Crown and Bridge

Lecture 3

Post crown

It is a fixed restoration which replaces the coronal part of the tooth completely and is retained by a post (dowel) which is extended and cemented to the root canal.

The post crown reinforces the remaining tooth structure against masticatory forces by distributing them to the surrounding structure.

Careful assessment of the endodontically treated tooth is made for the following:

1- Good apical seal.
2- No sensitivity to pressure.
3- No exudates.
4- No fistula.
5- No apical sensitivity.
6- No active inflammation.

Inadequate root filling should be retreated.

Indications:

1. Restoration of endodontically treated teeth when excessive amount of tooth structure is removed or lost by caries, trauma, filling, and making the retention of other types of crowns impossible.
2. Realignment of malposed teeth.
3. As bridge retainer (short span bridge).
4. Tooth with short clinical crown.

Factors to be considered in selection of a tooth for post crown

1. The root of the tooth should be sufficiently shaped, with adequate length and width. If there is an abnormal curvature affecting the shape of the tooth, post crowns can't be constructed or length of the root should be sufficient to use the post crown.
2. The root should be without internal or external resorption.
3. Alignment of the root, any abnormality in the alignment of the root in relation to the adjacent teeth will affect the steps of post crown construction.
4. Quality of the root filling is important in order to construct a post crown.
Parts of post crown:
1. **The post (dowel):** It is the part of the crown which extends into the root canal. It should be 2/3 of the root length.
2. **The core:** It is the coronal part of the post crown.
3. **The crown:** The crown should be a full metal, full veneer or jacket crown (acrylic or porcelain).

**There are two types of post-crowns**
1. Two unit post crown (post and core + crown).
2. One unit post crown (post, core and crown).

**Advantages and indications of two unit system post-crown**
1. Young patients under 18 years old, because the gingiva-tooth relationship will change with time so the crown is changed and the post remains.
2. The two unit system can be repaired if crown is damaged.
3. When the endodontically treated tooth is to be used as a bridge abutment, it is not necessary to do the post crown preparation parallel with the adjacent teeth. A different path of insertion may be selected in fabrication of post and core.
4. Satisfactory marginal fit is more easily achieved because the expansion rate of the two casting can be individually controlled.

**Preparation:**
1. **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 2-3 mm. sound tooth structure supragingivally.

2. **Root preparation:**
The bur used to prepare the root canal is called "peeso reamer" or "peeso bur". It comes in different sizes and the size used depends on the size of the root canal. It has a blunt non cutting end which will follow the area of less resistance (gutta percha) without perforating the root.

**Procedure:**
a) A radiograph is taken to evaluate the length, width, shape of the tooth and the type and quality of the filling especially in the apical third of the root canal.
b) 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. filling at the apex. The space made by the removal of the gutta percha is for the insertion of the post which should be as long as possible to get maximum retention and at the same time prevent dislodgment of the apical filling material which if it happens it will lead to leakage and failure of the treatment.

c) The canal should be parallel sided with slight flaring to the outside; in short teeth accessory retention ways may be used as pins, where the pin hole should be placed parallel to the post canal preparation.

d) A keyway is made at about 1 mm. depth, and 4 mm. length extended to the canal using a flat end fissure bur. This will act as a guide during placement of the final post, and will prevent the rotation of the post especially with teeth with a round cross sectional root canal.

e) Contra bevel. It is a reverse bevel placed around the occlusal external surface of periphery of the preparation; this will provide a good collar around the occlusal periphery of the preparation which will help in holding the tooth together and preventing the fracture of the remaining tooth structure.

f) For multirooted posterior teeth, the post should be placed in the largest canal, ex: palatal root for the maxillary molars, and distal mandibular molars. Placing many posts in a single tooth might weaken the tooth.

Retention of the post crown depend on:
1. Taper of the root canal. As the taper increase retention decreases.
2. Post length. As the length increases retention decreases.
3. Post diameter. Increasing the post diameter is not recommended because it weakens the tooth.
4. Post surface texture. A post with rough surface is more retentive than post with smooth surface.
5. Luting agent have little effect.

Antirotation devices
1. Keyway.
2. Triangular shape for the maxillary incisors and elliptical shape for maxillary canine.