

Special dentureselective course

2016

- I. Adhesive dentures
 - II. FRC composites

Adhesive dentures

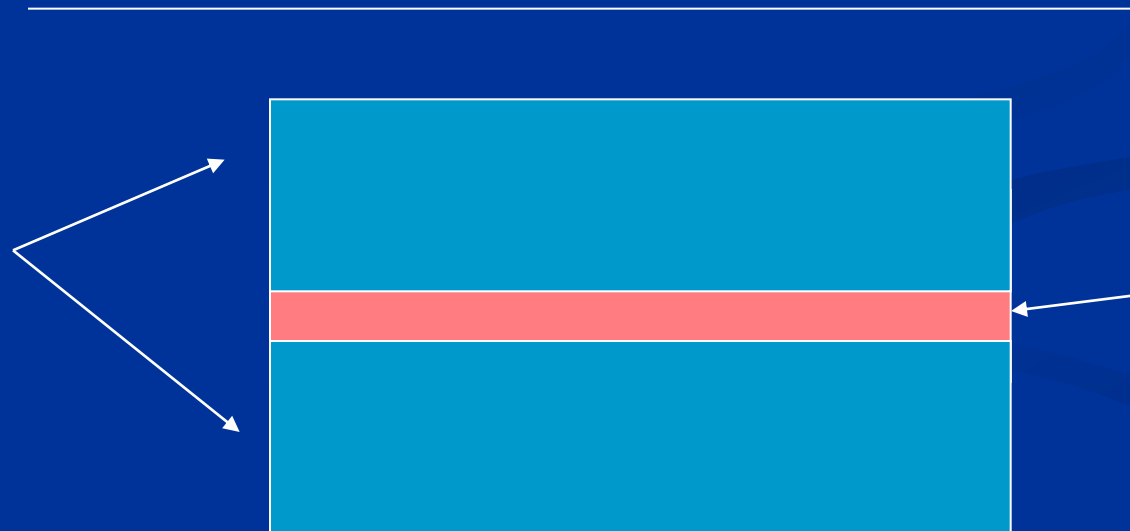
basic terms, adhesive cementation

- Adhesive dentures replace parts of teeth or teeth. They are fixed to abutment teeth adhesively.
- Examples: veneers, inlays, onlays, partial crowns, inlay bridges, Maryland's bridges, others adhesively fixed crowns and bridges. Material: metal, resin, ceramics.

Adhesion

- Ability of two materials to adhere (glue) together
- Adhesive

- Adherend

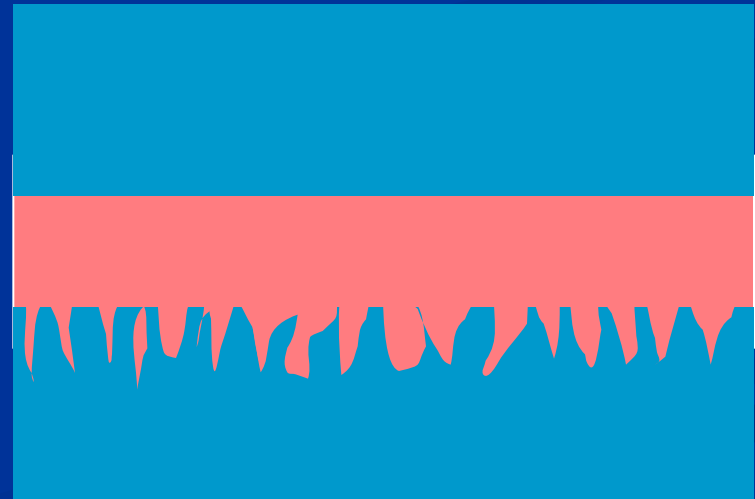


Adhesion

- Mechanic
- Specific

Adhesion

- Mechanical
irregularities of surfaces



Adhesion

➤ Specifická

Fyzikální

Chemická

Adhesion

➤ Specific

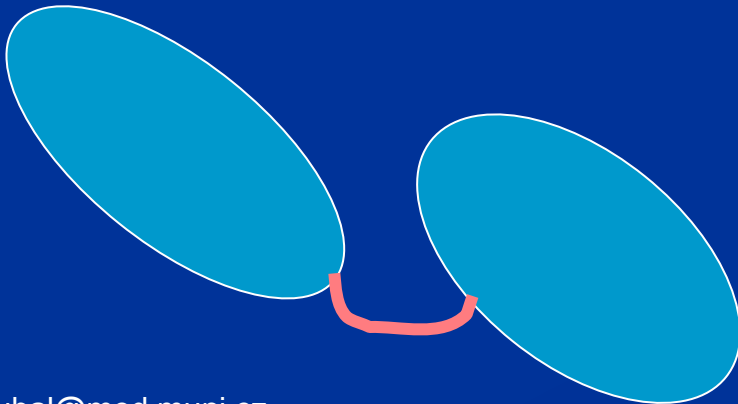
Ohysical – intermolecular forces

Van der Waals

Hydrogen bridges

Elektrostatic

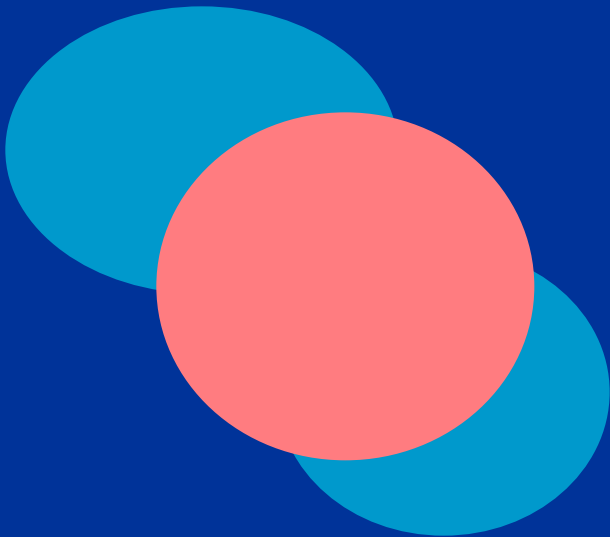
Difuse



Adhesion

➤ Specific

Chemical binding

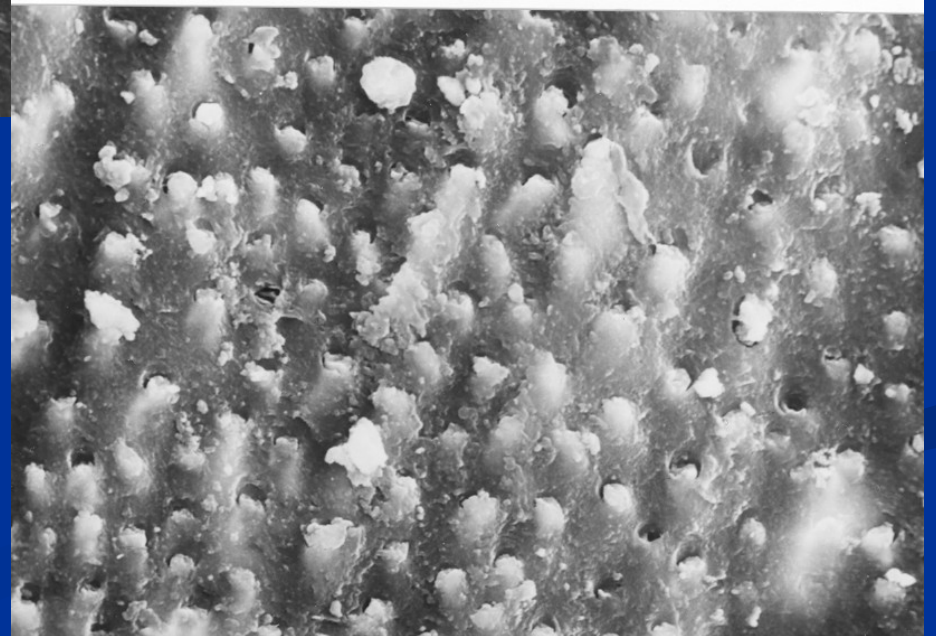
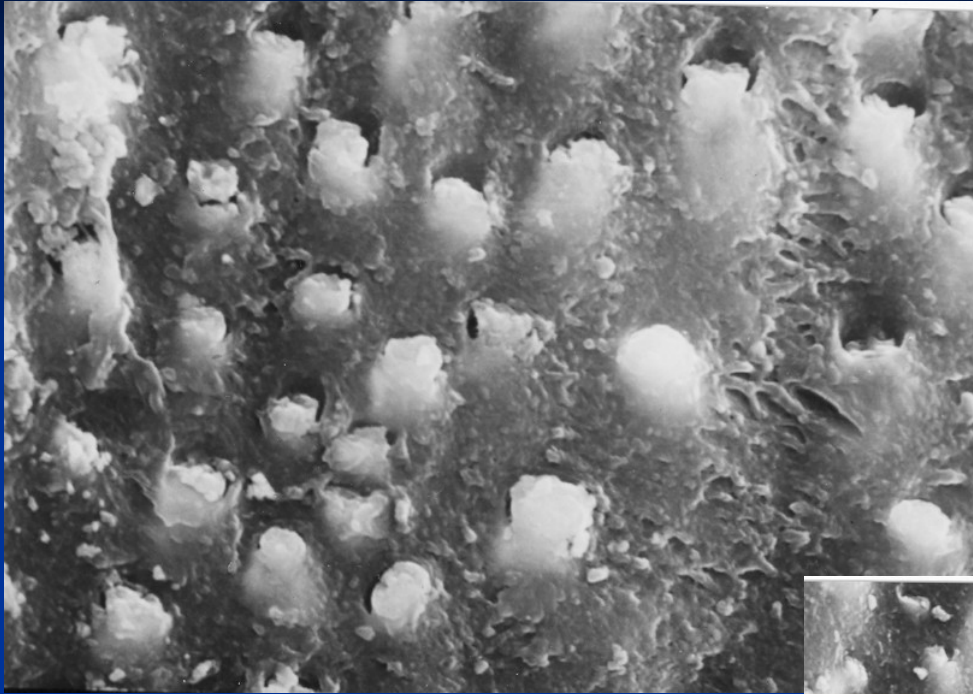


Adhesive treatment of surfaces in dentistry

- Sandblasting
- Acid etching
- Elektrolytic treatment
- Laser
- Plasma coating
- Silanization

Adhezivní úprava povrchů v zubním lékařství

- Vytvoří nerovnosti
- Zvýší povrchovou energii
- Zlepší smáčivost
- Kombinace předchozího



Adhesion in dentistry

- Making fillings
- Cementation
- Other procedures

Kompozitní cementy

- Kompozitní materiály
- S nižší viskozitou
- Iniciované chemicky, nebo duálně (světlem i chemicky).

Composite cements and their adhesion

- Mikromechanical
 - Acid etching
 - Selfetching adhesive systems
 - Without adhesive treatment





Refill 50

Recorder # 533670

ivoclar vivadent clinical

ivoclar vivadent

Variolink II Catalyst

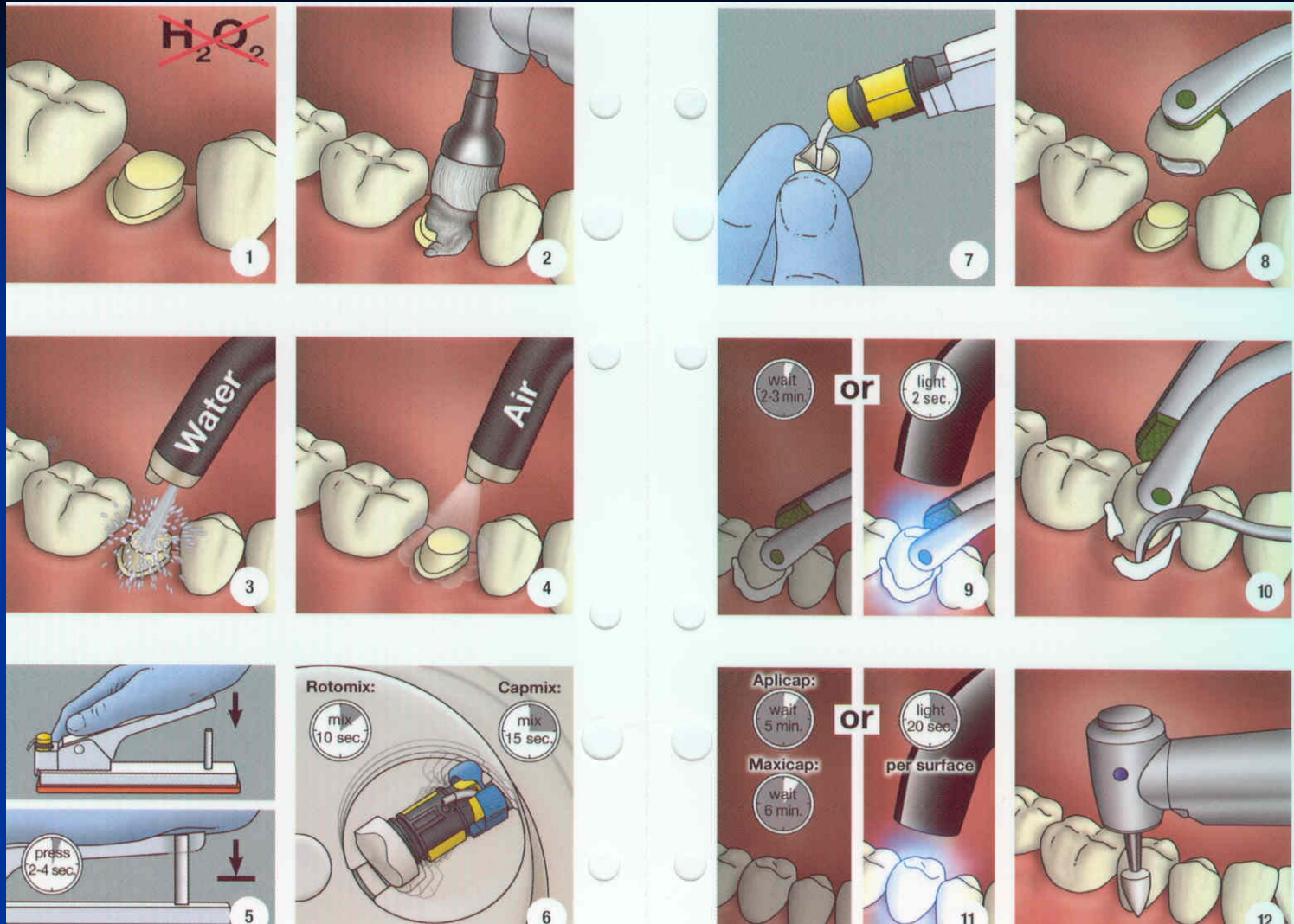
Variolink II Base

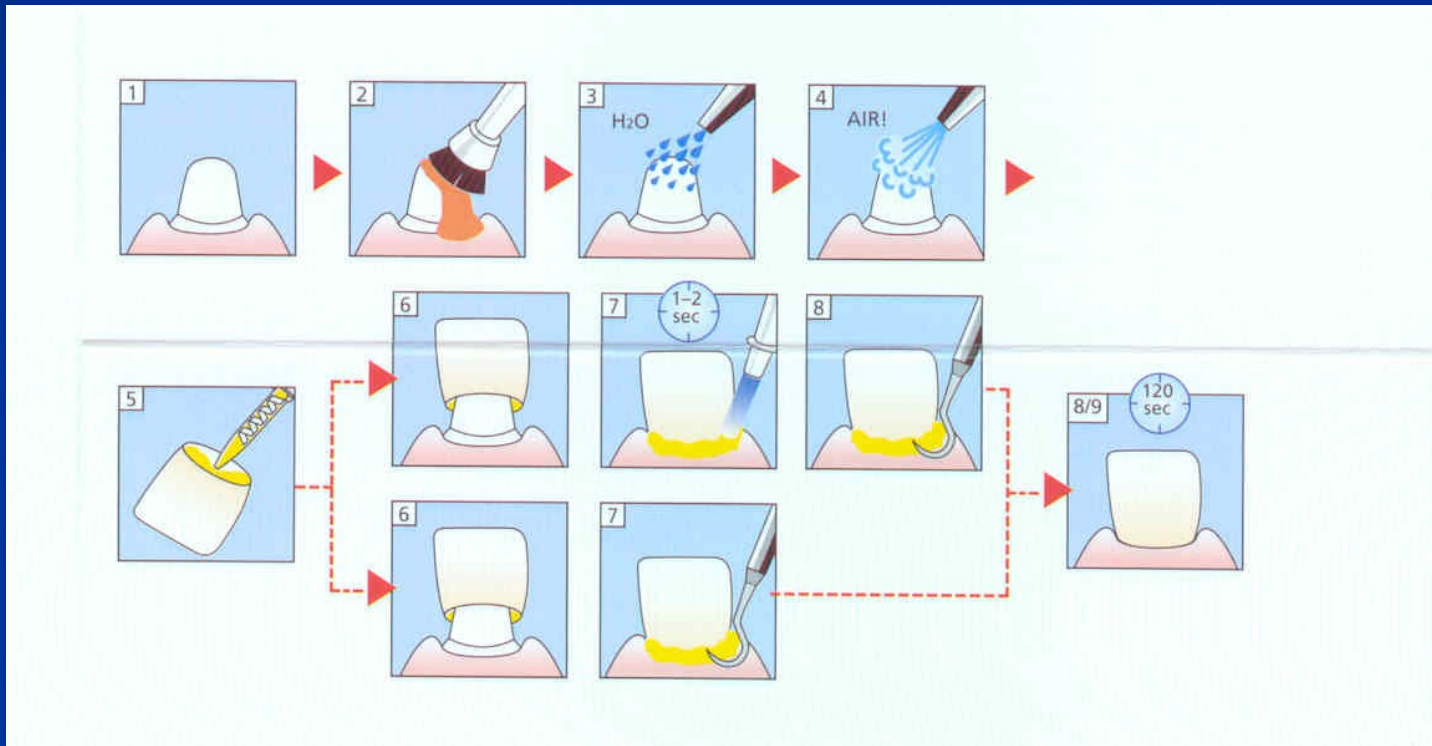
Excite BSC

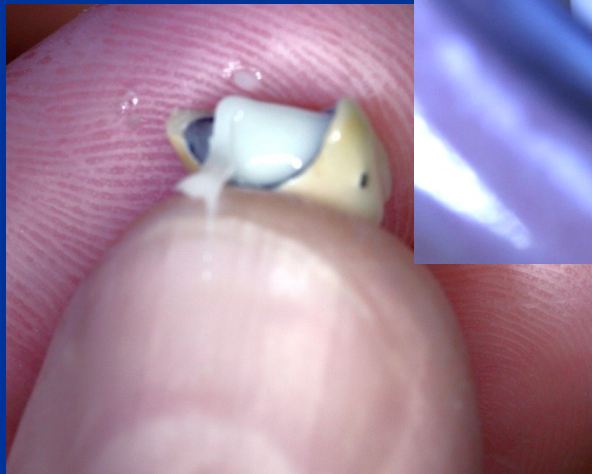
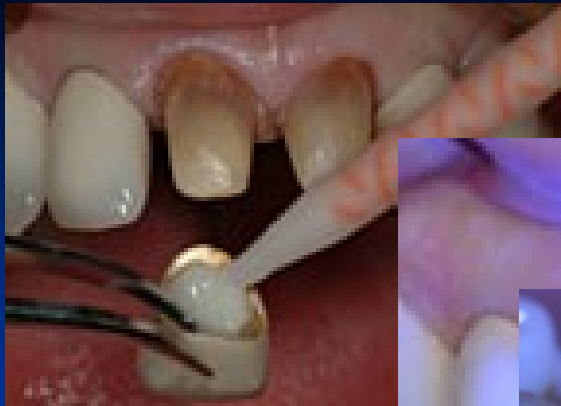


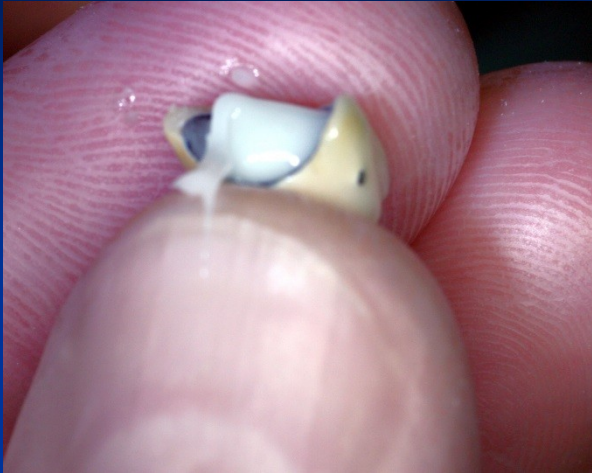










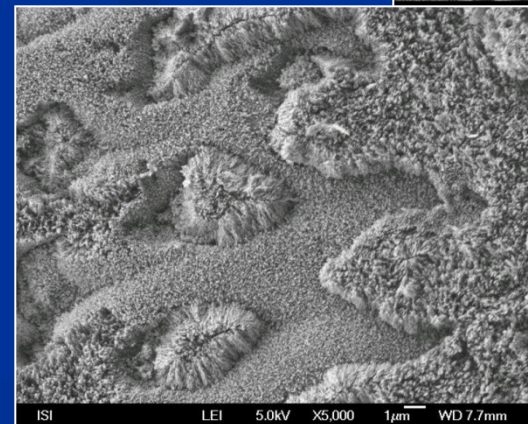
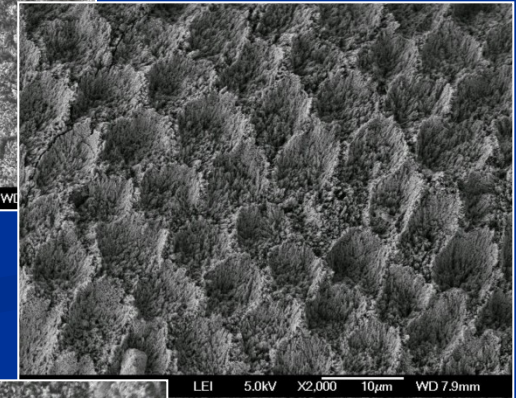
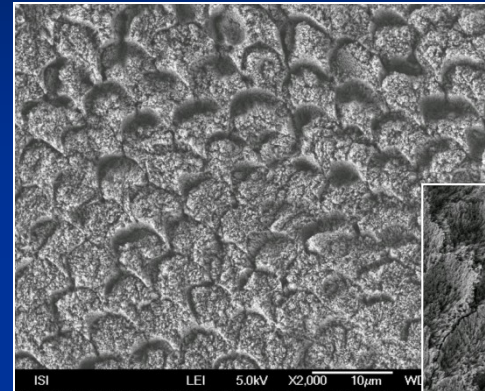


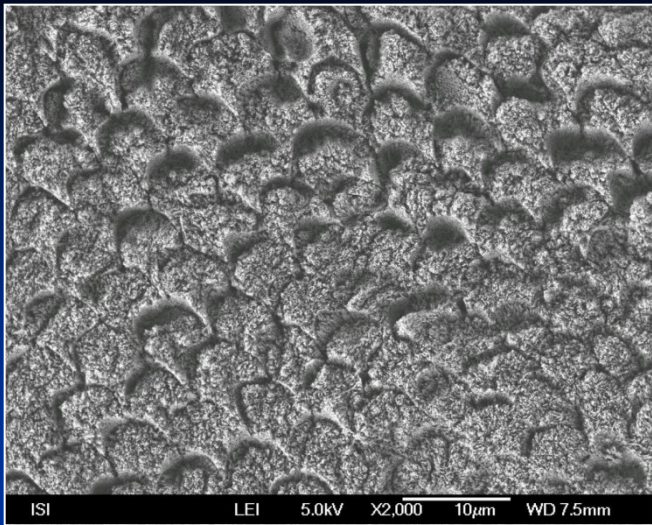
Treatment of various surfaces before adhesive cementation

- Enamel
- Dentin
- Ceramic materials
- Composite materials
- Metal alloys

Retentive pattern of enamel

- Periprismatic
- Intraprismatic
- Aprismatic





TE

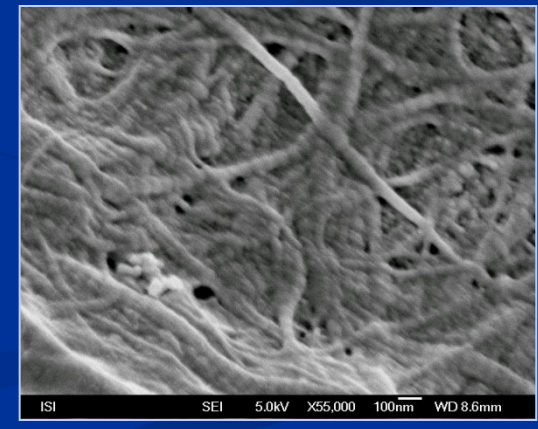
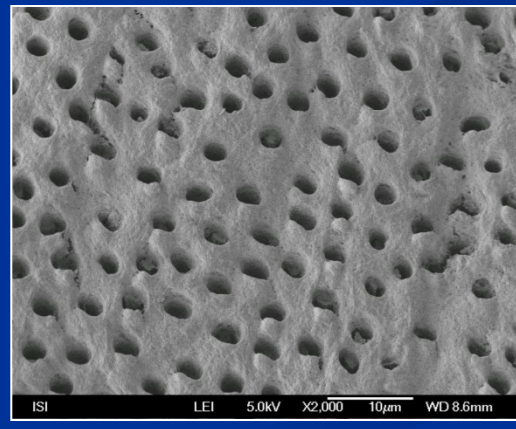


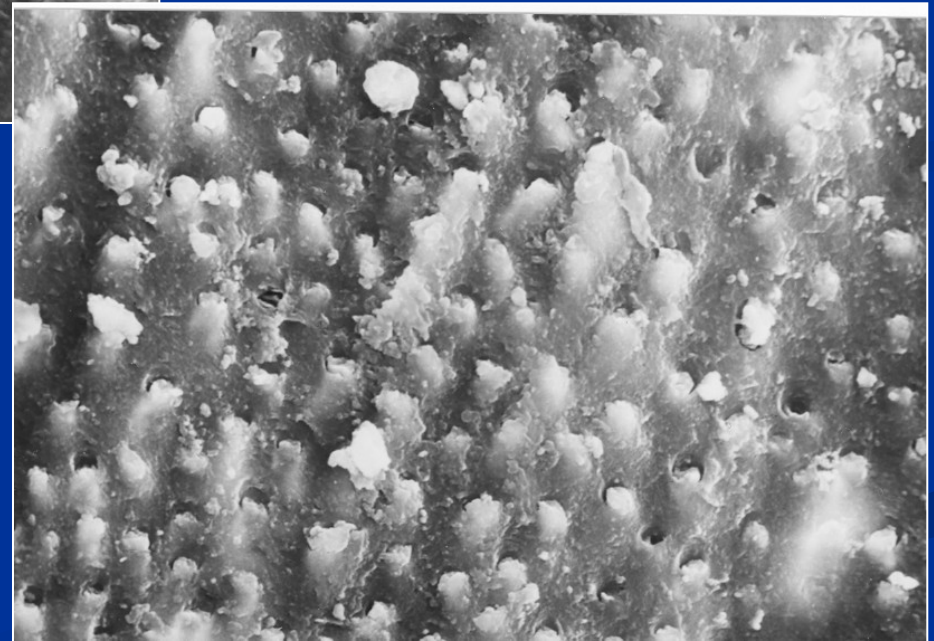
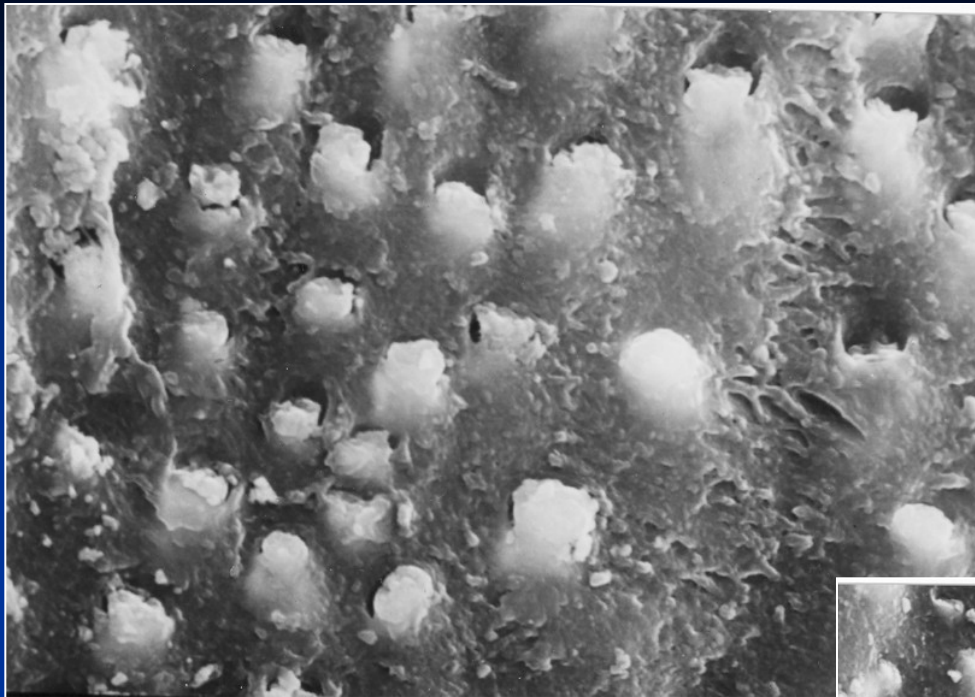
SE

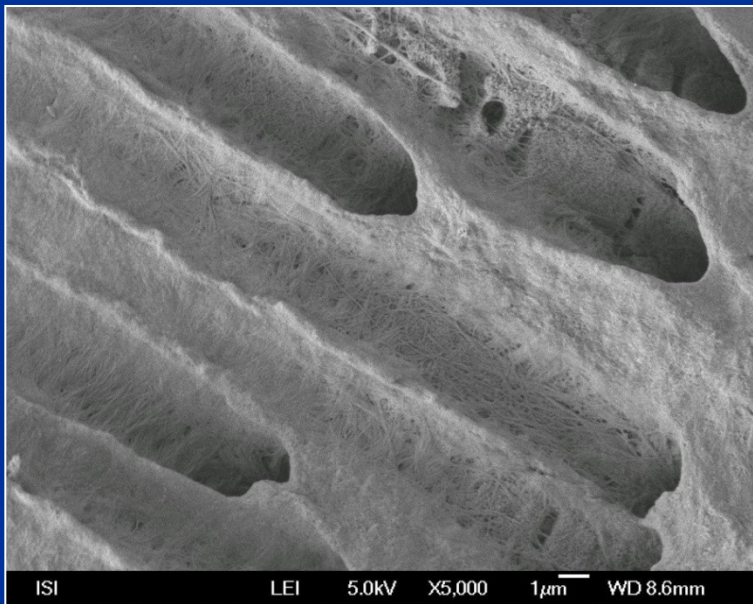
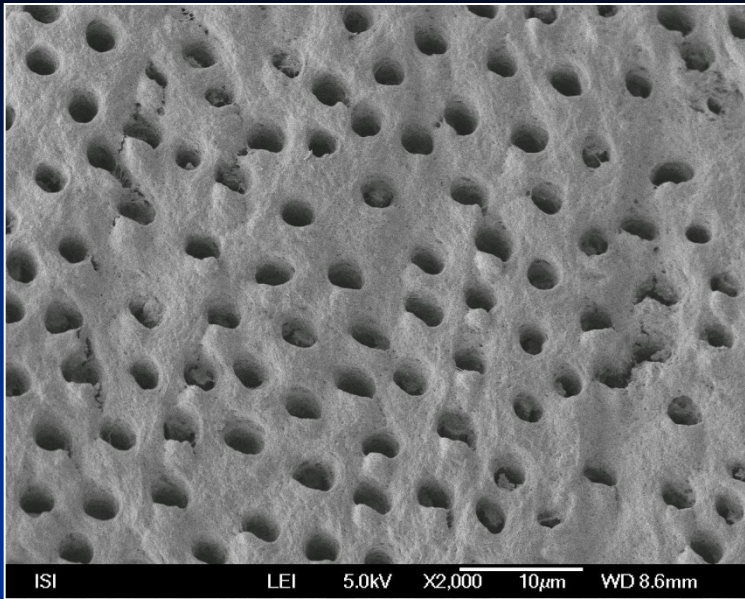


Retentive surface of dentin

- Removed or modified smear layer
- Open dentin tubules
- Decalcified collagen network







Ceramic materials

Silicate ceramics

- Feldspatic
- Leucit
- Alumina
- Zirkonoxide
- Lithiumdisilicate

Non silicate ceramics

- High dense alumina
- High dense denzní zirconia (stabilized with yttrium)
- CAD/CAM ceramics

Less than 15% silicate matrix is not the silicate ceramics

Ceramic materials

Silicate ceramics

- Crystals in glass matrix



- Etching with hydrofluoric acid

Oxide ceramics

- High dense material



- Sandblasting Al_2O_3

Etching with hydrofluoric acid



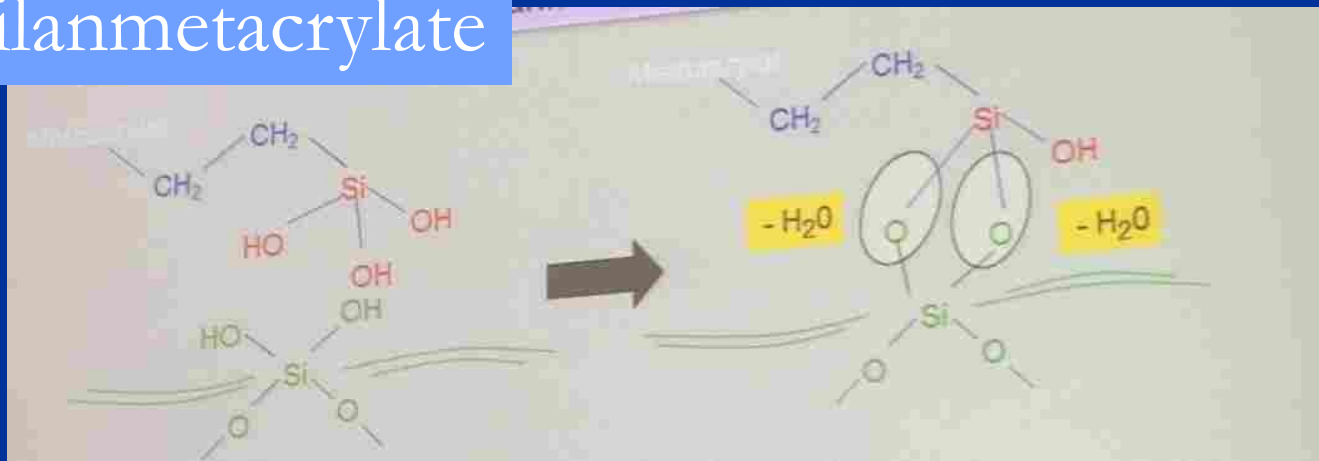
Composite materials and metal alloys

- Sandblasting



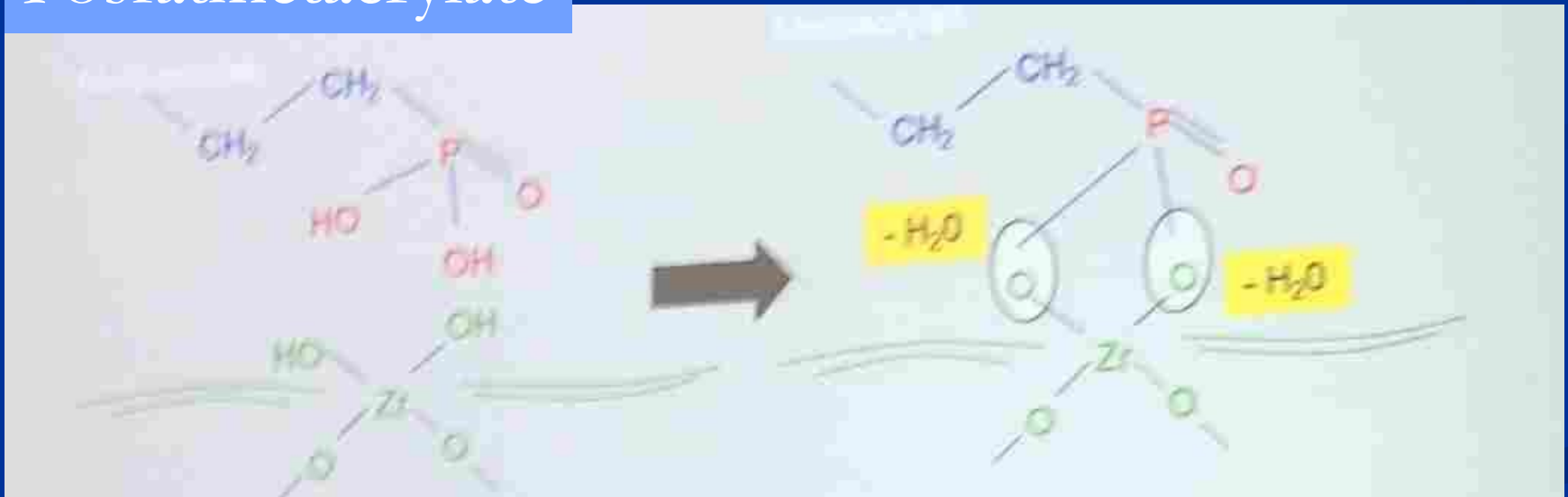
Chemical adhesive treatment of glass ceramics, composites and metal alloys

Silanmetacrylate



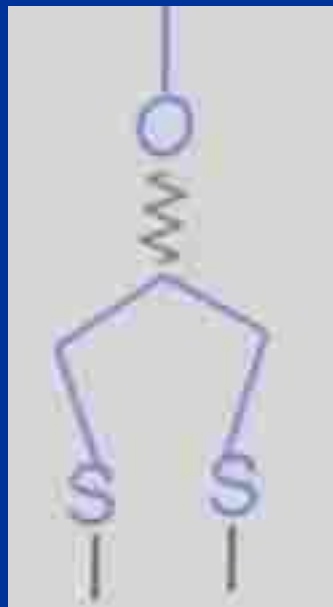
Chemical adhesive treatment of zirconia and non precious metal alloys

Fosfátmetacrylate



Chemical adhesive treatment of precious metal alloys

Sulphid metacrylate



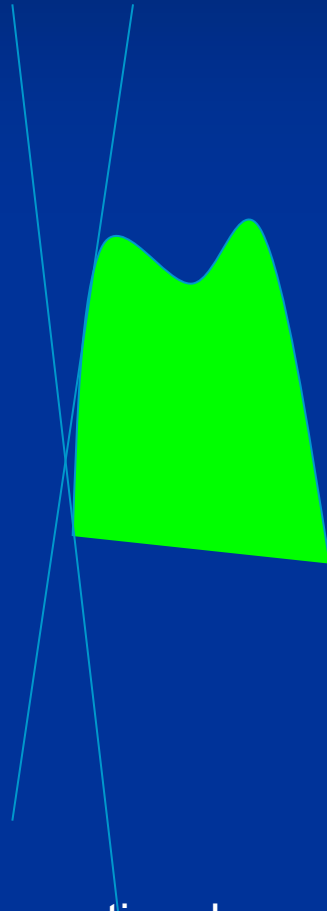
Au---Au----- Au---Au-----Au

Adhesive cementation when and why?

- Size of retentive area
- Geometry of preparation

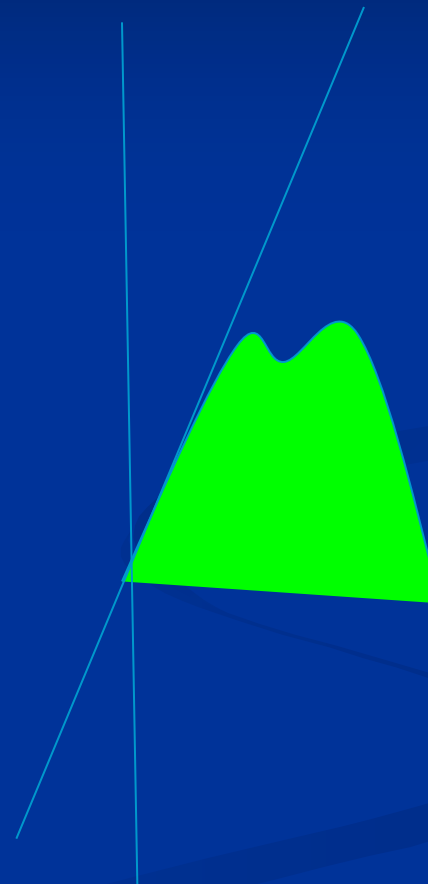
Angle of convergency

6-15°



Conventional cementation

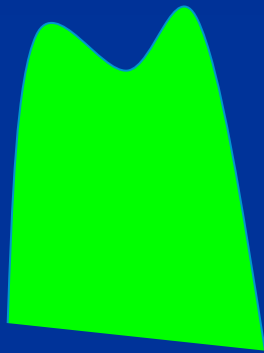
15-24°



Adhesive cementation

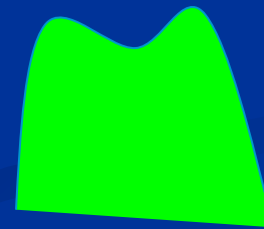
Height of the tooth

5 mm



Konvenčně

3mm



Adhezivně

Adhesive dentures with metal framework

Adhezivní náhrady s kovovou konstrukcí

Rochett's splints

Maryland bridges

Modification– adhesive bridges

Preparation

In enamel 0,3 -0,5 mm)

Mechanical stabilization is necessary

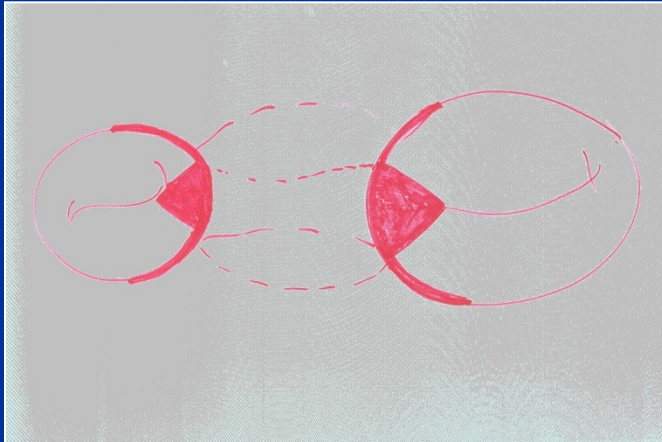
Indications of adhesive dentures with metal framework

- ✓ Replacement of 1 tooth in posterior area
- ✓ Replacement of 1 - 2 teeth in frontal area

Risks and benefits

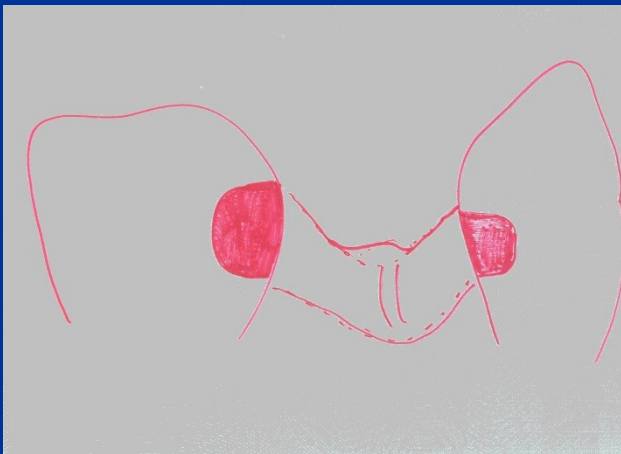
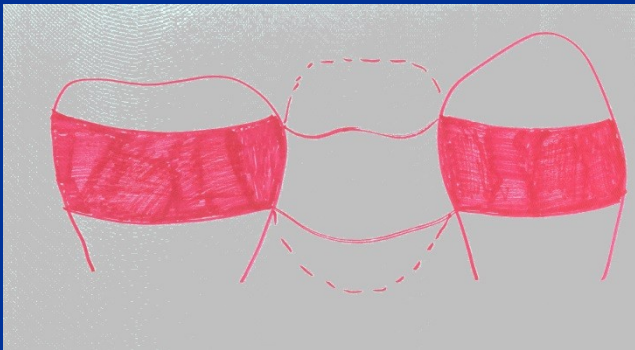
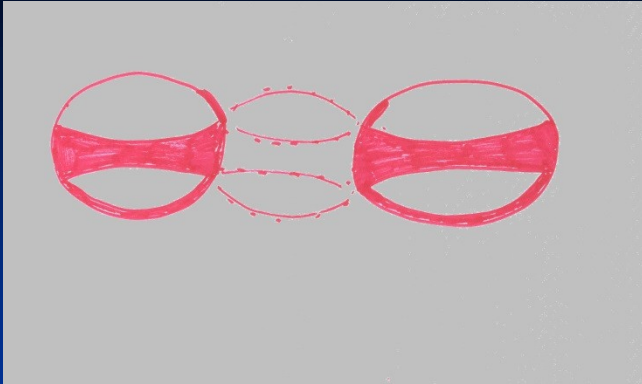
- Miniinvasive preparation
- Aesthetics - compromised
- Risk of secondary caries
- Semipermanent solution

Maryland bridge

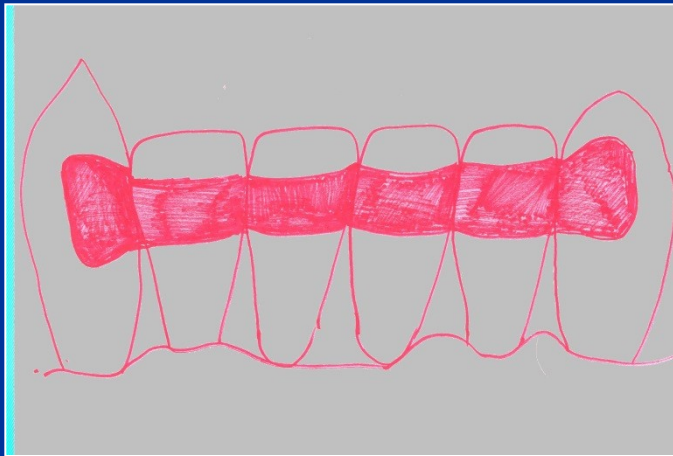


Small retention area

Poor stabilization

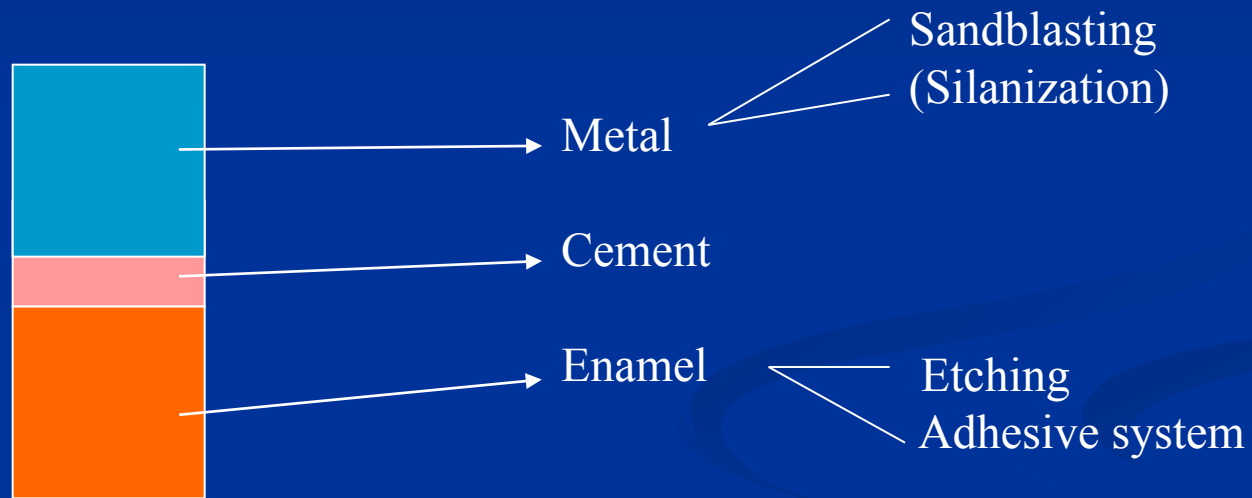


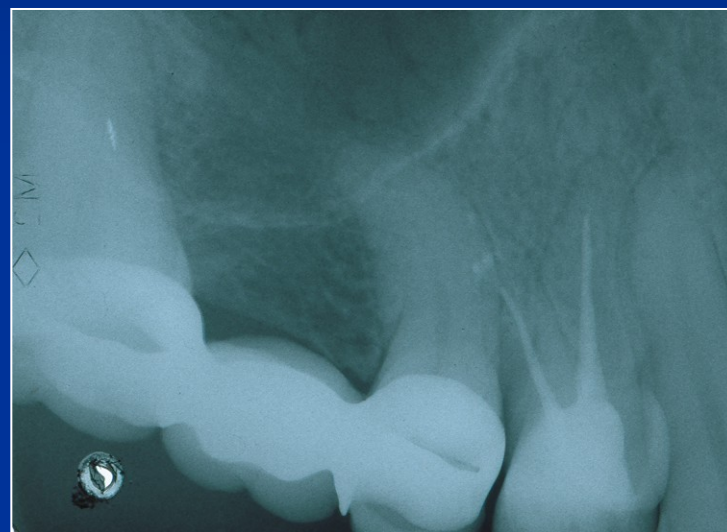
Modification – horizontal stabilization



Adhesive splint with
the possibility of replacement
1 – 2 frontal teeth

Adhesive connection







Pryskyřičný mezičlen



Keramický mezičlen

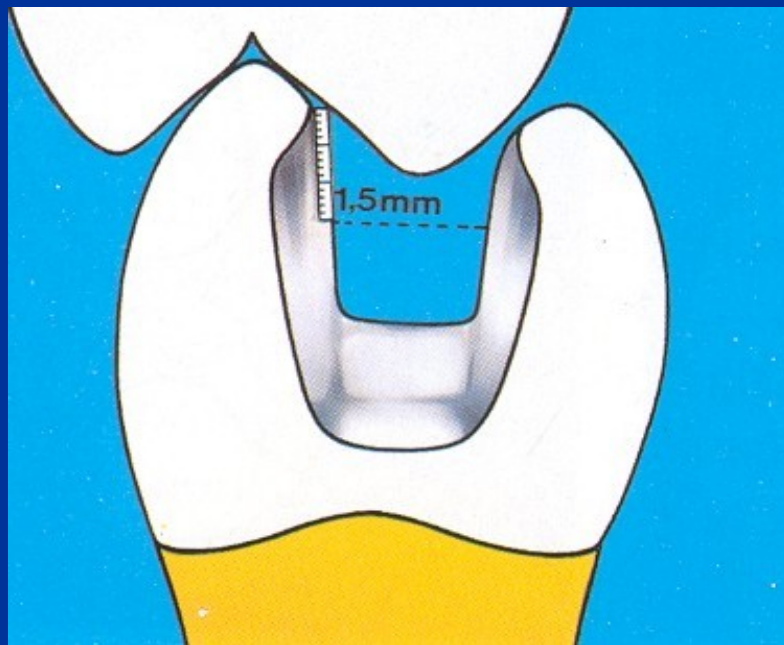
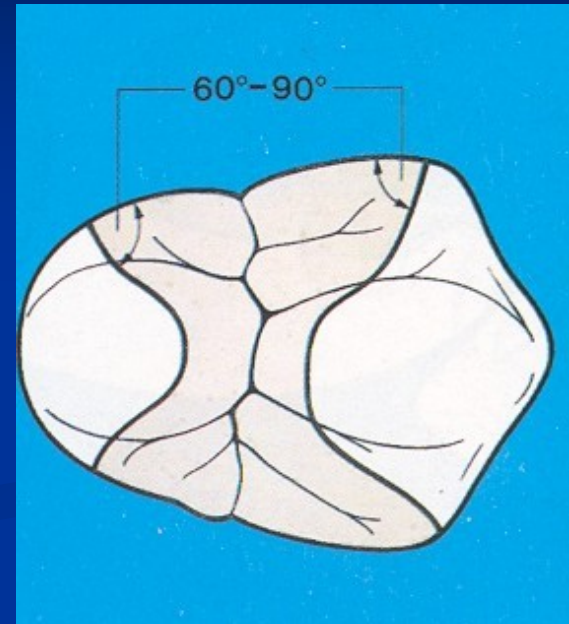
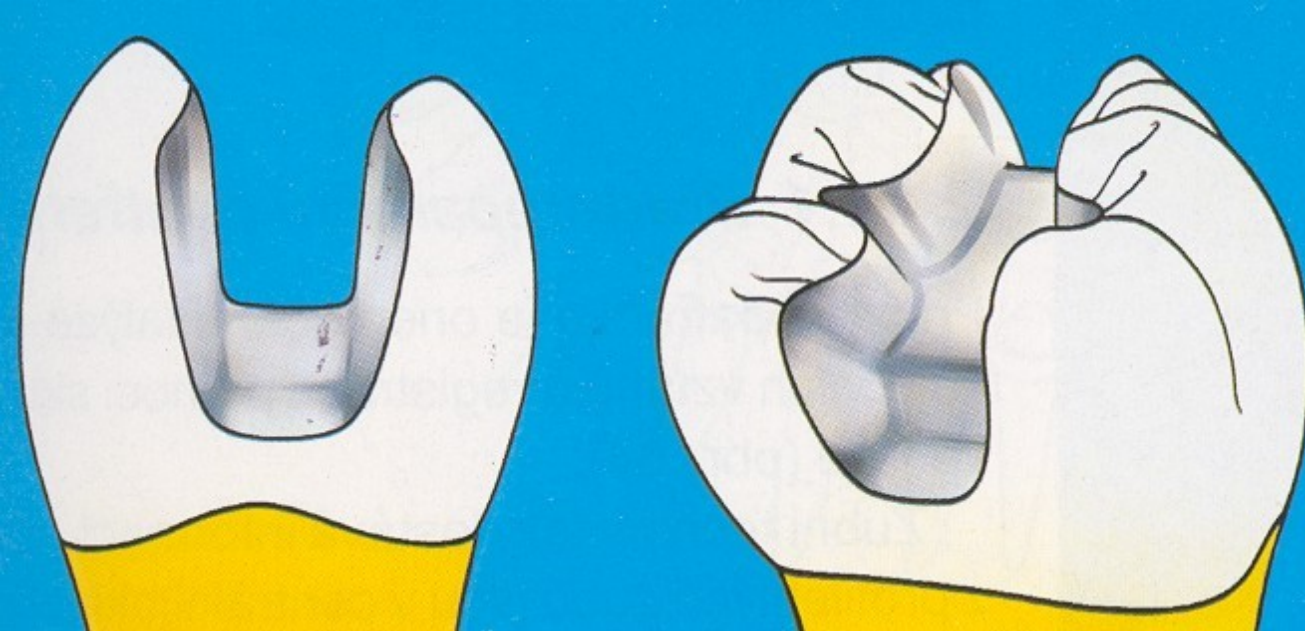


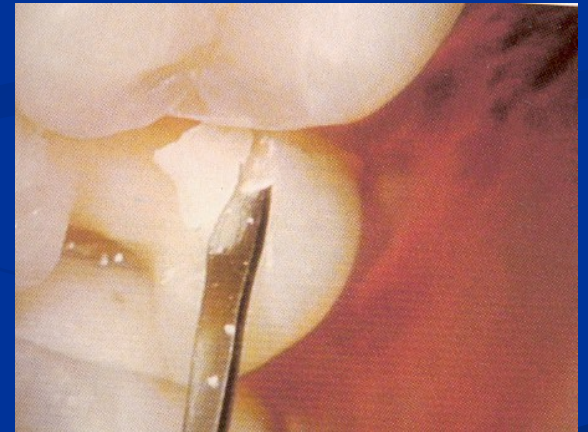
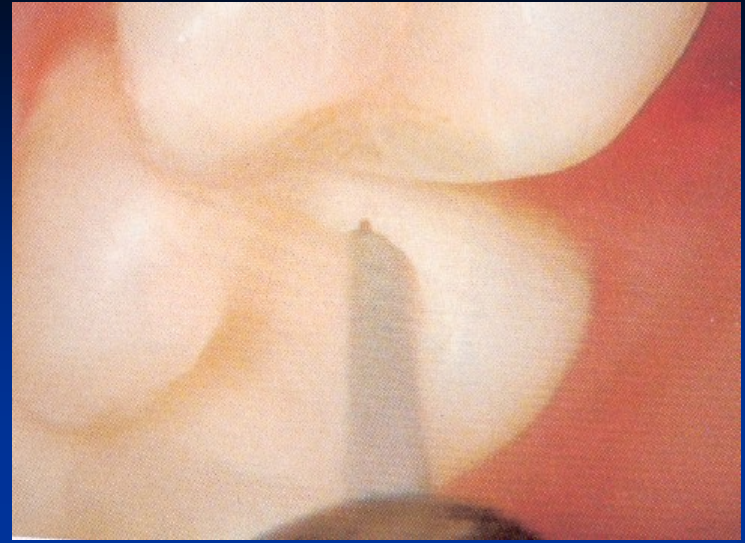


Marginální diskolorace

Non metallic adhesive dentures

- Inlaya, onlays
- Inlay bridges
- FRC dentures

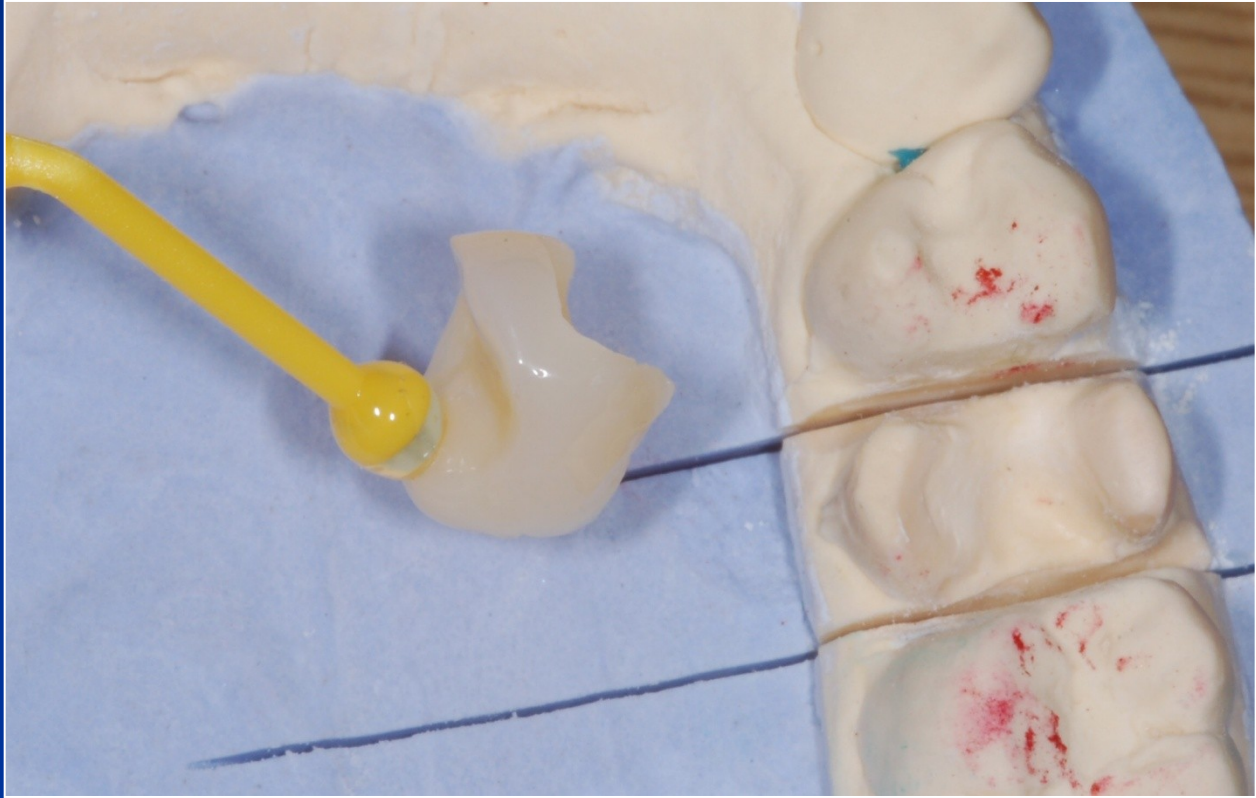








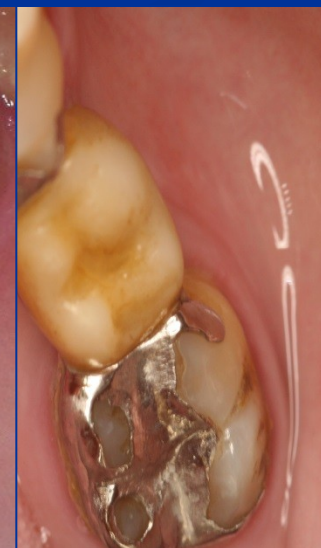
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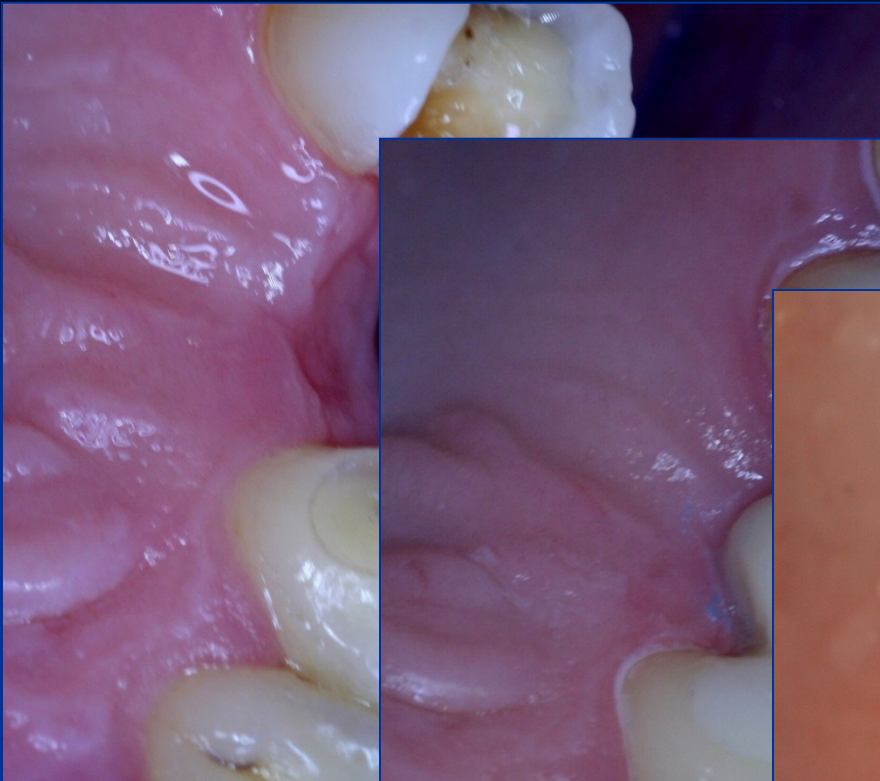
Ione tooth replacement – indirect method



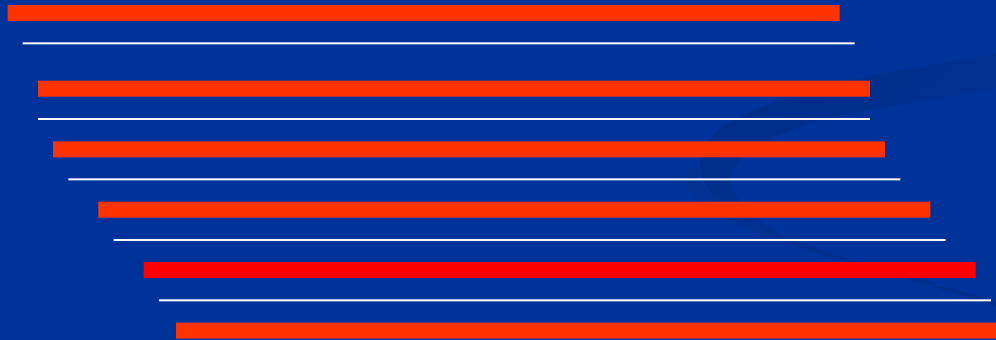
Inlay bridge and Maryland bridge“

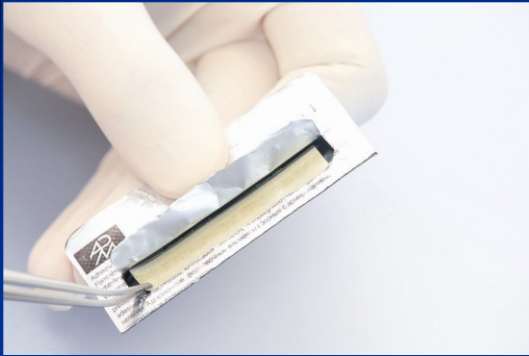






FRC – fiber reinforced composites

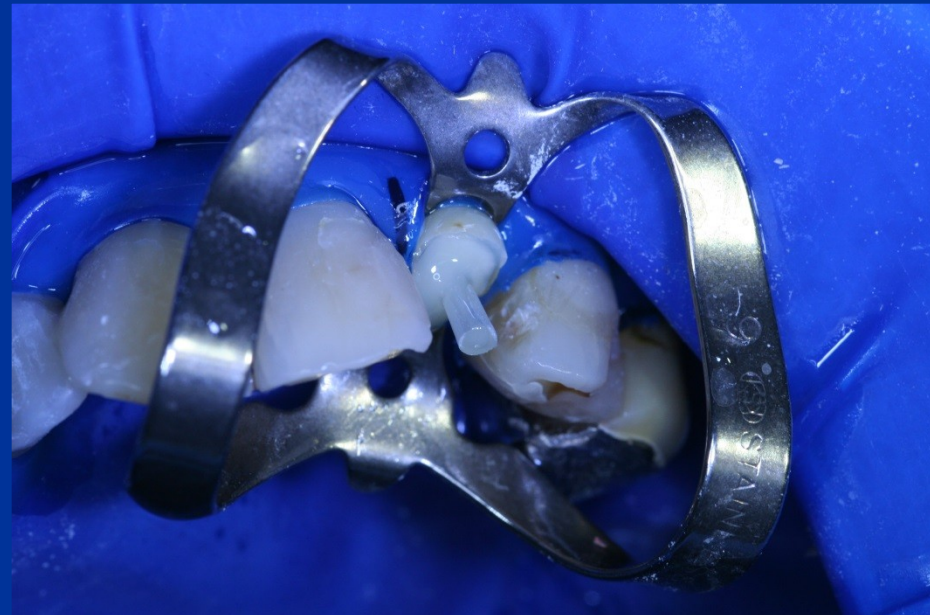




Prepregs



FRC posts



FRC x PFC



Surface friction between
organic matrix and fibers
of the filler
= reinforcement

Minimally surface
friction between organic
Matrix and particles of
filler

Anisotropy

Isotropy

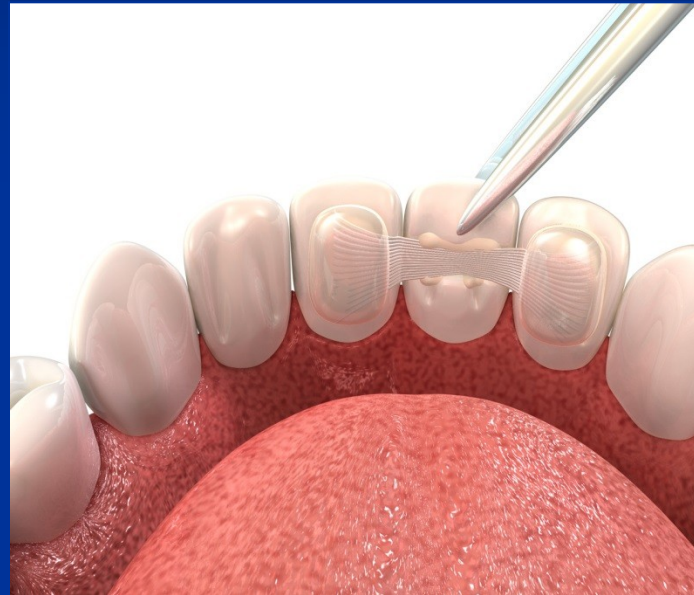


Always combination

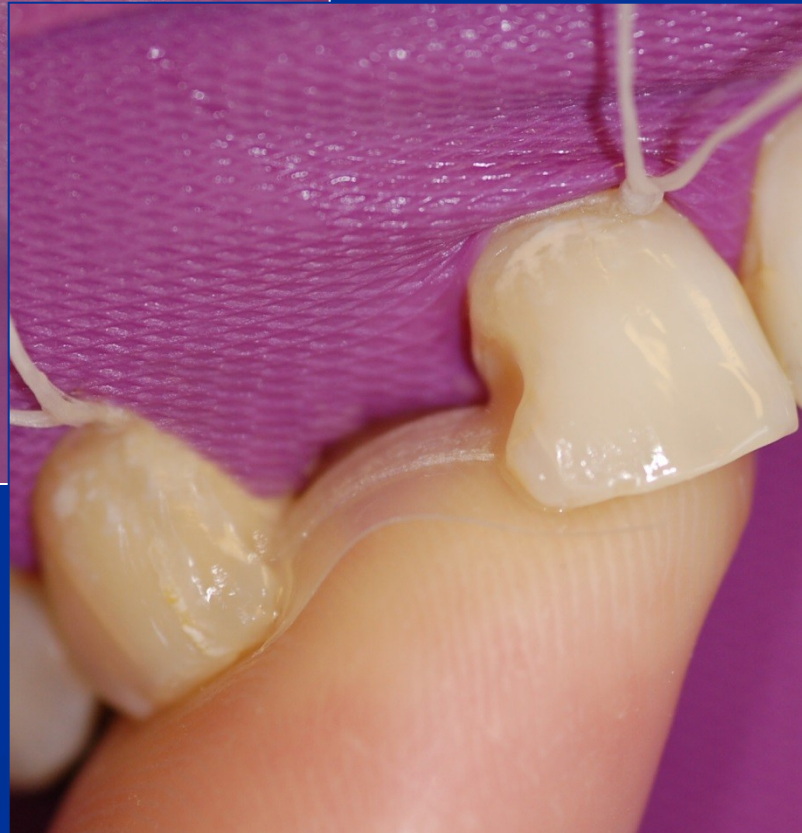
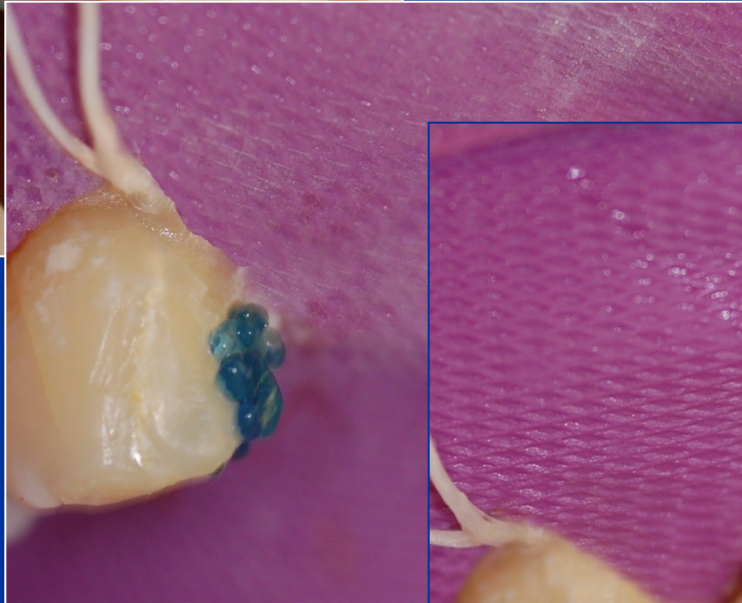


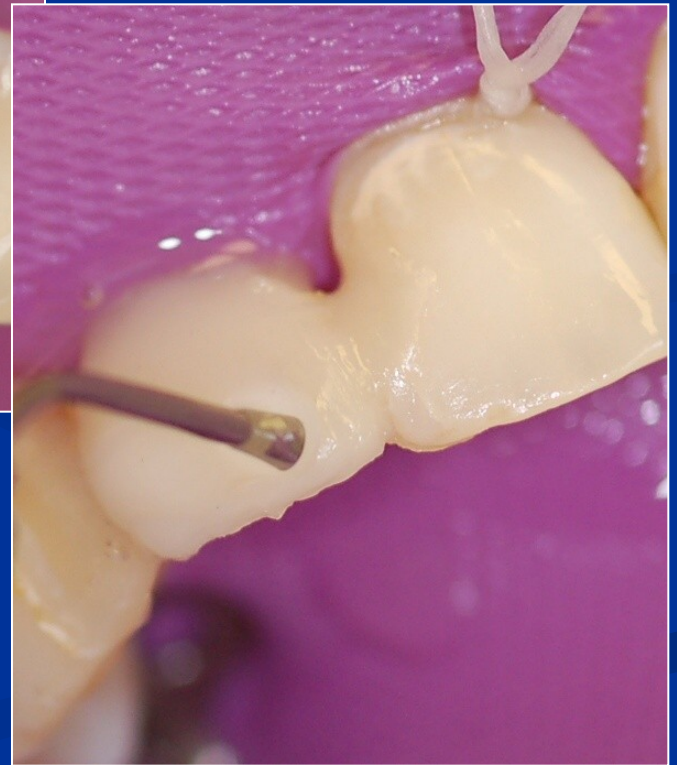


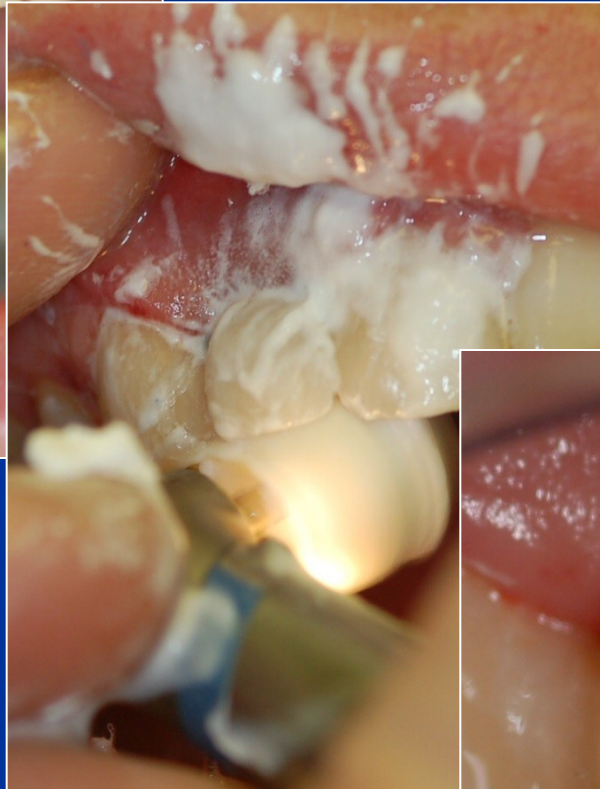
Replacement of one tooth – direct technique

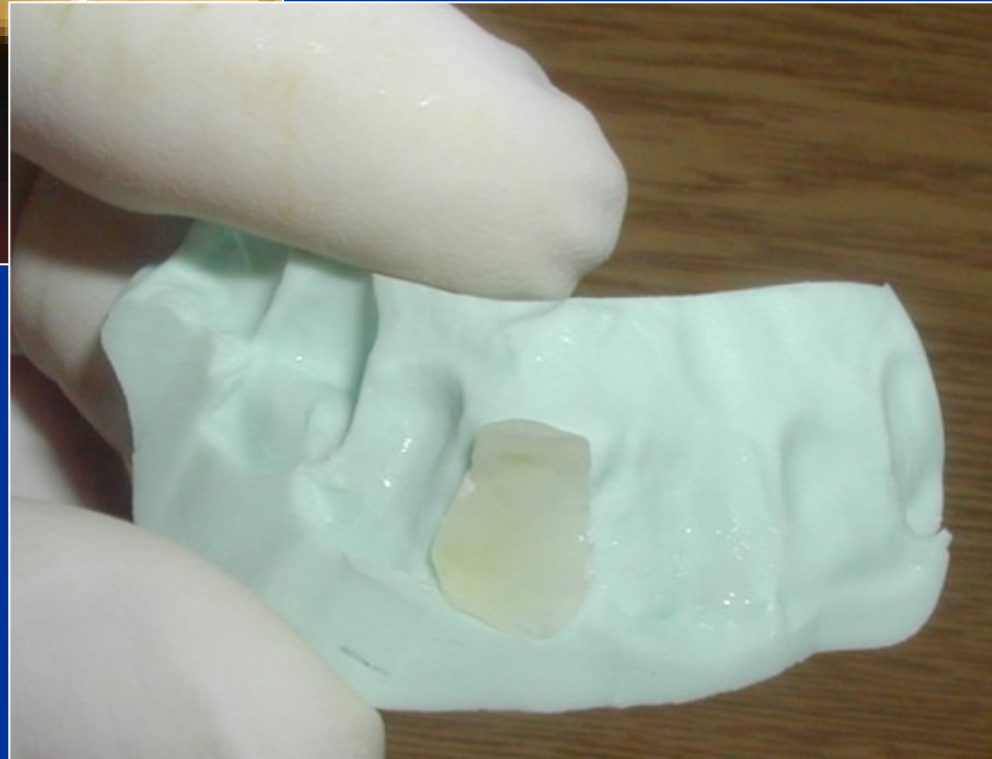












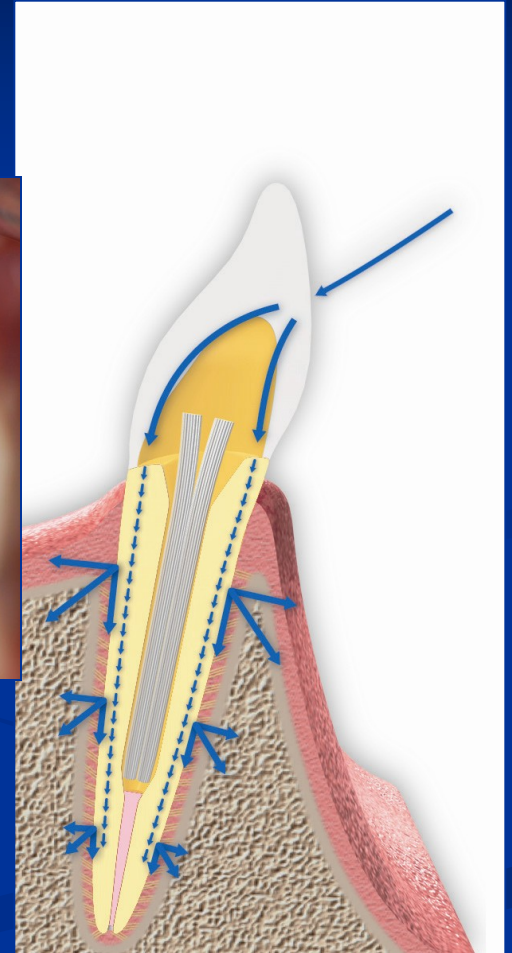
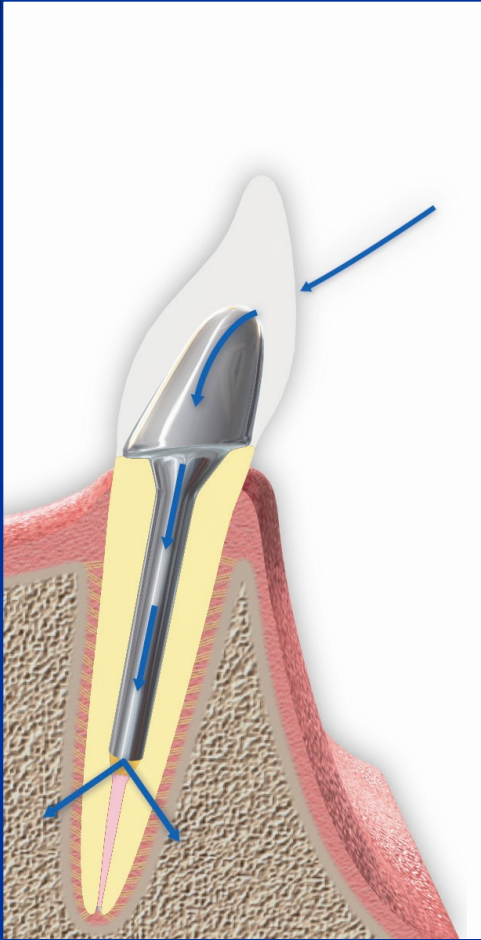


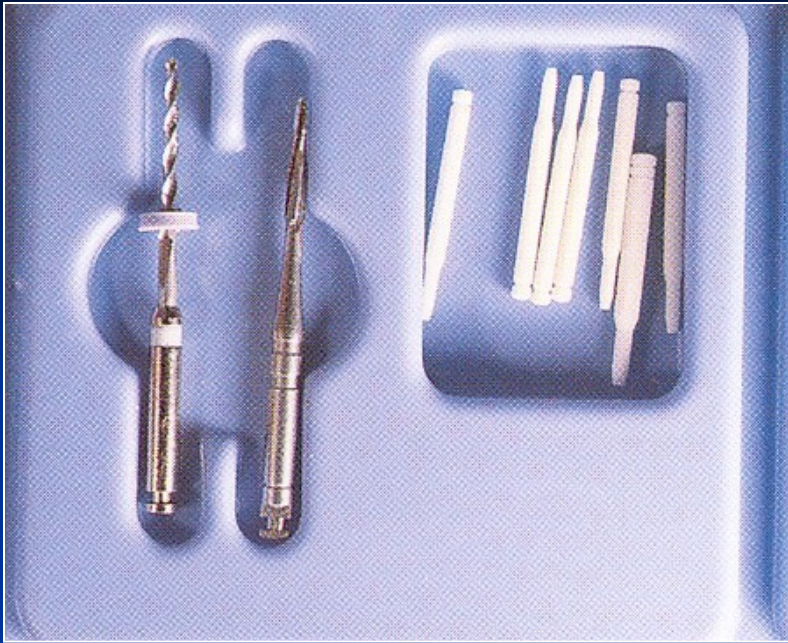




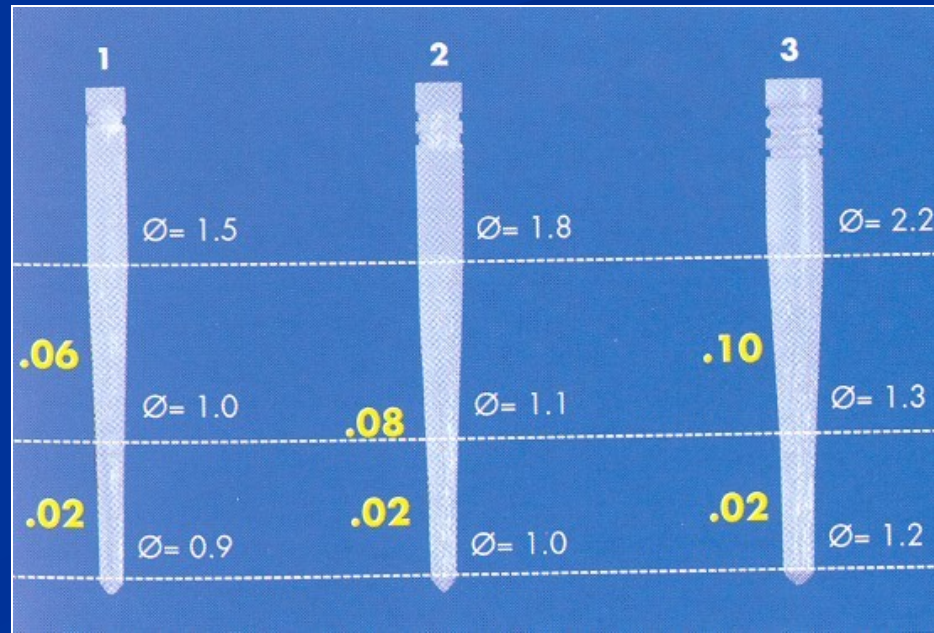


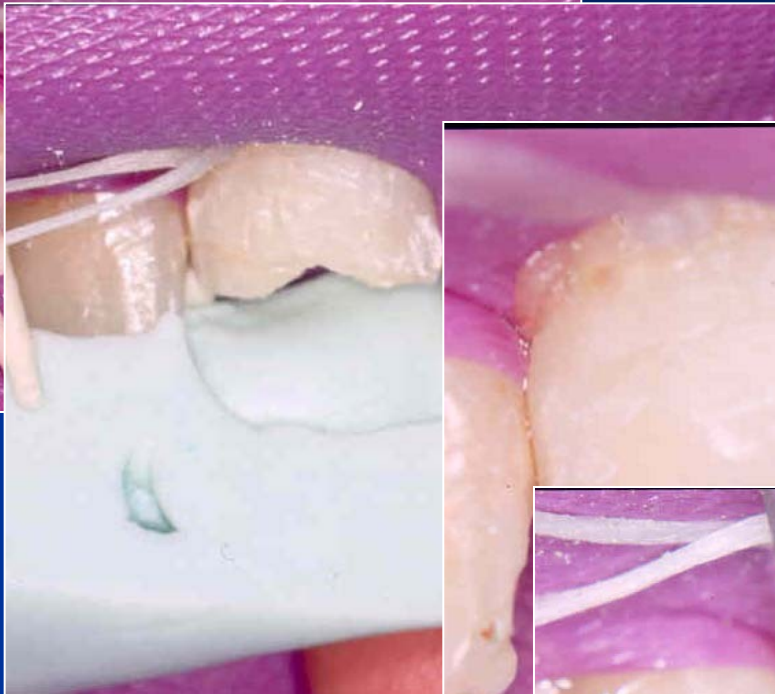
FRc posts - postendodontics

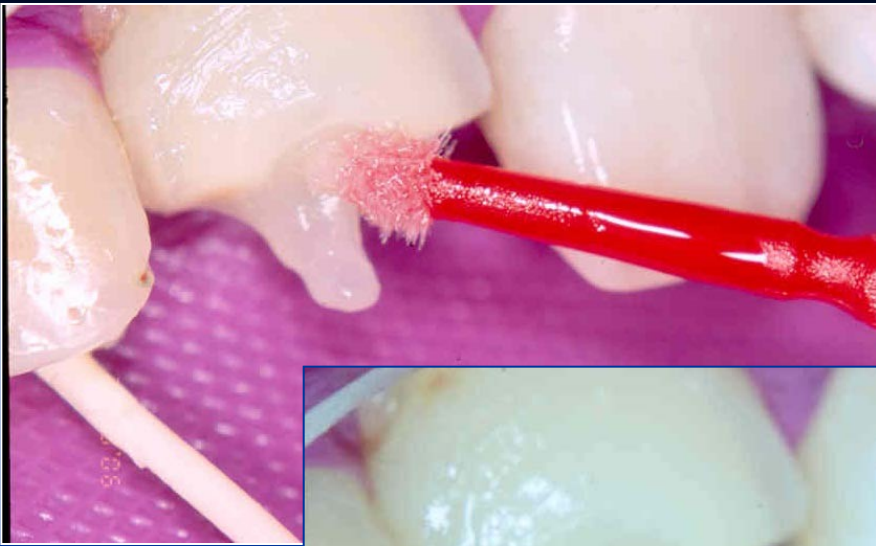




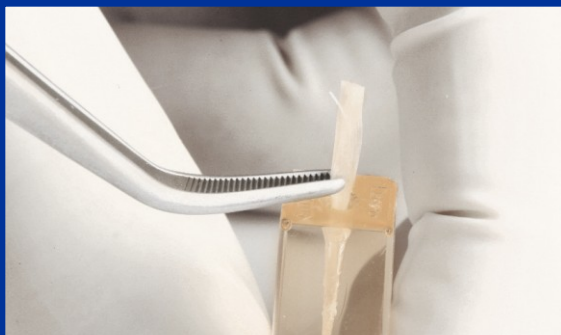
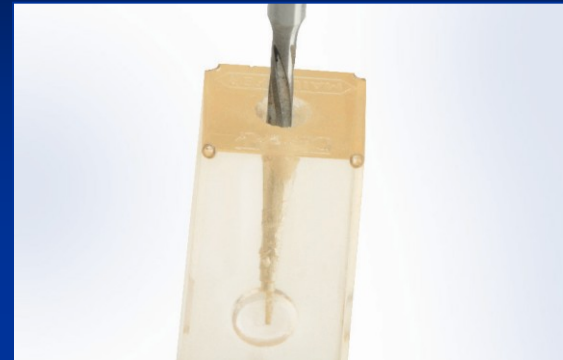
White Light



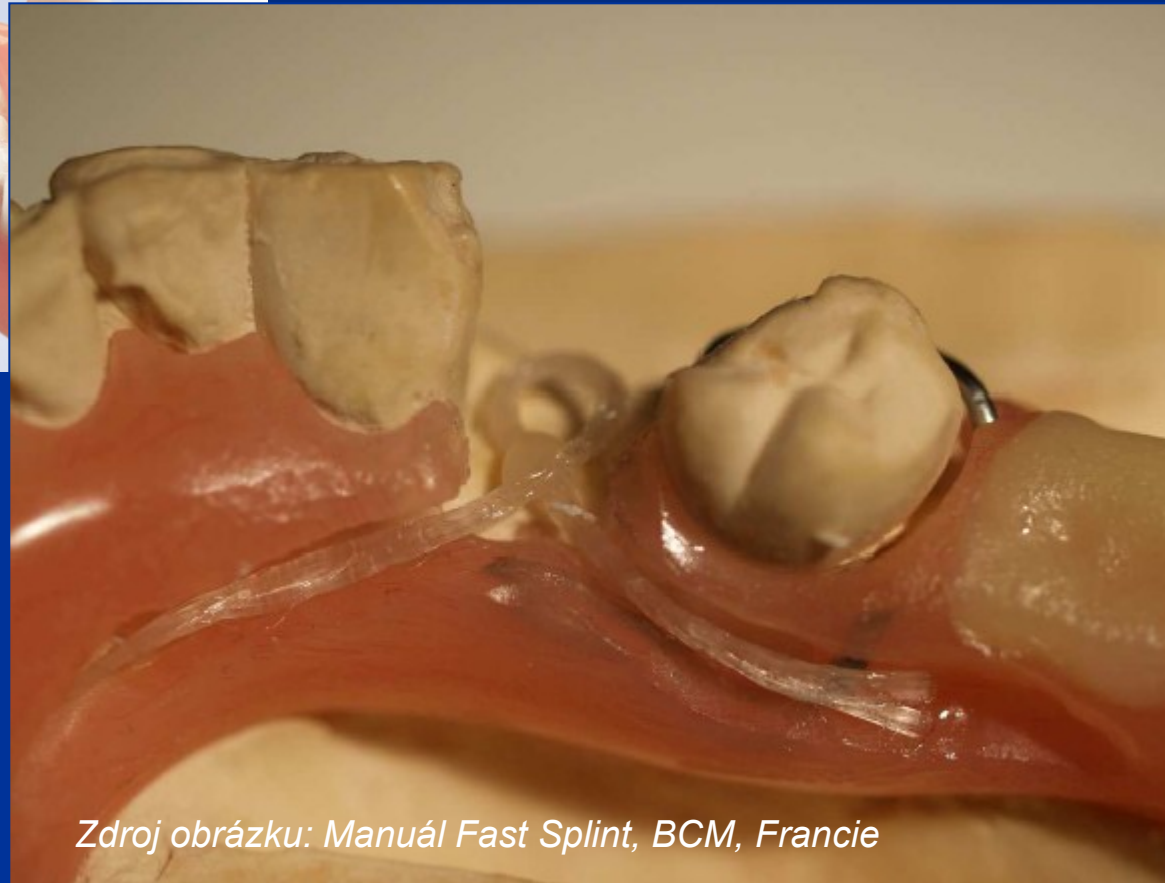




FRC posts individually made



Opravy zubních náhrad



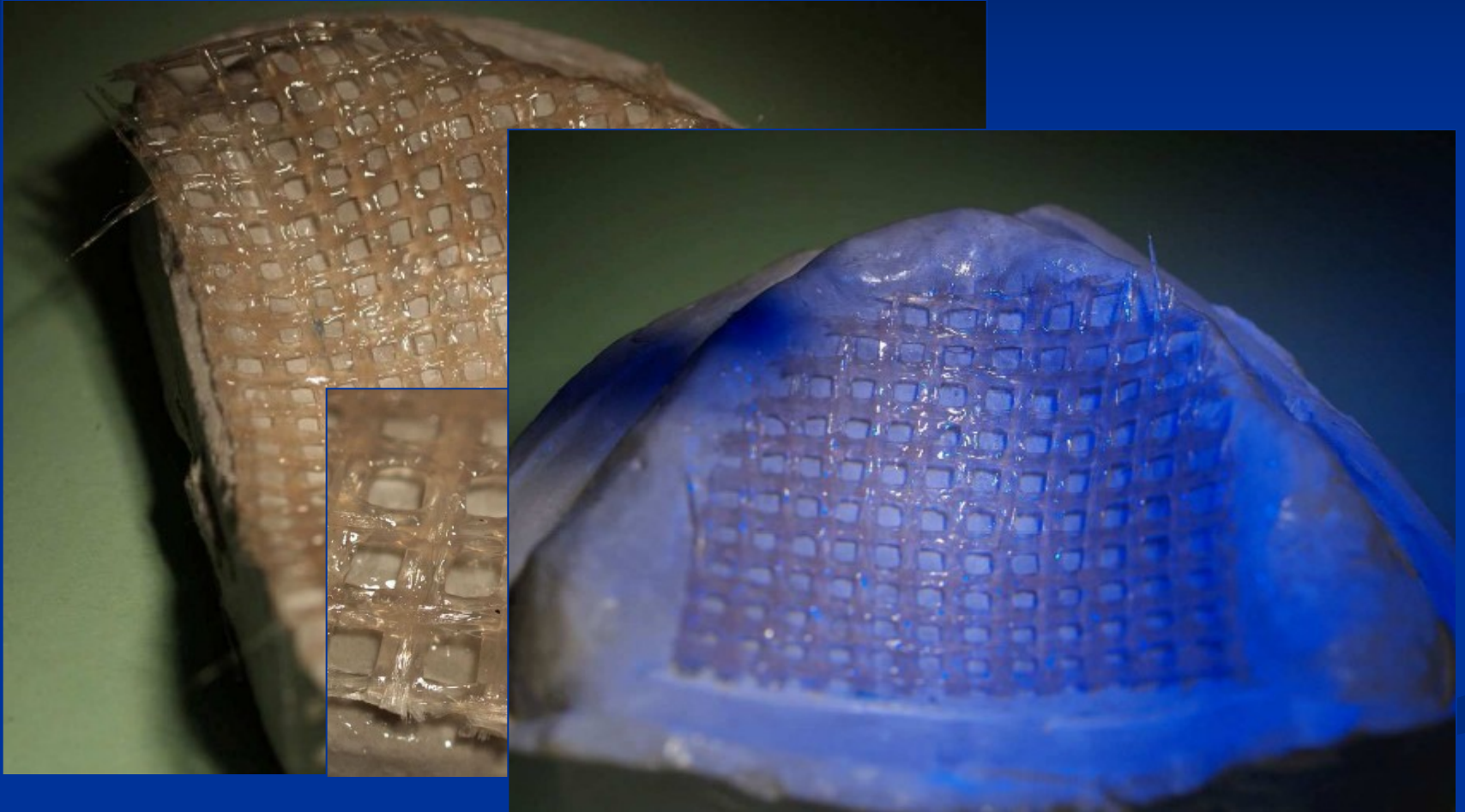
Zdroj obrázku: Manuál Fast Splint, BCM, Francie



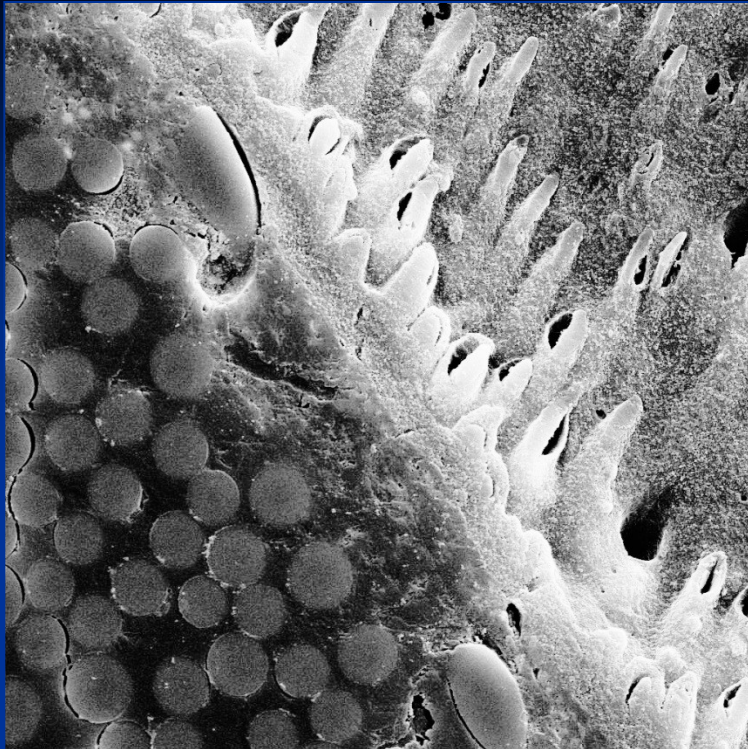
Repair of veneers



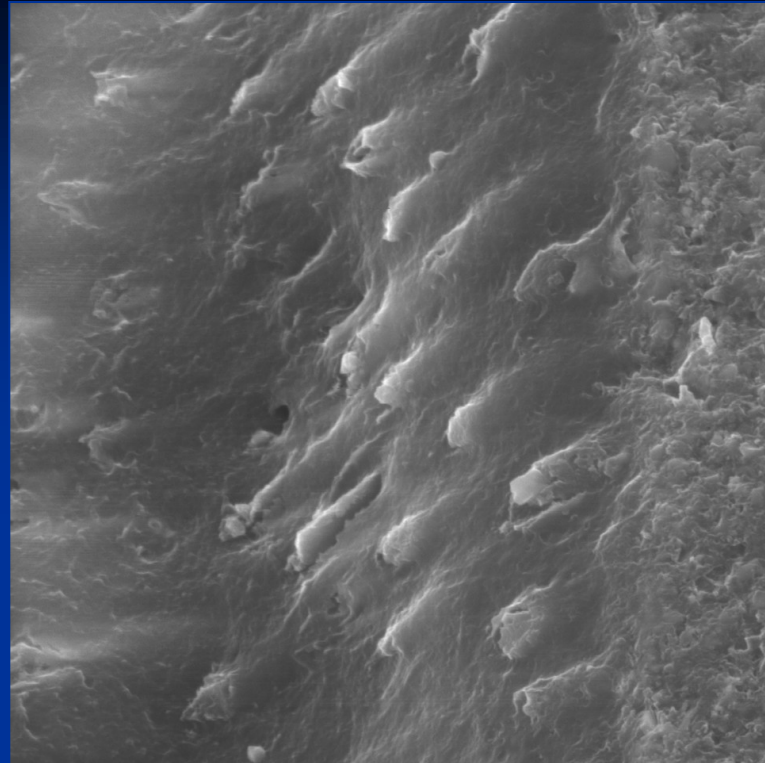
Reinforcement of removable dentures







SEM MAG: 4.00 kx DET: SE Detector 20 um Vega ©Tescan
HV: 20.0 kV DATE: 06/19/07 Digital Microscopy Imaging
VAC: HiVac Device: TS5136XM



HV: 20.0 kV DET: SE Detector 20 um Satellite ©Tescan
DATE: 05/22/06



