Partial Veneer Crown (Three-quarter crown)

Lecture 7

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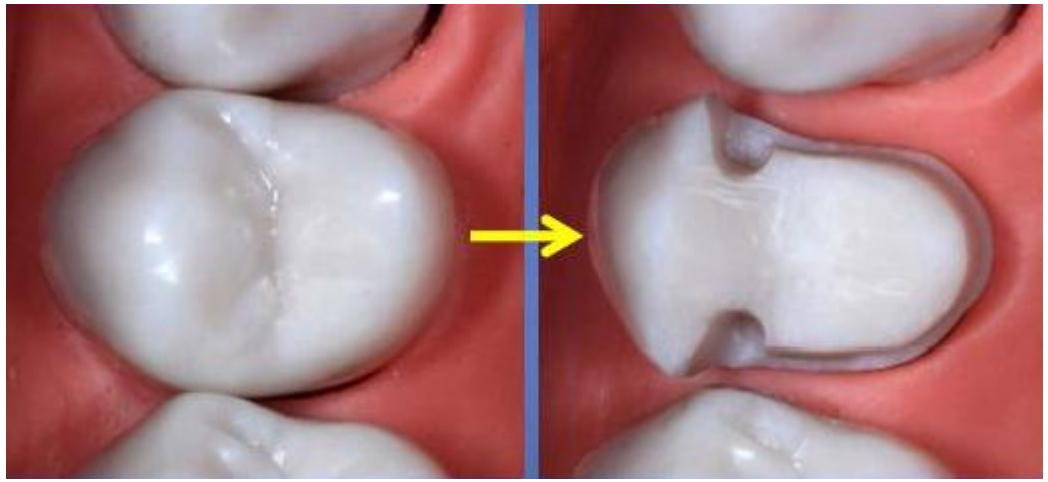
Restorative department

21-2-2026

Third stage

Three-quarter (¾)crown:

- It is a cast metal crown restoration that covers **three-quarters** of the crown (occlusal or incisal, palatal or lingual and proximal) leaving the labial or buccal surface unprepared, it tends to be **less** retentive and resistant than a full veneer crown.
- It can be used for anterior or posterior teeth.



Uses:

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

Indications

For posterior teeth;

1. A moderate amount of tooth structure is lost

With an **intact** and well-supported buccal surface.

2. As a retainer for a fixed partial denture.

For anterior teeth;

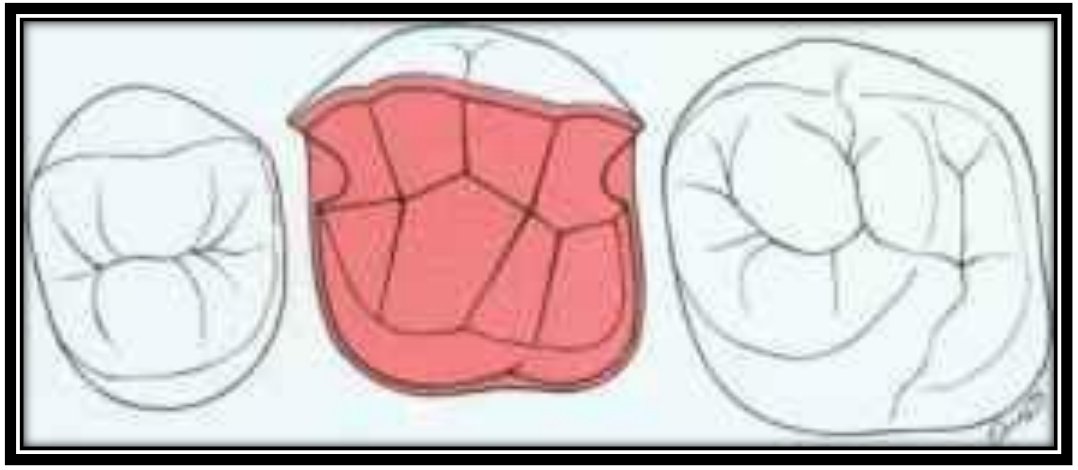
1. It is proper for teeth with a sufficient bulk and intact labial surface.
2. Retainer for F.P.D. or splinting of anterior teeth.



Contraindication:

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

Advantages of 3/4 crown:



1- Conservative of tooth structure.

2- Easy access to margins.

3- Less gingival irritation than a complete crown.

4- Easy escape of cement and good seating.

5- An electrical pulp test is possible.

6- The complete seating of the crown can be easily seen by direct observation.

Disadvantages:

1- Difficult in preparation compared to other types of crown restorations.

2- Possibility of recurrent caries more along the cavo-surface line angle.

3- Possibility of showing metal, especially in the lower anteri &poster teeth.

4- Less retention and resistance than a complete crown.

5- Limited adjustment can be done in the path of withdrawal.

Tooth Preparation :

Recommended dimensions

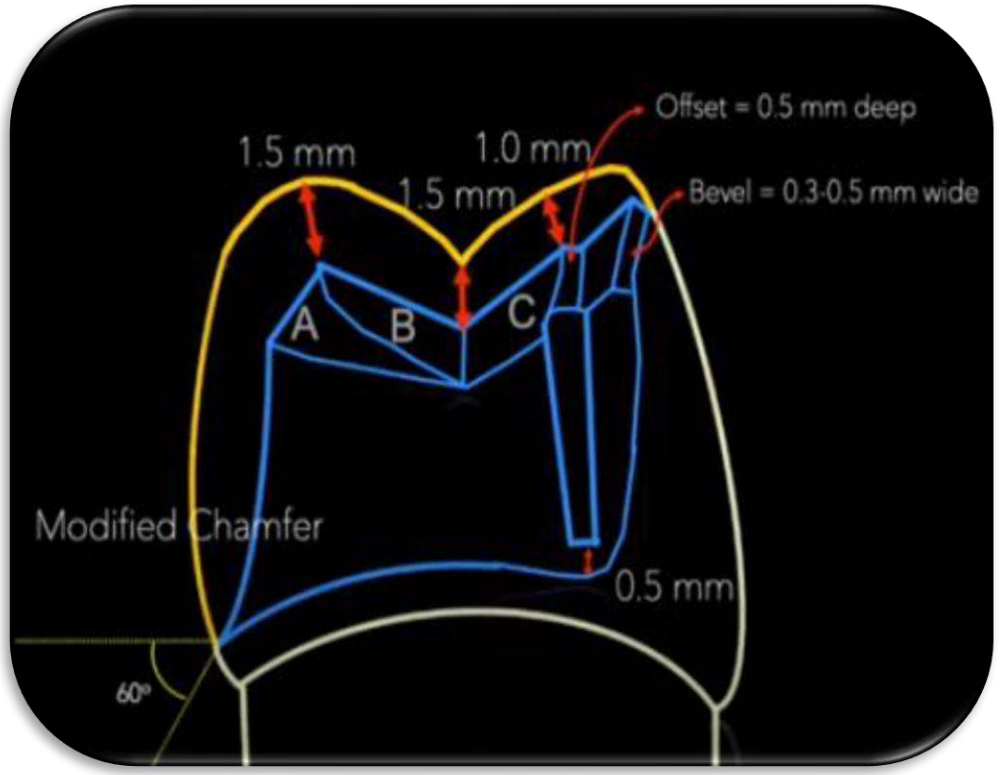
✓1.5 mm on functional cusp (lingual)

✓1.0 mm on non-functional cusp (facial)

✓Less than 0.5 mm on facial cusp tip if sufficient horizontal overlap

✓ 1.5 mm clearance

- Follow contours of opposing tooth
- Maintain the contours of the tooth being prepared
- Extend the bevel into the lingual embrasure

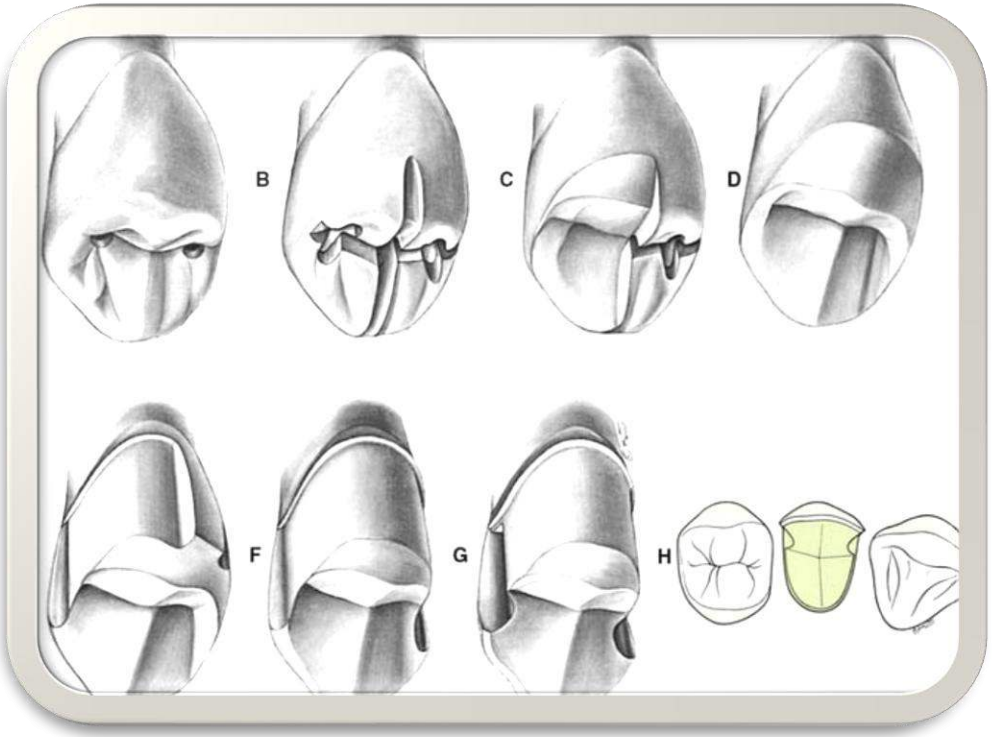


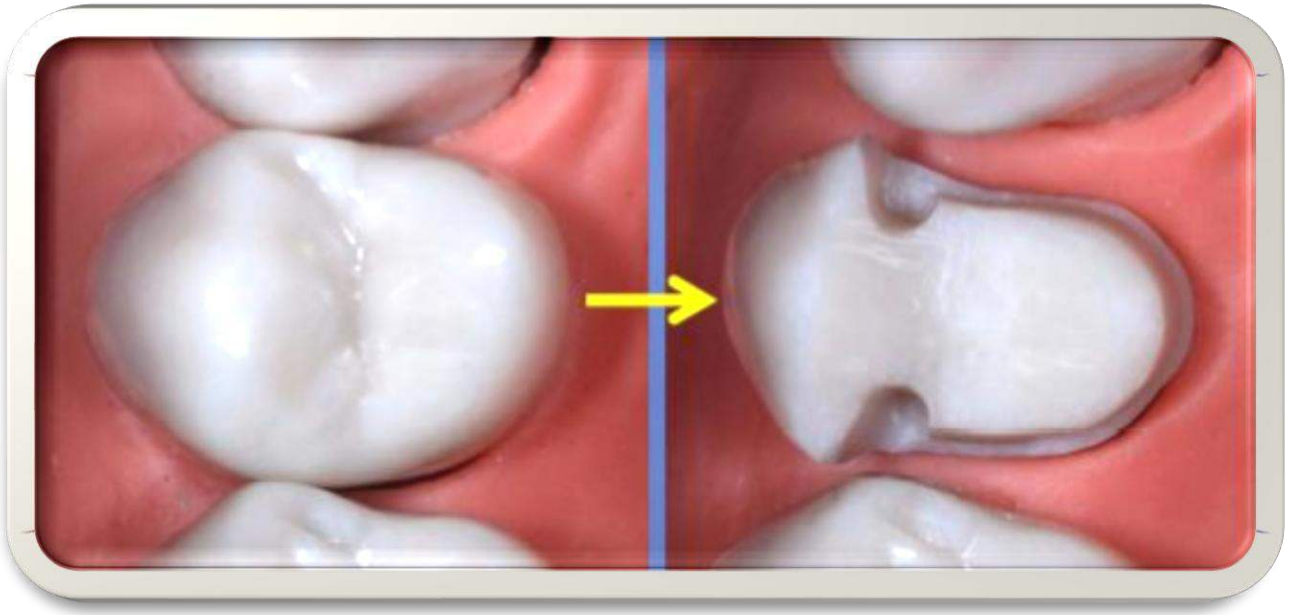


Preparation steps on maxillary posterior teeth:

1.Occlusal surface preparation

1. D.O.G. placed on the ridges and grooves of the occlusal surface using round end taper fissure bur, the grooves should extend through occlusal-buccal line angle but only **0.5mm deep** to prevent metal display.

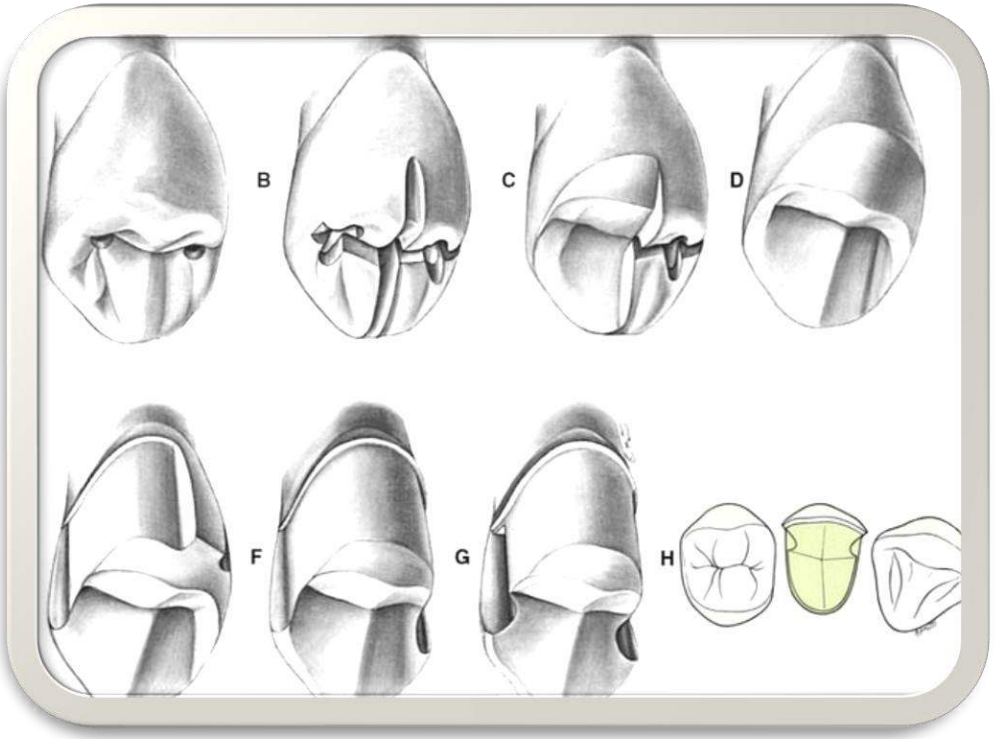




2. Occlusal reduction was completed by removing tooth structure between grooves reproducing the geometric inclined plan pattern of cusps, the depth of reduction should be decreased at the occlusal-buccal line angle.

3. A wide bevel is placed on the functional cusps using the same bur.

4. Occlusal clearance was then checked in centric & eccentric mand. relations.







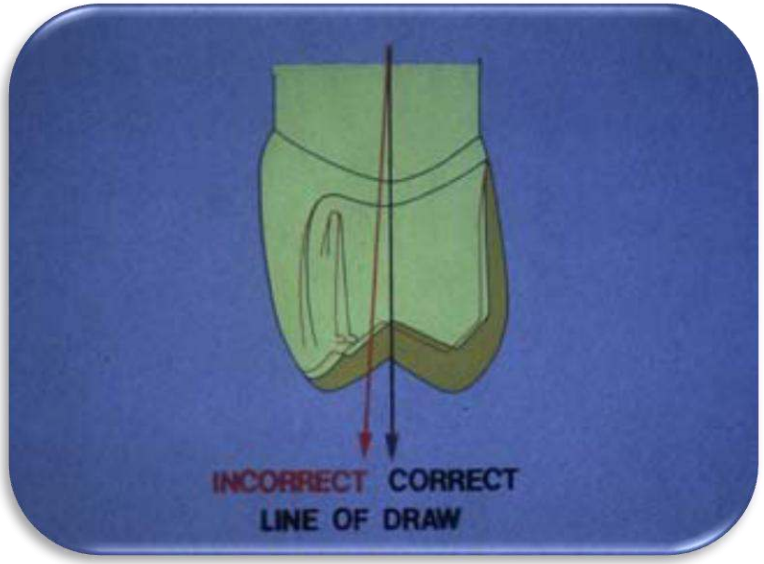
2. Lingual surface preparation: (It is done similarly to other types of crown)

- D.O.G. is placed parallel to the long axis of the tooth.

-Reaming tooth structure between grooves was then removed following the contour of the tooth holding the bur parallel to the long axis at the tooth.

-A **round-end tapered fissure bur** is used to obtain **Chamfer F.L** 0.5 mm supragingival.



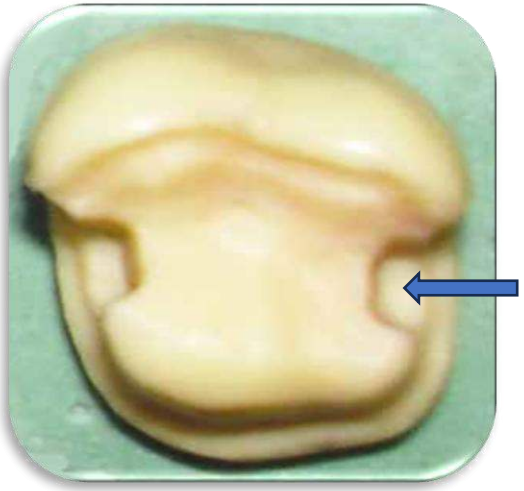


3. Interproximal Reduction

- Proximal access is done by short needle diamond bur, up and down movement, this continues until contact with the adjacent tooth is broken & access for larger bur is produced.
- Extend facially and gingivally to break contact with the adjacent tooth
- **Proximal grooves** (mesial and distal) are placed parallel to the path of withdrawal and parallel to each other using a carbide fissure bur.

Normally, unsupported tooth structure will remain on the buccal side, and this side is flared to remove it.

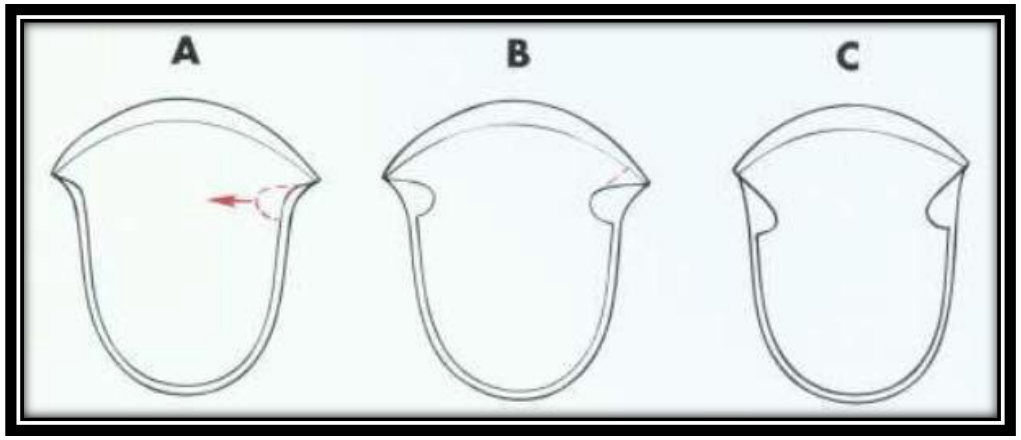




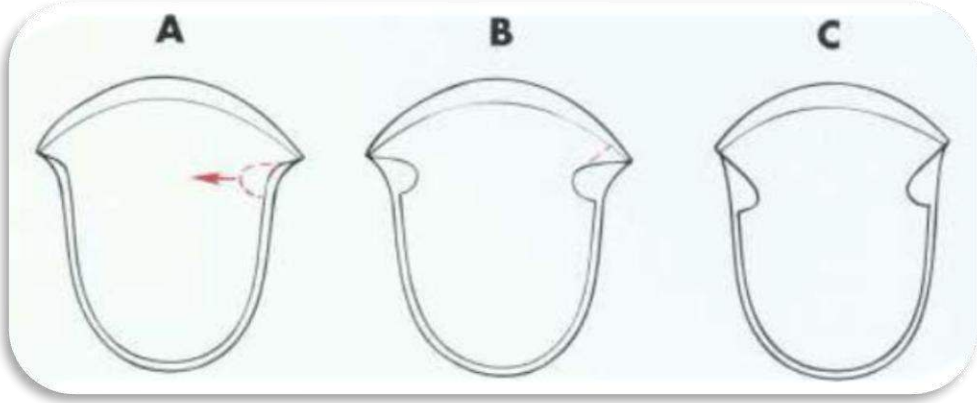
Proximal grooves:

- As a part of proximal reduction & **to improve the retention feature** of the preparation &as a substitution for the uncovered wall, proximal grooves should be placed on each proximal wall.
- They should be parallel to the long axis of the tooth or path of insertion & parallel to each other. A carbide fissure bur is used to place these grooves.





Requirements:



1. It should cut to the full diameter of the carbide bur No.171(0.5mm) to create a defiant lingual wall.

2. It should extend to the full length of the proximal wall (ending about 0.5mm to the chamfer).



3. It should be placed as far as facially as possible without undermining the facial surface (Middle &labial third).



4. It should be parallel to the long axis of the tooth.

➢ Advantages of Proximal grooves;

1. Increase retention.

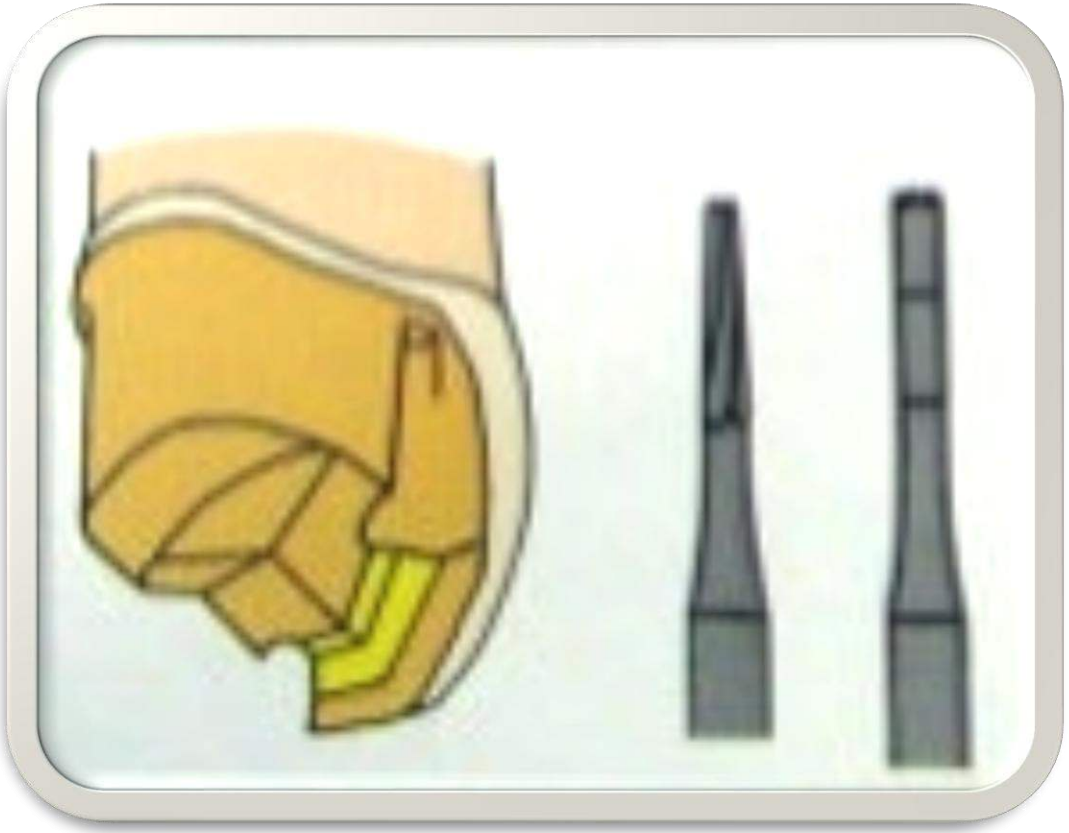
2. Prevent rotation (resistance).

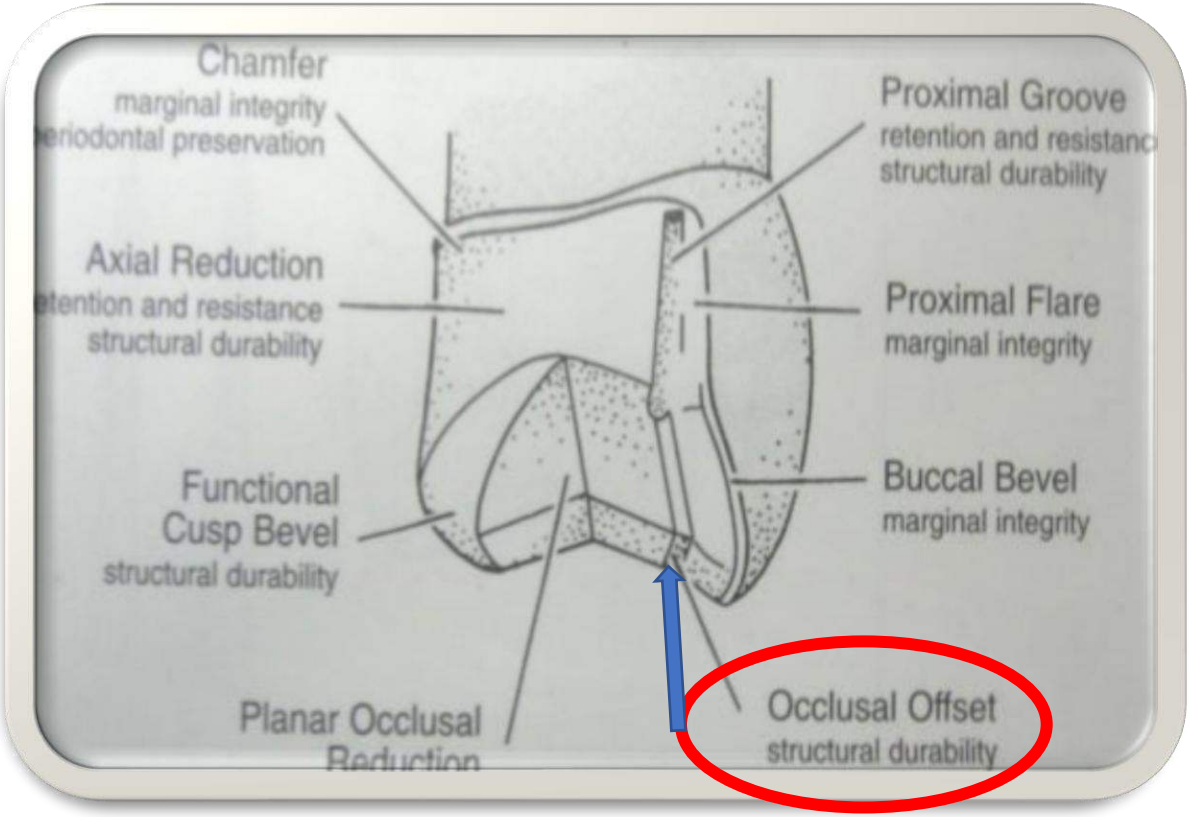
3. Reinforce the margin of restoration in this area.

4. They act as a guide during placement.

➢Occlusal offset:

A **1mm wide groove** made on the lingual incline of the facial cusp, it is V shape inverted lies at a uniform distance from the occlusal finish line.

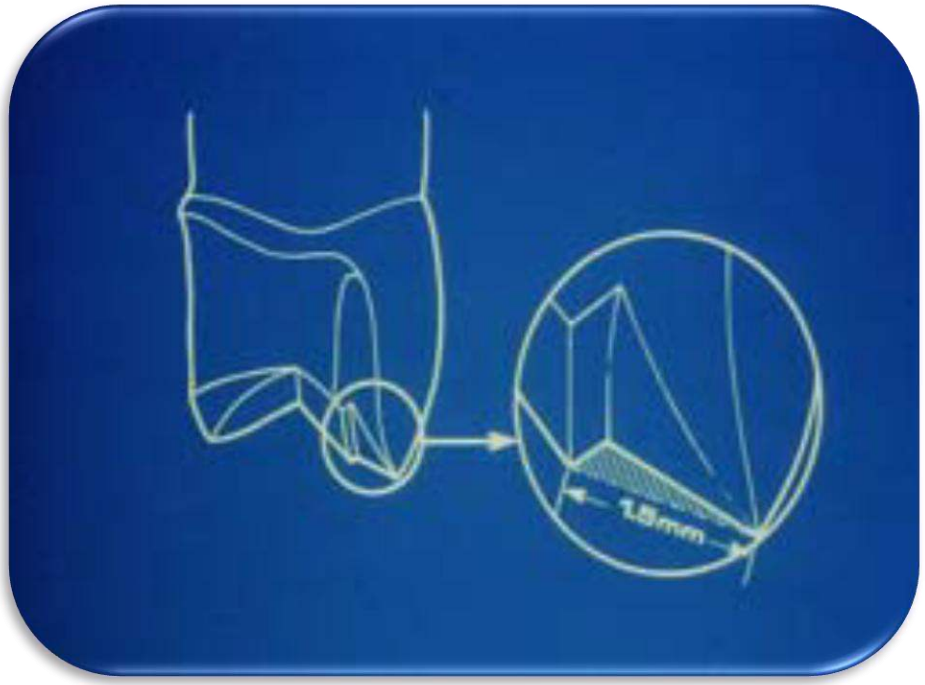




➢Advantages of Occlusal offset:

1. Improve the strength of the casting.

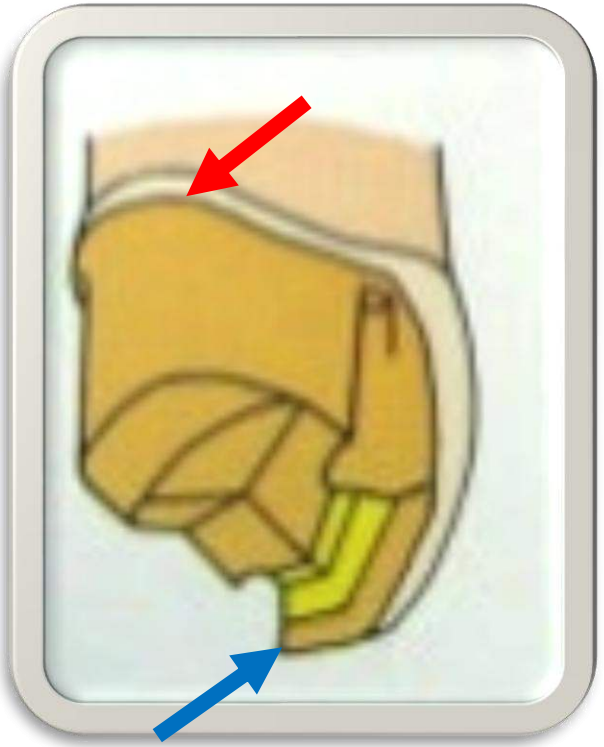
2. Reinforce the margin of the restoration in this area.





Finishing line :

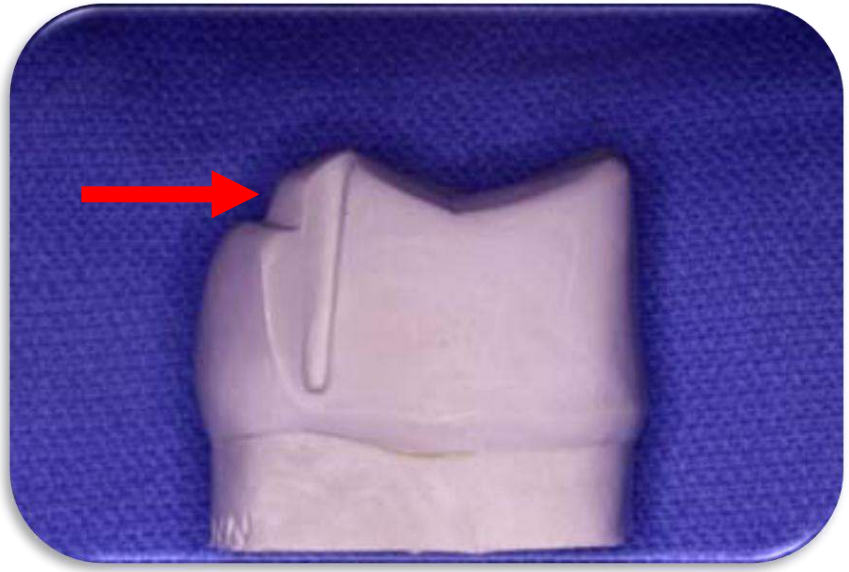
- **Chamfer** is used as a gingival finish line on lingual &proximal surfaces
- A **45-degree bevel F.L**. was used on proximo-facial & occlusal-facial margins

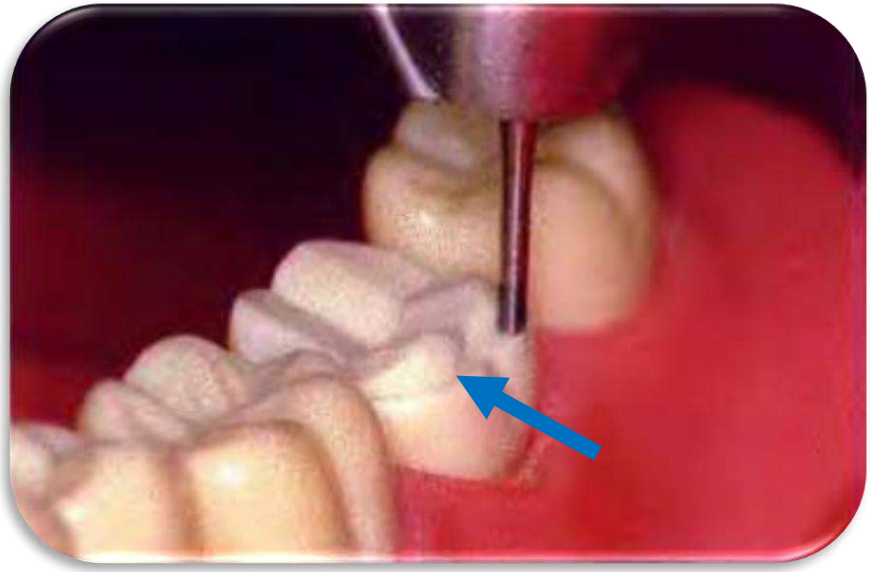


Mandibular posterior 3/4 Crown

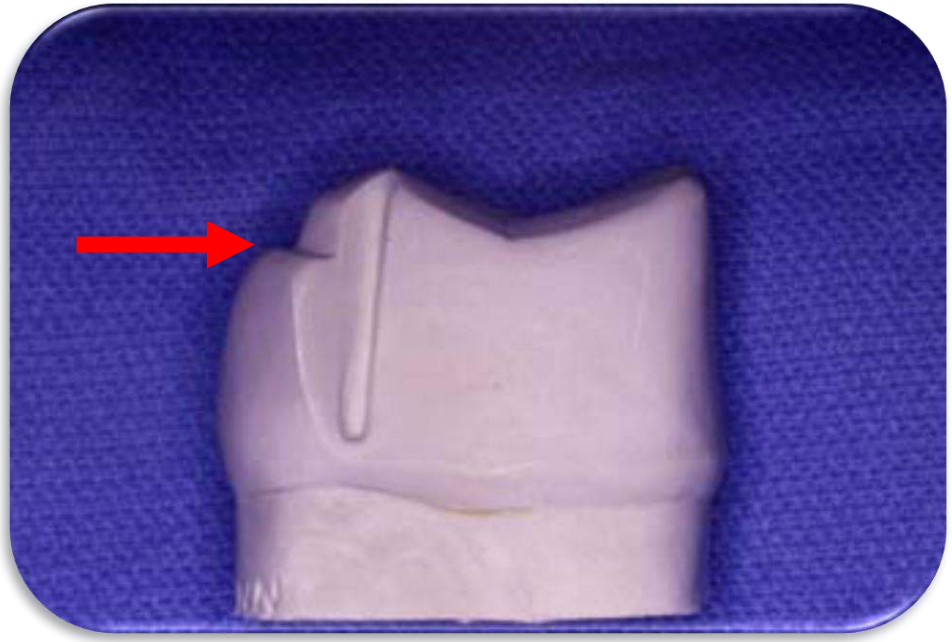
Differences between upper &lower posterior ¾ crown preparation:

1. The big difference is the position of FL on the facial surface, for max. pos. teeth terminate near the **bucco-occlusal line angle;** while in mand. pos. teeth the occlusal FL is **1mm gingival to the lower occlusal contact** with the upper teeth, why? (because the buccal cusps in the lower are the functional cusps).





2. In the upper, there should be occlusal offset however, **for the lower posterior teeth,** there is **no offset;** in the state, there is a **bucco-occlusal shoulder** (occlusal shoulder on the buccal aspect of the buccal surface), which serves the same purpose as the offset.





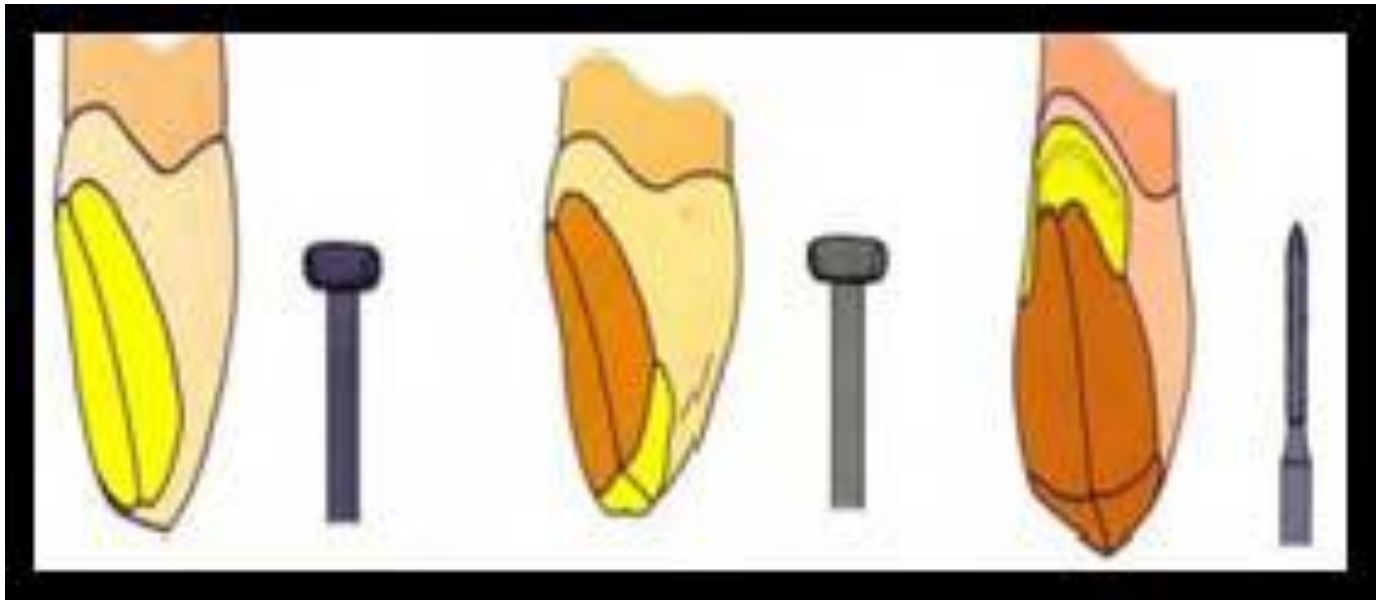
3/4 Crown Maxillary Anterior

1-lingual reduction:

This is done in two steps similar to other types of crowns.

A. Cingulum area reduction.

B. Lingual axial reduction.



2. Incisal termination:

- For max. ant. teeth lingo-incisal bevel is placed using diamond bur at **45°** to the path of insertion, this termination **should not be extended labially** to prevent the showing of metal, however, for the lower anterior a reverse bevel is placed on the labial surface.

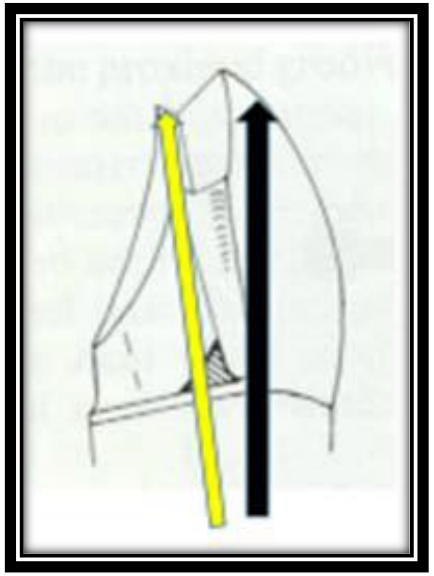
This means that the metal will extend to cover the incisal edge to:

1. Protect the area of unsupported enamel from fracture.

2. To prevent the dislodgment of the crown in a lingual direction.

3. Proximal reduction:

- The area is prepared similarly to the full veneer crown except that the preparation should have a **path of insertion parallel to the incisal 2/3 of the labial surface** (not to the long axis of the tooth).



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

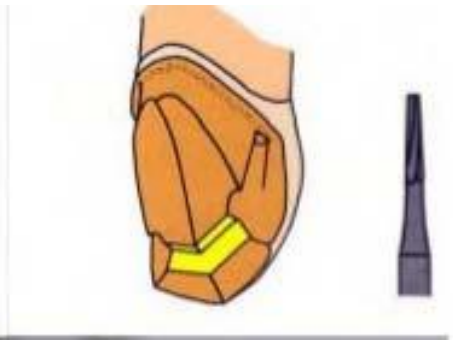
1. We can place the longest groove in this direction (better retention).

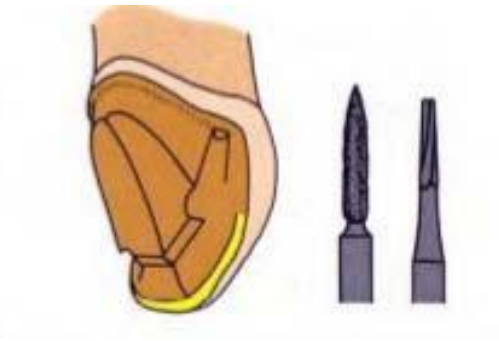
2. To avoid over-cutting the labial surface (if we do it parallel to the long axis), which affects the esthetic.

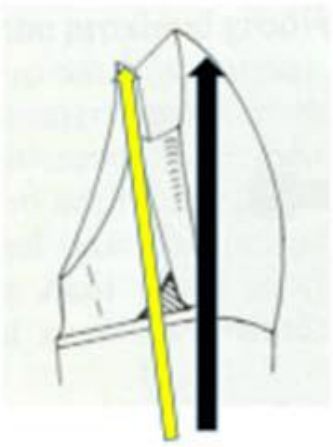
Differences between anterior and posterior teeth preparation:

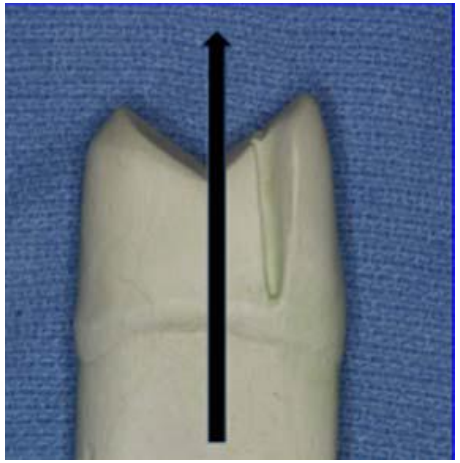
- **In the anterior teeth**, the retentive proximal groove should be parallel to the **incisal 2/3** of the labial surface; while **in the posterior teeth**, it is parallel to the **long axis** to get the longest groove for better retention of the crown.












THANK
YOU