THE FORCEPS OF LOWER TEETH

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- Here we have the long axis of the blades is in right angle to the long axis of the hand blades can be applied apical to the cemento-enamel junction (on the root) of the tooth surface parallel to the long axis of the tooth and the handle not to cause injury to the upper lip.

1- Forceps for extraction of lower central and lateral incisors and canine

- We have fine blades for extraction of the lower central and lateral incisors which have fine roots with flattened sides (mesiodistally) and heavy blades used for extraction of canines

2- Premolar forceps

- Because the bucco-lingual width of the crown in the premolar teeth is larger than that of lower incisors and canines we use forceps with heavy blades but partially away from each other when close to accommodate the crowns of these teeth without crushing for the crown.

3- Full crown lower molar forceps

- Since the lower molar teeth have two roots, one mesial and one distal root so the buccal and lingual blades of the forceps designed with projected tapered tip to fit the bifurcation of these teeth on the buccal and lingual sides, so the buccal and lingual blades are identical so the same forceps can be used on the right and left sides on opposite to that in upper molar teeth.
- In addition to that we have a fine blades forceps for extraction of retained roots anteriorly and posteriorly.


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22

Mechanical principles of extraction

I- Expansion of the bony socket

This is achieved by using the tooth itself as a dilating instrument, and this is the most important factor in forceps extraction, and this principle need:

- **1-** Sufficient tooth substance be present to be firmly grasped by the forceps.
- **2-** The root pattern of the tooth in such that it is possible to dilate the socket to permit the complete dislocation of the tooth from its socket, e.g. dilacerated, divergent, converge roots.
- **3-** Nature of the bone, elastic bone especially in young patients is maximal and decreased with age, older patients usually have denser, more highly calcified bone that is less likely to provide adequate expansion during extraction of the teeth.
- **4-** Thickness of the bone. Thick bone expansion is less likely to occur by using normal force.

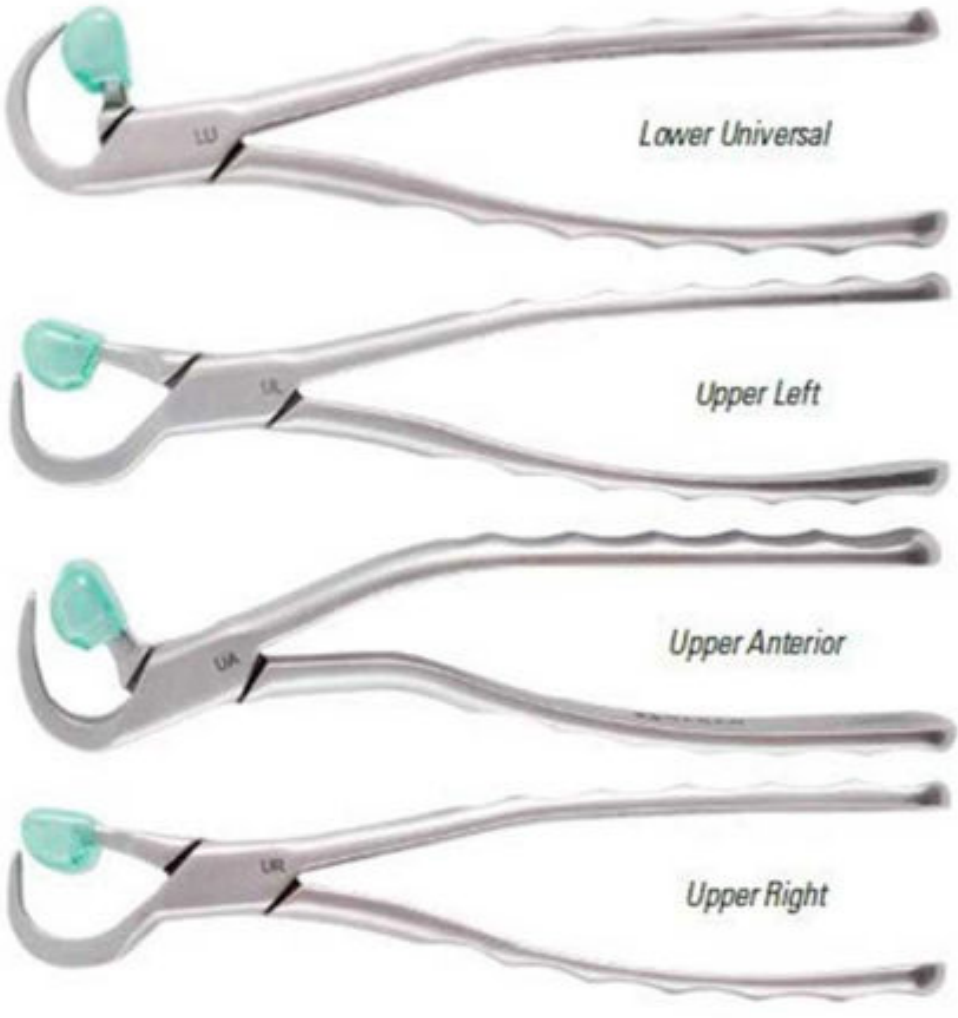
II. The use of a lever and fulcrum

- This is used to force a tooth or root out of the socket along the path of least resistance and the principle is the basic factor governing the use of elevators to extract teeth or roots

III-The insertion of a wedge or wedges

- Between the tooth-root and the bony socket wall, thus causing the tooth to rise in its socket and this explains why some conically rooted mandibular premolar and molars sometimes shoot out of their socket when forceps blades are applied to it.

Physics forceps


Lower Universal
Upper Left
Upper Anterior
Upper Right

- The Physics Forceps uses first-class **lever** mechanics.
- One handle of the device is connected to a **"bumper,"** which acts as a fulcrum during the extraction and stabilize the beak during wrist movements. The beak of the extractor is positioned most often the lingual or palatal root of the tooth and into the gingival sulcus.
- The bumper is most often placed on the facial aspect of the dental alveolus, typically at the mucogingival junction.
- Unlike conventional forceps, only one point of contact is made on the tooth being extracted.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- As a result, **a force on the handle c**onnected to the bumper will increase the force on the tooth, periodontal ligament, and bone by 8 times. No force is required to be placed on the beak, which is only on the lingual aspect of the tooth root. Therefore, the tooth does not split, crush or fracture.
- **Moment of force in** physics represents the magnitude of force applied to a rotational system at a distance from the axis of rotation. The principle of moment is derived from **Archimedes**' operating principles of the lever and is defined as M=rF, where "F" is the applied force and "r" is the distance from the applied force to the object. This is referred to as the moment arm. The length of the moment arm (or lever arm) is the key to the operation of the lever, pulley, and most other simple machines capable of generating mechanical advantage.

- This means that if the force applied to generate work cannot be increased, it is still possible to gain a greater amount of work by increasing the moment arm of the lever
- "**Creep** is a phenomenon whereby a material continues to change shape over time under a constant load. In a tooth extraction, creep may occur in bone and the periodontal ligament.
- higher the force that is applied, the greater the deformation of the bone. This process allows the tooth socket to expand and permits the tooth to exit the socket.

- The extraction of a tooth using the Physics Forceps is similar to the removal of a nail from wood using a hammer versus a pair of pliers
- The handles are never squeezed like a conventional forceps; rather they are held lightly in the hand, and the wrist is rotated to simply create tension on the palatal aspect of the root. There is no forearm, bicep, or shoulder pressure used. The handles simply allow the beak to engage the root structure without slipping off. During a short time of constant tension, the root will disengage or pop from the socket incisally and facially.

Thank you