Thursday 13 May 2004 - Slovak Day
13:30 Opening Ceremony
Balaž, V., SR: Endodontics - revolutionary technique of root canal filling by a single point
Javorka V., SR: Therapeutic principles of young permanent teeth trauma
15:15 Break
15:45 Mráček J., SR, Černý M., Fuchs E., Switzerland: Mandibular osteoplastics
Hirjak D., Sátka I., SR: Possibilities and problems of dental implantology
Čech L., SR: Aesthetics in implant prosthodontics
Tóthová M., SR: Ozone in prevention and treatment of dental caries
Bubčan J., Pánek T., SR: Slovak dentists in Africa
Friday 15 May 2004 - Czech Day
09:00 Opening
Černochová P., Kučovská K., CR: Dental ankylosis - diagnostic and therapeutic decisions
10:30 Break
11:00 Fassmann A., Celerová J., Slapnička J., Augustin P., Vavěk J., CR: Stomatologic indications for therapy by "tissue engineering"
Šťgel V., CR: Selected drug Interactions in dental medicine
12:30 Lunch break
13:30 Gojovská E., CR: Dental pain - pulp-dentine complex - vital apparatus
Nečtka J., CR: Implant or Bridge
Krhoválová J., CR: Oral parafunctions and their consequences to stomatognatic system
15:45 Break
16:15 Bartáková V., CR: Sialolithiasis - new looking, modern therapy, interesting cases
Dřížil L., CR: Salivation disorders and their clinical importance
Saturday 15 May 2004 - European Day
08:30 Opening
Čachova G., Germany: Endodontic and restorative treatment in deciduous dentition
Koch G., Sweden: Paediatric Dentistry - Caries prevention - How and When
Jokstad A., Norway: Management of buccal erosions
11:45 Break
11:00 Koch G., Sweden: Paediatric Dentistry - Traumatic Injuries in the Young Dentition
Sedešmann J., Germany: Composite resin in practice - theory and reality
12:30 Lunch break
13:30 Katesch P., Austria: Microscope - kinetic preparation of the cavity: quantitative jump in dental medicine
Lenartz M., Germany: Conditions for executing stomatology practice in the german health care system
15:00 Congress termination
Program change reserved!
Buccal defects - therapy

Asbjørn Jokstad
Institute of Clinical Dentistry
University of Oslo, Norway

Management?

Therapy and Interventions – Strategy 1

1. Establish status
2. Restore
   Caries & non-caries defects
Therapy and Interventions- Strategy 2

1. Diagnose correctly  
   Caries vs non caries  
2. Identify etiology  
   a. Caries  
   b. Non caries defects  
3. Restore  
   Caries & non-caries defects  
4. Reduce risk  
   a. Caries  
   b. Non caries defects

Therapy and Interventions

**Symptomatic**

1. Establish status  
2. Restore  
   Caries & non-caries defects  

Diagnosis and etiology is of limited interest. e.g. only for the sake of evaluating prognosis.

**Causal**

1. Diagnose correctly  
   Caries vs non caries  
2. Identify etiology  
   a. Caries  
   b. Non caries defects  
3. Restore  
   Caries & non-caries defects  
4. Reduce risk  
   a. Caries  
   b. Non caries defects
1. Diagnose correctly
   - Procedure
   - Types of defects
     - (a. carious) & b. non-carious defects

Diagnostic protocol for non-carious defects 1/5
1. Obtain historical data 1/3

Medical History
- Excessive vomiting, rumination
- Eating disorder
- Gastroesophageal reflux disease
- Symptoms of reflux
- Frequent use of antacids
- Alcoholism (possible narcotics?)
- Autoimmune disease (Sjogren's)
- Previous radiation treatment of head and neck
- Oral dryness, eye dryness
- Medications that cause salivary hypofunction
- Medications that are acidic

Diagnostic protocol for non-carious defects 2/5
1. Obtain historical data 2/3

Dental History
- History of bruxism (grinding or clenching)
  - Grinding bruxism sounds during sleep noted by bed partner?
  - Morning masticatory muscle fatigue or pain?
- Use of occlusal splint

Dietary History
- Acidic food and beverage frequency
- Method of beverage drinking (swish, swallow?)
Diagnostic protocol for non-carious defects 3/5. 1. Obtain historical data 3/3

Oral Hygiene Methods
- Toothbrushing method and frequency
- Type of dentifrice (abrasive?)
- Use of mouthrinses
- Use of topical fluorides

Occupational/Recreational History
- Regular swimmer?
- Wine-tasting?
- Working environment hazards?

Diagnostic protocol for non-carious defects 4/5-2. Perform physical assessment 1/2

Head and Neck Examination
- Tender muscles (bruxism?)
- Maseteric muscle hypertrophy (bruxism?)
- Enlarged parotid glands (autoimmune disease, anorexia, alcoholism)
- Facial signs of alcoholism:
  - Flushing, puffiness on face
  - Spider angiomas on skin

General Survey
- Underweight (anorexia)

Diagnostic protocol for non-carious defects 4/5-2. Perform physical assessment 2/2

Intra-oral Examination
- Signs of salivary hypofunction:
  - Mucosal inflammation / dryness
  - Unable to express saliva from gland ducts
- Shiny facets or wear on restorations (bruxism?)
- Location and degree of tooth wear (photos, models, radiographs)

Salivary function assessment
- Flow rate
- pH, buffer capacity (in research)
Types of defects

Carious
Non Carious
Developmental
Fluorosis
Other
Acquired
Discoloration
Fracture
Wear

Tooth wear

Tooth wear is the non-carious (non-bacterial) destructive processes affecting the teeth.

Definitions are based on etiology, clinical severity, pathogenic activity or on localization.
Wear defects

Erosion

*Definition:* Progressive loss of hard dental tissue by chemical processes not involving bacterial action.

Abrasion

*Definition:* Loss by wear of dental tissue caused by abrasion by a foreign substance (e.g., toothbrush, dentifrice).
Wear defects

Erosion
Abrasion
Attrition

Definition: Loss by wear of surface of tooth or restoration caused by tooth to tooth contact during mastication or parafunction
Wear defects

Erosion
Abrasion
Attrition
Abfraction

Definition: Loss of tooth surface at the cervical areas of teeth believed to be caused by tensile and compressive forces during tooth flexure.
Abrasion-attrition-erosion?

Abfraction-abrasion-erosion?

Abrasion-erosion?
Attrition-erosion?

Erosion – clinical appearance (anterior)
- Broad concavities within smooth surface enamel
- Increased incisal translucency
- Wear on non-occluding surfaces
- Loss of surface characteristics of enamel (perikymata) in young children
- Preservation of enamel “cuff” in gingival crevice is common
- Hypersensitivity
Erosion – clinical appearance (posterior)
- Cupping of occlusal surfaces, (incisal grooving) with dentin exposure
- Wear on non-occluding surfaces
- "Raised" amalgam restorations
- Clean, non-tarnished appearance of amalgams
- Preservation of enamel “cuff” in gingival crevice is common

Attrition – clinical appearance
- Matching wear on occluding surfaces
- Shiny facets on amalgam contacts
- Enamel and dentin wear at the same rate
- Possible fracture of cusps or restorations

Abrasion – clinical appearance
- Usually located at cervical areas of teeth
- Lesions are more wide than deep
- Premolars and cuspids are commonly affected
Abfraction – clinical appearance

- Affects buccal / labial cervical areas of teeth
- Deep, narrow V-shaped notch
- Commonly affects single teeth with excursive interferences or eccentric occlusal loads

Cervical loss

<table>
<thead>
<tr>
<th>Locations</th>
<th>Ling./Bucc</th>
<th>Buccal</th>
<th>Buccal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>U</td>
<td>Wedge</td>
<td>V-form</td>
</tr>
<tr>
<td>Edge</td>
<td>smooth</td>
<td>sharp</td>
<td>sharp</td>
</tr>
<tr>
<td>(sometimes subgingival)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enamel</td>
<td>smooth</td>
<td>smooth/rough</td>
<td>rough</td>
</tr>
<tr>
<td>(often slightly polished)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Probably:

- Abrasion
- Abfraction
1. Diagnose correctly
   • Procedure
   • Types of defects
     • (a. carious) & b. non-carious defects

2. Identify causes
   • (a. carious) & b. non-carious defects

**Erosion - Critical pH**

- The pH at which any particular saliva ceases to be saturated with calcium and phosphate is referred to as the critical pH. Below this value, the inorganic material of the tooth may dissolve.
- Critical pH varies according to the calcium and phosphate concentration, but it is usually around 5.5.
Erosion
Dietary acids principal causative factor.
- Consumption of low pH drinks
- Prolonged, frequent consumption of acidic drinks

Dietary analysis
Intrinsic erosion is the result of endogenous acid. This is gastric acid contacting the teeth during recurrent vomiting, regurgitation or reflux.
- Bulimia nervosa (self induced vomiting)
- Causes of somatic origin include alcoholism, antabuse therapy for alcoholism, gastrointestinal disorders.

Gastroesophageal reflux disease- signs & symptoms

<table>
<thead>
<tr>
<th>Common Symptoms in Adults</th>
<th>Common Symptoms in Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Acid taste in mouth</td>
<td>• Difficulty sleeping</td>
</tr>
<tr>
<td>• Persistent coughing</td>
<td>• Failure to gain weight</td>
</tr>
<tr>
<td>• Vomiting</td>
<td>• Feeding problems</td>
</tr>
<tr>
<td>• Sense of lump in the throat</td>
<td>• General irritability</td>
</tr>
<tr>
<td>• Stomach ache</td>
<td>• Asthma</td>
</tr>
<tr>
<td>• Sore throat</td>
<td>• Recurrent pneumonia</td>
</tr>
<tr>
<td>• Hoarseness of voice</td>
<td>• Anemia</td>
</tr>
<tr>
<td>• Choking spells</td>
<td>• Bronchitis</td>
</tr>
<tr>
<td>• Voice change</td>
<td>• Laryngitis</td>
</tr>
<tr>
<td>• Excess salivation</td>
<td></td>
</tr>
<tr>
<td>• Gastric pain on awakening</td>
<td></td>
</tr>
<tr>
<td>• Halitosis (bad breath)</td>
<td></td>
</tr>
<tr>
<td>• Belching</td>
<td></td>
</tr>
<tr>
<td>• Heartburn</td>
<td></td>
</tr>
</tbody>
</table>

1. Diagnose correctly
   - Procedure
   - Types of defects
     • (a. carious) & b. non-carious defects
2. Identify causes
   - (a. carious) & b. non-carious defects
3. Restore
   - carious & non- carious defects
     • Restoration
       - Composites & Bonding
Factors to be taken into consideration

Diagnosis

Tooth Defects

Etiology

Size of lesions

Location of lesions

Biomechanic (force)

Esthetic concern

Why restore? 1/2
- Facilitation of self-cleansing and hygiene procedures
- Reduction of plaque retention
- Reduce risk for root caries
- Reduction of cervical dentin sensitivity
- Prevention of pulpal involvement
- Improvement of esthetics
- Re-creation of appropriate coronal tooth length

Why restore? 2/2
- Diminishment of the progress of the lesion, tooth flexure, and stress concentrations
- Strengthening of the tooth
- Prevention of root fracture
- Restoration of normal anatomic contours
- Improvement of gingival health and symmetry
- Maintenance of the gingival contour
Management

- Tooth preparation
  - Minimal extension
  - Supragingival margins
  - No need for undercuts/retention lock
- Estimated force
  - No compression
  - Flexion α etiology
  - Wear α etiology, prosthodontics?
- Esthetics on anterior teeth, premolar

Restorative material

Alternatives

<table>
<thead>
<tr>
<th></th>
<th>Veneer</th>
<th>GIC</th>
<th>GIC-C.R.</th>
<th>Composite resin (C.R.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>esthetics</td>
<td>++</td>
<td>-</td>
<td>-/+</td>
<td>+</td>
</tr>
<tr>
<td>biological costs</td>
<td>-/+</td>
<td>++</td>
<td>+</td>
<td>-/+</td>
</tr>
<tr>
<td>longevity</td>
<td>++</td>
<td>-/+</td>
<td>-/+</td>
<td>--/++</td>
</tr>
</tbody>
</table>

Glassionomercement-resin

Two subgroups
1. Material polymerises without light initiation
2. Light initiation is required

Most products contain 4.5%-6% resin
Selection of restorative material composite resin-glassionomer

- High caries risk: need for F-
- Supragingival margin: moisture sensitive
- Cementum gingival margin
- Cervical abrasion: wear
- Dentin substrate: sclerotic dentin(?), depth of preparation, tubule orientation
- Abfraction: flexion
- Pros: retentive wear

Abfraction vs. Abrasion

Glassionomer or microfill composite resin

Hybrid microfill composite resin

Common mistakes - composite resin placement

- Improper bevel
- Etching technique and time
- Primer time
- Drying technique
- Moisture contamination
- C.R. partial polymerization prior to insertion
- Underpolymerization
- Bulk insertion of CR
- Void
1. Diagnose correctly
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3. Restore
   - carious & non-carious defects
     • Restoration
       - Composites & Bonding
4. Reduce risk
   - (a. carious) & b. non-carious defects
Decrease abrasive forces
• Use soft toothbrushes and dentifrices low in abrasiveness in a gentle manner.
• Do not brush teeth immediately after an acidic challenge to the mouth, as the teeth will abrade easily.
• Rinsing with water is better than brushing immediately after an acidic challenge.

Provide mechanical protection
• Consider application of composites and direct bonding where appropriate to protect exposed dentin.
• Construction of an occlusal guard is recommended if a bruxism habit is present.

Enhance the defense mechanisms of the body
(increase salivary flow and pellicle formation)
• Saliva provides buffering capacity that resists acid attacks. This buffering capacity increases with salivary flow rate.
• Saliva is also supersaturated with calcium and phosphorus, which inhibits demineralization of tooth structure.
• Stimulation of salivary flow by use of a sugarless lozenge, candy or gum is recommended.

Diminish frequency and severity of acid challenges
• Decrease amount/frequency of acidic foods / drinks.
• Acidic drinks should be drunk quickly rather than sipped. The use of a straw would reduce the erosive potential of soft drinks.
• If undiagnosed / poorly controlled gastroesophageal reflux is suspected, refer to a physician.
• In the case of bulimia, a physician or psychologist referral is appropriate.
• A patient with alcoholism should be assisted in seeking treatment in rehabilitation programs.
Enhance acid resistance, remineralization and rehardening of the tooth surfaces

- Have the patient use daily topical fluoride at home.
- Apply fluoride in the office 2-4 times a year. A fluoride varnish is recommended.

Improve chemical protection

- Neutralize acids in the mouth by dissolving sugar-free antacid tablets 5 times a day, particularly after an intrinsic or extrinsic acid challenge.
- Dietary components such as hard cheese (provides calcium and phosphate) can be held in the mouth after acidic challenge (e.g., hold cheese in mouth for a few minutes after eating a fruit salad).

Thank you for your kind attention