Technique of forceps extraction

Regardless of the tooth to be extracted in the oral cavity, some common principles are applied to all dental extraction. The general steps in the closed-extraction (forceps extraction) procedure are:-

1- Soft tissue retraction:-

Before starting the application of the dental forceps, the gingival tissue surrounding the tooth should be reflected with blunt probe or tweezers, the neck of the tooth freed labially and lingually as far as the bony alveolar margin, so that no laceration or tearing of the gingiva occur on extraction. So care should be exercised to avoid application of the beaks over the gingival tissue. Reflection of the gingival tissue allows the surgeon to ensure that profound anesthesia is secured before starting extraction. Also gingival retraction allow the beaks of forceps to be positioned more apically without interference or impingement of the gingival tissue.

2. **Luxation of the tooth with a dental elevator**:

The straight elevator is inserted perpendicular to the tooth into the interdental space, after reflection of the interdental papilla. The elevator is then turned in such away that the inferior portion of the blade rests on the alveolar bone and the superior, or occlusal, portion of the blade is turned toward the tooth being extracted. Strong, slow, forceful turning of the handle moves the tooth in a posterior direction.

In some situations the elevator can be turned in the opposite direction and more vertical displacement of the tooth will be achieved.

Next the small elevator is inserted into the periodontal ligament space at the mesio buccal line angle, the elevator is advanced apically and rotated back and forth, helping luxate the tooth with its wedge action. A similar action can be done at the disto buccal line angle. When a small elevator becomes too easy to twist a larger sized elevator is used to move the tooth.

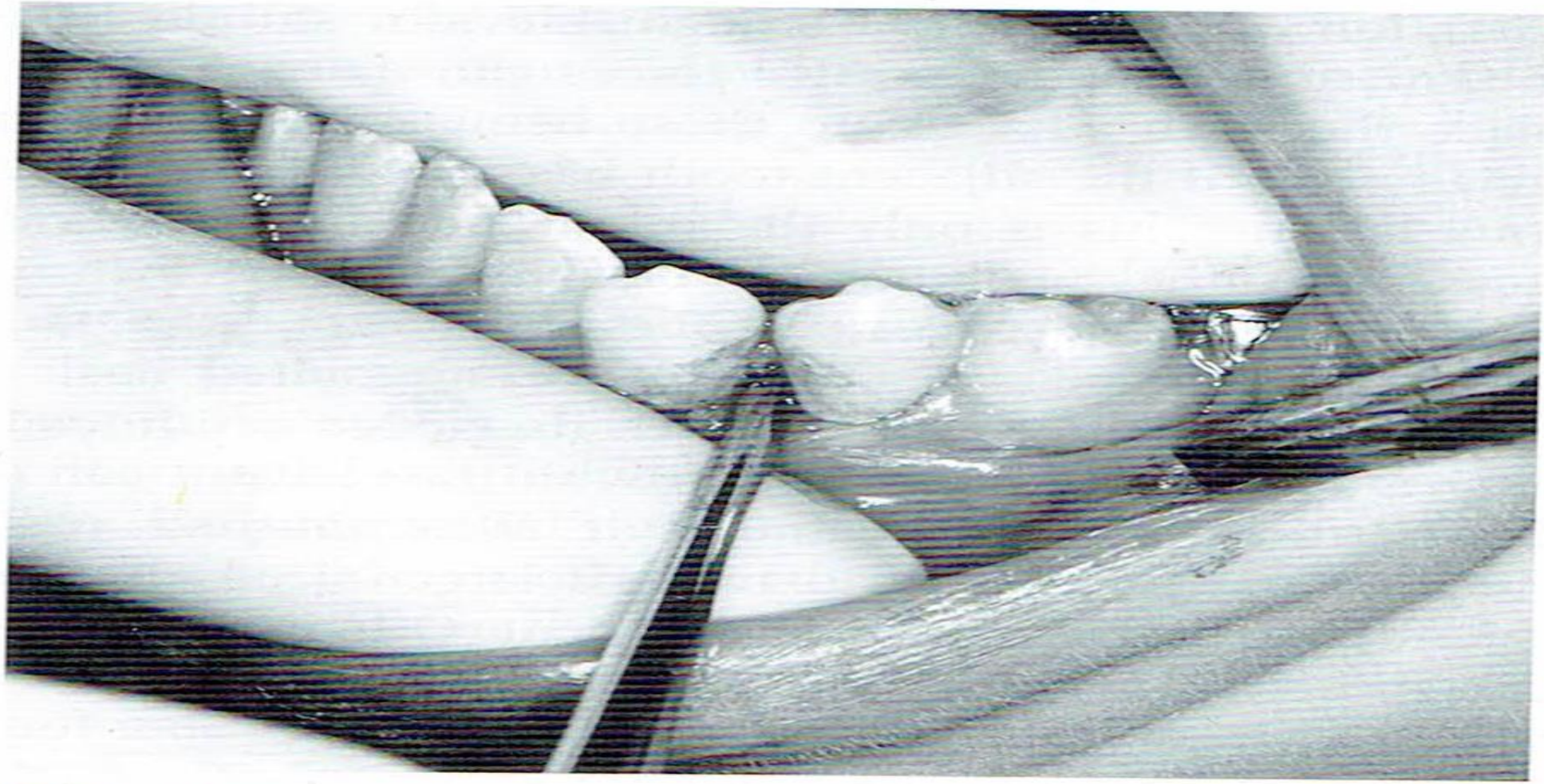


FIGURE 7-50 Small, straight elevator, inserted perpendicular to tooth after papilla has been reflected.

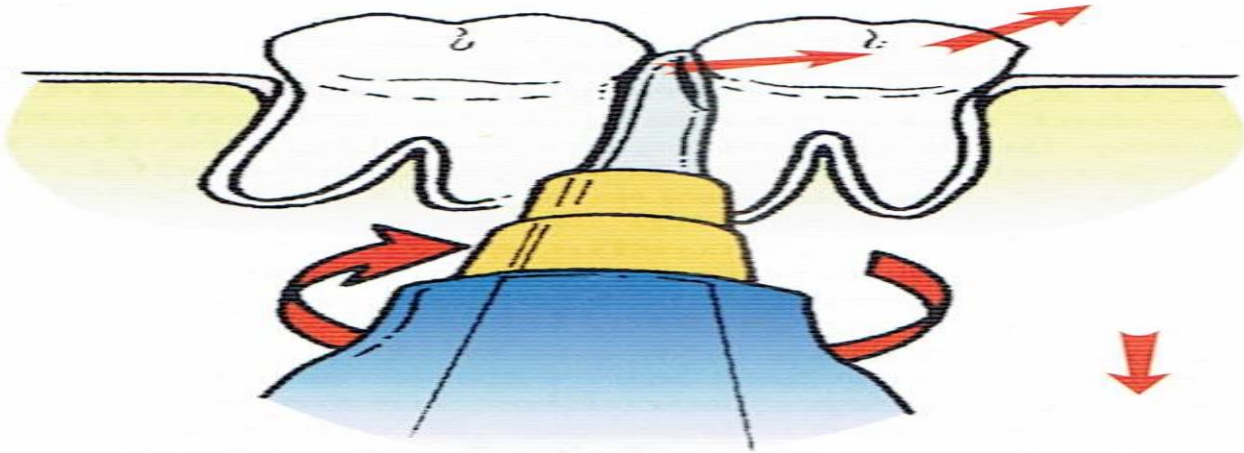


FIGURE 7-51 Handle of small, straight elevator, turned so that occlusal side of elevator blade is turned toward tooth. The handle is also moved apically to help elevate the tooth.

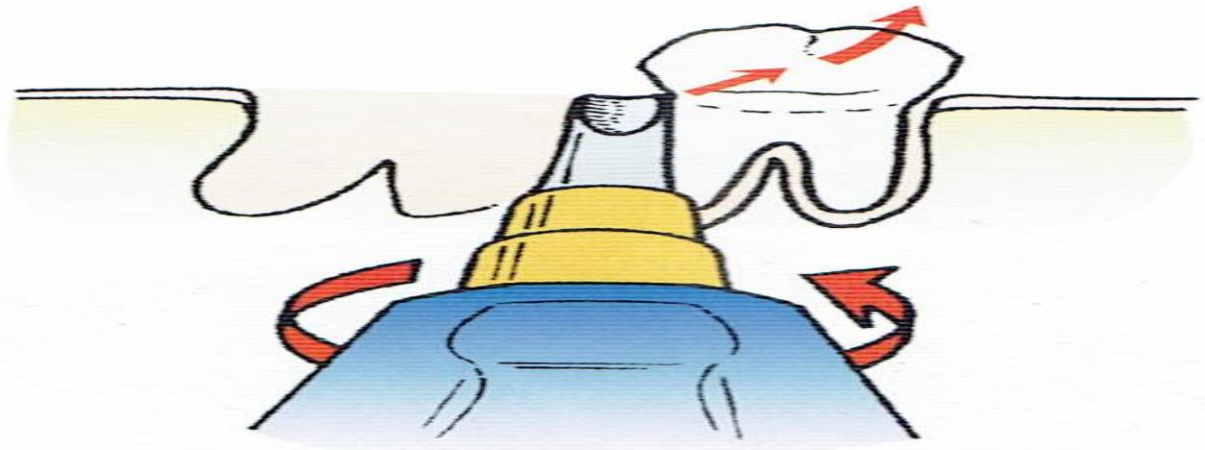


FIGURE 7-52 Handle of elevator, which may be turned in opposite direction to displace tooth further from socket. This can be accomplished only if no tooth is adjacent posteriorly.

2- Handling of the forceps:-

The forceps should be grasped by the palm of the right hand and the thumb finger is placed below the joint. The little finger is placed inside the two handle of the forceps so that it can control the opening and closure of the handle and guide the forceps beaks on the root surface, and when the tooth is grasped the little finger is placed outside the handle.

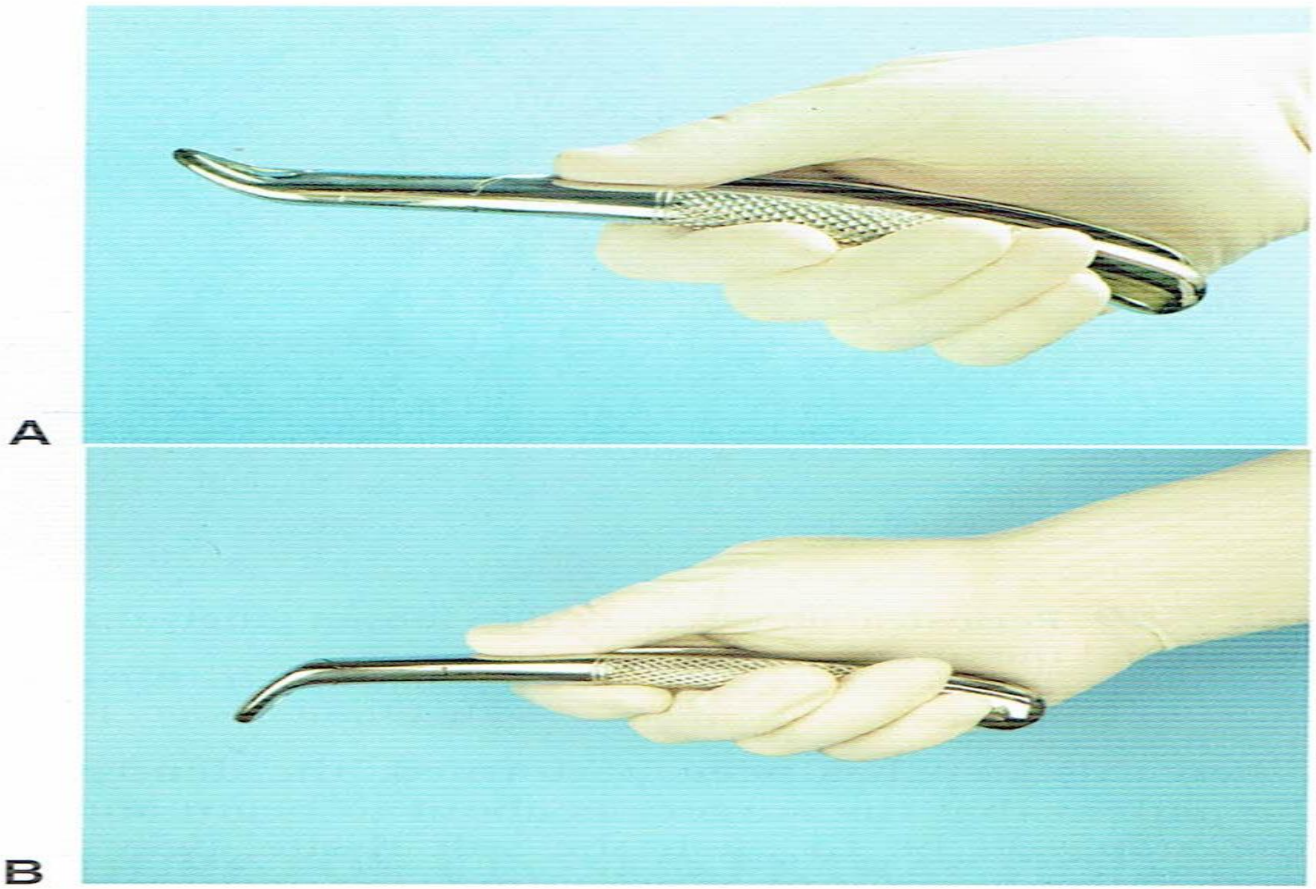
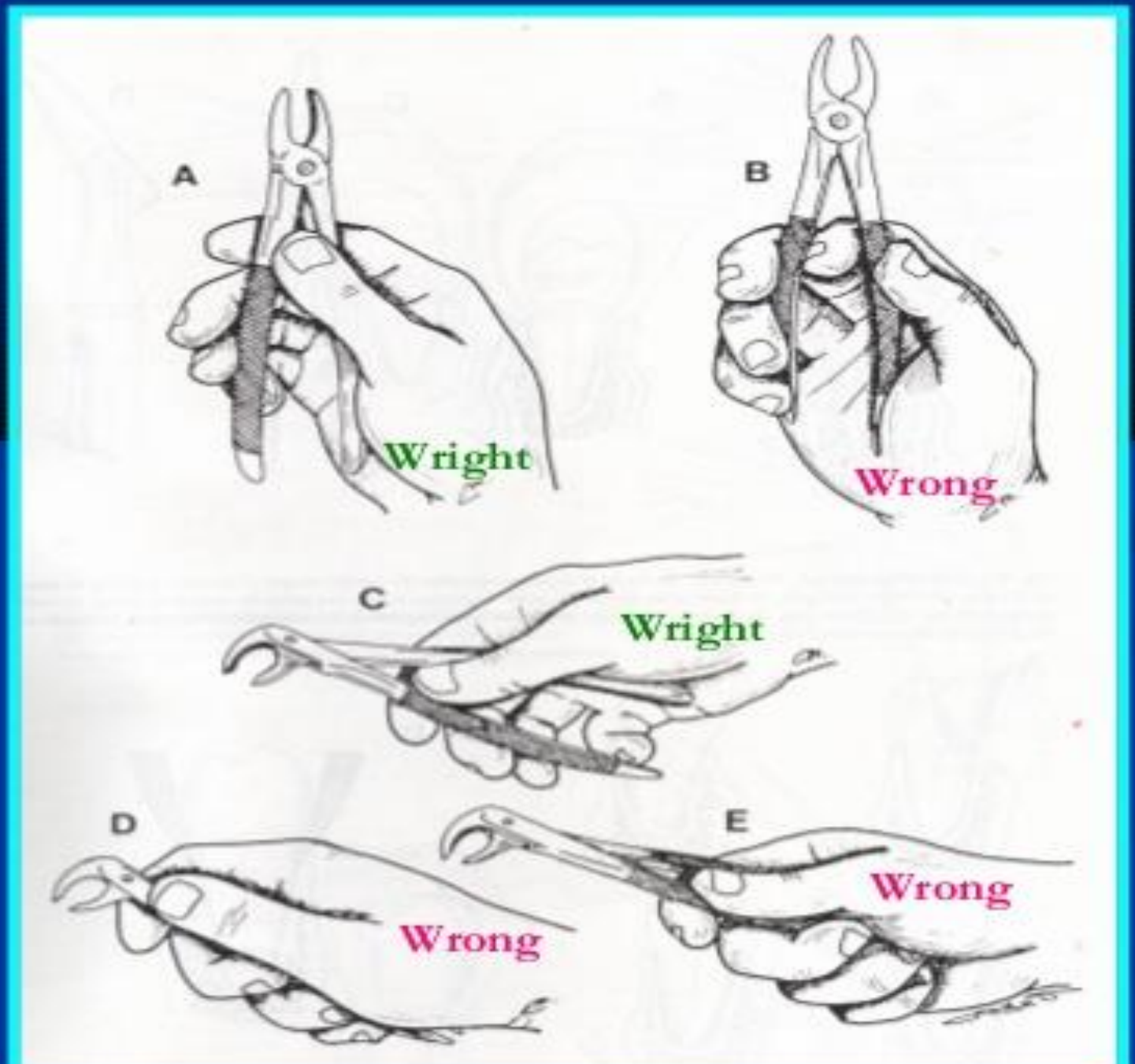


FIGURE 7-54 Forceps handles, held at very ends to maximize mechanical advantage and control. A, Maxillary universal forceps. B, Mandibular universal forceps.

Grip of the- 2 extraction forceps



3- Retraction and support (the use of the left hand):

When using the forceps and elevators to luxate and remove teeth, it's important that the surgeon's opposite hand play an active role in the procedure. For the right handed operator (dentist), the left hand has a variety of functions:

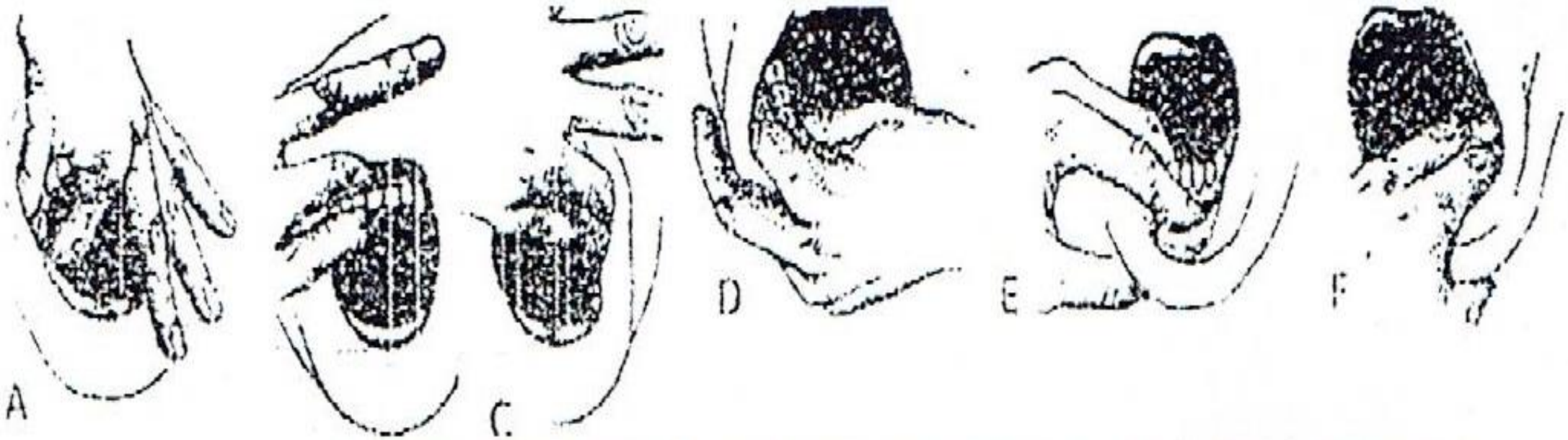
a) It's used to reflect the soft tissues of the cheeks, lips and tongue to provide adequate visualization of the area of surgery.

b) It helps to provide protection for the soft tissue structures and protect other teeth from forceps, if they release suddenly from the tooth socket.

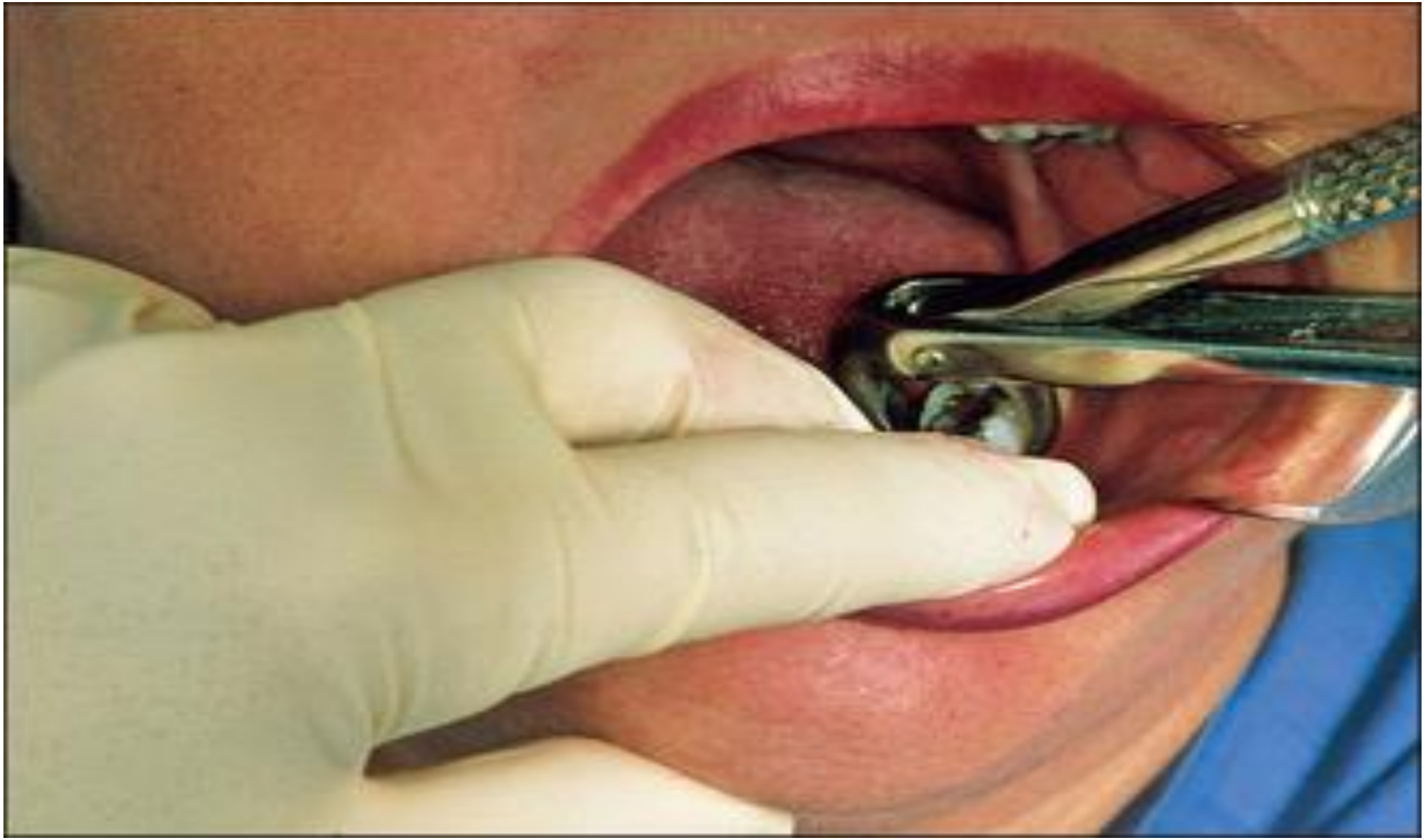
c) It helps to stabilize the patient's head during extraction process.

d) The opposite hand plays an important role in supporting and stabilizing th lower jaw when mandibular teeth are being extracted to prevent injury an post-operative pain in the tempromandibular joint (T.M.J). And also t prevent dislocation of the mandible during extraction especially whe extraction is performed under general anesthesia

e) The opposite hand support the alveolar process and provide tactile information to the operator concerning the expansion of the alveolar process during luxation process.

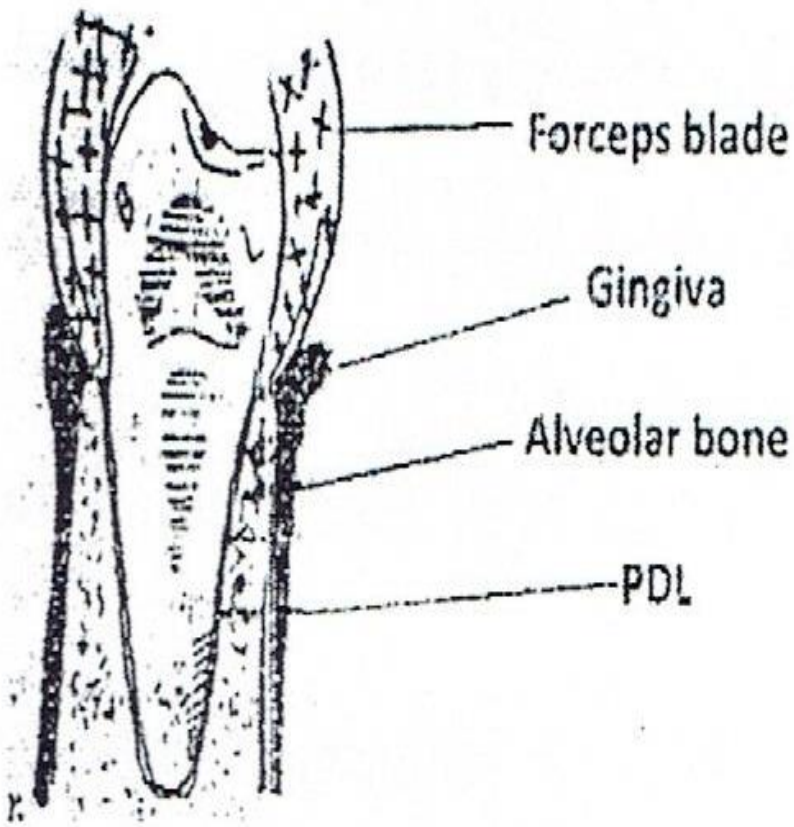


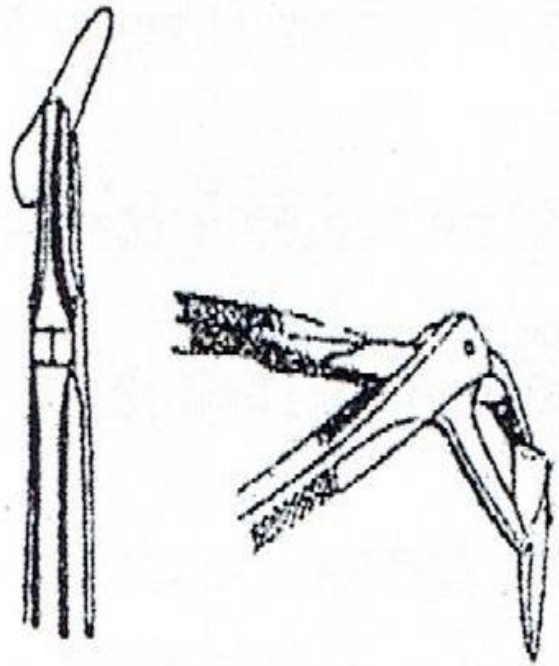
Correct use of left hand during extraction of: A, Right maxillary premolars, B, Maxillary anterior teeth. C, Left maxillary premolars and molars. D , Right mandibular cheek teeth (N.B. The operator stands behind the patient when extracting these teeth) E, Mandibular anterior teeth. F. Left mandibular molars and premolars



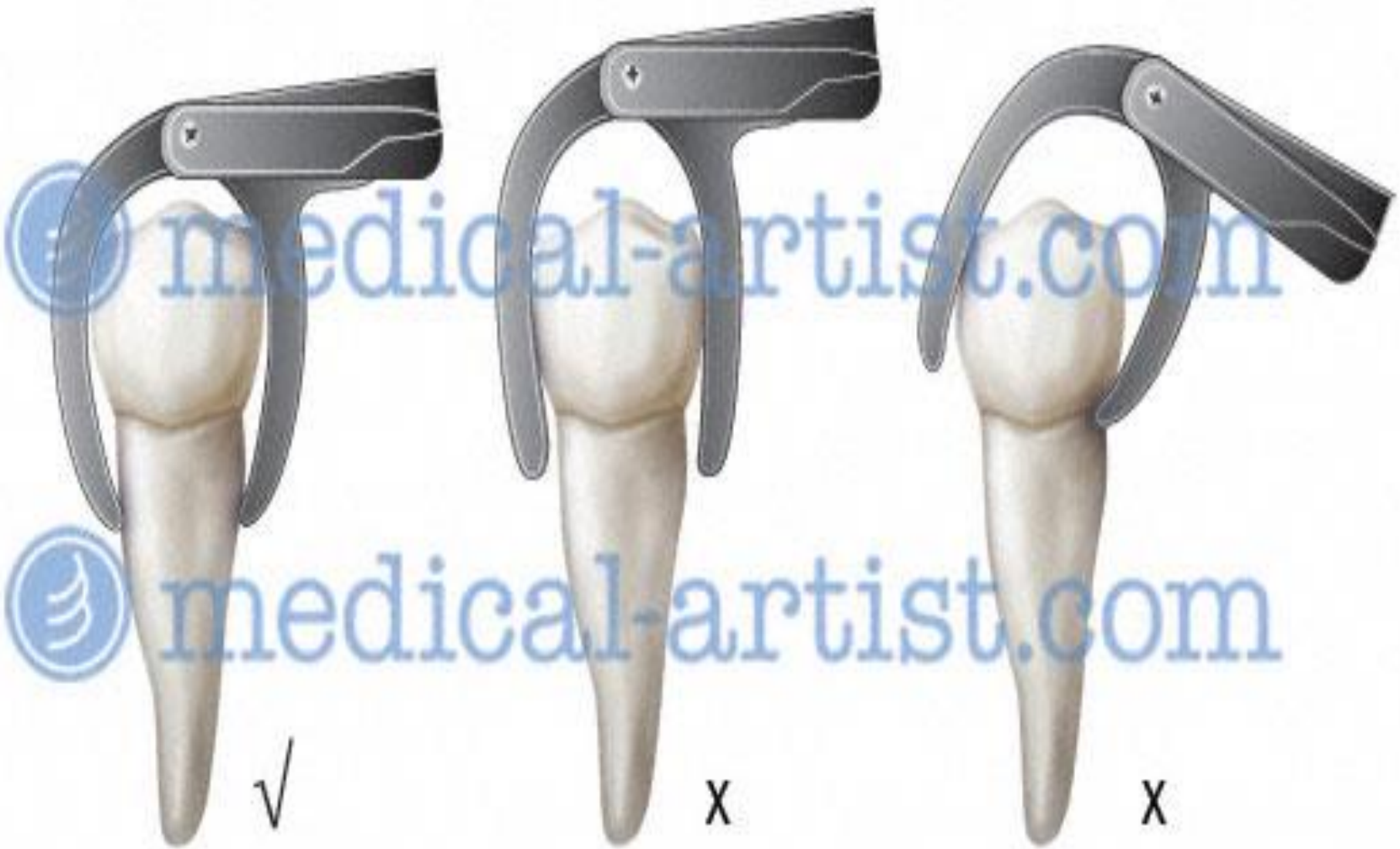
4- The application of forceps blades to the tooth (tooth grasp):-

After you select the proper forceps for the extraction of particular tooth. The forceps blades are applied on both labial(buccal) and lingual (palatal) surface of the tooth, so that the blades are parallel to the long axis of the tooth to be extracted





Incorrect alignment of upper premolar (left)
and lower premolar (right)



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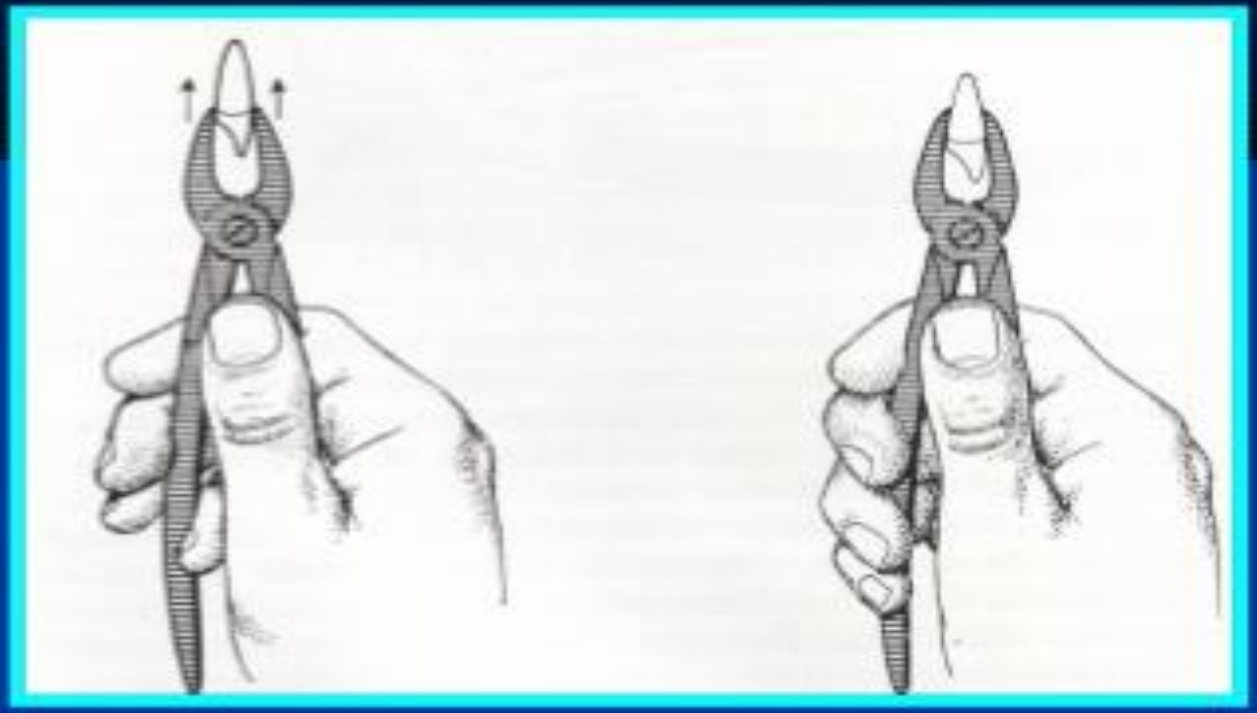
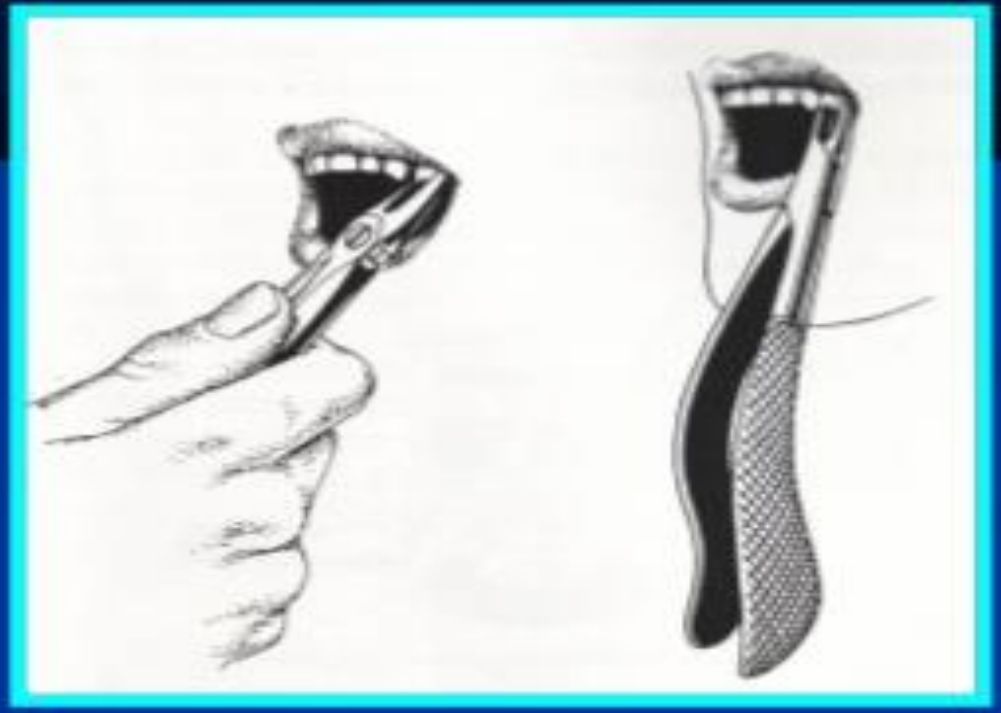
Application of the Forceps - 3
) (Grip of the tooth





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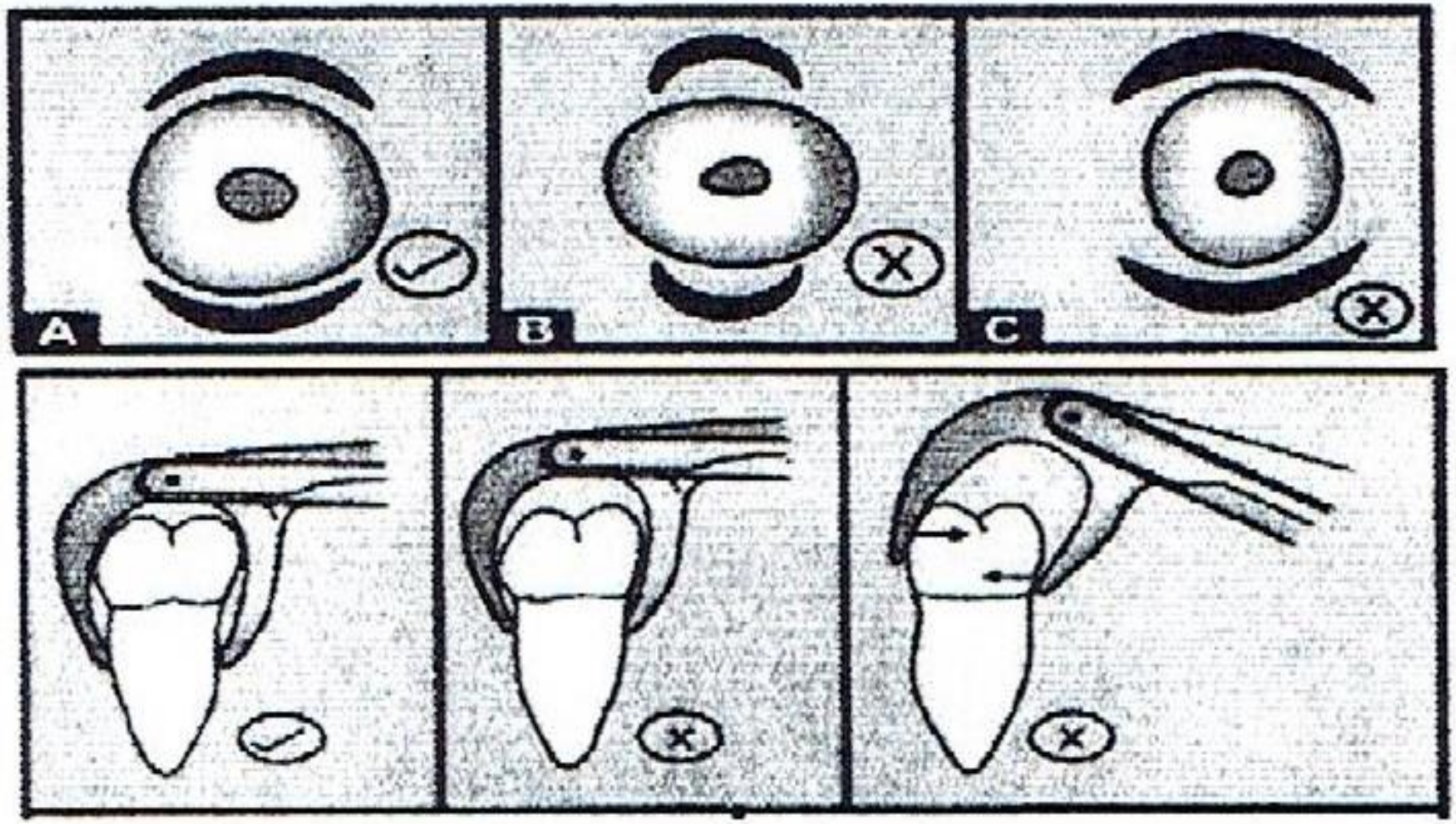
10. The extraction forceps blade should be applied to the carious side first, and the first movement made toward the caries.

The blades of the forceps is moved on the tooth surface apically and are allowed to move apically cutting through periodontal and gingival fibres to grasp the tooth-root surface below the cemento-enamel junction. The tooth to be extracted is grasped firmly, the blades are not allowed to slide on the surface of the root during extraction movement.

It's a good practice to apply the blades of the forceps to the less accessible side of the tooth to be extracted first under direct vision and then apply the other blade on opposite side. If one side of the tooth is carious, then the forceps blades applied to the carious side first and extraction movement should be started toward the carious side.

The surface of the beaks of the forceps should lie as close as possible to the surface of the tooth grasped tightly without slipping during extraction


A
B
C

6.The displacement of the tooth from its socket:

This is performed by using **The extraction movements:**

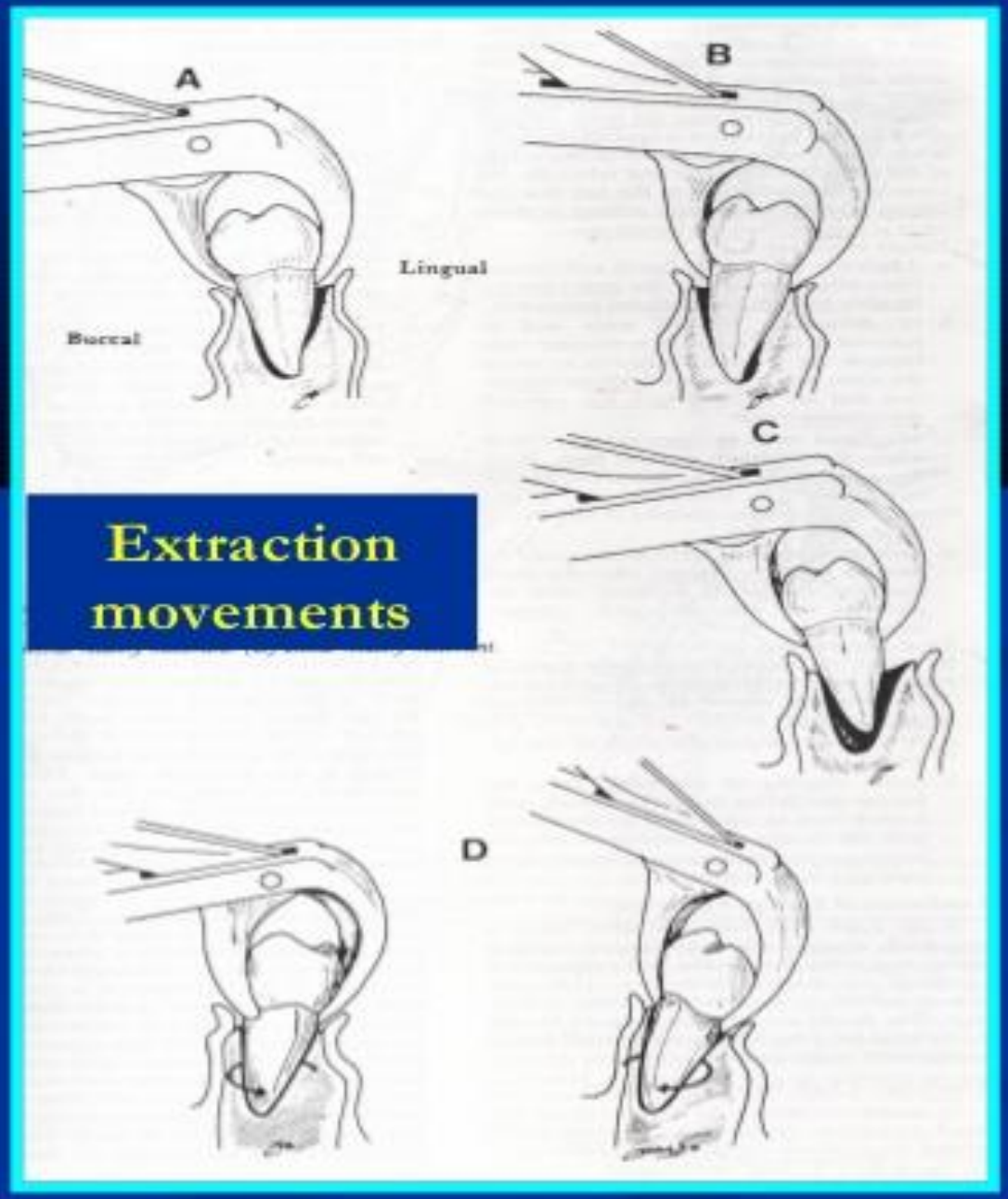
1. **Apical pressure**: which accomplishes two goals
   A. Expansion of the tooth socket by the minimal apical movement of the tooth by the insertion of the beaks into the periodontal ligament space.
   B. The center of rotation of the tooth is displaced apically.
2. **The buccal force**: result in expansion of the buccal plate, particularly at the crest of the ridge. It also causes lingual apical pressure. Excessive force can fracture buccal bone or the apical portion of the root.
3. **Lingual or palatal pressure**: result in expansion of the lingual or palatal crestal bone.
4. **Rotational movement**:
5. **Tractional force**: to deliver the tooth from the socket once adequate bony expansion is achieved.
   Because maxillary buccal bone is usually thinner and the palatal bone is thicker, maxillary teeth are usually removed by strong buccal forces and less vigorous palatal forces.

   In the mandible is thinner from the midline posteriorly to the area of the molars. Therefore the incisors, canines, and premolars are removed primarily as a result of strong buccal force and less vigorous lingual pressures.

   The mandibular molars thicker buccal bone and usually require a stronger lingual pressure than the other teeth in the mouth.

   Rotational forces are useful for single rooted that have conical roots and no severe curvatures at the root end. The maxillary incisors(particularly the centrals) and lower premolars (particularly the second premolar) are most amenable to rotational forces.

Extraction movements



The purpose of extraction movements are:

1-Cutting the tooth attachment.

2- Separating the tooth from the wall of the socket.

3- Dilatation of the bony wall of the socket utilizing the resiliency of the living bone.

4- The removal of the tooth from the socket.

When the blades applied to the root surface a firm grip of the root taken by the forceps and buccolingual and lingobuccal movements are made in that order. This pressure should be firm but not crushing, smooth and controlled not jerking. By this movements normally after few lateral movements the tooth is felt to be loosen and begins to rise out of the socket, when this loosening occur, rotatory or figure 8 movement will help to delivery of the tooth

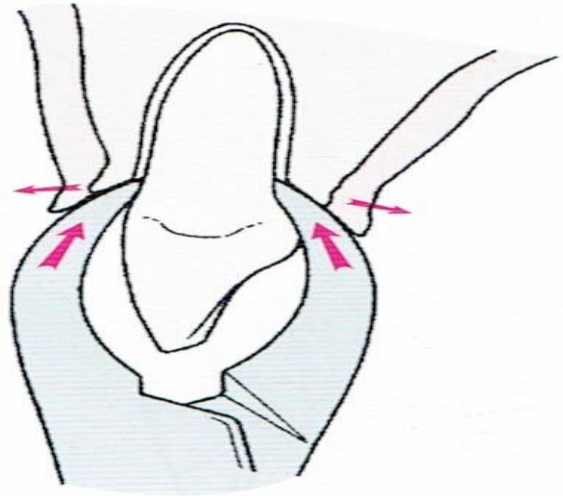


FIGURE 7-42 Extraction forceps should be seated with strong apical pressure to expand crestal bone and to displace center of rotation as far apically as possible.

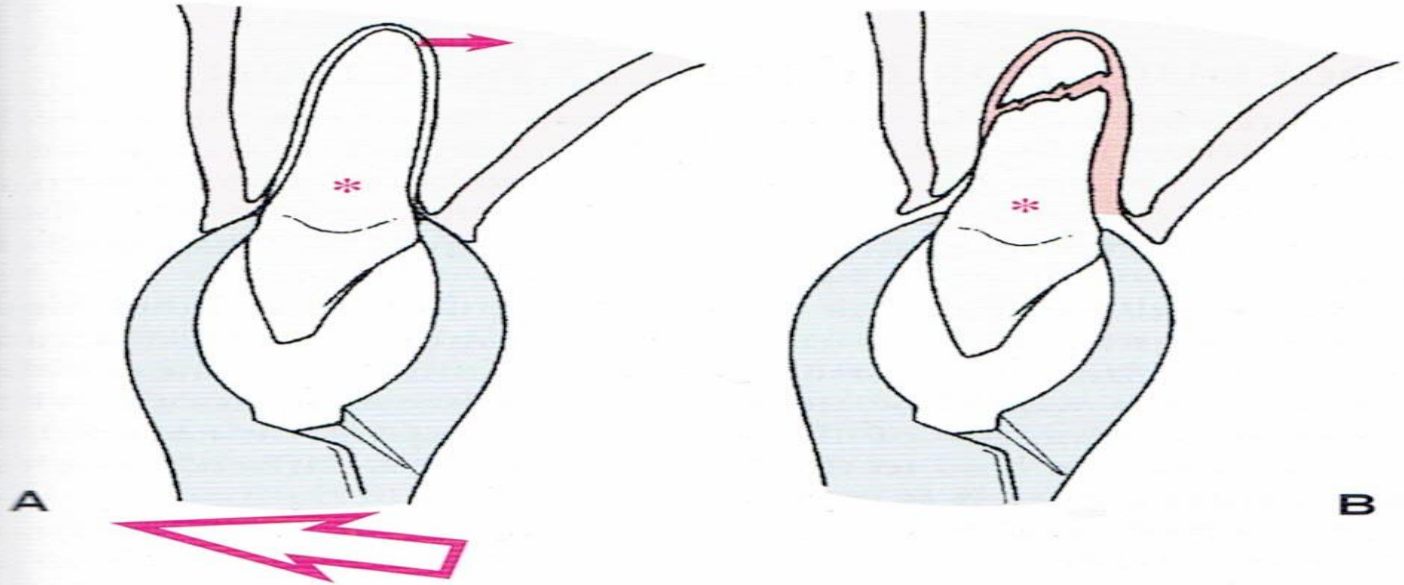


FIGURE 7-43 If center of rotation (*) is not far enough apically, it is too far occlusally, which results in excess movement of tooth apex (A). B, Excess motion of root apex caused by high center of rotation results in fracture of root apex.

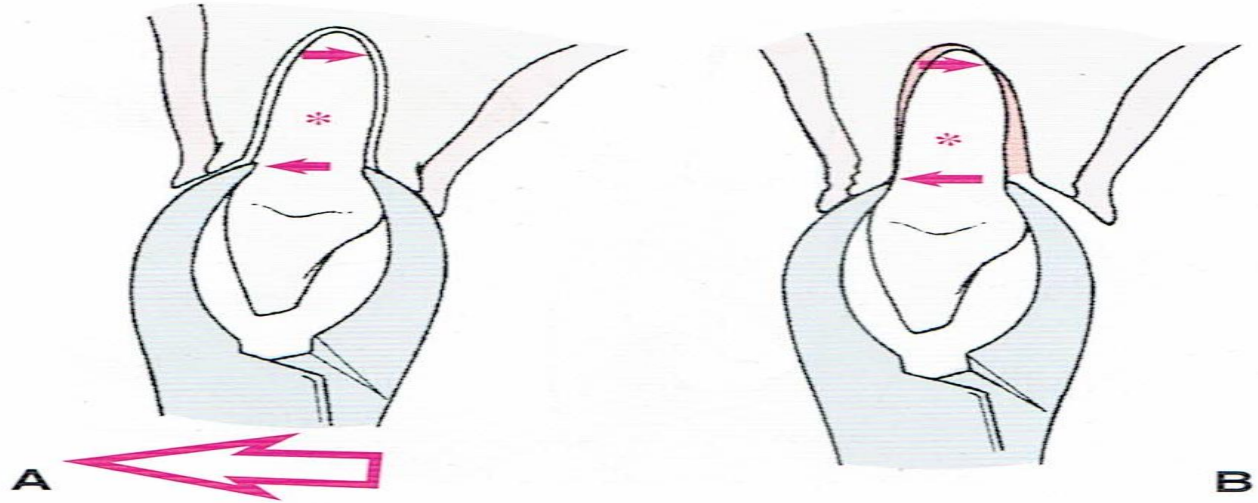


FIGURE 7-44 If forceps are apically seated, center of rotation (*) is displaced apically and less apical pressures are generated (A). This results in greater expansion of buccal cortex, less movement of apex of tooth, and therefore less chance of fracture of root (B).

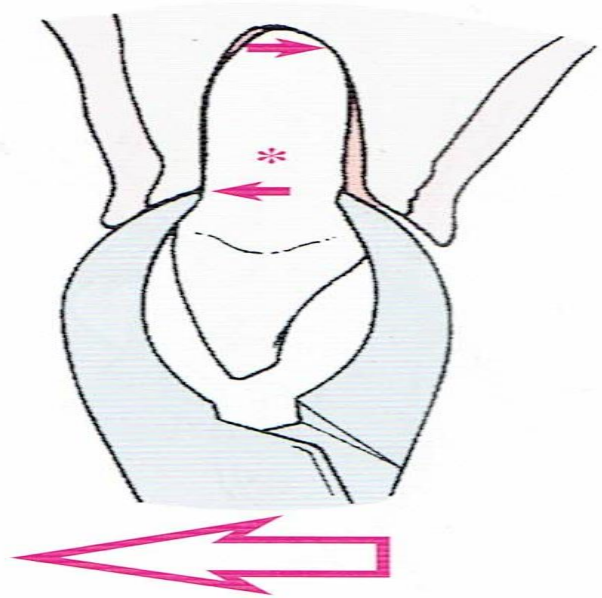


FIGURE 7-45 Buccal pressure applied to tooth will expand buccocortical plate toward crestal bone, with some lingual expansion at apical end of root. *Asterisk,* Center of rotation.

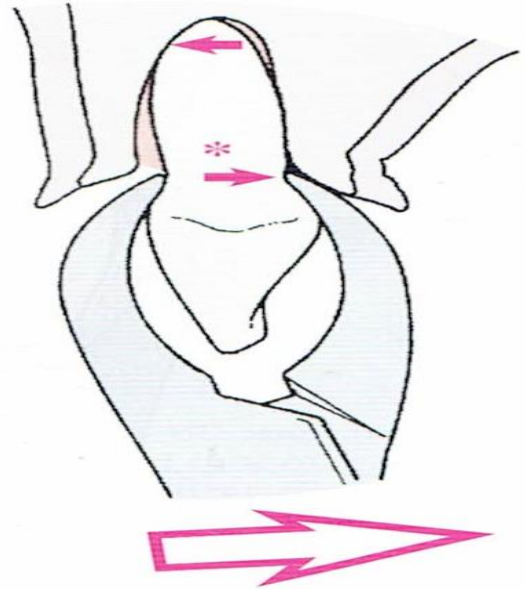


FIGURE 7-46 Lingual pressure will expand linguocortical plate at crestal area and slightly expand buccal bone at apical area. *Asterisk*, Center of rotation.

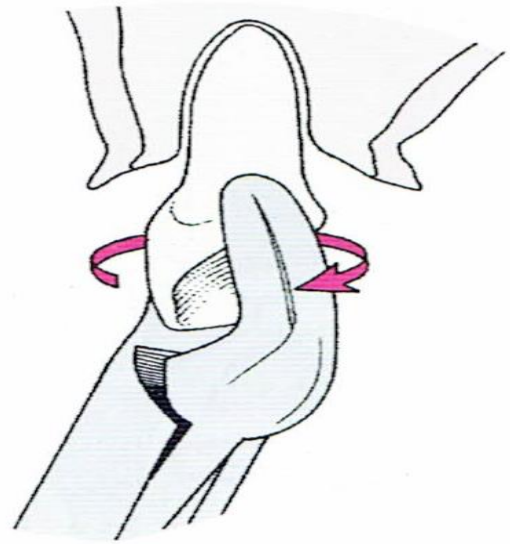


FIGURE 7-47 Rotational forces, useful for teeth with conical roots, such as maxillary incisors and mandibular premolars.

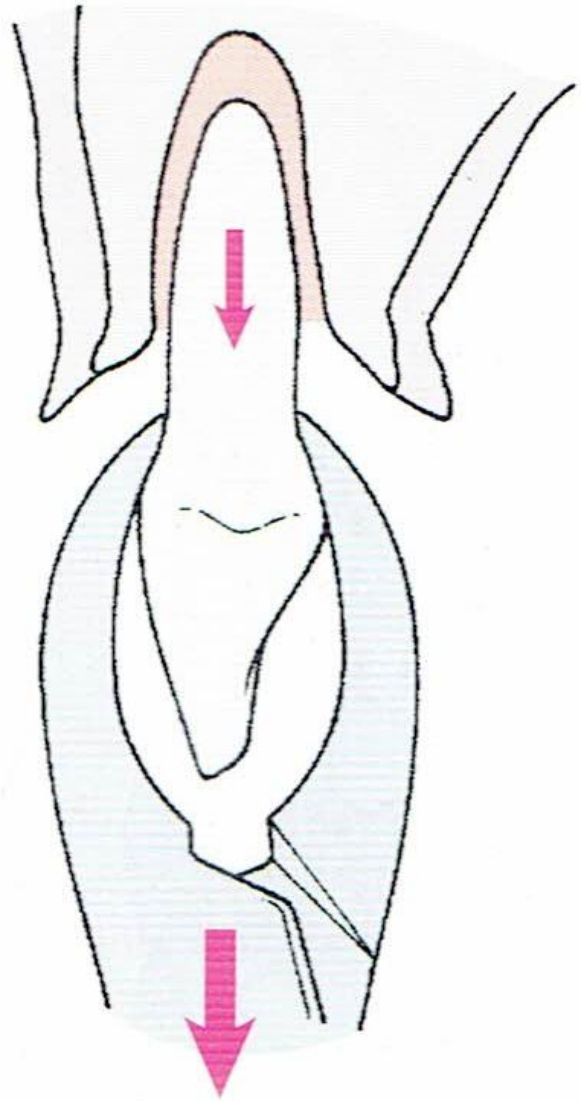
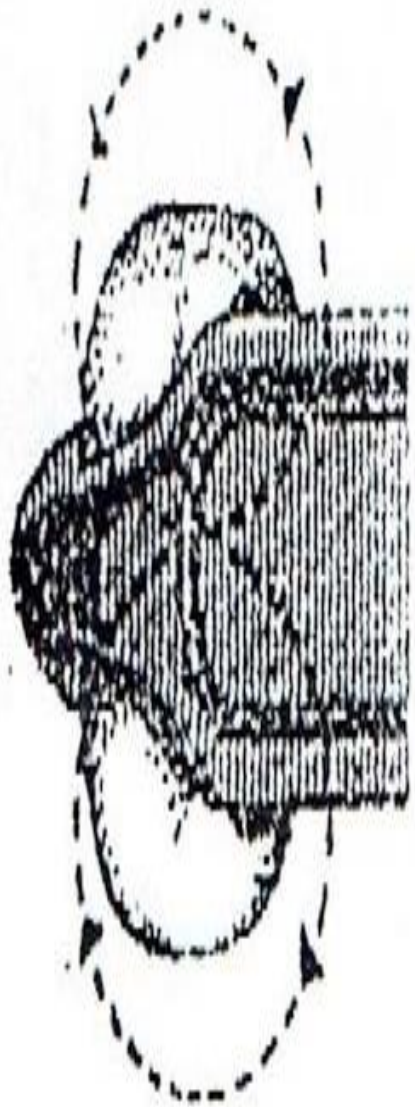


FIGURE 7-48 Tractional forces are useful for final removal of tooth from socket. They should always be small forces because teeth are not pulled.



. Occlusal view of mandibular molar illustrating the figure 8 of movement

Rotatory movement:

Can be used as primary movement for extraction of teeth with conical straight roots such as the upper central incisors and lower second premolars, also rotatory movements are useful in completing the removal of teeth previously loosened by other means and this is called secondary rotatory movement.

The gross distortion and laceration of the buccal plate and mucosa are happened if excessive lateral movement is done. The final movement by which the tooth is removed from its socket should be always directed outwards, so reducing the trauma

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to the opposing teeth and preventing slipping of the tooth in the mouth which may be swallowed or aspirated by the patient.

If the tooth dose not yield (no movement) after applying a reasonable force, excessive force should not be used, stop and re-evaluate the case clinically and/or radiographically because the tooth may be need surgical extraction.

Post-operative care of extraction wound:-

1- Examine the extracted tooth to be sure that there is no fracture in the roots (retained root), keeping in mind the anatomical variations in number of roots o each tooth, because some teeth has accessory roots.

2- Always examine the socket for any loose fragments of bone or roots (pieces o enamel), foreign materials (e.g. calculus, amalgam particles, or pathology (e.g periapical granuloma, polyp) all these should be removed by using curette o suction tip or tweezer.

3- You have to remove or smooth any sharp bone or projections of inter-radicula bone, then apply suture if necessary e.g. if there is laceration in the soft tissue.

4- The expanded bucco-lingual plate should be compressed or squeezed back their original configuration or shape in order to reduce any distortion of t supporting tissue to re-establish the normal contour before extraction

5- Make sure that the socket is fill of blood, (to form blood clot)

6- Place a properly shaped and size (2X2 inches) gauze piece over the socket(a never put it into socket) in such a way that the patient close his mouth and it is n visible to gain initial control of haemorrhage.

Instructions to the patient:-

1- Keep biting over the gauze for at least (0.5-1) hours and discharge after that but if haemostasis is not established , you can use another gauze.

2- Do not spit during first *1/2* hour and use minimal talking and avoid violent exercise or activity to assist the formation of a firm clot in the socket, so rest for the first few hours following extraction are recommended ,avoid insertion of the tongue tip inside the socket which lead to dislodgement of clot or disturb its formation

3- use only fluid and soft diet for the few postoperative hours and not take solid or hard food for the rest of the day, and chew on the opposite side of extraction.

4- in case of continuous bleeding. Place a sterile gauze in place over the wound and keep it in place for an hour, if bleeding not stopped contact your dentist.

5- always prescribe the proper analgesic and antibiotic if necessary (e.g. The presence of residual infection, diabetic patient, patient on immunosuppressive drugs, aids...etc.