Class I Cavity Preparation for Amalgam

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Definition

- Class I (Pit and Fissure) - involves a pit or fissure on a posterior or anterior tooth
Why????????!!!!!!

- union failure of tooth lobes
- organic debris collects
- acid formation/ incubator effect
- area not self cleansing, eliminate geography
- susceptible tooth + bacteria + food + time = caries
- toothbrush cannot reach bottom of groove
Caries Spread Diagram

Pit and fissure

Smooth Surface

Enamel

Dentin
Indications:

- Carious tooth structure in the occlusal fissures (or in facial or lingual pits) detected clinically and confirmed with bitewing radiographs.

- The replacement of a restoration that is defective beyond repair or associated with a recurrent caries lesion.
The objectives of treatment

1. To eliminate caries lesions.
2. To remove any enamel that has been undermined by the caries process.
3. To preserve as much sound tooth structure as possible.
4. To create a strong restoration that mimics the original sound tooth structure and allows little or no marginal leakage.
Clinical Technique

1. Anesthesia (Pt comfort, decrease salivary flow).
2. Occlusal assessment (determine design, adjust the restoration function).
3. Isolation (visibility, better restoration quality).
5. Pulp Protection.
6. Restoration.
G.V Black steps of cavity preparation

1. Outline form
2. Resistance form
3. Retention form
4. Convenience form
5. Removal of remaining caries
6. Finishing of walls and margins
7. Cleansing of the cavity
Tooth Preparation

1. Outline form

- *(1)* carious tooth structure should be eliminated.
- *(2)* margins should be placed on sound tooth structure.
Tooth Preparation

1. **Outline form**
   - a bur (no.329 or 330) is used to cut through the enamel to gain access to the carious dentin.
   - The preparation is widened to give access to all carious dentin and to remove any unsupported enamel.
   - No sharp angles.
   - Smooth
   - Conservative

1.6 mm

Don’t overextend prep into mesial or distal marginal ridges
Tooth Preparation

- When replacing a defective restoration (recurrent caries lesion), the outline form will be determined by:
  1. The outline form of the old restoration.
  2. Additional carious lesion.
  3. The resistance form required.
Outline form of class I on different teeth
Outline form of class I on different teeth
Outline form of class I on different teeth
Outline form of class I on different teeth
Outline form of class I on different teeth
Tooth Preparation

2. Resistance form

- **Adequate thickness** for the restorative material
- Margins should be approximately **90 degrees**.
- **Flat pulpal floor** (resist forces directed in the long axis of the tooth.)
Fig 12-5. An acute cavosurface margin of enamel has the potential for fracture; a 90-degree enamel margin on the occlusal surface will withstand occlusion.
Tooth Preparation

3. Retention form

- **opposing walls** of Class 1 occlusal restorations should be **parallel to each other** or should converge slightly occlusally.

- Grooves: bucco-pulpal or lingo-pulpal.
Tooth Preparation

4. Convenience form:
Creating sufficient access to the carious lesion to facilitate:

- Visibility
- Instrumentation during cavity preparation and restoration.
Tooth Preparation

5. Removal of remaining caries

- Extension of the cavity should ensure that all caries has been removed from the peripheral DEJ.

- Best removed using **spoon excavator** or slow speed round bur.
Tooth Preparation

6. Finishing the walls and margins
   • Finishing of the external walls and flares
• FLARE terminal extensions: M/D/B/L
  parallel enamel rods to prevent fracture
  Retention will not be affected
  Retention is gained in central portion, bur design
Pulp Protection

- Cavity sealers
  - Varnish
  - Adhesive Sealers
- Cavity liners
- Cavity bases
Direct Restorative Materials.

- Amalgam
- Direct gold
- Composite resin
Amalgam Placement Set-up

- Assemble instruments
  - Amalgam carrier, condensers, carvers, burnishers, explorer, and mirror
- Amalgam capsules and dappen dish
- Triturator
Amalgam Placement

- Check Triturator settings
- Place amalgam capsule in triturator properly and triturate
Amalgam Placement
Amalgam Placement

- Empty amalgam into dappen dish
- Load amalgam into carrier
Amalgam Placement

- Dispense amalgam into preparation
- Condense, pre-carve burnish, carve and post-carve burnish amalgam
Amalgam Placement

- Condense & pre-carve burnish
Amalgam Placement

- Carve and post-carve burnish amalgam
Amalgam Placement

- Evaluate completed amalgam restoration
Amalgam Placement

- Discard of excess amalgam properly
- If defective: remove immediately
  - Use instruments or slow speed handpiece if necessary,
  - REMEMBER: newly set amalgam will cut very easily with handpiece
CRITERIA FOR CLASS I OCCLUSAL AND BUCCAL PIT AMALGAM PREP #31

OCCLUSAL

1. Outline: Smooth, no sharp angles or irregularities.

2. Extensions: M-D: Extend to include mesial and distal pits, but marginal ridges are not undermined. B-L extension inside grooves is no more than the bur width.

3. Width: Conservative, no wider than #330 bur (or straight fissure bur); must be able to pass the bur through prep without binding.

4. Depth: 1.5-2.0 mm., even floor

5. Axial inclination: Parallel with long axis of the tooth.

6. Internal Form: Smooth walls and floor.

7. Flares: M,D,B,L flares slightly divergent at terminal extensions to parallel enamel rods, M-D flares do not weaken marginal ridges.

8. Retention: Located in central portion of prep, created by converging walls.

Evaluation sheet (exercise 1)

Student Name:  
Student ID:  

**Class I preparation:** A Check mark Indicates a Deficiency

<table>
<thead>
<tr>
<th>OCCLUSAL</th>
<th>INSTRUCTOR</th>
<th>STUDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Outline</td>
<td>Rough/ Incorrect shape</td>
<td>Rough/ Incorrect shape</td>
</tr>
<tr>
<td>2. Extensions M-D</td>
<td>Underextended</td>
<td>Underextended</td>
</tr>
<tr>
<td></td>
<td>Overextended</td>
<td>Overextended</td>
</tr>
<tr>
<td>3. Width</td>
<td>Narrow/ Wide</td>
<td>Narrow/ Wide</td>
</tr>
<tr>
<td>5. Axial Inclination</td>
<td>Incorrect M-D/ B-L</td>
<td>Incorrect M-D/B-L</td>
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<tr>
<td>6. Internal Form</td>
<td>Rough</td>
<td>Rough</td>
</tr>
<tr>
<td>7. Flares: M-D</td>
<td>Undercut/ Too Flared</td>
<td>Undercut/ Too Flared</td>
</tr>
<tr>
<td>8. Retention</td>
<td>Converges/ diverges</td>
<td>Converges/ diverges</td>
</tr>
<tr>
<td>9. Margins</td>
<td>Smooth, +/- 90</td>
<td>Smooth, +/- 90</td>
</tr>
</tbody>
</table>

**Grade of 10:** Excellent Outstanding, no check marks  
**Grade of 9:** Very good, lacking two of the above  
**Grade of 7:** Good, lacking four of the above  
**Grade of 5:** Average, lacking five of the above  
**Grade of 3:** Below average, lacking six of the above  
**Grade of 1:** Unsatisfactory, lacking seven or more of the above  

Grade _____
Plz watch these videos

https://youtu.be/ZObdvNSRcP0
https://youtu.be/ChvMiaLnYQA
https://youtu.be/bkU2w2FR9bg