BASIC STOMATOLOGICAL OPERATIONS. OPERATION OF TOOTH EXTRACTION. INDICATIONS AND CONTRAINDICATION. COMPLICATION UNDER TIME AND AFTER THE OPERATION. PROPHYLAXIS AND MEDICAL TREATMENT

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Indications For Removal of Permanent Tooth

Indications For Removal of Permanent Tooth are divided into groups: **absolute** and **relative**.

Absolute divided into:

A) **immediate (urgent)** – Indications when tooth must be extracted obligatory in the first visit to a doctor:

- "causal" tooth in osteomyelitis of the jaws;
- Teeth Involved in Jaw Fractures, if the tooth is injured or severely luxated from the surrounding bony tissue, its removal may be necessary to prevent infection
- Cracked Teeth (longitudinal fracture) A clear but uncommon indication for extraction of teeth is a tooth that is cracked or has a fractured root. The cracked tooth can be painful and is unmanageable by a more conservative technique. Even endodontic and complex restorative procedures cannot relieve the pain of a cracked tooth.

B) planned – Indications when tooth must be extracted obligatory but exodontia may be postpone at the appointed time:

- **Severe Periodontal Disease.** A common reason for tooth removal is severe and extensive periodontal disease. If severe adult periodontitis has existed for some time, excessive bone loss and irreversible tooth mobility will be found. In these situations the hypermobile teeth should be extracted;
- **Teeth Associated with Pathologic Lesions.** Teeth that are involved in pathologic lesions may require removal. In some situations the teeth can be retained and endodontic therapy performed. However, if maintaining the tooth compromises the complete surgical removal of the lesion, the tooth should be removed.
- **Cracked Teeth (crown)** with pulp discovering when restoration it is impossible.

Relative Indications are**:**

1) **Severe Caries**

Perhaps the most common and widely accepted reason to remove a tooth is that it is so severely carious that it can-not be restored. The extent to which the tooth is carious and is considered to be nonrestorable is a judgment call to be made between the dentist and the patient.

2) **Pulpal Necrosis**

A second, closely aligned rationale for removing a tooth is the presence of pulp necrosis or irreversible pulpitis that is not amenable to endodontics. This may be the result of a patient declining endodontic treatment or of a root canal that is tortuous, calcified, and untreatable by standard endodontic techniques. Also included in this general indication category is the endodontic failure. In this situation, endodontic treatment has been done but has failed to relieve pain or provide drainage.

3) Orthodontic Reasons

Patients who are about to undergo orthodontic correction of crowded dentition frequently require the extraction of teeth to provide space for tooth alignment. The most commonly extracted teeth are the maxillary and mandibular first premolars, but second premolars or a mandibular incisor may occasionally require extraction for this same reason.

4) Malopposed Teeth

Teeth that are malopposed or malpositioned may be indicated for removal in several situations. If they traumatize soft tissue and cannot be repositioned by orthodontic treatment, they should be extracted. A common example of this is the maxillary third molar, which erupts in severe buccal version and causes ulceration and soft tissue trauma in the cheek. Another example is malopposed teeth that are hypererupted because of the loss of teeth in the opposing arch. If prosthetic rehabilitation is to be carried out in the opposing arch, the hypererupted teeth may interfere with construction of an adequate prosthesis. In this situation the malopposed teeth should be considered for extraction.

5) Preprosthetic Extractions

Occasionally, teeth interfere with the design and proper placement of prosthetic appliances, that is, full dentures, partial dentures, or fixed partial dentures. When this happens, preprosthetic extractions are necessary.

6) Impacted Teeth

Impacted teeth should be considered for removal. If it is clear that a partially impacted tooth is unable to erupt into a functional occlusion because of inadequate space, interference from adjacent teeth, or some other reason, it should be scheduled for surgical removal. However, if removing the impacted tooth is contraindicated, such as in cases of medical compromise, full bony impaction in a patient who is over the age of 35, or in a patient with advanced age, then the tooth may be retained.

7)**Supernumerary Teeth .** Supernumerary teeth are usually impacted and should be removed. A supernumerary tooth may interfere with eruption of succedaneous teeth and has the potential for causing their resorption and displacement.

8) **Preradiation Therapy.** Patients who are to receive radiation therapy for a variety of oral tumors should have serious consideration given to removing teeth in the line of radiation therapy.

9) **Esthetics.** Occasionally, a patient requires removal of teeth for esthetic reasons. In these situations teeth may be severely stained, as with tetracycline staining or fluorosis, or they may be severely malopposed and usually protruding. Although other techniques, such as bonding, can be employed to relieve the staining problem, and orthodontic or osteotomy procedures can be used to correct severe protrusion, the patient may choose to have extraction and prosthetic reconstruction

10)Economics. A final indication for removal of teeth is economic. All of the indications for extraction already mentioned may become stronger if the patient is unwilling or unable financially to support the decision to maintain the tooth. The inability of the patient either to pay for the procedure or to take enough time from work to allow it to be performed may require that the tooth be removed.

CONTRAINDICATIONS FOR THE REMOVAL

Generally the contraindications are divided into two groups: (1) systemic and (2) local.

- **Systemic Contraindications**
- Systemic contraindications preclude extraction because the patient's systemic health is such that the ability to withstand the surgical insult may be compromised.
- One systemic contraindication is a group of conditions called severe uncontrolled metabolic diseases. Brittle diabetes and end-stage renal disease with severe uremia are part of this group. Patients with mild diabetes or well-controlled severe diabetes can be treated as reasonably normal patients. It is only when the disease process becomes uncontrolled that the patient should not have a tooth removed.

- Patients who have uncontrolled leukemias and lymphomas should not have teeth removed until the leukemias can be brought under control. The potential complications are infection as a result of nonfunctioning white cells and excessive bleeding as a result of an inadequate number of platelets.
- Patients with any of a variety of severe uncontrolled cardiac diseases should also have their extractions deferred until the disease can be brought under control. Patients with severe myocardial ischemia, such as unstable angina pectoris, and patients who have had a recent myocardial infarction (MI) should not have a tooth extracted. Patients who have severe uncontrolled hypertension should also have extractions deferred, because persistent bleeding, acute myocardial insufficiency, and cerebrovascular accidents are more likely to occur as a result of stress caused by the extraction. Patients who have severe, uncontrolled cardiac dysrhythmias should have their extraction procedures deferred as well.

- Pregnancy is a relative contraindication; patients who are in the first or last trimester should have their extractions deferred if possible. The latter part of the first trimester and the first month of the last trimester may be as safe as the middle trimester for a routine uncomplicated extraction, but more extensive surgical procedures should be deferred until after the child has been delivered.
- Patients who have a severe bleeding diathesis, such as hemophilia, or severe platelet disorders should not have teeth extracted until the coagulopathy has been corrected. Most severe bleeding disorders can be controlled by the administration of coagulation factors or platelet transfusions. Close coordination with the patient's hematologist can result in an uncomplicated recovery from the extraction procedure in most situations. Similarly, patients who take anticoagulants can have routine extractions performed when care is taken to manage the patient appropriately.
- Finally, patients who take or have taken a variety of medications should have surgery performed with caution. Drugs to watch for include corticosteroids, immunosuppressives, and cancer chemotherapeutic agents.

LOCAL CONTRAINDICATIONS

- Extractions of indicated teeth have several local contraindications. The most important and most critical is a history of therapeutic radiation for cancer. Extractions performed in an area of radiation may result in osteoradionecrosis and therefore must be done with extreme caution.
- Teeth that are located within an area of tumor, especially a malignant tumor, should not be extracted. The surgical procedure for extraction could disseminate cells and thereby hasten the metastatic process.

- Patients who have severe pericoronitis around an impacted mandibular third molar should not have the tooth extracted until the pericoronitis has been treated. Nonsurgical treatment should include irrigations, antibiotics, and removal of the maxillary third molar to relieve impingement on the edematous soft tissue overlying the mandibular impaction. If the mandibular third molar is removed in the face of severe pericoronitis, the incidence of complications increases. If the pericoronitis is mild and the tooth can be removed easily, then immediate extraction may be performed.
- Finally, the acute dentoalveolar abscess must be mentioned. It is abundantly clear from many prospective studies that the most rapid resolution of an infection secondary to pulpal necrosis is obtained when the tooth is removed as early as possible. Therefore acute infection is not a contraindication to extraction. However, it may be difficult to extract such a tooth because the patient may not be able to open the mouth sufficiently wide, or it may be difficult to reach a state of adequate local anesthesia. If access and anesthesia considerations can be met, the tooth should be removed as early as possible.

CLINICAL EVALUATION OF TEETH FOR REMOVAL

- Access to Tooth
- Mobility of Tooth
- Condition of Crown
- RADIOGRAPHIC EXAMINATION OF TOOTH FOR REMOVAL
- Relationship of Associated Vital Structures
- Configuration of Roots
- Condition of Surrounding Bone

INSTRUMENTS FOR TOOTH EXTRACTION

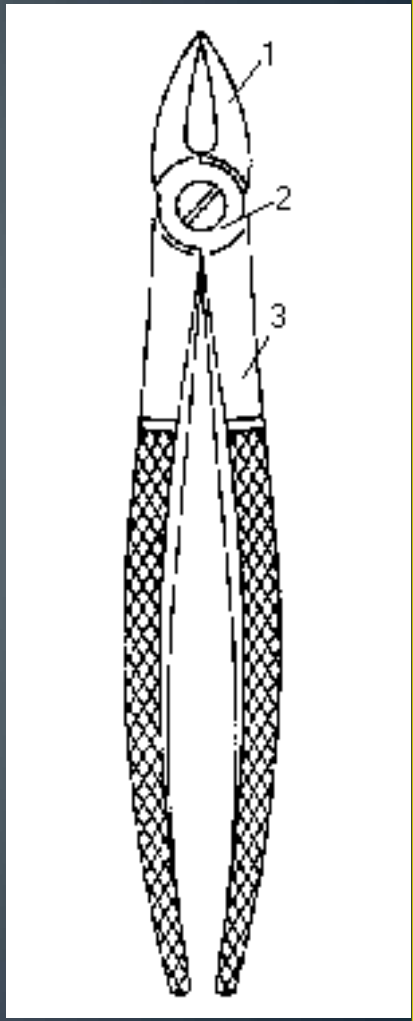
EXTRACTION FORCEPS

The basic components of dental extraction forceps are the:

1) The **Beaks** are designed to adapt to the tooth root at the junction of the crown and root. It is important to remember that the beaks of the forceps are designed to be adapted to the *root structure of the tooth and not to the crown of the tooth,* in a sense then, different beaks are designed for singlerooted teeth, two-rooted teeth, and three-rooted teeth.

2) **Hinge**. The hinge of the forceps is mereiy a mechanism for connecting the handle to the beak. The hinge transfers and concentrates the force applied to the handles to the beak.

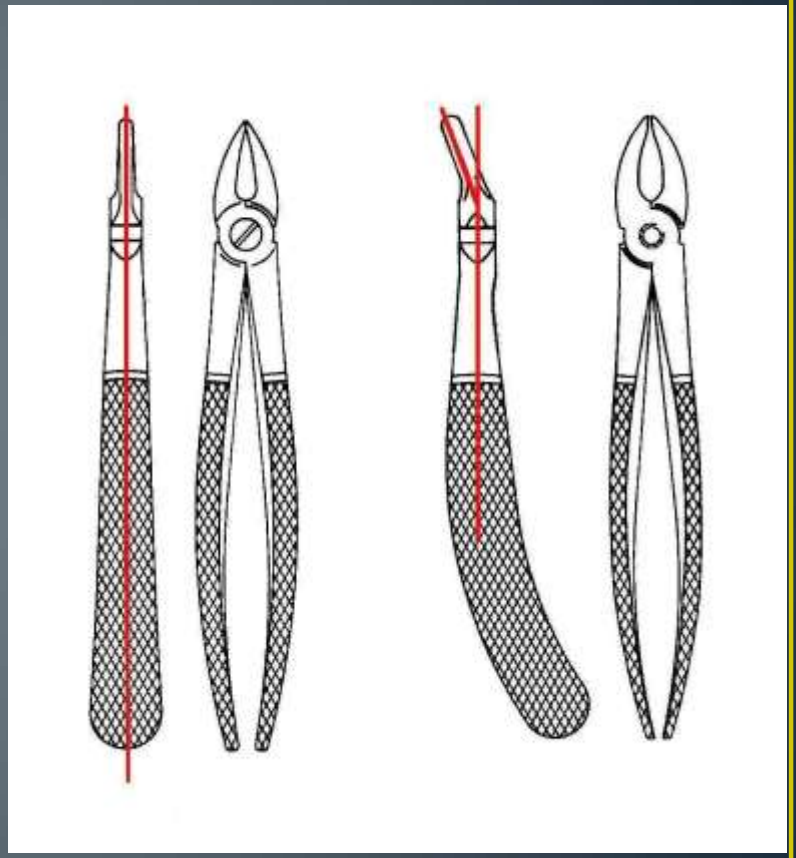
3) **Handle** are usually of adequate size to be handled comfortably and deliver sufficient pressure and leverage to remove the required tooth. The handles have a serrated surface to allow a positive grip and prevent slippage.



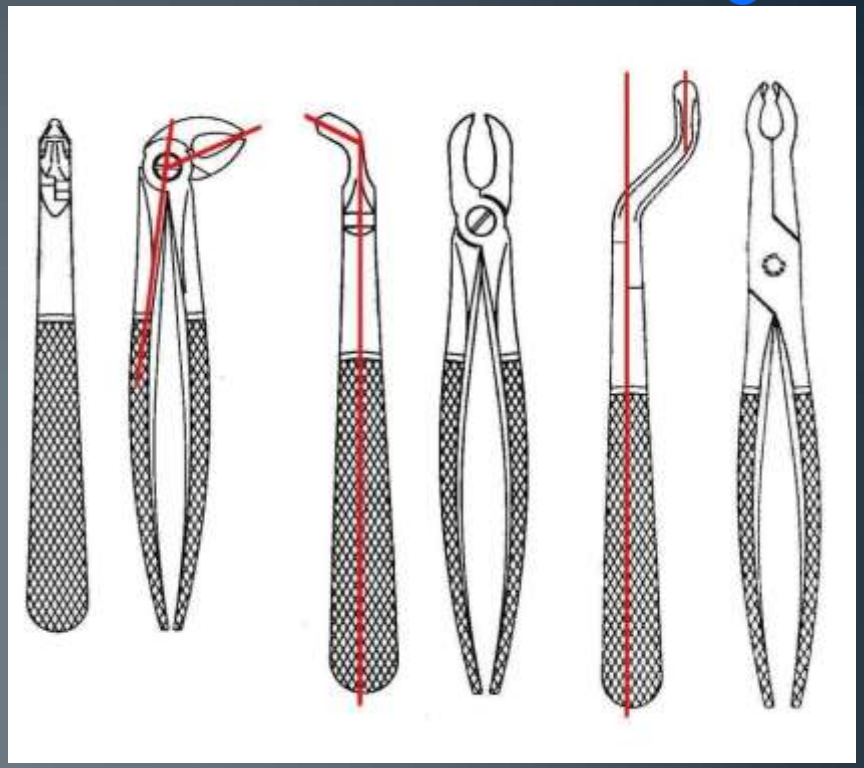
The handles of the forceps are held differently, depending on the position of the tooth to be removed.

Maxillary forceps are held with the palm underneath the forceps so that the beak is directed in a superior direction. The forceps used for removal of mandibular teeth are held with the palm on top of the forceps so that the beak is pointed down toward the teeth.

The handles of the forceps are usually straight but may be curved. This provides the operator with a sense of "better Fit”.

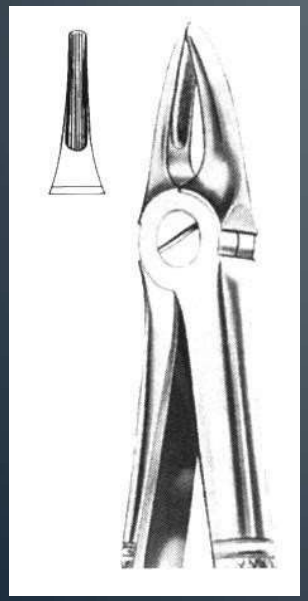


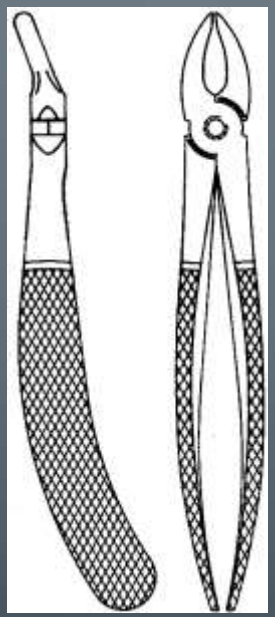
One distinct difference in styles of the handles does exist: The usual American type of forceps has a hinge in a horizontal direction and is used as has been described (see Figs). The English preference is for a vertical hinge and corresponding vertically positioned handle. Thus the English style handle and hinge are used with the hand held in a vertical direction as opposed to a horizontal direction.

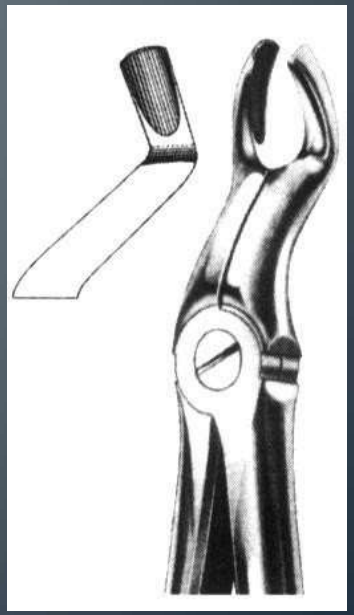


The beaks of the forceps are angled so that they can be placed parallel to the long axis of the tooth, with the handle in a comfortable position. Therefore the beaks of maxillary forceps are usually parallel to the handles. Maxillary molar forceps are offset in a bayonet fashion to allow the operator to comfortably reach the posterior aspect of the mouth and yet keep the beaks parallel to the long axis of the tooth.

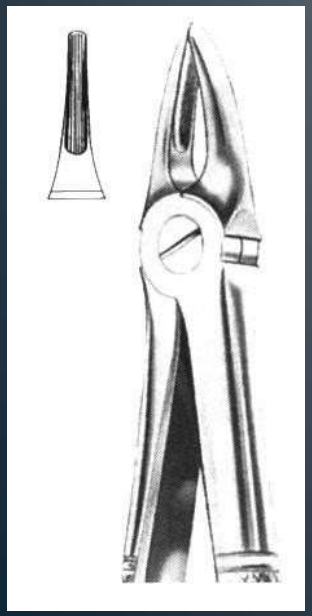
The beak of mandibular forceps is usually set perpendicular to the handles, which allows the surgeon to reach the lower teeth and maintain a comfortable, controlled position.

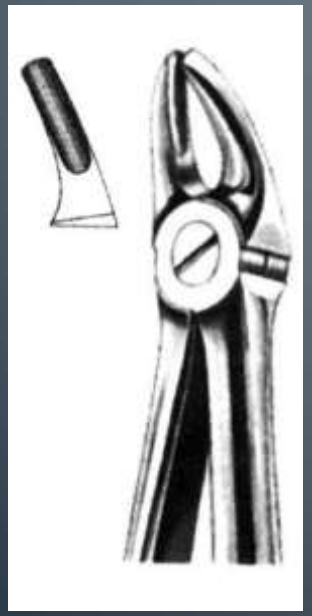


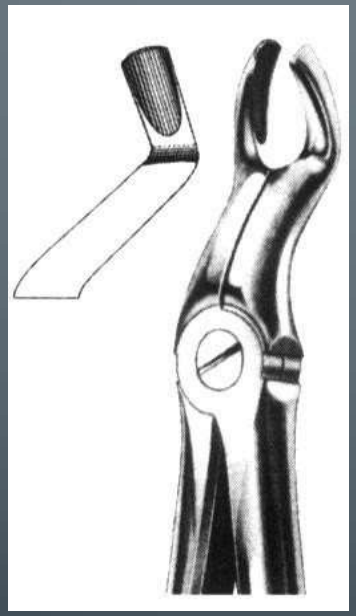


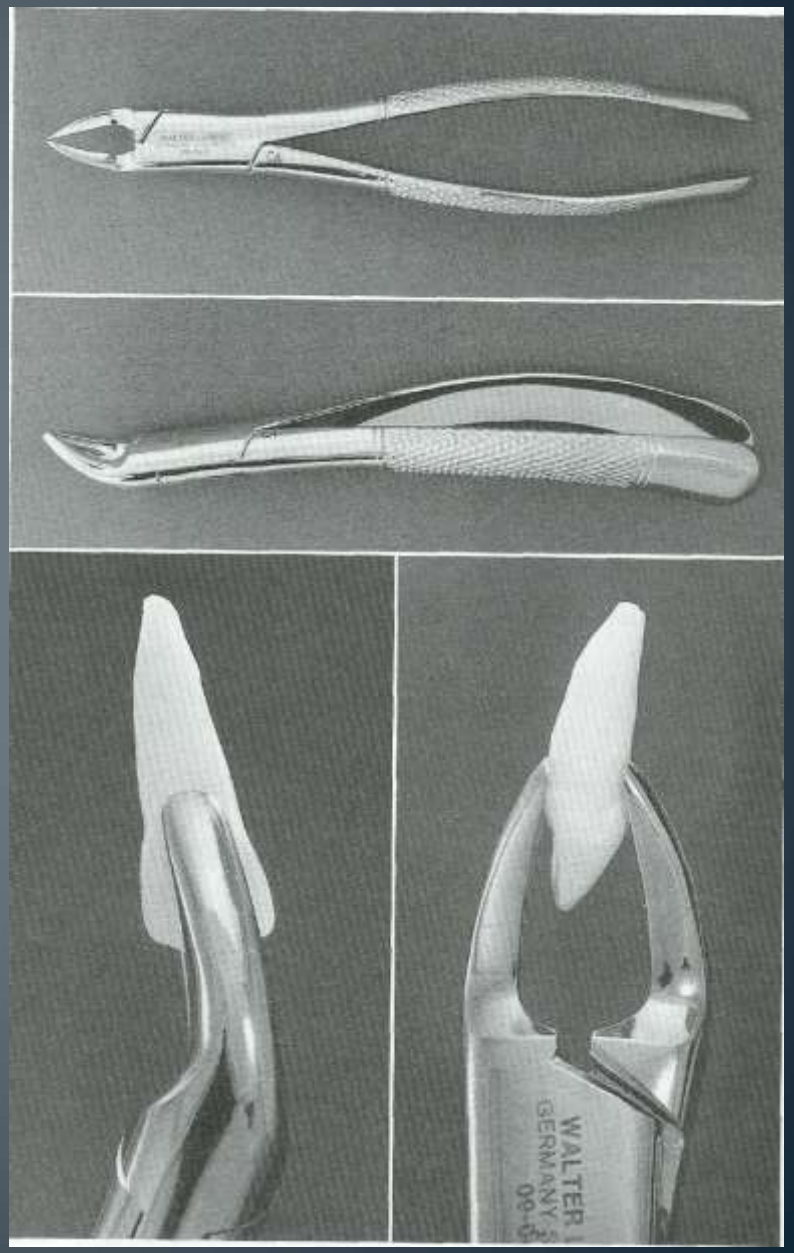


The maxillary incisors, canine teeth, and premolar teeth are all considered to be single-rooted teeth. The maxillary first premolar frequently has a bifurcated root, but because this occurs in the apical one third, it has no influence on the design of the forceps. The single-rooted maxillary teeth are usually removed with **maxillary universal forceps** which are slightly curved when viewed from the side and are essentially straight. The beaks of the forceps curve to meet only at the tip. The slight curve allows the operator to reach not only the incisors, but also the bicuspids in a comfortable fashion. In addition **straight** forceps are also available.

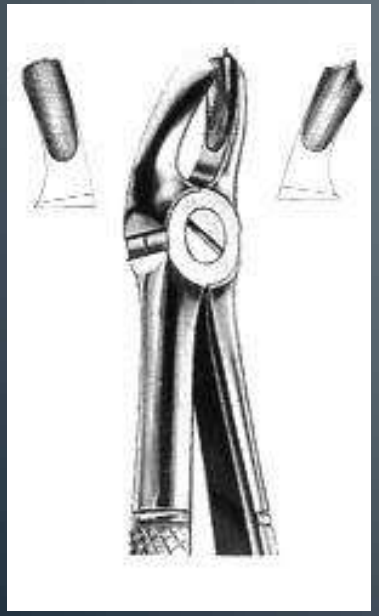


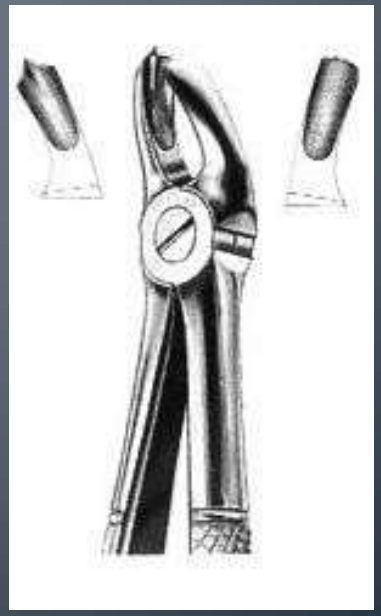




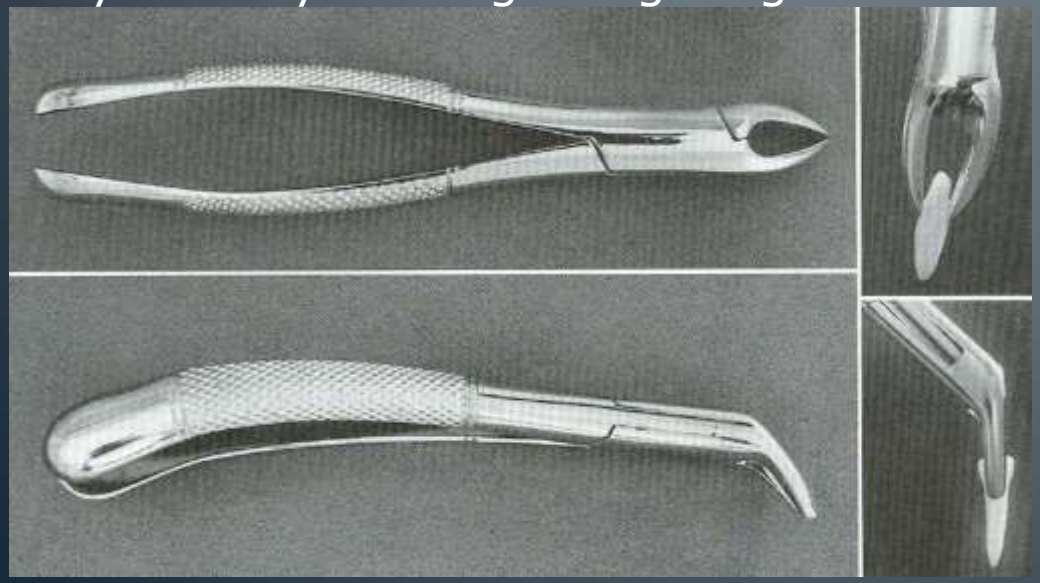


The maxillary molar teeth are three-rooted teeth with a single palatal root and a buccal bifurcation. Therefore forceps that are adapted to fit the maxillary molars must have a smooth, concave surface for the palatal root and a beak with a pointed design that will fit into the buccal bifurcation on the buccal beak. This requires that the molar forceps come in pairs: a left and a right. Additionally, the molar forceps should be offset so that the operator can reach the posterior aspect of the mouth and remain in the correct position.

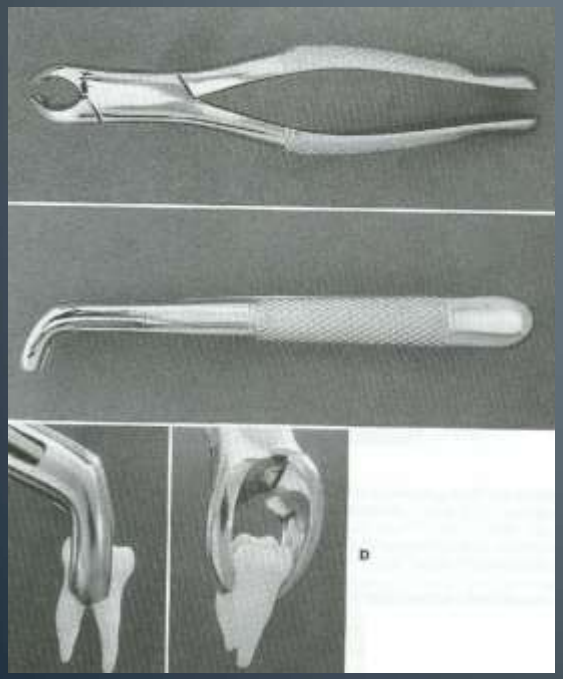


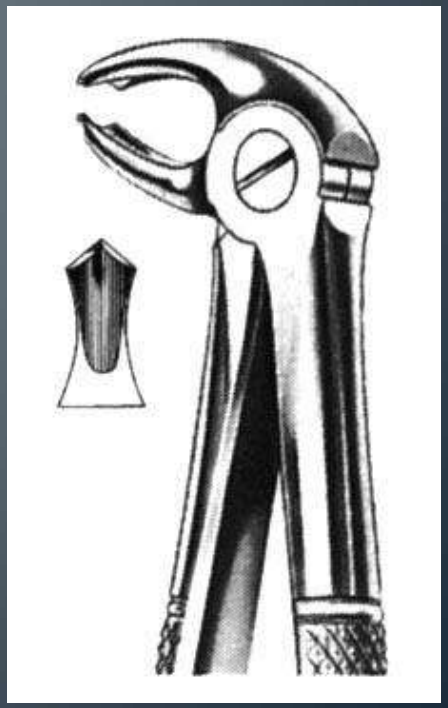


The forceps most commonly used for the single-rooted teeth are the lower universal forceps. The beaks are pointed inferiorly for the lower teeth. The beaks are smooth and relatively narrow and meet only at the tip. This allows the beaks to fit at the cervical line of the tooth and grasp the root. The no. 151A forceps have been modified slightly for mandibular premolar teeth. They should not be used for other lower teeth, because their form prevents adaptation to the roots of the teeth. The English style of vertical-hinge. The English style of vertical-hinge forceps is used occasionally for the single-rooted teeth in the mandible. Great force can be generated with these forceps; unless care is used, the incidence of root fracture is high with this instrument. Therefore it is rarely used by the beginning surgeon.

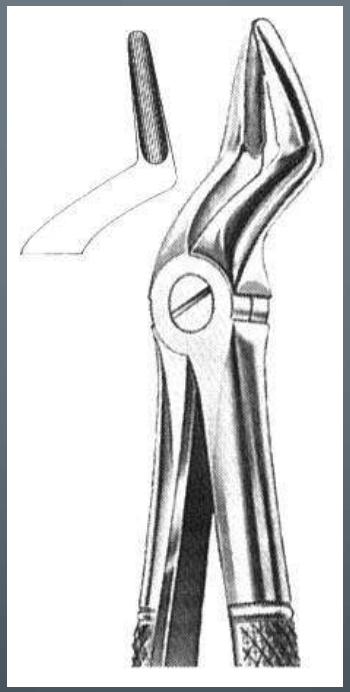


The mandibular molars are bifurcated, two-rooted teeth that allow the use of forceps that anatomically adapt to the tooth. Because the bifurcation is on both the buccal and the lingual sides, only single molar forceps are necessary for the left and right, in contradistinction to the maxilla, with which a right- and left-paired molar forceps set is required. The most useful lower molar forceps are the no. 17. These forceps are usually straight-handled, and the beaks are set obliquely downward. The beaks have bilateral pointed tips in the center to adapt into the bifurcation of the molar teeth. The remainder of the beak adapts well to the bifurcation. Because of the pointed tips, the no. 17 forceps cannot be used for molar teeth, which have fused, conically shaped roots. For this purpose another forceps are useful. They are similar in design to the no. 17, but the beaks are shorter and do not have pointed tips to prevent them from being used.





Some forceps are narrow, because their primary use is to remove narrow teeth, such as incisor teeth. Other forceps are somewhat broader, because the teeth they are designed to remove are substantially wider, such as lower molar teeth. Forceps designed to remove a lower incisor can be used to remove a lower molar, but the beaks are so narrow that they will be inefficient for that application. Similarly the broader molar forceps would not adapt to the narrow space allowed by the narrow lower incisor and therefore could not be used in that situation.



Methods of forceps fixation

Partch

Sheff

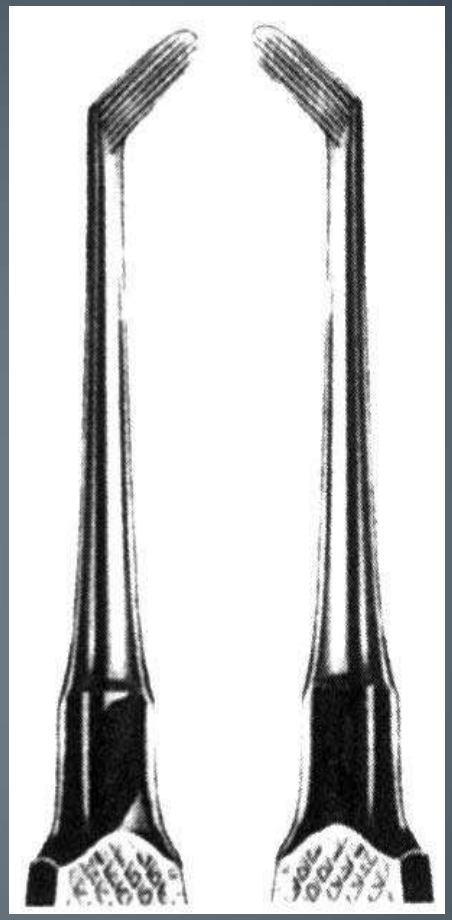
Yung

DENTAL ELEVATORS

The three major components of the elevator are the handle, shank, and blade

The straight or gouge type elevator is the most commonly used elevator to luxate teeth. *The blade of the straight* elevator has a concave surface on one side so that it can be used in the same fashion as a shoehorn

The second most commonly used elevator is the **triangular or pennant-shaped elevator**. These elevators are provided in pairs: a left and a right. The triangleshaped elevator is most useful when a broken root remains in the tooth socket and the adjacent socket is empty. A typical example would be when a mandibular first molar is fractured, leaving the distai root in the socket but the mesial root removed with the crown. The tip of the triangle-shaped elevator is placed into the socket, with the shank of the elevator resting on the buccal plate of bone. It is then turned in a wheel-and-axle type of rotation, with the sharp tip of the elevator engaging the cementum of the remaining distal root; the elevator is then turned and the root delivered. Triangle-shaped elevators come in a variety of types and angulations, but the Cryer is the most common type.



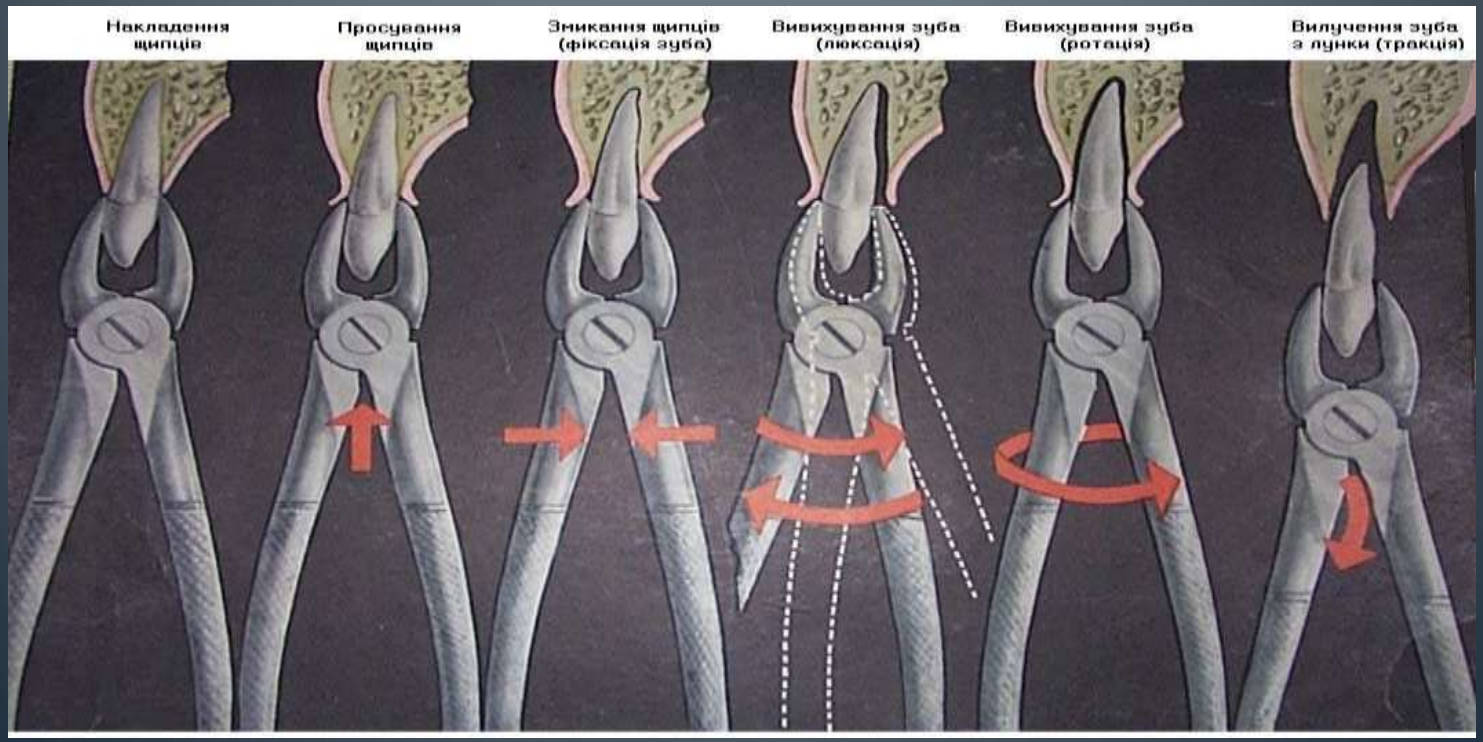
Bayonet-shaped (Lekluze elevators**).**

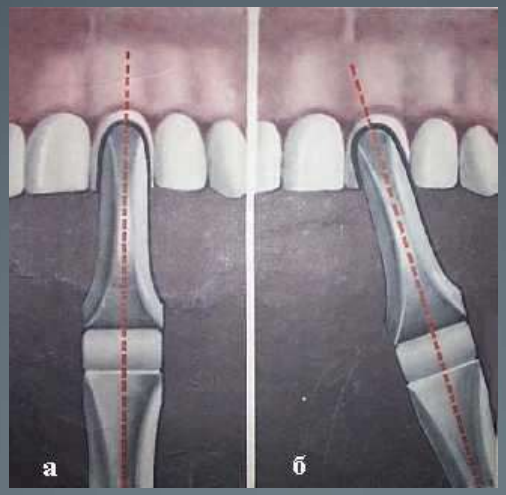
This type of handle can generate large amounts of force and therefore must be used with caution.

PROCEDURE FOR CLOSED EXTRACTION

1) *Adaptation of the forceps to the tooth.,*
2) *Moving of the forceps to the tooth neck,*
3) *Fixation of the forceps ,*
4) *Luxation of the tooth with the forceps.*
5) *Removal of the tooth from the socket.*

Before Adaptation of the forceps to the tooth: Loosening of soft tissue attachment from the tooth, in any cases Luxation of the tooth with a dental elevator.





The beaks of the forceps are angled so that they can be placed parallel to the long axis of the tooth, with the handle in a comfortable position.

Complication during and after the tooth extraction operation

Soft tissue injuries
- **Tearing Mucosal Flap**
- **Puncture Wound of Soft Tissue**
- **Stretch or Abrasion Injury**

COMPLICATIONS WITH THE TOOTH BEING EXTRACTED
- **Root Fracture**
- **Root Displacement**
- **Tooth Lost into Oropharynx**

INJURIES TO ADJACENT TEETH
- **Fracture of Adjacent Restoration**
- **Luxation of Adjacent Teeth**
- **Extraction of Wrong Teeth**

INJURES TO OSSEOUS STRUCTURES
- Fracture of Alveolar Process
- Fracture of Maxillary Tuberosity

INJURIES TO ADJACENT STRUCTURES
- Injury to Regional Nerves
- Injury to Temporomandibular Joint

OROANTRAL COMMUNICATIONS

POSTOPERATIVE BLEEDING

DELAYED HEALING AND INFECTION
- Infection
- Wound Dehiscence
- Dry Socket

FRACTURES OF THE MANDIBLEFRACTURES OF THE MANDIBLE