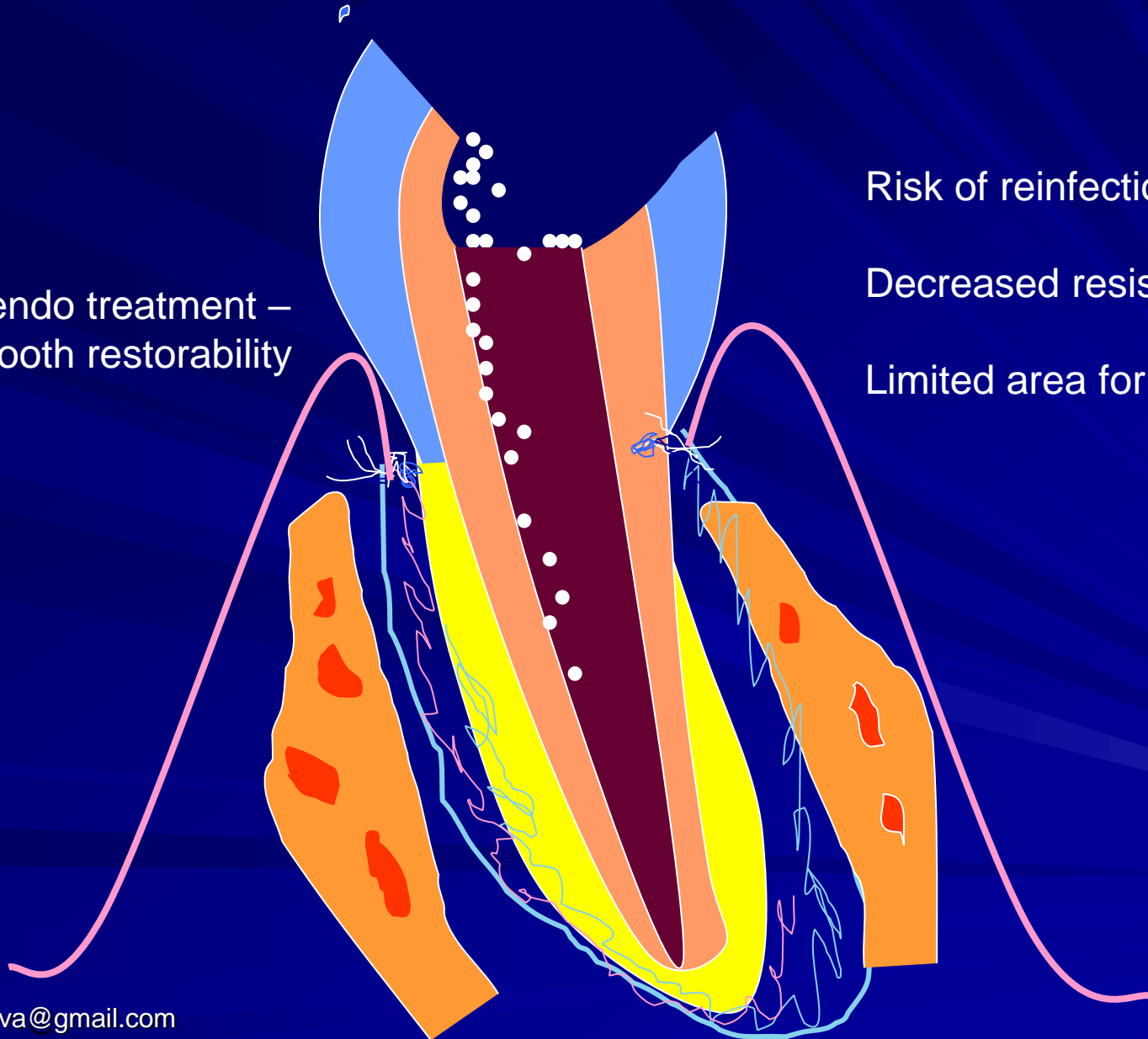


# Reconstruction of endodontically treated teeth

# Endodontically treated tooth

Consider endo treatment –  
Consider tooth restorability

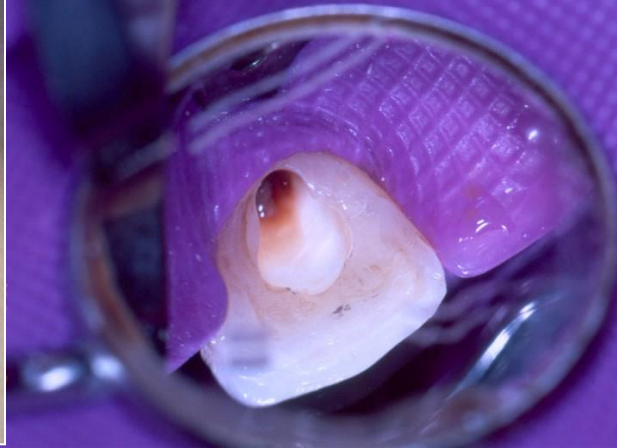


Risk of reinfection

Decreased resistance

Limited area for retention

# Aim of postendodontic treatment



- Prevent reinfection
- Longevity of crown reconstruction

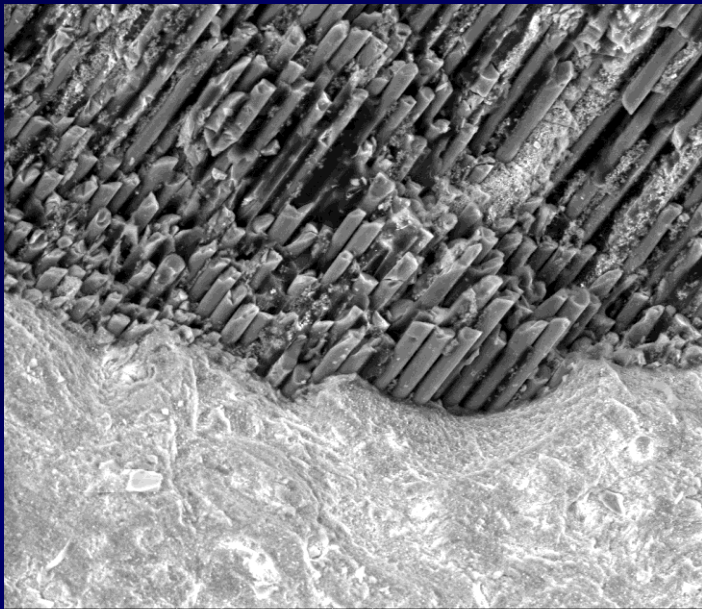
# Contemporary trends



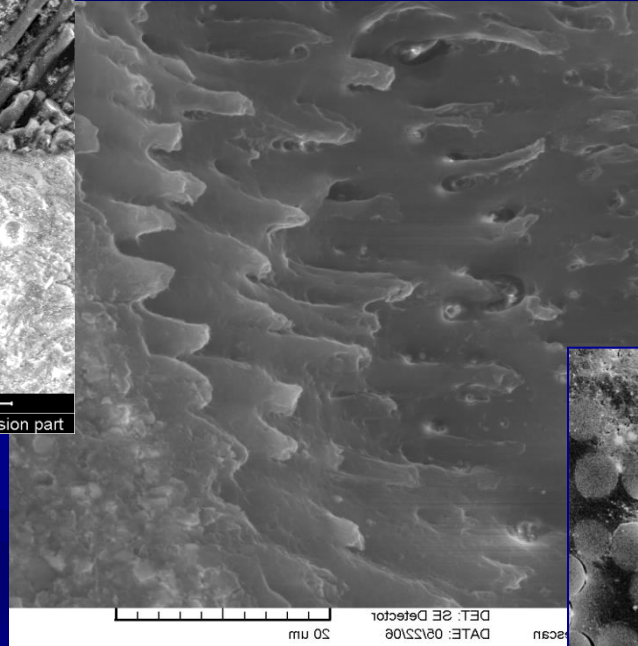
**Adhesive materials**



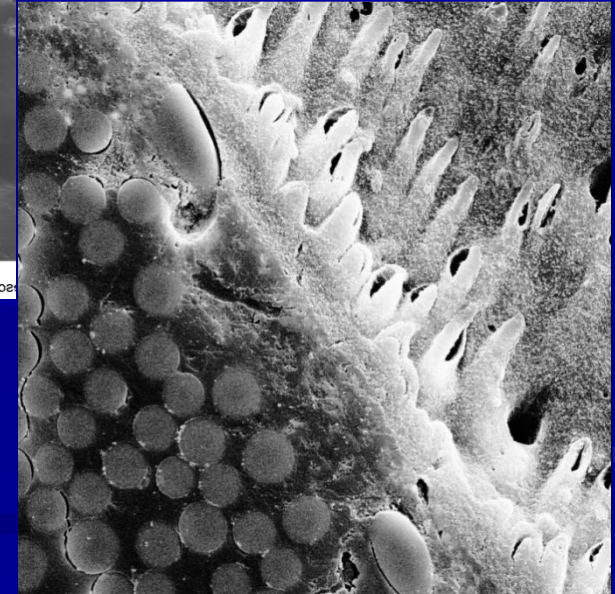
**Less indication of root canal posts**



9/7/2005	WD	Mag	HV	Spot	Det	Pressure	100.0µm
3:58:52 PM	18.3 mm	500x	25.0 kV	3.0	LFD	70.0 Pa	Tooth-Fill of the extension part

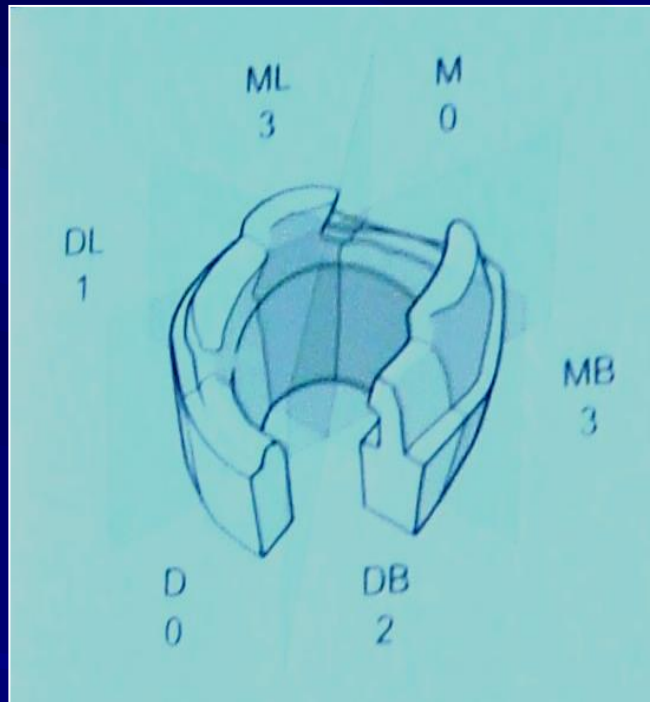


DATE: 08/23/06  
DET: SE Detector  
20 µm



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

# Restorability of the endodontically treated tooth



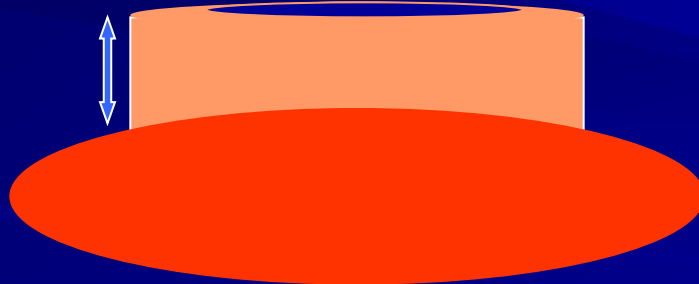
It is necessary to judge the amount of remaining hard dental tissues

*Bandlish DB, Mc Donald AV,  
Setchel DJ  
Assesment of the amount  
of remaining coronal  
dentine  
in root treated teeth  
Journal of Dentistry  
2006;9:699 - 708*

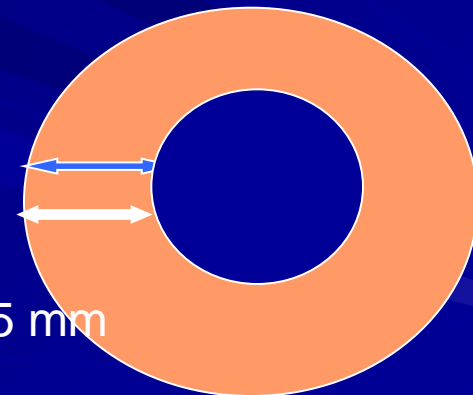


## Indication – loss of the crown – minimal requirements

2 mm



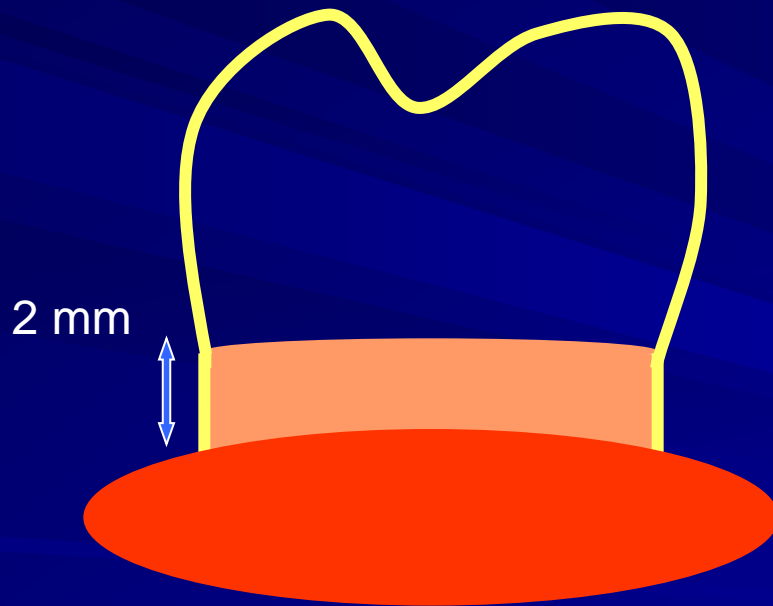
1 -1,5 mm





# Ferrule effect

Retention



Transfer of  
masticatory forces  
on the alveolar  
bone

Gingival sulcus depth

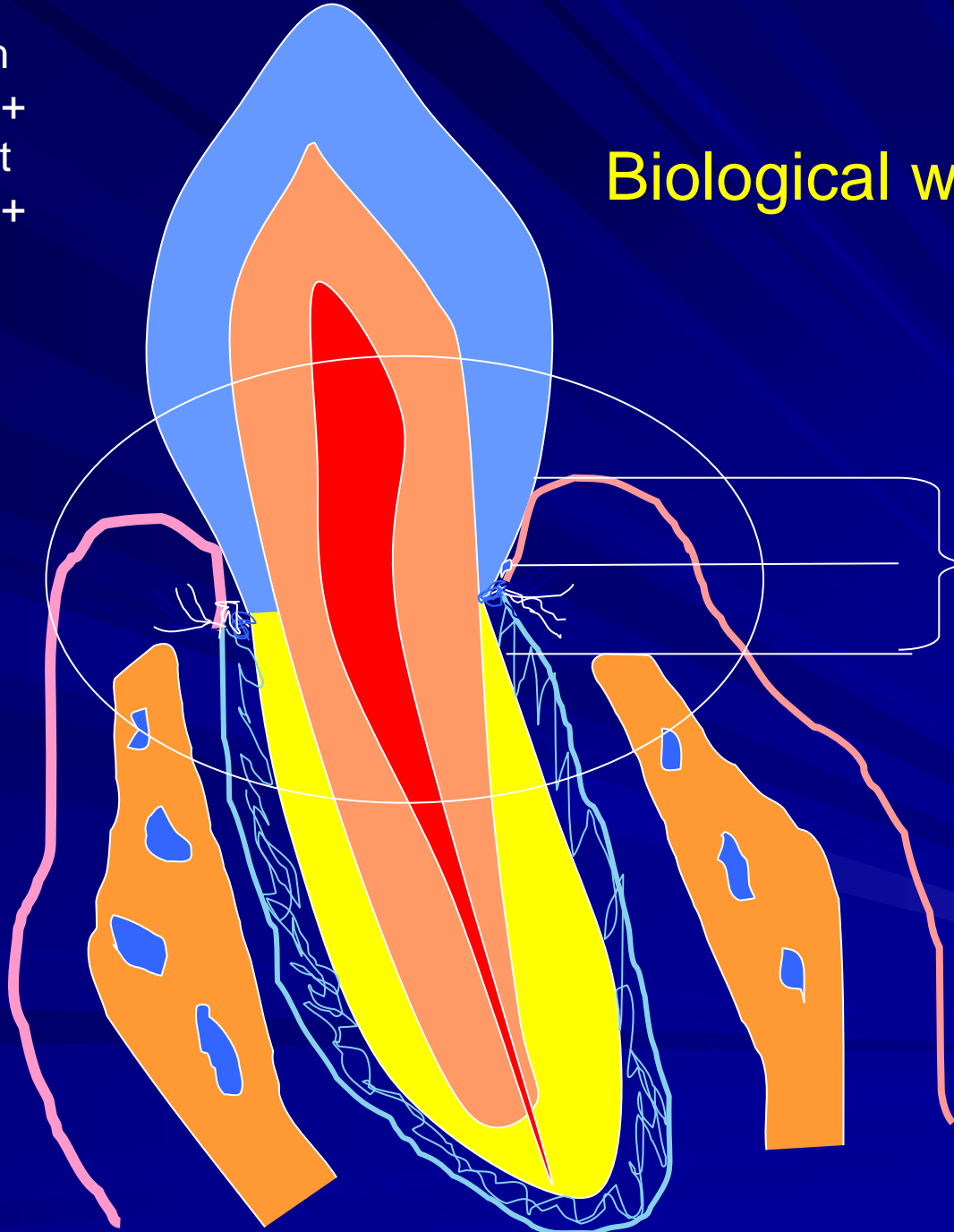
+

Epithelial attachment

+

Connective tissue attachment

# Biological width



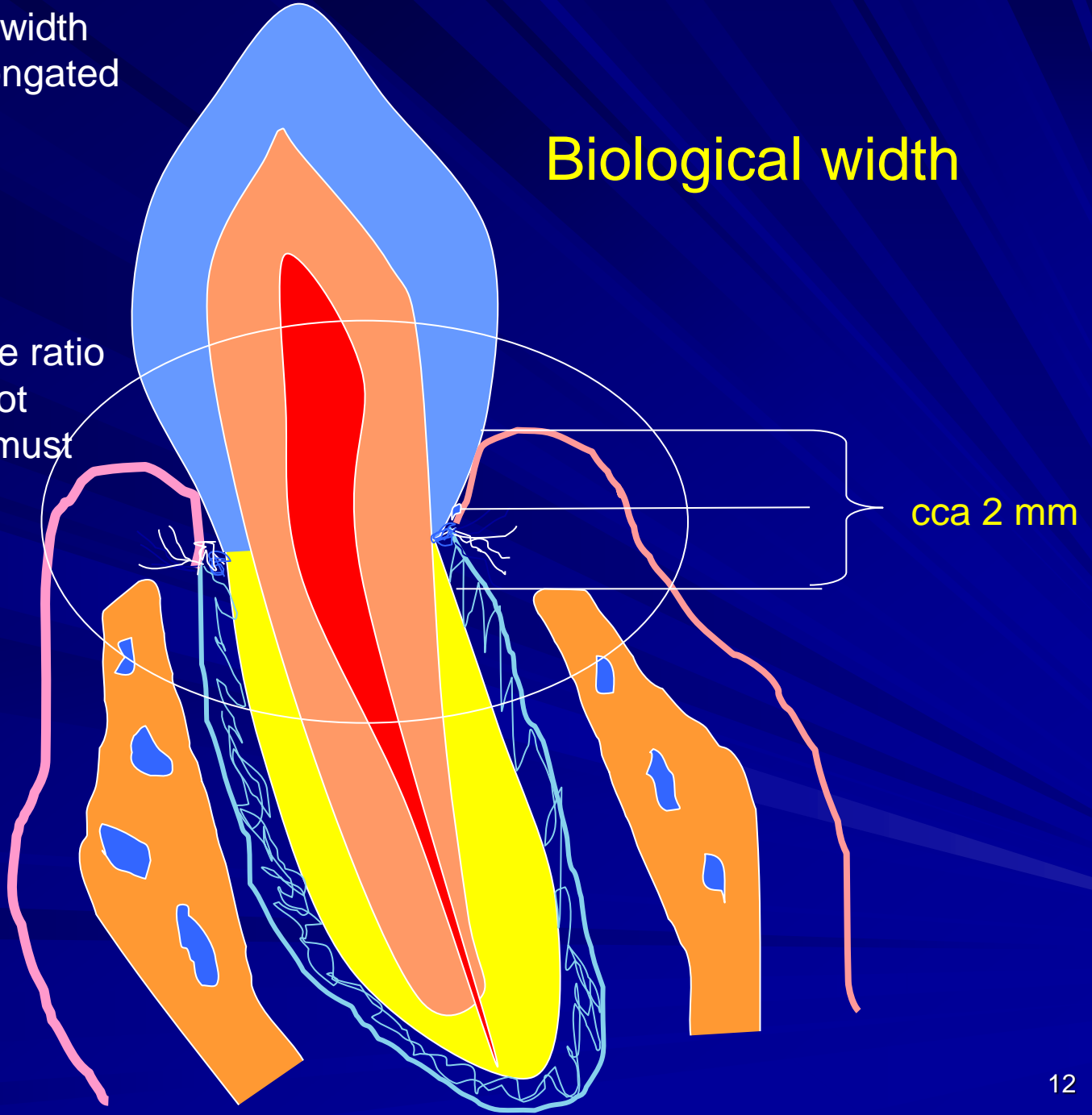
cca 2 mm

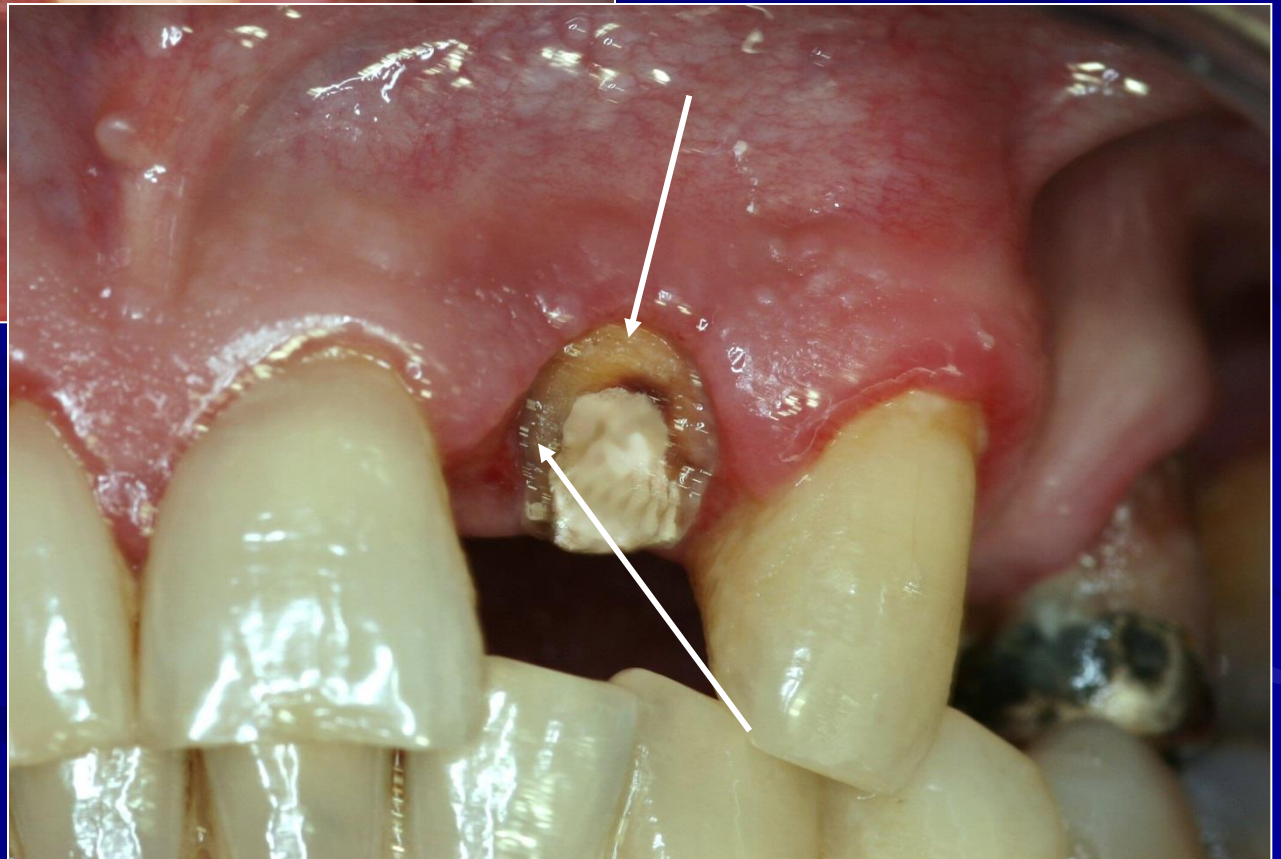
- Ferrule effect plus keeping of biological width (the distance between the restoration and alveolar crest) are crucial factors for the longevity of the postendodontic restoration

Within the biological width  
can be the crown elongated  
using gingivectomy.

If it is necessary  
to achieve more  
– the ostectomy can  
be performed. But the ratio  
clinical crown /the root  
after this procedure must  
remain at least 1:1

# Biological width

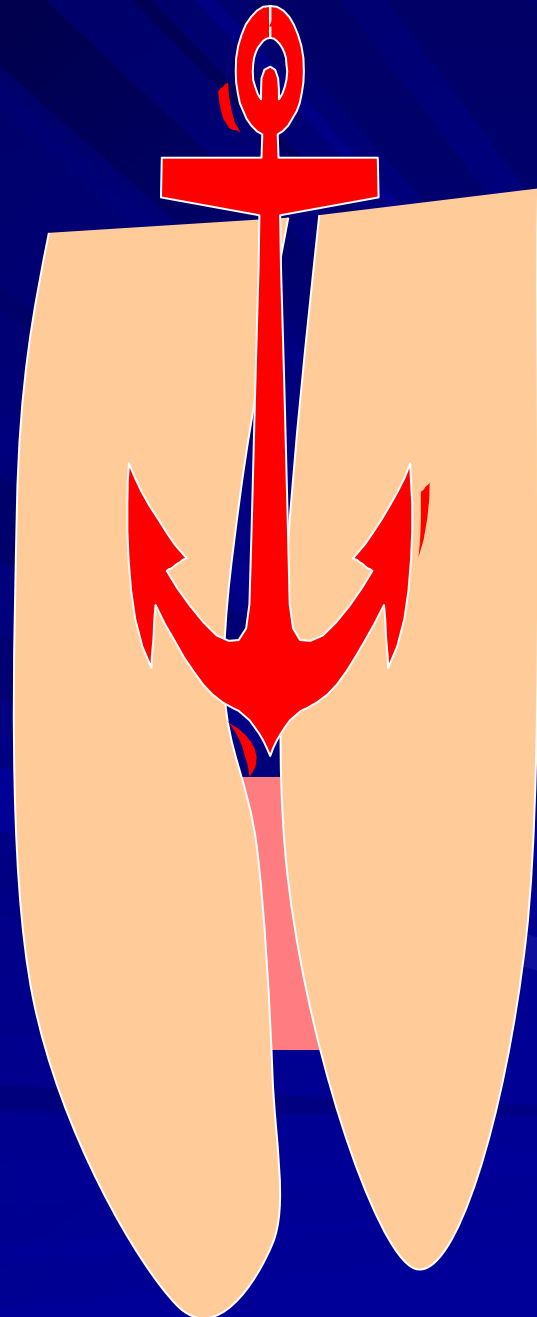
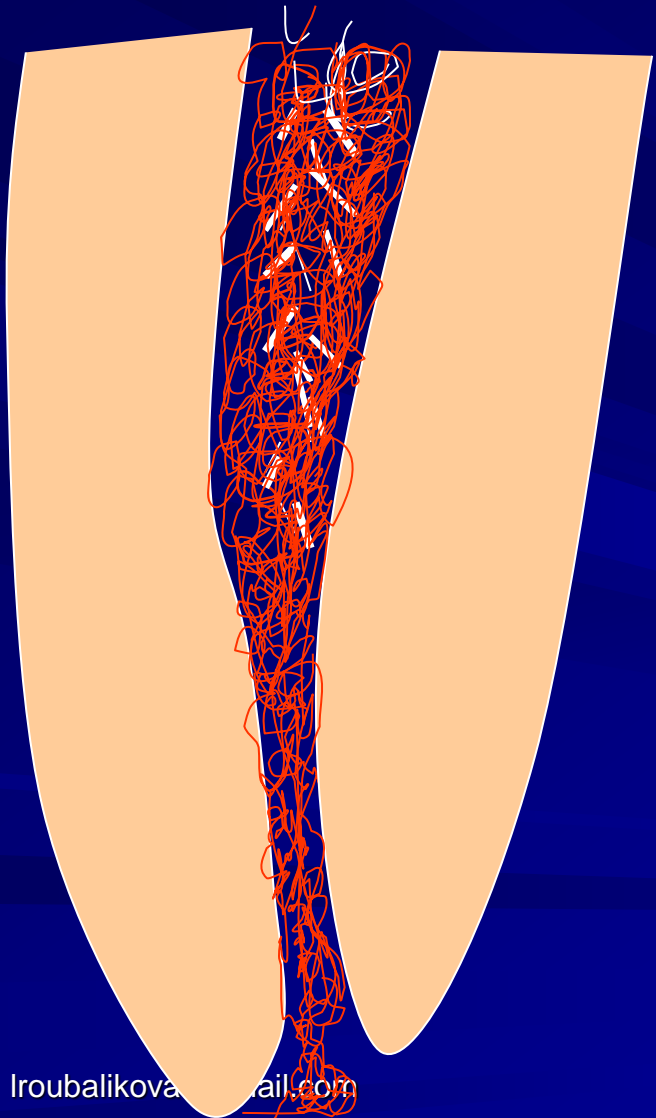


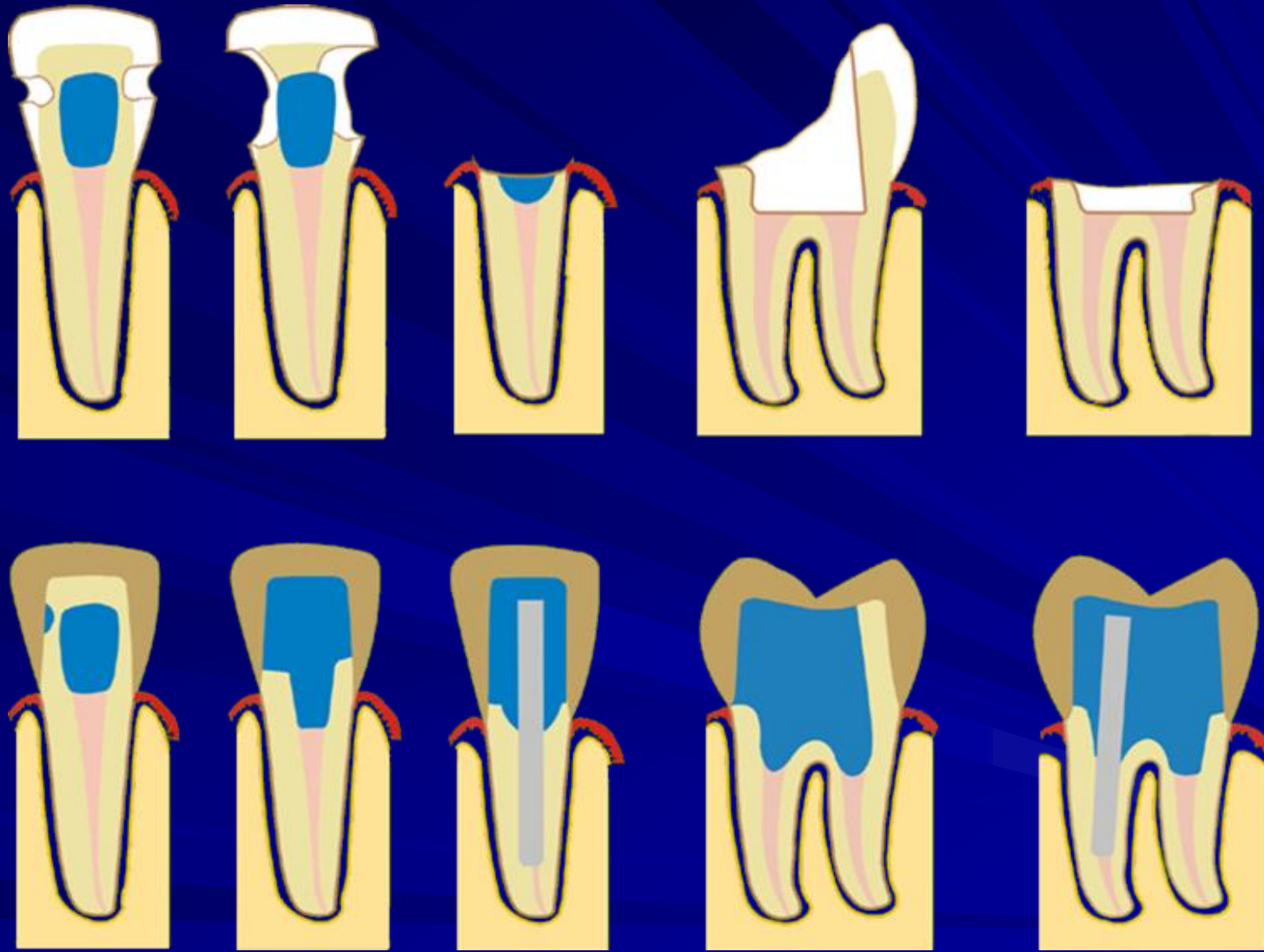


# When post

## Depends

- How much hard dental tissues is lost







In frontal area:

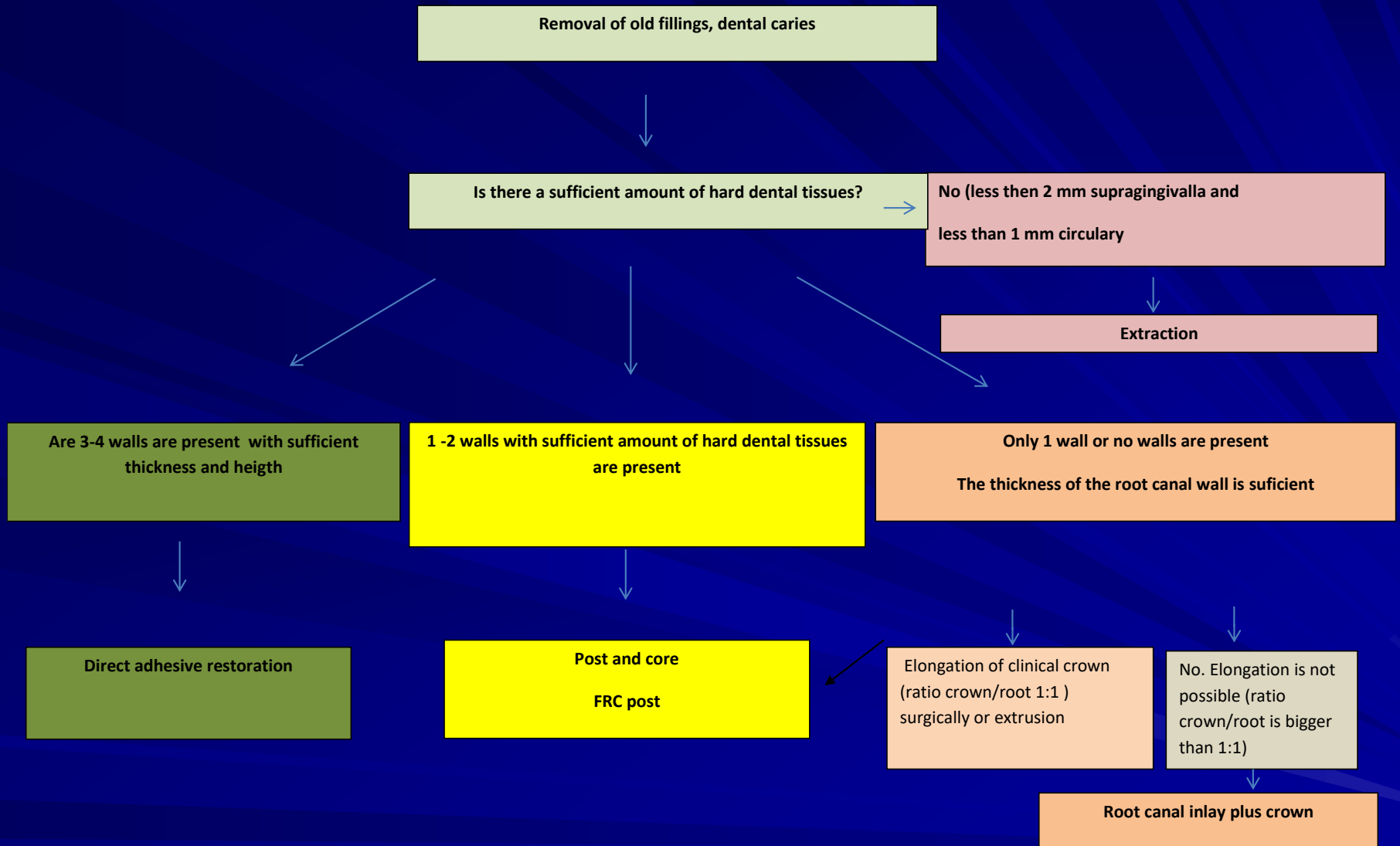
- when two marginal ridges are lost plus access cavity
- When only one marginal ridge is lost plus access cavity plus heavy loading (e.g deep bite)

In posterior area – when both proximal ridges are completely lost

# Frontal area

- Bigger loading with transversal forces
- Smaller area for retention



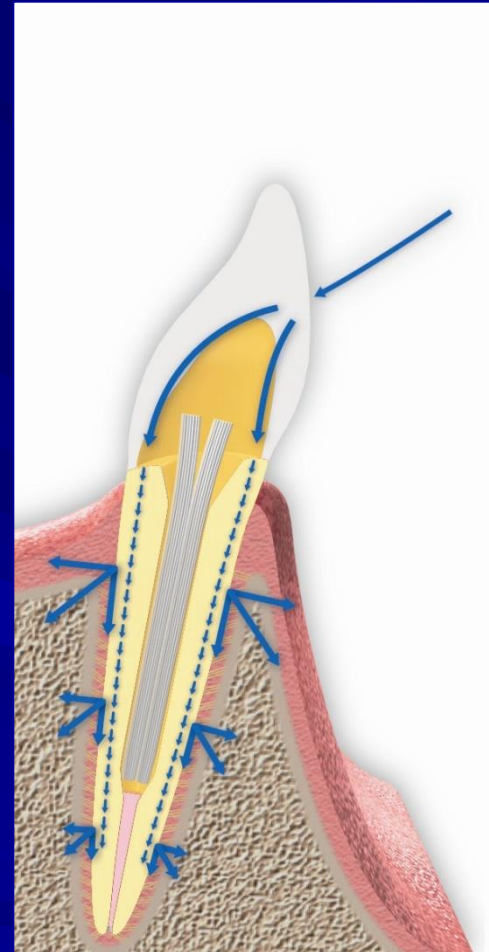
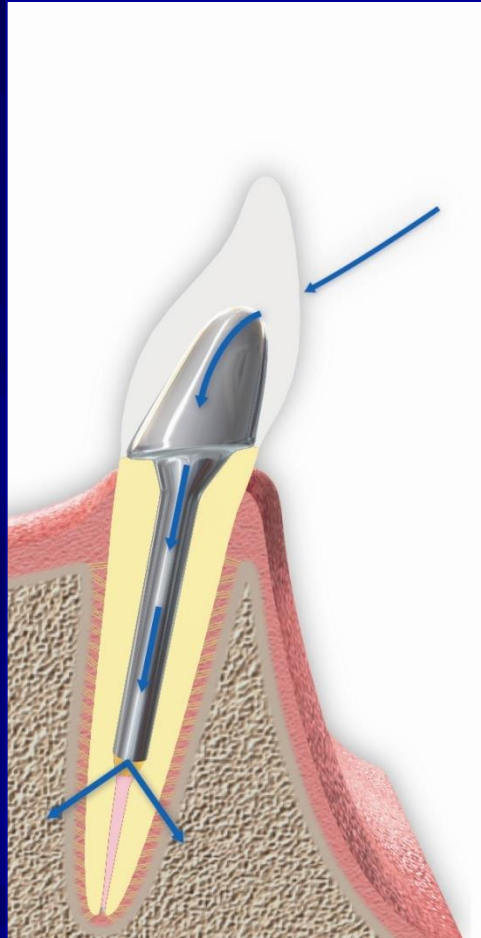


# Posterior area

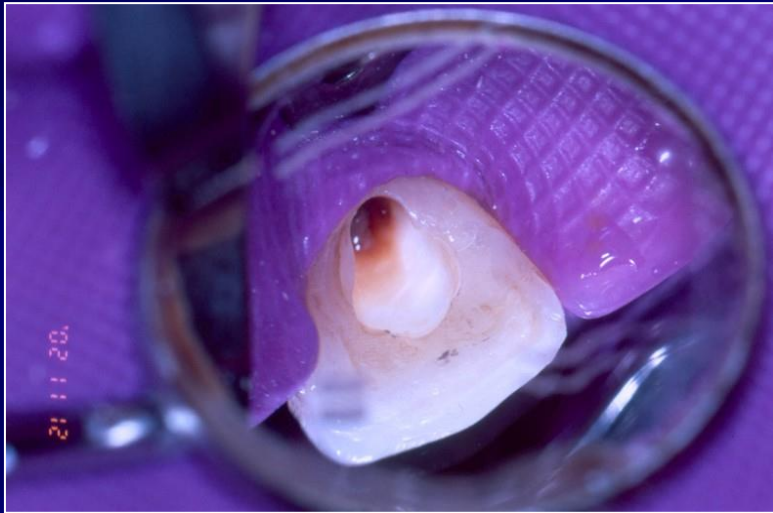
- Loading more in axial direction (less amount of transversal loading)
- Overlay is considered without any post in most cases



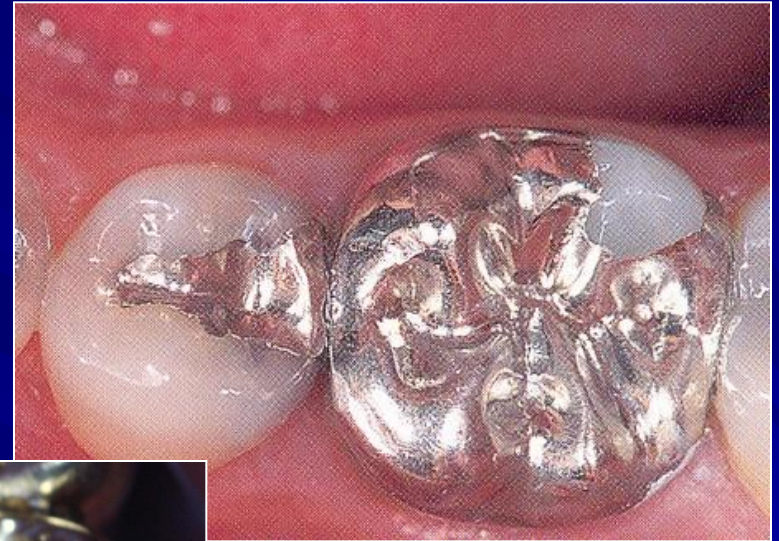
# Metal versus FRC post



# Techniques without posts



# Techniques without posts



Amalgam overaly  
Metal overlay



Composit or ceramic overaly  
- Endodontic crown





Indication of FRC posts in

Premolars: on proximal ridge is lost

Molars: both proximal ridges are lost



# Available posts prefabricated, custom made



Kov



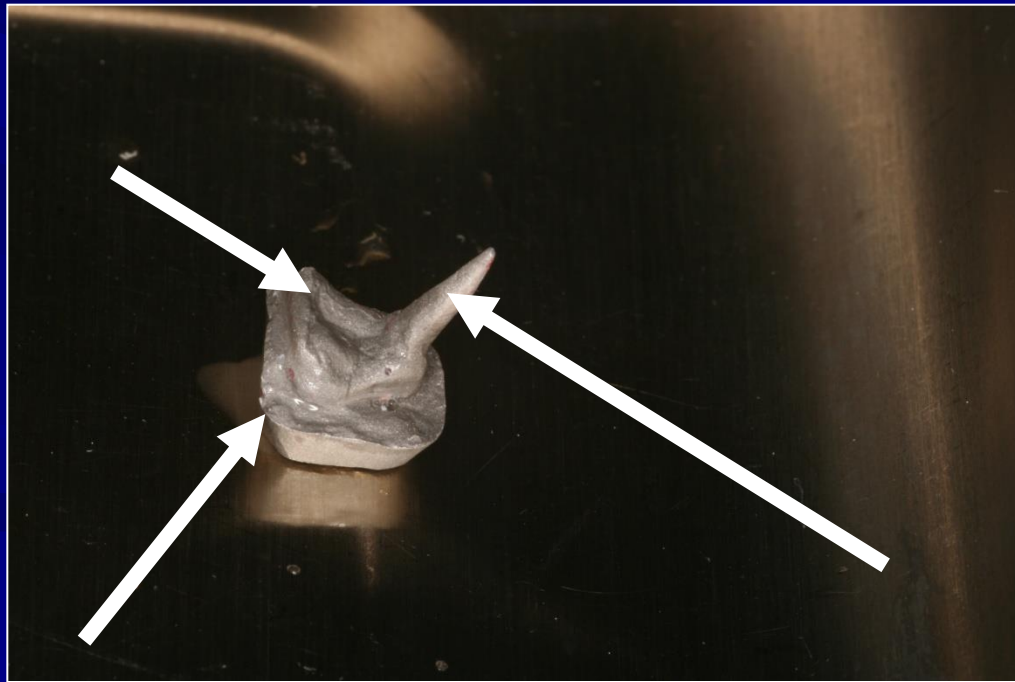
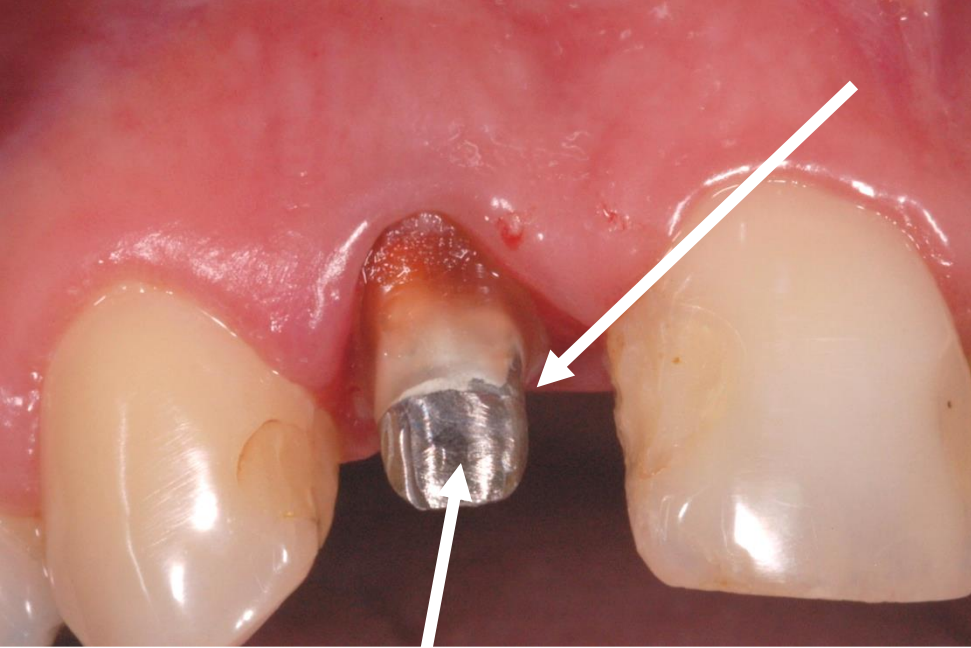
Vláknový uhlík

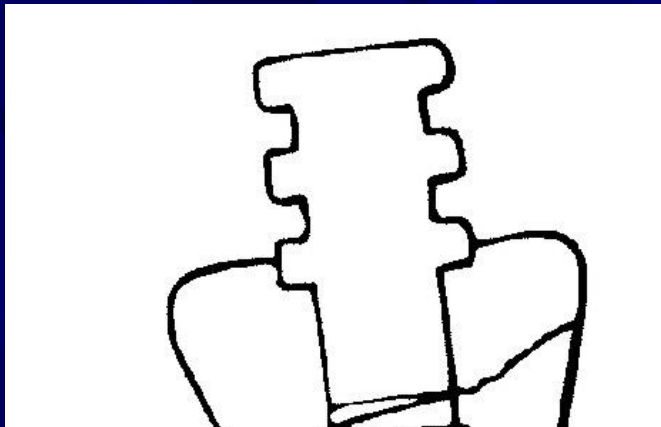
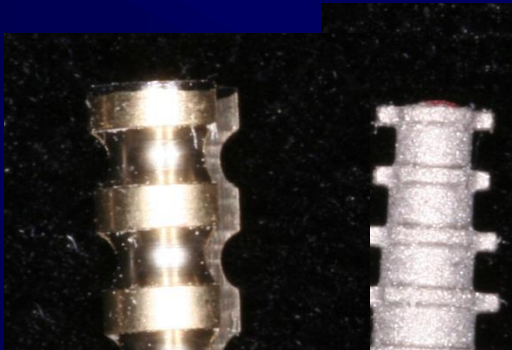


FRC



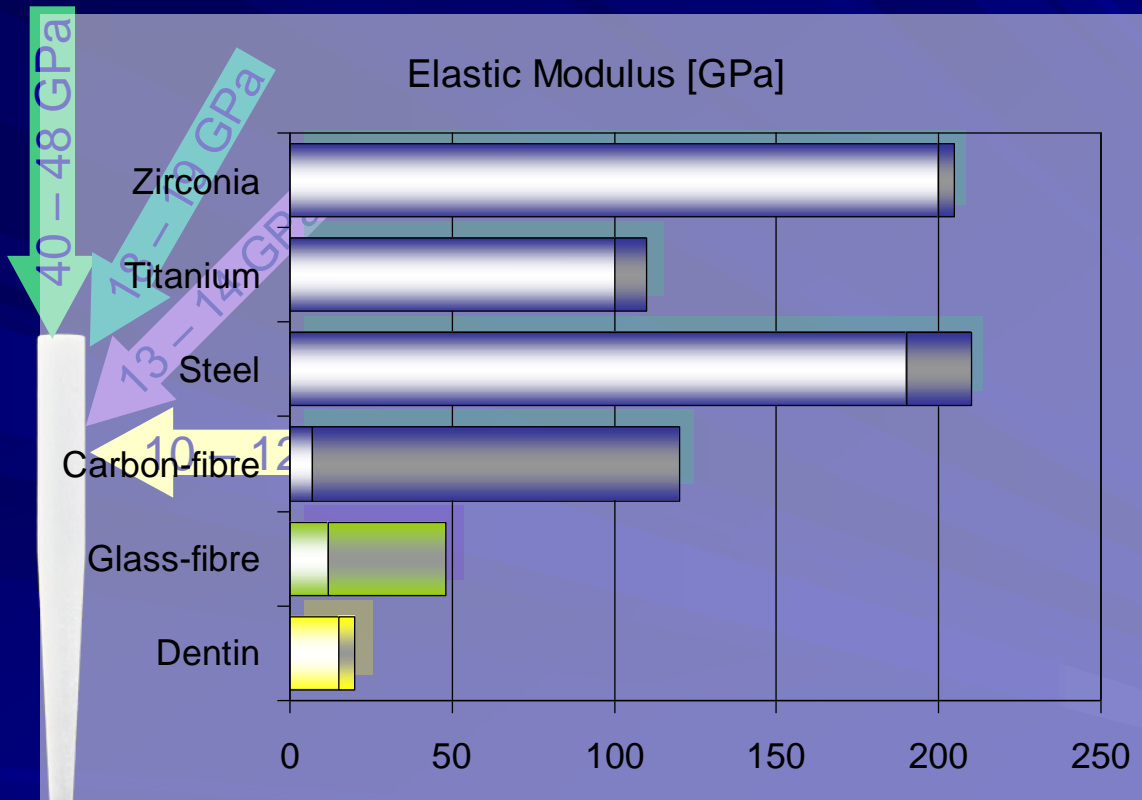
Zirkon





# Benefits of FRC posts

- Elastic modulus similar to dentin
- Good seal – adhesive technology
- Aesthetics
- One visit less (dental lab no need)



Source: Materials Science and Engineering: An Introduction



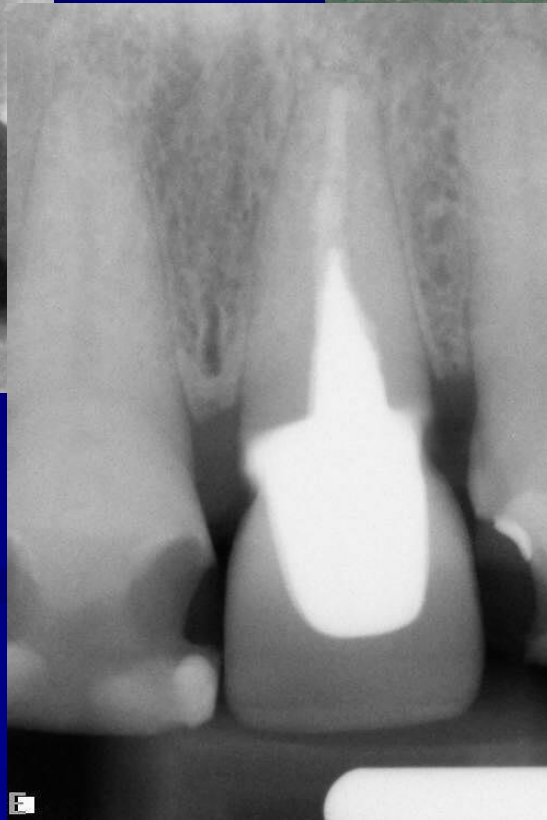
# Supragingival tissues

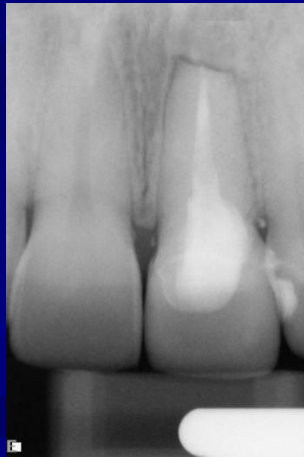
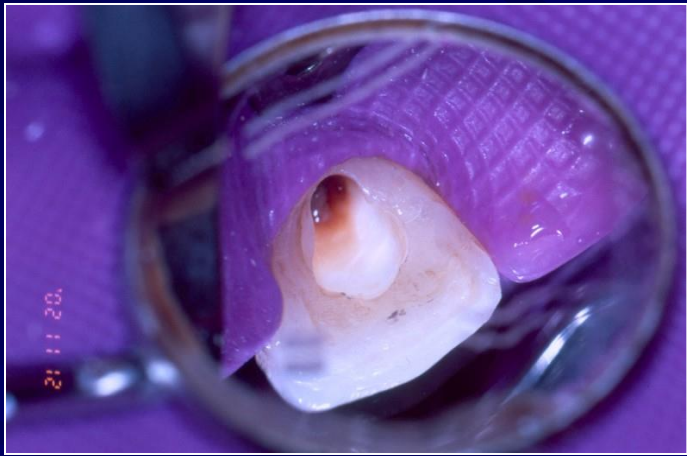
*Ferrule*  
*Good adhesion*

# Risks – only when technology is not properly followed

- Decementation
- Fracture of the post
- Fraktura of the root
- Gap



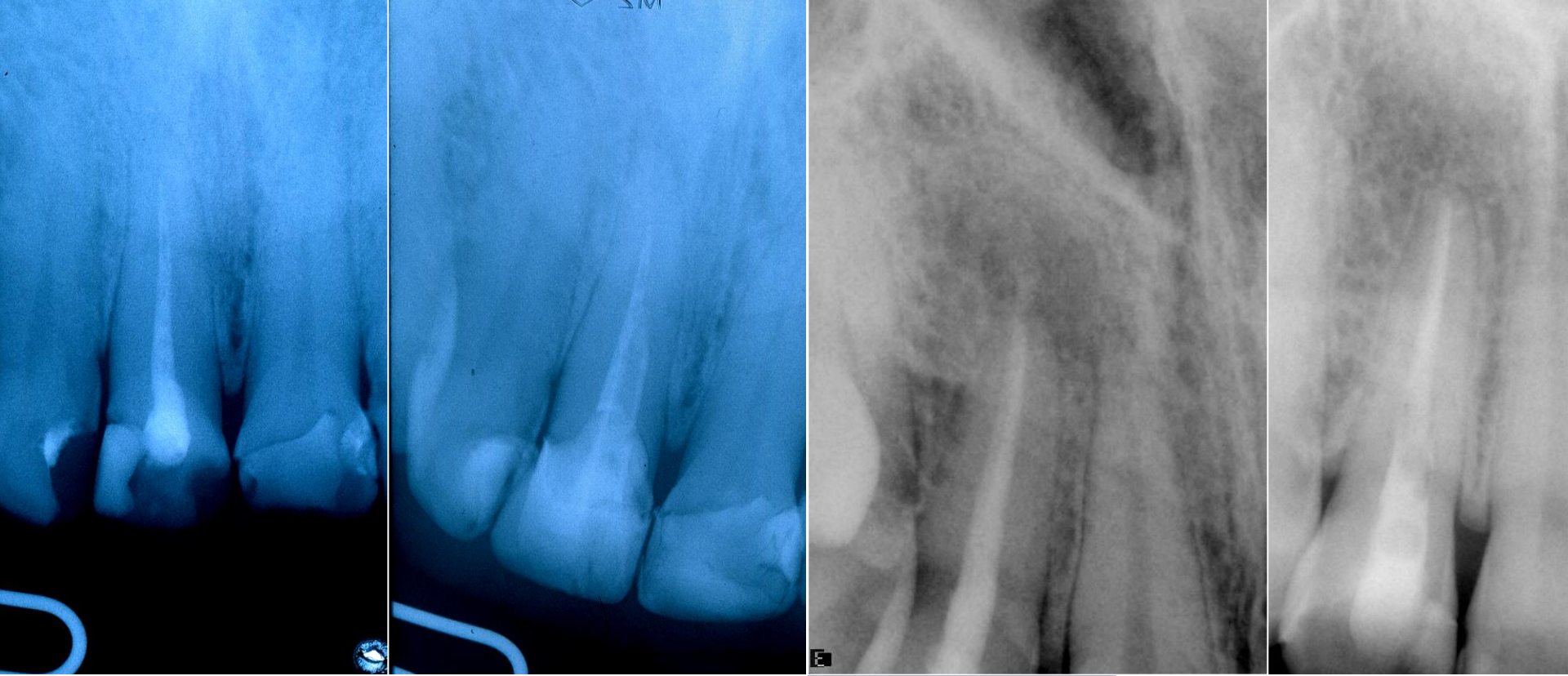






Core made of composite material

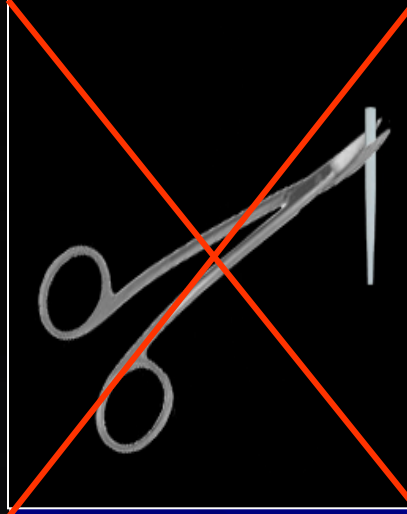
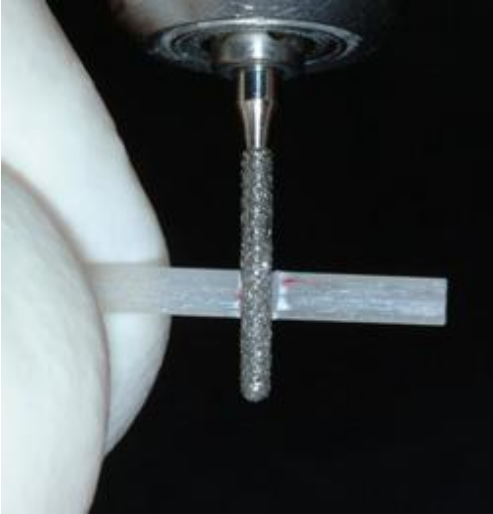
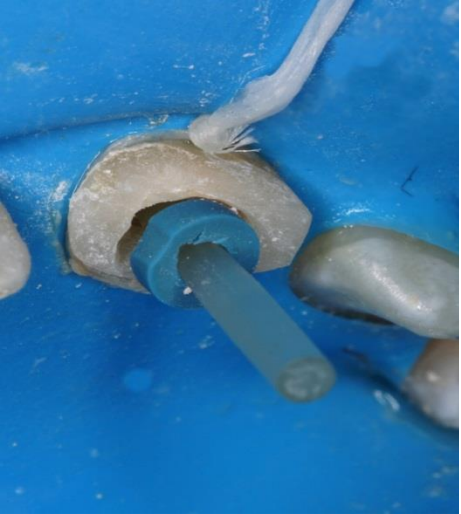
# Step by step procedure



# Check root canal filling



# Preparation



Try the post

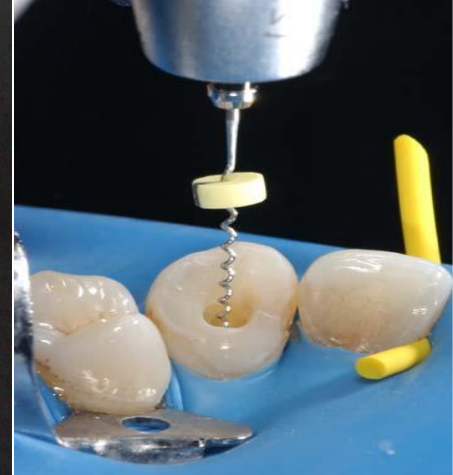
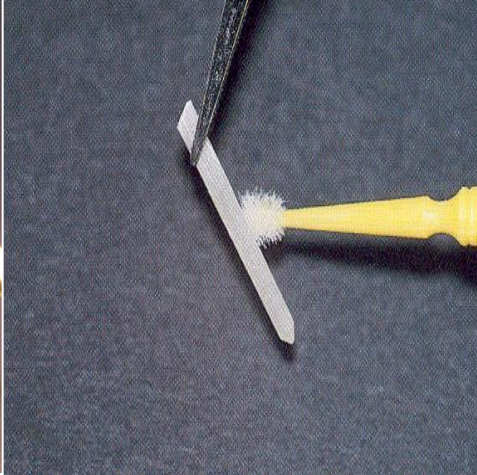
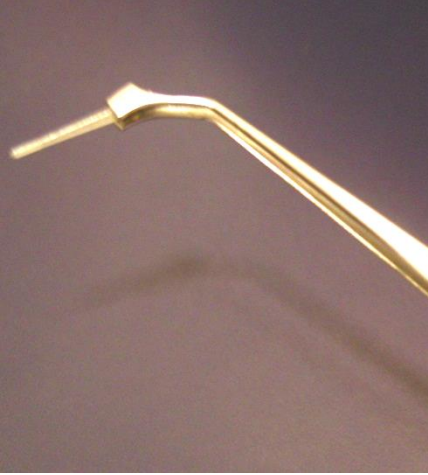
4 mm of root canal filling is left



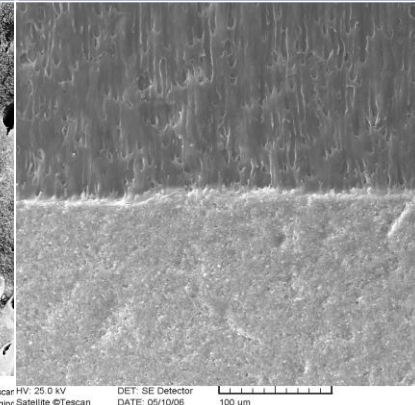
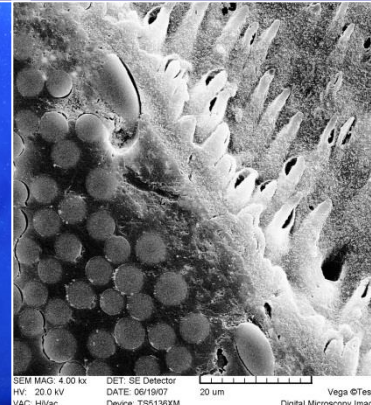
# Adhesive procedure







# Cementation using a dual or chemically curing composite cement



SEM MAG: 4.00 kx DET: SE Detector HV: 20.0 kV DATE: 06/19/07 VAC: HVac 20 um Vega ©Tescan HV: 25.0 kV DET: SE Detector DATE: 05/10/06 100 um Digital Microscopy Imaging Satellite ©Tescan



# Cements





**Core**

**Special material**

**Filling composite material**

**Post and core material – one material**

**- for post cementation and core**

