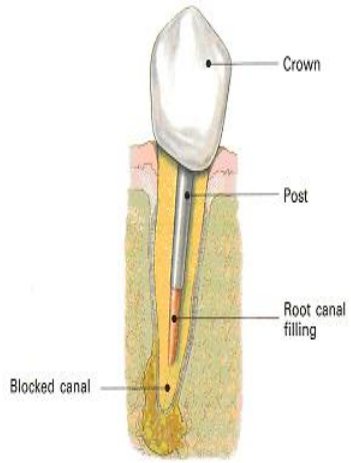
Post crown

Post-crown: It is a fixed restoration, which replaces the coronal part of the endodontically treated tooth and is retained by a post (dowel) which is extended and cemented to its root canal.



Indications*:*

1. Restoration of endodontically treated **with insufficient tooth structure**.
2. Realignment of malposed teeth.
3. As bridge retainer (short span bridge).
4. Tooth with short clinical crown.

Lack of Coronal tooth structure

Contraindication:

1. Unsuccessful endodontic treatment.
2. Significant tooth structure remains.
3. Inadequate root length.
4. Caries in the root.

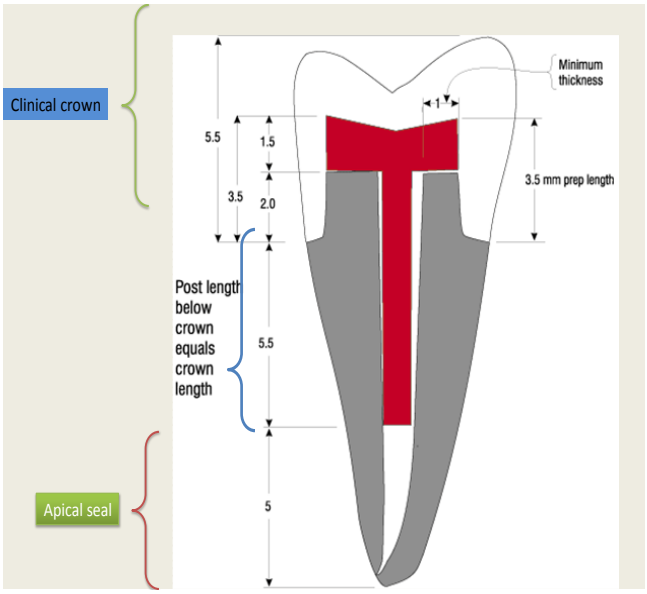
Factors considered in selection of a tooth for post crown

1. The root should be without internal or external resorption, and tooth mobility.
2. Alignment of the root will affect the steps of post crown construction.

3. The root of the tooth should be with adequate length and width.

4. The quality of the root filling, well condensed (Gutta percha filling material) especially at the apical third of root canal space.

5. Occlusal relationship must be evaluated.

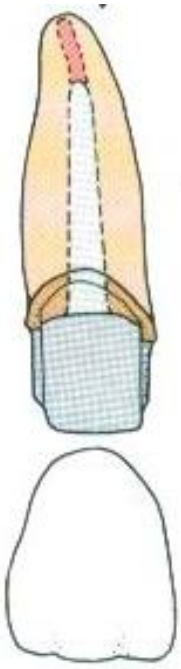


Components of post crown:

1. The post (dowel): It is the part of the crown which extends into the root canal to give retention and support for the coronal part . It should be 2/3 of the root length.

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

3. The crown: it is the final restoration that placed over The core, it could be a full metal or porcelain crown.



There are two types of post –crown:

1. Two units post crown (post and core + crown)
2. One unit post crown (post, core,crown).

- One unit post crown is indicated in some cases, for example tooth with very short clinical crown (as with lower incisor)in such 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.

Advantages of two-units system post-crown:

1. Crown restoration can be replaced at any future time without disturbing the dowel core part.

2. The two-units system can be repaired if crown is damaged.

3. When endodontically treated tooth is used as a bridge abutment (bridge retainer), different path of placement could be selected.

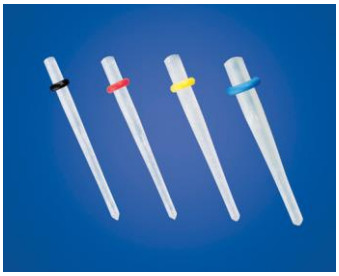
4. Marginal adaptation& fitness of crown restoration are independent of any dowel that be used because the expansion rate of the two castings can be controlled individually.

The Types of posts (according to the fabrication procedure):

1. Customized cast post-crown: It is fabricated from negative reproduction of the prepared canal, the main advantage of this type that its replicate the configuration of the prepared canal accurately. It is indicated for ovoid & triangular canal and contraindicated in tiny and severely cured canals.
2. Prefabricated or readymade dowel posts.

Classification of post according to the type of materials:

1. **Metallic post crown**: (custom-made or prefabricated).
2. **Non metallic post**: zirconia post.



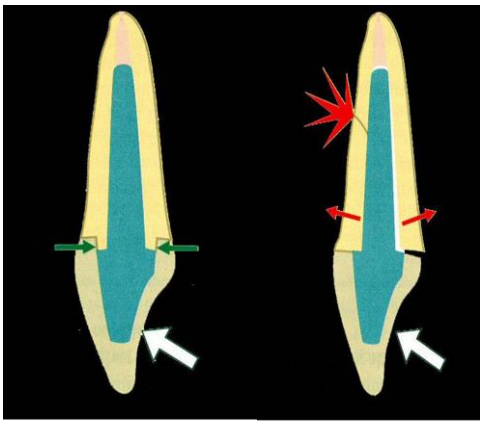
Preparation step by step:-

Coronal part (crown) preparation:

-In a weakened endodontically treated tooth we should remove any undercut, unsupported enamel, previous filling, cement base, and any weak part which may

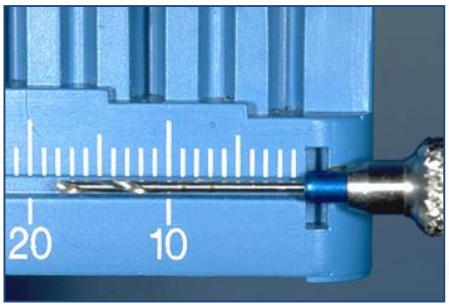
fracture later on, therefore leaving 2-5 mm. sound tooth structure supragingivally. The preparation depends on the type of final preparation.

At the supragingival tooth structure a contra bevel about 1mm around the external periphery of the preparation to provide a metal collar (ferrule) around the occlusal circumference of the preparation to aid in preventing remaining tooth structure from fracture.



With Ferrule Without Ferrule

Root preparation*:* The instrument used to prepare the root canal is called "peeso reamer" or "peeso bur". Avoid using coronal part burs (flat fissure or round taper) in post space preparation that penetrate dentine leading to undesirable undercut.



Procedure:

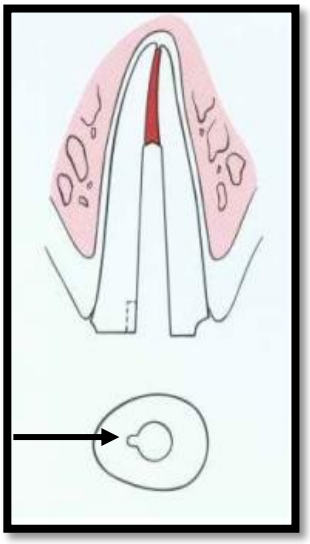
1. A radiograph is taken to evaluate the shape, length of the root.

2. With the use of peeso bur, the root canal filling material (gutta- percha) is removed up to 2/3 of the root length leaving 3-5 mm from the root filling at the apex.

3. The canal prepared to be parallel sided with slight flaring to the outside.

4. Diameter of the prepared canal should be no more than one third of the root diameter at C.E.J. and should be at least 2mm less than root diameter at mid root area. Otherwise, post insertion stress leads to fracture of the root.

Note: For multirooted posterior teeth, the post should be placed in the largest canal. The other canal may be prepared to a limited distance either to make 2 posts or to act as a key way.



5. A keyway is longitudinal hole prepared beside the root orifice about 2 mm width, and 4 mm length using flat end carbide fissure. It usually done at the widest area of the root. Lock at the figure (black arrow).

Advantages of key ways:

1. Act as a guide during the placement of the dowel post restoration.

2. Act as Anti rotational mean by preventing the post from rotation.

3. Improve the retention.

Note: other anti-rotational devices are:

1. Triangular shape for incisor and elliptical for upper canine.

2. Pin holes.

Retention of the post crown depends on:

1. Taperness of the root canal, (more parallel root canal preparation means parallel side post which is the more retentive than tapered one).

2. Length of the dowel post (2/3 length of the root, length of post below the crown equal to the length of clinical crown, 4-5 mm root apical seal, 8mm deep from CEJ).

3. Post diameter. Should be no more than one third of the root diameter at C.E.J. and should be at least 2mm less than root diameter at mid root area

4. Post surface texture. A serrated post is more retentive than smooth post.