Restorative Dentistry in Primary Teeth – Intercoronal Restorations and Stainless Steel Crowns
Norman Tinanoff, DDS, MS
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Outline
Decisions to Treat
Class I
- Amalgam
- Composite
- Incomplete Caries Removal
Class II
- Amalgam
- Composite
Restorative Materials for Intercoronal Restorations
Stainless Steel Restorations

Decisions for Treatment
Past – Clinical/radiographic identification of a lesion.
Present – Decisions are complex involving understanding the natural history of the carious process, better diagnosis of disease, risk assessment, evidence of outcomes, ability of an individual to change their risk and informed consent.

False Negative – explorer does not stick, but caries in dentin

False Positive - explorer sticks in fissure

With the Visual-Tactile (Mirror-Explorer) Criteria in Fissure Caries

Sensitivity = Ability of a diagnostic test to correctly identify those teeth that have caries (39% sensitivity means that 61% of the time the lesion was not detected) – false negative

Specificity = Ability of a diagnostic test to correctly identify those teeth that do not have caries (84% specificity means that 6% of the time a lesion was identified that was not really there) – false positive
Different Criteria for Fissure Caries

Knowing that sealants arrest undetected and small enamel caries, can we move to visual criteria? --

- Is there a hole in the tooth?
- Is there shadowing under the enamel?

<table>
<thead>
<tr>
<th>LOW RISK</th>
<th>MODERATE RISK</th>
<th>HIGH RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Sealants</td>
<td>Sealants (with caution)</td>
</tr>
<tr>
<td>Restoration of cavitated lesions</td>
<td>Restoration of fissures with shadowing</td>
<td>Restoration of fissures with shadowing</td>
</tr>
</tbody>
</table>

Outline

Decisions to Treat

Class I
- Composite
- Incomplete Caries Removal

Class II
- Amalgam
- Composite
- Critical Issues

Differences between primary and permanent teeth

- Smaller preparations due to smaller teeth.
- Shallower preparation (just into dentin)
- Internal angles rounded to reduce internal stress
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Restorative Materials for Intercoronal Restorations
Stainless Steel Restorations

Advantages of Amalgam Restorations

- Less technique sensitive; better predictability of success
- Able to be placed without absolute moisture control
- Better wear resistance, especially in areas of occlusion
- Cheaper than composite materials
- Quicker than composites
- Some clinical trials in children show greater life span

Amalgam preparations – Include fissures in preparation
Conservative preparation that includes all fissures

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Restorative Materials for Intercoronal Restorations
Stainless Steel Restorations
Advantages of Composite Restorations

- Leakage less, especially with dentin bonding
- Better aesthetics
- No concern about mercury
- Lower thermal conductivity
- Bonds tooth together
- Do not have to remove as much tooth structure

Treating the Routine Fissure Carious Lesion
Treating Fissures with Shadows

Caries Spread in the Dentin

Caries Removed
Initial Layer of Flowable Composite

Partially Filled with Flowable Composite

Completed with Filled Resin

Sealant over Composite Restoration

Completed Class I Restorations

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Treating Deep Caries – Incomplete Caries Removal

CLINICAL REVIEW

Incomplete Caries Removal: A Systematic Review and Meta-analysis

Outline Carious Lesion with a Football Diamond

Less Pulp Exposures

Failures

Caries Outlined
Outline

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With the Radiographic Criteria of Enamel Proximal Lesions

Sensitivity = Ability of a diagnostic test to correctly identify those teeth that have caries (30% sensitivity means that 70% of the time the lesion was not detected) – false negative

Specificity = Ability of a diagnostic test to correctly identify those teeth that do not have caries (76% specificity means that 24% of the time a lesion was identified that was not really there) – false positive
### Treatment Planning Proximal Caries

<table>
<thead>
<tr>
<th>Restorative Therapy</th>
<th>LOW RISK</th>
<th>MODERATE RISK</th>
<th>HIGH RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Monitor, monitor proximal lesions</td>
<td>Restoration of cavitated lesions</td>
<td>Restoration of cavitated lesions</td>
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<tr>
<td></td>
<td>Restoration of progressing lesions</td>
<td>Restoration of progressing lesions</td>
<td>Aggressive treatment to minimize continued caries progression</td>
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</table>

### Principles of Class II Amalgam Restorations in Primary Teeth

- **Isthmus** should be wide enough to join occlusal and proximal preparations
  - Buccal and lingual walls point to center of tooth
  - Pulpal axial wall rounded
- Buccal, lingual, and gingival walls of proximal box should just clear contact
- Retention in box from convergence of buccal and lingual walls, not from retention grooves
- Width of proximal box should not exceed 1.5 mm

**Proximal box 1.5mm:**
Just break contact, gingivally, buccally and lingually

**Isthmus = 1/3 to 1/2 intercuspal distance**

**Isthmus = 1/3 to 1/2 intercuspal distance**
Proximal box preparation with the bur moving buccal and lingual

Internal angles rounded, including pulpal axial line angle
Box preparation follow external anatomy, converging buccal and lingual walls

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Proximal lesions on distal of first and mesial of second molars

Dove Tails

Bonding Agent
Outline

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Restorative Materials for Intercoronal Restorations

Which lesions need to be restored?; Which will progress?

15 months later
Iatrogenic Adjacent Tooth Damage

- 97% of adjacent teeth had a preparation trauma
- Statistically significant increase of damage was found on distal surfaces
- Over time operative treatment was performed on 10% of the undamaged test surfaces and on 35% of the damaged ones


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Restorative Materials for Interproximal Restorations
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Restorative Materials -- Primary Teeth

<table>
<thead>
<tr>
<th>Restorative Material</th>
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<th>Class III</th>
<th>Class IV</th>
<th>Class V</th>
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<tr>
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<td>Evidence in Favor</td>
<td>Expert opinion for</td>
<td>No Data</td>
<td>No Data</td>
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<tr>
<td>Glass Ionomer</td>
<td>Strong Evidence</td>
<td>Evidence in Favor</td>
<td>No Data</td>
<td>Expert opinion for</td>
<td>No Data</td>
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<td>Evidence in Favor</td>
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<tr>
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<td>No Data</td>
<td>No Data</td>
<td>Expert opinion for</td>
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Anterior Crowns
- N/A
- N/A
- Expert opinion for
- Expert opinion for

Restorative Materials -- Permanent Teeth

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3 M Crowns