

# CROWN AND BRIDGE PROSTHODONTICS

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

Lec.4



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

## Full metal cast restoration

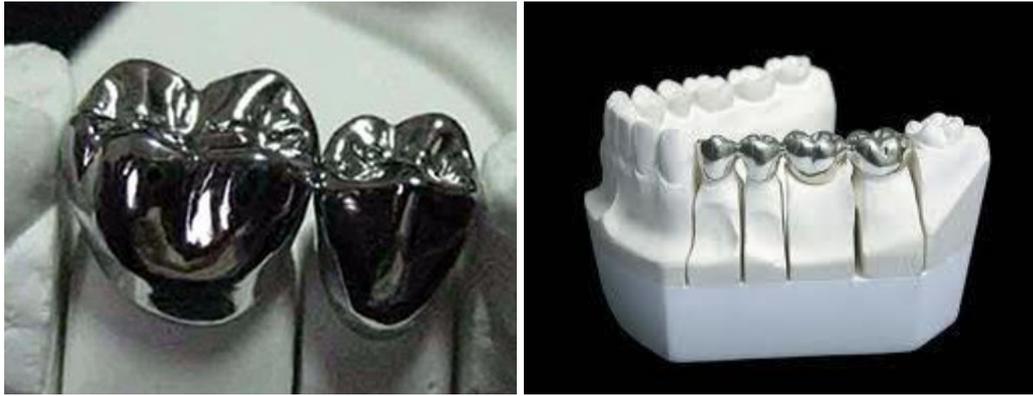
### Full metal crown (cast metal):

It is one of the most commonly indicated crown restoration for the posterior teeth because it made of metal, it should be used when the patient dosen't mind the appearance of metal or when esthetic not a factor. It can used as a single unit or as a retainer for a F.P.D, especially when we have a small abutment teeth with long span edentulous area (to overcome occlusal forces preventing bridge displacement).

It has better retention-resistance to displacement than other crown restorations such as 3/4 crown, 7/8 crown because all the axial walls are included as well as the occlusal surface.

### Metal alloys type used in construction of FMC:

- ✚ High noble alloy--- gold alloys (soft, medium, hard, extra-hard).
- ✚ Low noble alloy--- Agpd, Aupd.
- ✚ Non-noble alloy--- NiCh, ChCo.



### **Indications:**

- ❖ Teeth that have extensive coronal destructions by caries or trauma and large restoration to protect the remaining tooth structure from fracture.
- ❖ Maximum retention and resistance is needed (short crown).
- ❖ Endodontically treated teeth.
- ❖ Correction of occlusal plane
- ❖ As bridge retainer.
- ❖ Correction of minor inclination.
- ❖ Patient with high caries index.
- ❖ Recontouring of the tooth (Teeth receiving clasps for partial denture).

### **Contraindications:**

- ❖ When less than maximum retention and resistance is necessary. If more conservative crown could be used, ex: 3/4 crowns. As intact buccal surface, very short span bridge.
- ❖ When caries index is low.
- ❖ For high esthetic needed like anterior teeth.

### **Advantages:**

- ❖ High retention and strength.
- ❖ High resistance to deformation.
- ❖ To modify the axial tooth contour.

### **Disadvantages:**

- ❖ Extensive tooth structure removal compare to other.
- ❖ Display of metal.
- ❖ Difficulty to test the vitality of the tooth especially by electrical pulp tester.
- ❖ Interfere with test.

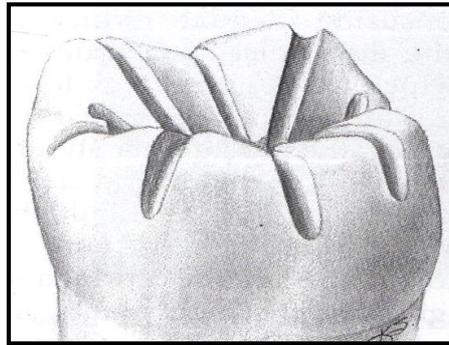
### **Steps in preparation:**

- ❖ Occlusal surface preparation.
- ❖ Buccal surface preparation.
- ❖ Lingual surface preparation.
- ❖ Proximal surface preparation.

### **Depth orientation groove:**

This is a groove that is placed on a surface of a tooth to act as a guide or reference to determine when sufficient amount of tooth structure is removed by preparation, if preparation is done without these grooves under and over preparation is possible, and more time will be wasted by repeated

checking of the preparation. Chamfer finishing line is used, therefore a round end tapered fissure bur is used in the preparation.



### **1. Occlusal surface preparation:**

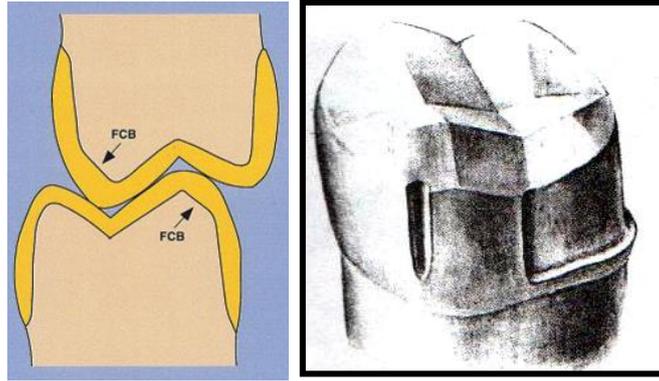
**Aim:** To create about 1.5 mm occlusal clearance over functional cusp and 1.0 mm over non-functional cusp.

**Geometric inclined plan reduction should be followed during occlusal reduction, objective of this:**

1. Providing restoration of uniform thickness.
2. Preservation of tooth structure (axial wall length).
3. Improve retention and resistance feature of the preparation.

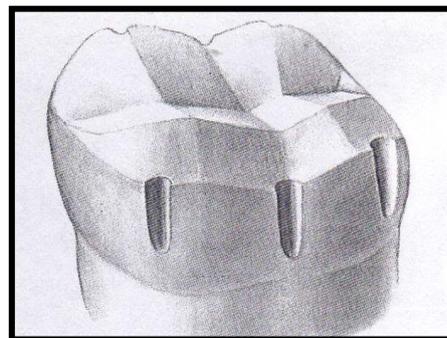
### **Occlusal reduction sequence:**

1. Depth orientation grooves (D.O.G) are made on the occlusal surface by a fissure bur to follow inclines of the cusps.
2. Any tooth structure between D.O.G should be removed following the normal contour of the cusps.
3. A wide bevel placed on the functional cusps.
4. Occlusal clearance then check in centric & eccentric occlusal relations.



## 2. Buccal and Lingual surface preparation:

- Three D.O.G are placed in the buccal surface with the same bur, one placed in the center of the wall and one in each medial and distal transitional line angle (parallel to long axis of the tooth or to the proposed path of insertion of the restoration).
- Move the bur mesially and distally following the inclination of this surface to remove any island of T.S between D.O.G (occluso-vertically the placement of the tip of the bur will determined the position of the margin (round end fissure bur is used during axial reduction to obtain chamfer finishing line).



## 3. Lingual surface preparation:

The same preparation procedure is used as in buccal surface.

## 4. Proximal surface preparation:

The most difficult surface to prepare, interproximal contact should open without endanger adjacent teeth (safe aided disk can be use during

proximal reduction in order to prevent any damage to the adjacent tooth also placing matrix band on the adjacent tooth can help), with very thin longer taper diamond bur (short needle diamond) the contact should be removed carefully by the use of a fine tapered fissure bur rest on the prepared tooth (to prevent any damage to the adjacent tooth), then, by moving the bur up & down the contact will be open buccolingually.

Once the contact is open, round end taper diamond fissure bur were used then to plan the wall while forming the chamfer.



## 5. Finishing of the preparation:

Smoothing of the axial wall, removing sharp angles because they act as a stress concentration area.

A seating groove is placed in the buccal surface of the lower molar and the palatal surface of the upper molar.

### Advantages:

1. Act as a guide during the placement of the crown.
2. Prevent the rotation (by increasing resistance).
3. Improve retention.

