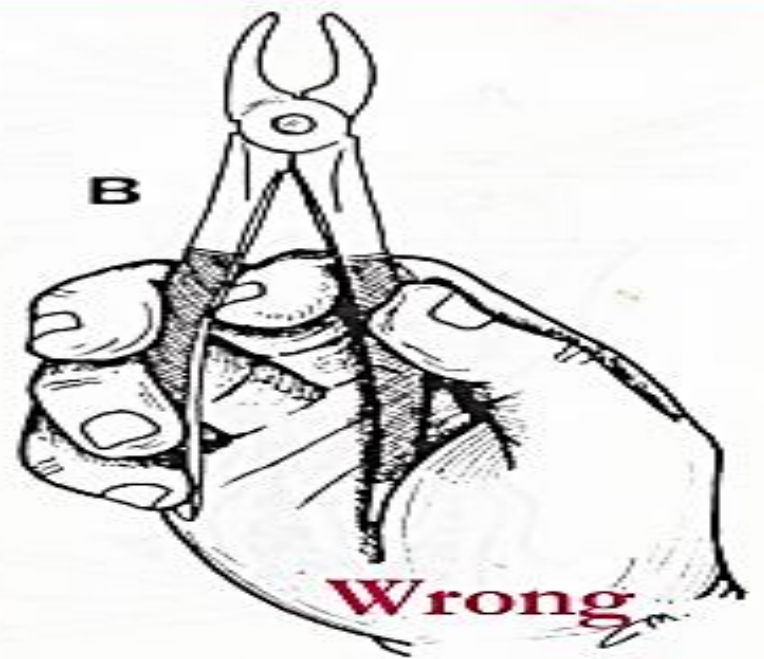
- ***Soft tissue Retraction:***

Dissect and retract mucoperiosteum at the gingival attachment.

- ***Forceps Handling:***

Hold the forceps in the palm of right hand with the thumb finger support at the joint.

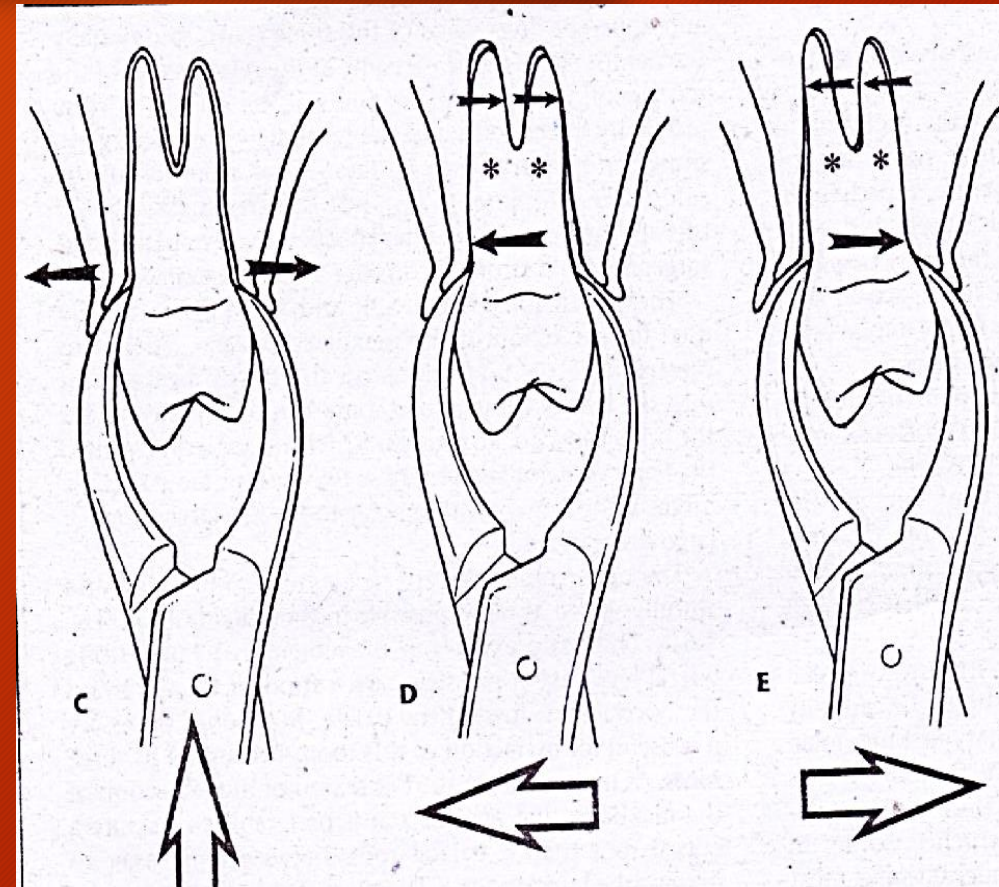
In upper premolar or molar forceps the curved side of the handle should rest in the palm.



Forceps Motions

I - Apical Pressure:

- ❖ Forceps blades are pushed apically along tooth surface to reflect the gingiva and cut the PL and to have a deep grip at or below CEJ and to reach the furcation area in multirooted teeth.
- ❖ Centre of rotation of the tooth is displaced apically. If the fulcrum is high, a large amount of force is placed on the root in wrong place and magnitude leading to root fracture



II- Buccal Force (outward movement):

- Expansion of buccal plate specially at the crest. It's the primary movement of all teeth with exception of lower 3rd and relatively 2nd molar due to thick buccal bone. It must be ***slow, steady and firm***.
- Excessive buccal pressure may cause lingual apical pressure.

III- Lingual or Palatal Force (inward movement):

- Usual 2nd movement in all teeth except lower 3rd and 2nd molar as lingual bone is thinner than buccal bone

VI- Rotational Pressure:

- Teeth that can be luxated by rotational forces are those with single, conical and not curved usually upper central and lower 2nd premolar.

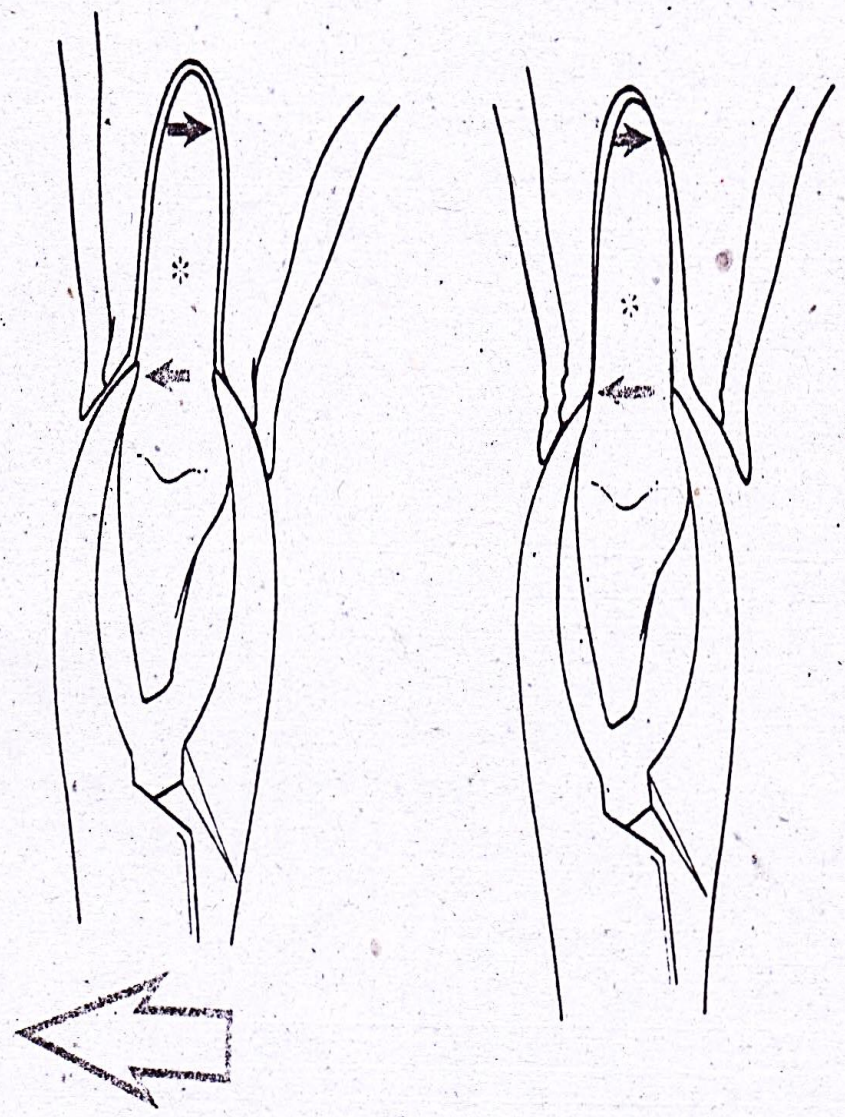
- Chronically infected and long standing roots as the alveolar bone around will be resorbed and replaced with granulation tissue.
- Misplaced and supernumerary teeth.
- After application of 1ry movements, it can be a final movement as the tooth has been completely loosened.

V - F i n a l M o v e m e n t

By which the tooth is completely removed from the bony socket. Avoid:

Traumatizing the teeth in the opposing jaw.

Tooth slipping from the forceps and falling inside the mouth leading suffocation or lung abscess.



• **Retraction and support:**

Surgeon`s opposite hand (left) and/or assistant play an important functions.

- a) Reflection of soft tissue of cheek, lips and tongue to provide good visualization.
- b) Protect other teeth from the sudden release of forceps.
- c) Stabilize patient`s head during extraction movements.
- d) Stabilize and support lower jaw during extraction of mandibular teeth
- e) Support to the alveolar process and provide tactile sensation about ridge expansion
- f) Suction away of blood, saliva and irrigation solution
- g) Provision of psychological and emotional support for the patient for gaining confidence and cooperation.



A

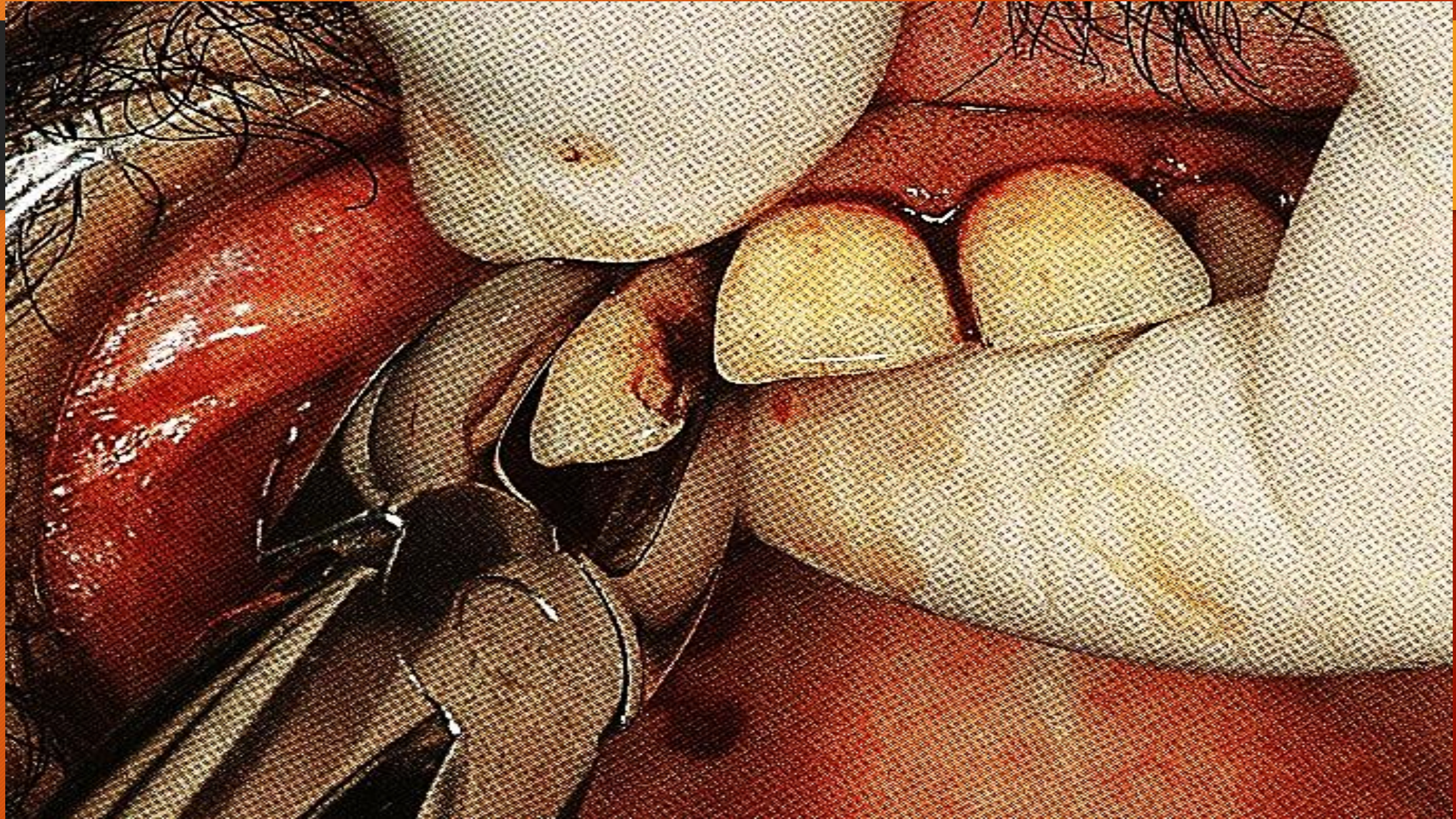


B



C





- *Tooth Grip:*
- *Tooth Manipulation With Extraction Movements*

Chair Position For Forceps Extraction

- Proper position of the operator, patient and chair is important for successful completion of the extraction.
- Correct position will provide stability , support and keep the arms close to the body. It also keep the operator wrist straight to deliver the force with the arm and shoulder.



Chair Position for Maxillary Extraction

• CHAIR

- Tipped backward so the maxillary occlusal plane is at an angle of about 45 degree to the floor
- Height of the chair should be that the height of the patients mouth is at the operators elbow level or slightly above.
- Maxillary Right Quadrant: patient`s head turned toward the operator for adequate access and visualization.



- Maxillary Anterior Area: patient should be looking straight ahead.
- Maxillary Left Quadrant: patient is looking straight ahead and slightly turned toward the operator.

Chair Position for Mandibular Extraction

- **CHAIR**

- Patient position more upright, mouth opened widely so that occlusal plane is parallel to the floor.
- Height of the chair should be lower than that of maxillary teeth
- Surgeon`s arm is inclined downward to approximately 120 degree at the elbow to provide stable and comfortable position.



- For mandibular left side and anterior teeth the dentist should stand in front of the patient and patient head is slightly turned toward the surgeon.
- For mandibular right side teeth the dentist should stand behind and to the right of the patient and patient head is severely turned toward the surgeon.



Specific Extraction Techniques For Removal Of Each Tooth

- Maxillary anterior and left side teeth
 - Left index finger reflect the lip and cheek tissues.
 - Left thumb rest on the palatal alveolar process
- Maxillary right side teeth
 - Left index is placed on the palate with the thumb placed buccally.
- Maxillary Central Incisor

The tooth is grasped with upper anterior forceps (No. 150). Applied forces are combinations of labio-palatal and rotation. Then removed with labio-palatal movement.

- *Maxillary Lateral Incisor:*

Same forceps as the upper central incisor.

Applied force is the labio-palatal and avoid doing primary rotation movement especially if the root is bent

• Maxillary Canine:

- Same forceps as the upper central incisor.
- **Difficult for extraction** as longest root in the mouth plus large surface area of periodontal attachment. Great force is usually required to dislodge upper canine and fracture of the labial alveolar bone is common.
- Applied force initially is the labio-palatal with a small amount of rotational to expand bone.
- If fracture of a small part of the labial bone is felt, continue with caution to not tear soft tissue. If the fractured part is large, try freeing this part using a thin mucoperiosteal elevator to keep it attached to the periosteum while the tooth is removed.

Maxillary First Premolar

- Usually fracture easily if not manipulated slowly and correctly.
- Liability for root fracture increase with age as bone become more dense and less elastic.
- The tooth is grasped with upper premolar forceps. Can be luxated first by the use of straight apexo elevator, then bucco-palatal movement. More buccal than palatal to avoid fracture of the palatal root which is more difficult to retrieve. *Avoid any rotational force.*

Maxillary Second Premolar

- The tooth is grasped with upper premolar forceps. It has single, thick and blunt root.
- Primary movement is in bucco-palatal direction then bucco-occlusal with rotation and traction forces.

Maxillary First Molar

- It has 3 large and strong roots.
- Buccal roots are usually close together, and the palatal root diverge widely to the palate. If buccal roots are widely divergent, it will be difficult to extract.
- Upper (Rt&Lt) molar forceps.
- Strong, steady, and slow buccal and palatal pressures
- Maxillary 2nd molar is slightly different in anatomy as the roots is usually shorter and less divergent with the buccal roots commonly fused.

Maxillary Third Molar

- Difficult in accessibility due to the forward movement of the coronoid process when mouth is open. So that, a special design forceps **Jockey** or **Bayonet** is used. So extraction is facilitated by the patient half close.
- Extraction movements: bucco-palatal.

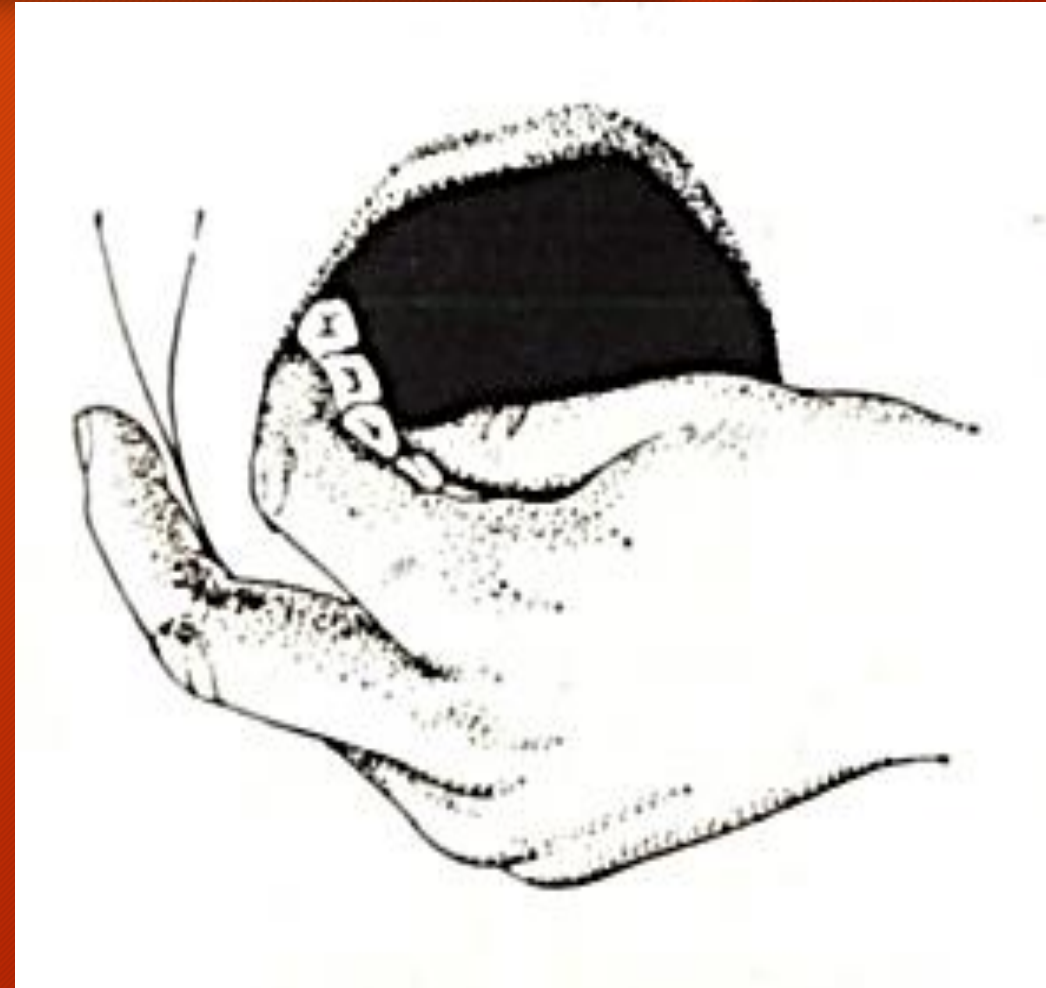


Mandibular Teeth

When removing lower anterior and left side teeth, it's recommended to use the index finger of the left hand in the buccal vestibule, and the middle finger is in the lingual vestibule to reflect the lip, cheek and tongue. Also, the thumb finger is placed below the chin, so that the mandible is supported between the two fingers and thumb.



When removing lower right side teeth, it`s recommended to use the index finger of the left hand is in the buccal vestibule, and the thumb finger is in the lingual vestibule to reflect the lip, cheek and tongue. Also, the middle finger is placed below the chin, so that the mandible is supported between the two fingers and thumb.



Mandibular Incisor and Canine Teeth

- Lower anterior forceps.
- Flattened roots bucco-lingual and root may have distal curvature.
- Labio-lingual movements.
- Rotary movement contra-indicated.



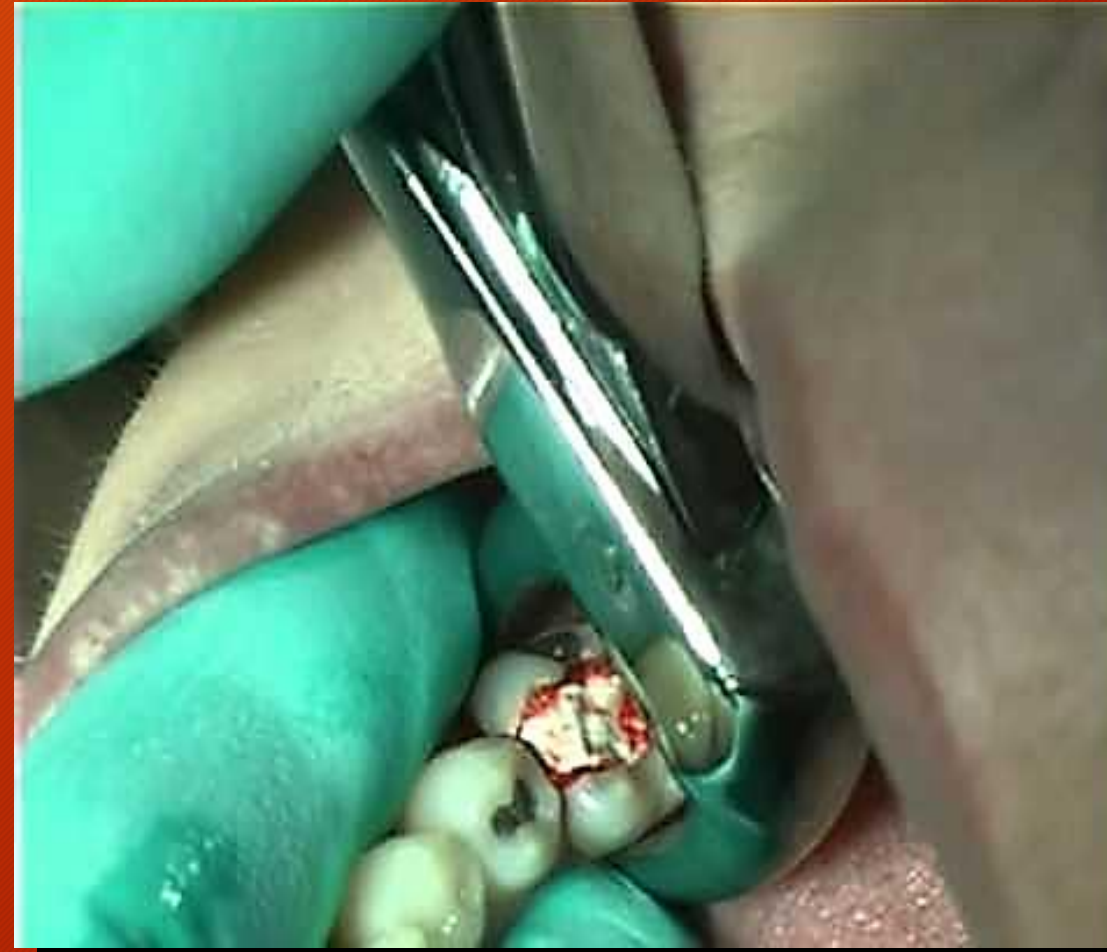
Mandibular Premolar Teeth

- Lower premolar forceps.
- Roots tends to be straight and conical.
- For the lower first premolar, extraction movement is labio-lingual.
- Primary rotary movement are used in extraction of the second premolar besides the bucco-lingual movement.



Mandibular First Molar

- Extraction using lower molar forceps.
- Wide and flat roots. Mesial root may become bifurcated.
- Thicker lingual plate than buccal.
- Take care of the pointed tips of the forceps blades to be resting in the furcation area and the long axis of the blade parallel to the vertical axis of the tooth.
- Bucco-lingual movement mainly.

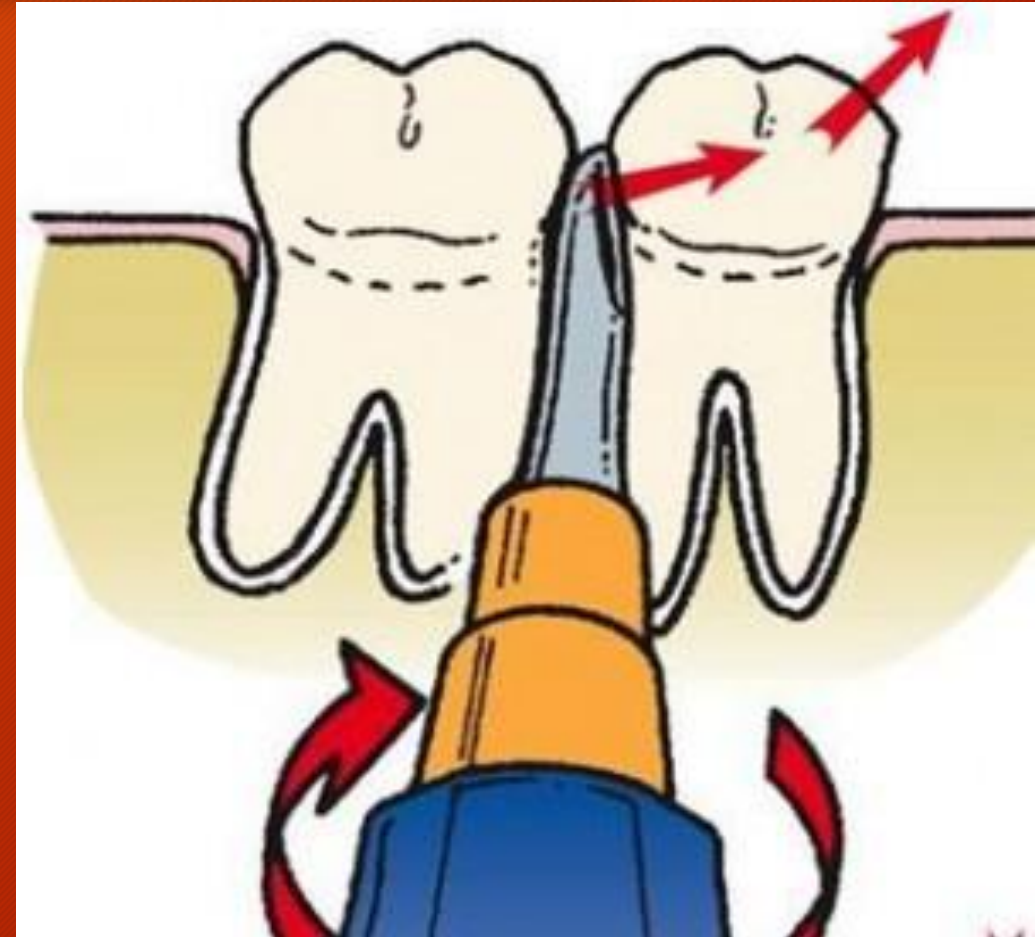


Mandibular Second Molar

- Same as first molar tooth except it responds to the extraction movements easier.
- It can be removed more easily with stronger lingual pressure than buccal pressure.

Mandibular Third Molar

- Normally erupted mandibular third molar can be extracted using mandibular molar forceps with lingual movement.
- Dentist can use straight elevator to achieve a moderate degree of luxation before forceps application. Tooth is luxated distally. The blade of the elevator is inserted mesially with curved side of the blade resting on the interdental septum and its straight side engaging the mesial root of the 3rd molar
- Use gradual, slow, steady and firm force



Dental Elevators

- Consist of:

I. Handle is usually in line with the shank and is enlarged to be grasped. Handle can be perpendicular to the shank(cross-bar).

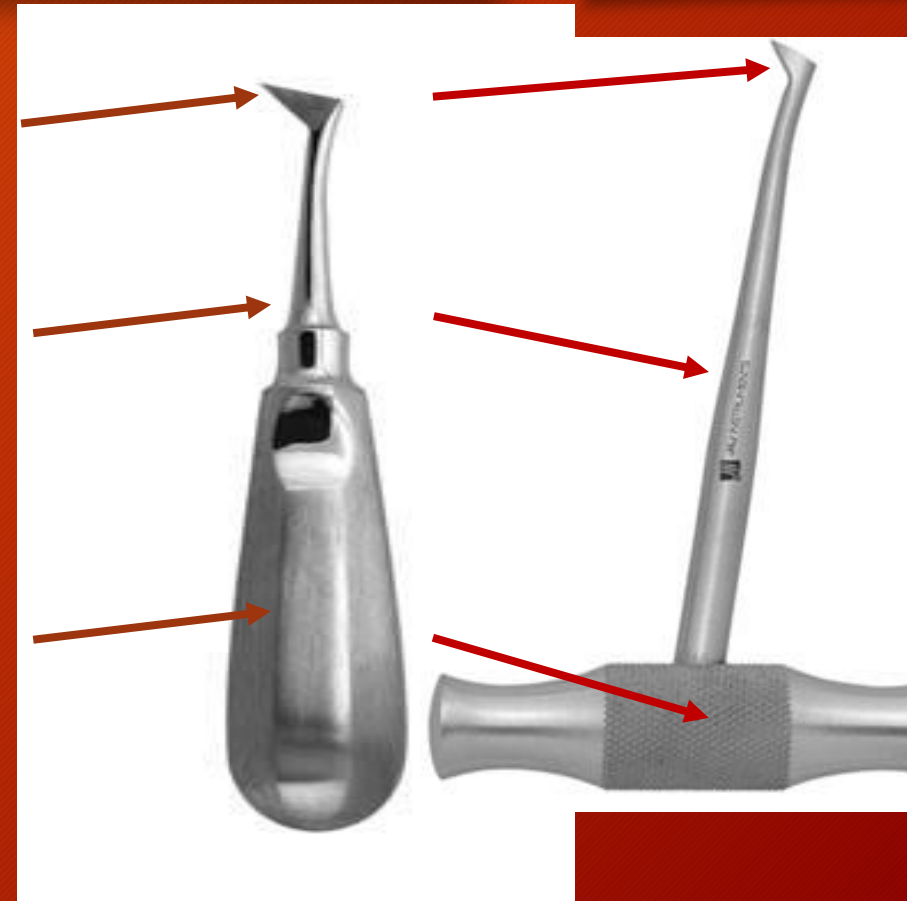
II. Shank connects the handle to the blade.

III. Blades can be straight, curved, triangular, or pointed

Blade

Shank

Handle



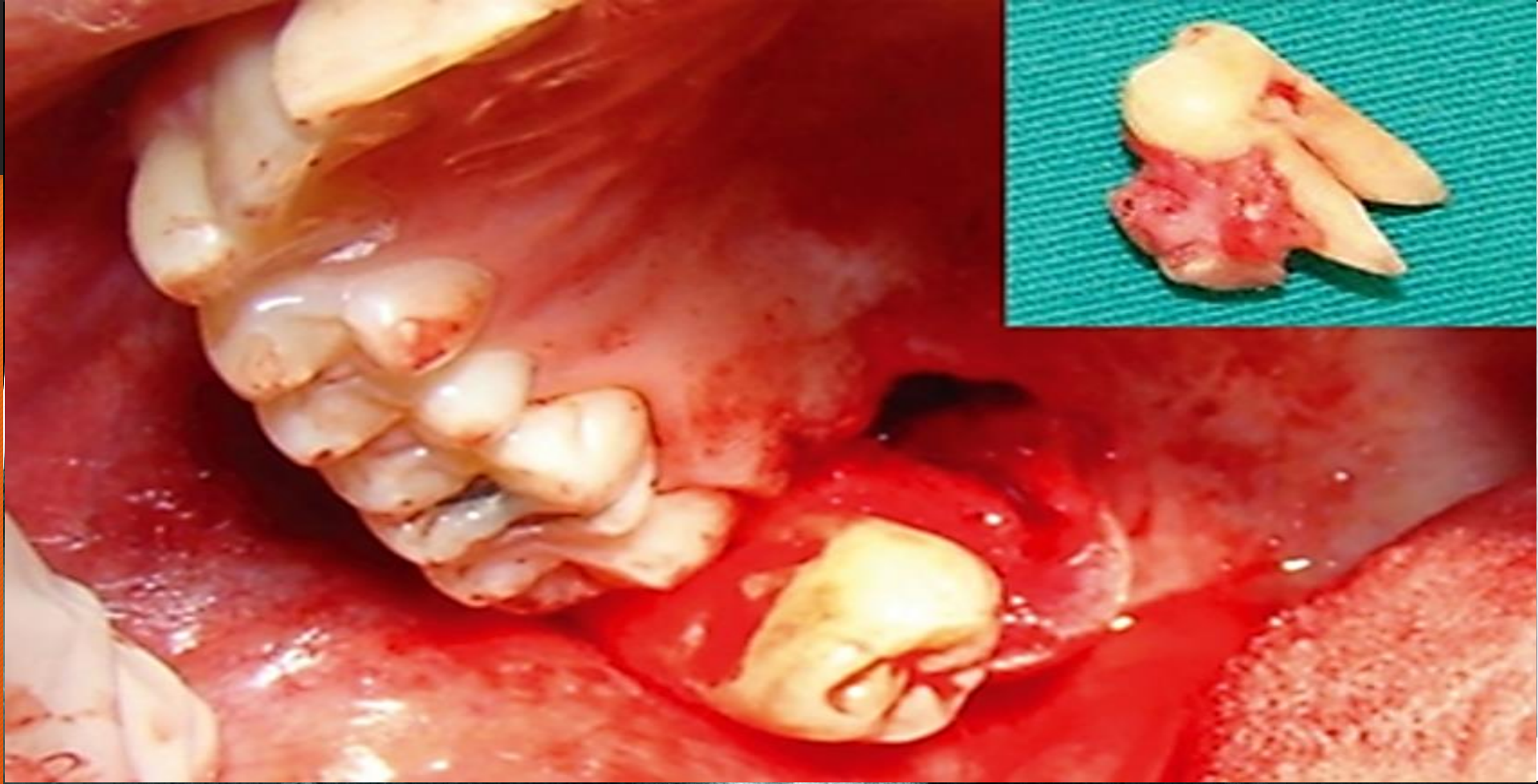
Dental Elevators

□ INDICATIONS:

1. luxation or removal of teeth(impacted, malposed, badly decayed or teeth with deep cervical caries) or teeth fragments, which can't be grasped with the blades of the forceps.
2. when initial forceps application is difficult or will cause trauma to the cheek.
3. Removal of roots broken at extraction time.
4. Removal of remaining roots.
5. Breaking down the periodontal attachment.
6. Mucoperiosteal elevation.
7. Bone removal.

• **DANGERS:**

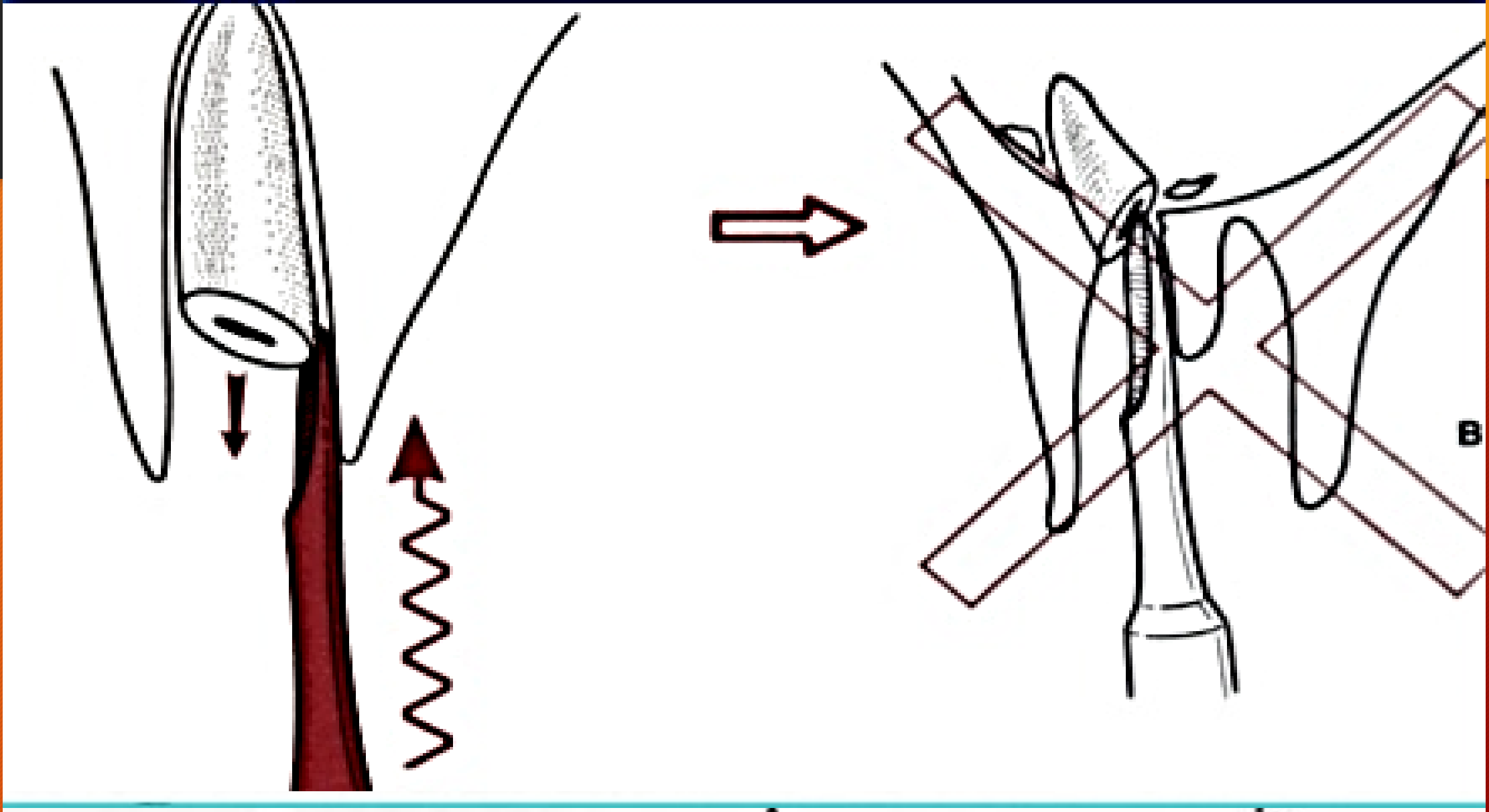
- Loosening or extraction of adjacent teeth.
- Fracture of the alveolar process, mandible or maxilla.
- Penetrating the maxillary sinus or forcing part or hole tooth into the sinus.
- Forcing part of or hole mandibular third molar in to the mandibular canal or sublingual space.
- Slipping of the tip of the elevator can cause damage to the soft tissue like tongue, cheek, palate, floor of the mouth, pharynx or even tonsils. also BV and nerves like lingual and mental.



RULES FOR USING ELEVATORS

1. Palm grip.
2. Don't use neighbouring tooth as a fulcrum unless the tooth is going to be extracted.
3. Never use buccal plate of bone as a fulcrum except in odontectomy.
4. Never use lingual plate of bone as a fulcrum.
5. Use left hand fingers for reflection, guard and support.
6. Use controlled force to avoid slipping of the tip and damage to neighbouring structures.

7. Follow respectively root curvature.
8. Start with smaller elevators and move toward larger one as the tooth luxate.
9. Support the mandible to prevent dislocation.
10. Concave / flat surface of the elevator always faces the tooth / root.
11. Start elevation from mesial tooth side.



CLASSIFICATION OF ELEVATORS

- According to form:

- 1) Straight elevators.
 - a) Straight elevator
 - b) Coupland elevator
 - c) Straight apexo Elevator
- 2) Curved elevators: curved Rt & Lt
 - a) Cryer`s elevator
 - b) Miller`s elevator
 - c) Apexo elevator
- 3) Cross-bar elevators: handle at right angle to the shank.
 - 1) Buccal applicator
 - 2) Socket applicator

- **According to function:**

1. Elevators used to remove the entire tooth
2. Elevators used to remove roots broken off at the gingival line or half way to the apex.
3. Elevators used to remove apical third of the root
4. Elevators designed to cut bone and to remove roots or teeth (ossisectors).
5. Elevators used to reflect soft tissue (periosteal elevators).

Straight Elevator

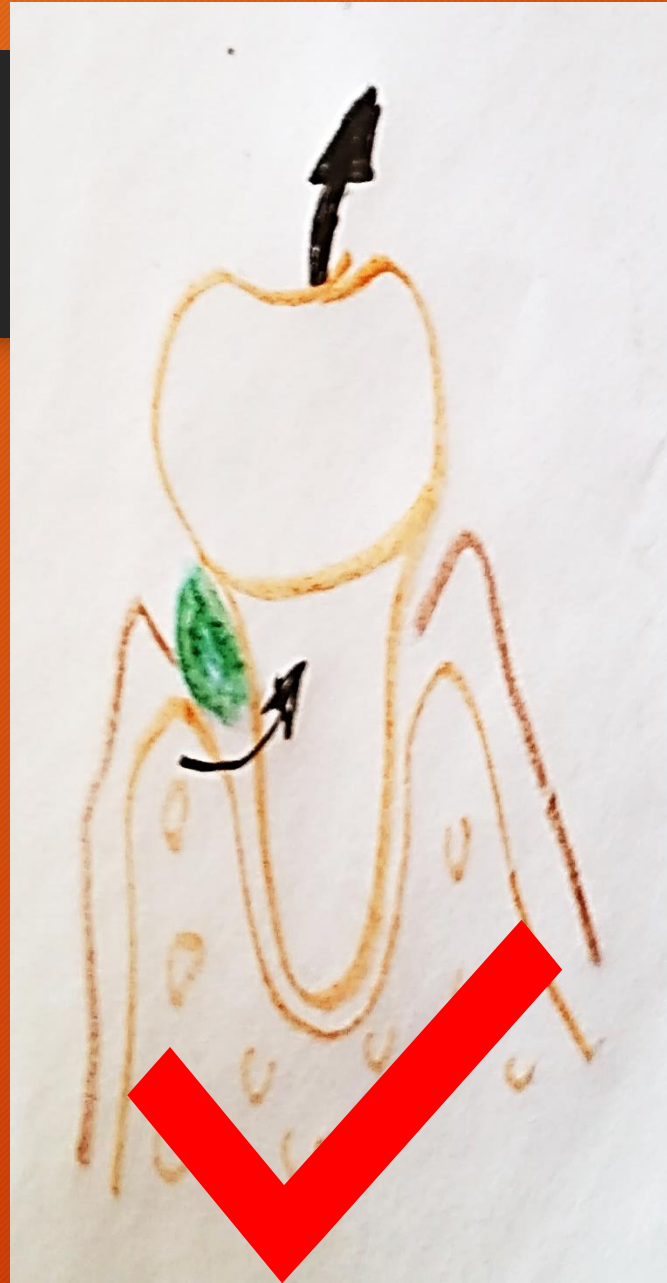
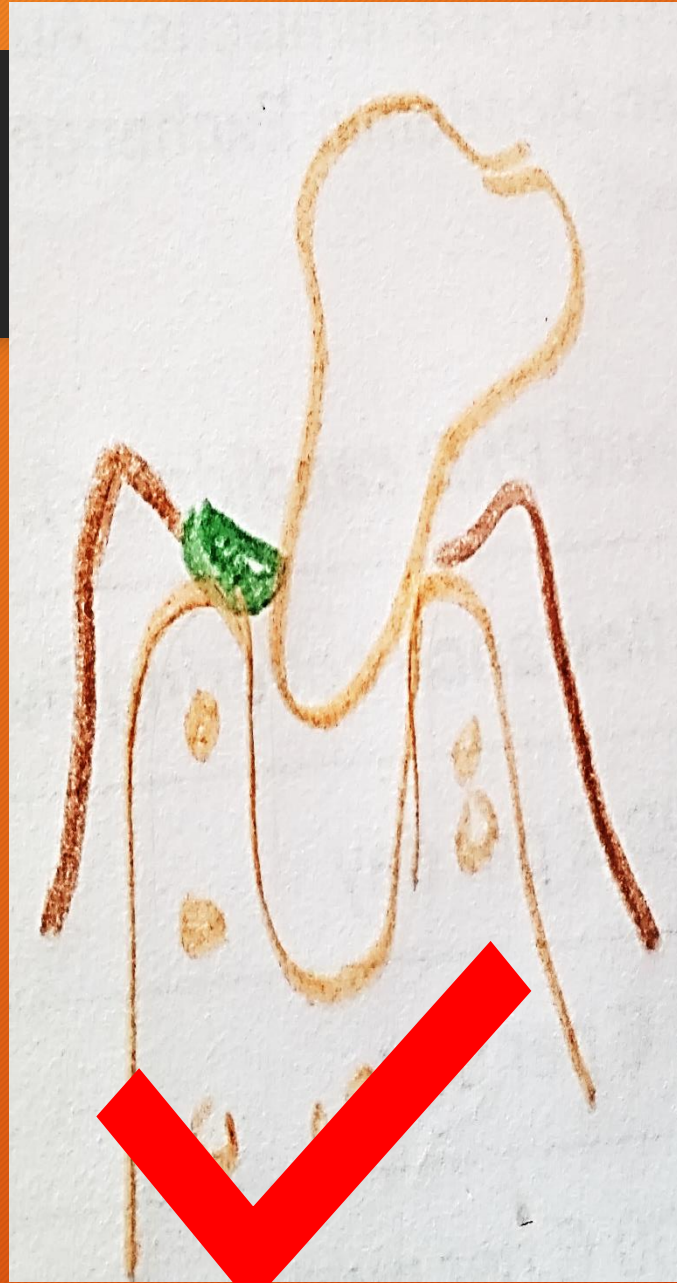
- Blade has one convex side inserted toward the bone and one flat (smooth/serrated) side inserted toward the tooth.
- Luxation of mandibular 3rd molar with distally curved roots.
- Mesial application of force.
- Principal
 - Lever type I
 - Rotational movement.



Resting on bone

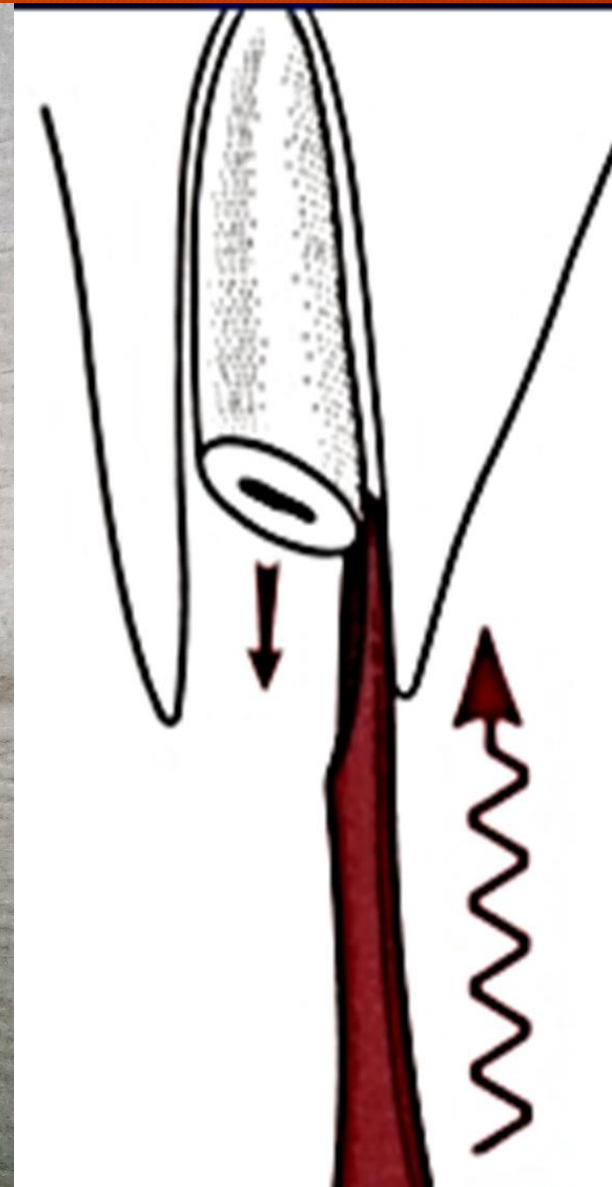
Resting on bone

Resting on neighboring tooth



Coupland Elevator

- Blade has a convex side which is placed toward the bone and a concave side toward the root surface.
- Used as the straight elevator.
- Used to elevate the free gingiva from all around the tooth before force application.
- Used to luxate and elevate fractured roots of maxillary anterior teeth fractured at the bone crest by wedging action.
- Point of application along side the root surface in the PL space in opposing line angles.



Straight Apexo Elevator

- Blade has a convex side which is placed toward the bone and a concave side toward the root surface with a tapered end.
- Used to luxate and elevate fractured apical third of maxillary anterior teeth by wedging action along side of root surface.
- Point of application along side the root surface in the PL space in opposing line angles.



Socket applicator elevator

- Wheel and axil principal.
- Use: removal of remaining roots of mandibular bifurcated teeth.
- Socket application of force.
- Introduced through the empty socket of one root of multi-rooted molar tooth to engage and remove interseptal bone and the remaining root.



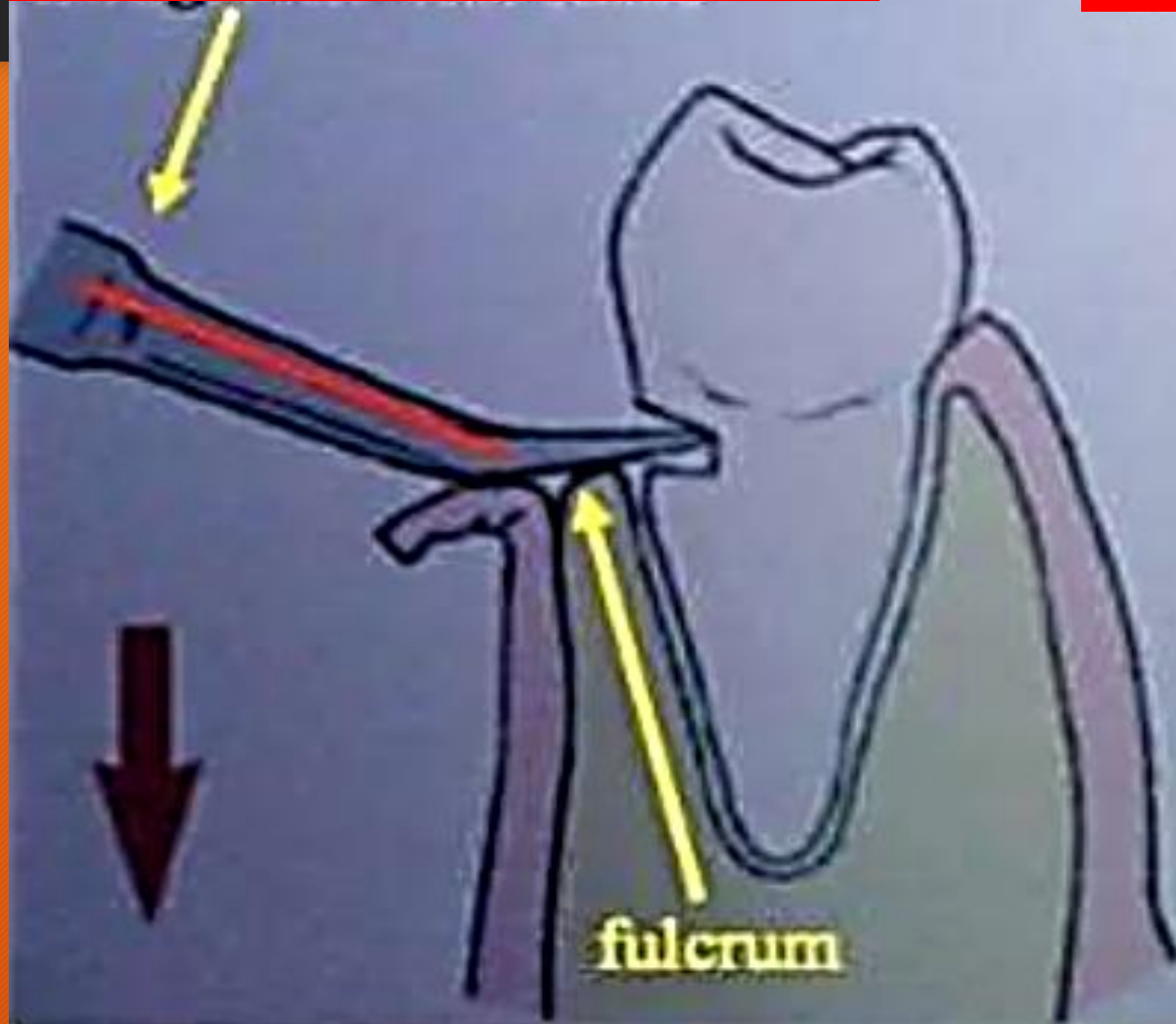


Buccal Applicator Elevator

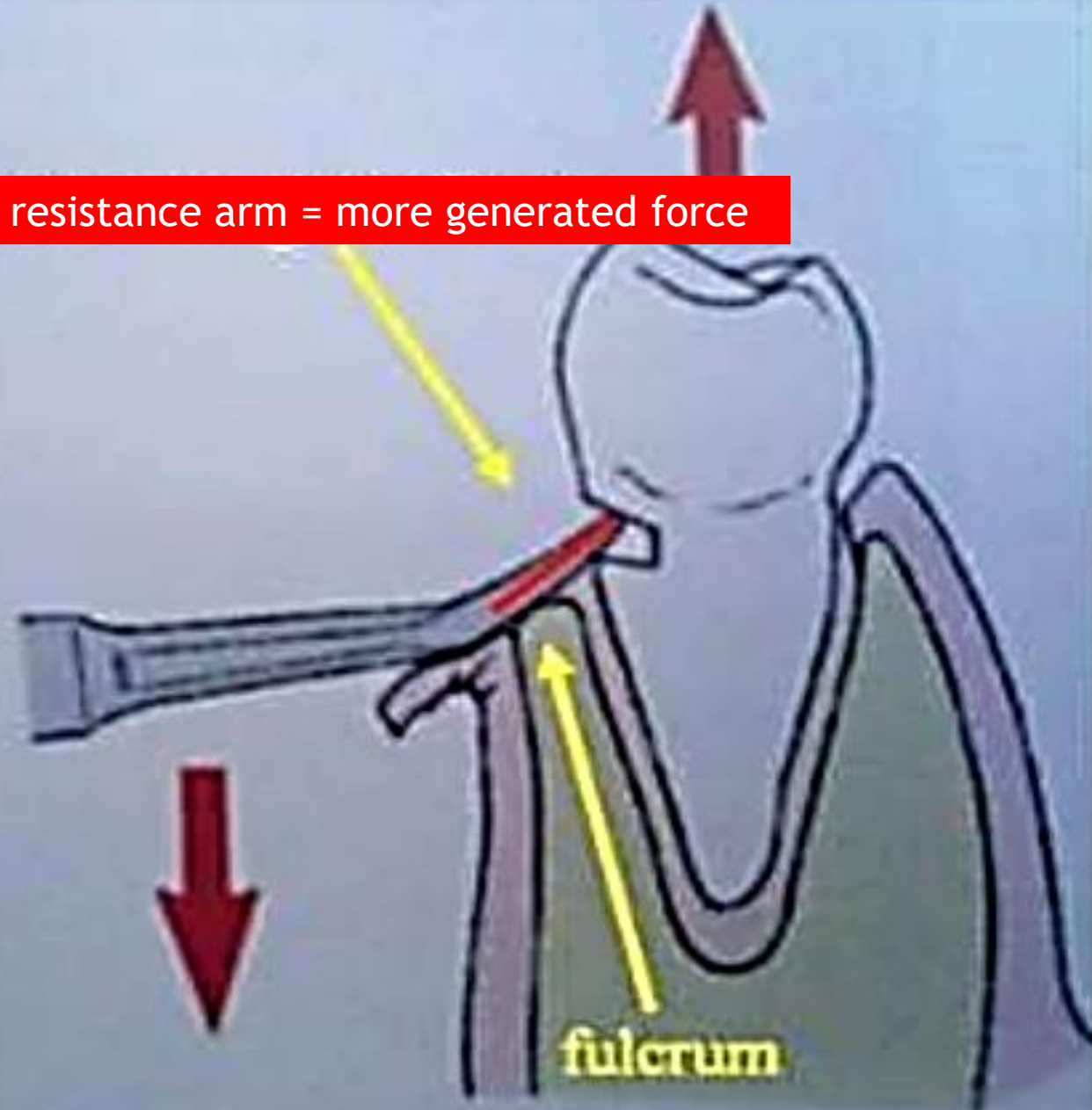
- Wheel and axil principal.
- Use: removal of both roots united at the trunk.
- Used for luxation and/or extraction of mandibular molars with straight roots.
- Buccal application of force.



Long force arm = less force to do



Short resistance arm = more generated force





Cryer`s Elevator

- Same as cross-bar socket applicator and buccal applicator.
- Introduced through the empty socket of one root of multi-rooted molar tooth to engage and remove interseptal bone and the remaining root.



Curved Apexo Elevator

- Removal of fractured single root (single rooted teeth or separated multi-rooted teeth).
- Removal of apical fraction
- Wedging action.





Miller`s Elevator

- Primary luxation of maxillary third molar tooth with distally curved roots.
- Lever action.



Deciduous Teeth Extraction

- Much easier than permanent.
- Same techniques are used in extraction of deciduous teeth except that smaller forceps (**Pediatric**) is used.
- Factors complicating deciduous teeth extraction:
 - Limited access.
 - Buds of premolar teeth are located between the roots of deciduous molars.
 - Common root fracture during extraction as the roots is slender and may show resorption.
- In some instances, it`s advisable to remove very small root tip to undergo resorption or to be removed later on when they are elongated thus avoiding damage to underlying permanent teeth.

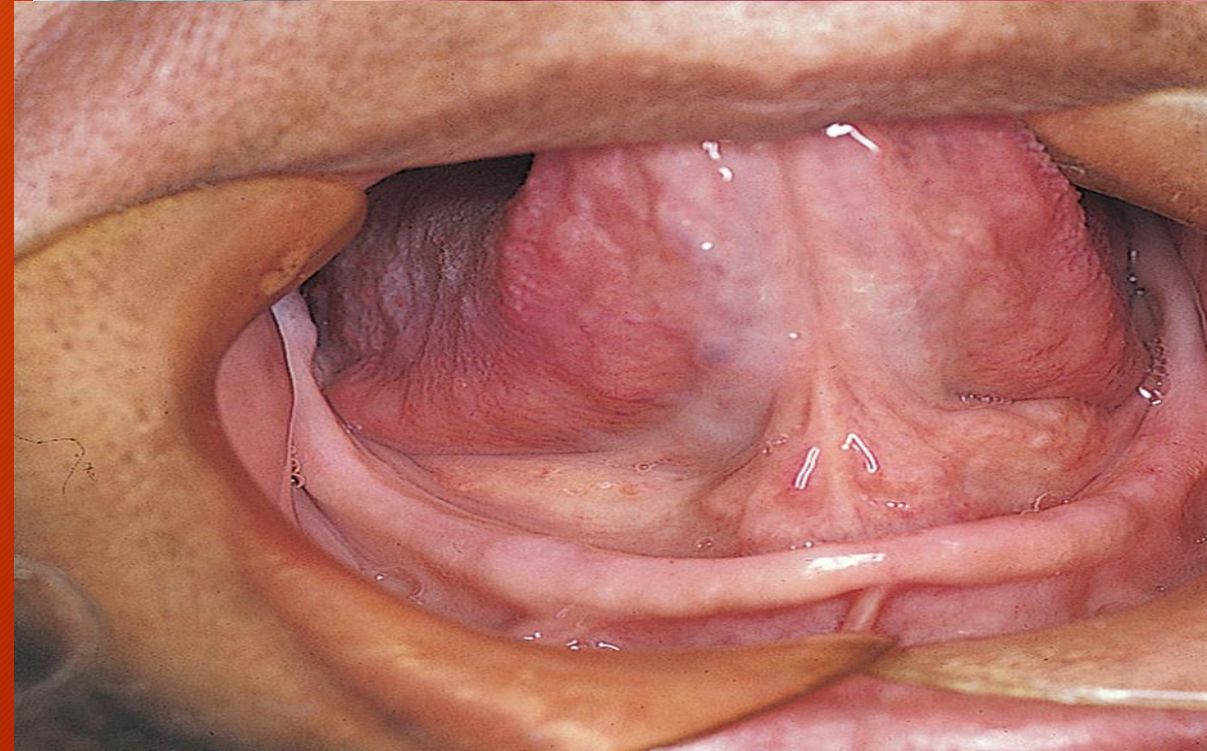
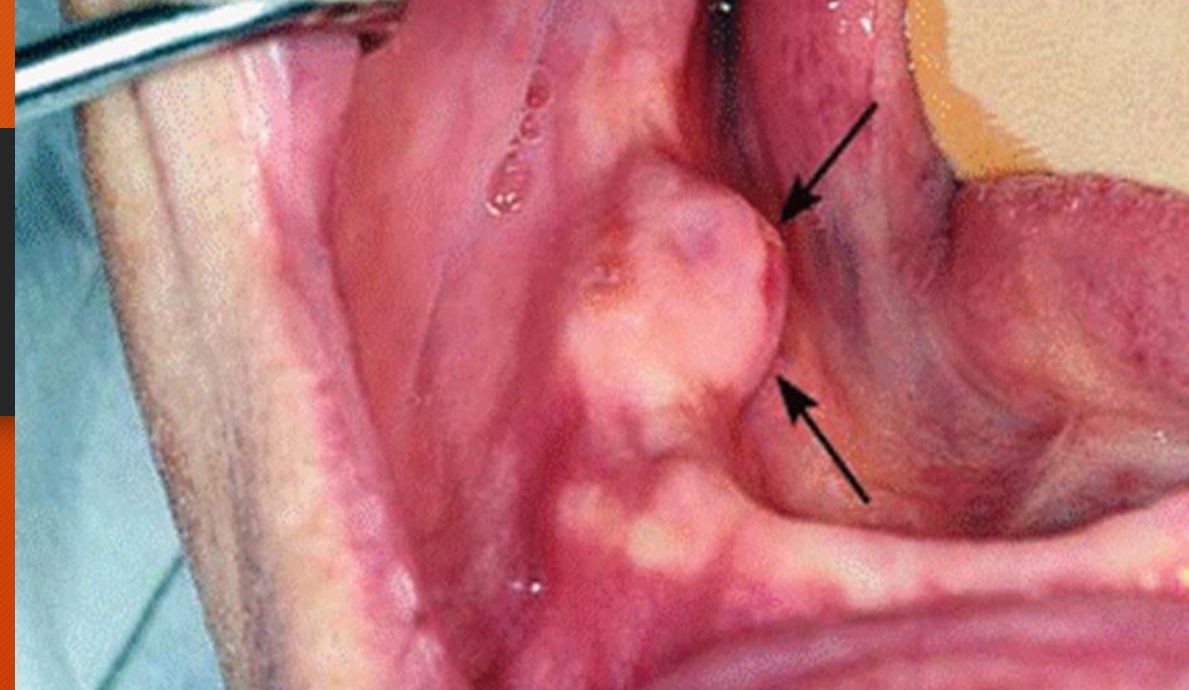
Postextraction Tooth Socket Care

- A. Socket inspection
- B. Remove any foreign body (calculus, tooth fragment, broken filling) from the socket to avoid infection.
- C. If a periapical lesion was visible on the preoperative radiograph and there was no granuloma attached to the tooth when it was removed, so careful curettage of the socket should be done.



D. Trim and smoothen any sharp bony edge from alveolar plates or bony septa to avoid postoperative pain, necrosis or infection to allow proper alveolar ridge healing.

- **Socket curettage mustn't be done unless there is a foreign body or periapical lesion to not produce additional injury and delay healing.**



- Socket squeezing gently and firmly using thumb and index finger to adapt the dilated alveolar plates to their original configuration, this prevents bony undercuts. Avoid squeezing if implants are planned to be inserted or if orthodontic movement into this place is planned.
- Palpate the bone through overlying mucosa to check for sharp bony projection.

ALARM (DIFFICULT PATIENT)

- Obesity
- Dense bone
- Macroglossia
- Microstomia
- Dilacerated roots
- Strong gag reflex
- Position of the inferior alveolar canal
- Advanced age
- Proximity to maxillary sinus
- Fractious patient
- Apical root of lower third molar in cortical bone
- Uneven anesthetic
- Atrophic mandible
- Limited surgical access
- Uncontrolled systemic diseases



Thank
you