Diagnostics of the caries
Enamel disorders with non-carious origin

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Caries

- A chronic process that progresses to the deep from the surface leading to the destruction of the hard tissues of the tooth and cavitation
- Initially it could be reversible
- It penetrates deep and deep as a result of the repetitition of cariogen noxa

- It occurs with a frequency of 90-95% sometimes in the life
- Under 35, the main cause of tooth loss

Multifactorial:

- plaque – bacterial film
- quantity (min. 0,3-0,4ml/min) and puffer capacity of the saliva
- the structure of the enamel
- external harmful effects, food
- time

Plaque

- microbial aggregate with a stable structure adhering to the surface of teeth, prostheses and implants
- the acid producing by bacteria cause the caries

Enamel structure

- It is constantly exposed to de- and remineralizing effects throughout life - an outer, more compact, more resistant layer develops

- After eruption the enamel is damaged more easily

Its structure can be damaged (discoloration, increased tendency for caries)

- By genetic origine
- Intrauterin
- Infections
- Drugs, poisons

Steps of the diagnostic process

- Recognition of the caries
- Assessing the severity of the lesion
- Determination of activity

  active or non-active

Predilection (non-self-cleaning) sites

Caries – chronic, multicausal disease

caries

- reversible
- there is no visible material loss
- secunder prevention

- irreverzible
- material loss
- Restoration required

Primery and secunder

Caries types

Caries of the crown

In the enamel and dentin

- Fissura, foramen
- Smooth surface

proximal, gingival surface

Root caries

cement

Black’s classification

- **Class I:** fissures and foramen ceocum
- **Class II:** proximal surfaces of molars and premolars
- **Class III:** proximal surfaces of incisors without involving the incisal angles
- **Class IV:** proximal surfaces and and incisal angles of anterior teeth
- **Class V:** gingival one-third of facial and lingual surfaces

Classification by extent to the deep

Caries incipiens

- Dark or white spot on any surface – macula cretosa (white spot) – no macroscopic material loss

With cavitation

- **Caries superficialis** – only in the enamel
- **Caries media** – spread into the dentin
- **Caries profunda** – spread deeply into the dentin – seoareted from the pulp by a thin dentin layer
- **Caries penetrans** – penetrates the pulp

New classification: International Caries Detection and Assesment System (ICDAS)

On basis of size and deepness

- 0. normal surface
- 1. opacity – white or brown
- 2. opacity – white or brown - without air-drying
- 3. microcavitation
- 4. underlying grey shadow
- 5. distinct cavity – dentin is visible
- 6. extensive cavity

Easily adapted in clinical practice

Diagnostics methods

Traditional instruments:

- Mirror
- Probe
- Lupe
- Fissure painting
- Measurment of electric impedance
- X-Ray

New examination methods:

- Translumination – FOTI (CarieScan), DIFOTI) – glasses neede, secondary caries not visible well)
- CT
- Ultrasound
- UV light

Inspection

- Put the patient into the appropriate situation
- Light
- Cleaning – remove all objects which

disturbe the vision

saliva
debris
dentures
Dental mirror, lupe

Dental mirror

It is used to view tooth surfaces that cannot be seen using direct vision.

Indirect Illumination

- Reflect the light onto a tooth

Transilluminácio

The mirror is used to reflect light through the anterior teeth and interproximal surfaces

Carious lesions and restorations will appear as dark

Using probe for examination

- Fistula
- Ducts of big salivary glands
- Carious lesions (carfully tuch the lesion, rather puster, laser)
- Parodontium

DIAGNOdent

- Red laser beam – the fluorescece of the carious tissue is stronger
  - False result is frequent – dental plaque, fillings, food remains (especially green), reminarilized enamel,

    – may only be used on thoroughly washed teeth
  - May be used in approximately 2 mm depth
  - Only for fissur caries examination

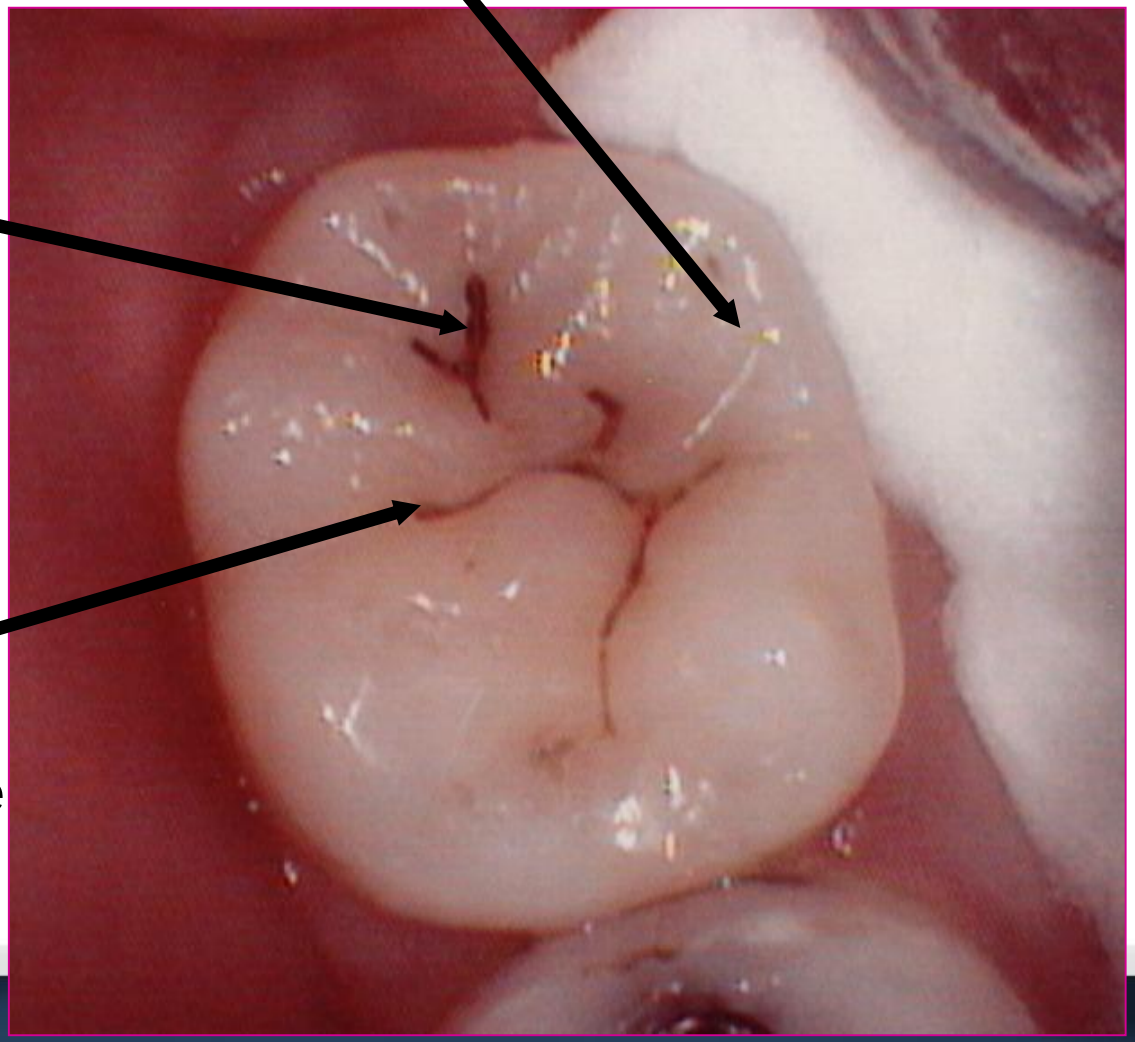
Natural fluorescence value: 10

48

The caries developing in the dephts of the fissure has not been reached with probe

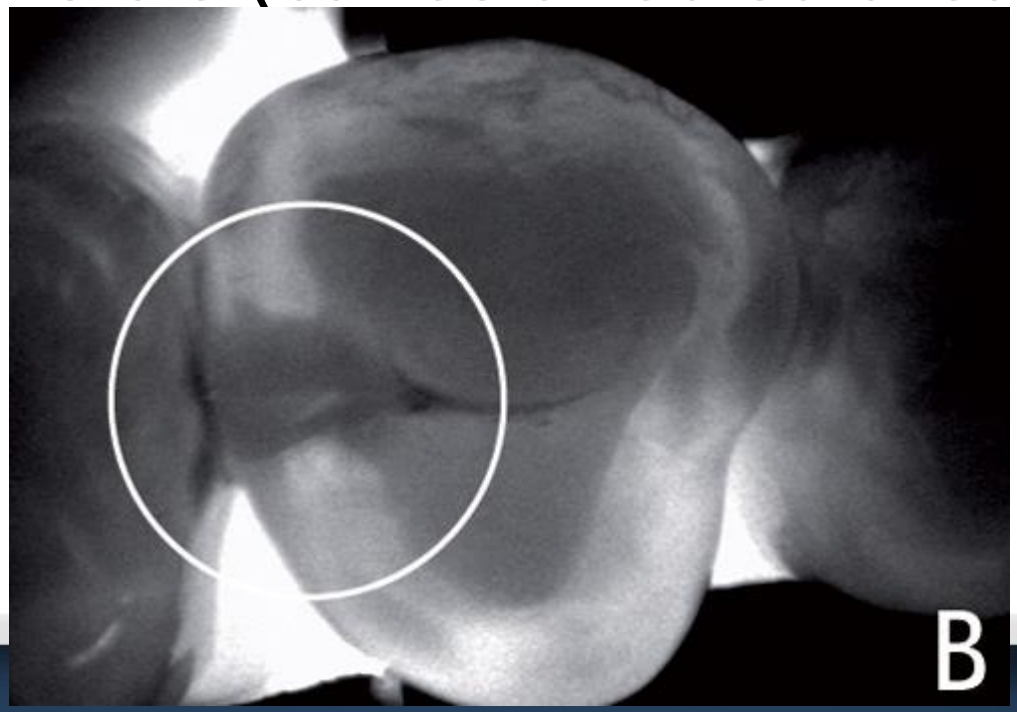
24

The enamel in the fissure entrance was not carious



DIAGNOcam

- Works on similar basis as the DIAGNOdent, but the signal is received by a camera, so the aproximal carious lesions are also visible (caries affected areas are darker)



Additional diagnostic tests - sensitivity

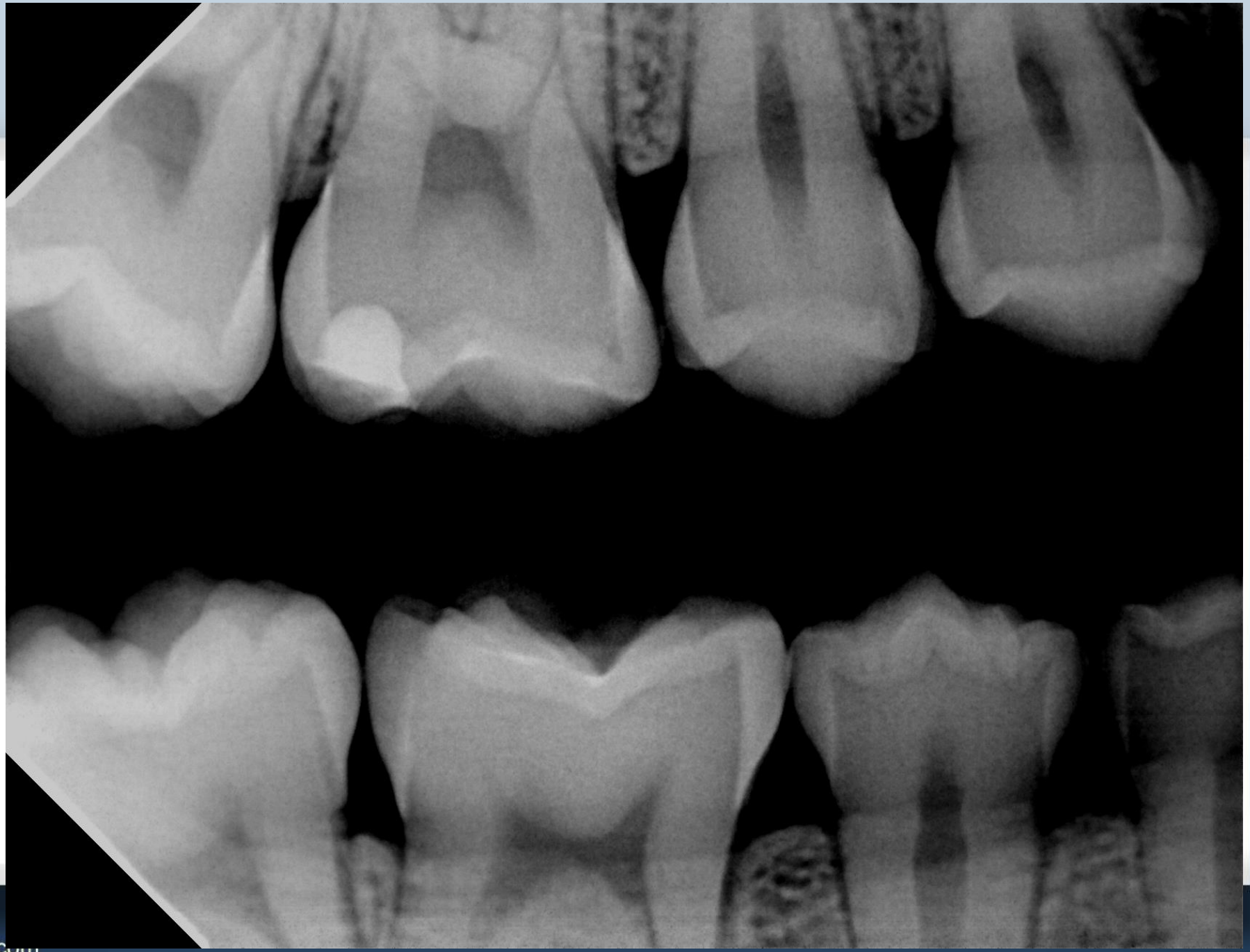
- For the examination of the pulp reaction

  (the answer of the sensing nerves for outer stimulus - cold, warm (reversible, irreversible pulpitis, vitality of pulp)
- There is a lot of possibility of error in the case of a negative result – fillings, sclerotized root canal

Additional diagnostic tests - radiology

- A winged X-ray film can be used to examine the carious lesion of the crown
- Dental status
- Diseases caused by caries:

  periapical X-ray



Transparency on the neck

- The enamel-cement border is similar to a sinus curve
- Cortical bone

Amelogenesis imperfeca

- Carious lesion developing not only at the predirected surfaces
- Only the enamel is damaged, the structure of the dentin is intact
- All teeth affected
- Genetic origin

Enamel hypoplasia

- Localised lesion – due to a damage in the secretory phase of the amelogenesis
- The intact and the damaged enamel part is separated by a sharp border

Congenital syphilis – Hutchinson teeth

- Triangular teeth are widely spaced and may have weakened enamel

Fluorosis

- Fluoride absorption in the mineralization stage
- Symmetrical, diffuse, hard tissue, caries resistance increased
- Esthetical problem

Tetracyclin before 6 years old age

- Calcium-tetracyclin chelate
- Binds to the hard tissues of the developing teeth
- Discoloration

Non-carious lesions - Attrition

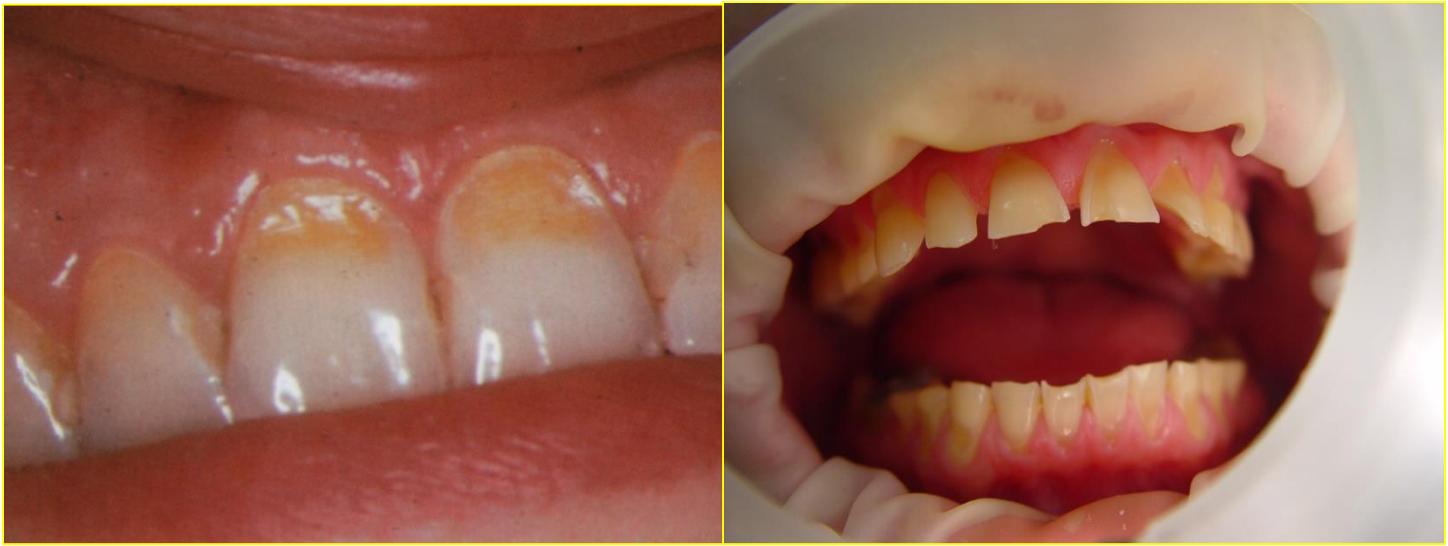
- abrasions of incisal or occlusal surfaces of the tooth caused by function (tooth to tooth contact) and parafunction (bruxism)

Abrasion

Mechanical injuries due to brushing, flossing, picking os partial removable denture, mainly on the vestibular surface.

Erosion

- Oval or round form loss of enamel due to acids (air, drinks, water in swimming pool, vomiting).



Abfraction

- „V” shape laesion. Bruxism (clenching of teeth) could be in the background. In the enamel rods and dentin developing microfratures

Thank you for your attention

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