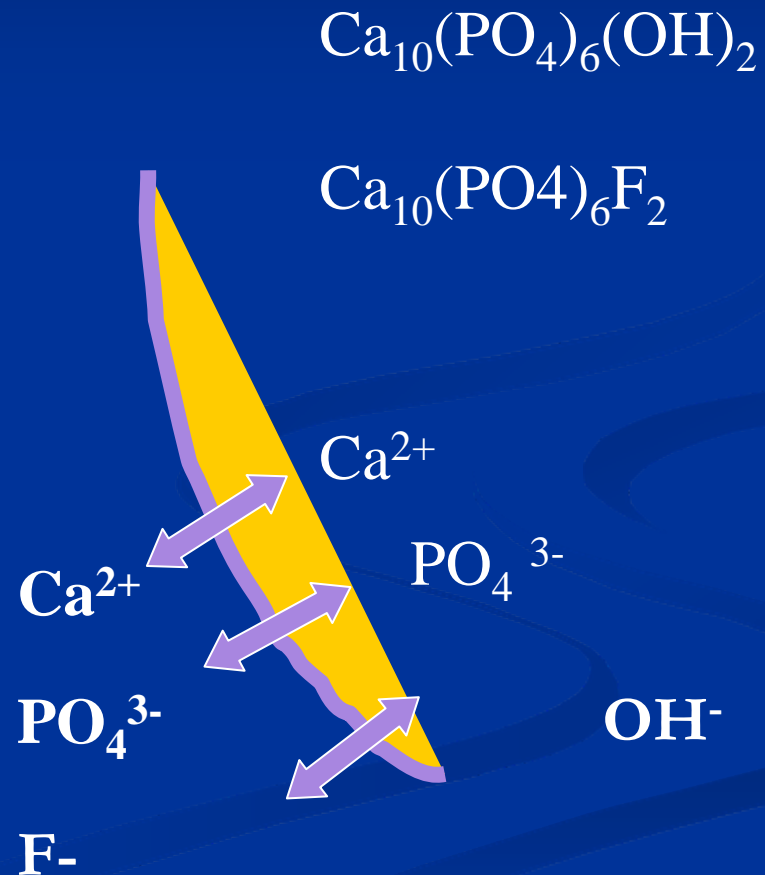
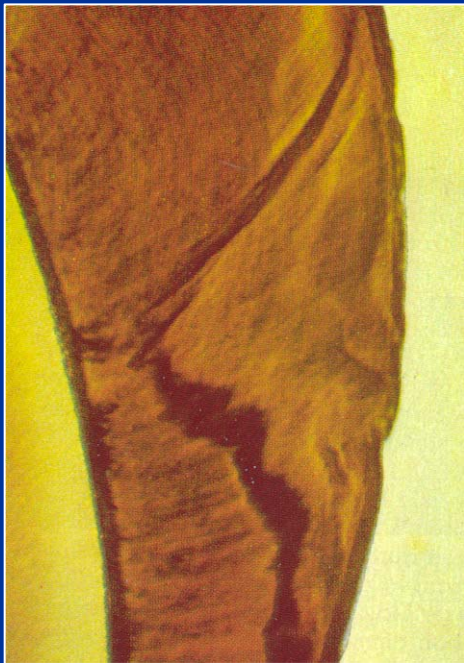


# Therapy of dental caries

# Chemical equilibrium on the tooth surface demineralization - remineralization

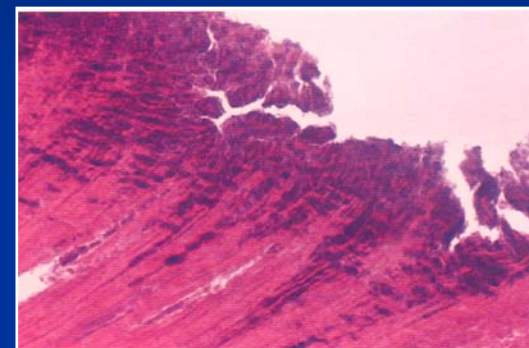
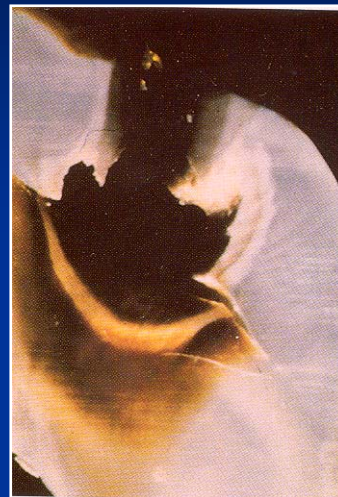


**Deminereralization**

**Non cavitated lesion**



**Cavitated lesion**



**Time**

# Therapeutical consideration



## Caries lesion

- *Location*
- *Degree of demineralization*



## Patient

- *History*
- *Cooperation*
- *Examination and caries risk*



**Final decision**

# Concept of the treatment



## Non invasive

- *Improvement of oral hygiene*
- *Controls*
- *Remineralization*
- *programms*
- *Antimicrobial therapy*
- *Including ozone*

## Invasive

- *Miniinvasive treatment*
- *Conventional treatment*

# Non invasive treatment

- Low risk: improvement of oral hygiene
- Middle risk: Dtto plus tooth paste 1000 ppm F
- Higher risk: Dtto plus 900- 1000 ppm neutral solution of NaF mounth rinse daily. Chewing gum.
- High risk: 5000 ppm F tooth paste daily (2x) Recaldent (calcium, phosphate)
- Highest risk: Fluoride varnish, surface treatment with glass ionomer cements plus diet management

Ngo 2003







# Minimally invasive treatment

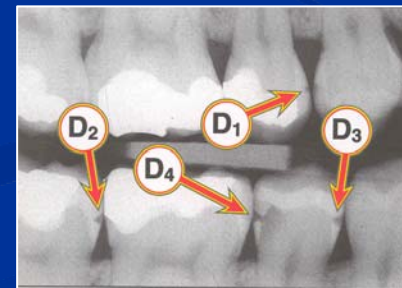
## Early diagnosis

Diagnostic methods (X-ray, infrared laser fluorescence)

Illumination



Magnification



# Minimally invasive treatment

## Techniques of preparation

- Mechanical
- Chemo - mechanical
- Kinetic
- Laser

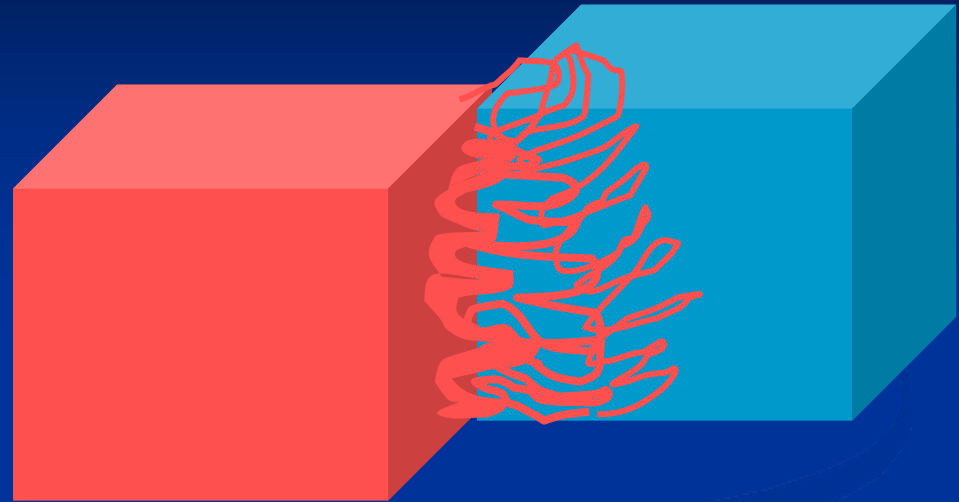
*Peters MC, Mc Lean ME: Minimally invasive operative care II.  
Contemporary techniques and materials: An overview.  
J Adhes Dent 2001; 3:17-31.*

# Mechanical preparation

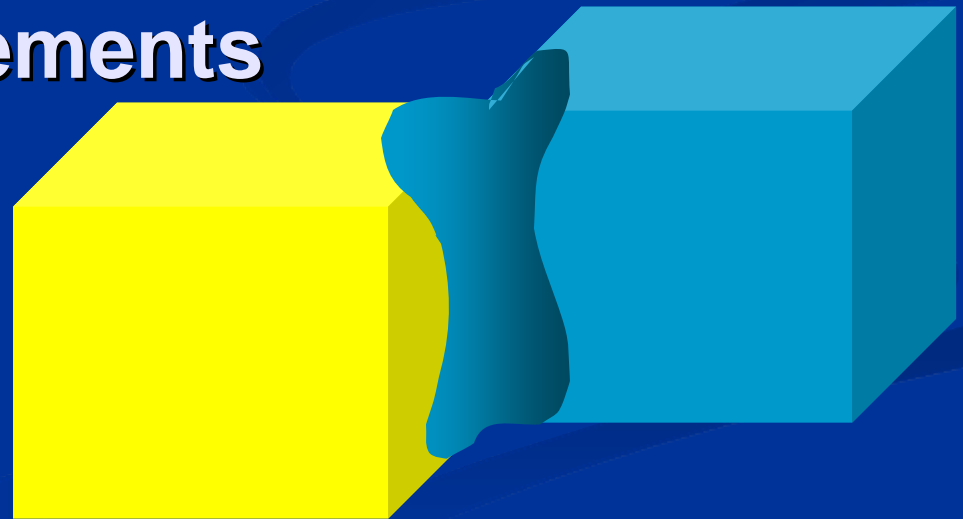
- Rotary power driven preparation
- Sonic and ultrasonic preparation
- ART

# Filling materials

**Composites**



**Glass ionomer cements**



**Treatment of caries in  
premolars and molars  
on the occlusal  
surface  
Class I.**

# Class I.

## Non invasive treatment

Principle

Ozone plus remineralization

Indication:

*Non cavitated lesion (Diagnodent)*

Contraindication:

*Cavitated lesion*

# Class I.

Minimally invasive treatment

## Principle:

prepare small cavities limited on carious lesion only

Adhesive materials – composites

Preventive fillings – combination of GIC and composites (lesion is filled with GIC covered with composite and in addition fissures are filled with composite)

# Class I.

Minimally invasive treatment

Indication:

small cavitated lesion – see next picture

Good level of oral hygiene

Contraindication:

Middle and big cavitated lesion

Poor oral hygiene

Badly destroyed teeth

Periodontal diseases with bad prognosis







# Class I.

Conventional treatment

Indication: middle and big cavitated lesion

Contraindication:

Non cavitated and small cavitated lesions

Badly destroyed teeth

Periodontal diseases with bad prognosis

# Class I.

- Choice of materials

Composite: small to middle lesions

Glass Ionomer Cements: preventive filling, internal remineralization (see next chapters).

Amalgam: middle – big lesions, cases where composites are contraindicated.

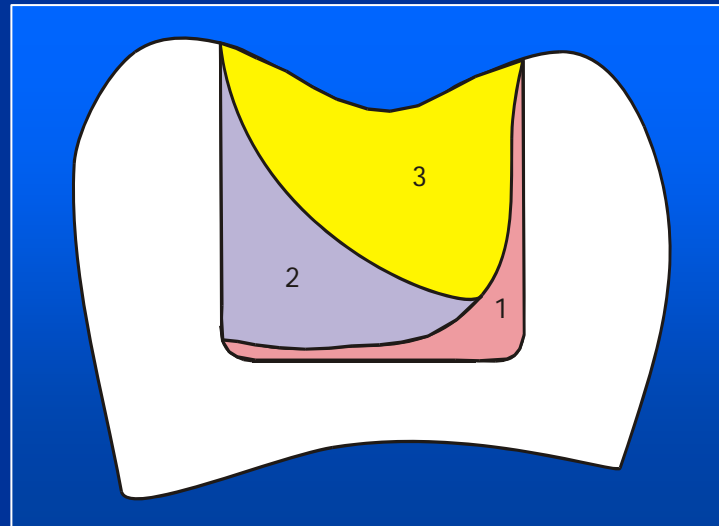
# Composite

- Cavity
- Acid etching
- Placement of composites – C factor!

# Placement of composites

First layer thin – flowable is possible

Other layers – free surface as big as possible



# Glass Ionomer Cement

- Preparation of cavity – limited on dental caries
- Smooth border
- Conditioning
- Washing
- Wet cavity
- Placement of the cement
- Varnish
- Finishing and polishing immediately in next appointment if possible

# Amalgam

- See preclinical dentistry



**Treatment of caries in  
premolars and molars  
on the proximal  
surface  
Class II.**

# Class II.

## Non invasive treatment

### Principle

Interdental hygiene plus remineralization

### Indication:

*D1 lesion (bite wing)*

*Good level of oral hygiene, low caries risk*

### Contraindication:

*Cavitated lesion*

*Poor oral hygiene*

*Badly destroyed teeth*

*Periodontal diseases with bad prognosis*

# Class II.

Minimally invasive treatment

## Principle:

prepare small cavities limited on carious lesion only – slot or tunnel preparation

Adhesive materials – composites

Amalgam

GIC – for middle term temporary treatment only

# Class II.

Minimally invasive treatment

Indication:

Small cavitated lesion (D2 on BW)

Good level of oral hygiene

Contraindication:

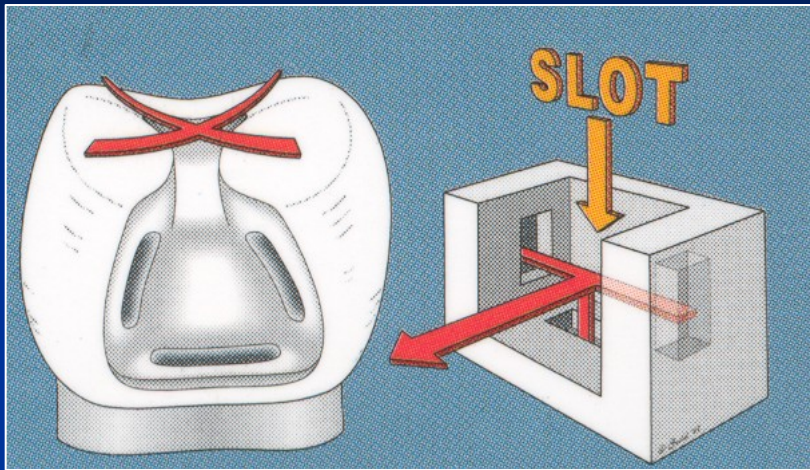
Middle and big cavitated lesion

Poor oral hygiene

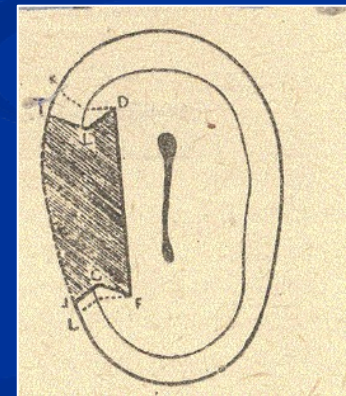
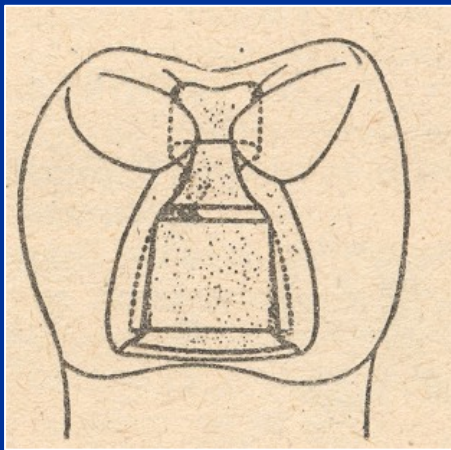
Badly destroyed teeth

Periodontal diseases with bad prognosis

# Slot for amalgam



*Sedelmayer J. Amalgám – zapomenuté řemeslo.  
Brno, 2000.*

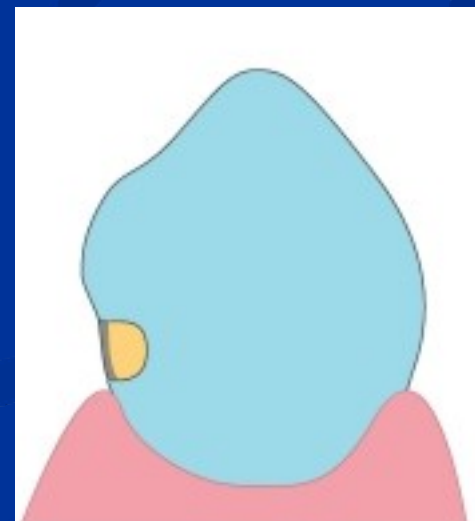
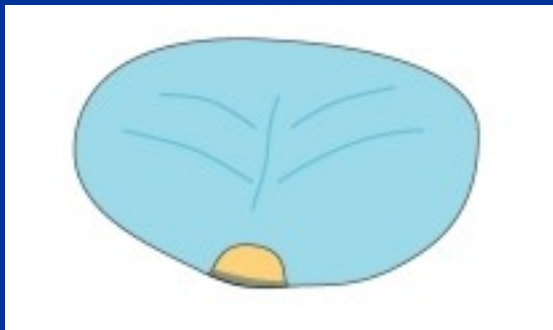
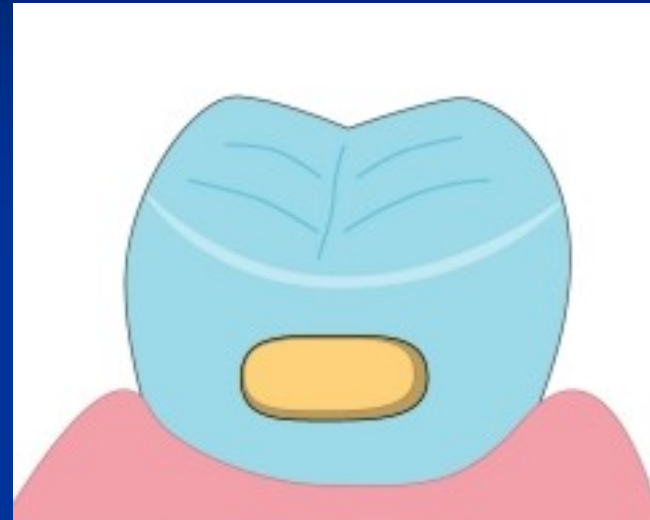
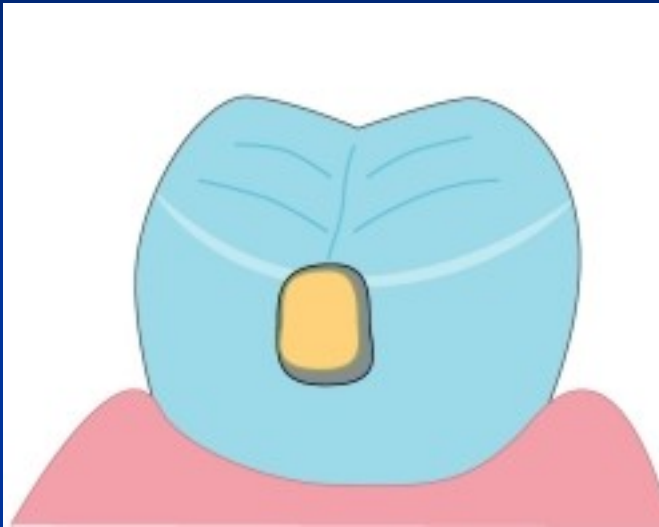


*Bažant V.*

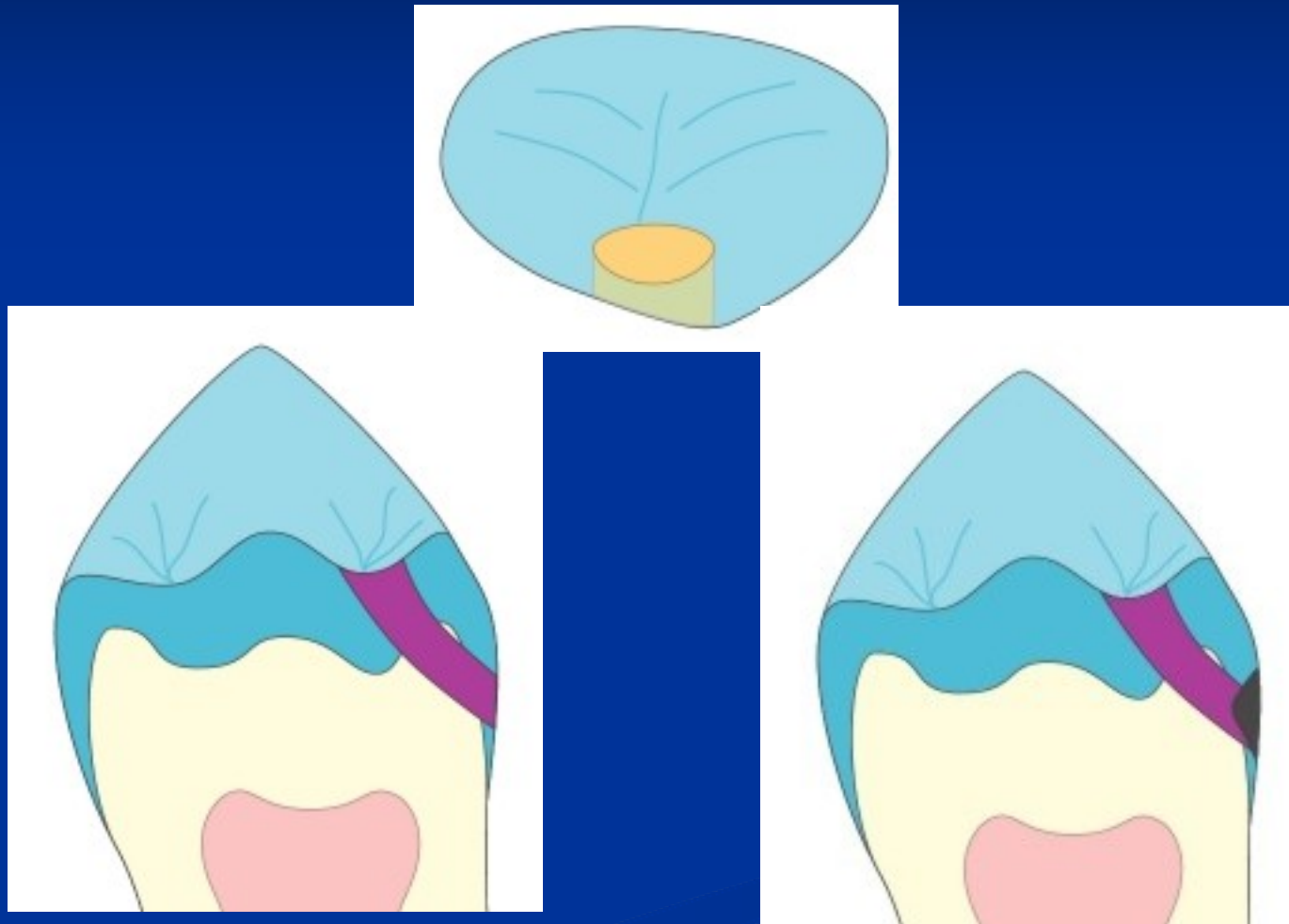
*Konservační zubní lékařství, SPN Praha, 1962.*

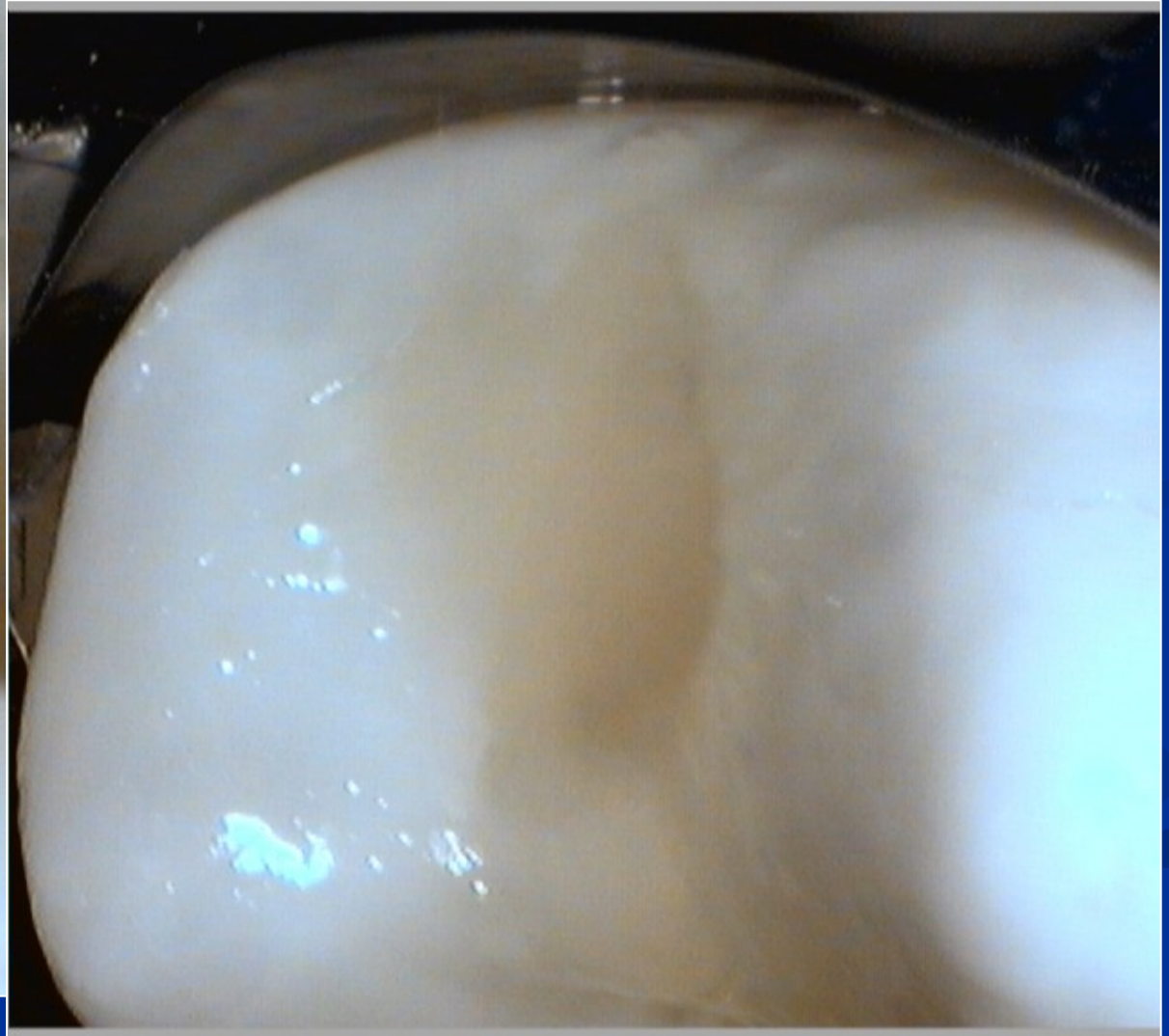
# Adhesive slot

## Vertical Horizontal



# Tunnel preparation







## Success of tunnel

1. Low caries risk
2. Good cooperation of the patient
3. Intact proximal ridge
4. D2



## Success of tunnel

1. Magnification
2. Small (mini) instruments
3. GIC
5. BW post op



# Class II.

Conventional treatment

Indication: middle and big cavitated lesion

Contraindication:

Non cavitated and small cavitated lesions

Badly destroyed teeth

Periodontal diseases with bad prognosis

# Class II.

- Choice of materials

Composite: small to middle lesions

Glass Ionomer Cements: preventive filling, internal remineralization (see next chapters).

Amalgam: middle – big lesions, cases where composites are contraindicated.

# Composite

- Cavity
- Acid etching
- Placement of composites – Contact point and C factor!

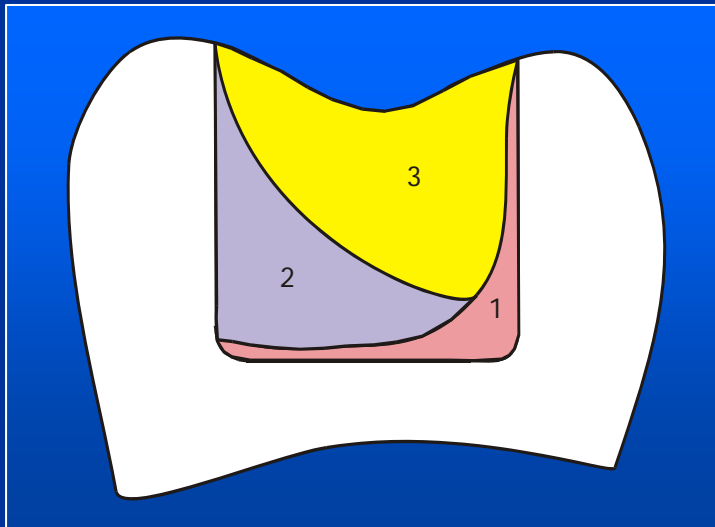
# Placement of composites

Placement of the matrix and the wedge

Proximal layer – contact point

First layer thin – flowable is possible

Other layers – free surface as big as possible





# Glass Ionomer Cement

- Preparation of cavity – limited on dental caries
- Smooth border
- Conditioning
- Washing
- Wet cavity
- Placement of the cement
- Varnish
- Finishing and polishing immediately in next appointment if possible

In class two for temporary filling only – internal remineralization (see next chapters)

# Amalgam

- See preclinical dentistry



**Treatment of caries in  
incisors and canines  
on the proximal  
surface without lost of  
incisal edge  
Class III.**

# Class III.

## Non invasive treatment

Principle

Ozone plus remineralization

Indication:

*Non cavitated lesion (Diagnodent)*

Contraindication:

*Cavitated lesion*

# Class III.

Minimally invasive treatment

Indication:

Cavitated lesion – in all cases the preparation is limited on defect only

Good level of oral hygiene

Contraindication:

Badly destroyed teeth

Periodontal diseases with bad prognosis

# Class III.

- Choice of materials

Composite:

All lesions, esp. situated in enamel, aesthetic reasons.

Glass Ionomer Cements:

Cemental caries, poor oral hygiene.

# Cleaning the tooth



# Preparace kavity



# Acid etching, protection of neighbour tooth



# Matrix wedge, bonding





# Layering of composite, palatal layer is placed first



# Layering of composite, wedge, matrix



# Wedges in gingival embrasure – tighten the matrix, separate teeth.



# Fillings before finishing



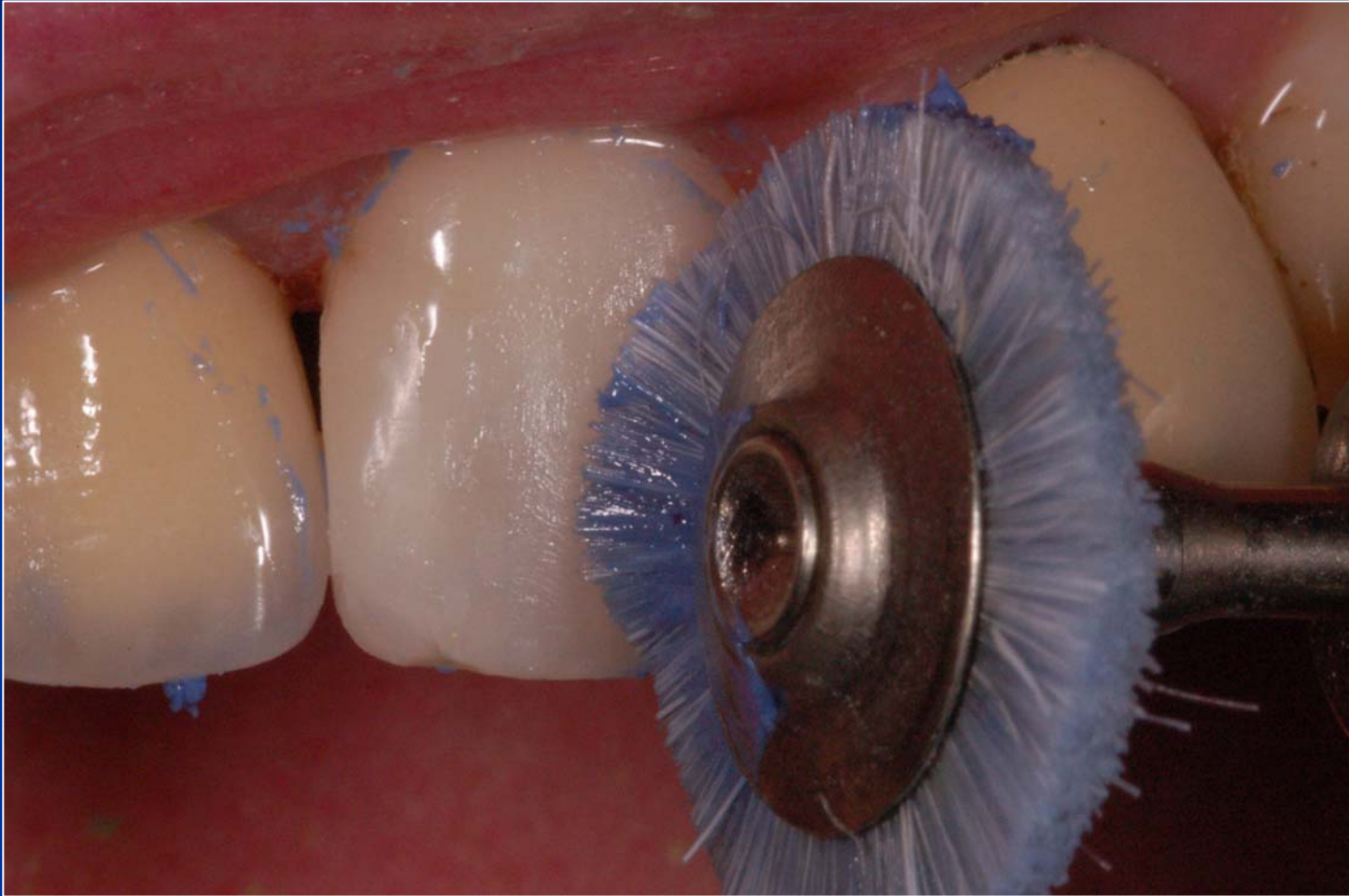
# Finishing



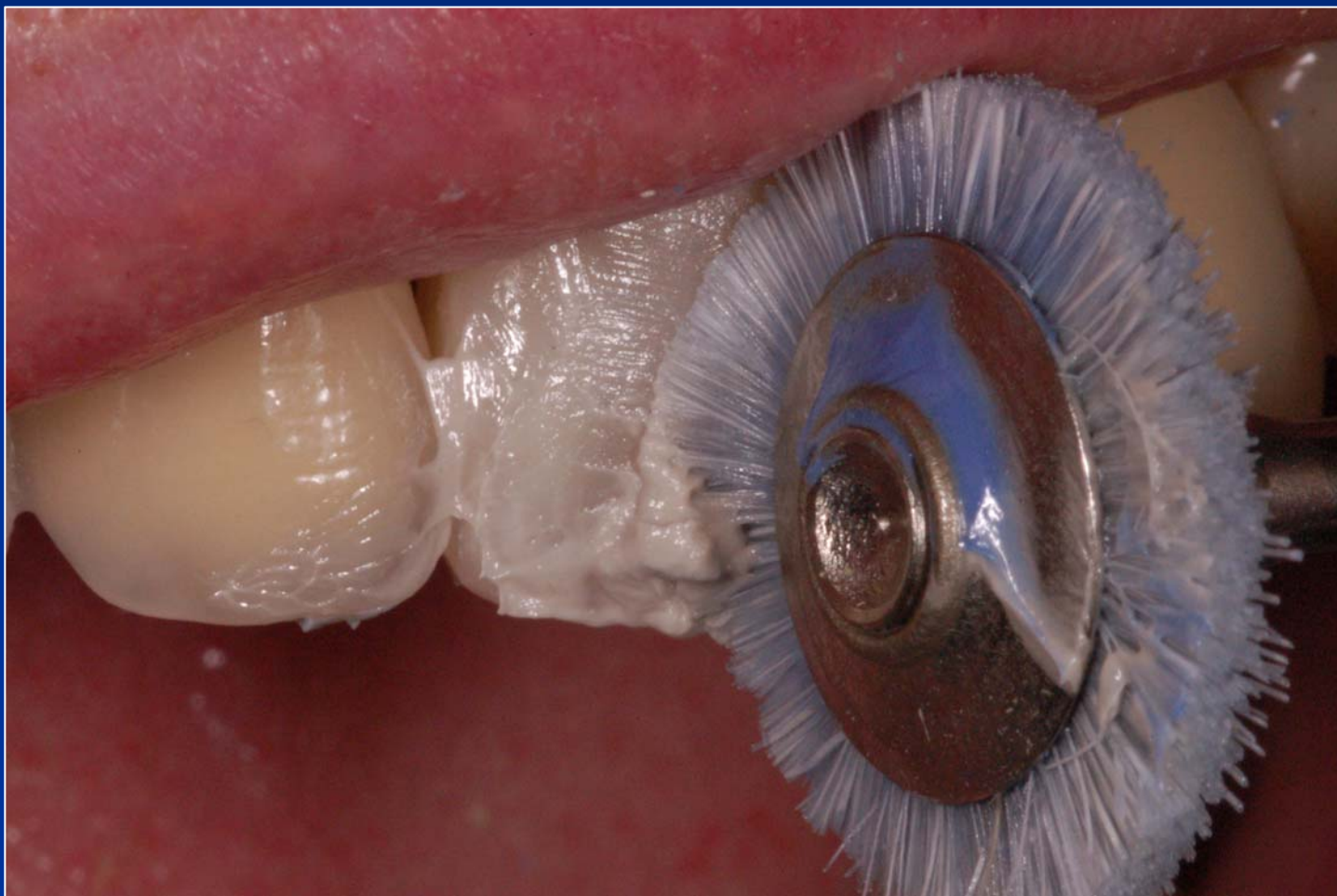
# Polishing



# Polishing

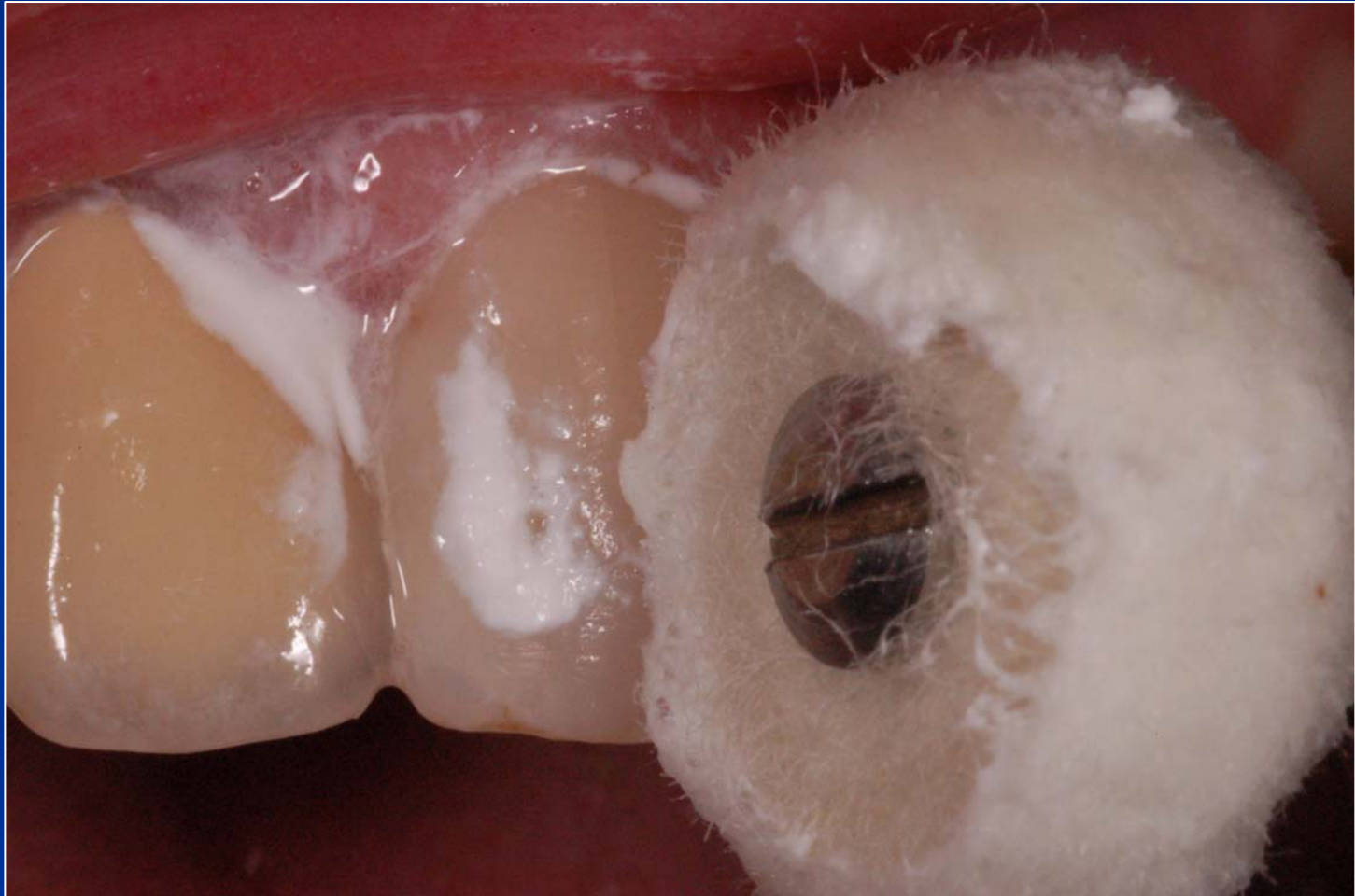


# Leštění plstěným kotoučem





# Leštění plstěným kotoučem



# Fillings after polishing

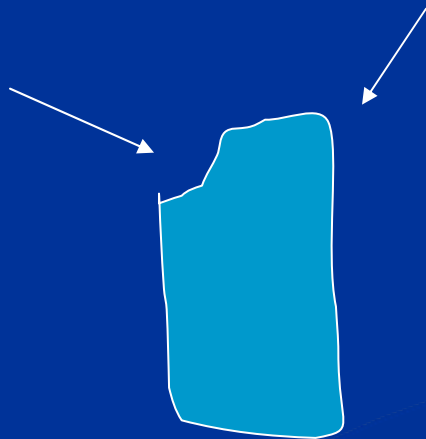


**Treatment of defects in  
incisors and canines  
on the proximal  
surface with lost of  
incisal edge  
Class IV.**

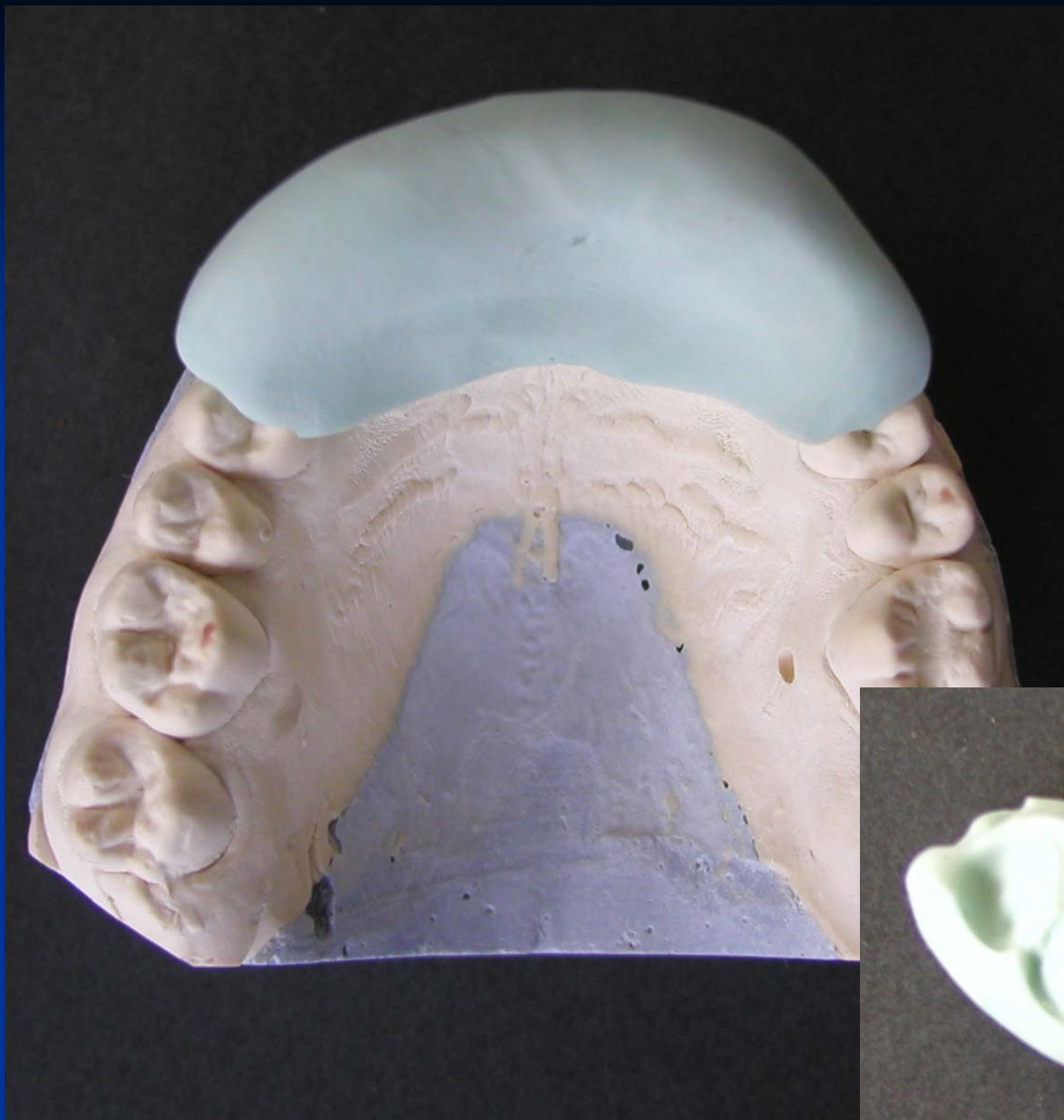
# Principle of the treatment

Minimally invasive only - do not remove  
More than dental caries and damaged  
enamel.

The material: composite only, other  
materials are contraindicated (mechanical  
properties)



**Retentive border**



Silicone matrix

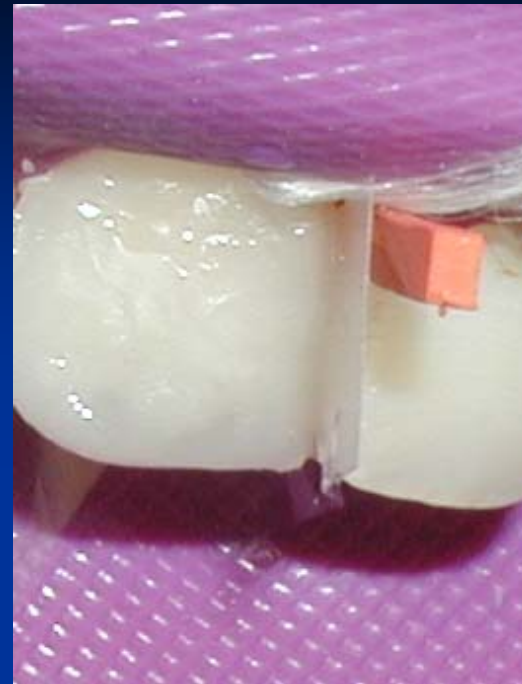










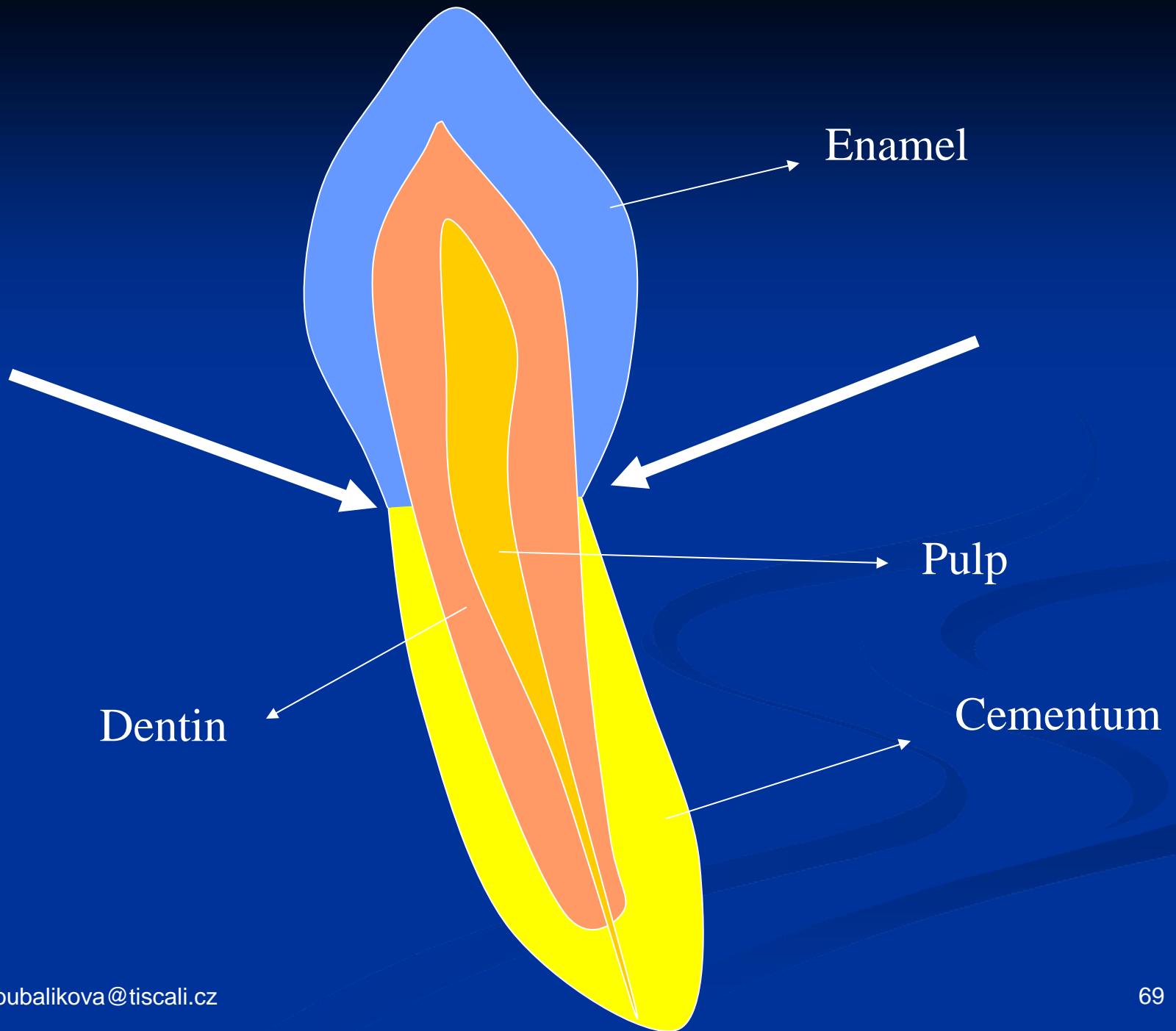


Matrix strip, wedge

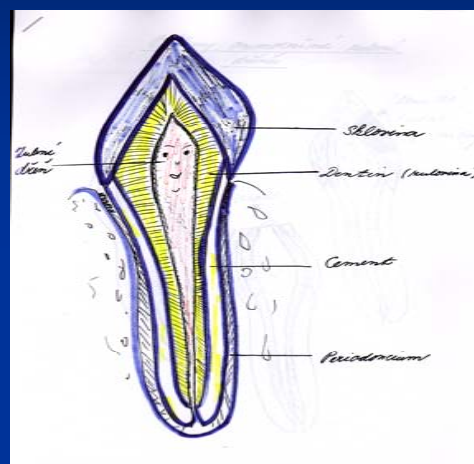
# **Class V. and cemental caries**

# Cervical area

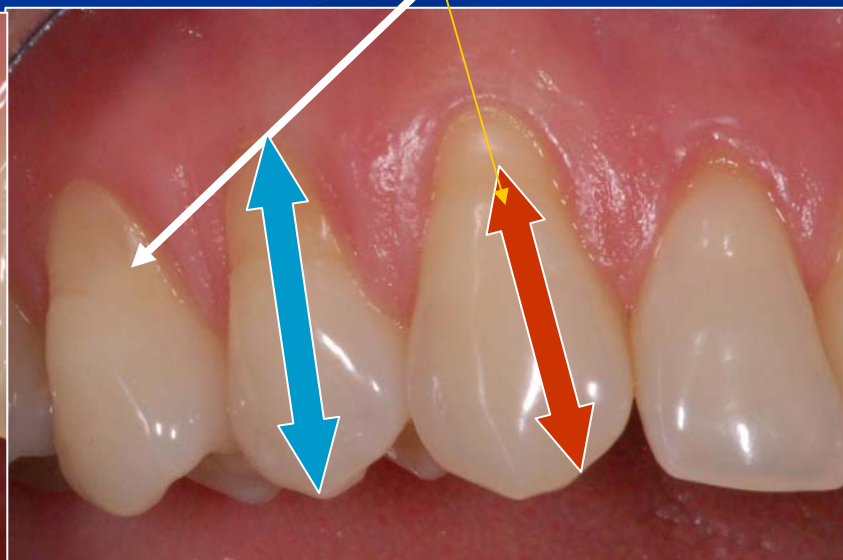
- Caries risk place
- Nearness of the gingival border - possibility of its injury, bleeding, inflammation
- Flow of the sulcular liquid
- Specific ordering of the hard dental tissues
- Difficulties with the maintenance of dry operation field
- The pulp chamber can be opened easily

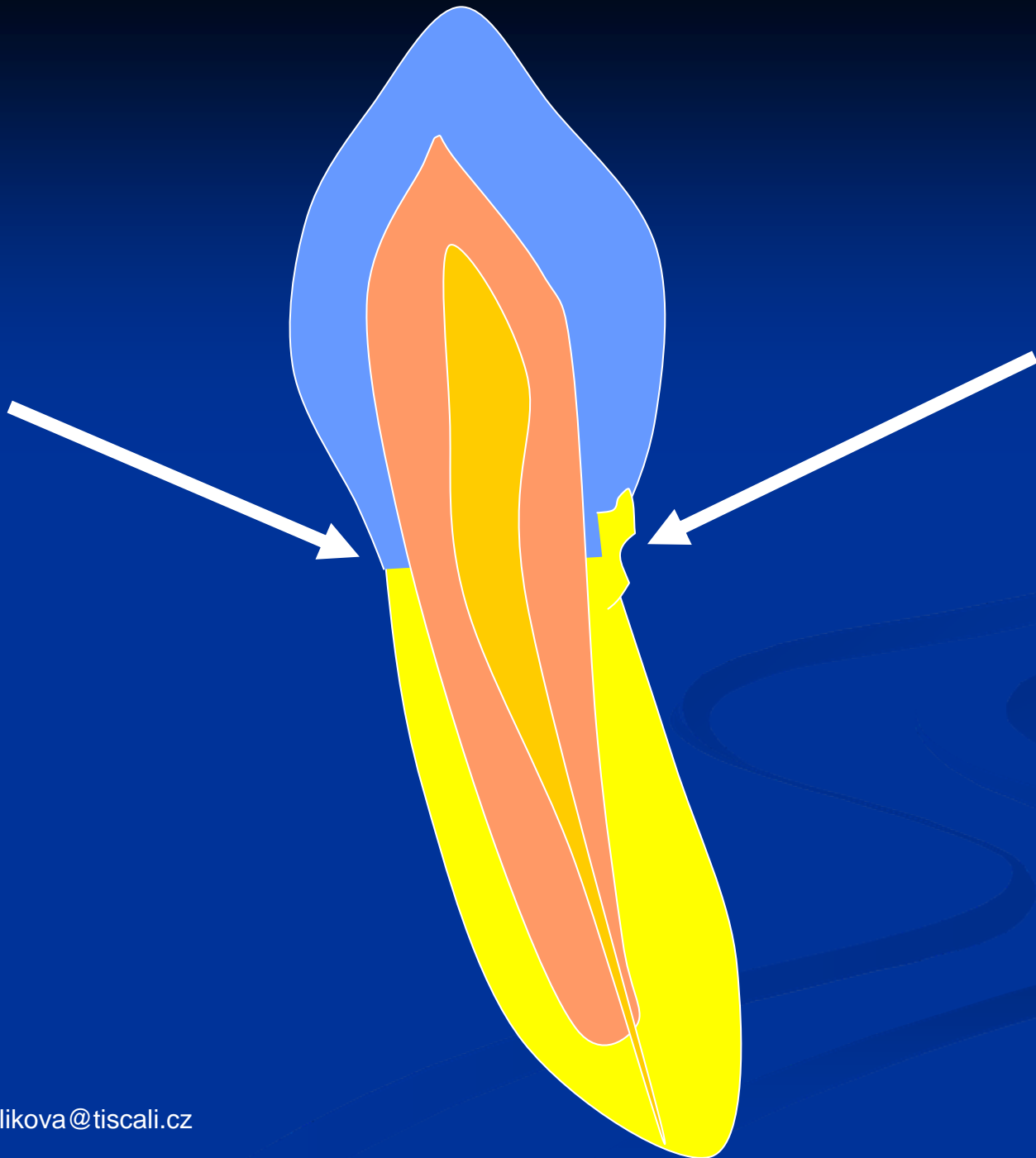


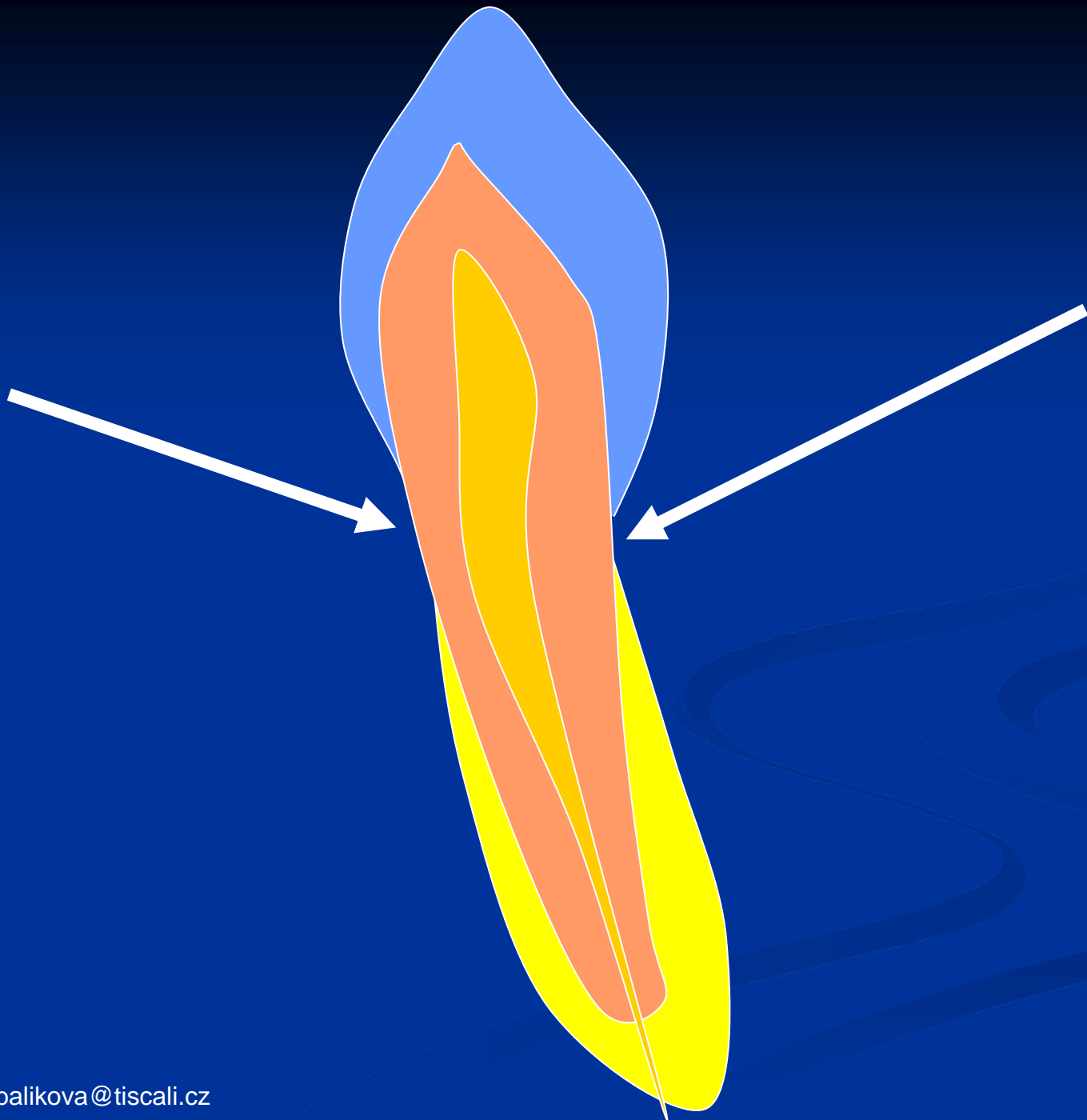
# Anatomical x clinical crown



DEJ









# Class I.

## Non invasive treatment

Principle

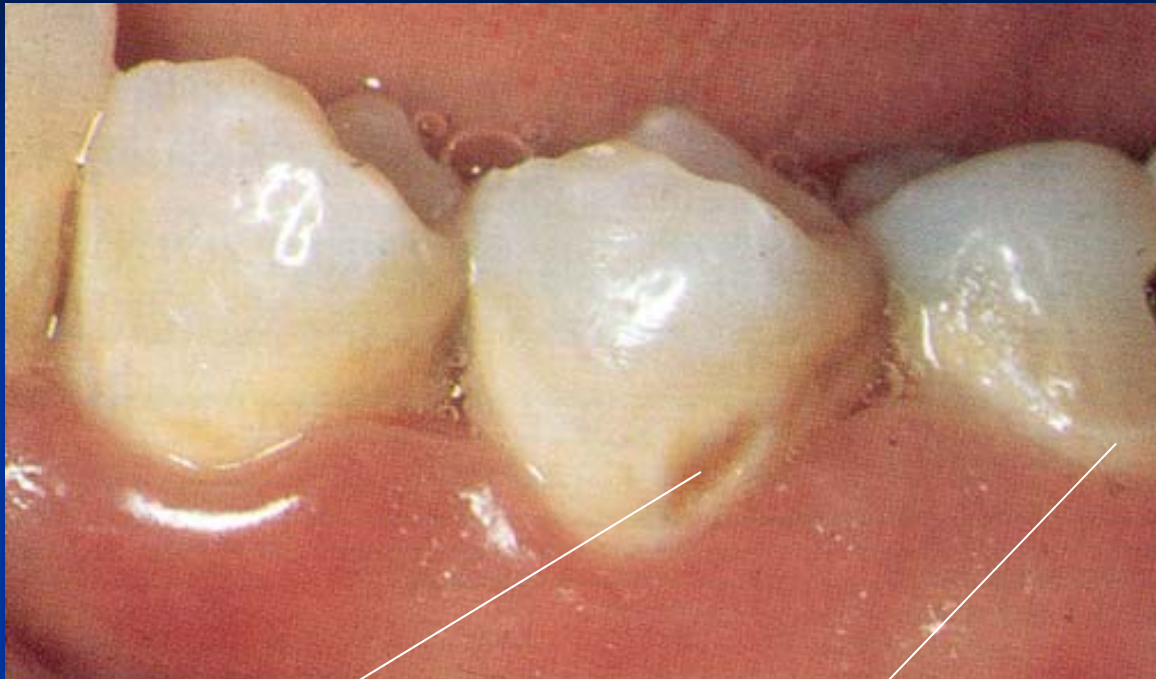
Ozone plus remineralization

Indication:

*Non cavitated lesion (Diagnodent)*

Contraindication:

*Cavitated lesion*



**Cavitated lesion**

**Non cavitated lesion**

# Class V.

Minimally invasive treatment

## Principle:

prepare small cavities limited on carious lesion only

Adhesive materials – composites

Glass ionomer cements

Combination of GIC and composites (lesion is filled with GIC and covered with composite – sandwich filling)



# Principle

- Elimination of the undermined enamel
- Burs or diamonds (pear), tapered fissure bur
- Separation of the gingiva—temporary filling guttapercha, fermit, clip, zinkoxidsulphate cement, cavit, provimat).
- Ablation of ingrowing gingiva—surgical (scalpel, laser, highfrequency current)



# Matrices

Important for the correct shape of fillings

For good curing of materials

*Strip or a special form*





Soft aluminium matrix for GIC

Secondary caries

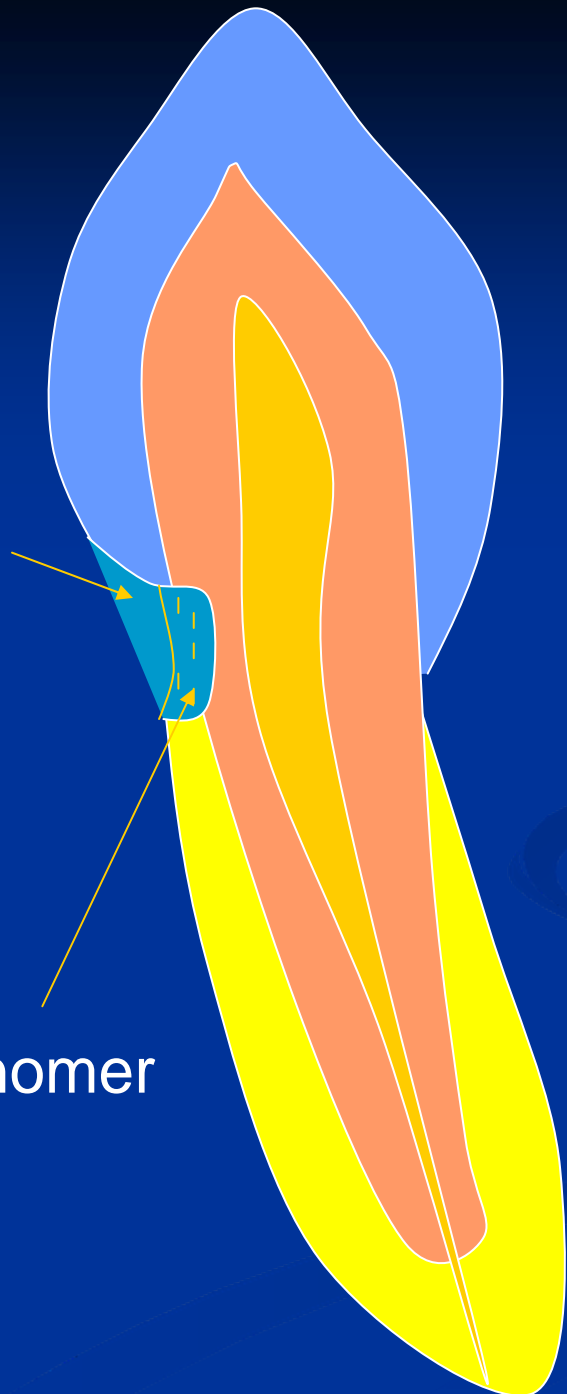


# Class V. – Sandwich principle (combination of GIC and composite)

- Base of glassionomer – a replacement of the lost dentin
- Thin layer of composite – a replacement of the lost enamel

Composite

Base of a glasionomer

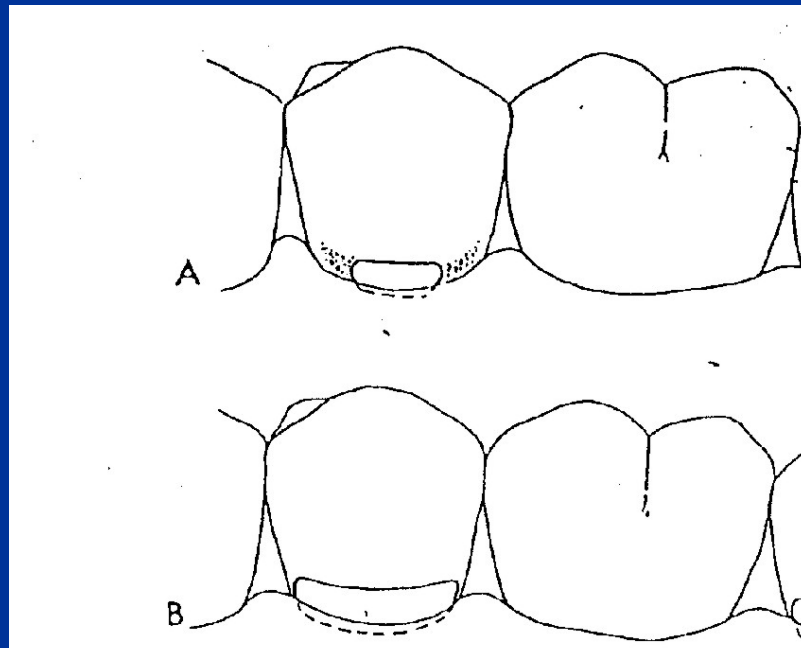
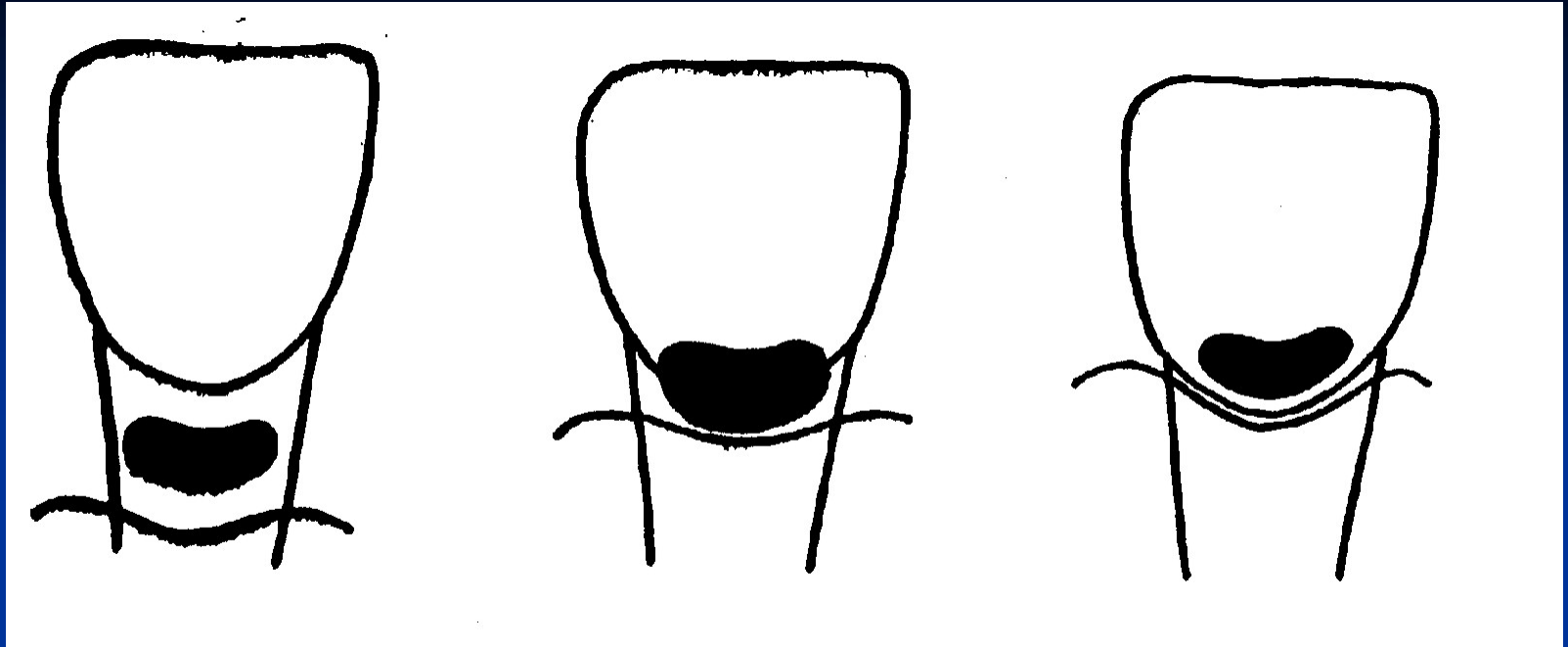


Bond:

GIC -tooth  
chemical

Composite-tooth  
micromechanical

Composite-GIC  
micromechanical

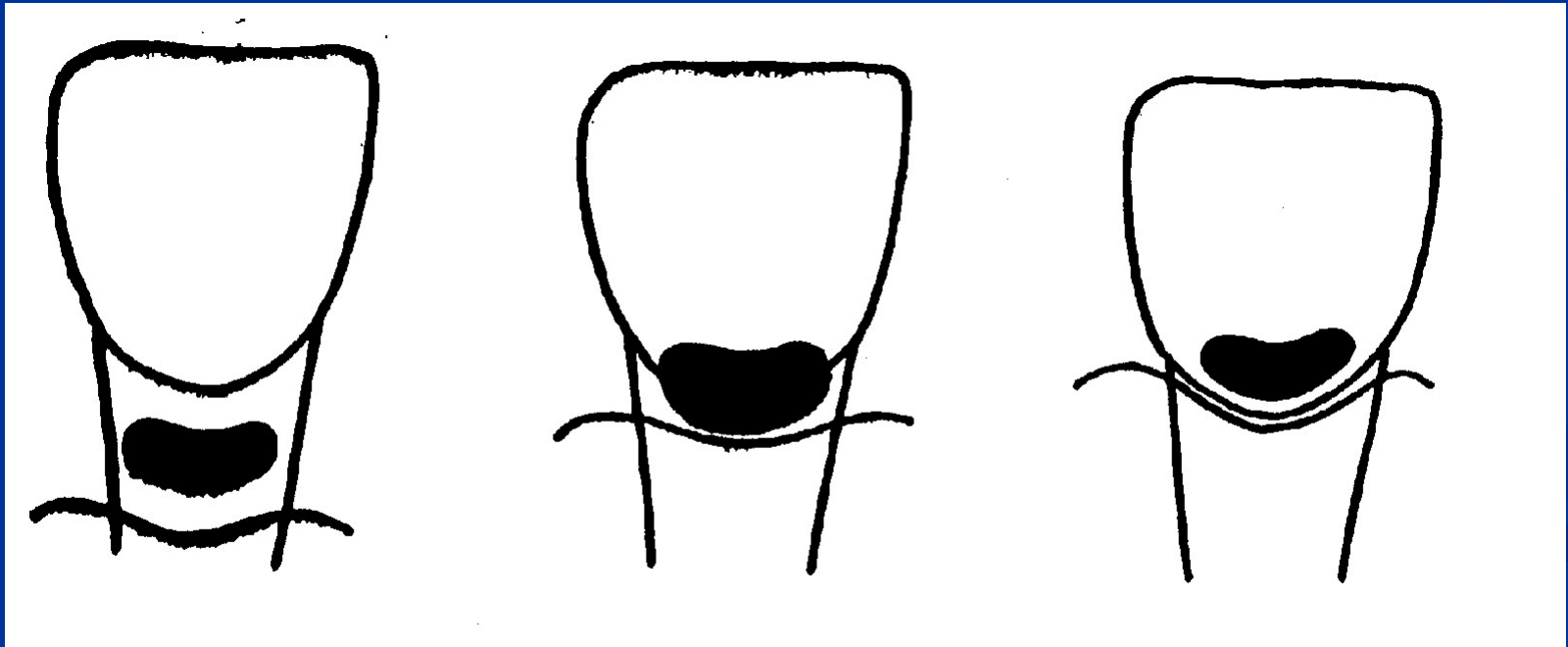


# Choice of material – 1st choice

GIC

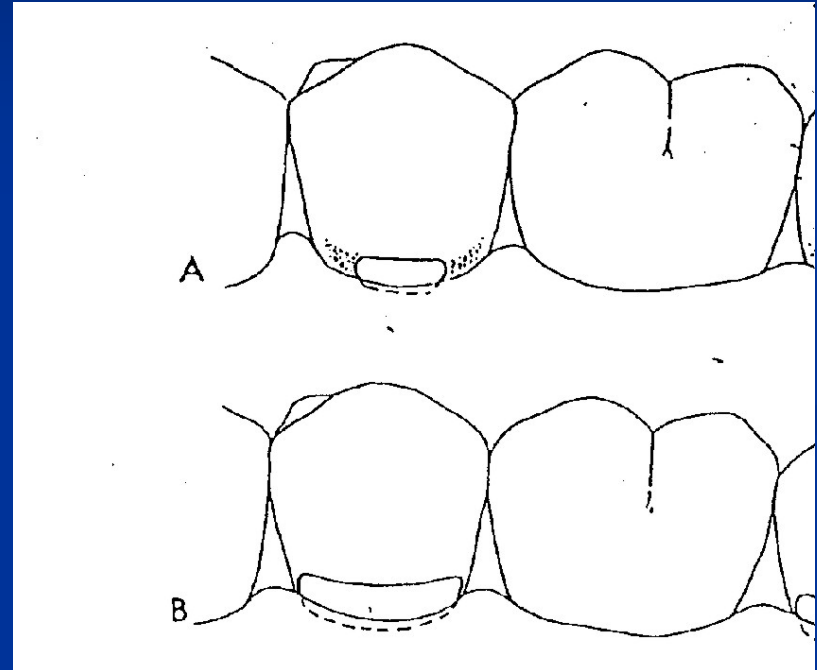
Sandwich

Composite



# Class V. - amalgam

- Posterior area



Conventional preparation



# Secondary caries

- Secondary caries – on the border, reasons: bad preparation – damaged enamel during preparation, borders are not smooth enough, bad acid etching technique, no extension for prevention in patients with poor oral hygiene.

Diagnosis:

Visual, probe, good illumination, magnification.

Usually mistakes of dentists.

# Recurrent caries,

- In the cavity, usually at the bottom or walls

Reasons: casious dentin has been left in the cavity.

Diagnosis: X ray, usually BW: clearnesss under the filling. Transillumination – diaphanoscopy.

Mistakes of dentists.



# Subgingival caries

- The border of cavity is situated subgingivally, or gingiva is overgrowing into the cavity.

- Solution:

Removal of overgrowing gingiva (see above)

Retraction cord

Temporary filling

Matrix esp. Belvedere matrix.

Fundamental recommendation: The control of border is necessary! Dry field !!!