INTRODUCTION TO ENDODONTIC SURGERY

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Introduction

- The **Art & Science** of Endodontics deals etiology diagnosis, prevention, treatment & restoration of diseases of pulp and periapical tissues compatible with good health.

- Before development of endodontics as a field all such teeth were treated by mass **extractions.**

- Today- *" preservation rather than amputation."*

When the pulp is irreversibly *diseased* or *dead*

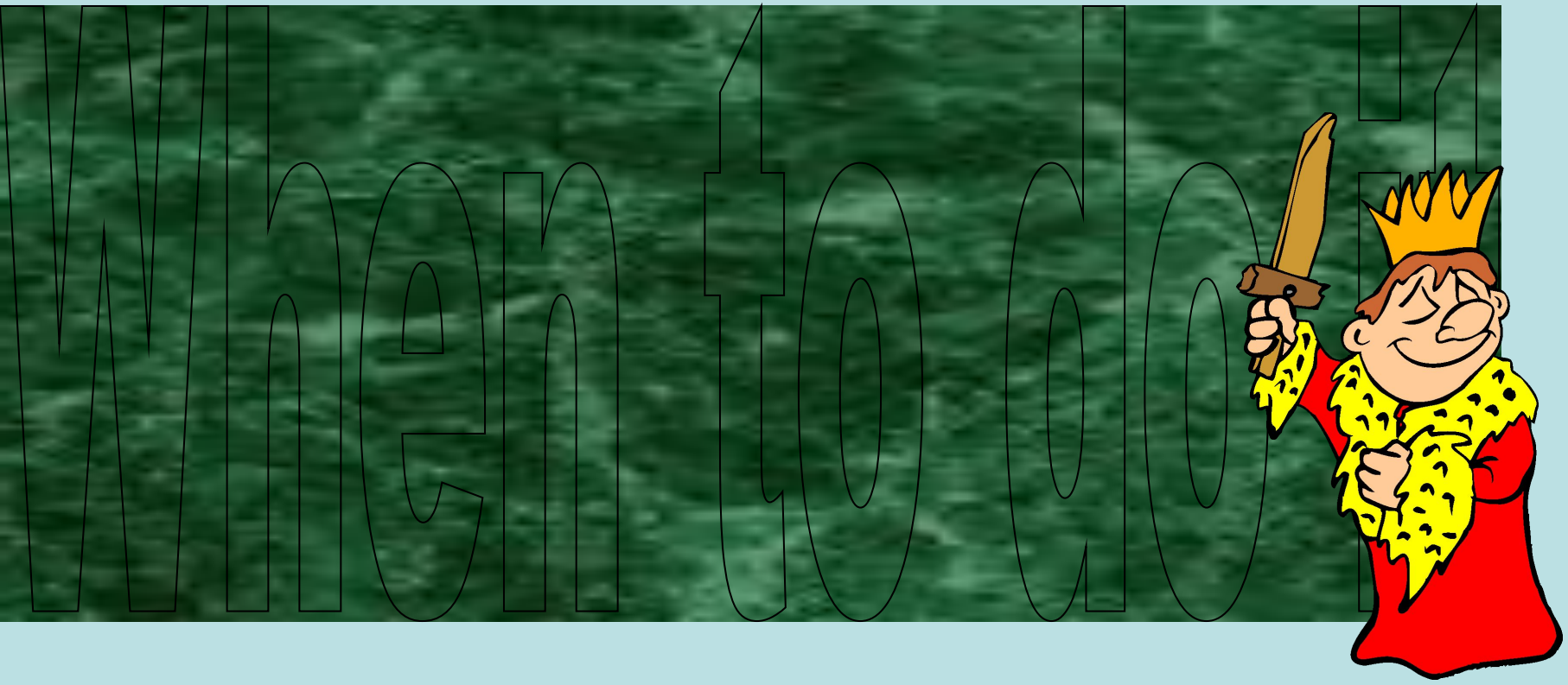
- Most of the cases.
- Routine endodontic therapy.

Basis for Successful Endodontic Therapy

- Thorough debridement
- Complete cleaning & shaping
- Total 3D obliteration of pulp space
- Followed by healing of apical lesion

But not always the case.....

When to do it?



Nonsurgical not possible

- When routine treatment is not possible or fails because of anatomic variations like abdormal shape of pulp space, calcifications, nonhealing apical lesions, lesions needing surgical removal, procedural errors, biopsy……

Historical Perspective

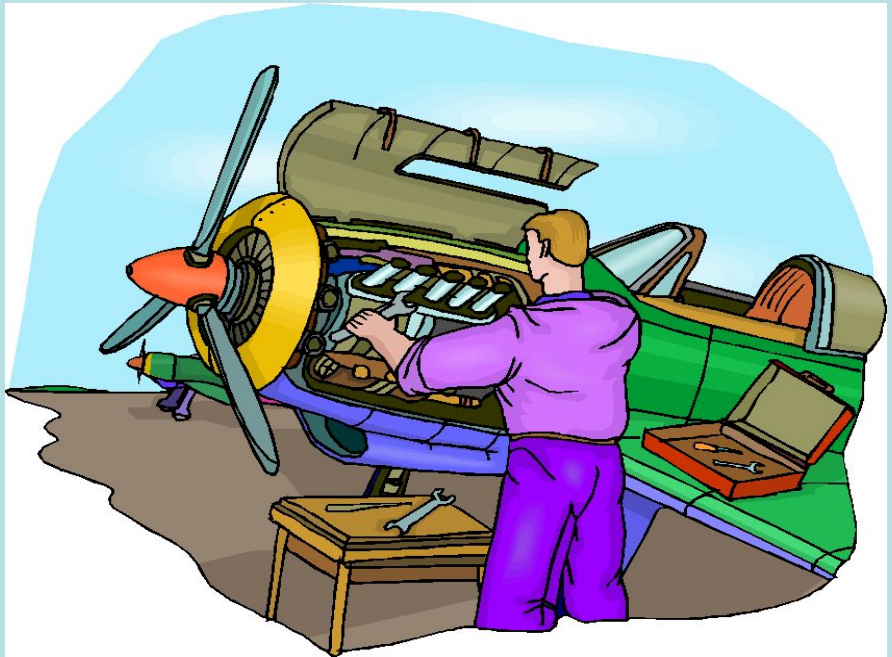
- Over 1,500 years ago incision and drainage of an acute endodontic abscess performed by Aetius, a Greek physician–dentist, over 1,500 years ago.

- In 1910 William Hunter's
  "An Address on the Role of Sepsis and Antisepsis in Medicine,
  to the Faculty of Medicine of McGill University in Montreal.

"A black eye blow"

- **Hunter's presentation initiated a major conflict, but turned out to be a blessing in the development of endodontics and endodontic surgery.**

Endodontic surgery is dynamic,and it is imperative that scientific investigation continue; concepts, techniques, and materials used must be continually modified & placed on the assessment of long term clinical outcomes.



Current status

- Clinical articles, scientific reports, and textbook chapters provide extensive lists of indications for periradicular surgery.

- However, many of the previously accepted indications are no longer valid in light of current concepts of the biologic basis for endodontic treatment

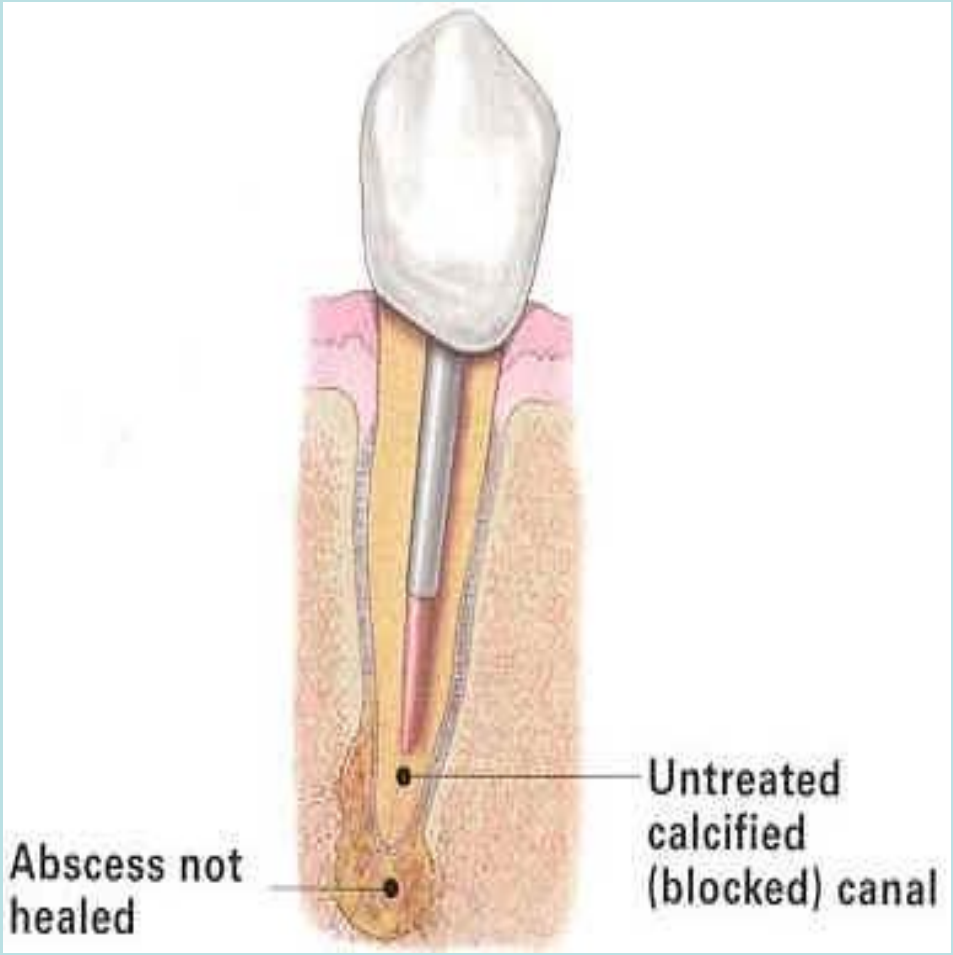
Dr. Irving J. Naidrof said

" **A good surgeon Knows How to cut and an excellent surgeon knows when to cut."**

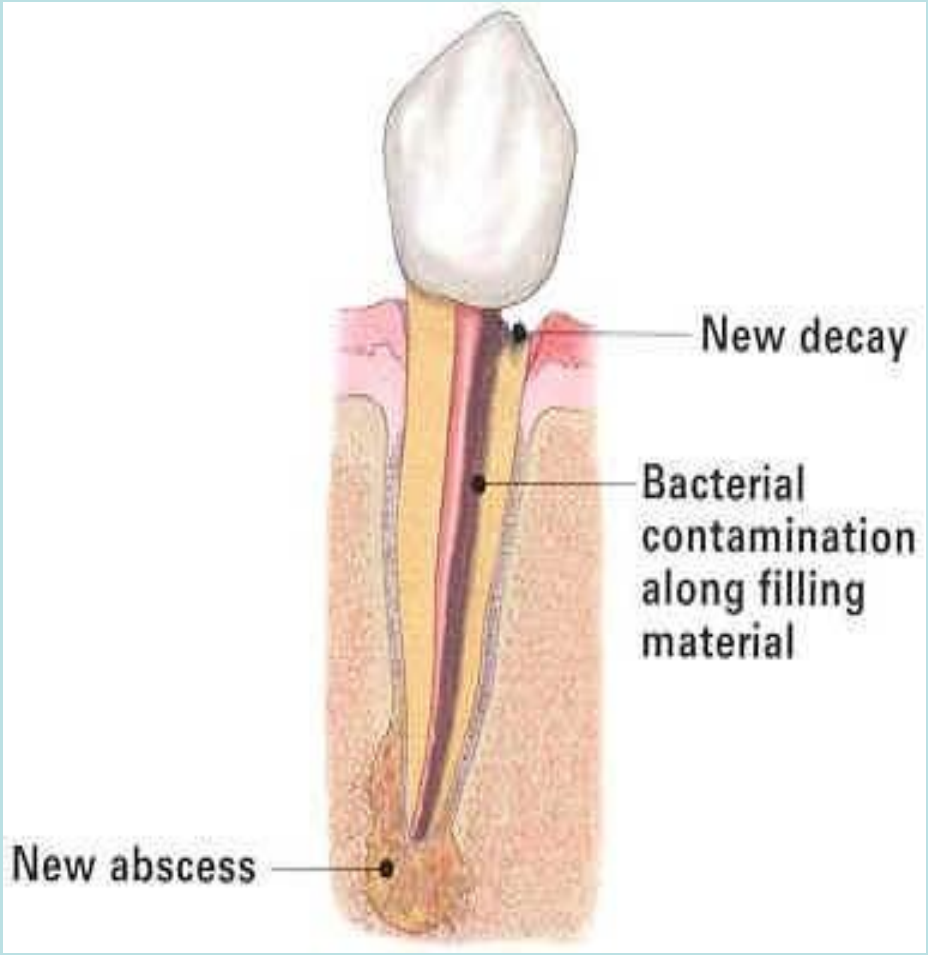
So it must be recognized that

- Periradicular surgery has become very selective in modern dental practice
- Application of surgery must always be in the best interest of the patient
- And also within the realm of the expertise of the practitioner.

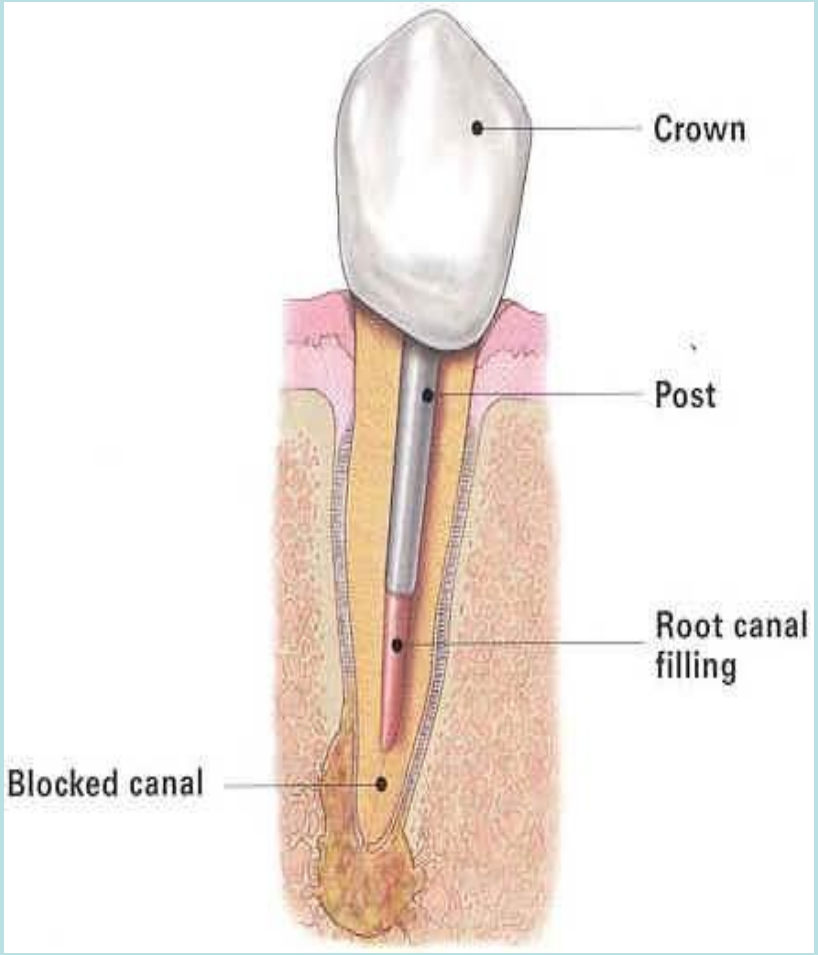
Endodontic failure –Inadequate treatment



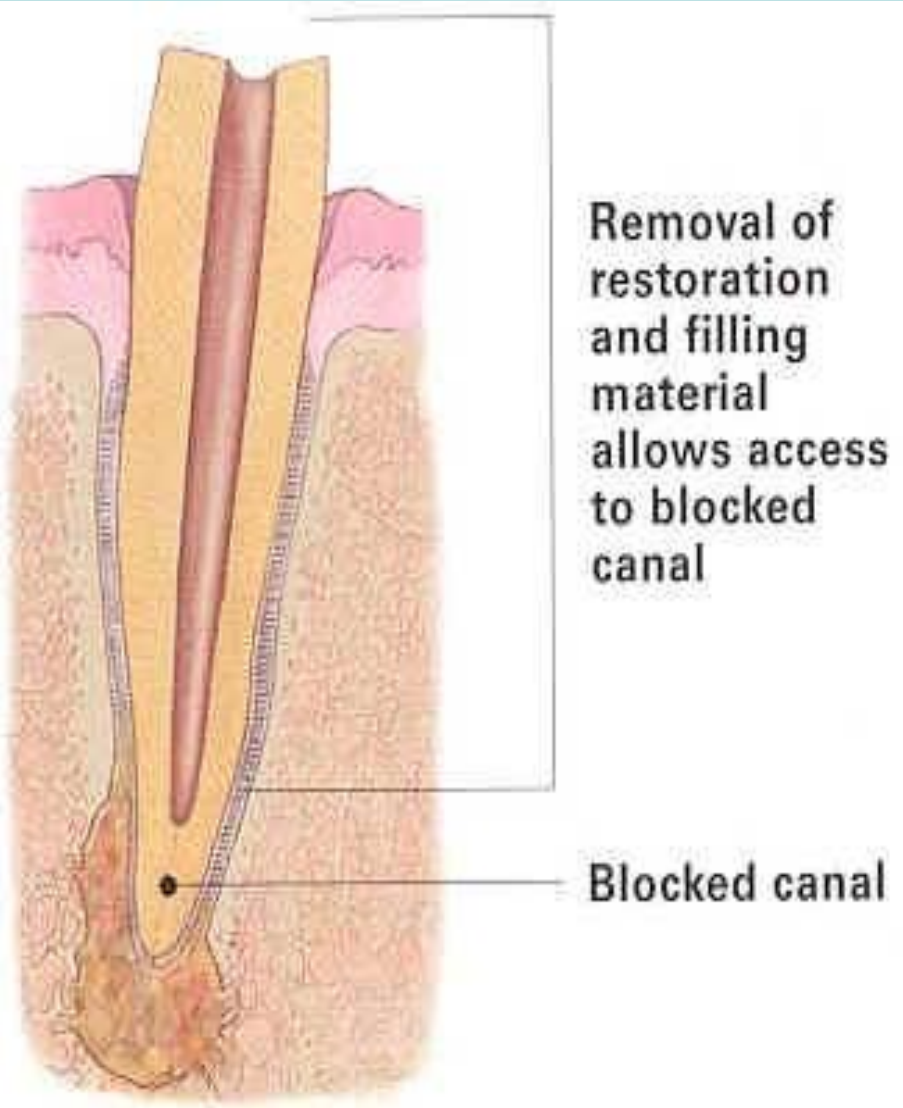
Endodontic failure - Adequate treatment



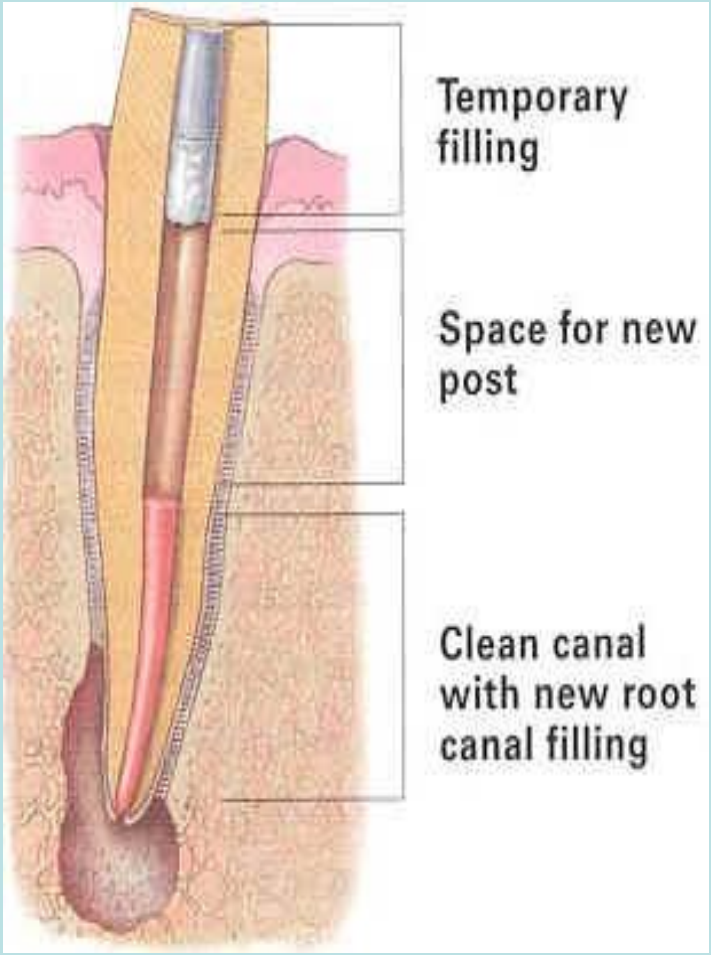
Spread of existing lesion



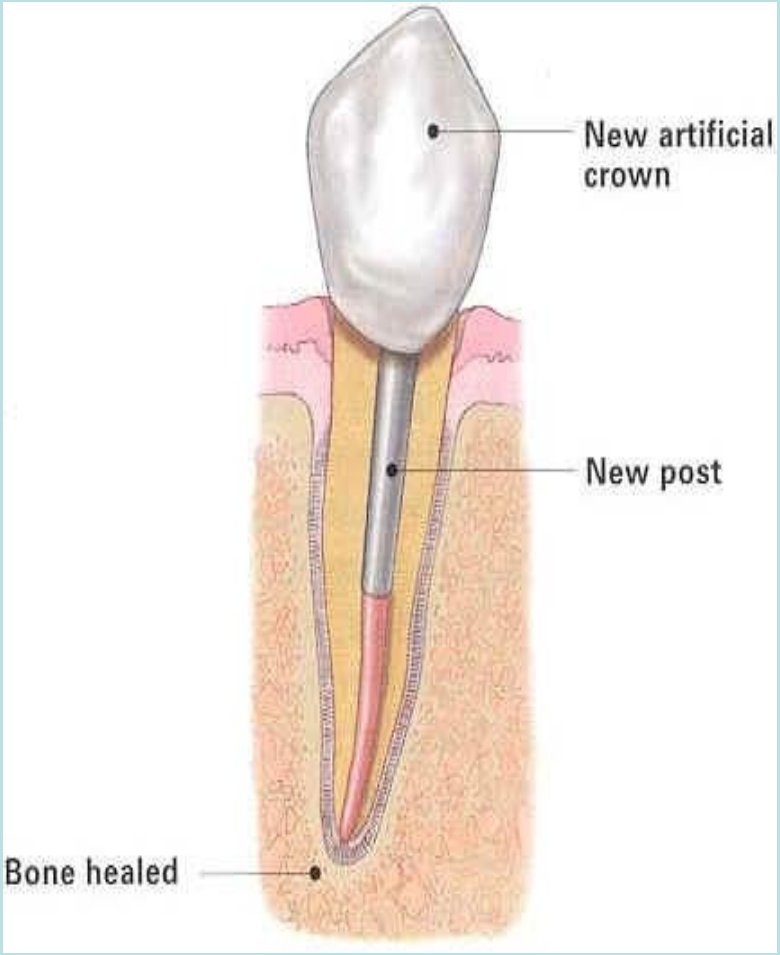
Filling removed



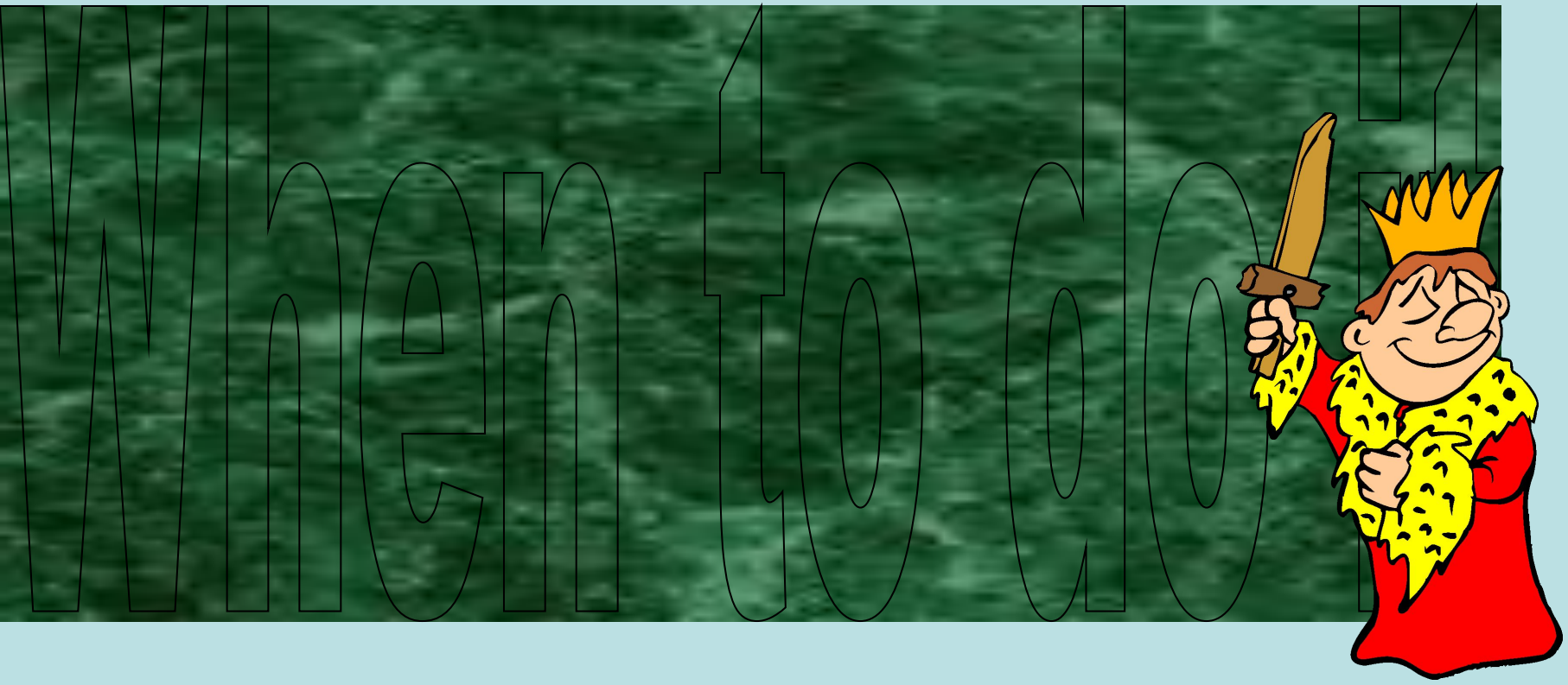
Retreatment complete



Restored tooth after retreatment & healing



When to do it?



Indications for Endodontic Surgery

1. Need for surgical drainage

2. Failed nonsurgical endodontic treatment
    1. Irretrievable root canal filling material
    2. Irretrievable intraradicular post

3. Calcific metamorphosis of the pulp space

4 Procedural errors
    1. Instrument fragmentation
    2. Non-negotiable ledging
    3. Root perforation
    4. Symptomatic overfilling.

5 Anatomic variations
    A. Root dilaceration
    B. Apical root fenestration

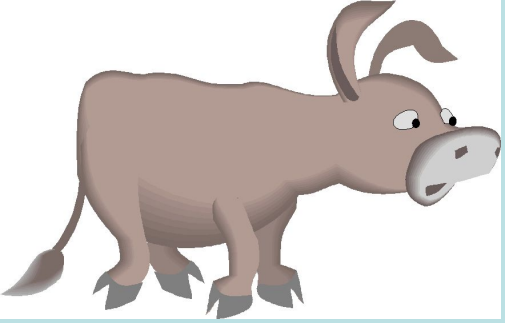
6. Biopsy

7. Corrective surgery
    1. Root resorptive defects
    2. Root caries
    3. Root resection
    4. Hemisection
    5. Bicuspidization

8. Replacement surgery

1. Replacement surgery
    1. Intentional replantation (extraction/replantation)
    2. Post-traumatic

2. Implant surgery
    1. Endodontic
    2. Osseointegrated



Contraindications

- **Pts medical status**
  - **General**
  - **Systemic**
    - C.N.S
    - Respirator
    - C.V.S
    - Haematologic
    - G.I.T
    - Urogenital
    - Endocrine
    - Immunologic
    - Allergy
    - Metabolic
      Medications
      Addictions
- **Anatomic considerations**
  - Inadequate acess
  - Posterior areas
  - Nasal floor
  - Maxillary sinus
  - Mandibular canal
  - Neurovascular bundle
- **Dentists skill & experience**

“Do no harm.”

Obviously poor prognosis

Do not attempt surgery

FISTULATIVE SURGERY

- Fistulative surgery involves procedures to establish by surgical means a communication between the oral cavity and submucoperiosteal and/ or periradicular intraosseous areas of pathosis of endodontic etiology

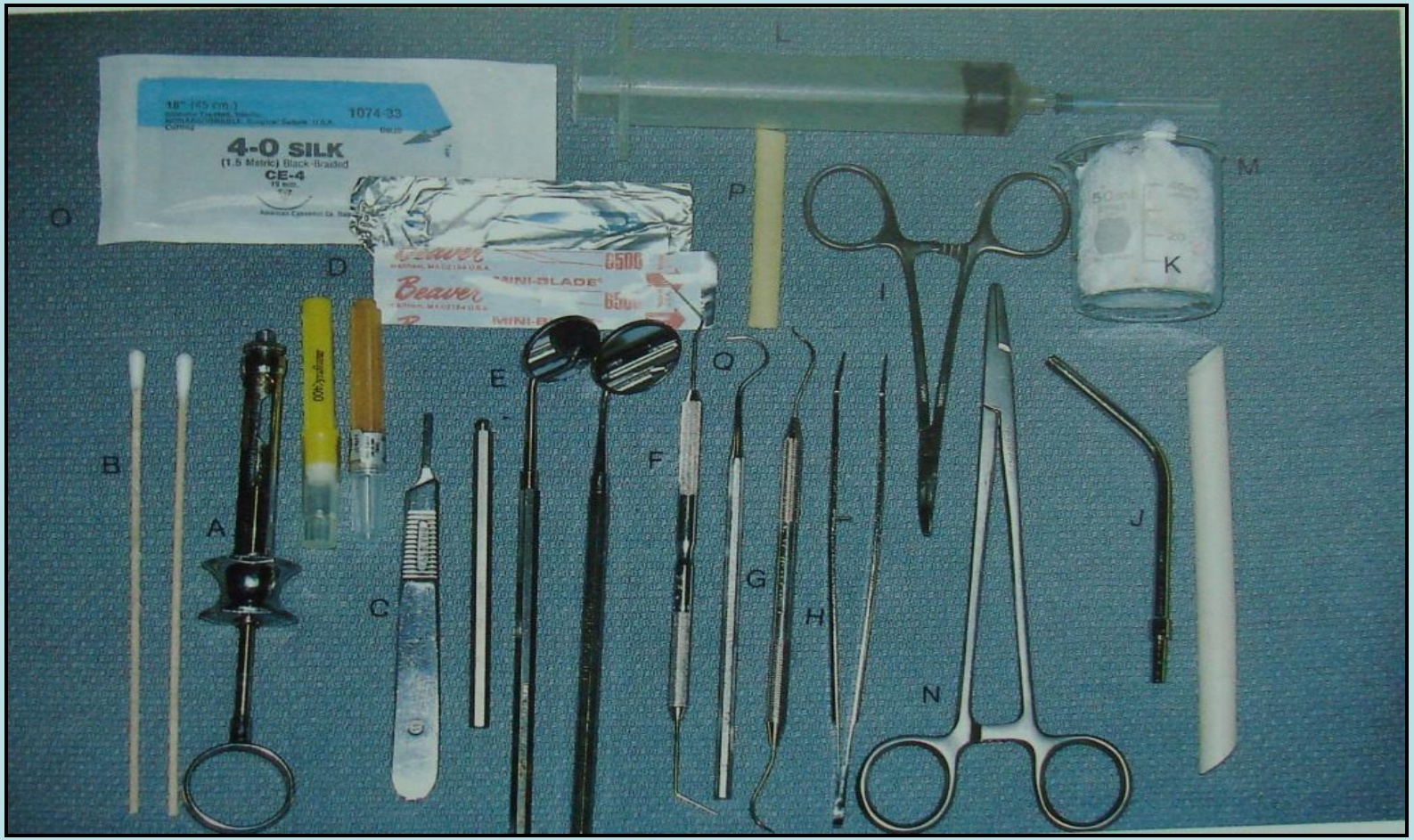
- These procedures include
  - INCISION AND DRAINAGE
  - CORTICAL TREPHINATION
  - DECOMPRESSION

- Incision and drainage and cortical trephination are emergency procedures designed to relieve acute pain so that definitive endodontic therapy can be completed after acute symptoms and signs are resolved and the inflammed tissues have reverted to a chronic status

- Decompression is a non emergency procedure for reducing large periradicular lesions and protecting vital adjacent structures from surgical disruption

INCISION AND DRAINAGE

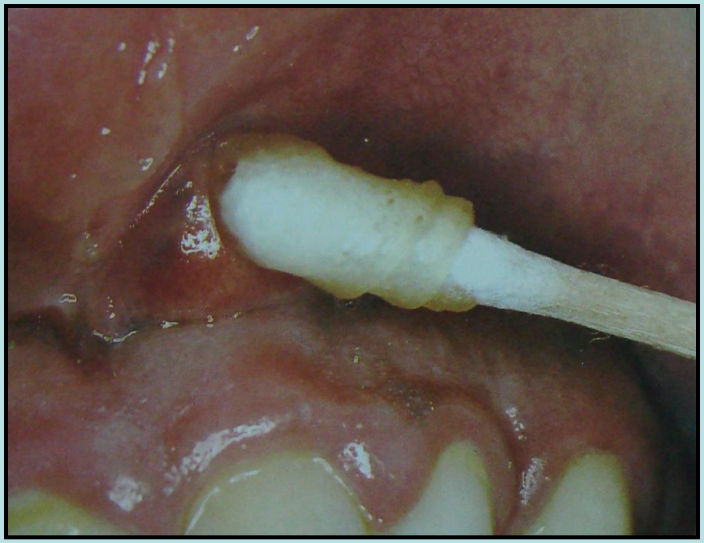
Basic incision and drainage tray setup



Pre operative soft tissue examination

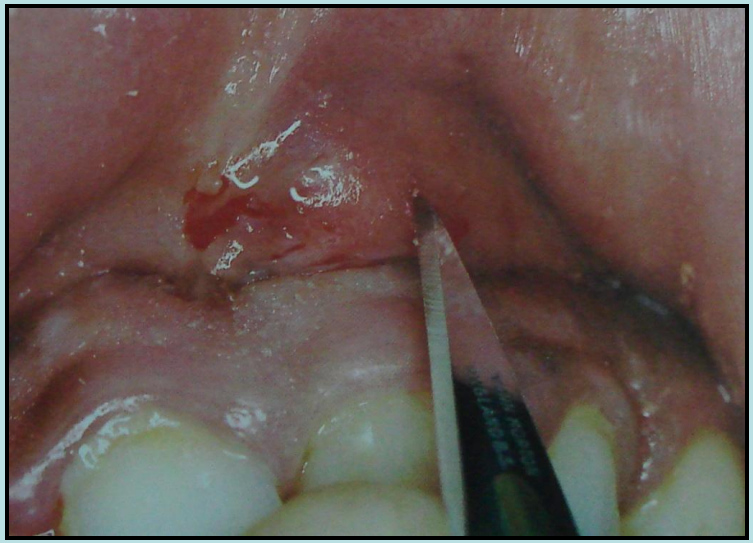
- Localized, fluctuant swelling
- Patient is afebrile
- No apparent facial swelling

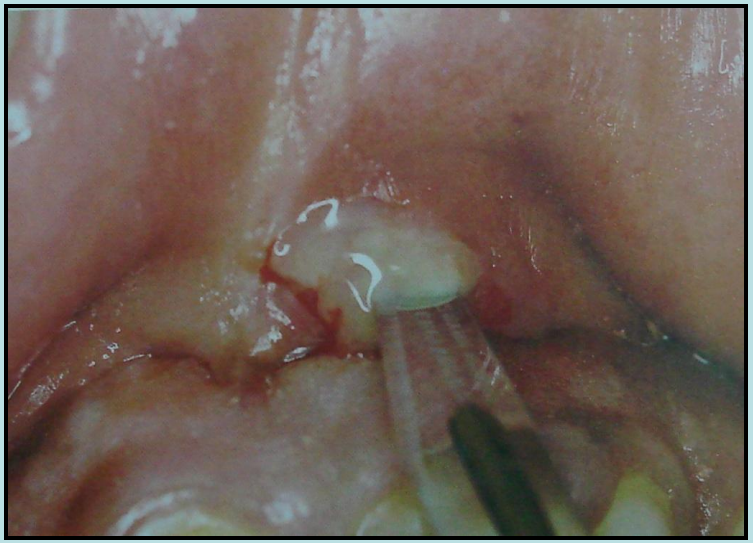
Anesthesia



- Nerve block is preferable
- Local anesthetics with such as Mepivacaine, are the most effective in this clinical situation

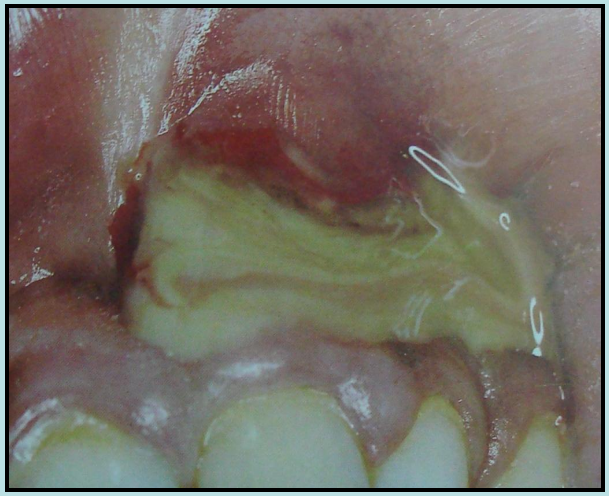
INCISION



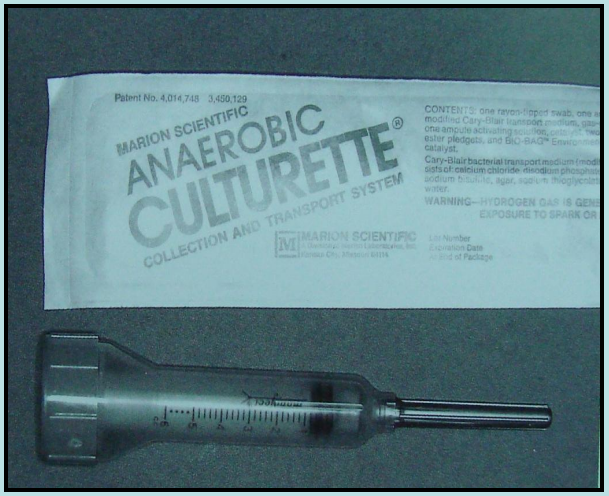


- The incision should be horizontal and placed on the dependent base of the fluctuant area
- Scalpel blade that is pointed No.11 or 12
- Make stab incision through soft tissue and periosteum to bone

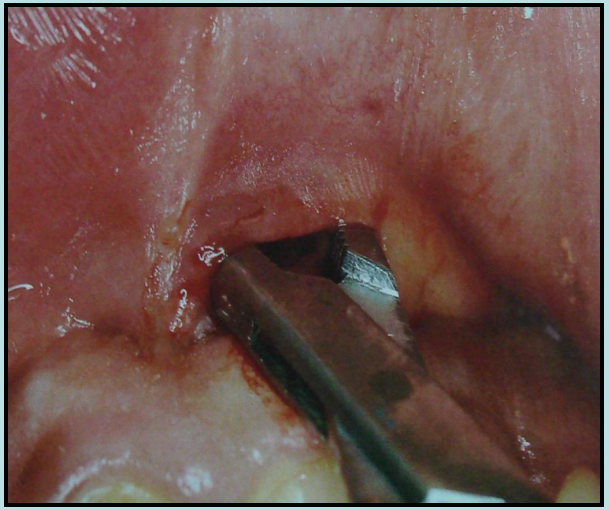
DRAINAGE



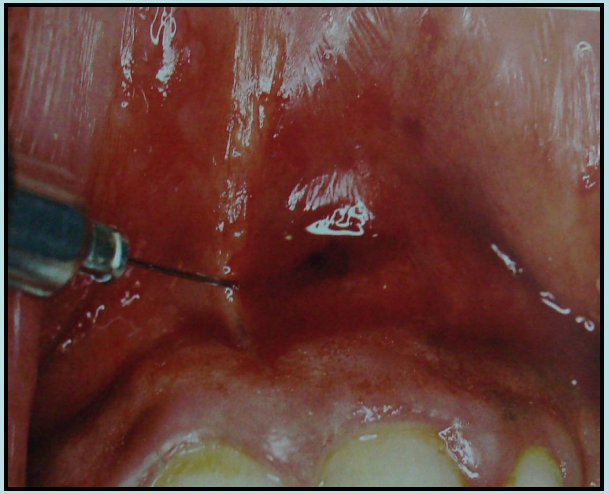
CULTURE & SENSITIVITY



BLUNT DISSECTION

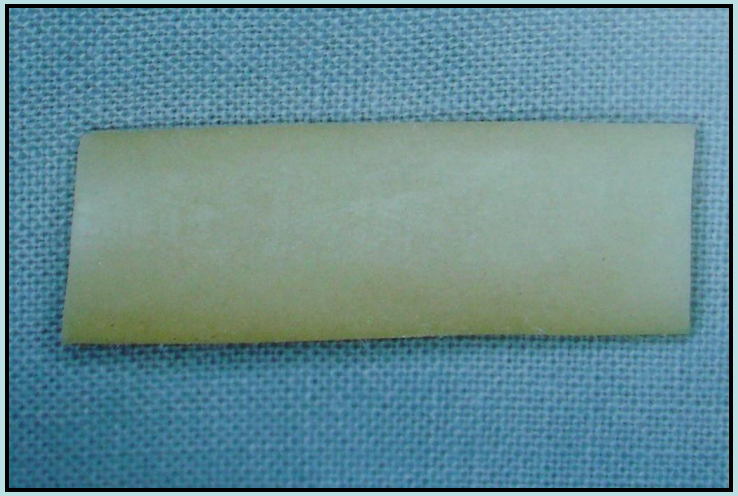


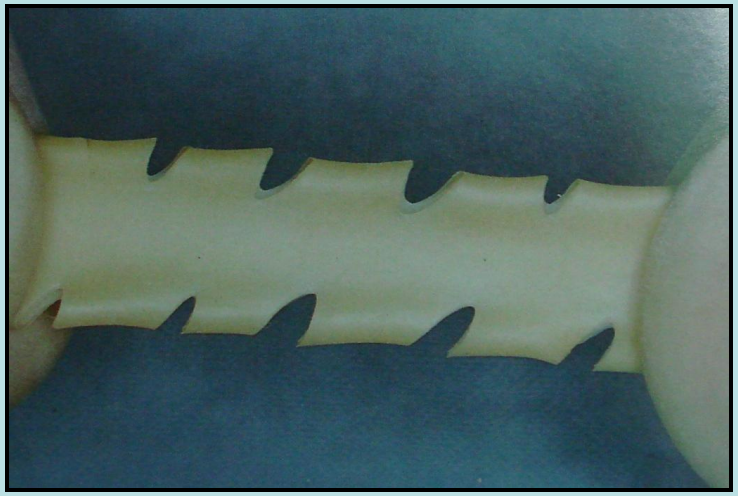
IRRIGATION



- Probing with a curette or hemostat into the incisional wound to release exudate entrapped in tissue compartments will facilitate a more effective result

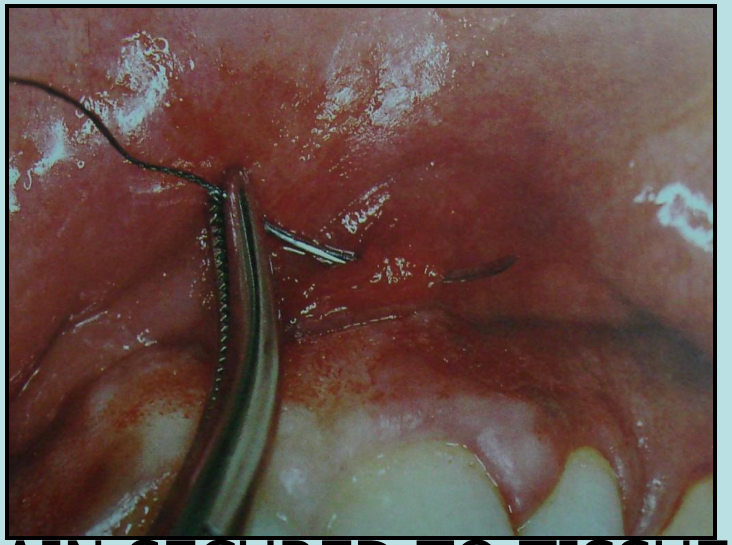
DRAIN PREPARATION



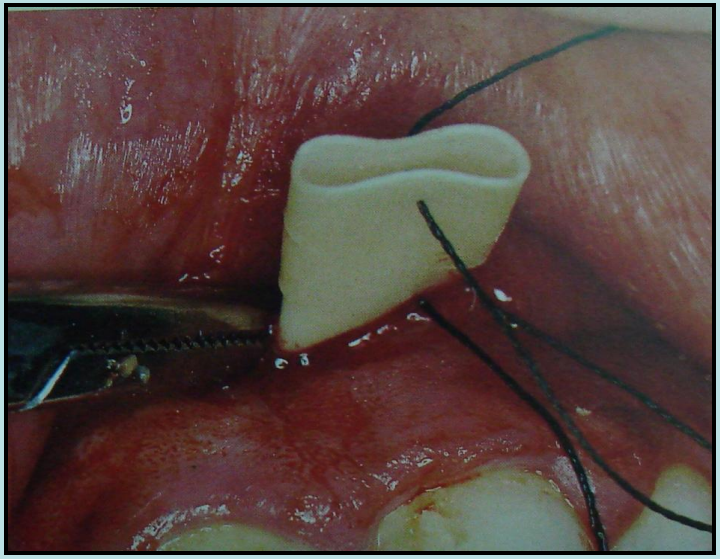


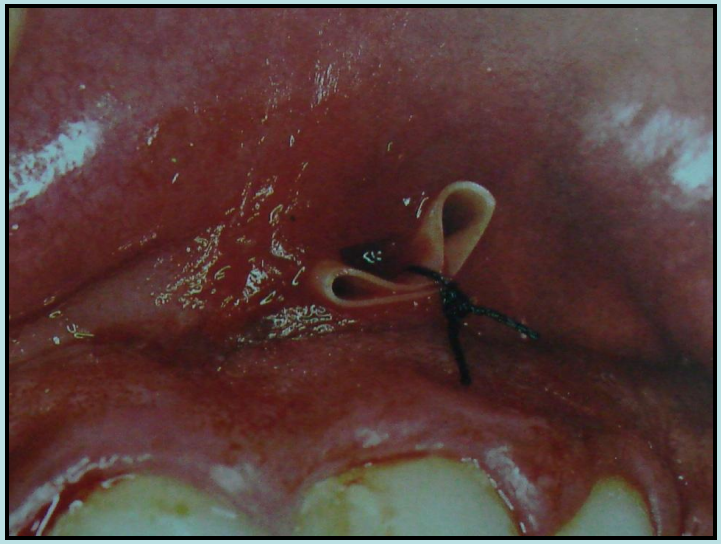
DRAIN PLACEMENT

DRAIN

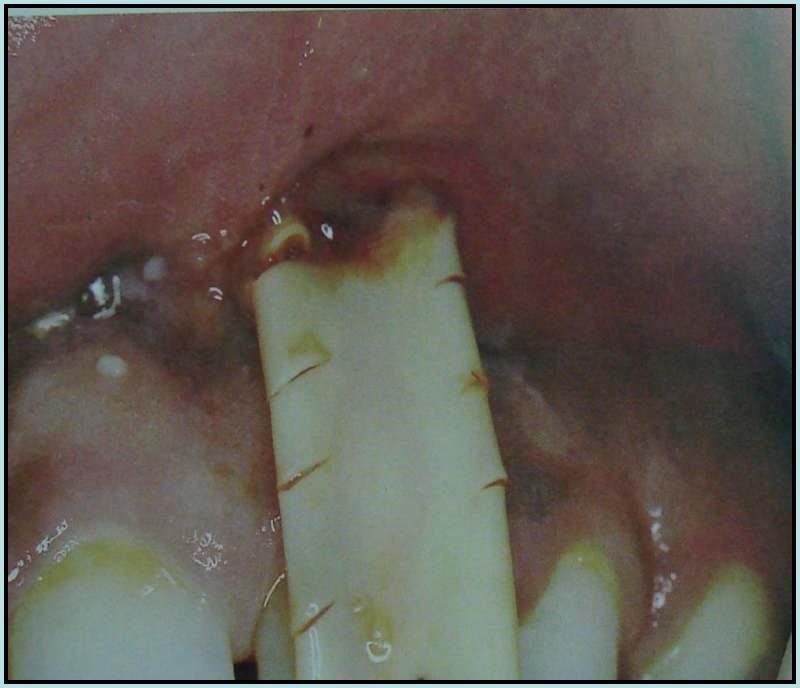


DRAIN SECURED TO TISSUE





DRAIN REMOVAL



INITIAL SOFT TISSUE HEALING

TREPHINATION

- Cortical trephination is a procedure involving the perforation of the cortical plate to accomplish the release of pressure from the accumulation of exudate within the alveolar bone

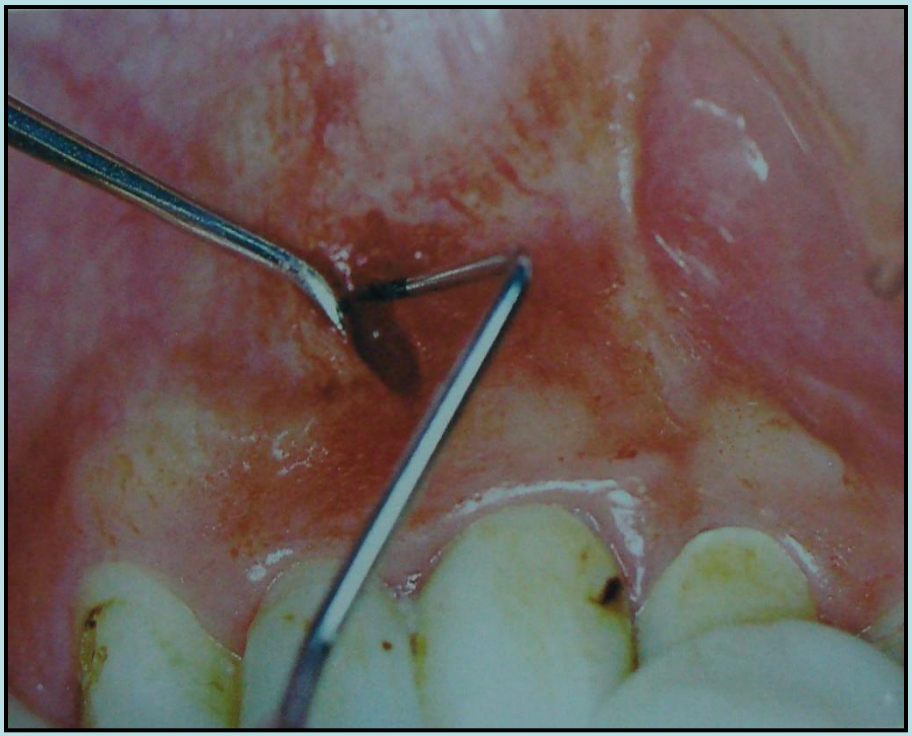
ENDOMETRICS

INCISION PLACEMENT

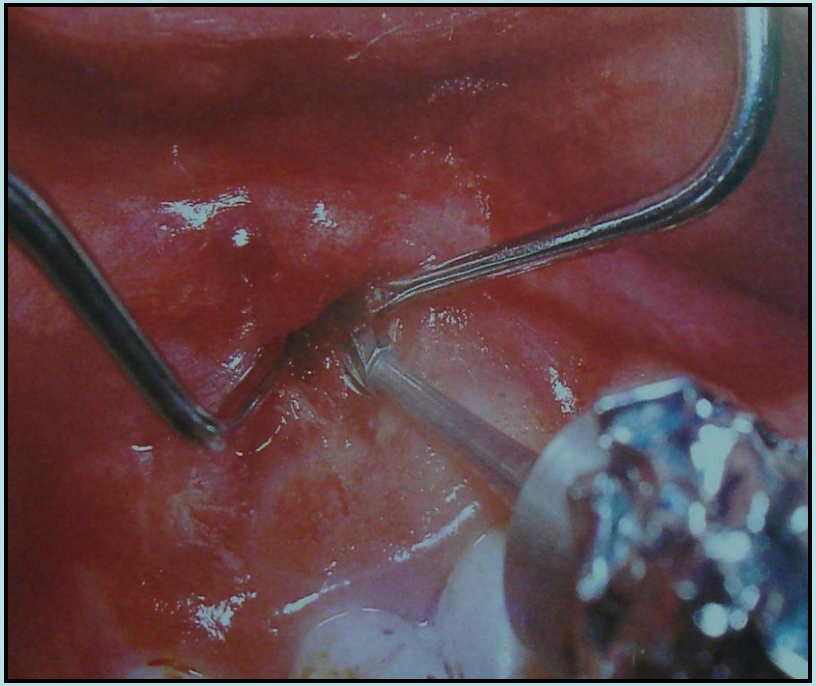
- Trephination site should be at or about midroot level in the interdental bone, either mesial or distal to the affected tooth

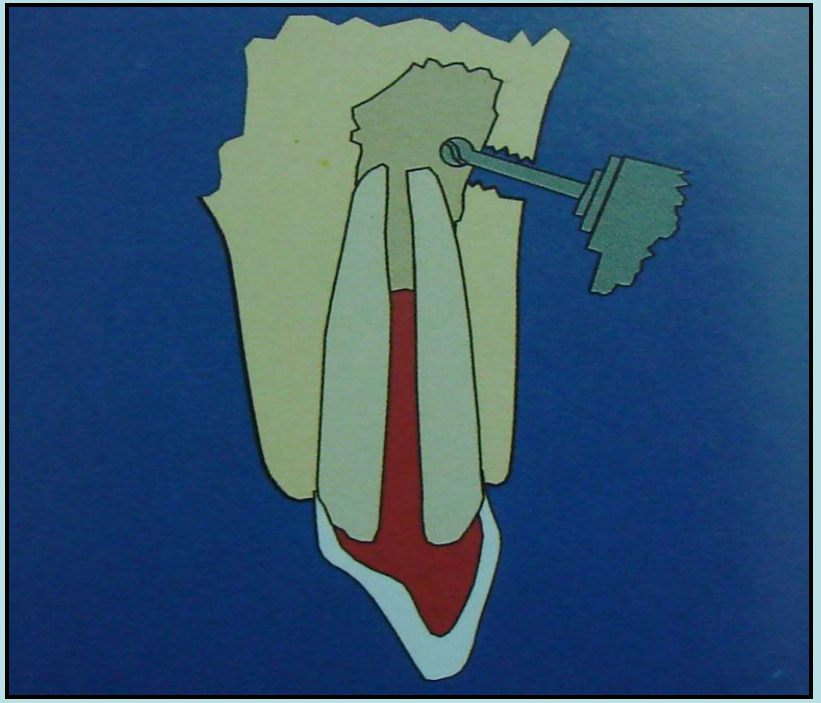
- Should always be initiated from the buccal approach, never from the lingual or palatal

EXPLORATION OF CORTICAL BONE



CORTICAL BONE PENETRATION





DECOMPRESSION

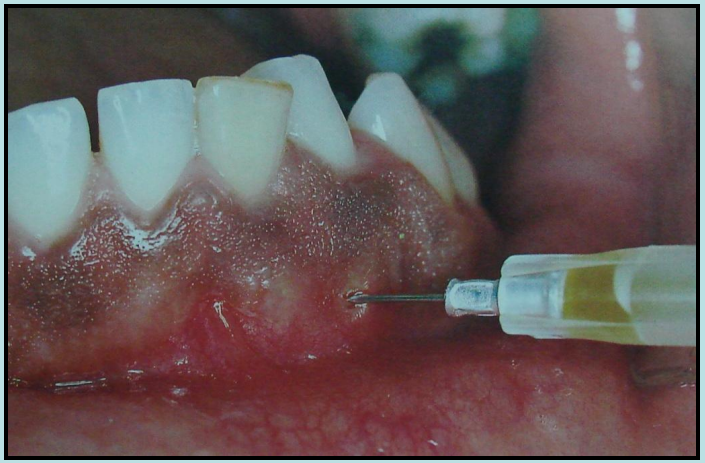
PRE SURGICAL SOFT TISSUE EXAMINATION

Palpation reveals:

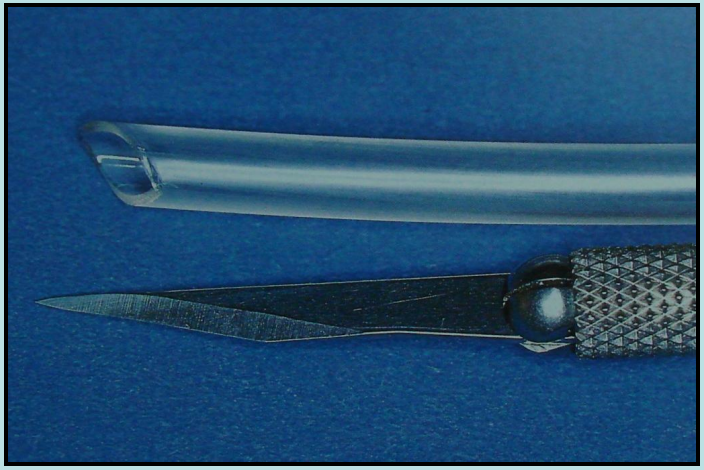
- Crepitation
- Pathologic fenestration
- Expansion of the lesion

ANESTHESIA

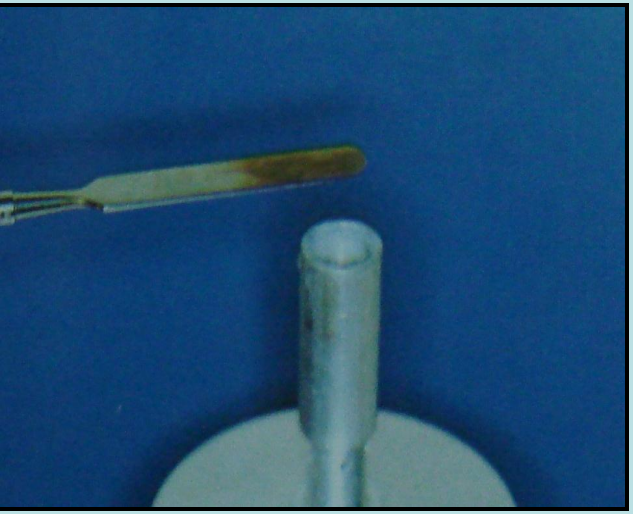
ASPIRATION OF THE LESION

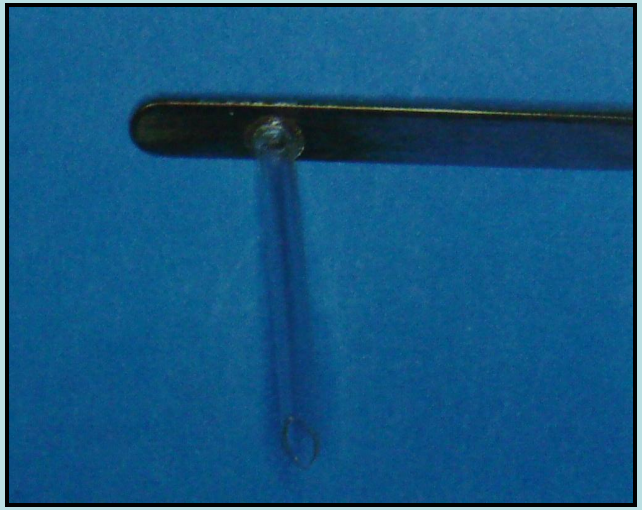


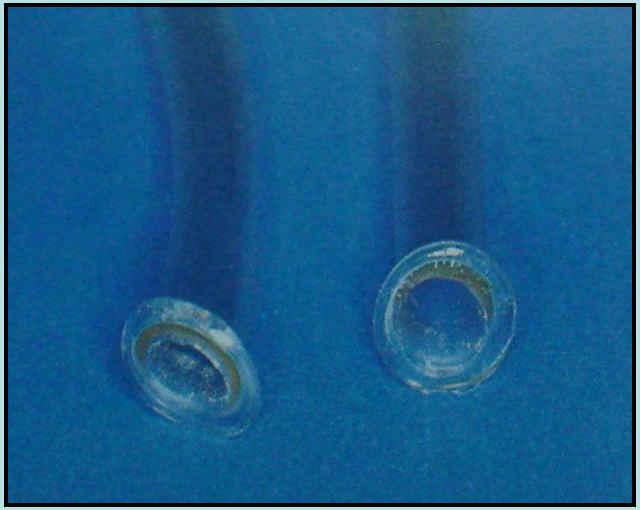
DECOMPRESSION TUBE FABRICATION



EXTERNAL BUTTON FABRICATION







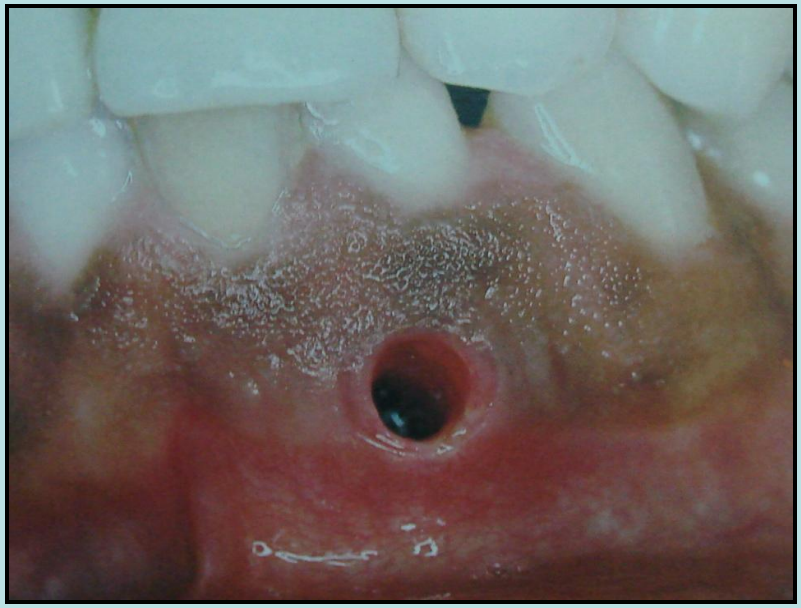
INCISION

TUBE PLACEMENT

FINAL TUBE PLACEMENT

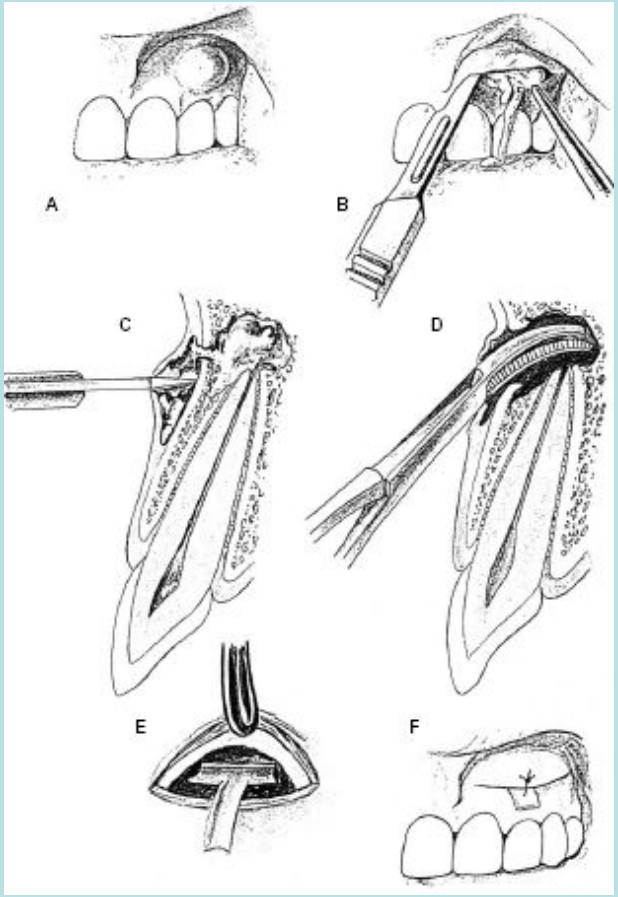
IRRIGATION

TUBE REMOVAL



- The patient is placed on 3-month follow-up observation and is checked radiographically for signs of osseous repair
- Failure of the lesion to resolve may necessitate surgical intervention

Steps in Apical surgery



(1) local anesthesia & hemostasis,

(2) Incision making

(3) Bone removal,

(4) Surgical access, both visual and operative,

(5) Access to root structure,

(6) Periradicular curettage,

(7) Root-end resection,

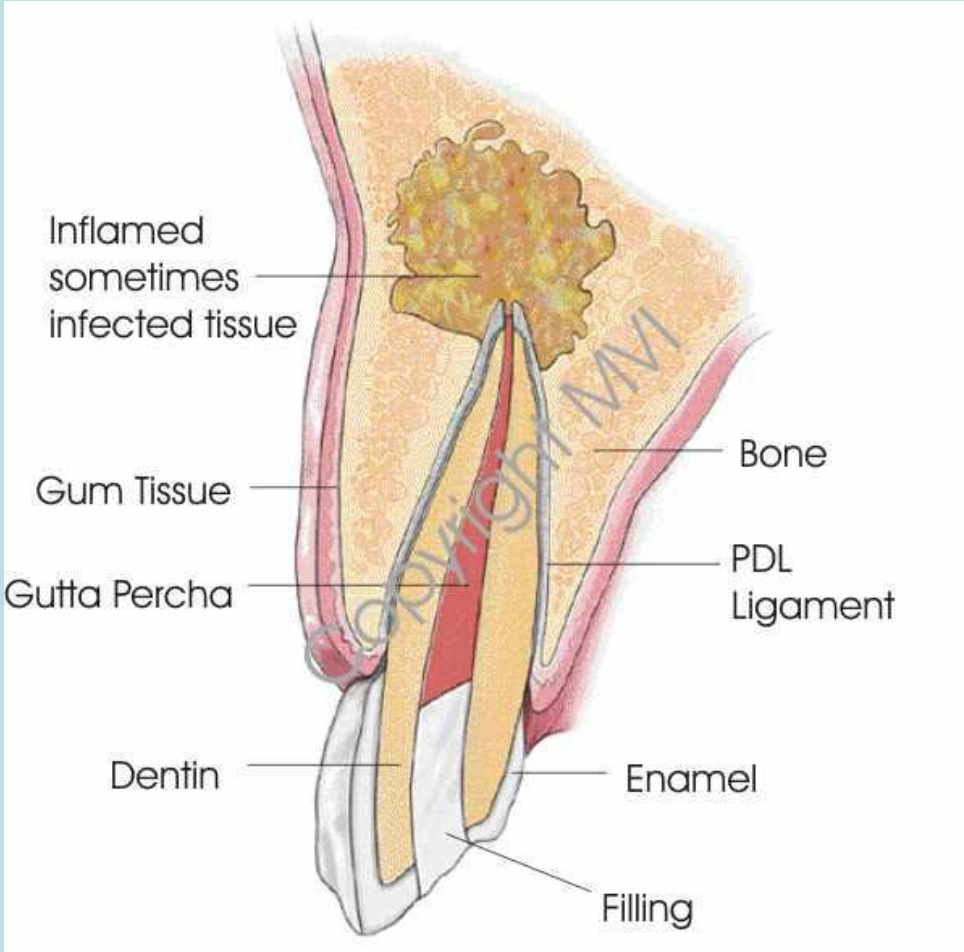
(8) Rootend preparation,

(9) Root-end filling

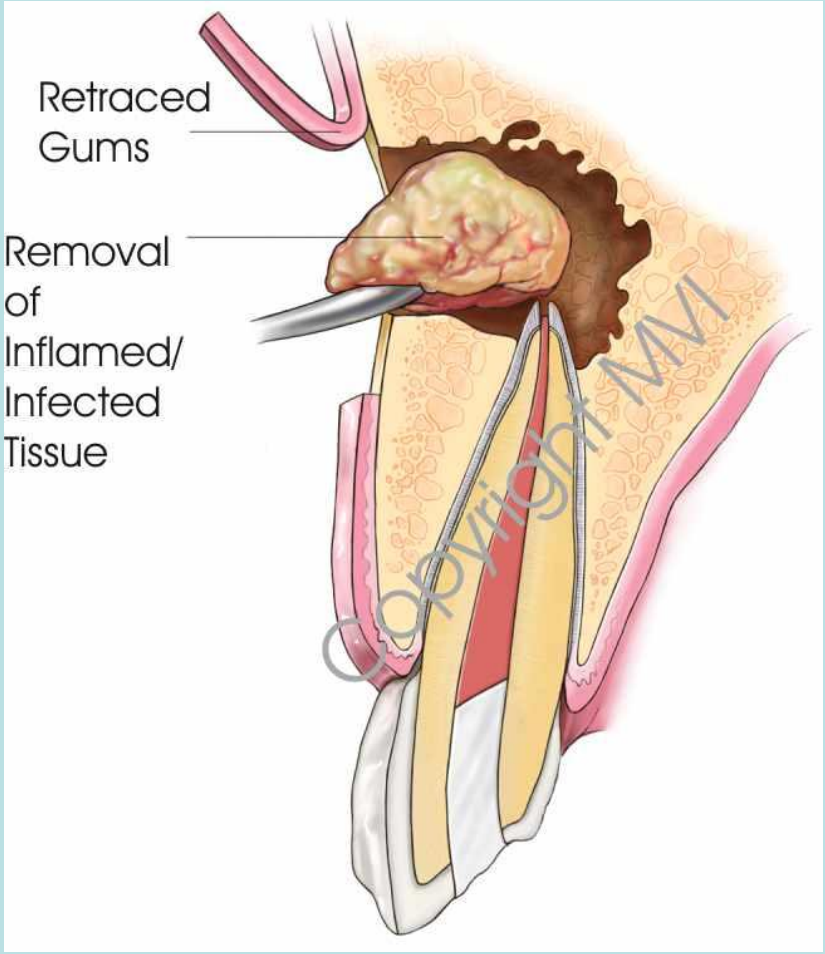
(10) Soft-tissue repositioning and suturing,

(11) Postsurgical care.

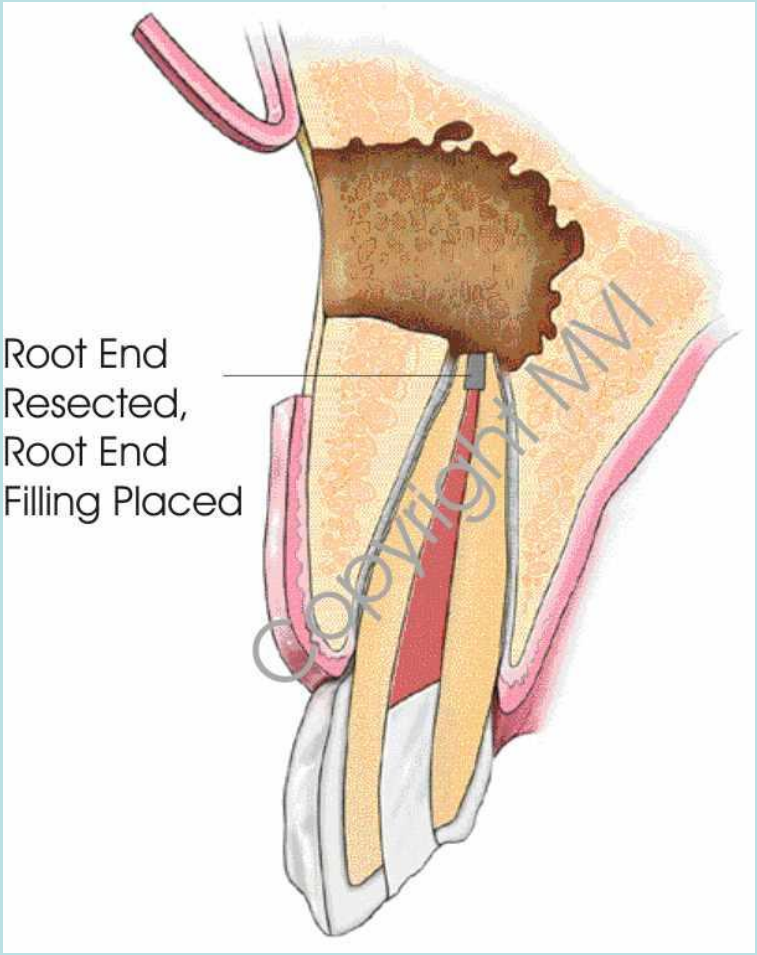
Preoperative



Removal of pathology



After removal



After healing