

## CAVITY PERPARATION

### Class I cavity:

#### 1. The outline form:

means placing the preparation margins in the positions they will occupy in the final preparation, the typical features of establishing proper outline form and initial depth are:

- Width of the facio-lingual walls of the cavity should be  $\frac{1}{4}$  I.C.D (inter-cuspal distance).
- Preserving marginal ridge strength (2mm thickness marginal ridge).
- The depth of the preparation into dentin should be 1.5-2mm.
- The extent of the caries lesion affects the outline form of the tooth preparation because the **objective is to extend to sound tooth structure also** Ideal outline includes all pits & fissures even if its sound to prevent them from caries in the future (**extension for prevention**).

#### 2. Resistance form

Is the shape of the cavity that enables both the tooth and restoration to withstand occlusal forces without fracture. And this includes:

- Factors prevent fracture of the tooth
- The facio-lingual width of the preparation should not exceed  $\frac{1}{4}$  I.C.D fig 6.

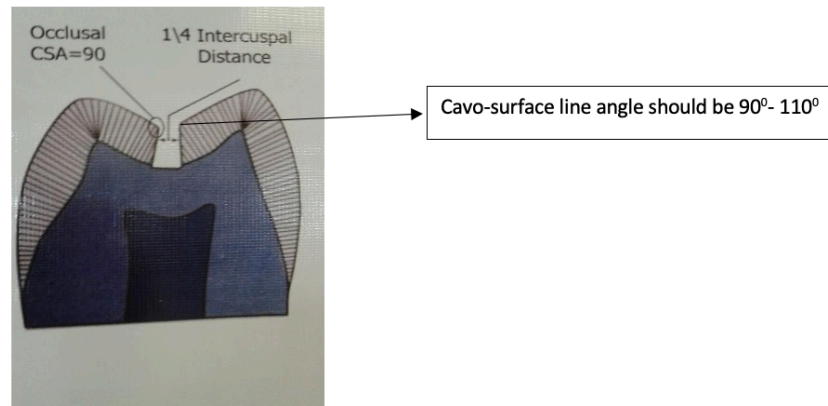


Fig 6: resistance means of CL I.

- Mesial & distal walls of the cavity should be parallel and slightly diverge occlusally to be within the enamel rod direction and prevent any unsupported enamel at the marginal ridge.
- All internal line angle should be rounded to prevent stress concentration area.

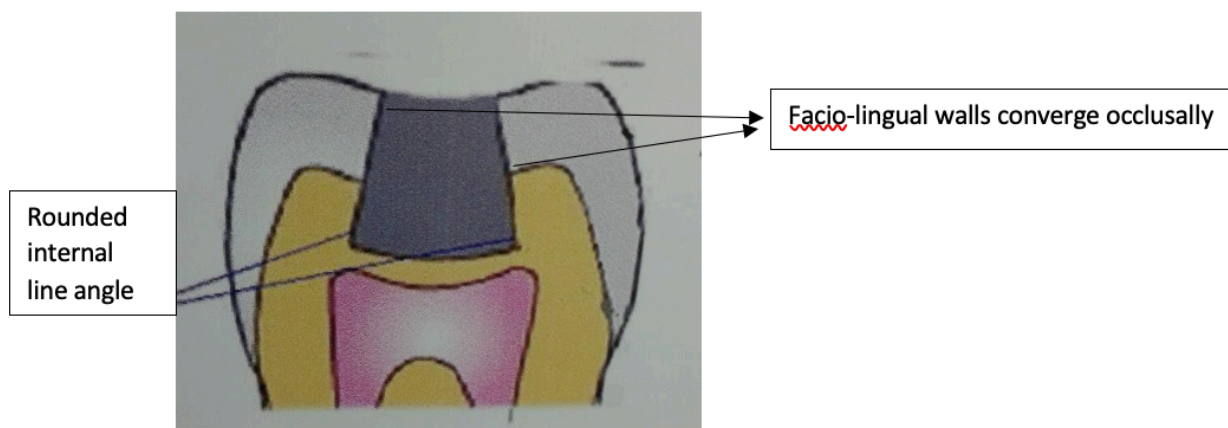


Fig. 7

- Factors prevent fracture of restoration
- Facio-lingual width should be  $\frac{1}{4}$  I.C.D because large surface area exposed to more force and fracture occurs.
- Occlusal amalgam should have thickness of (1.5-2.0 mm) to resist fracture during function.
- Factors prevent fracture for both tooth and restoration:
- Removal of unsupported enamel by making the margin ( $90^{\circ}$ - $110^{\circ}$ ) because less than  $90^{\circ}$  the tooth is more subjected to fracture if more than  $110^{\circ}$  lead to fracture of restoration.
- Smooth pulpal floor to prevent stress concentration area.

**3. Retention form:** is the shape of the cavity that permits the restoration to resist displacement through the tipping or lifting force.

To provide retention the cavity has the following:

- Opposing wall should be parallel to each other or converge occlusally ( $5^{\circ}$ ) this convergence done on buccal and lingual wall fig 7.
- The floor of the cavity should be flat to prevent restoration movement.
- Outline form should be small as possible to prevent displacing force on it.
- Dove-tail preparation to increase retention.

#### 4. Convenience form:

Is the shape of the cavity that allows an adequate observation, accessibility this achieved by giving good depth (1.5-2mm) and width (1\4) I.C.D

#### 5. Removal of remaining caries

Deep dentinal caries can be removed by using spoon excavator or large round bur with slow speed hand piece.

#### 6. Finish enamel walls

Involve making the wall smooth and removing of unsupported enamel.

#### 7. Clean the preparation:

Removal of all debris by washing the cavity and drying it.

### Clinically:

#### Buccal Pit Cavities:

The outline of these cavities usually describes a triangle with its base forming the gingival wall and its sides forming the mesial and distal walls, the gingival wall is placed at or slightly occlusal to the height of contour of the tooth.

- All walls are extended just enough to eliminate defective enamel and dentin.
- The enamel walls are planned in the direction of enamel rods and perpendicular to the axial wall.
- Hoe excavators are used to smooth the axial wall and make it parallel with the external surface of the tooth.

- The shape of the cavity will be governed by the extension of caries, accordingly the outline of these cavities may be a rounded or oval in shape.



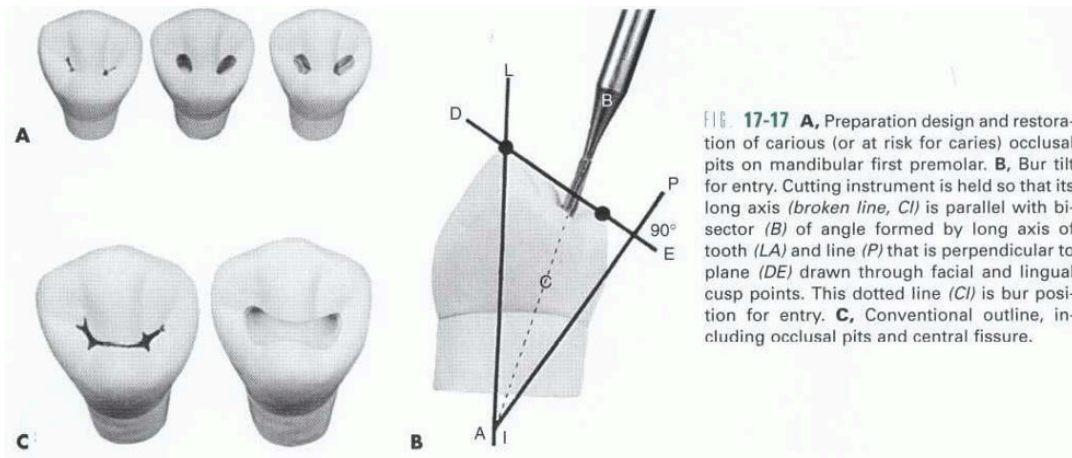
### OUTLINE FORM FOR PIT RESTORATIONS

#### Occlusal pits of mandibular first premolars

Mandibular 1st. premolars have 2 exceptions:

- 1- We can make 2 separated cavities one on mesial occlusal pit & one on distal without including central fissure if this fissure is not involved by caries.
- 2- The buccal horn of pulp is higher than the lingual one. So according to this when we prepare the cavity floor it should be inclined lingual (not flattened) in order not to harm the pulp.

All the principles of cavity preparation for class I as discussed previously were applied here except flattening of pulpal floor.



### **Cavity preparations for maxillary first molars**

Upper 6 also had exceptions because of the anatomy of the tooth. The presence of oblique ridge in between distobuccal & mesiopalatal cusps gives the possibility to do 2 separated cavities one mesial & one distal without the need to include oblique ridge within the preparation.

#### **Buccal and Lingual Extensions:**

In case of occluso-buccal and occluso-lingual cavities extensions are made through the fissures and towards the respective surfaces. The cavity walls and margins are finished as previously described.

