

Cl. II cavity preparation for amalgam restoration

Class II restoration involves the proximal (mesial or distal) surfaces of premolars and molars. It termed MO; mesioocclusal, DO; disto-occlusal, or MOD; mesio-occluso-distally cavity.

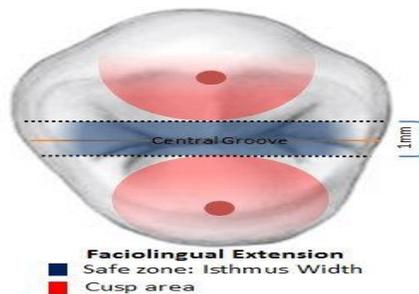
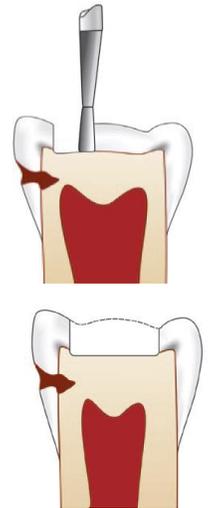


1. Outline Form:

Outline form for occlusal portion follows the same principles as given for pit and fissure lesions except that external outline is extended proximally toward defective proximal surface.

A. Establishing the occlusal step

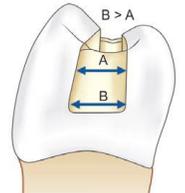
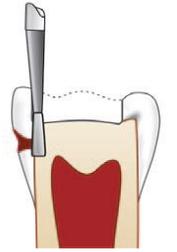
1. Using a round or pear shaped bur, make a punch cut in the pit closest to the involved proximal surface. Keep long axis of the bur parallel to the long axis of the tooth and maintain the initial depth of 1.5 to 2.0 mm.
2. Extend the outline to include the central fissure while maintaining uniformity in depth of pulpal floor.
3. Make isthmus width not wider than one fourth of the intercuspal distance.



4. Give slight occlusal convergence to facial, lingual and proximal walls to provide retention for amalgam.
5. A dovetail is provided. It prevents mesial displacement of the restoration.

B. Extending occlusal step proximally

1. Outline form in proximal area is primarily determined by faciolingual position of the contact area and the extent of carious lesion.
2. While maintaining established pulpal depth, extend the preparation towards proximal surface of tooth, ending 0.8 mm short of cutting through mesial marginal ridge.
3. Proximal cutting is sufficiently deep into the dentin (0.5-0.6 mm) so that retentive locks are prepared into axiolingual and axiofacial line angles.

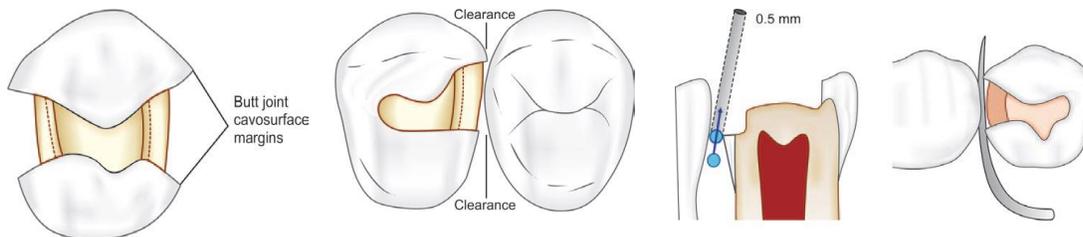
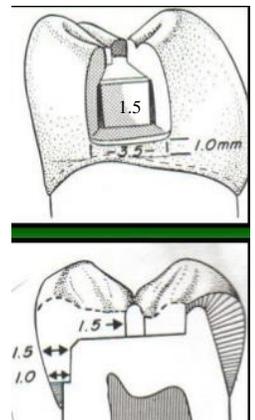


C. Preparation of proximal box:

1. Widen the preparation faciolingually to just clear the contact areas. Proximal cut is converge occlusally. It provides good retention and conservation of marginal ridge.
2. Keep a small slice of enamel at the contact area to prevent accidental damage to adjacent tooth.



3. Fracture the slice of enamel in the region of the contact area with a small chisel or enamel hatchet.
4. Proximal margins should have a cavosurface angle of 90° and when completed, the walls of the proximal box should converge occlusally.
5. It is important to conserve the tooth tissue so that the tooth remains as strong as possible and occlusal forces placed on the amalgam are as small as possible.
6. Ideal clearance of facial and lingual margins of the proximal box should be 0.2 to 0.5 mm from the adjacent tooth.
7. Avoid extending gingival margins into the gingival sulcus because it becomes difficult to restore subgingival margins.



Gingival floor should have clearance of 0.5 mm from the adjacent tooth; The clearance can be tested by passing the explorer.

2. Resistance Form:

This can be obtained by incorporating the following features in the preparation:

1. Shape of the preparation like a box with flat pulpal and gingival floor.
2. Cavosurface angle of 90°.
3. Include all the weakened tooth structure.
4. Maintain minimal width of the preparation so as to preserve tooth structure.
5. Round off all the internal line and point angles.
6. Consider cusp capping for preserving cuspal strength.



3. Retention Form:

Primary retention form prevents the restoration from being displaced. It can be increased by the following:

1. Occlusal convergence (about 2 to 5%) of facial and lingual walls.
2. Occlusal dovetail.

Occlusal convergence of buccal and lingual walls provide retention to amalgam restoration

4. Final Tooth Preparation:

1. During final preparation, remove debris and examine for correction of all cavosurface angles and margins.
2. Remove remaining caries, old restorative material and adjacent deep pit and fissure involved in the preparation.

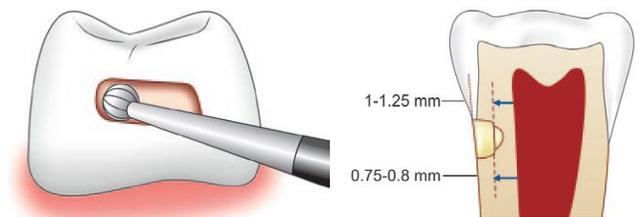
3. In the large preparations with soft caries, the removal of carious dentin is done with spoon excavator or slow speed round bur.

Secondary retention and resistance form

1. Place retention grooves and locks in the proximal box.
2. Slot and Pot holes are placed in gingival floor.



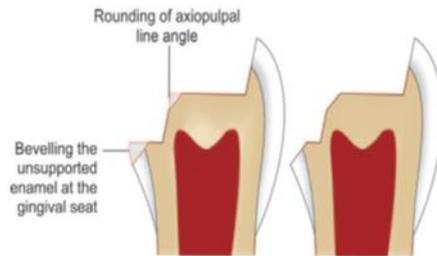
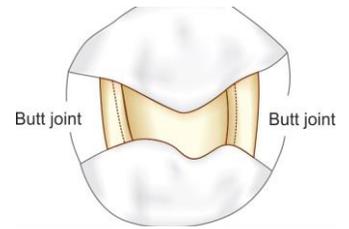
Retention locks in the proximal box (A) Preparation of locks using fissure bur



Slot preparation.

5. Finishing of enamel walls and margins:

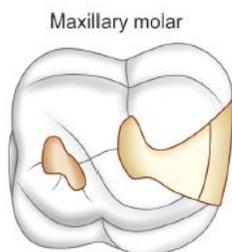
1. It is done by removing all unsupported enamel. Beveling of enamel portion of gingival wall is done with the help of gingival marginal trimmer.
2. Make cavosurface angle 90° butt joint type to provide bulk to restoration, which in turn, provides maximum strength.
3. The final stage of tooth preparation is to clean the preparation thoroughly with water and air spray. Then dry it with moist air.



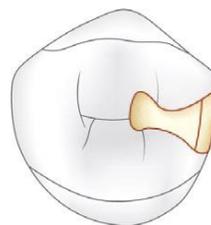
Conservative Preparation for Mandibular First Premolar and Maxillary Molar

Conservative design in these teeth helps in the preservation of oblique ridge or the transverse ridge which protects the cuspal strength.

Design features: For maxillary first molar, mesio-occlusal and disto-occlusal preparations are made independently without involving oblique ridge. For mandibular first premolar, transverse ridge is not involved in proximal preparation. Because of high facial pulp horn, pulpal floor should have facial inclination.



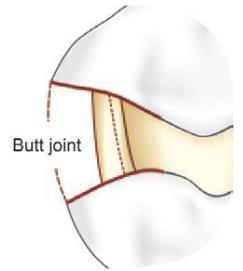
Conservative class II preparation in maxillary first molar. Here mesio-occlusal and distobuccal preparations are made independently without involving oblique ridge



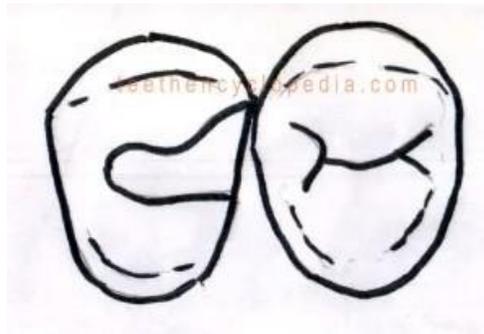
Conservative class II preparation in mandibular first premolar not involving transverse ridge

Reverse curve:

In class II preparations, extension of proximal area is important for elimination of caries and breaking proximal contacts. But in teeth with broader contacts, reverse-S shape curve is given to both widen the box yet remove less tooth structure. Reverse curve is given to the proximal walls by curving them inwards towards the contact area.



Reverse curve is given to the proximal walls by curving them towards the contact area



References:

1. Textbook of operative dentistry. Nisha Garg and Amit Garg. (2015).