Caries of primary teeth and its treatment
Development of caries

Predilection places
Earliest occurrence of caries

**time:**

- 6 month–1 year after tooth eruption

**primary incisors:** about 1 year of age

**primary molars:** about 3 years of age
Caries frequency
## Caries intensity

<table>
<thead>
<tr>
<th>Age (year)</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ds</strong></td>
<td>1.15</td>
<td>2.93</td>
<td>4.47</td>
<td>6.52</td>
<td>6.94</td>
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<tr>
<td><strong>m</strong></td>
<td>0.03</td>
<td>0.06</td>
<td>0.12</td>
<td>0.25</td>
<td>0.52</td>
</tr>
<tr>
<td><strong>fs</strong></td>
<td>0.00</td>
<td>0.07</td>
<td>0.24</td>
<td>0.50</td>
<td>0.68</td>
</tr>
<tr>
<td><strong>dmfs</strong></td>
<td>1.18</td>
<td>3.06</td>
<td>4.83</td>
<td>7.27</td>
<td>8.14</td>
</tr>
</tbody>
</table>

The graph shows the trend of caries intensity (dmf-s) over the given age ranges.
Caries in different tooth-groups (%)
Classification of caries

- according to quality:
  
  - CARIES SICCA – relatively hard, brown, broken surfaces, slow progression
  
  - CARIES HUMIDA – rapid desintegration of hard tissues
  
  CIRCULAR CARIES „rampant caries”
Classification of caries

- according to depth:
  - CARIES SUPERFICIALIS
  - CARIES MEDIA
  - CARIES PROFUNDA
Classification of caries

- OCCLUSAL CARIES – pit and fissure
- APPROXIMAL CARIES
- SMOOTH SURFACE CARIES
CARIES OF ANTERIOR TEETH

- CIRCULAR CARIES
  - NURSING BOTTLE CARIES /
  - BABY BOTTLE SYNDROME /
  - EARLY CHILDHOOD CARIES (ECC)

- „NORMAL CARIES”
  - on the approximal surfaces
ECC

- this form of caries occurs on the labial surface of incisors near the gingiva and spreads very fast in a circular pattern.

- it may start in extreme cases at about 1 year of age.

**AETIOLOGY:**

- **EXOGEN:** bottle-feeding with sweet drinks (e.g. tea, juice)

- **ENDOGEN:** premature birth, exudative diathesis, TBC, rachitis.
ECC

- Symmetrical appearance,
The rapid caries may cut the crowns of incisors before the eruption of second primary molars;

- If the causes are persistent, the caries spreads on the canines and molars both in the upper and lower jaws;

- For 2-3 years of age totally destroyed primary teeth;

- In saliva: Streptococcus mutans, lactobacillus acidophilus
ECC

Mixed dentition

Primary dentition
TREATMENT OF ECC

• stop cariogenic diet!

• in very early stages: fissure sealant

• filling, restoration (glassionomer, composite)

• crown

• impregnation

• extraction (space maintenance; speach-pathologist!)
ECC references


"NORMAL" CARIES OF ANTERIOR TEETH

- 4-6 years of age;
- approximal surface;
„NORMAL” CARIES OF ANTERIOR TEETH
Modern diagnostics

Cold light probe

Laser fluorescent lamp
“NORMAL” CARIES OF ANTERIOR TEETH: TREATMENT

- filling (glassionomer/composite)
- grinding, impregnation (compromise)
- crown
“NORMAL” CARIES OF ANTERIOR TEETH: TREATMENT

- filling
  (glassionomer, composite)
NORMAL CARIES OF ANTERIOR TEETH: TREATMENT

- Cavity preparation
„NORMAL” CARIES OF ANTERIOR TEETH: TREATMENT

- grinding, impregnation:
  - self-cleaning approximal surfaces,
  - obliteration of dentin channels,
  - discoloration (brown, black).
CARIES OF PRIMARY MOLARS

- All caries types can occur;
- Central, approximal caries (different types of dentition);
- The lower primary molars decay earlier than the upper;
- 4th year is the critical age
CARIES OF PRIMARY MOLARS

- Change in the rate of the central and approximal caries;
- 4th year is the critical age
CARIES OF PRIMARY MOLARS

- Rate of central and approximal caries lesions at the age of 6
CARIES OF PRIMARY MOLARS
TREATMENT

- Grinding, impregnation:
  - self-cleaning approximal surfaces,
  - obliteration of dentin channels,
  - discoloration (brown, black)
  - combination with filling
CARIES OF PRIMARY MOLARS

TREATMENT

- isolation:
  - cotton-roll, saliva-ejector;
  - rubber dam ??
Caries of Primary Molars

Treatment

- Cavity preparation:
  - minimal invasive technique;
  - chemomechanical caries removal (Caridex, Cariosolv)
  - modified Black principles
Caries of primary molars

**Treatment**

- Cavity preparation:
  - chemomechanical caries removal
    (e.g. Caridex, Cariosolv)
Caries of Primary Molars

Treatment

- Cavity preparation:
  - modified Black principles
CARIES OF PRIMARY MOLARS

TREATMENT

Cavity preparation:
- modified Black principles

Occlusal cavity:
- follow the fissure;
- form the cassette

Occlusal-palatinal cavity
CARIES OF PRIMARY MOLARS
TREATMENT

- Cavity preparation:
  - modified Black principles

Approximal-occlusal cavity:
  - C-C = distance between the cusps;
  - I-I = isthmus-width.

Approximal cassette:
  - optimal width and contour

(anatomy of primary teeth)
CARIES OF PRIMARY MOLARS
TREATMENT

*Cavity preparation:*
- modified Black principles

Preparation of approximal cassette:
- extension to gingival direction;
- convergent cassette-walls

Pulp-horns!
Anatomy of primary teeth
CARIES OF PRIMARY MOLARS
TREATMENT

- Mistakes in the cavity preparation:

  - Exposure of pulp-horn
  - Too deep in the gingival direction
  - Not proper form;
  - Too big cavity
CARIES OF PRIMARY MOLARS

TREATMENT

- matrix
CARIES OF PRIMARY MOLARS
TREATMENT

- **filling**

  - isolation
  - drying (cotton-pellets, benzine)
  - indirect pulp-capping: Ca(OH)$_2$
  - base: glassionomer cement
  - filling: amalgam, composite, cermet cement,
  - inlay
  - crown
CARIES OF PRIMARY MOLARS
TREATMENT

PREVENTIVE COMPOSITE:

=extension of fissure-sealant

• combination of fissure-sealant with filling

• indication:
  • small occlusal caries lesion + deep fissure
CARIES OF PRIMARY MOLARS

TREATMENT

- Filling material: amalgam
CARIES OF PRIMARY MOLARS TREATMENT

- Filling material: cermet cement
CARIES OF PRIMARY MOLARS TREATMENT

• INLAY
## Filling materials in primary dentition

<table>
<thead>
<tr>
<th>Filling material</th>
<th>advantage</th>
<th>dis-advantage</th>
<th>indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMALGAM</td>
<td>long-lasting, easy to use</td>
<td>esthetics</td>
<td>I, II</td>
</tr>
<tr>
<td>COMPOSITE</td>
<td>esthetics</td>
<td>cooperation needed</td>
<td>I, II, III/IV, V</td>
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<tr>
<td>COMPOMER</td>
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<td>I, II, III/IV, V</td>
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</table>
Filling materials in primary dentition

Glassionomer cement

Advantage: easy to handle

fluoride emission

Disadvantage: fragility

gets dry
CARIES OF PRIMARY MOLARS

TREATMENT

- restoration with „metal ring“
CARIES OF PRIMARY MOLARS
TREATMENT

- Preformed steel crown
  - Stainless steel; Ni-Cr
  - Restore the bite-function of destroyed primary molars;
  - Proper preparation and adaptation;
  - Conventional cementation.
CARIES OF PRIMARY MOLARS

TREATMENT

- Preformed steel crown

- steel crown

- conventional cementation
CARIES OF PRIMARY MOLARS

TREATMENT

- preparation of tooth for preformed steel crown
CARIES OF PRIMARY MOLARS

TREATMENT

- preparation
  - approximal view of primary molar
    - a. before preparation
    - b. after preparation
CARIES OF PRIMARY MOLARS

TREATMENT

- preparation

- measuring of mesio-distal diameter helps to choose the proper crown

- special forceps for the application of crown
CARIES OF PRIMARY MOLARS
TREATMENT

- Application of the preformed steel crown
  - shortening the crown length
  - polishing the crown edge
CARIES OF PRIMARY MOLARS

TREATMENT

- application

- shaping the contact point

- shaping the margin of the crown with forceps
CARIES OF PRIMARY MOLARS

TREATMENT

- application

• incorrect application

• correct application
PREVENTIVE VITAL AMPUTATION

Indication:
- caries profunda of first primary molar;
- exposed pulp (caries, cavity-preparation, trauma).

Necessary materials and instruments:
- Sterile drill (excavator);
- Physiological saline;
- Sterile cotton-pellets;
- Formocresol / Ca(OH)$_2$; / MTA (mineral trioxide aggregate);
- ZnO-Eugenol / glassionomercement;
- filling (amalgam / composite)
PROPHYLACTIC VITAL AMPUTATION

PROCESS:
1. local anaesthesia
2. prepare the cavity
3. remove coronal pulp
4. stop the bleeding
5. dry
6. filling
   - Formocresol+
   - ZnOeugenol, or
   - Ca(OH)$_2$ or MTA
PROPHYLACTIC VITAL AMPUTATION

- **PROCESS:**

  After vital amputation:

  - Glassionomer-cement
  - Filling
  - Stainless steel crown to protect the weak crown
CARIES OF PRIMARY MOLARS

TREATMENT

What circumstances influence our choice of the proper therapy?

1. Characteristics of caries lesion (quality, depth, localization)
2. Condition of the dentition
3. Age of the patient (changes of dentition)
4. Cooperation of the child
THANK YOU FOR YOUR ATTENTION!