

# TRANSALVEOLAR EXTRACTION

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# TRANSALVEOLAR EXTRACTION

- Also known as an open method of extraction.
- This method involves the reflection of a muco-periosteal flap , cutting of the bone obstructing the removal of the tooth and if required sectioning of the roots and then removal.

# EXODONTIA

It is defined as painless removal of whole of the tooth or part of the tooth with minimal trauma to investing tissues so that the wound heals uneventfully and no post-operative prosthetic problem is created.



# TYPES OF EXODONTIA

1. Intra-alveolar extraction  
-also known as "Forceps Extraction".  
-Closed method technique of extraction with the use of forceps and elevators.
2. Extra-alveolar extraction  
- commonly called as "Surgical Extraction" or "Transalveolar Extraction".  
- Open view technique.



# Indications

- Any tooth, which offers a lot of resistance in forceps extraction
- Retained roots, which can't be grasped by the root forceps.
- Hypercementosis of a tooth.
- Radiographic evidence of complicated or difficult root pattern
- Sclerosis of the bone
- Teeth associated with pathology - periapical granuloma, cyst, tumor etc.
- Impacted teeth, embedded teeth.

# Contra-indications

- Severe and uncontrolled diabetes.
- Infected extraction site.
- Patients with severe gum disease.
- Patients of hypertension
- Asthma or any other respiratory problem.
- Pregnancy (1<sup>st</sup> and 3<sup>rd</sup> trimester)
- Hemophilic patients
- Immuno-compromised patients

# Advantages

- Gives good visibility.
- Easy Access.
- Prevents laceration of gingiva.
- Prevents traumatization of bone & fracture of tooth.
- Reduce post operative complications.



# Procedure

- Local Anaesthesia
- Incisions and flap design
- Bone removal
- Sectioning of teeth
- Elevation of the tooth
- Smoothing of sharp edges of bone
- Debridement of socket
- Suturing of the flap

## ➤ Local Anaesthesia

Local anaesthesia has been defined as a loss of sensation in a circumscribed area of the body caused by a depression of excitation in nerve endings or an inhibition of the conduction process in peripheral nerves.

Depending on the quadrant in which the extraction is to be done, local anaesthetic blocks are given.

# ➤ Incisions and flap design

Incision is defined as a 'cut or wound deliberately made by an operator in the skin or the mucosa using a sharp instrument such as a surgical blade so that the underlying structures can be exposed adequately for surgical access'.

## TYPES OF INCISION:

1. Horizontal Incision.
2. Vertical Incision
3. Semi-lunar Incision.

# 1. Horizontal Incision

- Directed along gingival margin either mesially/distally.
- **INTERNAL BEVEL** :First incision made about 1mm away from gingival margin directed towards crest of alveolar bone.
- **CREVICULAR INCISION**: Second incision starts at bottom of pocket, normally used in periodontal surgeries

## 2. Vertical Incision

- most desirable
- also called as releasing incision, on one or both sides of flap.
- They should be placed at obtuse angle to the horizontal incision and should leave inter-dental papillae intact.

### 3. Semilunar Incision

- Also called as curved or elliptical incision.
- used when it is desirable to maintain the attached gingiva intact around the teeth and for endodontic surgery.
- the gap of 5mm must be present from the base of gingival sulcus to the incision.

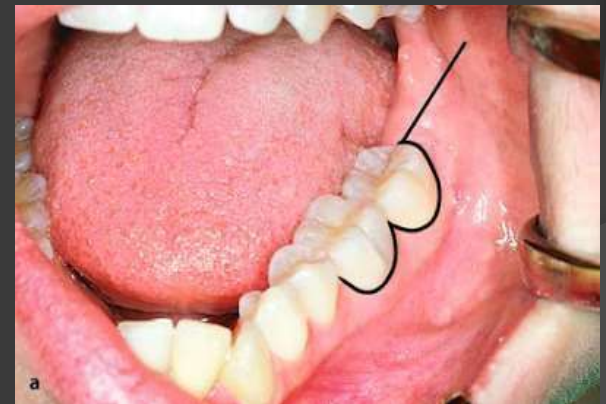
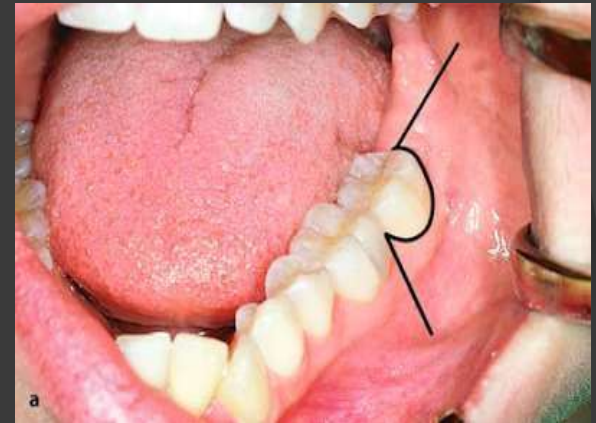


# Flaps

PRINCIPLE: Intraoral surgical flaps are made to gain surgical access to the area to be operated or to move tissues from one place to another.

## TYPES:

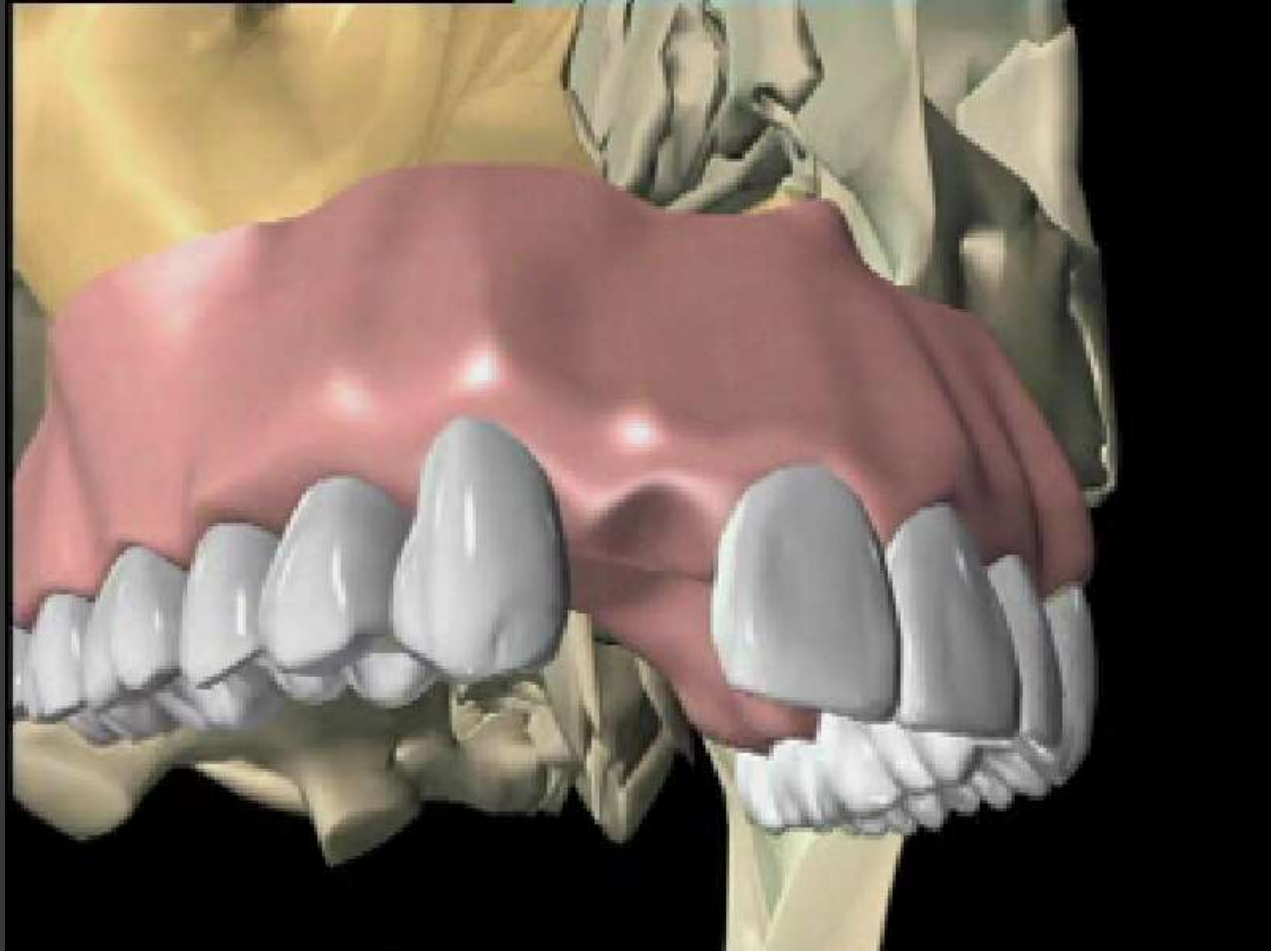
1. Envelop flap
2. Three-cornered flap
3. Four-cornered flap
4. Semi-lunar flap

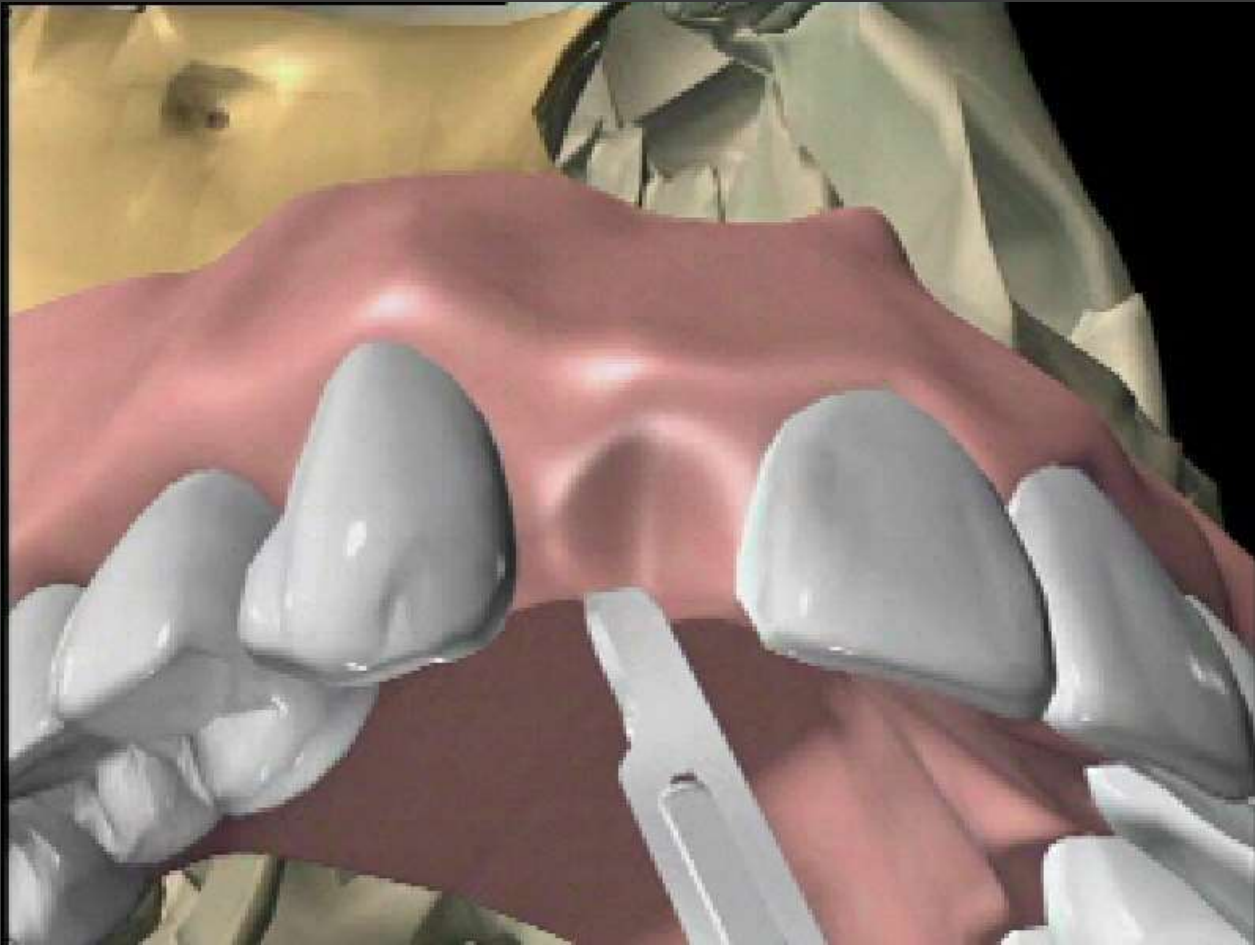


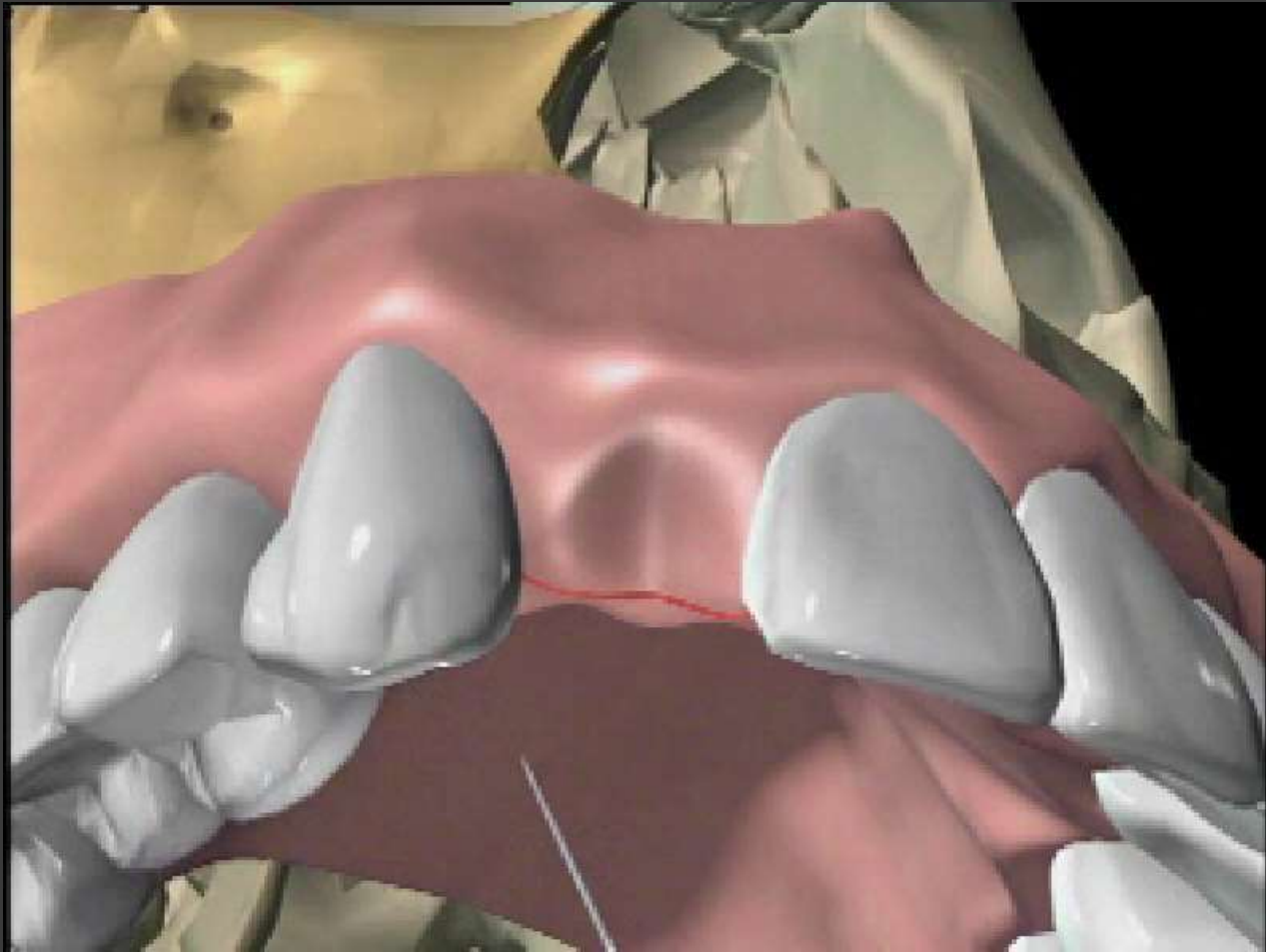
# Flaps

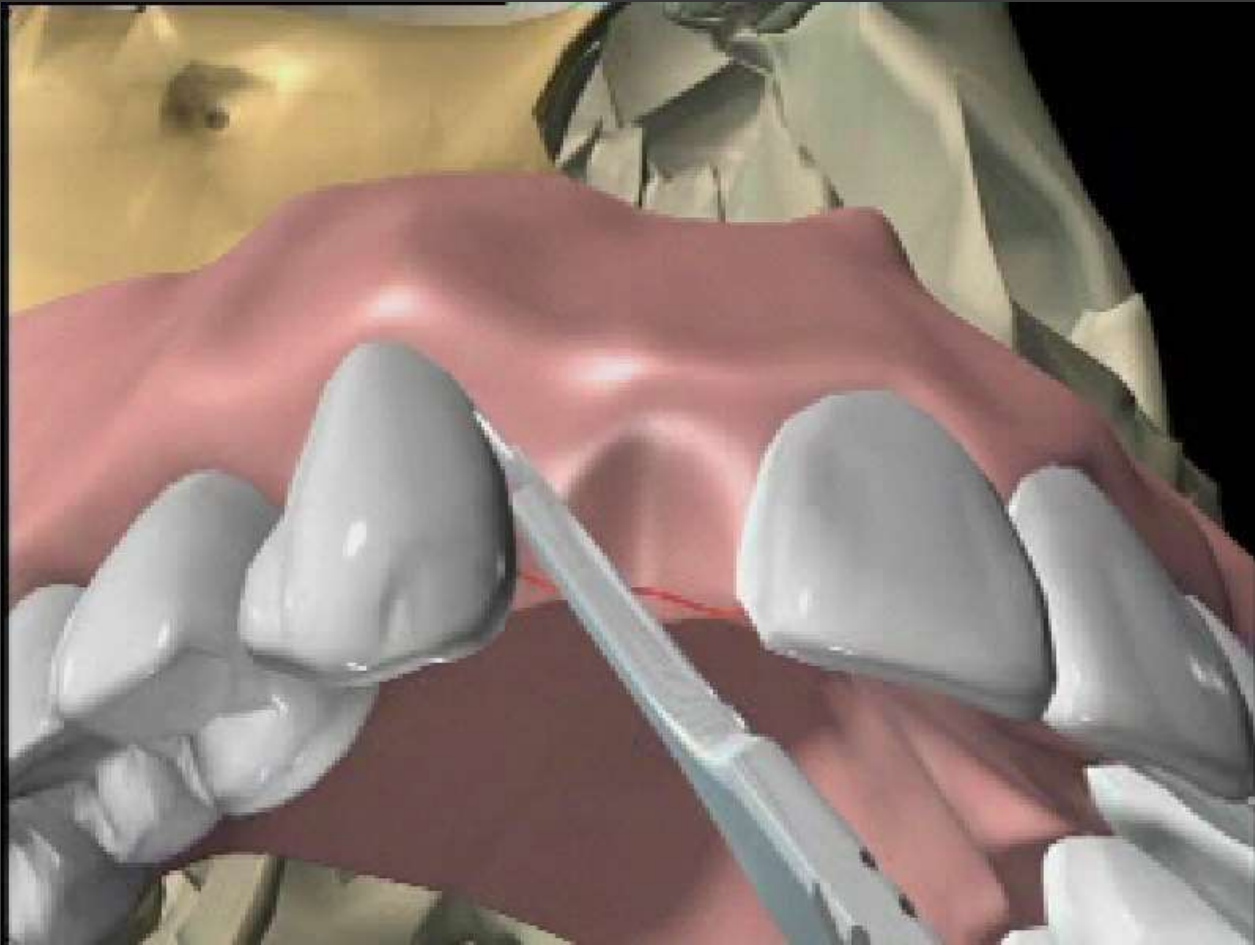
- Incisions should avoid anatomical structures, such as major nerves or blood vessels.
- Anatomical structures to be avoided in the mandibular arch include
  - Lingual nerve,
  - Mental nerve,
  - Long buccal nerve,
  - Facial artery
- The anatomical structures to be avoided in the maxillary arch include
  - Greater palatine nerve, artery, and vein,
  - Incisive papilla,
  - Nasopalatine nerve

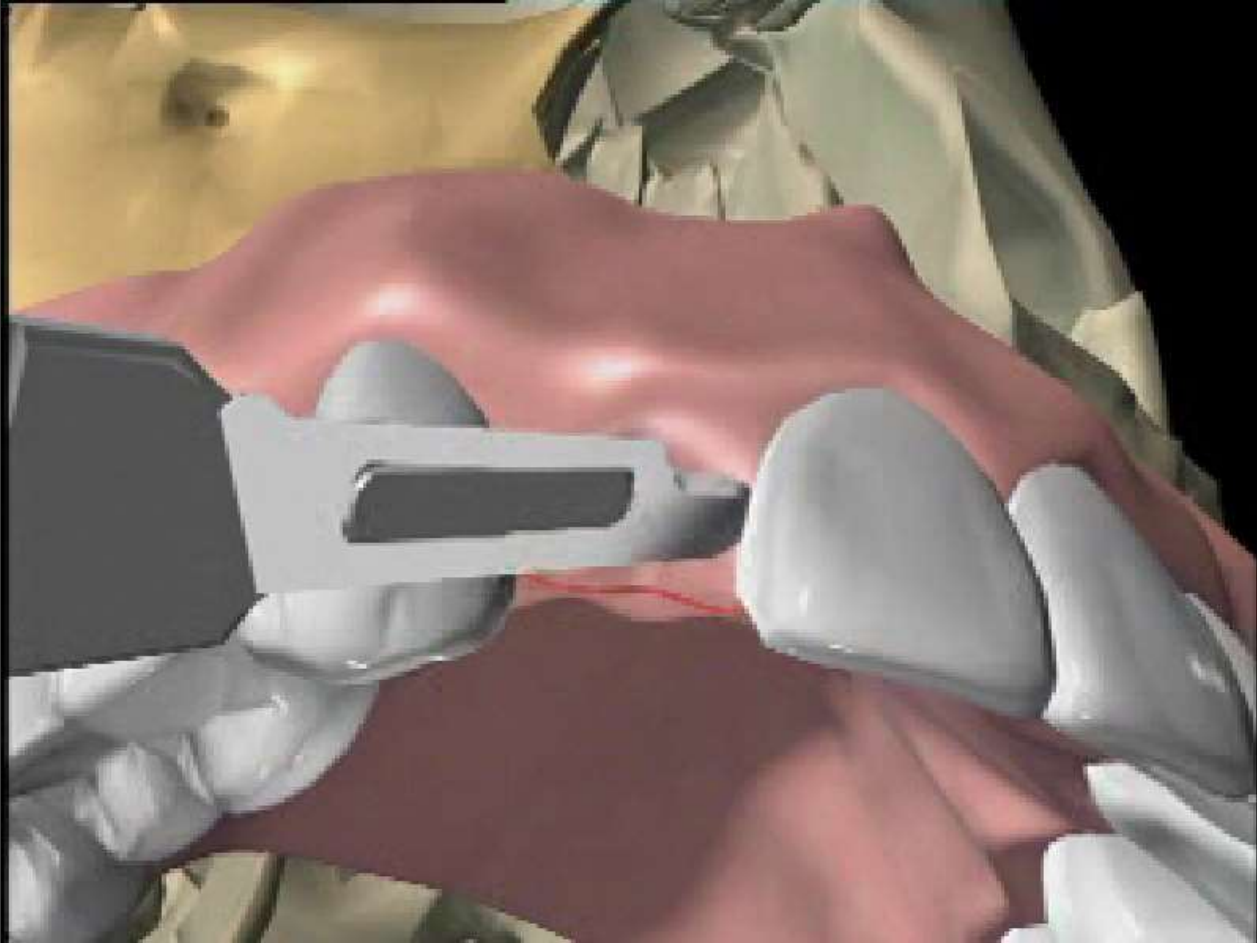


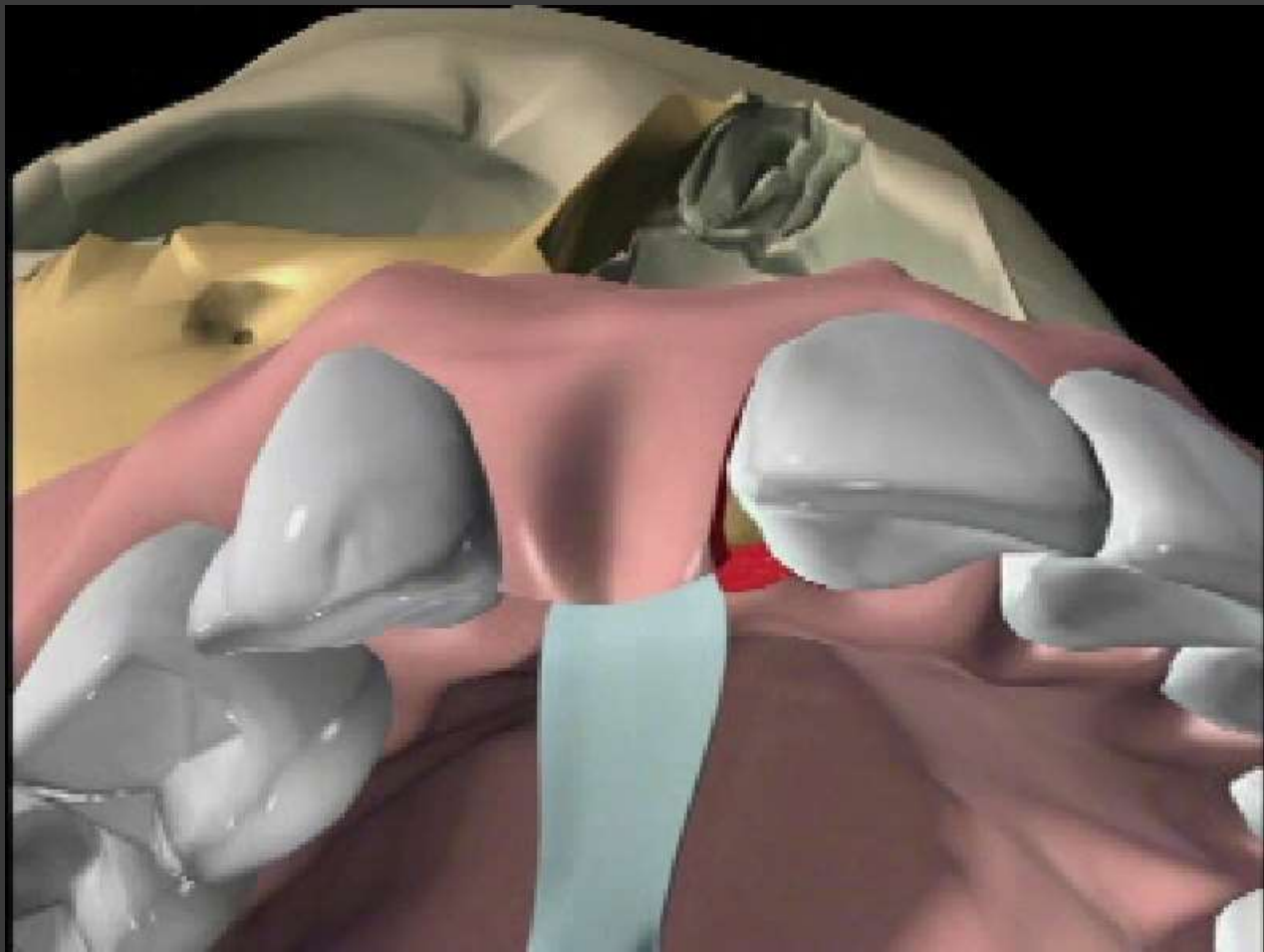




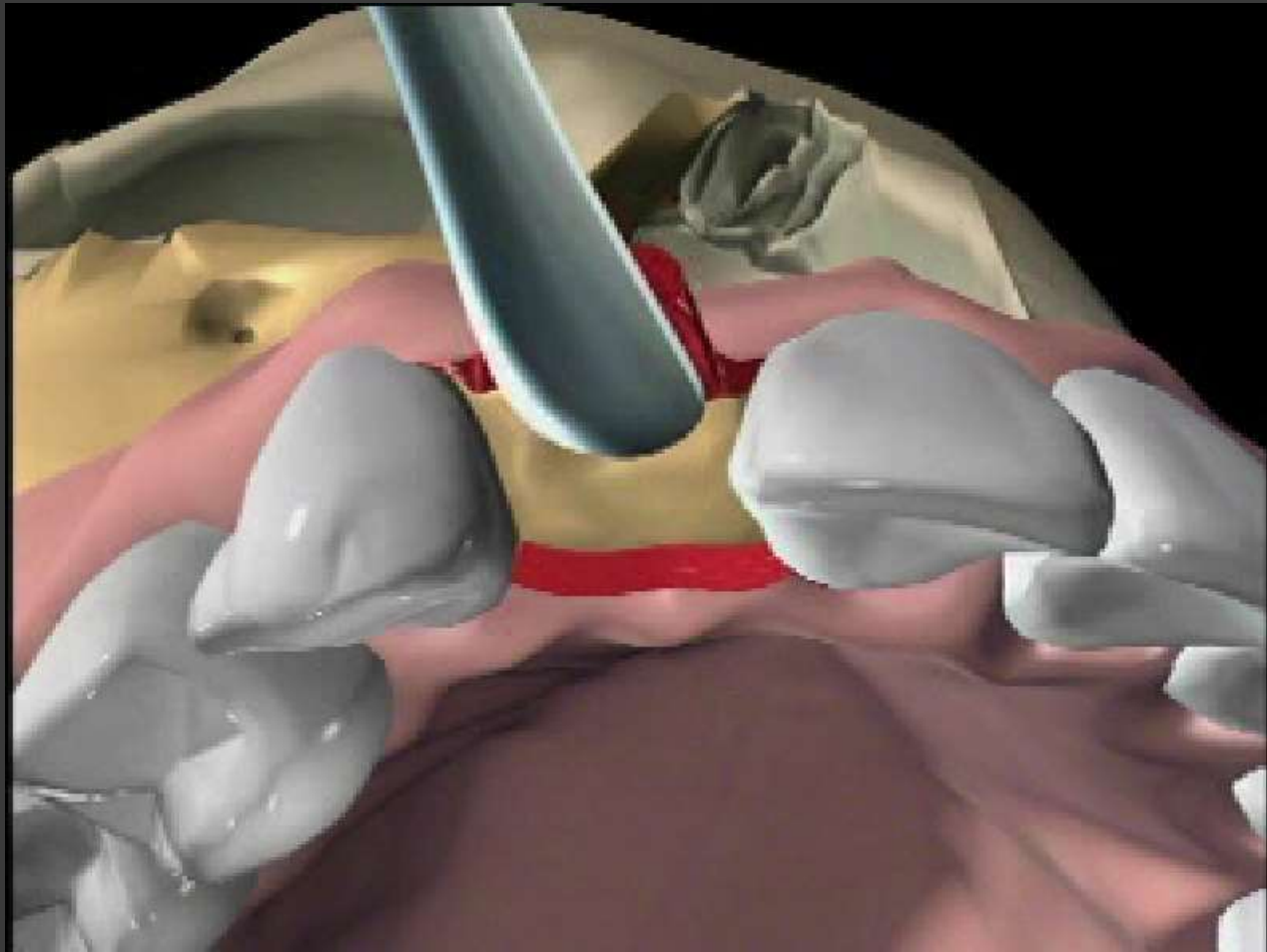












# ➤ Reflection of Flaps

- Flaps are reflected with the muco-periosteal elevators.
- Using the sharp pointed end of the elevator → interdental papilla are freed from the underlying bone (using the tooth as a fulcrum).
- Using the broad end of the elevator in a push stroke, the attached gingiva and alveolar mucosa are reflected to the desired extent.
- Using the muco-periosteal elevator in a pull stroke can sometimes shred the periosteum.





# ➤ Retraction of Flap

- A Periosteal elevator is used as a retractor for small flaps and the Minnesota or Austin retractors for large flaps.



Austin Elevator



Minnesota Elevator



Periosteal Elevator

# ➤ Bone cutting

- Bone is removed to some extent, to expose the underlying tooth/root.
- Bone, must not be sacrificed unnecessarily and removal must be limited to what is required to achieve certain objectives.
- Removal of bone is intended to:
  - Expose either the tooth or roots before their delivery.
  - Provide a point of application for an elevator or forceps.
  - Create a space into which the tooth or root may be displaced.

## a) Using a Bur

Bone removal using a bur is more convenient.

- Cutting of bone is more easily controlled
- No splintering
- Allows operator to hold the flap, while removing the bone
- Cuts with extreme rapidity, without causing much discomfort

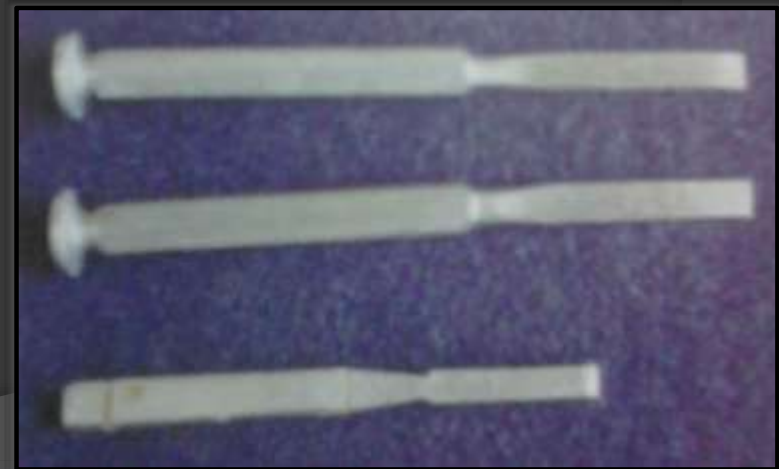
The bur must never be allowed to over-heat.

Constant irrigation should be done with normal saline water.

- To avoid over-heating of bur
- To remove debris
- To prevent the bur from clogging

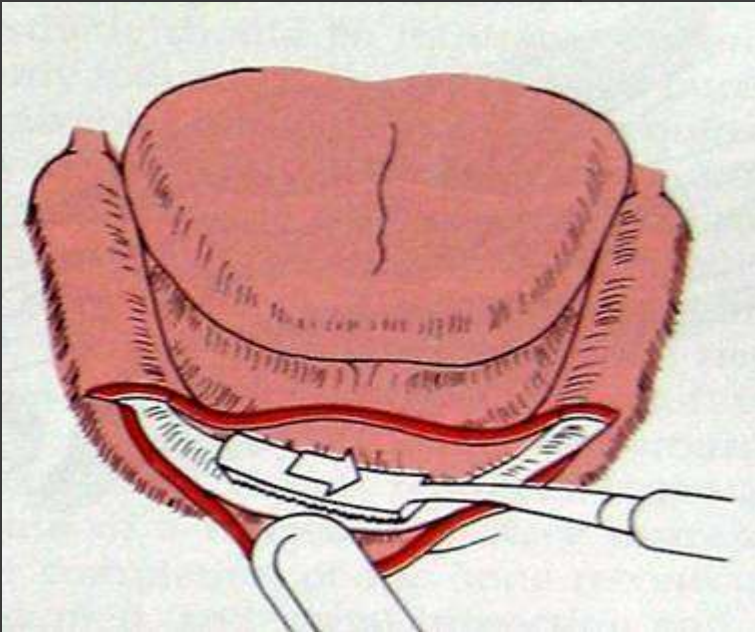
## b) Using Chisel and Mallet

- Is usually used for removal of bone in maxilla because the bone is soft.
- Advantages
  - less time consuming
  - post operative edema will be less
- Disadvantages
  - problem to TMJ
  - chances of slippage of instrument
  - chances of break of the jaw
- Contra-indications
  - If the bone is too hard
  - if the mandible is thin
  - if the root is brittle



## c) Bone File or Rasp

- It is a double-ended instrument with a small and large end.
- Used only for final smoothing of the bony ridge after gross removal.



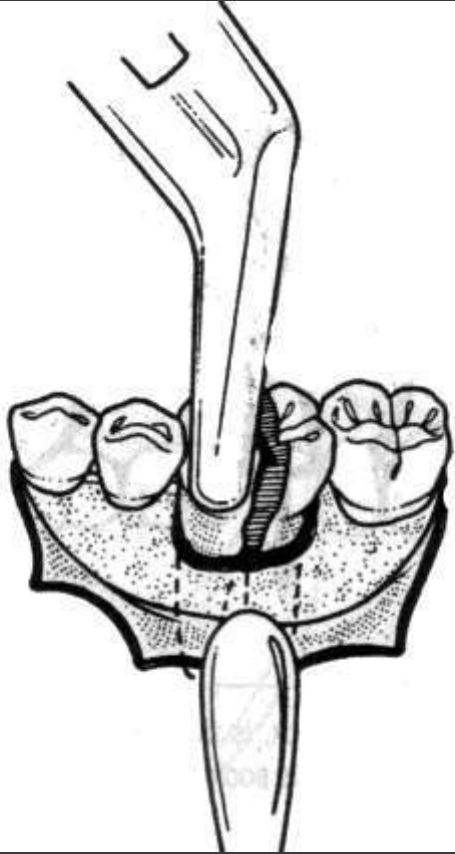
## ➤ Elevation of the tooth or root from the socket

- If a firm grip of the root or root-mass can be obtained, forceps is used, if not, the use of elevators is necessary.
- When applying buccal force it is necessary to engage the elevator in a notch on the side of the root-mass.
  - Bifurcation of lower molars.
  - Created with a round bur.
- When using elevators, excessive force is never necessary if the principles outlined for their use are followed.

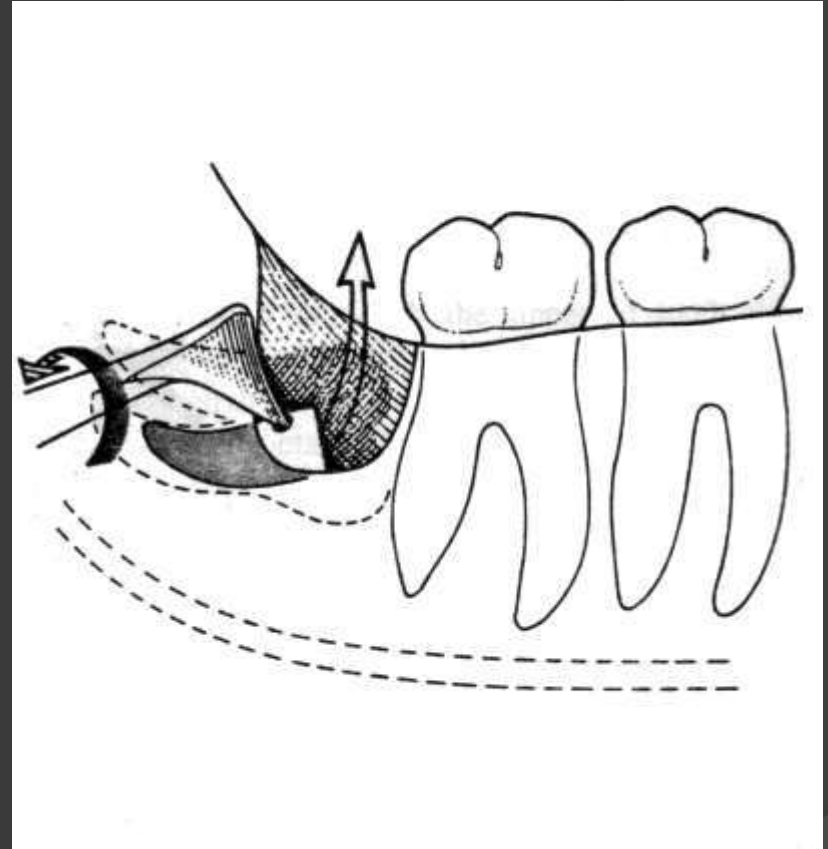
- The various types of elevators used are
  - Coupland elevator - placed at the base of the crown
  - Cryer elevators- may be used in wedging action or buccal elevation







Removal of the tooth segment with a Forceps



Removal of the root with an elevator

# ➤ Debridement and Smoothing of Bone Margins

1. Irrigation of the socket. The socket is irrigated especially under the flap where the bony chips may accumulate.
2. Scraping to remove any dental follicle or epithelium. Any granulation tissue present within the socket should be curetted.
3. check for remnants of bone, bleeding point and erosion of the adjacent tooth.
4. Rounding off, of the margins of the socket with a round bur or bone file.
5. Irrigate the suture again
6. Control bleeding before suturing.
7. After the debris is removed, the flap is then placed into its normal position and sutured which is supported by sound and intact bone.

# ➤ Suturing

- A suture is a strand of material used to ligate/tie up blood vessels together.
- To suture is the act of sewing or bringing tissues together and holding them in apposition until healing has taken place.
- Every suture is a foreign body and they should only be inserted into the tissues if there is a positive indication for their use.

- At the end of an oral surgical operation, sutures are inserted to
  - Hold the cut edges of soft tissue together to promote healing .
  - Arrest hemorrhage.
  - Appose loosely soft tissues to minimize wound contamination with food debris.
- If the flap lies snugly in position and bleeding is controlled there is no need for suturing.

# Types of Suturing

1. Interrupted suture (most commonly used)
2. Continuous suture
3. Continuous locking suture
4. Mattress suture
  1. Horizontal
  2. Vertical
5. Figure of 8 suture
6. Sub-cuticular suture

# INTRAOPERATIVE COMPLICATIONS

- Inability to move the tooth
- Fracture of tooth
- Fracture of alveolar process
- Fracture of maxillary tuberosity
- Jaw fracture
- Mucosal lacerations, puncture wounds
- Abrasions or burns on soft tissue
- Damage to adjacent tooth
- Dislocation of adjacent tooth
- Nerve injury
- Hemorrhage
- Dislocation of TMJ

# POSTOPERATIVE COMPLICATION

- Hemorrhage
- Pain
- Swelling
- Dry swelling

# POSTEXTRACTION INSTRUCTIONS

1. The patient should be advised to firmly bite on the gauze piece placed on the extraction of socket for a minimum of half an hour after the extraction.

**REASON:** This helps in stabilisation of the clot in the socket.

2. The patient should be advised not to rinse his mouth vigorously for the next 24 hours. Mouth wash should be avoided on the 1<sup>st</sup> day.

**REASON:** This may cause dislodging of the clot from the socket.



3. Patient should be advised to avoid any hot food for the next 24 hours. Patient should take cold food.  
**REASON:** Heat may cause vasodilatation and encourage bleeding from the socket. Also the region may be numb, the patient may not be able to sense the heat and can produce burns.
4. Patient should be advised soft diet on the day of extraction.  
**REASON:** Hard food may traumatise the socket clot and cause bleeding.
5. Patient is told not to use straw on the day of extraction  
**REASONS:** This creates a negative pressure in the mouth which may dislodge the clot and causes bleeding.

6. Warm saline water rinse and gentle brushing should be advised for the next day.

**REASONS:** It is very important to maintain good oral hygiene. This should be stressed repeatedly. The patient should brush normally from the next day and also supplement it with warm saline water rinses which help to prevent infection.

7. Anti-Inflammatory Analgesics should be prescribed.

**REASONS:** Any extraction procedure is followed by some amount of pain and inflammation. Analgesics help to keep the patient comfortable and pain free during the healing period.

THANK YOU