

Restorative dentistry I.

4th lecture

Preparation and making fillings
Class V., III., IV.

Class V.

Fillings of cervical defects-

In cervical area can be found:

Dental caries

Non carious lesions:

Non carious lesions are defects of hard dental tissues caused by various reasons, no microbes are involved.

Dental caries



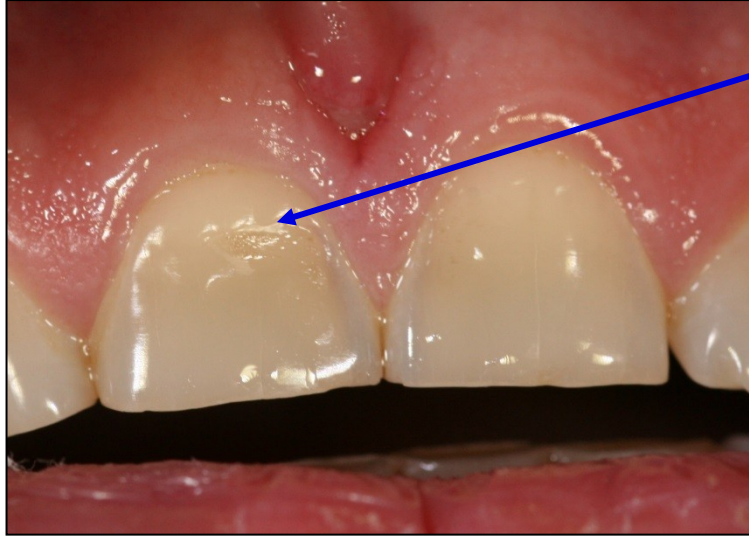
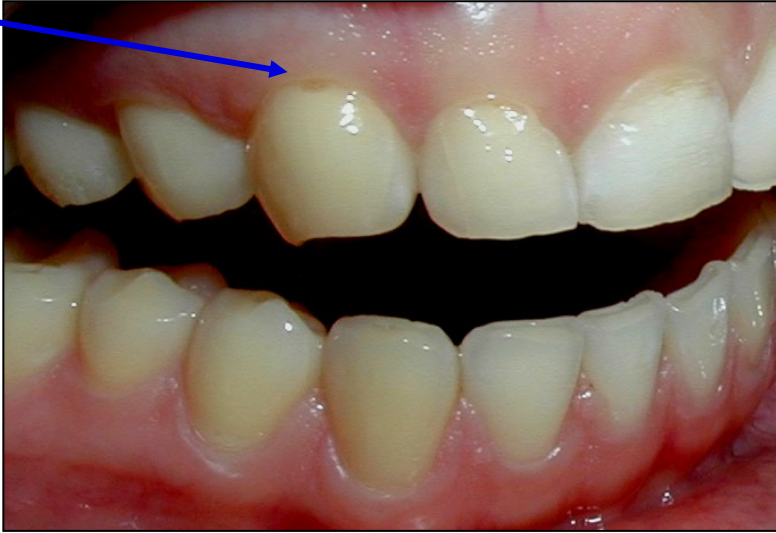
Types of defects

- Caries
- Erosion
- Abrasion
- V shaped defects
- Erosion

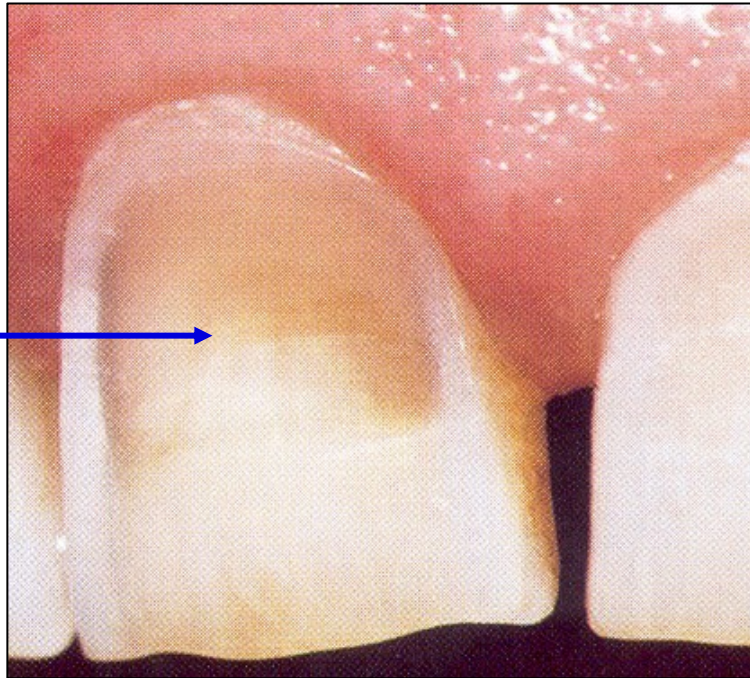
Erosion

- Irreversible loss of hard dental tissue as a consequence of demineralization without participation of microbes. Repeated contact with chemicals of low pH (1-3) is necessary.

Acidic food and beverages, gastric acid (gastrooesophageal rephlux).



Erosion + abrasion



Abrasion

□ Abrasion is a loss of hard dental tissues caused mechanically with some substance or objects. Abrasion is often combined with erosion. Typical location – cervical area of canines and premolars.

Typical reason: hard toothbrush, abrasive toothpaste.



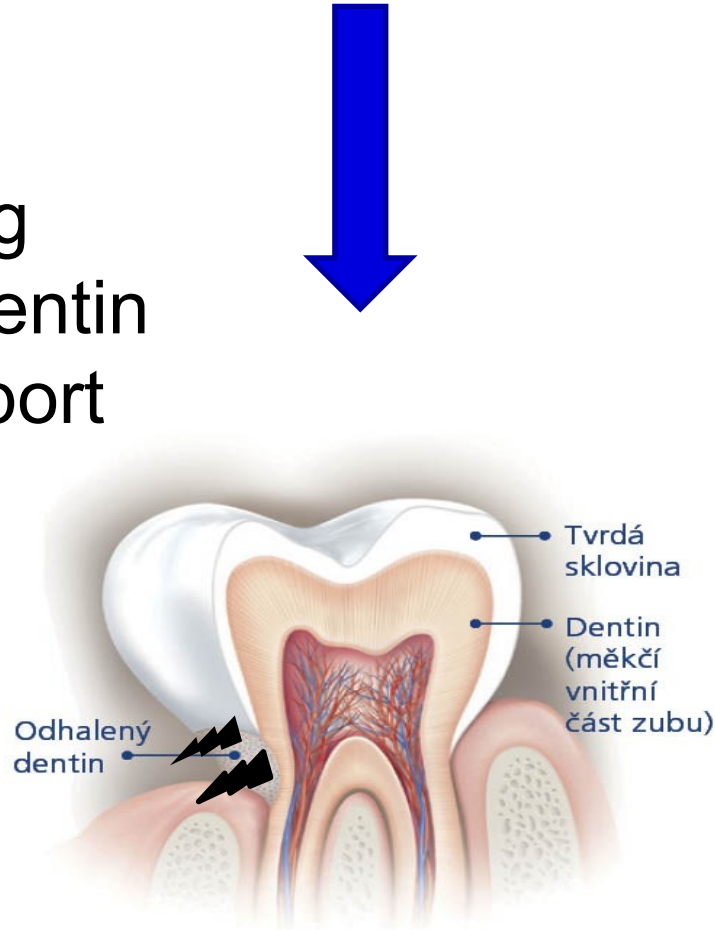
V shape defect



Typical shape, smooth bottom, the border is subgingivally. No pain.

Aethiology of V shaped defects - abfraction

- During the occlusal loading
- elastic deformation of dentin
 - enamel loses the support
 - fracture of small pieces
 - **abfraction**



Hard enamel
Elastic dentin

Filling therapy of central caries and non carious lesions is the same

Choice of material

- Amalgam (posterior area)
- Composite (mainly in anterior teeth where the defect is situated in enamel)
- Glassionomer: caries defects, esp deeper, situated out of enamel, higher caries risk

V.Class Amalgam

- Posterior area



Access

- Elimination of the undermined enamel
 - Burs or diamonds (pear), tapered fissure bur
- Separation of the gingiva – temporary filling guttapercha, fermit, clip, zinkoxidsulfate cement, cavit, provimat).
- Ablation of ingrown gingiva – surgical (scalpel, laser, high frequency current)

Cavosurface margins

Gingival: axial depth of 0,5 mm inside the DEJ.

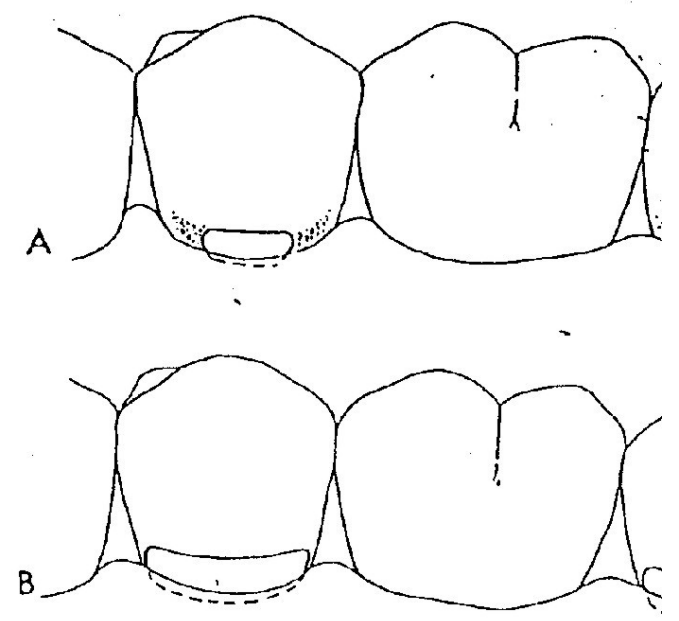
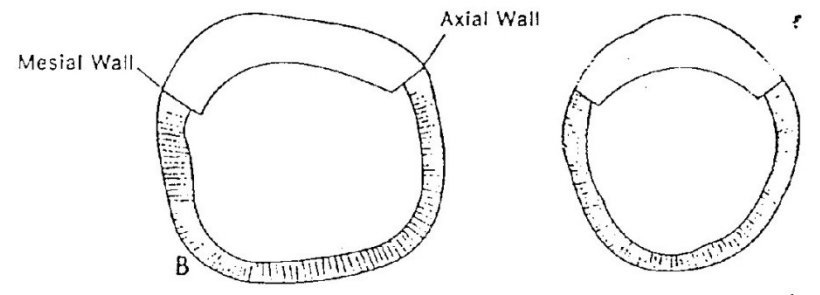
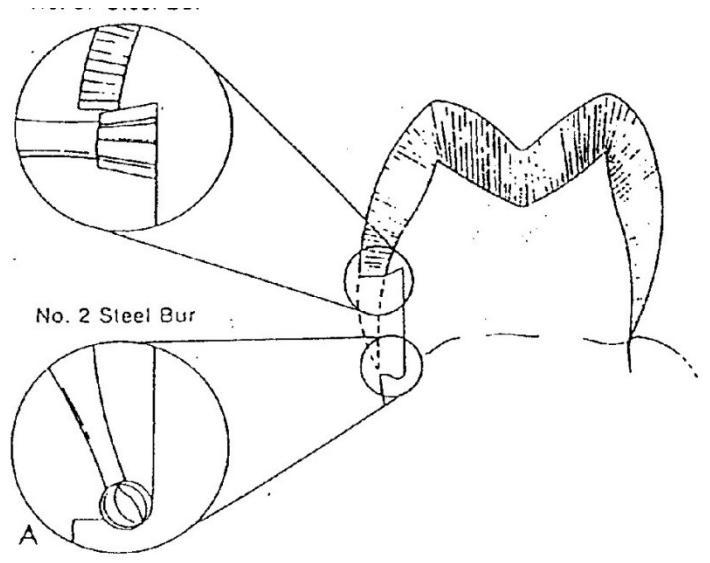
Extention of the preparation incisally,

Gingivally: 0,5 mm subgingivally

mesially and distally: to axial walls

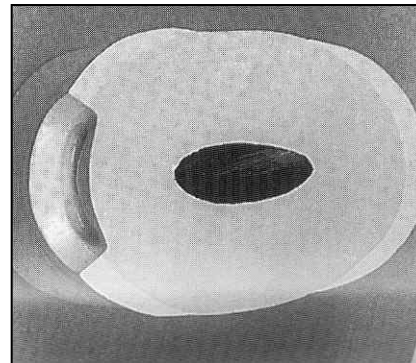
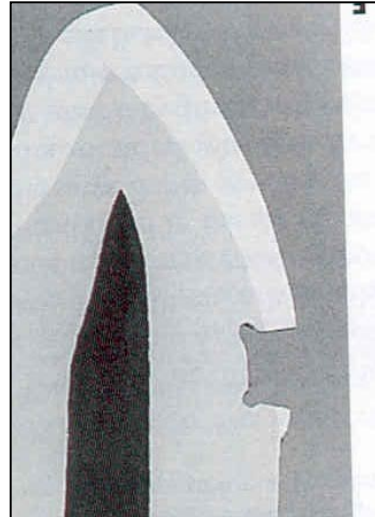
Or: untill the cavosurface margins are positioned in sound dental structure. (small cavities, good oral hygiene)

Total depth: 1 – 1.25 mm. If on root surface -0,75 mm



Retention

- Box 0,75 – 1,25 mm deep, undercuts,



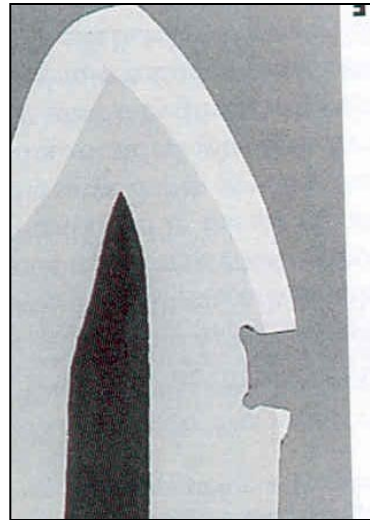
Depth

Gingivally: axial depth of 0,5 mm inside the DEJ.(Subgingivally)

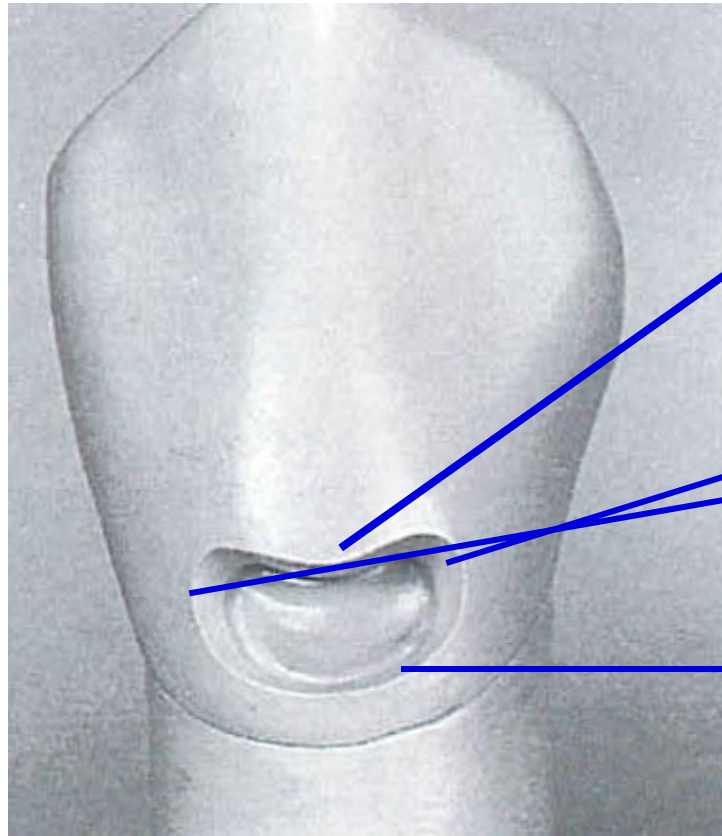
Total depth: 1 – 1.25 mm. If on root surface -0,75 mm

Resistance

No occlusal forces



The bottom of the cavity follows the convexity of the crown.



Occlusal margin

Mesial and
distal margin

Gingival margin

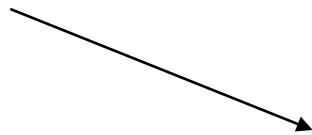
Filling

Base – pulpal wall

Amalgam – portion by portion, condensor with straight front,
burnisher (spatula).

Class V. composit

- Aesthetic area
- Margin in enamel



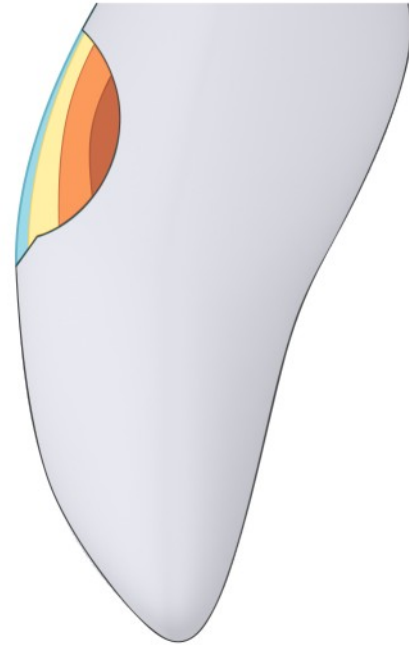
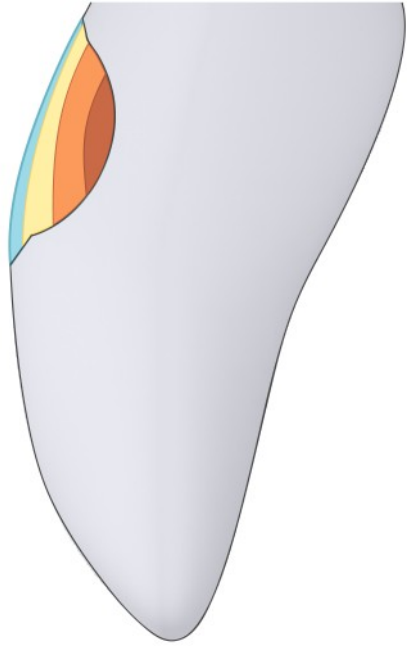
Preparation for composite, making filling

Cavity is limited on caries lesion only

Enamel must be beveled

Etching, priming + bonding

Placement of composite



Matrices

Transparent cervical matrices

Matrix band acc. to Belvedere



Class V. glassionomer

- Cavities with margins in cementum
- Or also in enamel or partly in enamel (in patients with worse level of oral hygiene)



Glassionomer

- Bonds chemically to hard dental tissues
- Release fluoride ions
- Thermal expansion similar to dentin
- Acceptable aesthetics

Preparation for glassionomer

- Cavity is limited on carious lesion only
- Margins should be smoothed (no bevel)
- Conditioner (polyacrylic acid) -20 s
- Washing
- Placement of glassionomer (one bulk)
- Matrix (transparent or aluminium cervical
- Matrix – cervical foil)



Matrices for glassionomers

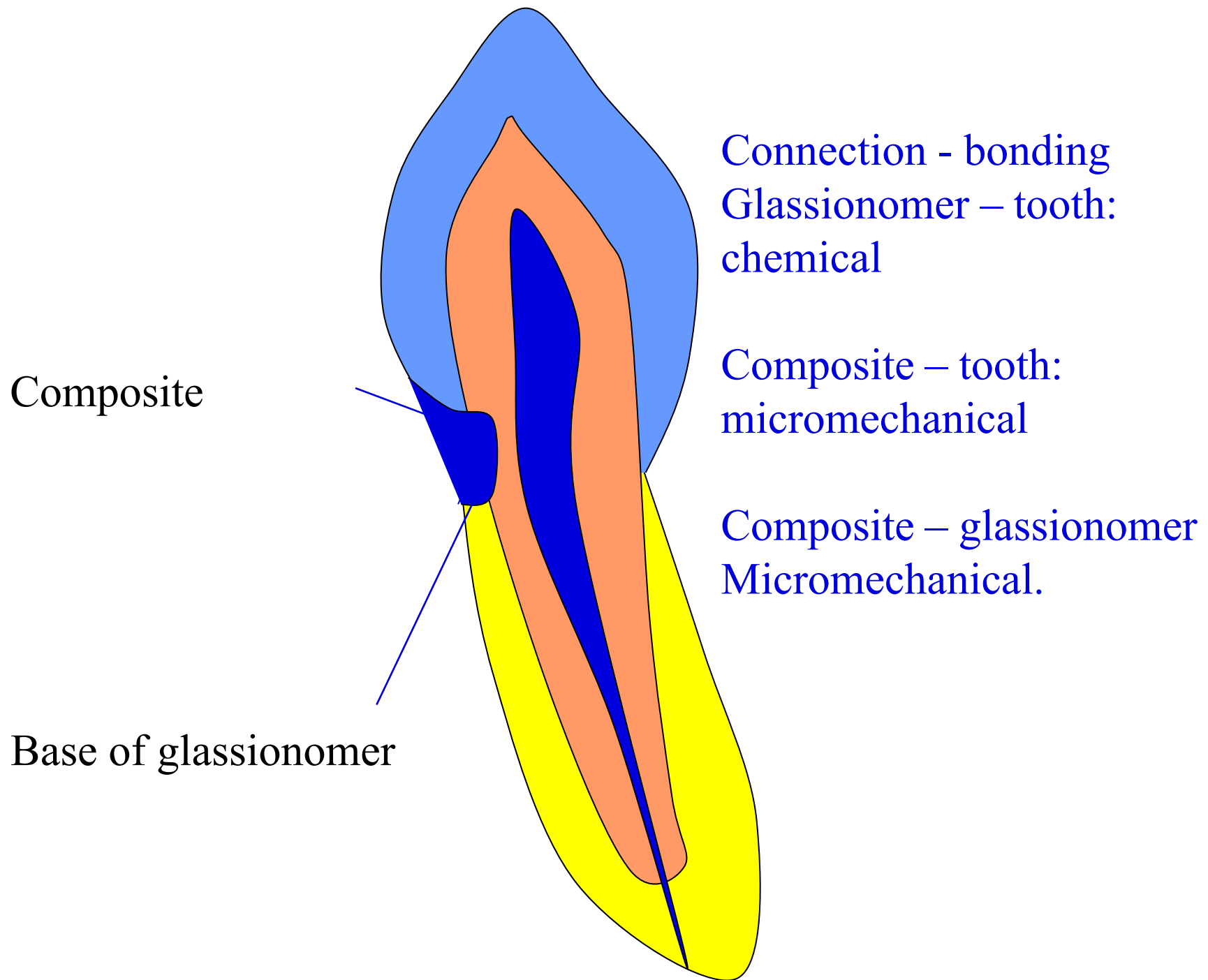
□ Cervical foils



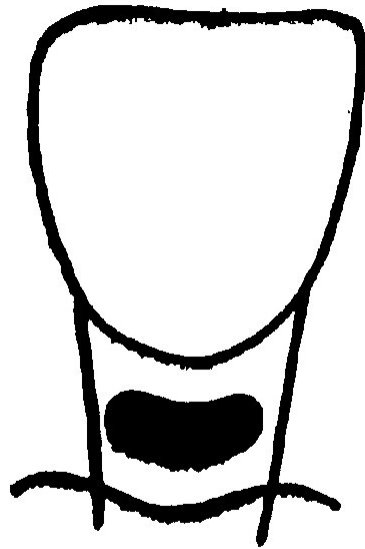
Have adaptable metal cervical matrices have a specially treated aluminium surface and are suitable for all self-curing composites and glass ionomers.

Combination of materials

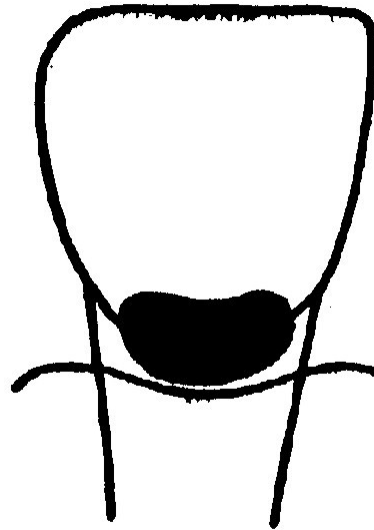
- Glassionomer – replaces lost dentin
- Composite – replaces lost enamel



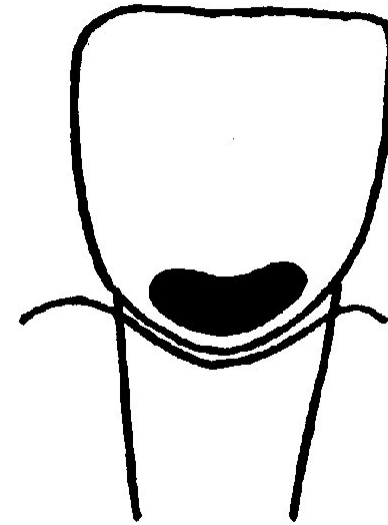
Choice of materials



Glassionomer



Combination



Composite

Or amalgam in posterior area

Remember !

- The filling therapy is symptomatic therapy only!
- *It is always important to discover the ethiology of non carious lesions and eliminate it if possible.*

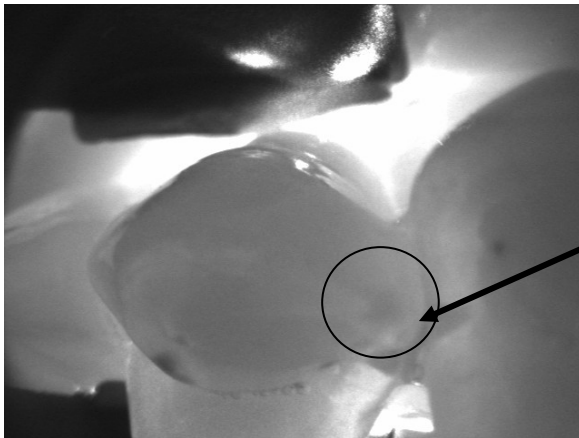
Class III.

Proximal surface of frontal teeth (incisors and canines) without loss of incisal edge. It originates usually below the contact point.



Diagnosis and clinical symptoms

- Visual diagnosis – good illumination or transillumination. Dark spot can be seen. Also Diagnocal can be helpful.
- Early diagnosis is quite easy.

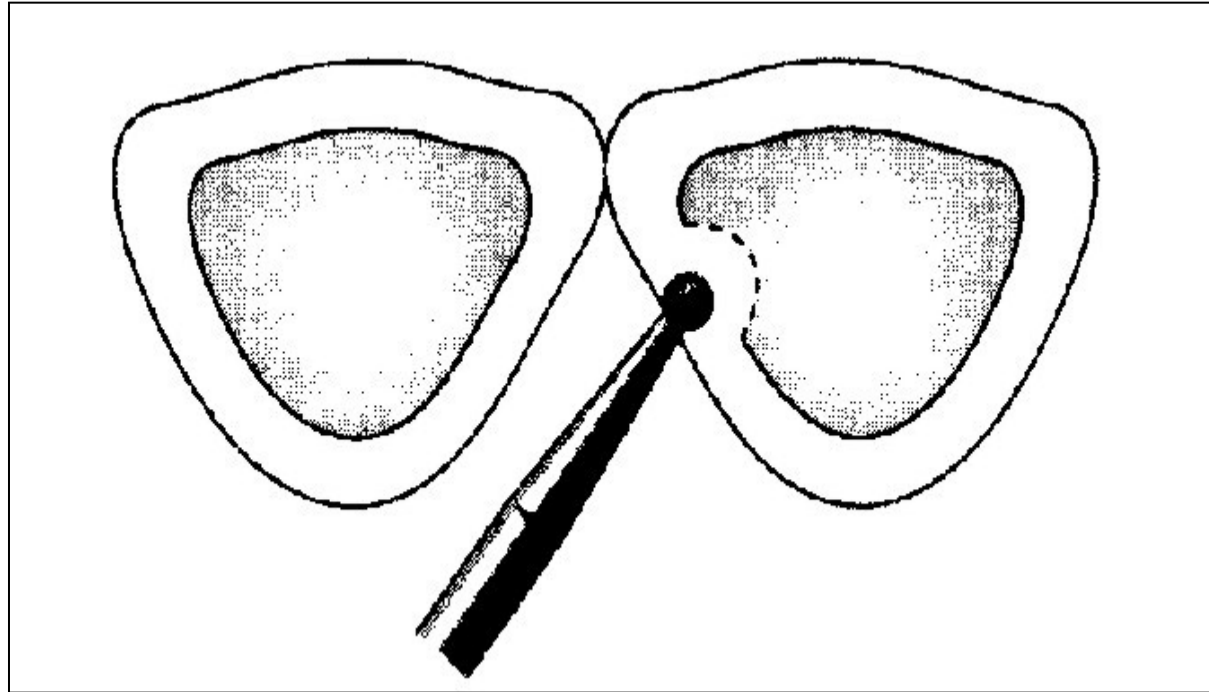


Access to the cavity

- Through the enamel from the oral side
- If the carious lesion is spreading towards vestibular side, vestibular access is acceptable
- Removal of old filling
- Separation of teeth - wedges
- Removal of hyperplastic gingiva



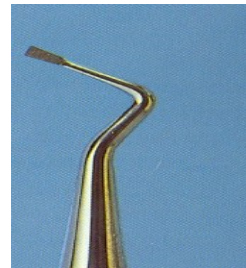
Access

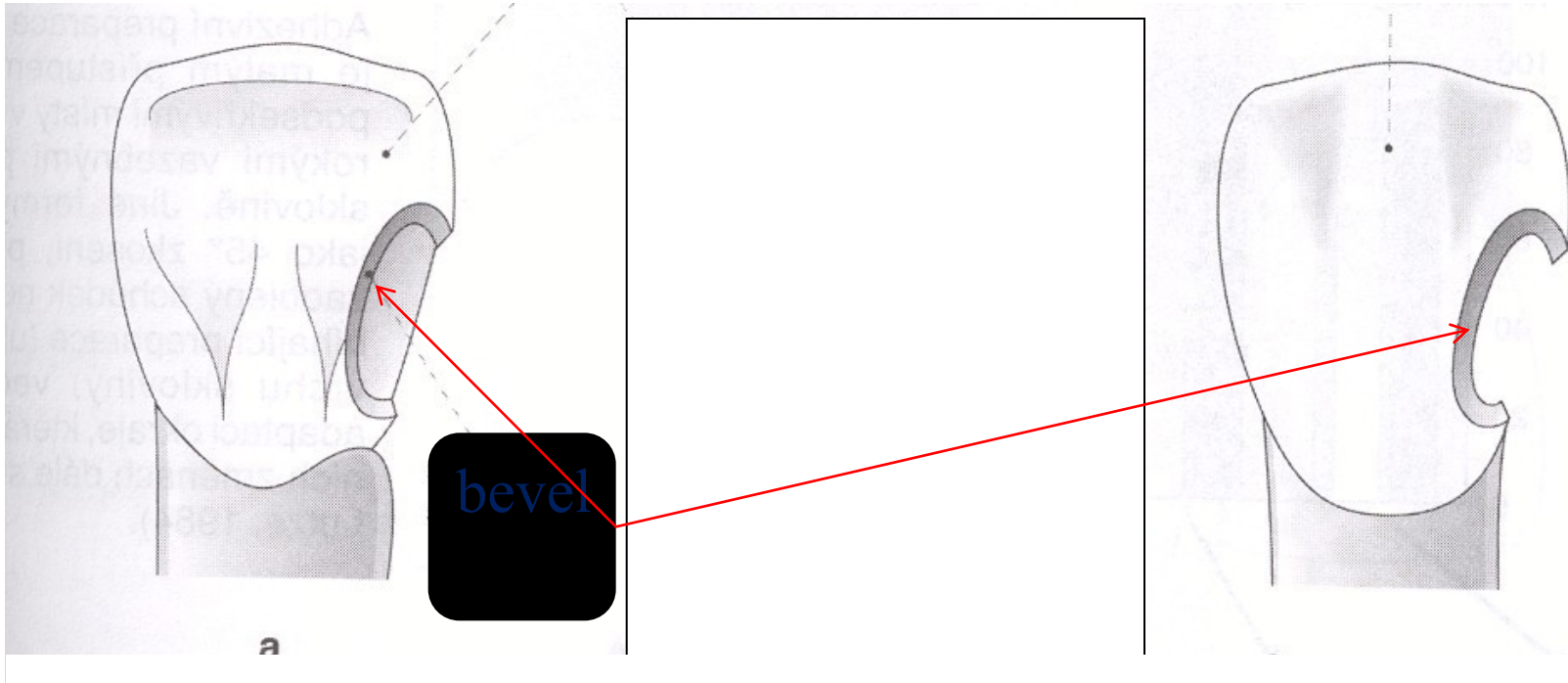


Round bur or diamond,
from oral side,
the caries lesion
on proximal wall must be reached

Cavosurface margin

- Cavity is limited on carious lesion only
- Margins must be beveled

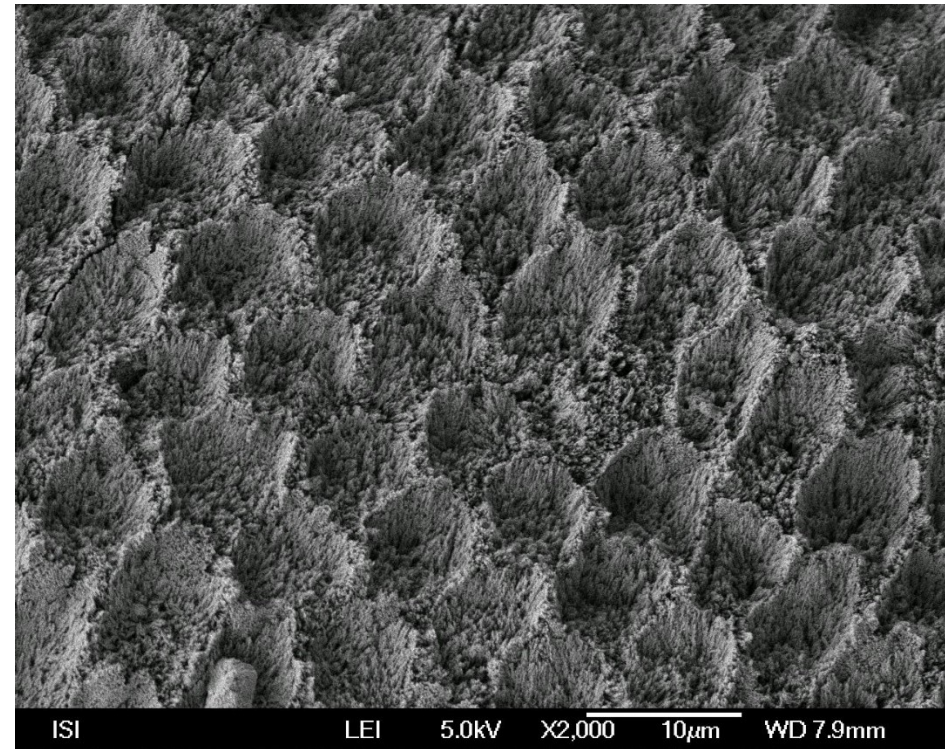
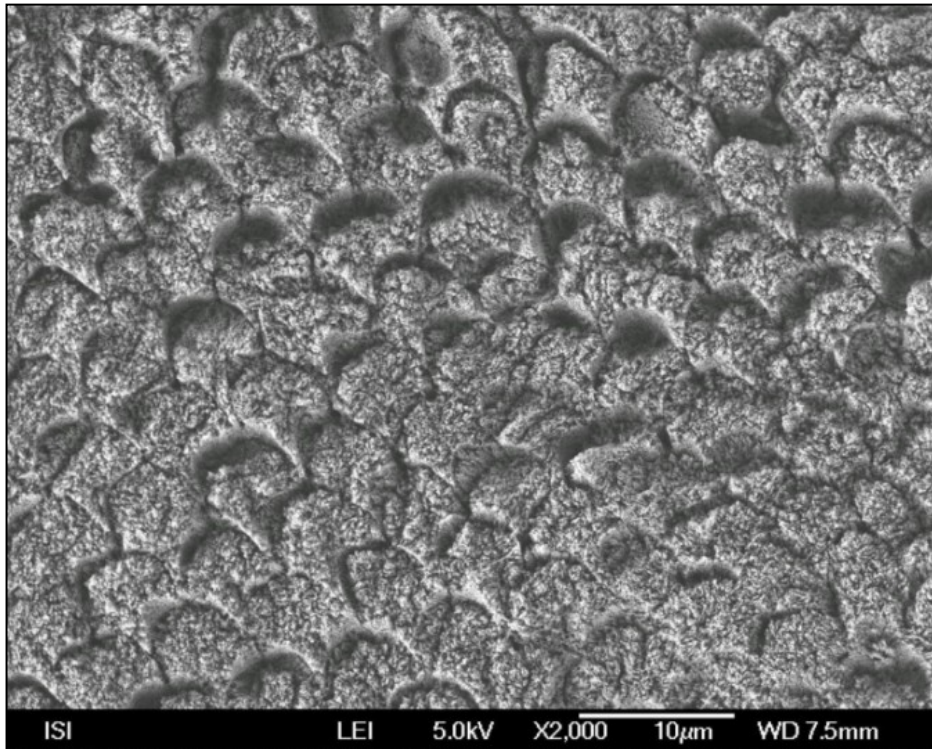




Retention

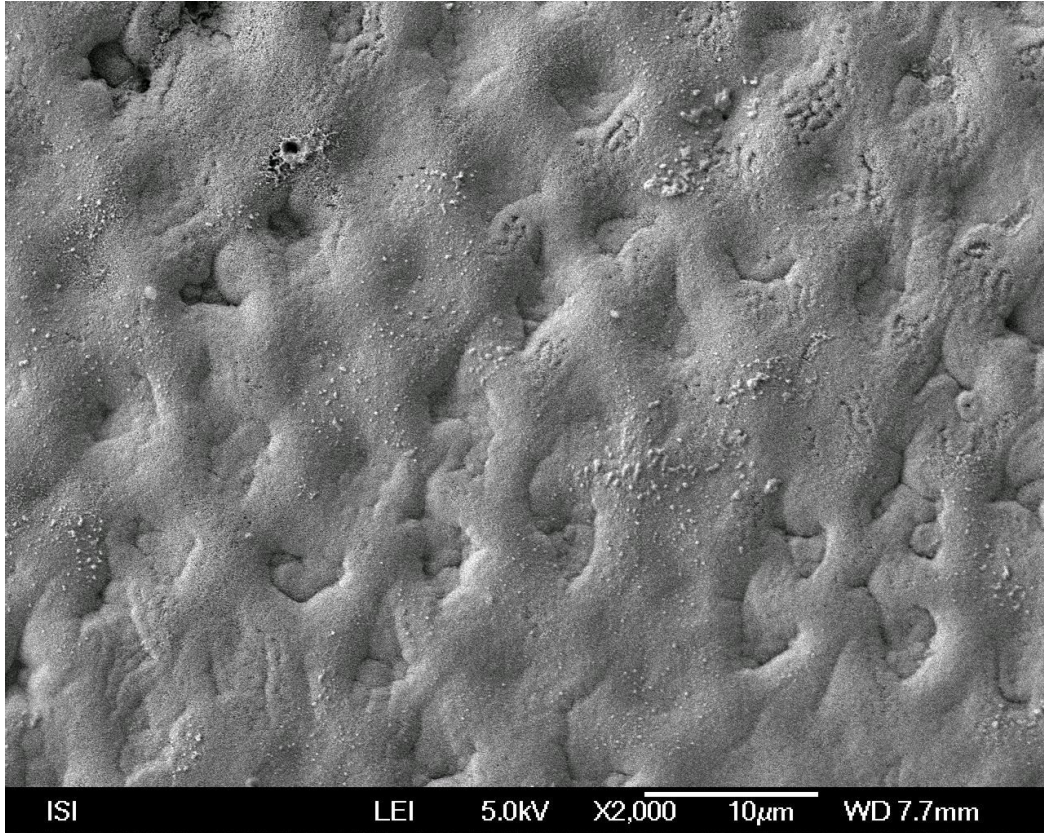
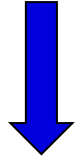
- Margins must be beveled – micromechanical retention
- Within the bevel (retentive border – shallow groove around the lesion) the aprismatic enamel is removed, the prismatic structure is exposed. Depth 0,5 mm. Angel appr. 45°.

Prismatic structure
after the removal of aprismatic enamel
and acid etching – retentive pattern
periprismatic intraprismatic

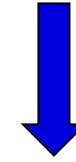


MUNI
MED

Aprismatic enamel



Aprismatic enamel after acid etching



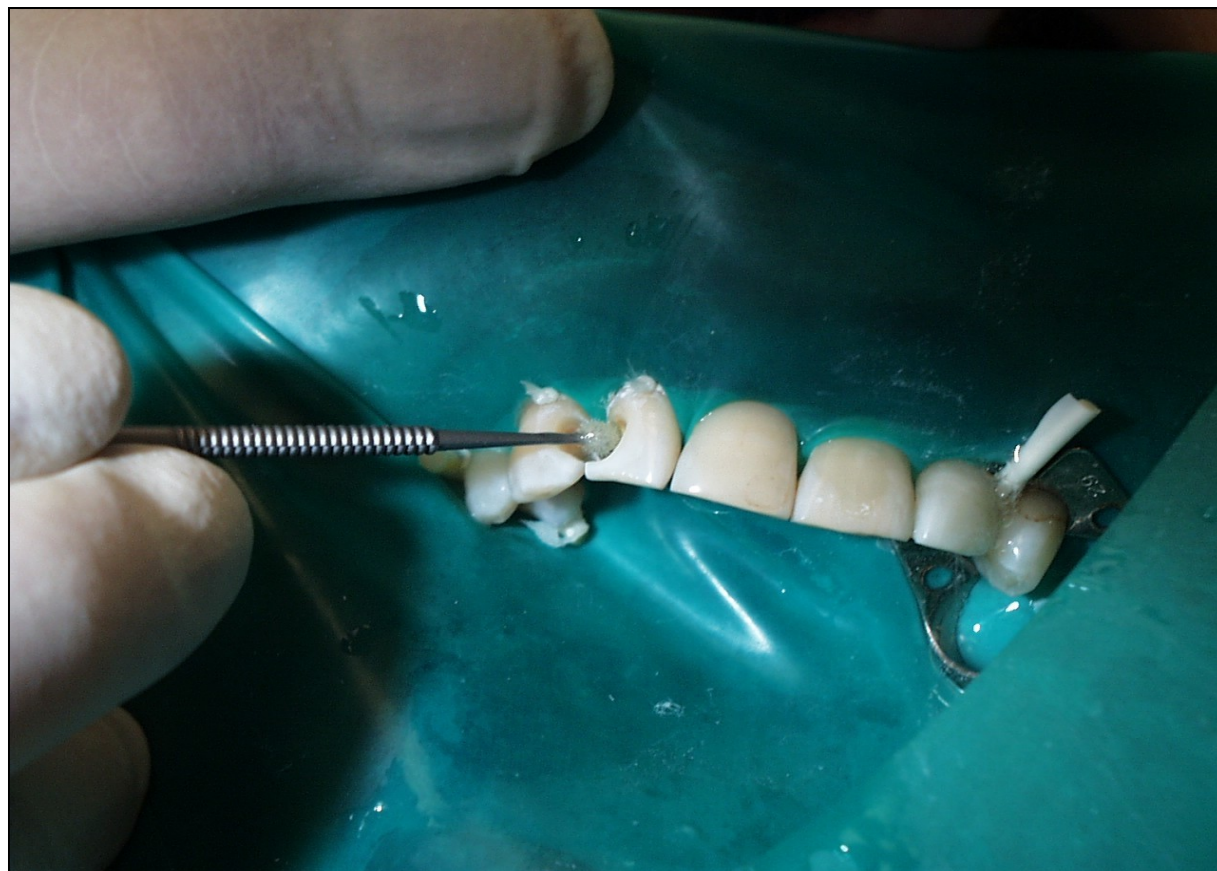
Good isolation with the rubberdam



**Acid etching of enamel and dentin:
Enamel 20 – 30 s
Dentin 10 s**



Bonding



Sequence of operation – after choosing the colour – the enamel is cleaning



Preparation



Acid etching – protection of the other tooth



Matrix (transparent polyester strip) and wedge, priming and bonding



Application of the composite – palatal layer first



Incremental technique



Before finishing, the wedge can remain in situ – separation of teeth



Layering of the composite

- Palatal wall (matrix in situ) – enamel shade
- Dentin shade
- Enamel shade

Matrix has been removed



Finishing: final shape with fine and extrafine diamond bur, flexible discs



Polishing – rubber instruments, fine discs



Rubber cups,
brushes

Finished filling



3 rd class restoration – 20 years ago



Layering depends on size and location of the defect – dentin and enamel shades



M U N I Class IV. M E D

Defects on proximal surfaces premolars and molars with loss of part or complete incisal edge

Dental caries
Trauma

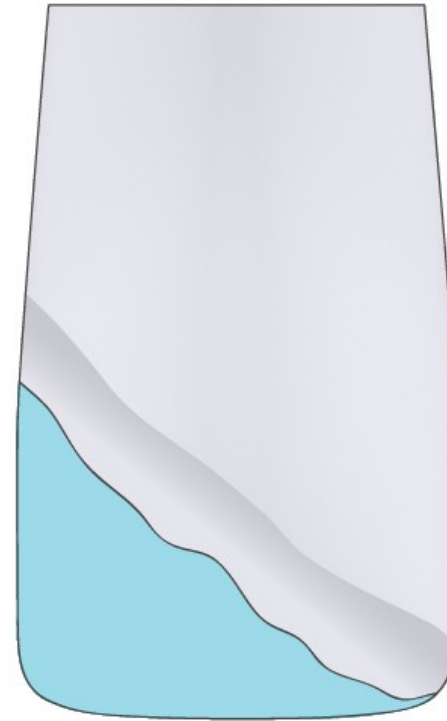
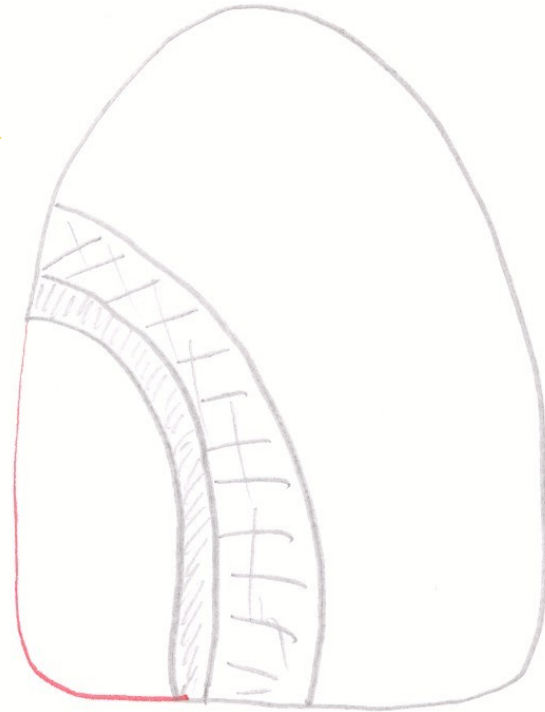
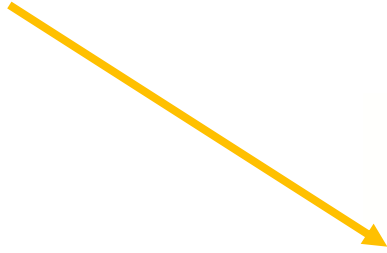


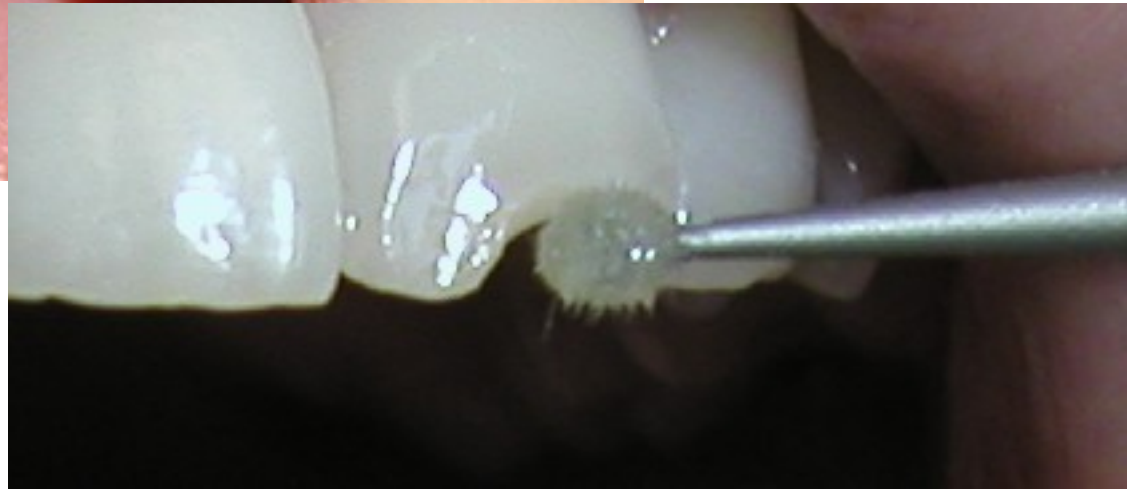
Cavosurface margin

Preparation is limited on the defect



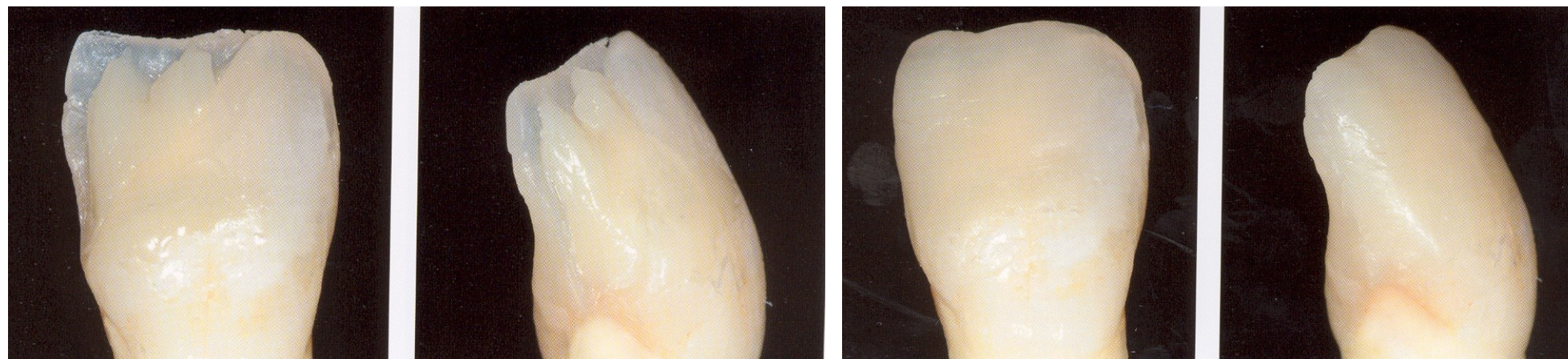
The enamel must be beveled





M U N I
M E D

Principle of the layering of the composite material



M U N I
M E D

The matrix is necessary:

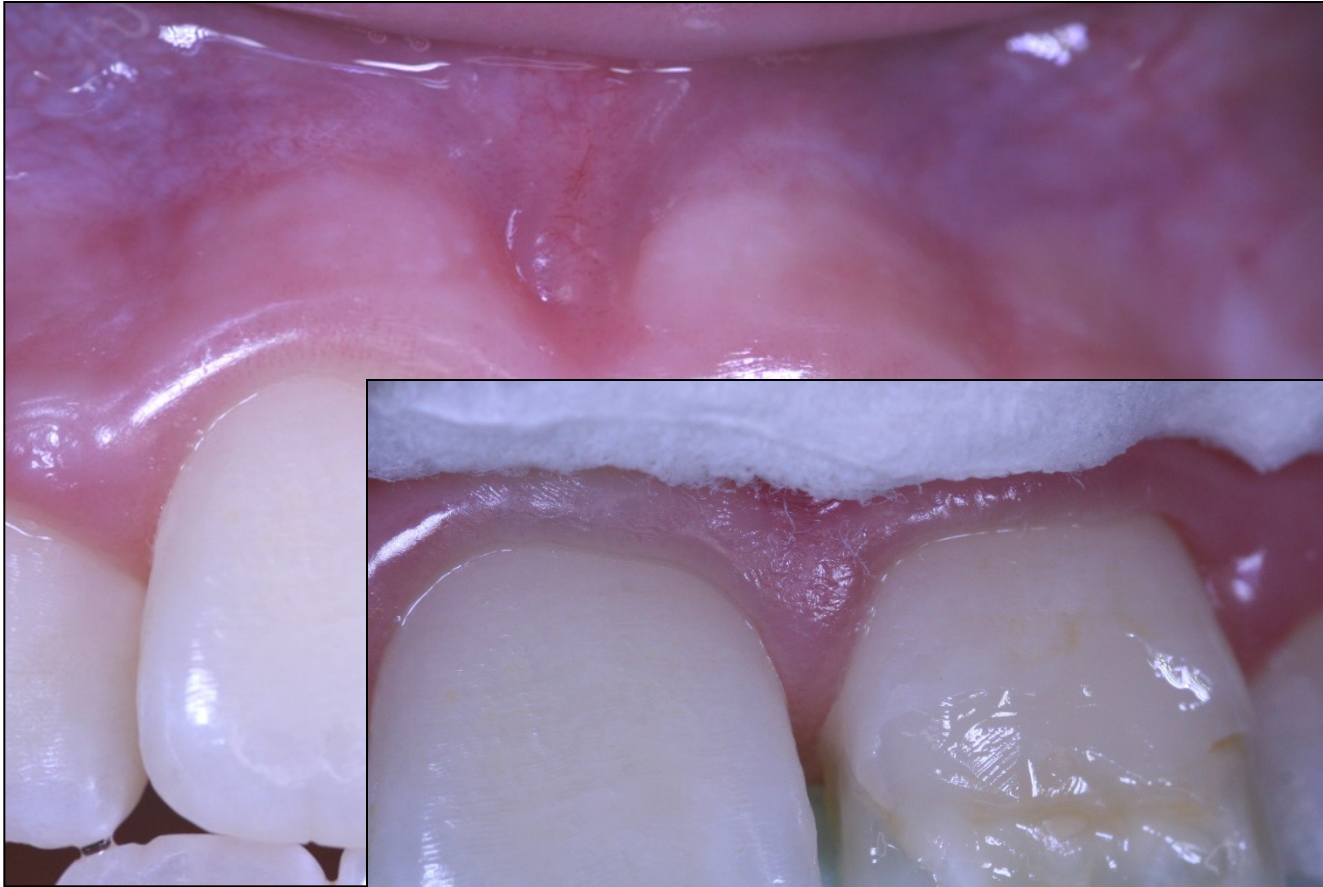
Transparent polyester strip + wooden wedge

For location of the palatal wall silicone matrix can be used

Silicone matrix

- Is a simple impression of silicone impression material after building of the shape of the future restoration on the model or in oral cavity













Now the transparent strip
and wedge is necessary again



