Preparation of cavity class II.
for amalgam restoration.
Lower and upper premolars
and molars
Cavity class II.

- Black classification (based on the predilection places of decay): I-V, was introduced in 1914
- Cavity class II.: involves one or both of the proximal surfaces of the tooth (premolars, molars)
- Usually the decay starts under the contact area: M, D, M and D surfaces
- MO, MOD, OD cavity preparation
Black principles of cavity preparation

- Opening of the decay
- Establish the outline form and initial depth (extension for prevention)
- Primary retention (convergent walls) and resistance form
- Obtain the convenience form
- Remove any remaining carious dentin or old restorative materials
- Pulp protection
- Secondary retention (undercuts) and resistance form
- Finishing the walls (remove the unsupported enamel)
- Clean and check the cavity
Instruments of the cavity preparation

- Pear shaped bur (inverted cone bur - 5-8 degree occlusal convergence) is advocated for tooth preparations for amalgam restoration, high speed accompanied with water spray
- Low speed, round bur advocated for the removal of the deepest part of carious dentin and previous tooth filling remnants
Round
Inverted cone
Pear-shaped
Straight fissure
Tapered fissure
Principles of cavity preparation

Macroteintion:

- 5-8 degree occlusal convergence of facial and lingual walls
- extension of the walls in strictly established form
- pulpal and gingival walls are flat and perpendicular to forces directed with the long axis of the tooth
- rounded internal line angles to reduce stress concentration
- providing enough thickness of amalgam to prevent its fracture
How to handle the pain sensation and inconvenience during the cavity preparation?

- Anaesthesia
- Isolation
Steps of the cavity preparation I.

Occlusal outline form

- Similar to Class I. cavity preparation in the affected area (M, D)
- Using turbine with air-water spray, inverted cone bur (5-8 degree occlusal convergence)
Steps of the cavity preparation II.

- Direction of the bur: parallel to the long axis of the tooth crown
- Enter the pit nearest the involved proximal surface
- Bur position to begin proximal ditch cut
- Proximal ditch is extended gingivally to dentined level of gingival wall moving the bur vestibulo-orally
- Proper initial depth: 1.5-2
Steps of cavity preparation III.

- isthmus preparation: no wider than \( \frac{1}{4} \) the intercuspidal distance
- flat pulpal floor
- do not undermine the marginal ridge
- include developmental fissures radiating from the pit (dovetail retention form if necessary)
Proximal outline form

- include all caries or existing restorative materials
- move the bur to extend outline (creating facial, lingual, distal or mesial walls with 5-8 degree occlusal convergence) primary retention form
- the axiopulpal wall follows the faciolingual contour of the proximal surface
The appearance of occlusal and proximal cavities

- the axiopulpal wall follows the faciolingual contour of the proximal surface
Removal of any remaining defective enamel and infected carious dentin

- slowly rotating stainless steel round bur of appropriate size

- infected dentin on a portion of either the pulpal wall or axial walls does not indicate deepening the entire wall
Pulp protection

- only on the pulpal walls (axiopulpal, occlusopulpal)
- do not extend it until the margins
Secondary retention and resistance form I.

- the use of retention grooves in the axiogingival line
- prevent the removal of dentin that supports the proximal enamel
- not to prepare the locks entirely in the axial wall (risk of pulp exposure)
- the use of pins
Secondary retention and resistance form II.

- only if necessary (extensive proximal box)
- the use of retention locks in the axiofacial and axiolingual line angles (0.2 mm in the DEJ)
Finishing external walls

- remove unsupported enamel (less marginal leakage)
- no beveling
- 90 degree cavosurface angle at the margins
Cleaning, inspecting
Variations

- Mandibular 1st premolar
- Maxillary 1st premolar
- Maxillary 1st molar
- Maxillary 2nd molar with caries on distal portion of facial surface
- Mandibular 1st molar
Mandibular 1st premolar

- Small lingual cusp
- Facial inclination of the pulpal wall
- Tilt the bur slightly lingually (in this way we don’t weaken the lingual cusp and don’t expose the facial pulp horn)
- The lingual cusp may need to be reduced for caping
- In case of sound transverse ridge do not extend the outline across the ridge
- Dovetail retention, if required
Maxillary 1st premolar

- The mesiofacial embrasure is esthetically prominent.
- The occlusogingival preparation of the facial wall of the mesial box is parallel to the long axis of the tooth instead of occlusal convergence.
- The extension of the mesiofacial proximal wall should be minimal.
Maxillary first molar

- Oblique ridge (remove or preserve)
- Cutting through the oblique ridge is indicated: if it’s undermined by caries
- Preserving the oblique ridge: two separate MO and OD cavities
Maxillary first molar

- MOL cavity: includes distal pit, distal oblique and palatal fissures
Maxillary second molar

- Sometimes the distofacial cusp may need to be included in to the cavity
Mandibular first molar

- Entire distal cusp included in preparation outline form
- Capping of distal cusp is indicated when occlusal margin crosses cuspal eminence
- Cusp reduction: min. 2 mm
Walls

II. Class (MO) cavity
Angles

II. Class (MO) cavity