Class II Cavity Preparation for Amalgam

When the lesion present in the proximal surface of premolars and molars, this requires class II cavity preparation, which is either MO or DO or MOD.

If the carious lesion is present only in proximal surface and not involve the occlusal surface, the class II cavity should include all pits and fissures in the occlusal surface in addition to the proximal surface (extension for prevention).

Nowadays, if the patient with low caries index and has a good oral hygiene, in countries with high preventive measures, in this case, class II cavity could include only the proximal surface which is called "box design" and do enameloplasty to the non coalesced pits in the occlusal surface.

Steps of Class II cavity preparation

- First, we do class I cavity preparation on the occlusal surface applying all Black's principles of cavity preparation, because it gives vision and proximity to reach caries in the proximal contact area. Usually caries occur in the contact area, because of difficulty to clean this area by dental brush, this leads to food accumulation, and development of caries.

- One of the most important point in class II cavity is that we should not hit the adjacent tooth by rotary bur, since the proximal surface of the adjacent tooth is intact and smooth, so any cut will produce a rough surface and this facilitate food and bacterial accumulation which will cause caries to the sound tooth. To avoid this:
  A-
  - Placing a matrix band between the two adjacent teeth, place the fissure bur at the same depth of class I cavity and continue cutting towards the proximal marginal ridge until reach the end of the tooth. (the opening has the same width of the bur and same depth of class I)
- Placing the fissure bur perpendicular to the occlusal surface, and ascend gingivally to create a step and reach caries in the proximal contact area, continue cutting to remove caries and extend the base of the box just beyond the proximal contact area (0.5 mm below the contact area) so the margin of the restoration will be in cleansable area.

- Move the fissure bur buccolingually until the buccal wall and lingual wall will be free form the contact area to be in cleansable area.

- The contact should be opened 0.5 mm gingivally, buccally and lingually (palatally), the tip of the probe should pass freely between the two teeth.

Or

B-
- Place the fissure bur at the same depth of class I cavity and continue cutting towards the proximal marginal ridge leaving a thin shell of marginal ridge, after that move the bur occlusogingival creating a step beyond the contact point, then move the bur buccolingually, remove the thin shell by a chisel or hatchet. Finish enamel walls by chisel or hatchet to remove any undermined enamel, and free the contact gingivally, buccally and lingually.
- at the end we will have a proximal box with the following walls:
  - axial wall: parallel with long axis of the tooth.
  - gingival seat: perpendicular to the ling axis of the tooth.
  - buccal wall
  - lingual (palatal wall)

and has the following line angles
  - Axiogingival line angle
  - Axiobuccal line angle
  - Axiolingual (palatal) line angle
  - Axiopulpal line angle

**Retention form**

1. In addition to the convergence of the buccal and lingual walls of the occlusal class I cavity, and the dovetail. We do convergence of the buccal and lingual walls of the box occlusally.

2. Flat gingival wall (seat) to prevent dislodgement of the restoration.

3. Retentive grooves: using a small fissure bur to make retentive grooves on axiobuccal and axiolingual line angles, they should be placed in dentine because its resiliency.

**Resistance form**

1. width of the cavity 1/4 of intercuspal distance.
2. cavosurface line angle (90° – 110°).
3. Axiopulpal line angle is beveled. To eliminate stress concentration on the restoration.
4. Gingival cavosurface line angle is beveled. To remove the unsupported enamel.
5. rounded internal line angles.

**Note**: the buccal and lingual walls of the box is diverge proximally to free them from the contact and to remove the unsupported enamel, but the restoration will not be dislodged proximally, due to the retention means in the occlusal cavity, the dovetail act as a lock preventing the restoration from being dislodged proximally, in addition to the retention grooves.
**Isthmus:** is the area present at the junction between the occlusal part and proximal part of the cavity (proximal box), it should be as narrow as possible (1/4 of ICD) to reduce the force on it and prevent fracture of the restoration. The depth of Isthmus is 1.5 – 2 mm to have a good bulk of the restoration at this area.

**Convenience form**

The axial wall should be parallel to the long axis of the tooth, to have a good accessibility to the deepest point of the cavity.

**Removal of the remaining caries and toilet of the cavity.**