

# CROWN AND BRIDGE PROSTHODONTICS

## 4<sup>TH</sup> GRADE



B.D.S., M.Sc. in Conservative Department

### Lec.8

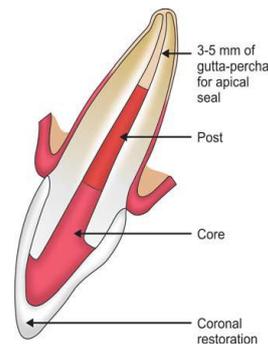
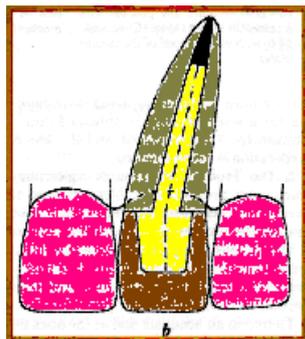
## Post Crown

### Post crown:

It is a fixed artificial cast restoration which replaced the coronal portion of the natural tooth completely. It retained itself by a mean of post (dowel) that extended and cemented to the root canal space of endodontically treated tooth.

### The dowel post serves two functions:

- 1) Intra-canal retentive mean for the coronal restoration.
- 2) It increases the resistance against horizontal fracture.



### Indications:

1. It is commonly indicated on endodontically treated teeth that have;
  - A) Remaining T.S. unsuitable for any other mean of restoration.
  - B) Core construction is needed.

C) Intra-coronal retention is the only mean for retention needed for the coronal restoration.

2. Re-alignment of malposed tooth.
3. As bridge retainer.
4. Tooth with short clinical crown.

### **Contraindications (Custom Cast Dowel Core):**

1. Unsuccessful endodontics (retreat).
2. Significant coronal tooth structure remain.
3. Inadequate root length.
4. Caries on root or in canal.

### **Factors to be considered in assessment of a tooth for post crown:**

1. Quality of the root filling, it should be filled with a well condense guttapercha filling material especially at the apical third of RC space.
2. The root should have proper alignment of the root, because any abnormality in the alignment of the root in relation to the adjacent teeth make the construction post crown difficult.
3. The root should be without internal or external resorption.
4. Periodontal condition and mobility of the tooth.
5. Occlusal relationship should be evaluated.

### **Basic components of post crown:**

#### **1) Post (dowel):**

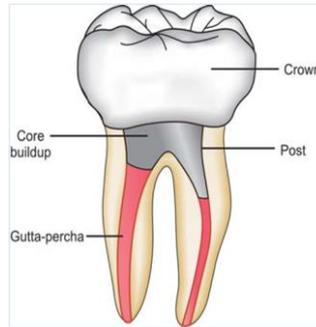
It is the part of the restoration that extended into the root canal and give support and retention for the coronal restoration.

#### **2) Core:**

It is the coronal extension or addition to the dowel post necessary to provide the desire retention for the final crown restoration.

### **3) Crown:**

It is the final restoration that placed over the core, it could be a full metal, full veneer or jacket crown.



#### **There are two types of post- crowns:**

1. Two unit post crown (post and core +crown).
2. One unit post crown (post + core + crown one piece).

The final crown restoration is direct extension of the dowel post. It indicated in some cases, for example tooth with very short clinical crown (as with lower incisor) in such a case there is insufficient space within the crown of the tooth to make both retentive core and separated crown so one piece post crown often the solution.

#### **Two unit post-crown:**

##### **Advantages and Indications:**

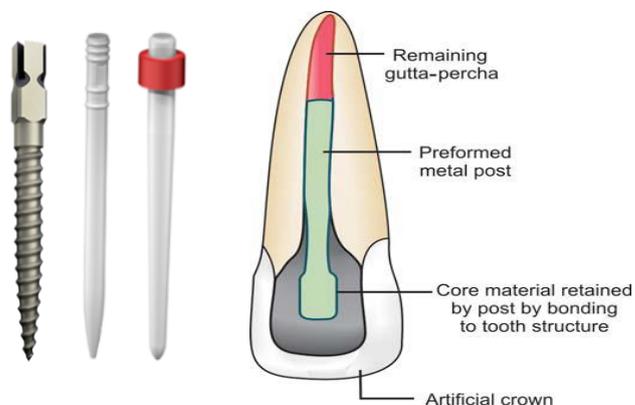
- 1) Crown restoration can replace at some future time, if necessary, without disturbing the dowel core part of restoration. That is why two units post crown indicated in young patient (under 18 years age).
- 2) When the endodontically treated tooth is to be used as abutment for fixed bridge (bridge retainer), it is not necessary to make the post crown preparation parallel to the 2<sup>nd</sup> abutment.
- 3) Marginal adaptation and fit of the crown restoration are independent of any dowel that must be used.



## **Post classification:**

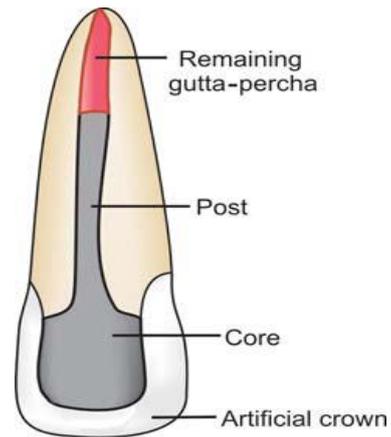
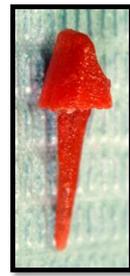
### **1. Prefabricate or ready-made dowel post:**

One advantage of using prefabricated posts is the simplicity of the technique it doesn't need a negative reproduction of the prepared canal. Stainless steel, Carbon fiber or fibro glass material might be used in its construction, it comes in different sizes, designs (parallel side, taper, parallel with taper end...etc). A post is selected to match the dimensions of the canal, and only minimum adjustment is needed for seating it to the full depth of the post-space.



### **2. Customized Cast Post:**

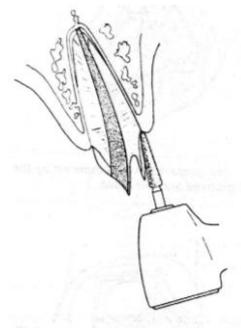
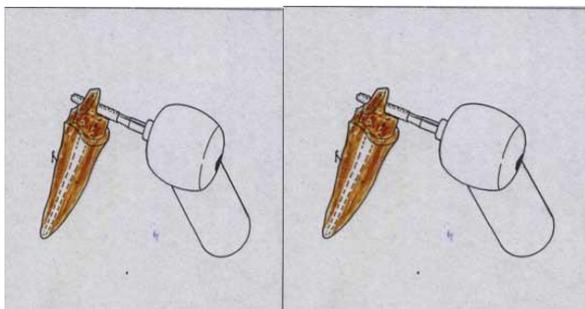
It is fabricated from a negative reproduction of the prepared canal, constructed from metal alloy. The main advantages of this type is that it conforms closely to the configuration of the prepared canal. It is indicated for avoid canals and contraindicated in narrow and severely curved canals.



## **Tooth Preparation:**

### **1) Preparation of the coronal portion:**

1. Remove any existing restoration, caries, and any thin or unsupported wall of tooth structure. Most of the time, this will end with leaving about 2mm-5.0mm of sound tooth structure supra-gingivally.
- 2) The coronal portion (remaining) were then prepared according to the type of the final crown restoration. For example, if the final restoration was Jacket crown – shoulder F.L. should be created all around.



### **2) Preparation of the Canal:**

The instrument of choice for removing guttapercha and enlarging the canal are Pessio reamers, they come in different size ranging from 0.7mm-1.7mm.

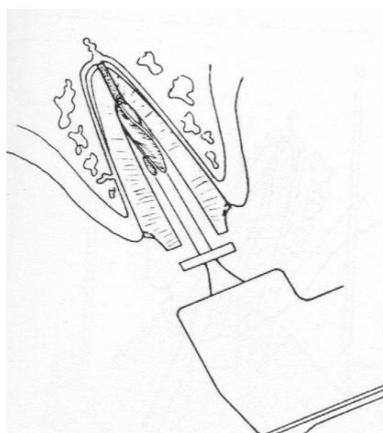
### **Advantage of using this bur:**

It has a blunt non cutting end so it will follow the path of least resistance without perforating the root.

- 1) Begin removal of guttapercha filling material from the canal using hot instrument (endodontic condenser).
- 2) Measure a Pessio reamer against radiographic film of the tooth being restored to determine the length to which the bur will be inserted into the canal ( $2/3$  of root length). The length of the dowel should be equal to  $2/3$  of root length or equal to the crown length, whichever is greater keeping in your mind you should have at least 3mm-4mm remaining apical gutta peracha.

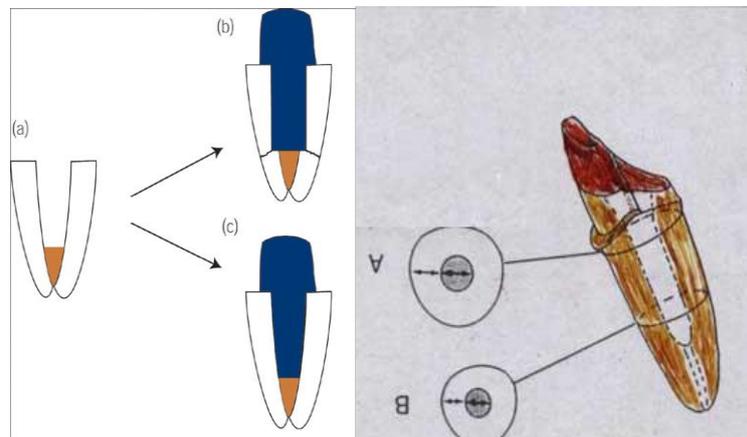


- 3) Remove guttapercha with P.R. up to  $2/3$  of root length, leaving 3-5mm. At the apex to get maximum benefit from length for retention.



## Canal preparation:

4) The canal should be parallel sided with slight flaring to the outside, in short teeth accessory retention means may be used as pins, where the pin hole should be placed parallel to the post canal preparation. Diameter of the prepared canal should be no more than one third the root diameter at C.E.J and should be at least 2mm less than root diameter at mid root area.

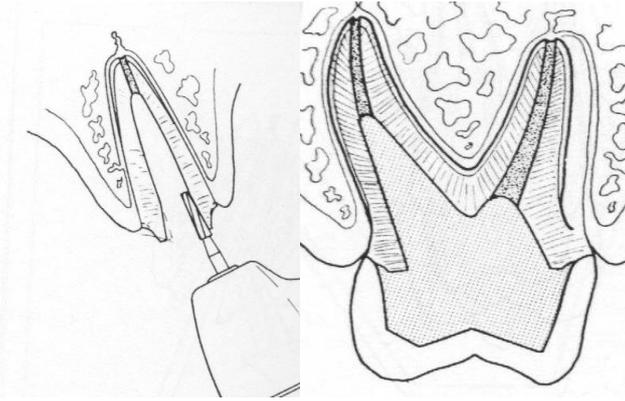
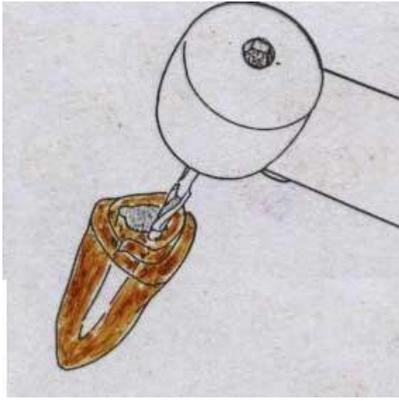


5) Flat end carbide fissure were then used to create a key way or groove in the orifice of the canal. It should be place in the area of the where there is a greatest bulk, it should cut to the depth of the diameter of the bur and up the canal to the length of the cutting blade of the bur (4mm.).

### Advantages of Key Way:

1. It act as a guide during placement of the dowel post restoration.
2. It act as anti-rotational device by preventing the post from rotation.
3. Improve the retention.

**For multirooted teeth**, the post dowel should place in the largest canal, usually it's the palatal canal for upper molar, distal canal for lower, the other canal used as keyway.



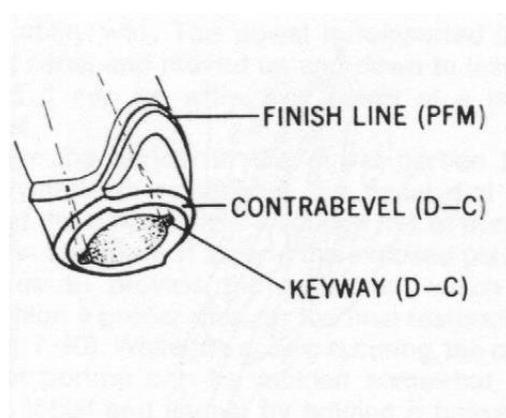
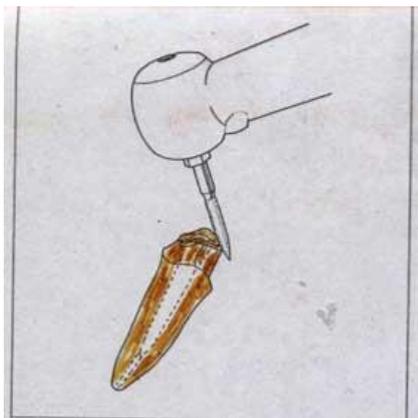
### Anti-rotation devices:

**A.** Keyway.

**B.** Triangular shape for the incisors and elliptical shape for upper canine.

**C.** Pins.

6) If there is supra gingival tooth structure a flame bur is used to place contra bevel around the external periphery of the preparation to provide a metal collar around the occlusal circumference of the preparation to aid in preventing remaining tooth structure from fracture.



## **Factors affecting on retention of Post Crown:**

1. Length of the dowel post. (2/3 length of root, Equal to length of clinical crown, 4-5 mm from apex, 8 mm deep from CEJ )
2. Diameter of dowel post (No more than one third the root diameter at C.E.J .and should be at least 2mm less than root diameter at mid root area).
3. Shape of the prepared canal (parallel sided prep. Is more retentive than tapered).
4. Accessory means (pin, groove, keyway) Post Prep. Requirements
5. Post surface texture, a post with rough surface is more retentive than post with smooth surface.

## **Post Prep. Requirements:**

- 1) The length of post should be the greatest length provided that the apical seal not to be jeopardize.
- 2) Whenever possible the occlusal surface of the tooth is prepared with contra bevel
- 3) Diameter of the prepared canal should be no more than one third the root diameter at C.E.J .and should be at least 2mm less than root diameter at mid root area .
- 4) Leaving 1mm vertical wall between core margin and the shoulder of the preparation to provide sufficient support and prevent the root against fracture.
- 5) Avoid using of burs in canal prep. Which may penetrate dentine causing undesirable undercut.