

Endodontic failures and Re-treatment II



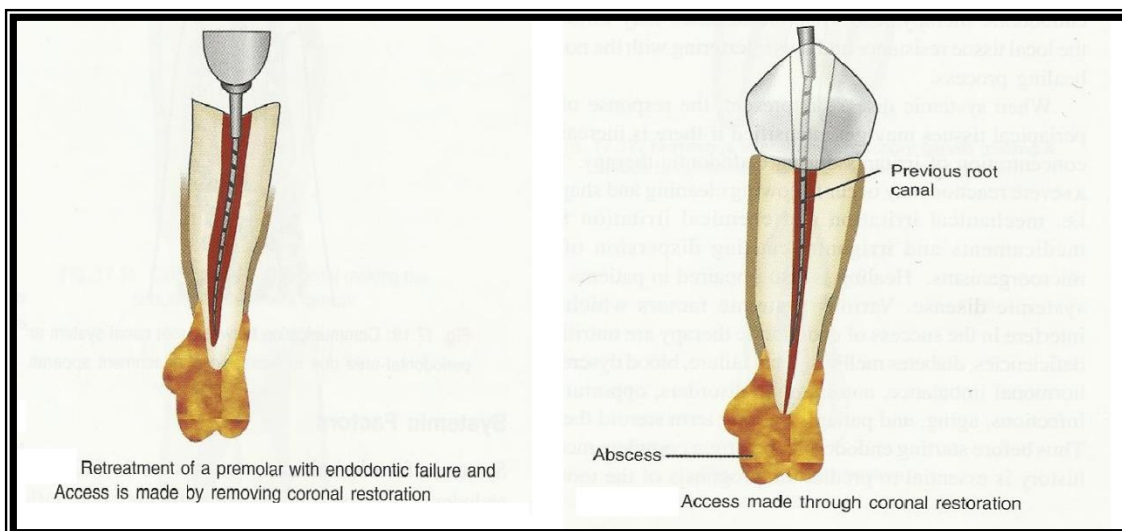
أ.د. بلند محمد سليم شكري

STEPS OF RETREATMENT

- 1- Coronal disassembly
- 2- Establish access to root canal system
- 3- Remove canal obstruction
- 4- Establish patency
- 5- Thorough cleaning, shaping, and obturation of the canal

Coronal Disassembly

Endodontic retreatment procedures commonly require removal of the existing coronal restoration, but in some cases access can be made through existing restoration.

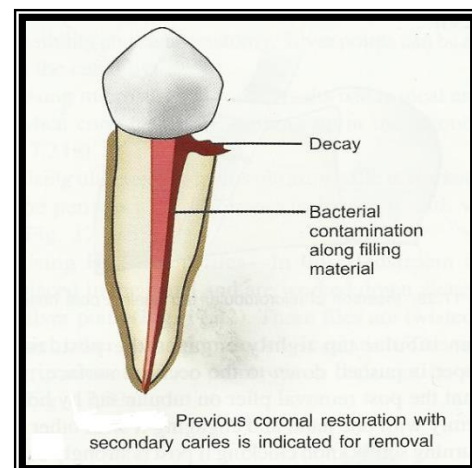


Gaining access through original restoration helps in:

- . Facilitate rubber dam placement
- . Maintaining form, function and aesthetics
- . Reducing the cost of replacement

But disadvantage of retaining a restoration include

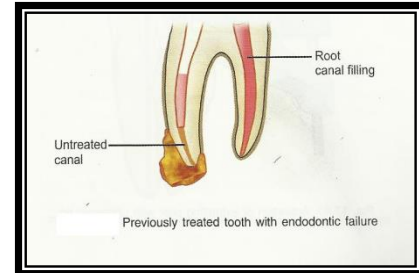
- . Reduce visibility and accessibility
- . Increase risks of irreparable errors
- . Increase risks of microbial infection if crown margins are poorly adapted.



It is advisable to remove the existing restoration especially if it has poor marginal adaptation, secondary caries to avoid procedural errors. To maintain form, function and aesthetics, temporary crown can be placed.

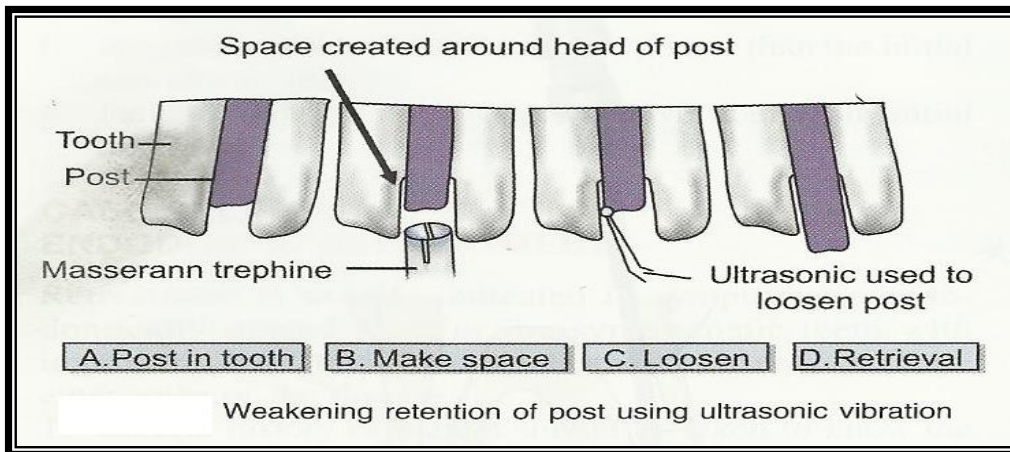
Establish Access to Root Canal System

Some teeth are with post and core which need to be removed for gaining access to root canal system or sometimes they can be perforated to gain access



Posts can removed by various methods, these are:

1. Weakening retention of posts by ultrasonic vibration

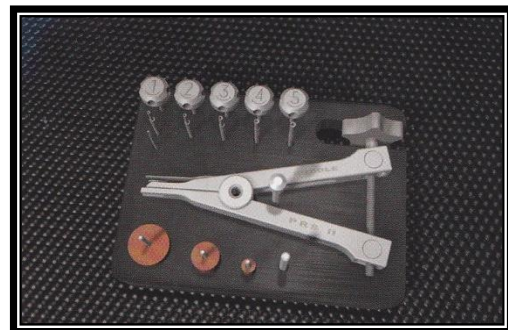


2. Forceful pulling of posts but it increases the risk of root fracture.

3. Removing posts with the help of special pliers using post removal systems.

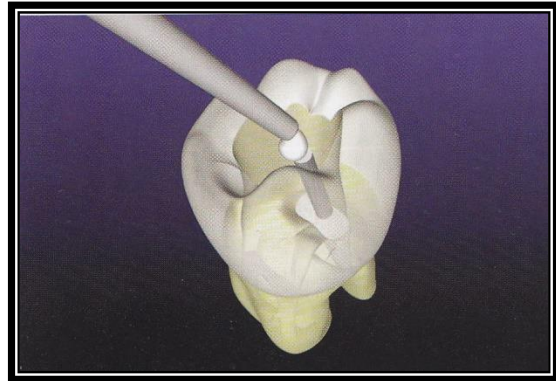
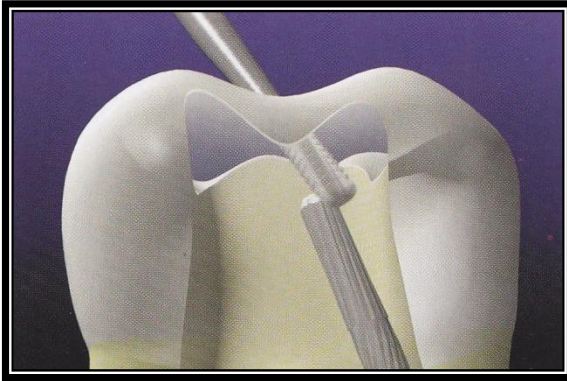
4. Occasionally access can be made through the core for retreatment procedure without disturbing the post.

The Post Removal System (PRS) simplified the removal of post from the canal. For use of PRS kit, one should have straight line access to the canal and also the post should be easily visualized from the chamber.

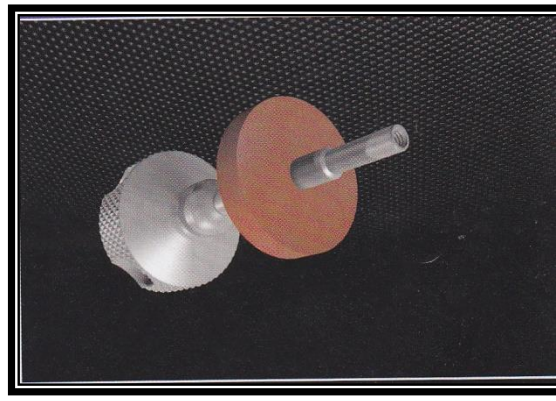
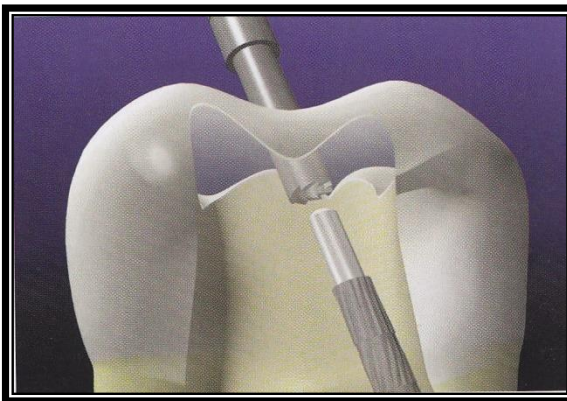


PRS Kit consists of five variously designed trephines and corresponding taps, a torque bar, a transmeatal bur, rubber bumpers and extracting pliers.

1. Initially a transmeatal bur is used for efficiently dooming of the post head.
2. Then a drop of lubricant such as RC Prep is placed on the post head to further facilitate the machining process.

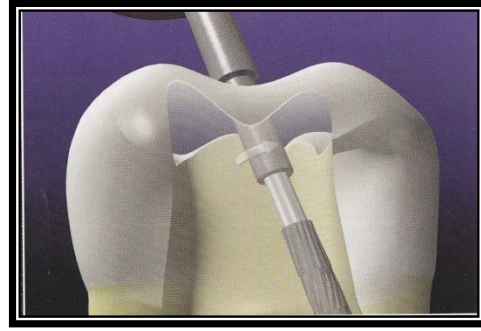


3. After that select the largest trephine to engage the post and to machine down the coronal 2-3 mm of the post.
4. Followed by a PRS microtubular tap is inserted against the post head and screwed it into post with counter clockwise direction. Before doing this rubber bumper is inserted on the tap to act as cushion against forces.

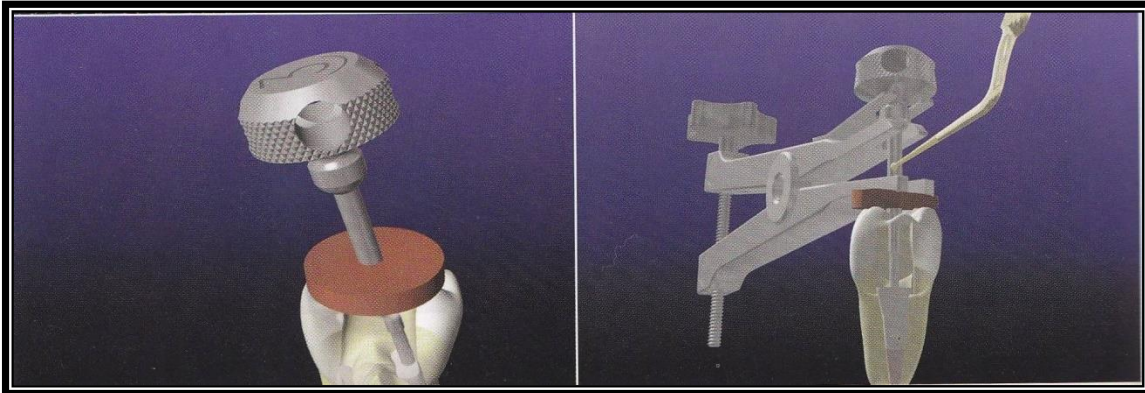


5. When tubular tap tightly engages the post, rubber bumper is pushed down to the occlusal surface.

6. Mount the post removal plier on tubular tap by holding it firmly with one hand and engaging it with other hand by turning screw knob clocking if post is strongly bonded in the canal, then ultrasonic instrument is vibrated on the tap or a torque bar is inserted onto the handle to increase the leverage, thereby facilitating its removal.



7. After that select an ultrasonic tip and vibrate it on the tubular tap, this cause screwed knob to turn further and thus help in post removal.



Removing Canal Obstructions and Establishing Patency

Patency of canal can be regained by removing obstructions in the canal which can be in the form of silver points, gutta-percha, pastes, sealers, separated instruments and posts etc.

1. Gutta-Percha Removal

The relative difficulty in removing gutta-percha is influenced by length, diameter, curvature and internal configuration of the canal system. Irrespective of the technique gutta-percha is the best removed from root canal in progressive manner to prevent its extrusion periapically. Coronal portion of gutta-percha should always be explored by Gates Glidden to:

- . Remove gutta-percha quickly

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- . Provide space for the solvent
- . Improve convenience form

Gutta-Percha can be removed by:

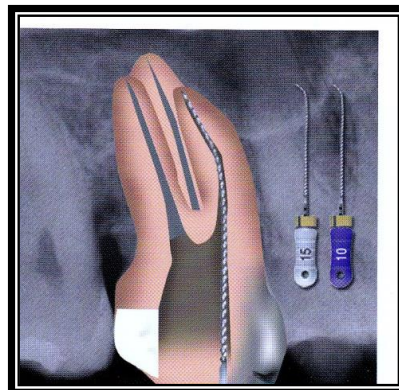
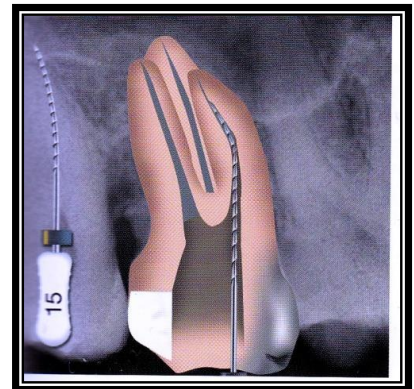
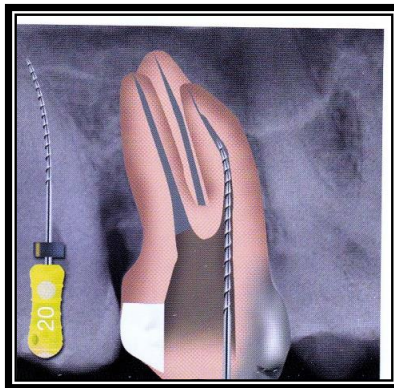
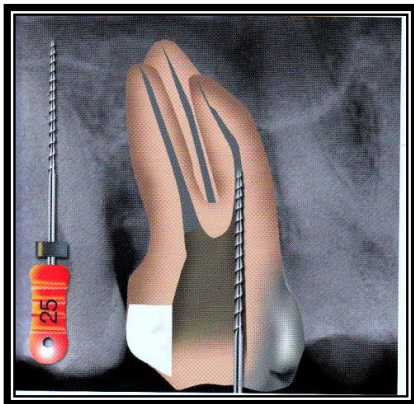
- a. Using solvents
- b. Using hand instruments
- c. Using rotary instruments
- d. Using microdebrider

A. using of solvents to remove Gutta-Percha

Since it has been seen that gutta-percha is soluble in chloroform, methyl-chloroform, benzene, xylene, eucalyptol oil, halothane and rectified white turpentine, it can be removed from the canal by dissolving it among these solvents.

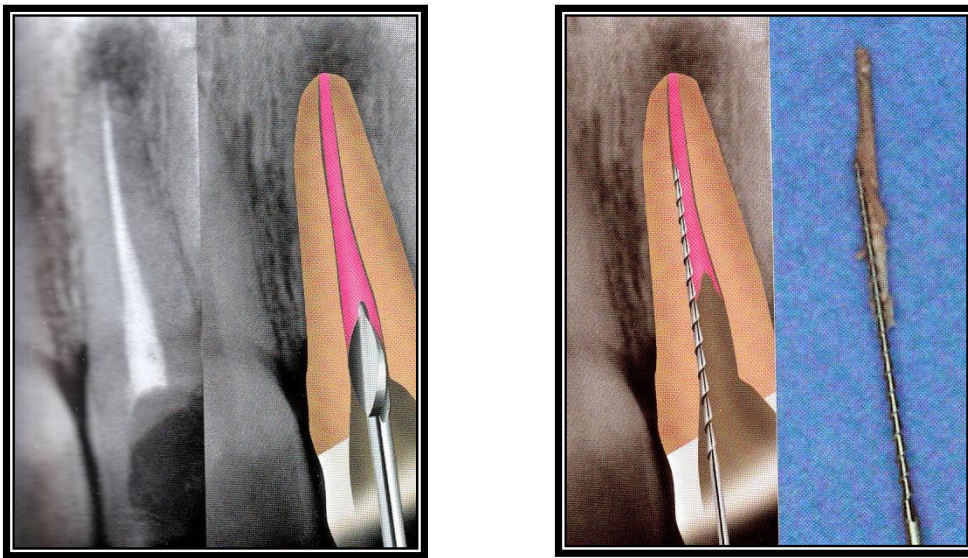
Being highly volatile, chloroform is most effective so commonly used. Since at high concentrations, it has shown to be carcinogenic, its excessive filling in pulp chamber is avoided.

Gutta-Percha dissolution has to be supplemented by further negotiation of the canal and removing the dissolved material from it.



B. Using of hand instruments:

Hand instruments are mainly used in apical portion of the canal. Poorly condensed gutta-percha can be easily pulled out by using of files. Hedstoem files are used to engage the cones so that they can be pulled out in single piece. Removal of gutta-percha can also be done by using hot endodontic instrument like file or reamer. Reamers or files can be used to bypass the gutta-percha sometimes. With over extruded cones, files sometimes have to be extended periapically to avoid separation of the cone at the apical foremen. Sometimes cones which get separated at apex may not be retrieved.



C. Use of rotary instrumentation:

Rotary instruments are safe to be used in straight canals. ProTaper universal Re-treatment files were introduced as a Re-treatment systems consisting of D1, D2 and D3 to be used at 500-700 rpm.



D1 file:

. Removes filling from coronal third

D2 file:

. Removes filling from middle third

D3 file:

. Removes filling from apical third

D-Using microdebrideres:

These are small files constructed with 90 degrees bends and are used to remove any remaining gutta-percha on the side of the canal walls or isthmuses after the preparation.

2. Pastes and Cements

Pastes or cements can be varying consistency and hardness.

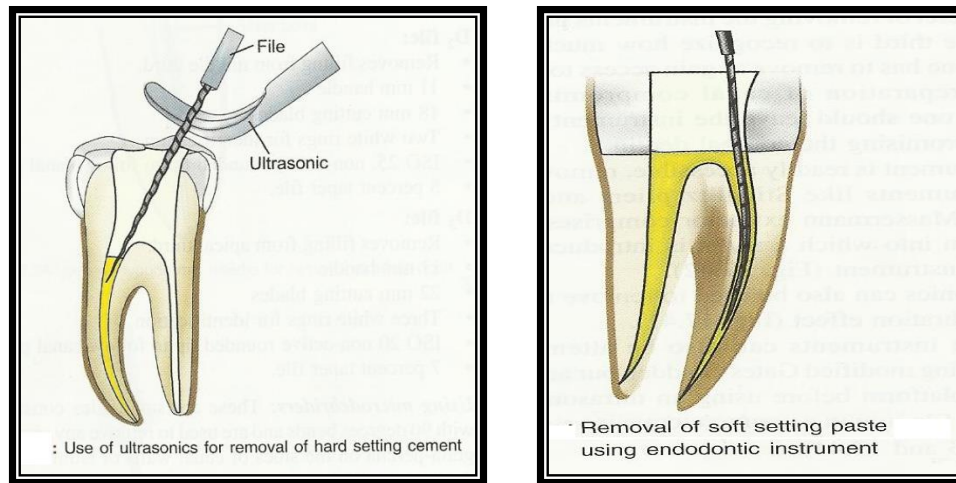
A. Soft setting pastes

Can be removed using the normal endodontic instruments preferably using crown down technique.

B. Hard setting cements

Like resin cements can be first softened using solvents like xylene, eucalyptol etc. and then removed using endodontic files. Ultrasonic endodontic devices can also be used to breakdown the pastes by vibrations

and thus facilitate their removal. Hard setting pastes can also be drilled out using long shank, small round bur.

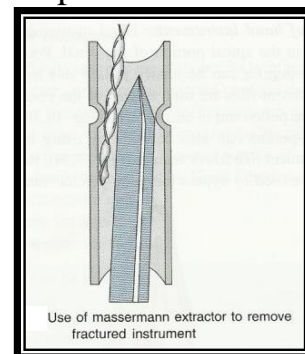


3. Separated Instruments and Foreign Objects

Broken instruments or foreign objects can be retrieved from the canals but primary requirement for their removal is their accessibility and visibility. So, we one can say that if root canal obstructed by foreign object in coronal third then attempt retrieval, in middle third, attempt retrieval or bypass and if it is in apical third leave or surgically treated.

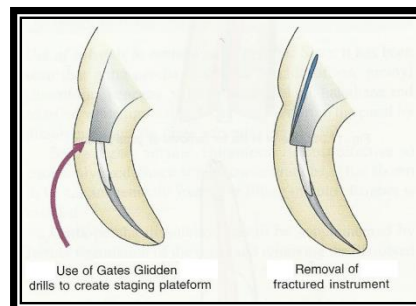
The secret of removing the instruments broken in coronal and middle third is to recognize how much coronal tooth structure one has to remove to gain access to the instrument. If over preparation of canal compromises the dentin thickness, one should leave the instrument in place rather than compromising the coronal dentin. If instrument is readily accessible, remove it by holding with instruments like Stieglitz pliers and Massermann extractor. Massermann extractor comprises a tube with a constriction into which a stylet is introduced to grasp the fracture instrument. Ultrasonics can also be used to remove the instruments by their vibration effect. Broken instruments can also be attempted for their removal using modified Gates

Gladden bur and then creating a staging platform before using an ultrasonic tip to rotate around the file in counterclockwise direction to remove it. When it is not possible to remove the foreign objects, attempts should be made to bypass the object and complete biomechanical preparation of the canal



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system. Bypass of instrument can be attempted using hand instrument like reamers and files. These instruments are inserted alongside the broken instrument to soften its cementation and thus facilitating its removal. While making efforts to bypass the instrument, copious irrigation is needed. Irrigation with sodium hypochlorite,



Hydrogen peroxide and RC Prep may float the object coronally through the effervescence they create. Use ultrasonic K-file No.15 or 20 with vibration and copious irrigation may also pull the instrument coronally.