

Day: MTWTF<sup>✓</sup>FS

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PROGRAM: BS(D.T)

PAPER : OPERATIVE  
DENTISTRY.

SUBMITTED TO: SIR  
USMAN

SEMESTER : 8<sup>th</sup>.

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QNO: 1

PART: A

Write possible outcomes  
for missed root  
canal.

ANSWER:-OUTCOMES OF MISSED  
ROOT CANAL:-

- > Adverse effect on endodontic outcomes.
- a- Associated with periapical lesion.
- b- Severe pain
- c- Disruption of Lamina dura.
- d- Failed Root Canal treatment.
- e- Post operative Periapical
- f- Improper coronal seal (leakage)

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Lesion

OR:-

There's a high prevalence of periapical lesions when we missed and untreated canals that causes endodontics failure. This influences the prognosis of an endodontically treated teeth. For this reason is so important to have knowledge about the teeth anatomy, root canal configurations and possible variations, before starting an endodontic treatment.

~~lesion.~~

QNO: 1

PART: B.

A patient came for root canal treatment of maxillary 2<sup>nd</sup> molar during procedure breakage of file occur in the canal. Manage the whole procedure.

ANSWER:-

The four treatment protocols have been suggested by a literature for management of fractured instruments in roots canal.

- 1- Allowing the separated instrument to ~~the~~ be retained in the canal and treating the canal.
- 2- By passing the separated fragment and treating the canal.

3- Retrieving the separated fragment and treating the canal.

- Surgical approach of retrieval of separated fragment by treatment accordingly-

### BREAKAGE OF FILE IN THE ROOT CANAL:-

- This is an unfortunate but a known cause of failure of RCT where the file used to perform RCT is broken in the canals which lead to breakage of the instruments due to excessive torsion force being applied.

- In ~~most~~ most cases if the instrument is removed and re-RCT performed or the file is bypassed which can be done by an

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endodontist with a microscope the tooth can be save from f use infection.

### PERIODONTAL OR GUM INFECTION:-


In some rare case it is seen that a periodontal or gingival infection like periodontitis or gingivitis can lead to infection of the root canal which is terms as perio-endo lesion.

OR.

The file should be removed by the one following procedure and the perform root canal treatment.

### CHEMICAL SOLVENTS:-

→ The use of EDTA has been suggested as a method

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of softening root canal wall dentin around separated instruments, facilitating the placement of files for the removal of the fragment.

- Other chemical such as iodine trichloride, nitric acid, hydrochloric acid, sulfuric acid, crystals of iodine, iron chloride solution, nitrohydrochloric acid, and potassium iodine solutions have historically been used to achieve intentional corrosion of metal objects.  
→ However for obvious reason such as irritating the periapical tissue, they are no longer in use.

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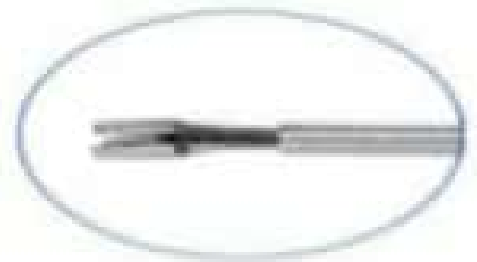
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## MINIFORCEPS:-

In the presence of sufficient space within the root canal system, an instrument separated in a more coronal position of the root canal can be grasped and removed by using forceps such as sterglitz forceps.



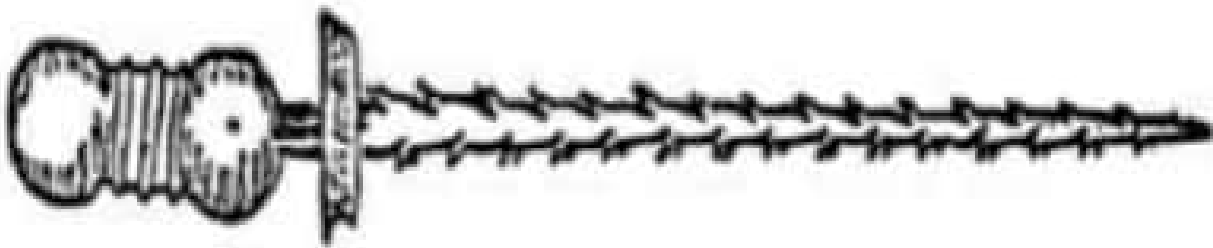


Q10-100  
Endobronchial retractor Forceps

## BROACH AND COTTON:-

→ If the separated fragment is a barbed broach and not tightly wedged in the root canal, another small barbed broach with a small piece of cotton with roll twisted around it can be inserted inside the root canal to engage the fragment; then the whole assembly is withdrawn.

## Barbed Broach



## WIRE LOOPS:-

A wire loop can be formed by passing the 2 free ends of a 0.14mm wire through a 25-gauge injection needle from the open end until they slide out of the hub end. By using a small mosquito hemostat, the wire loop can be tightened around the upper free part of the fragment, and then the whole assembly can be withdrawn from the root canal.

## BRAIDING OF ENDODONTIC FILES:-

- A Hedstrom or K type file(s) can be inserted into the root canal to engage with the fragment and then withdrawn. This method can be effective when

the fragment is positioned deeply in the canal and not visible and the clinician is relying on tactile sense, or the fragment is loose, but cannot be retrieved by using other means.

- The largest possible size of files should be used with caution because of the possibility of separation of the braided files.



## ULTRASONICS:-

- a) Ultrasonics instruments have a contra-angled design with alloy tips of different lengths and sizes to enable use in different parts of the root canal. Most ultrasonic instruments have an SS core coated with diamond or zirconium nitride; therefore, the instruments abrade along its sides in addition to its tip.

## SOFTENED GUTTA PERCH:-

- ) Rahimi and Parashos reported a novel, but simple, technique to remove loose fragments located in the apical third of the root canal by using softened gutta-percha (GP) points.

- SS Hedstrom files #8, #10, and #15 are initially used to partially bypass the fragment to check that it is loose. Then, the apical 2-3mm of a size 40, 0.04 taper GP point of different size and taper according to the canal accommodating the fragment, is clipped in chloroform for approximately 30 seconds.
- The softened GP is then inserted to the maximum extent into the canal and is allowed to harden for approximately 5 minutes. The GP point and the H fragment action. This conservative technique may assist in removal of loose fragments that are not easily accessible while using other removal techniques.



## LASER RADIATION:-

The Nd:YAG laser has been tested recently in laboratory studies for removal of separated instruments.

→ Also heat generated within the root canal can carbonize or even burn dentin, which in turn may disturb the close contact or bond b/w the filling materials and root canal walls.

Dislodgment of ret

QNO: 4

Differentiate all types of pontic thoroughly.

ANSWER:-

PONTIC:-

An artificial tooth on a fixed dental prosthesis that replaces a missing natural tooth, restores its function, and usually fills the space previously occupied by the clinical crown.

Tylman. Pontic is the suspended member of a fixed partial denture, it replaces the lost natural tooth, restores function, and occupies the spaces of the missing tooth.

## IDEAL REQUIREMENTS:-

- Smooth surfaced and convex in all directions
- Easily cleansable
- Pinpoint pressure free contact on the ridge.
- No irritation to the gingival tissues.
- Restore function
- No abutment overloading
- Color stable.

## FUNCTIONS:-

- Mastication
- Speech
- Esthetics.

## MUCOSAL CONTACT:-

- Ridge lap
- Modified ridge lap.
- Ovate
- Conical.

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## NO MUCOSAL CONTACT:-

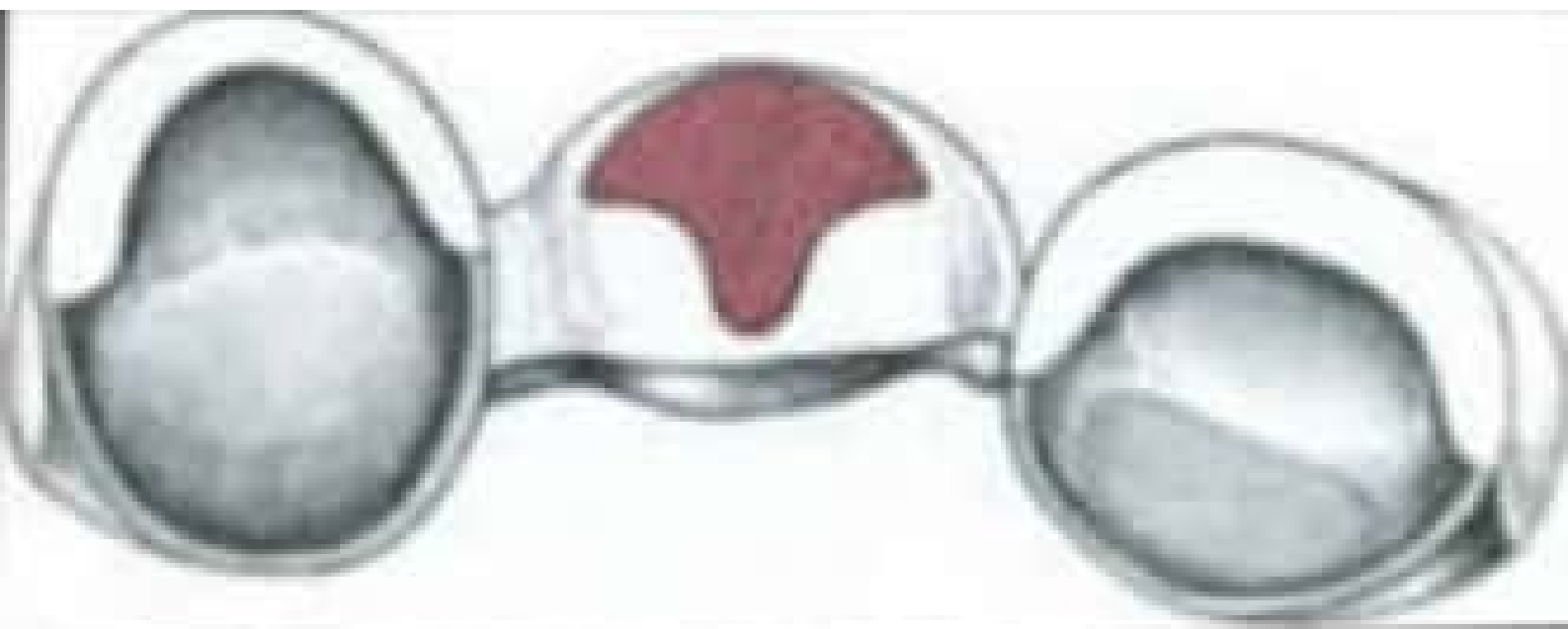
- Sanitary (hygienic)
- Modified Sanitary

## TYPES OF PONTICS:-

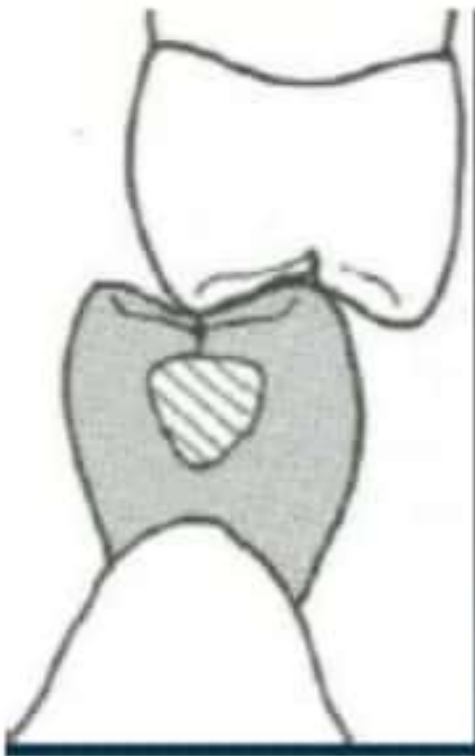
- 1- Ridge Lap Pontic
- 2- Modified ridge lap pontic
- 3- Ovate pontic
- 4- Conical pontic
- 5- Modified Sanitary
- 6- No Mucosal contact.

## MODIFIED RIDGE PONTIC:-

The modified ridge lap pontic combines the best features of the hygienic and saddle pontic designs, combining esthetics with easy cleaning



# Ridge lap pontic



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## OVATE PONTIC:-

The ovate pontic is the most esthetically appealing pontic design, its convex tissue surface resides in a soft tissue ~~surface~~ depression or hollow in the residual ridge, which make it appear that a tooth is literally emerging from the gingiva. Careful treatment planning is necessary for successful results.

# × Ovate pontic





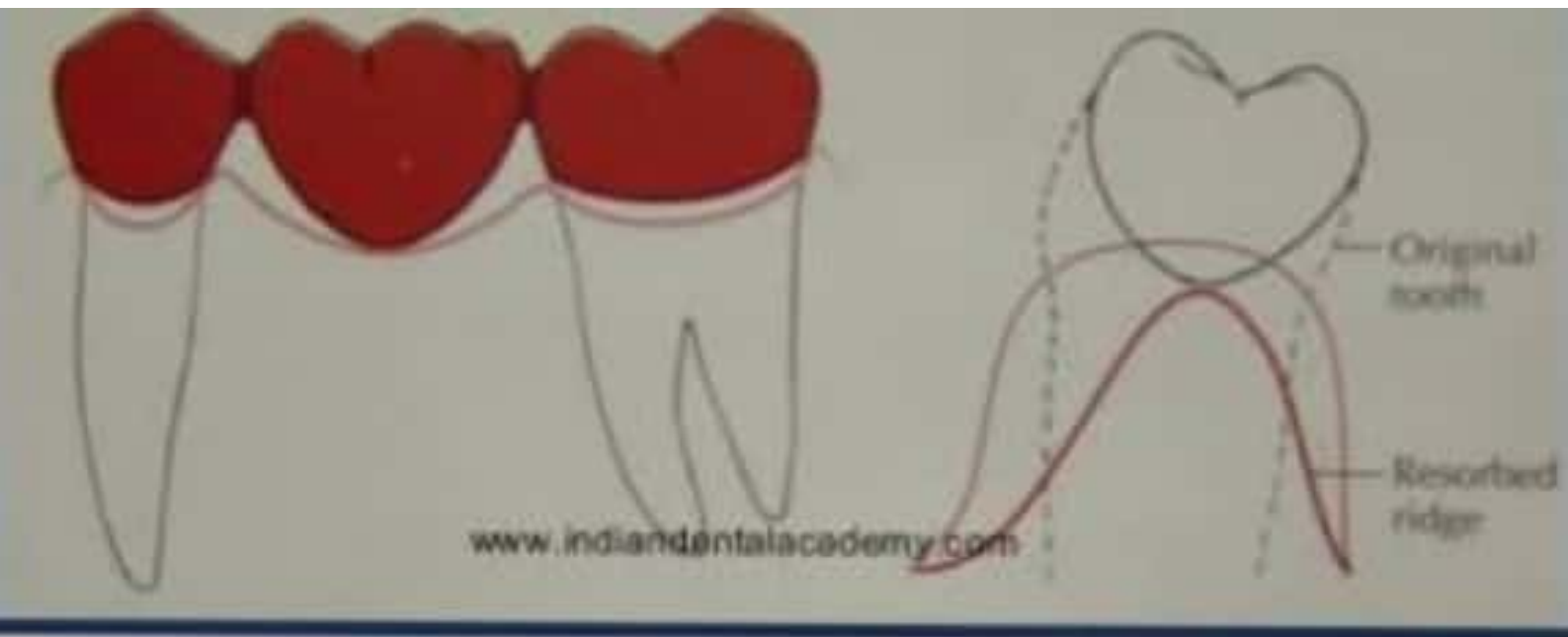
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## CONICAL PONTIC :-

often called egg-shaped, bullet-shaped or heart-shaped, the conical pontic is easy for the patient to keep clean. It should be made as convex as possible, with only one point of contact at the center of the residual ridge. This design is recommended for the placement of mandibular posterior teeth where esthetics is a lesser concern.



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# NO-MUCOSAL CONTACT

Sanitary (hygienic)  
Modified Sanitary

QNO: 5

Classify dental bridges and explain its types.

ANSWER:-

DENTAL BRIDGES:-

Dental bridges, also called tooth bridges, are placed when patients have one or more teeth missing or have gaps between their teeth. It usually takes two visits to get dental bridges fitted. ~~the~~ and the procedure takes about two hours.

OR

Any dental prosthesis that is luted, screwed or mechanically attached to natural teeth, tooth roots and or implant abutments that furnish primary support for dental prosthesis.

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A bridge is a fixed dental restoration used to replace one or more missing teeth by joining an artificial tooth definitively to adjacent teeth or dental implants.

### MATERIALS FOR CONSTRUCTION OF DENTAL BRIGES:-

The following materials are used for dental bridges

- Metal
- Metal ceramic
- All-ceramic
- Acrylic.

### DIFFERENT TYPES OF DENTAL BRIDGES:-

There are 4 main types of dental bridges.

- 1- fixed - fixed bridge
- 2- fixed movable bridge
- 3- cantilever bridge
- 4- resin bonded bridge (conservative bridge)
- 5- Spring cantilever bridge

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## 1- FIXED FIXED BRIDGES:-

In this type of the pontic is attached to the retainers (mesial and distal) by rigid connectors (solid joint) so they should have one path of insertion. This is the most commonly used ~~FD~~ FPD.

### ADVANTAGES:-

- 1- Maximum retention and support.
- 2- Abutment teeth are splinted together.
- 3- The design is most practical for larger bridges.

### DISADVANTAGES:-

- 1- Require preparation to be parallel.
- 2- All the retainers are major retainers and require extensive destruction preparation of the abutment teeth.
- 3- Has to be cemented in on place.



## 2- FIXED MOVABLE BRIDGE-

In this type of pontic is attached to one distal major retainer (distal end of the pontic) by fixed connector & while the other end is attached to the minor retainer (in front of front of pontic) by movable joint. It is indicated in case of drifted abutment teeth and difficulty to obtaining parallel abutments.

### ADVANTAGES:-

- 1- Preparations do not need to be parallel to each other
- 2- More conservative of tooth tissue because preparations for minor retainers are less destructive
- 3- Parts can be cemented separately.
- 4- Allow flexure of mandible



## DIS ADVANTAGES:-

- 1- More complicated to construct in laboratory than fixed bridge.
- 2- Difficult to make temporary bridge.
- 3- More space
- 4- Food impaction

## 3. CANTILEVER BRIDGE:-

It's a kind of minimal preparation bridge. It provides support for the Pontic at one end only. The pontic may be attached to a single retainer or two or more retainers splinted together e.g. Maryland bridge, Rochette bridge.

## ADVANTAGES:-

- Preserve tooth structure
- Minimal pulp trauma
- Rebond possible.



**DISADVANTAGES:-**

- Length of span is limited to one pontic only.
- Occlusal forces on the pontic encourage ~~fit~~ tilting of abutment tooth.
- Not successful for posterior prosthesis.

**4. SPRING CANTILEVER BRIDGES:-**

- They are restricted to the replacement of upper incisor teeth. Only one pontic should be supported by a spring cantilever bridge.

**ADVANTAGES:-**

- Restoration of spaced dentition

**DISADVANTAGES:-**

- Food impaction under metal connectors
- Dislodgment of retainer



QNO: 3

A patient come to your your clinic with incomplete root formation of mandibular 9<sup>st</sup> molar.

Diagnose the problem and manage its  
ANSWER:- <sup>stepwise.</sup>

This condition is the apexification.

**MANGEMENT OF APEXIFICATION:-**

**STEPS OF TECHNIQUE:-**

- 1- The affected tooth is carefully isolated with a rubber dam, and an access opening is made into the pulp chamber





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2 A file is placed in the root canal, and a radiograph is made to establish the root length accurately. It is important to avoid placing the instruments through the apex, which might injure the epithelial diaphragm.

3- After the remnants of the pulp have been removed using barbed broaches and files, the canal is flooded with hydrogen peroxide to aid in the removal of debris. The canal is then irrigated with sodium hypochlorite and saline.





4- The canal is dried with absorbent paper points and loose cotton.

5- A thick paste of calcium hydroxide is transferred to the canal. An endodontic plugger may be used to push the material to the apical end but excess material should not be forced beyond the apex.

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6- A cotton pledget is placed over the calcium hydroxide, and the seal is completed with a layer of reinforced zinc oxide - eugenol cement.

One month after initial treatment



C

- Six months after initial treatment.
- The root canal is then reopened to determine whether the for a conventional gutta-percha filling.



D

- five months after the placement of the gutta-percha canal filling.

If apical closure has not occurred in 6 months, the root canal is retreated with the calcium hydroxide paste. If weeping in the canal was not controlled before the canal was filled, retreatment is recommended 2 or 3 months after the first treatment.





## STEPS OF TECHNIQUE:-

### USING MTA:-

- The canal has been opened, rinsed with 5% sodium hypochlorite, dried, and calcium hydroxide was then placed in the canal for 1 week.
- 7 days after initial treatment with calcium hydroxide, the incisor was instrumented to ~~see~~ remove calcium hydroxide and all the remaining tissue before further treatment.
- The apical 4 to 5 mm of the incisor root has been filled with mineral trioxide aggregate (MTA).
- A moist cotton wool pledget was then placed in the canal overnight and the system

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temporarily sealed during  
using thermoplasticized gutta-  
percha using obturation,  
and a zinc oxide/eugenol  
dressing.

- Check radiograph was  
obtained to evaluate the  
apical seal.

- The gutta-percha and  
cotton wool pledget a  
definitive root-filling  
placed coronal to the  
MTA using thermoplasticiz-  
ed gutta-percha.

- The incisor has completed  
initial treatment with  
MTA. A temporary restoration  
has been placed to seal  
the canal canal opening.

- At the 6 month and 1 year follow ups,  
the clinical and radiographic appearance  
of the teeth showed resolution  
of the periapical lesions.

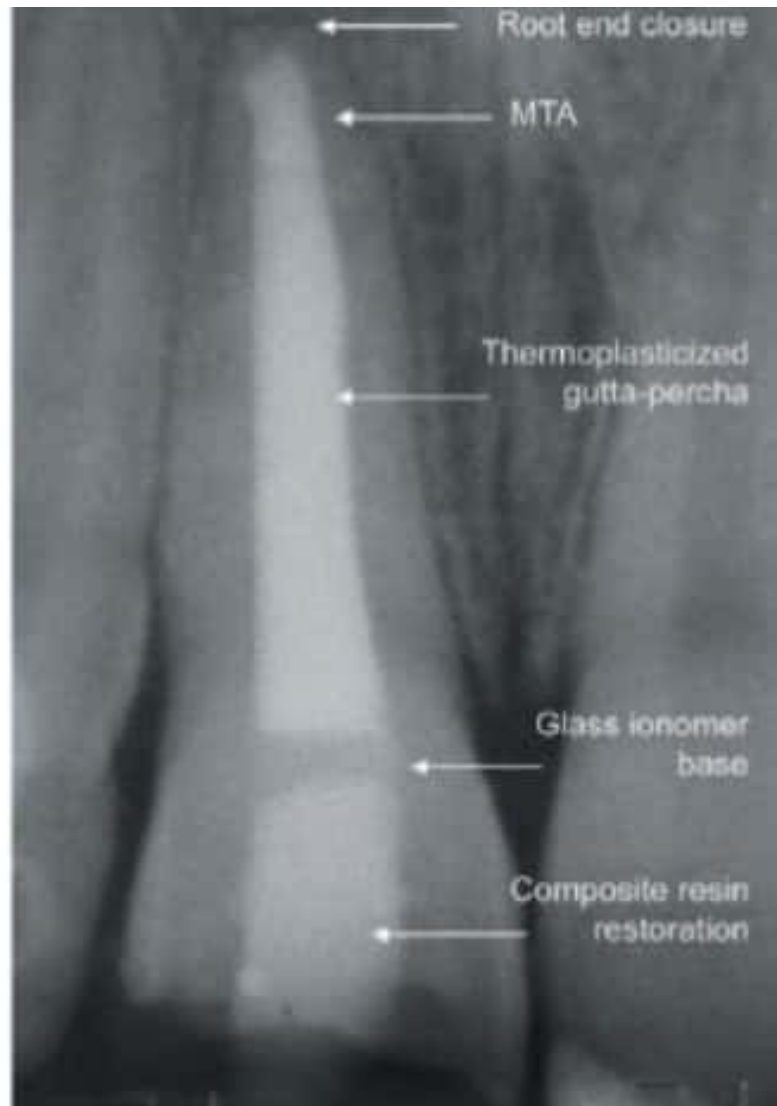
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QNO: 2

Clinically explain root canal procedure with box maxillary 2<sup>nd</sup> mol 1<sup>st</sup> premolar.

ANSWER:-

First the patient will prepare for the RCT.

ISOLATION WITH RUBBER DAM:-

- Isolation of the tooth is accomplished with a rubber dam.
- The rubber dam will be
- Keeps bacteria in the saliva from entering into the tooth.
- They will prevent debris, instruments etc from going down the patient's throat.
- The rubber dam will also protect the other healthy

teeth.

## HIGH-TECH INSTRUMENTS.

- Rotary nickel-titanium (NiTi) files.
  - Efficient way to clean the canal system, significantly reducing operating time
  - Able to navigate curved canals due to their flexure



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## CLEANING THE ROOT CANAL:-

- We use many instruments of different sizes and different shapes to properly clean and shape your specific root canal anatomy.



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## DISINFECTION OF THE ROOT CANAL:-

- Sodium hypochlorite is one of the disinfectants used to reduce the bacteria load within the tooth.
- Specialized blunt-ended needles are used to deliver these disinfectants to the end of the root and effective way.



## ACCESSING THE ROOT CANALS:-

To gain access the root canals of the tooth, a small opening is ~~sm~~ small opening is made either on the occlusal surface of the tooth (for posterior teeth) or on the lingual side of the tooth.

- In a multirooted tooth, gaining access into the root canals is more challenging.
- With the aid of a microscope we are able to locate any hidden or calcified canals.





## FINAL PREPARATION:-

- After thoroughly cleaning and shaping the canals, the canals are dried with absorbing paper point.

## OBTURATING (FILLING)

- Finally, the canals are sealed with two components
  - Sealer a cement that sets over time.
  - Gutta percha - a filler made of a natural form of latex.
- Upon completion of the root canal treatment, a temporary filling is placed over the sealed canals that has two parts:
  - Cotton pellet soaked in an antibacterial solution
  - A solid temporary filling on top.
- A final restoration.

Then they refer to the X-Ray.

In the X-Ray they will check the canals.

After temporary filling they will tell for the next visit.

In the next a final restoration (usually a crown) is placed by the dentist.

• This will restore functionality to your tooth and protect it from fracturing.





