



Retreatment in Endodontics

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DCP 4 - Semester 2



Evaluation of success of endodontic treatment

- Clinical
- Radiographic
- Histologic



SUCCESS or FAILURE

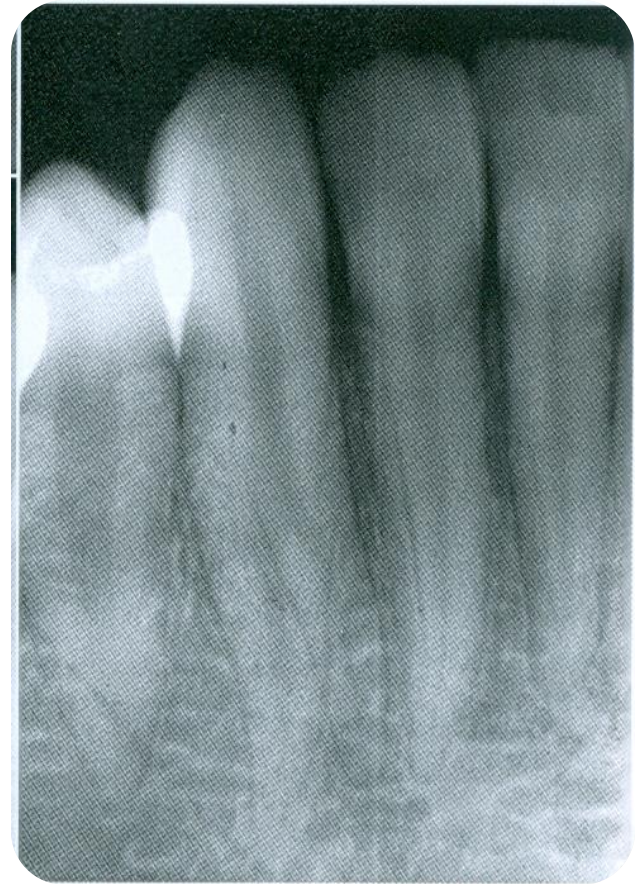
- Earlier the case was considered a success or failure
- New terminology
 - Healing- reduced periradicular lesion
 - Healed- complete elimination of periradicular lesion
 - Developing- new periradicular lesion

These terminology better describe the actual clinical observation

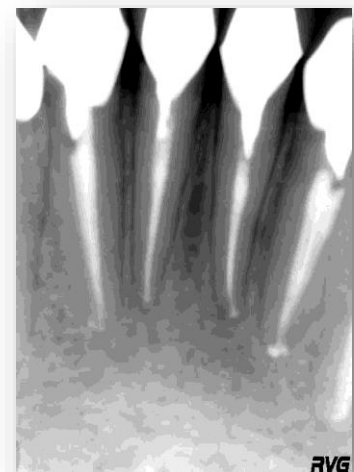
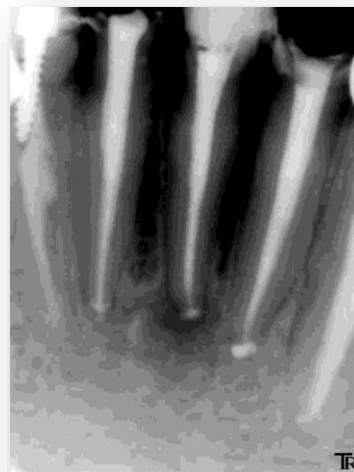
Factors which influence the outcome of treatment

- Radiographic interpretation
- Presence/absence of periradicular pathosis
- Anatomy of the rootcanal system and the external root
- Thorough debridement and apical level of instrumentation
- Degree of apical seal at the cemento-dentin junction
- Degree of coronal seal and coronal restoration
- Disinfection and asepsis of the treatment regimen
- Health and systemic status of the patient
- Clinician's skill and expertise

Abnormal root canal anatomies



Apical level of instrumentation



Loss of coronal seal



The Influence of Certain Factors on the Radiographic Periapical Status of Endodontically Treated Teeth

Category	Number	% of Total	% Success	% Failure
Good Endo & Resto	330.5	32.7	91.4	8.6
Poor Endo & Resto	213	21.1	18.1	81.9
Good Endo Poor Resto	164.5	16.2	44.1	55.9
Poor Endo Good Resto	302	30.0	69.6	30.4



Clinical criteria

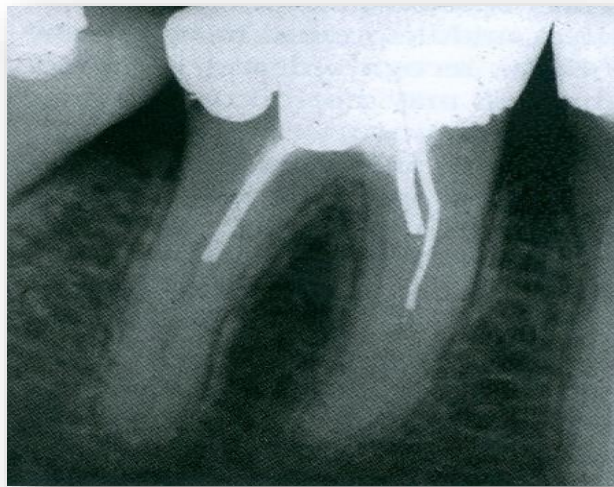
- No TOP, Palpation
- Normal mobility
- No discomfort
- Normal form, function and aesthetics
- No infection/swelling
- No sinus tract



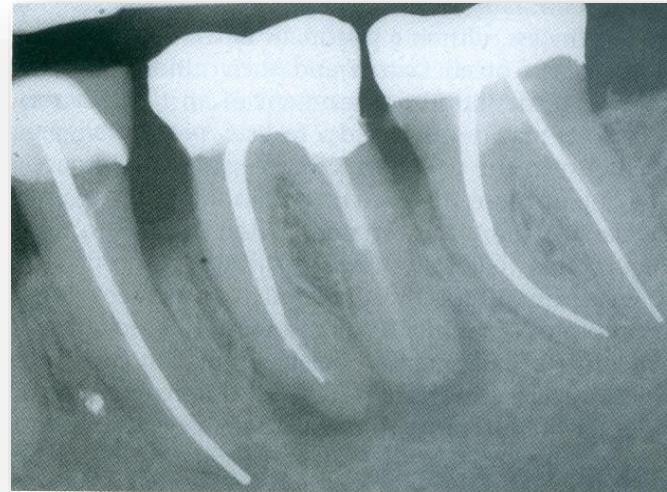
Radiographic criteria for success

- Normal/slightly thickened PL space
- Reduction/elimination of previous rarefaction
- No resorption
- Normal lamina dura
- Dense 3 dimensional obturation of canal space

RADIOGRAPHIC CRITERIA ALONE IS MISLEADING



Tooth is short-filled but symptom-free Must retreat for a successful outcome



All 3 teeth show success and failure. Treatment done 15 yrs ago and patient is asymptomatic. Treatment choice is open to interpretation

**CLINICAL FINDINGS MUST BE INCLUDED IN THE
DECISION MAKING**



Histological criteria for success

- Absence of inflammation
- Regeneration of the PL fibres
- Presence of osseous repair
- Repair of cementum
- Absence of resorption
- Repair of previously resorbed areas

SHOULD WE WORRY ABOUT HISTOLOGIC OUTCOMES???

- 1967, study by BYRNOLF reveals:
 - complete healing occurred in a small %-7%
 - chronic infection persisted in the other 93%
- Several studies have supported this concept that
PATIENT CAN EXIST IN A STATE OF CHRONIC INFLAMMATION WITHOUT MEASURABLE SYMPTOMS



How long will you evaluate a treated case??

ANNUALLY for a minimum of 4 yrs

DOES THIS HAPPEN USUALLY?

-NO!

Pt education and communication-essential to achieve high levels of compliance and long-term treatment evaluation

Will an acceptable outcome change to an unacceptable outcome?


YES, it can, usually due to non-endodontic reasons like

1. Fracture
2. Recurrent decay-coronal leaks
3. Advancing periodontal disease
4. Root abrasion/erosion
5. Traumatic occlusion



Case selection for retreatment

- Careful history of the patient
- Evaluate the anatomy of the RC
- Evaluate the quality of the primary obturation
- Check for iatrogenic complications
- Consider the co-operation of the patient

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- If RC treated tooth remains tender even if there are no opposing teeth, then treatment may be unacceptable.
 - Vertical fracture can present without radiographic changes:- fractures on the B and L side of the root may not cause sufficient bone loss to affect the Xray image.
 - Recently completed root canal treated tooth may show some tenderness to percussion.

Here, a diagnosis of unacceptable treatment is immature.

Symptoms of failure do not appear until months after completion of treatment. This inflammation is usually associated with either lack/loss of apical seal/remnants of pulp tissue.

Waiting and watching is usually appropriate

Discomfort to thermal stimulus





- Usually requires the presence of pulp tissue in the tooth
 - Even if not root-filled, if the pulp has been removed, the tooth cannot respond to thermal stimulus
- 2 possibilities exist:
- (a) untreated canal in the endo-treated tooth
 - (b) discomfort from another tooth



Contraindications for retreatments

- Unfavourable root anatomy
- Presence of untreatable root resorptions, perforations
- Root caries or bifurcation caries
- Insufficient crown/root ratio

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- In an epidemiologic study conducted in USA, the minimum life-span of an endodontically treated tooth in the oral cavity is **8yrs**
 - The combined incidence of **untoward events** such as retreatments, apical surgeries and extractions was **3%** and occurred usually **within 3 yrs of completion of treatment.**
 - Analysis of the extracted teeth revealed that **85% had no full coronal coverage.**

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- The most common reasons for endodontic failure include
-missed canals, coronal leakage, post-placement errors, blocks,
ledges, perforations and transportations, fractures, inadequately
filled canals, separated instruments and resin-based obturating
pastes-**clinician vectored iatrogenesis-nonetheless
preventable**
 - We should be prudent in treatment planning
 - **IT SHOULD NOT BE CONSIDERED DE RIGEUR TO REMOVE
THE FAILURE AND RE_ENGINEER THE DENTITION WITH A
TITANIUM ARTIFICE!**



Endodontic failure Retreat

Case selection for retreatment is based on

1. Restorability of the tooth,
2. Periodontal condition of the surrounding area.
3. Capability of superceding anatomic anomalies like calcifications, obstructions etc
4. The strategic value of the tooth.
5. Economics should be acceptable to patient



Steps in retreatment

1. Coronal disassembly
2. Access to root canal system
3. Remove canal obstructions
4. Establish patency
5. Thorough cleaning, shaping and obturation of the canal



Removal of the existing coronal restoration

- If just a restoration
- If a crown is cemented
- If there is a post and core and then a crown



Post removal

- Weakening the retention of post by using the ultrasonic vibrations
- Forceful pulling of the post but it increases the root fracture
- Removing the post with the help of special pliers using post removal systems

Eg-PRS kits-post removal systems

Posts can be removed by various methods. These are:

1. Weakening retention of posts by use of ultrasonic vibration (Fig. 17.26).

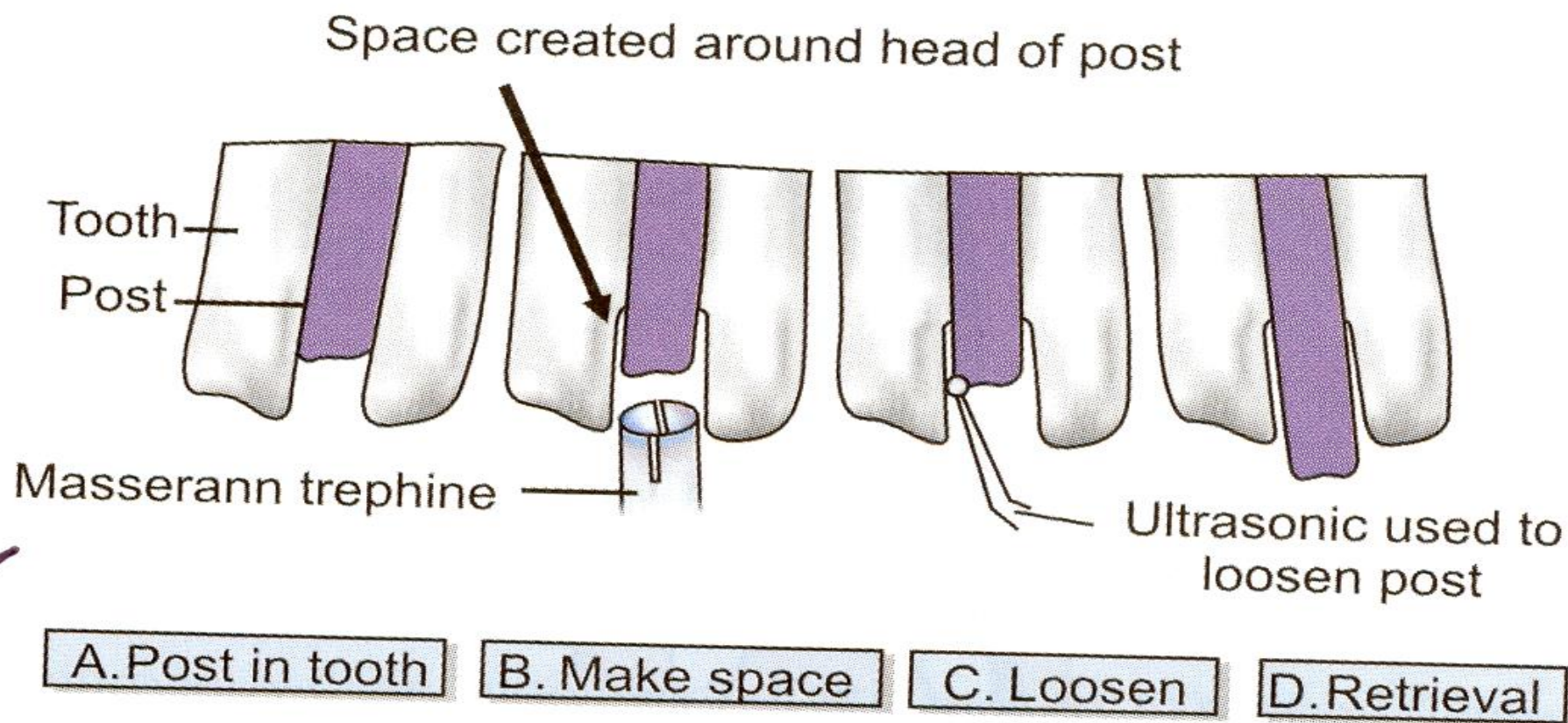


Fig. 17.26: Weakening retention of post using ultrasonic vibration

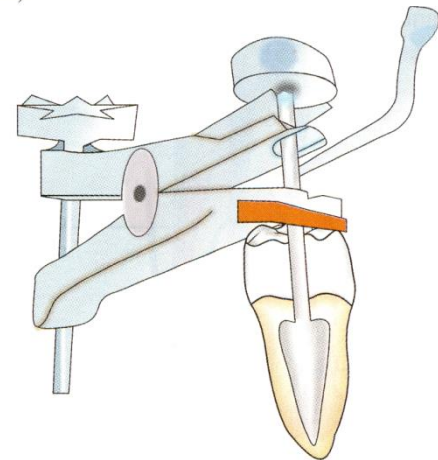
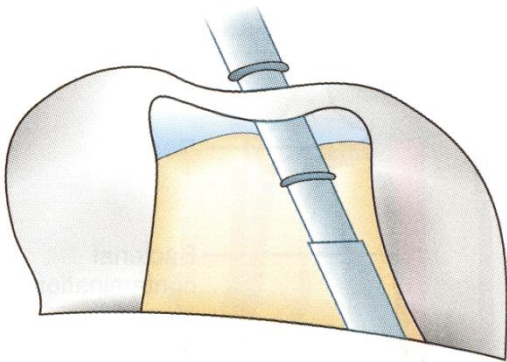
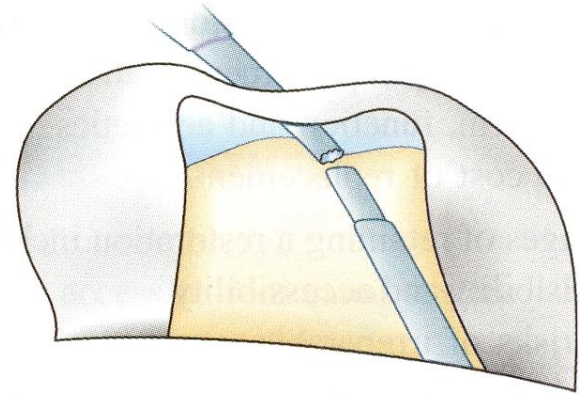
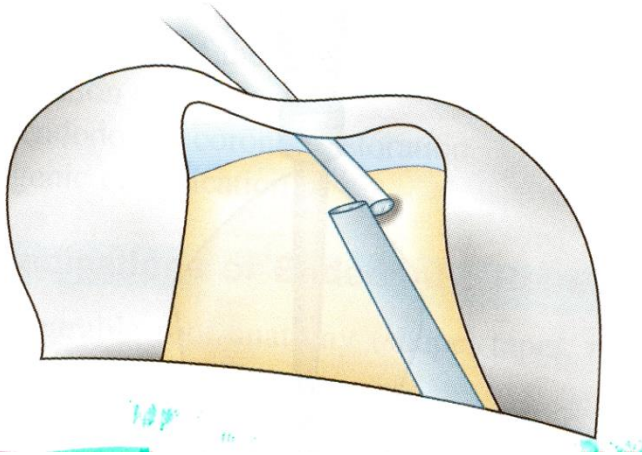
Removal of canal obstructions

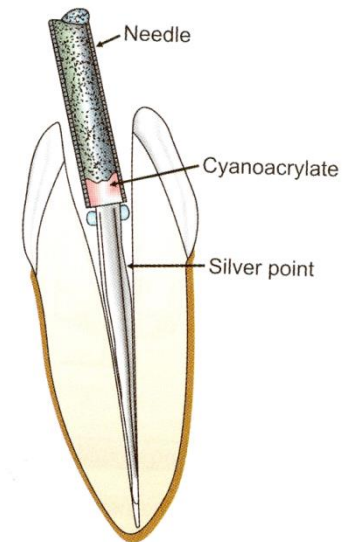
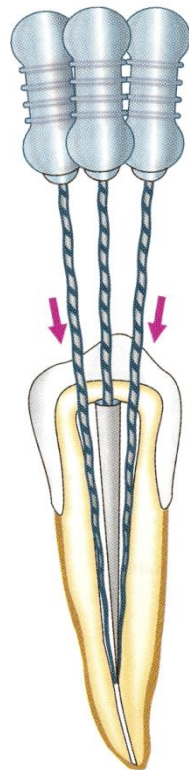
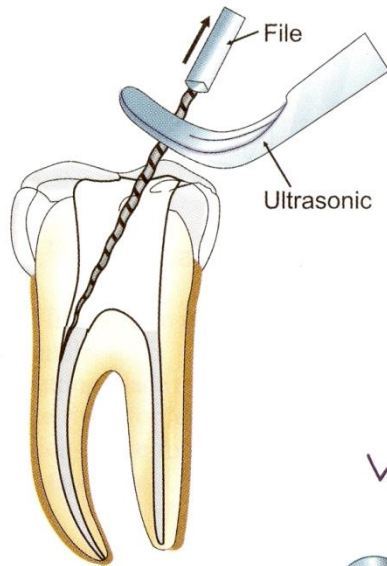
- Obstructions can be in the form of silverpoint, guttapercha, pastes, sealers, separated instruments and posts

Silver points-can be removed by

1. Microsurgical forceps
2. Use of ultrasonics
3. Use of H files
4. Use of hypodermic needle
5. Using instrument removal systems

PRS system





Hypodermic needle is made to fit tightly over the silver point over which cyanoacrylate is placed as an adhesive. When sets, needle is grabbed with pliers



GP removal

- Solvents-
chloroform,benzene,xylene,halothane,eucalyptol,
- Hand instruments-Hedstroem files
- Rotary instruments-

Protaper has recently introduced the D1,D2 and D3 to remove GP

Pastes and cements

- Soft setting cements- usually with the files
- Hard setting-first softened with solvents and then files are used to remove them

-Ultrasonics are used

-Long shank small round burs

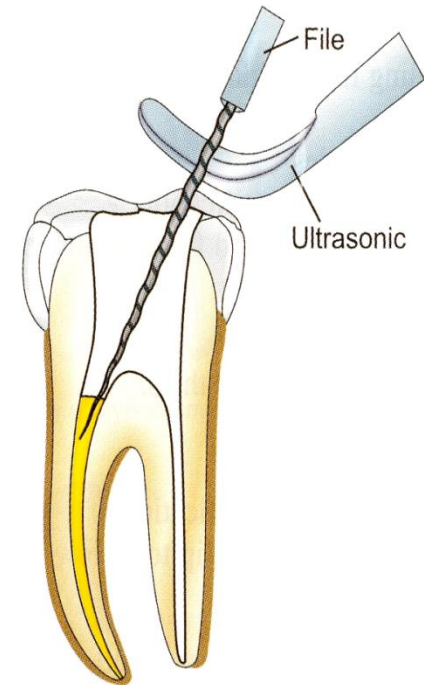


Fig. 17.41: Use of ultrasonics for removal of hard setting cement

Separated Instruments and Foreign Objects

Seperated instruments and foreign objects


- Primary requirement for the removal is accessibility and visibility

- If the instrument is in the

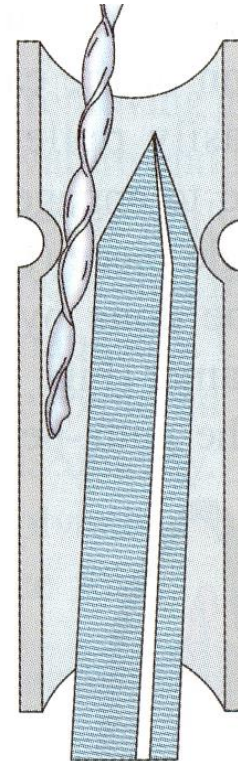
Coronal 3rd-attempt retrieval

Middle 3rd-attempt retrieval/bypass

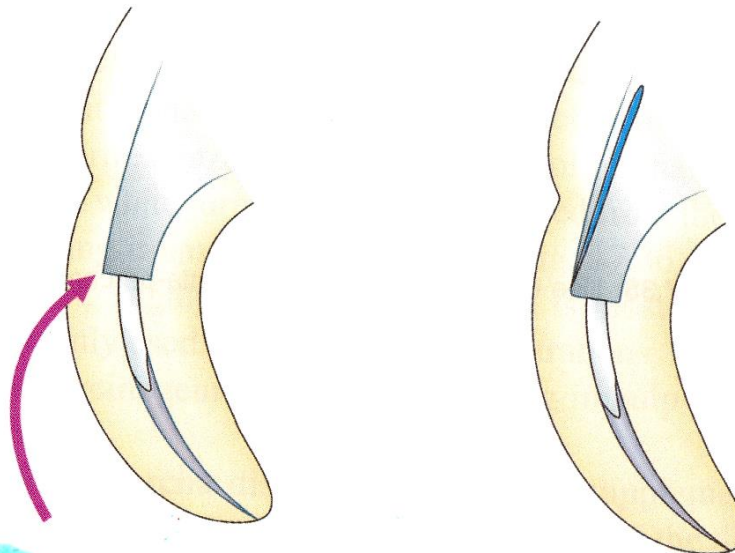
Apical 3rd-leave/surgically remove


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- For instruments broken in the coronal and middle 3rd, it is necessary to recognize how much of the coronal tooth structure should be removed to gain access to the instrument.
 - If dentin thickness is compromised, one should leave the instrument in place
 - If instrument is easily accessible, remove using **Stieglitz plier, Masserman extractor.**

- Masserman extractor-comprises of a tube with a constriction into which a stylet is introduced to grasp the seperated instrument



- Ultrasonics are also used to remove instruments by their vibrations
- Use of the modified gates glidden bur to create a platform, then an ultrasonic tip will be used to remove it



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- When instrument cannot be removed, attempt to bypass and complete the biomechanical preparation
 - Always use irrigation with hypochlorite, H_2O_2 and RC prep which create effervescence and may float the object coronally

Completion of retreatment

- Once patency is achieved complete the case as routine
- Sometimes, re Rx may be difficult due to presence of therapy resistant *Enterococcus faecalis*.
- Canal ,in re Rx should be enlarged slightly more than before to completely remove the residues of previous treatment

Outcomes of re-treatment

- Could be short-term or long-term
- Short-term: maybe post-operative discomfort including pain and swelling
- Long term outcomes depend mainly on regaining canal patency and the obturation of the root canal system

It has often been seen that re-treatment is mainly associated with procedural complications rather than the primary treatment.

EFFECTIVE COMMUNICATION BETWEEN THE CLINICIAN AND PATIENT ABOUT POTENTIAL PROBLEMS SHOULD BE DISCUSSED BEFORE RE-TREATMENT IS INITIATED



Life isn't about waiting for the storm to pass.
It's about learning to dance in the rain.

Thankyou



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