

**Partial veneer crown (three/quarter crown)**

It is the restoration that nearly covers the entire clinical crown except the buccal or labial surface.



Fig.(1) three quarter crown

**Uses:**

1. As a single restoration.
2. As a retainer for short span bridge.
3. As a splint for the anterior teeth.



Fig(2) Partial veneer crowns serving as retainers

**Indications:**

- ❖ Posterior teeth that have lost moderate amounts of tooth structure but the buccal wall is intact and well supported by sound tooth structure. They are also used as retainers for a fixed partial denture.
- ❖ Anterior teeth: are rarely suitable for restoring damaged teeth, but they can be used as retainers, to reestablish anterior guidance, and to splint teeth. However, the tooth must have sufficient bulk to accommodate the necessary retentive features.

**Contraindications:**

1. Short clinical crown.
2. High caries index.
3. Extensive destruction.
4. Poor alignment.
5. Thin tooth.
6. Long span bridge
7. Non vital tooth.

### **Advantages:**

1. Conservative type. 2. Supragingival f.l. (less pulpal and P.D. problems).
3. During cementation the luting agents seated well and removing the excess by direct vision.
4. Vitality test can be done on the buccal wall.

### **Disadvantages:**

1. less retentive and resistant than complete coverage.
2. Limited adjustment of the path of insertion.
3. Possibility of showing metal especially in the anterior teeth.
4. Possibility of recurrent caries.
5. Difficulty in tooth preparation compared to other types of crown.

## **Steps of tooth preparation**

### **Preparation of 3/4 crown for Max. posterior teeth**

#### **Occlusal reduction:**

1. Place depth orientation grooves on the anatomic ridge and grooves of occlusal surface with a round end tapered fissure diamond, the groove should extend through occluso-buccal line angle but only with 0.5mm deep to prevent metal display .as shown in the fig3. below:
2. Occlusal reduction then completed by removing tooth structure between grooves reproducing the geometric inclination of cusps.
3. A wide beveling is placed on the functional cusps using the same bur.
4. Assess the amount of occlusal clearance in the intercuspal position and in all excursive movements of the mandible. We can check the occlusal clearance by midsagittal silicon index fig(4).

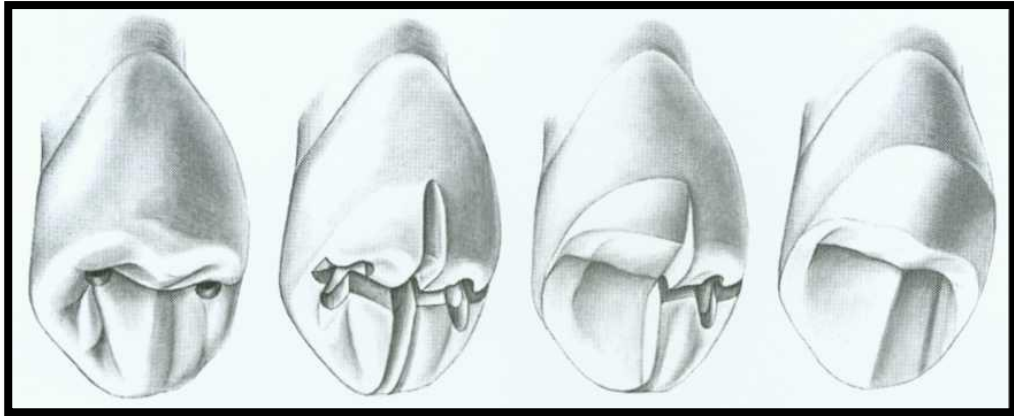


Fig3. occlusal prep. of The maxillary premolar three-quarter crown.



Fig(4) placing the midsagittal plane index to check occlusal clearance.

### **Axial Reduction (lingual & proximal)**

1. Place D.O.G in the center of the lingual surface and on the mesio and distolingual transitional line angles using the same bur and these groove should be parallel to the long axis of the tooth .
2. Then removed the remaining tooth structure between grooves following the contour of the tooth by holding the bur parallel to the long axis of the tooth.
3. Extend buccally and gingivally into the proximal embrasure to break the contact area and reduce the proximal wall.
4. Proximal grooves (mesial and distal) are placed parallel to the path of withdrawal and parallel to each other using carbide fissure bur. Normally, unsupported tooth structure will remain on the buccal side of the groove, and this side is flared to remove it.

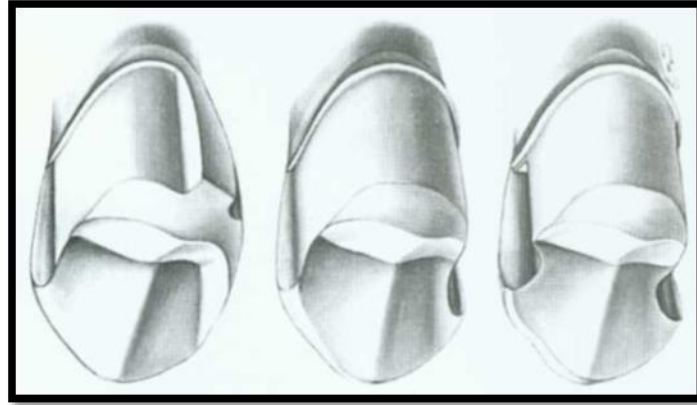


Fig.(5) Axial reduction of max. premolar 3/4 crown, note the proximal grooves are placed perpendicular to the prepared surface, and the buccal wall of each groove is flared to remove the unsupported enamel.

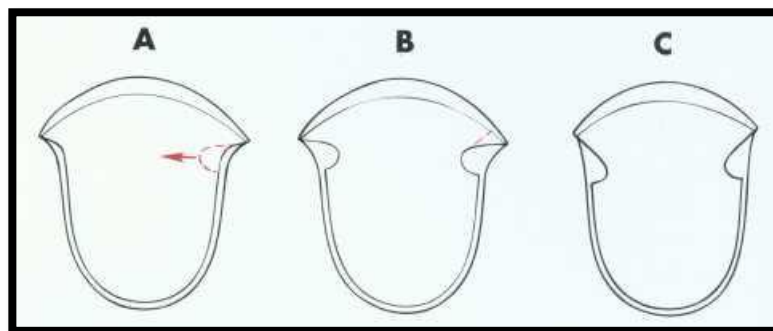


Fig.(6) A, Upon completion of the proximal axial reduction, a groove is placed perpendicular to the prepared surface. B, Note that some unsupported tooth structure remains at the cavosurface angle. C, After the buccal wall of the proximal groove is flared, no unsupported tooth structure remains.

**Proximal grooves:** are those placed as a part of proximal reduction to improve the features of the preparation, these proximal grooves are done with a tapered carbide bur parallel to path of insertion and to each other.

**Requirements of proximal grooves:**

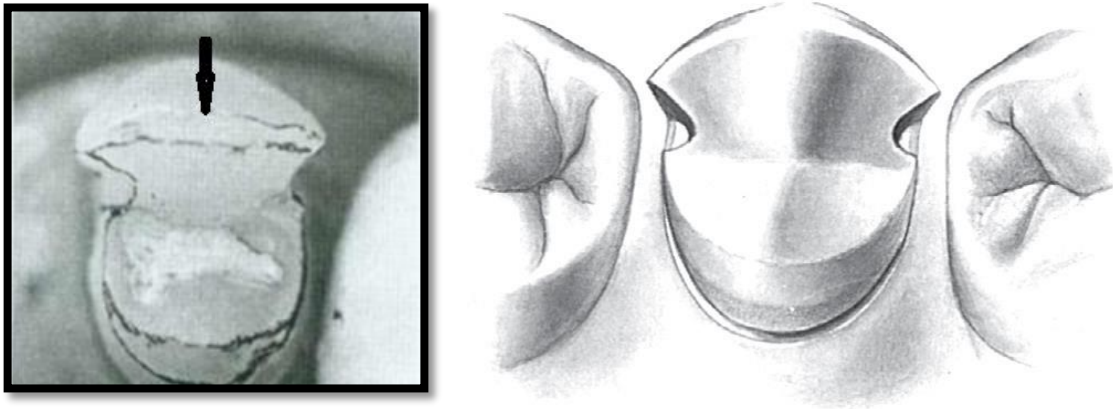
1. It should be cut to full diameter of carbide bur No.171 to create enough depth of 1mm.
2. It should extend to the full length of proximal wall (ending about 0.5 mm to the chamfer).
3. It should be placed as far facially as possible without undermining facial surface(between middle and labial third).
4. It should be parallel to the long axis of the tooth and to the path of insertion.

**Advantage of proximal grooves:**

1. Increase retention.
2. Prevent rotation (increase resistance).
3. Reinforce the margin of restoration at this area.
4. They act a guide during placement (seating grooves).

## Bucco-occlusal Contrabevel

Connect the mesial and distal flares with a **narrow contrabevel** at the bucco-occlusal line angle that follows the buccal cusp ridges. Its primary purpose is to remove any unsupported enamel and thereby protect the buccal cusp tip from chipping during function.



Fig(7) buccocclusal contrabevel connecting the mesioproximal and distoproximal flares.

## Occlusal Offset:

It is a V shaped groove made on the lingual incline of facial cusp extends from the proximal grooves along the buccal cusp.

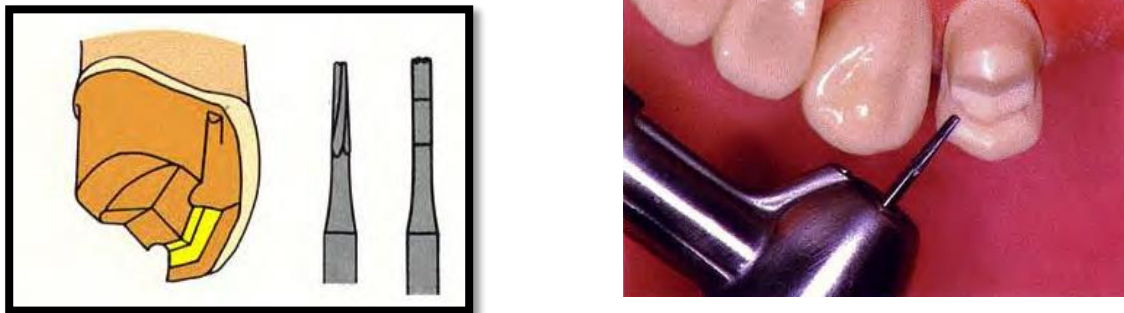


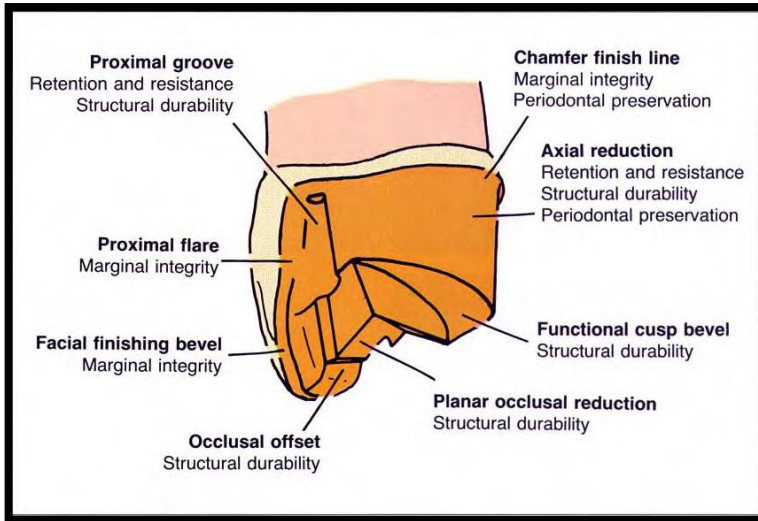
Fig.(8) occlusal offset (yellow area).

### **Advantages of occlusal offset:**

- Improve the strength of the casting by reinforce the margin of the restoration at this area.

### **Finishing line:**

Chamfer F.L.is used on lingual & proximal surfaces.

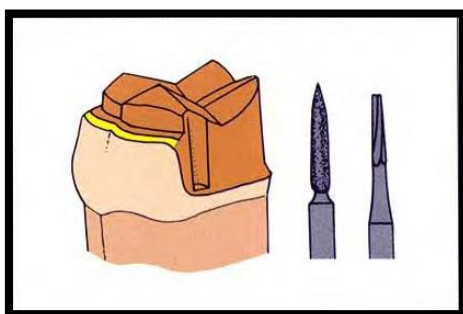


Fig(11) complete 3/4 crown preparation on max. premolar.

### 3/4 crown on Mandibular posterior teeth

The main steps of preparation are the same for that of the max. post teeth. Except the following differences':

1. The position of F.L. on the facial surface of max. Posterior teeth: it terminates near the bucco-occlusal line angle while in the mand. Post. teeth the F.L located more gingivally (occlusal shoulder), this is because the buccal cusps are the functional cusps of the lower posterior teeth.
2. In Max.teeth, there should be an occlusal offset however, for the lower there is no offset, in state, there is bucco-occlusal shoulder (occlusal shoulder),it serve the same purpose as the offset.



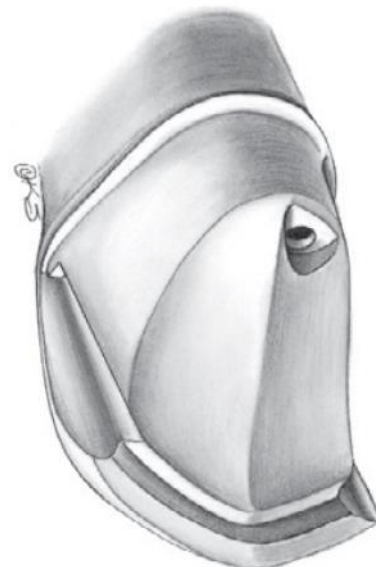
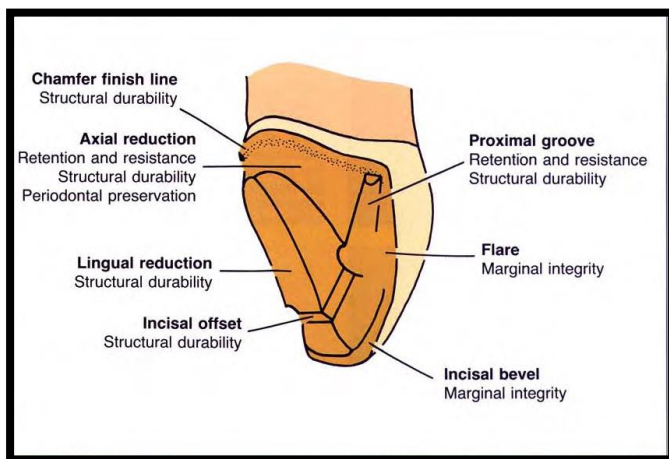
Fig(9) occlusal soulder on the buccal surface of mand. Molar

**3/4 Crown on anterior teeth:** Lingual reduction: this is done by two steps similar to other types of crowns, Cingulum area and Lingual axial reduction.

**Incisal termination:**

For max. anter. teeth lingo-incisal bevel is place using diamond bur at 45° to the path of insertion, this termination should not be extend labially to prevent showing of metal, however for the lower ant. a reverse bevel is placed on the labial surface. this mean that the preparation extend to cover the incisal edge in order to:

1. Protect the area of unsupported enamel from fracture.
2. To prevent the dislodgment of crown in lingual direction.



Fig(10) 3/4 crown preparation for max. Canine.

**Proximal reduction:**

The area is prepared similar to the full veneer crown except:

Two proximal grooves should be placed at the junction between the labial and middle third of the proximal surface, **parallel to the incisal 2/3 of the labial surface**(path of insertion) using a carbide fissure bur. *this is because:*

1. Longest proximal grooves if placed parallel to the incisal 2/3 of the labial surface (better retention).
2. To avoid over cutting to the labial surface (if we do it parallel to the long axis) that affect on the esthetic.