

Preparation techniques and their clinical consequences – preparation trauma



Preparation

Power driven

- Rotary
- Alternative

Hand

- Excavator
- Chisel

Preparation techniques

- Pressure – max hand preparation – risk of excavators
- Vibrations
- Heat – due to friction
 - increases with rpm (turbine max)

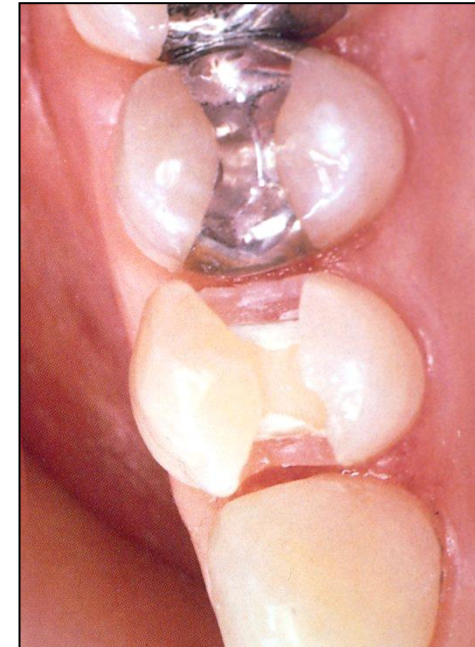
Consequences in enamel, dentin, cementum

- Rotary preparation with high speed handpiece, turbine:
- Enamel :shattered borders, cracs. Prevention: gentle interrupted preparation, water cooling.
- Dentine: burnt areas, denaturation of protein.
- Dental pulp: aspiration of odontoblasts into dentine tubules, hyperaemia, infiltration, inflammation.

Prevention

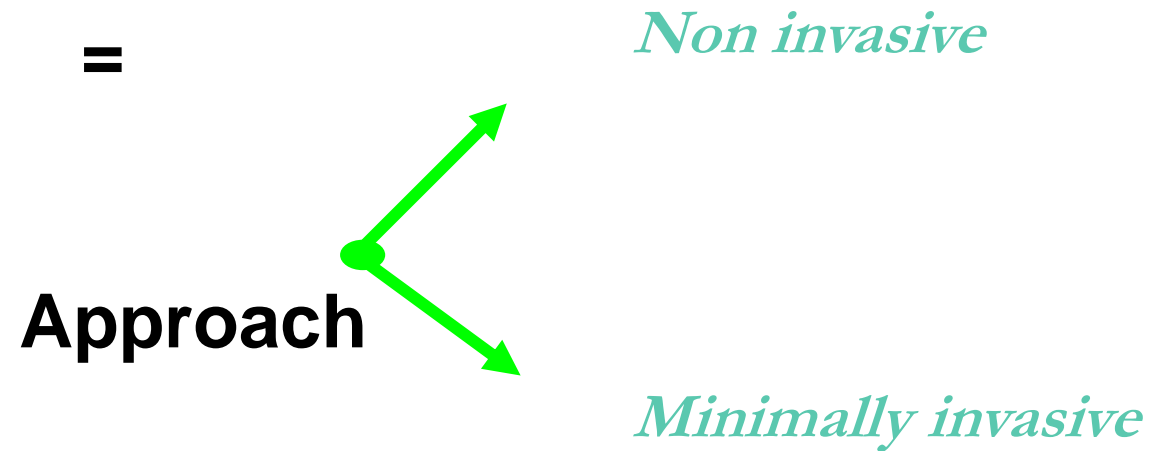
- Gentle interrupted preparation
- Sharp instruments, well centered
- Sufficient watercooling by using highspeed rpm (50ml/min)
- The biggest preparation instruments for the excavation of carious dentin

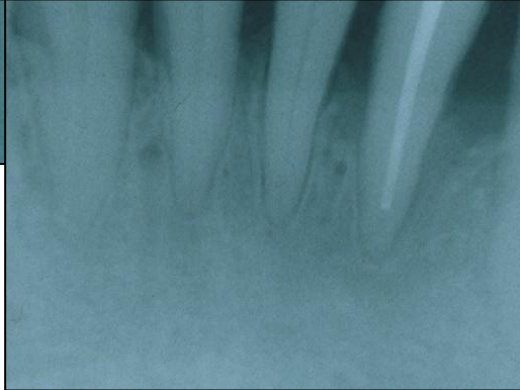
From extension for prevention to prevention of extension !



Primum non nocere !

Minimal intervention





?



Prevention od extension



- Etiology and patogenesis of dental caries
- Biomechanical properties of the tooth
- Diagnosis
- Filling materials
- Preparations techniques



**Changes in the treatment concepts,
size and shape of cavities**

Biomechanics



MOD - 63%
Endodontics - 9%
Dehydratation -14%



*Ferrari M, Scotti R. Fiber posts. Characteristics and clinical applications.
Milano: Masson, 2002.c*

Illumination, magnification



~~Dry field~~

Clean
surfaces

Dry field

Miniinvasive treatment - techniques

- Mechanical
- Chemo – mechanical
- Kinetic
- Laser

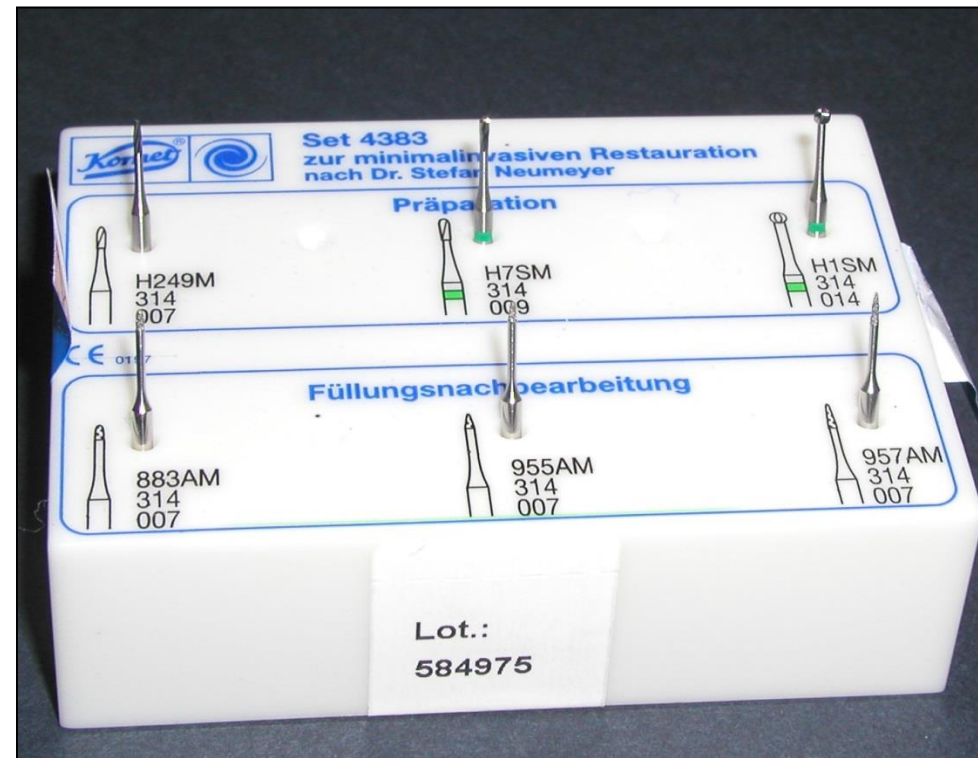
□ Mechanical preparation

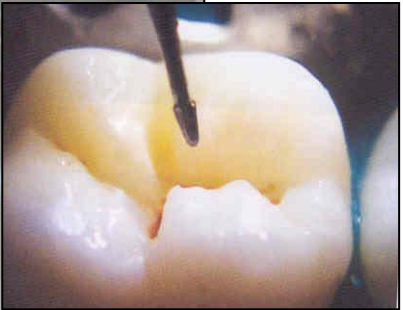
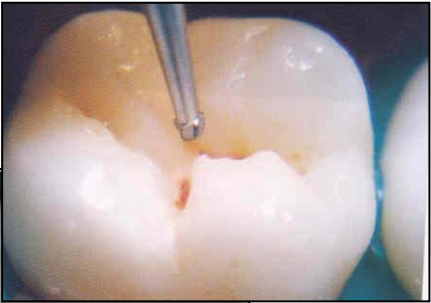
➤ *Rotary*

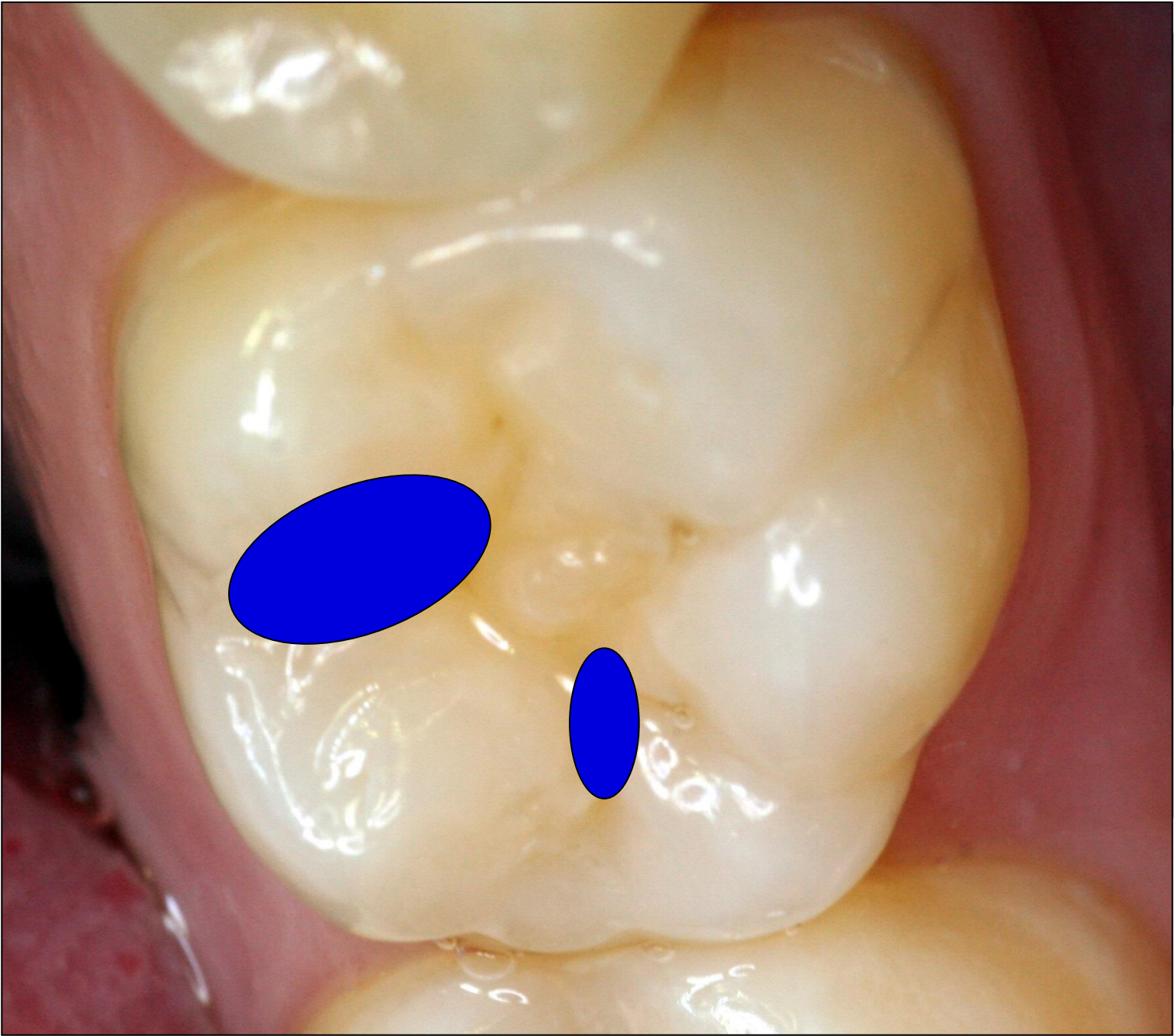
➤ *Sonic , ultrasonic*

➤ *ART*

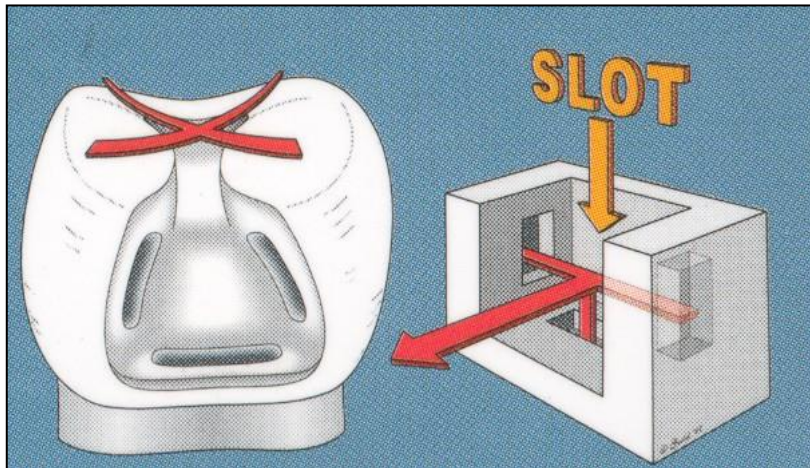
➤ Rotary (micro and miniinstruments)



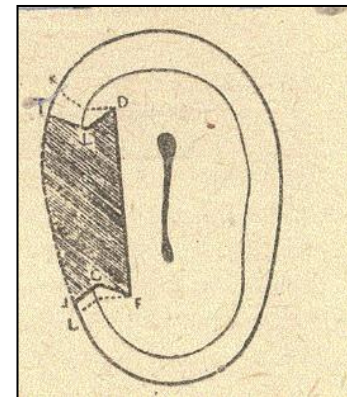
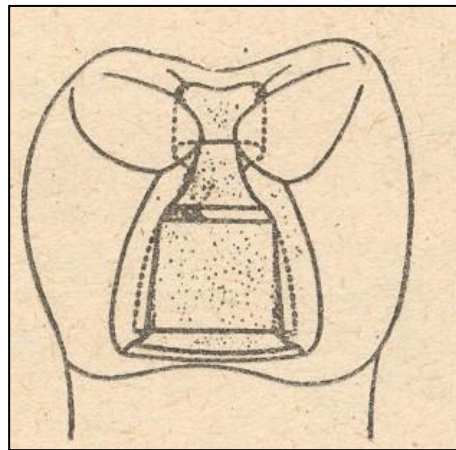




Slot preparation with macroretention



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

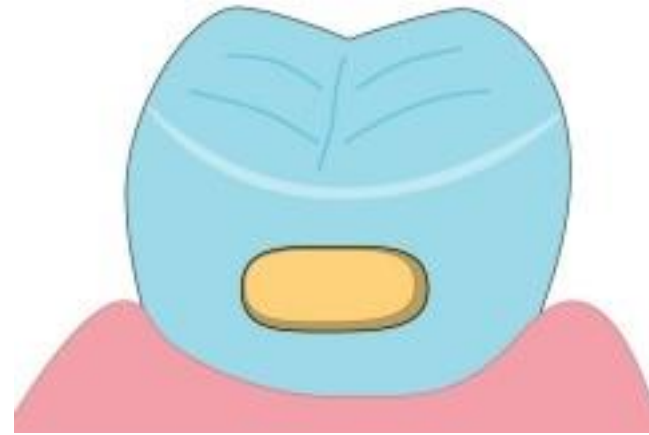


Bažant V.

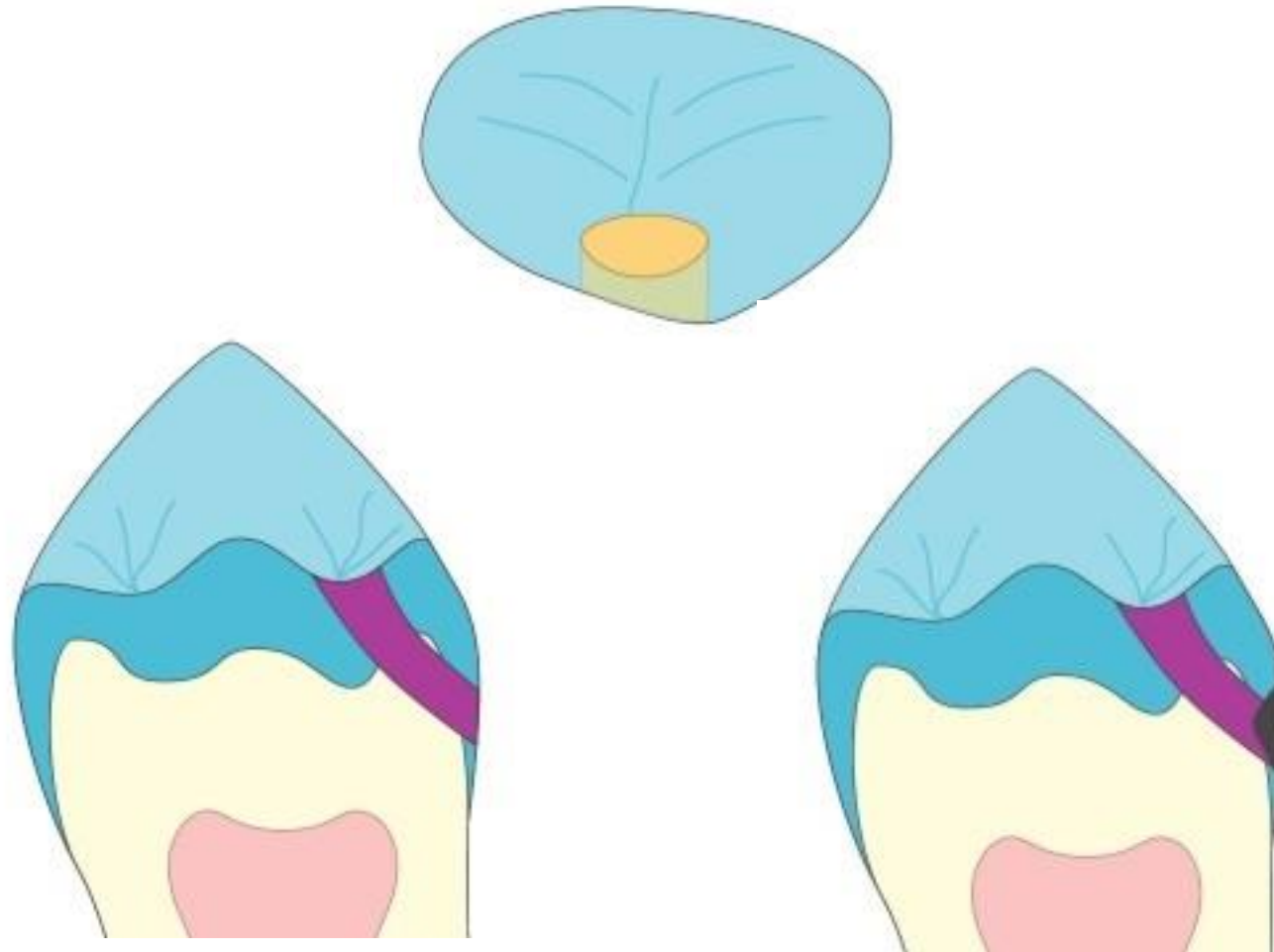
Konservační zubní lékařství, SPN Praha, 1962.

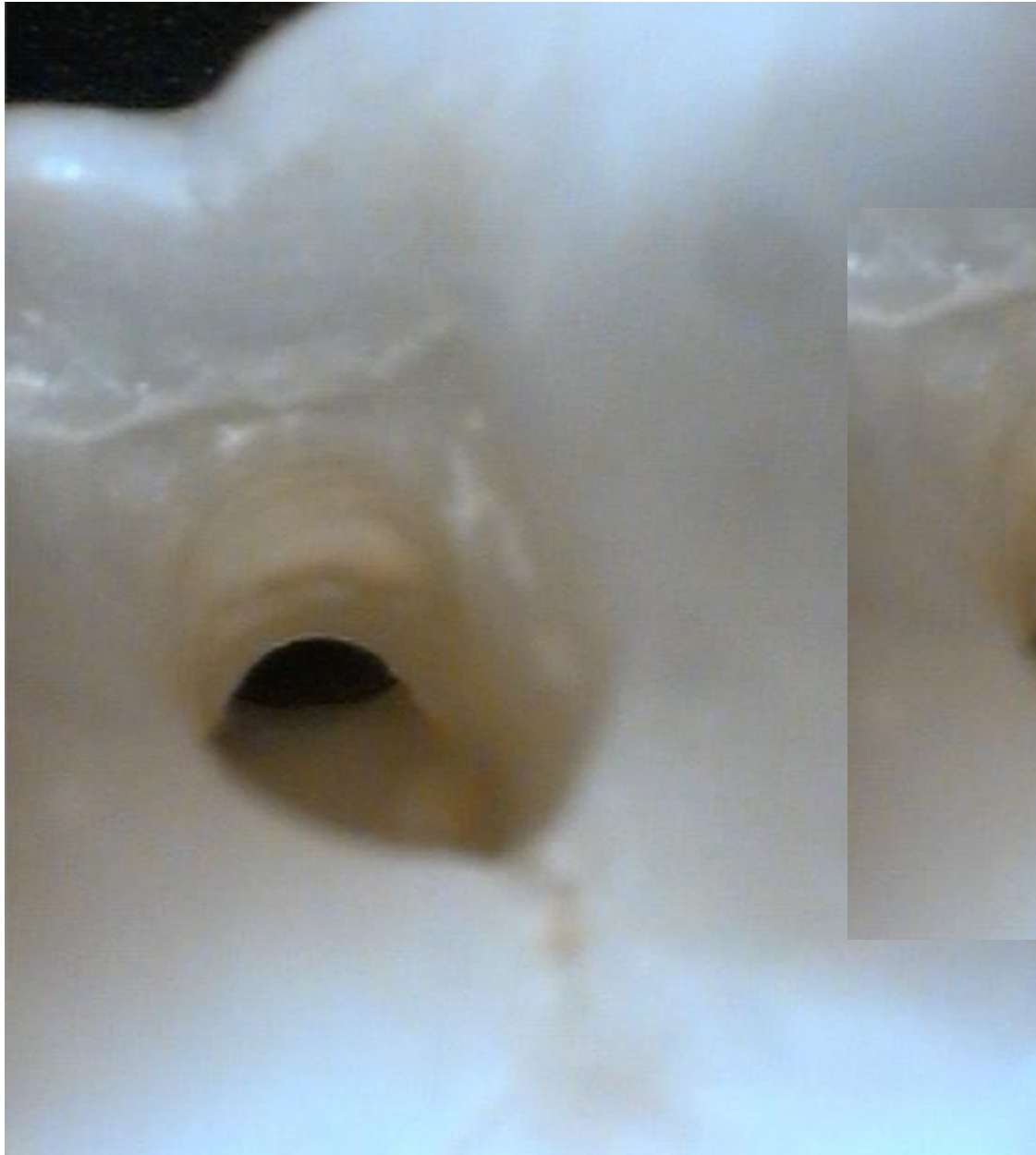


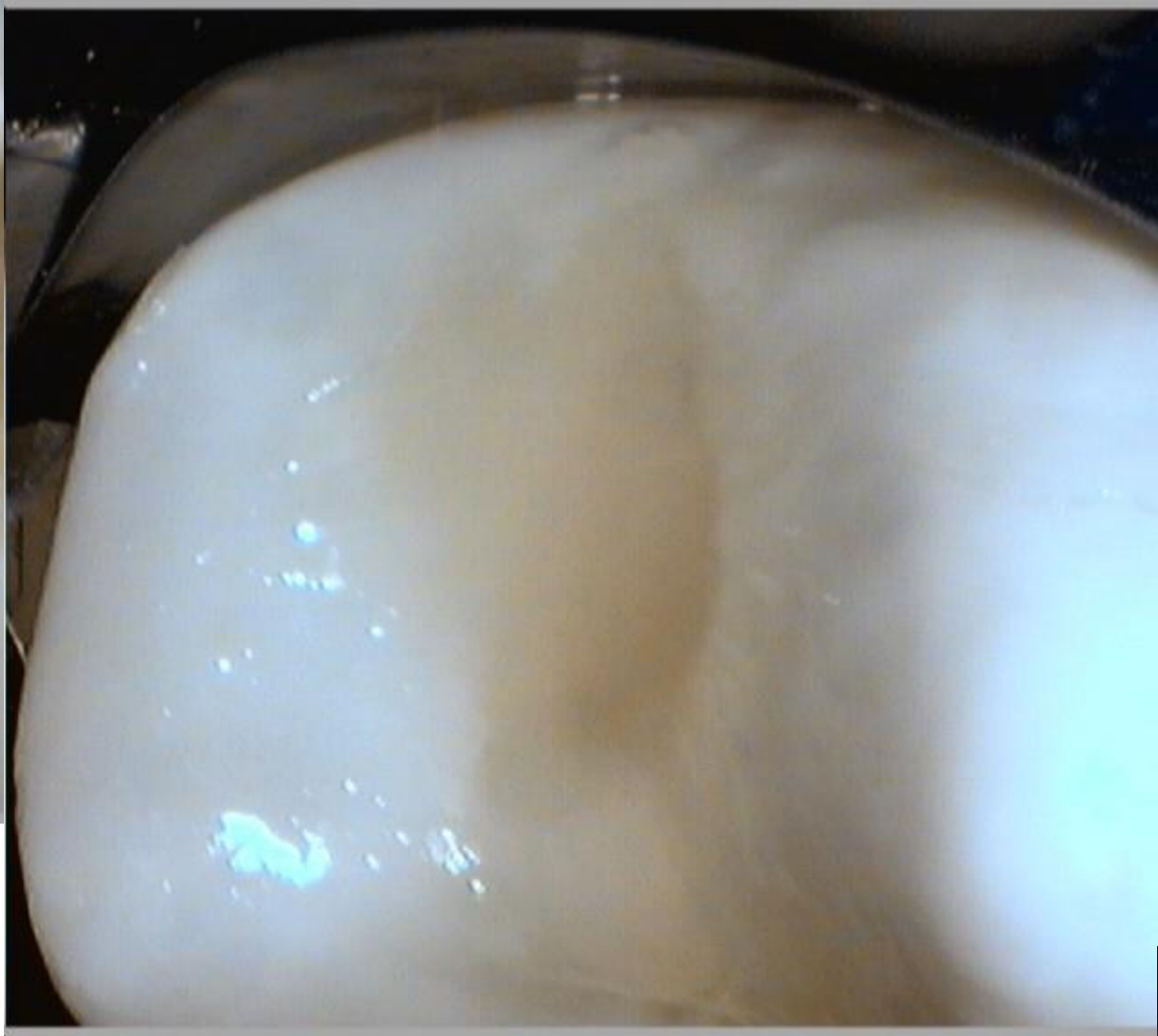
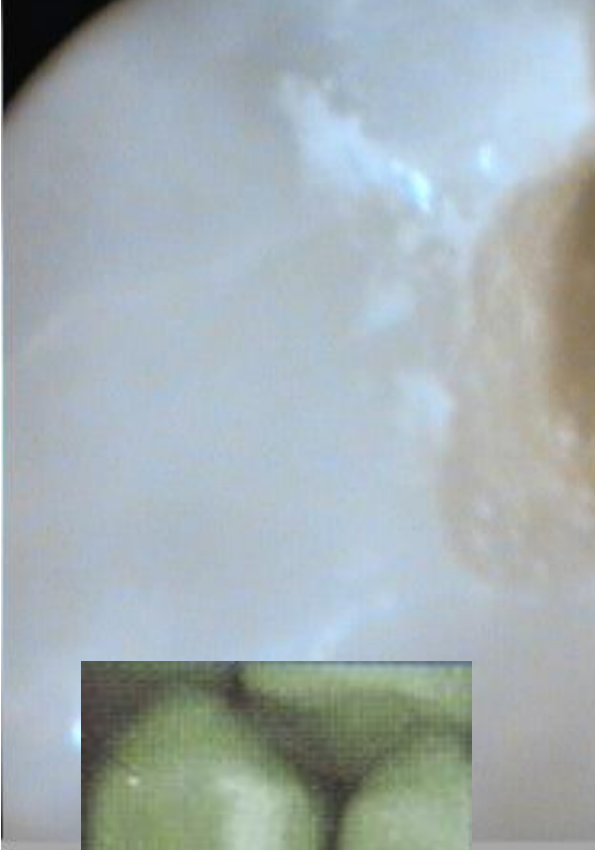
Adhesive slot



Tunnel preparation









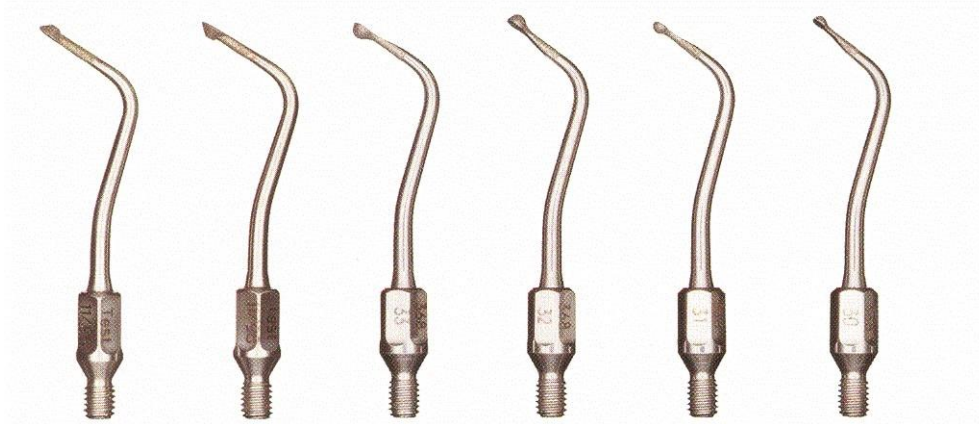
1. Magnification
2. Miniinstruments
3. Disinfection of cavities
4. GIC or composite
5. BW post op

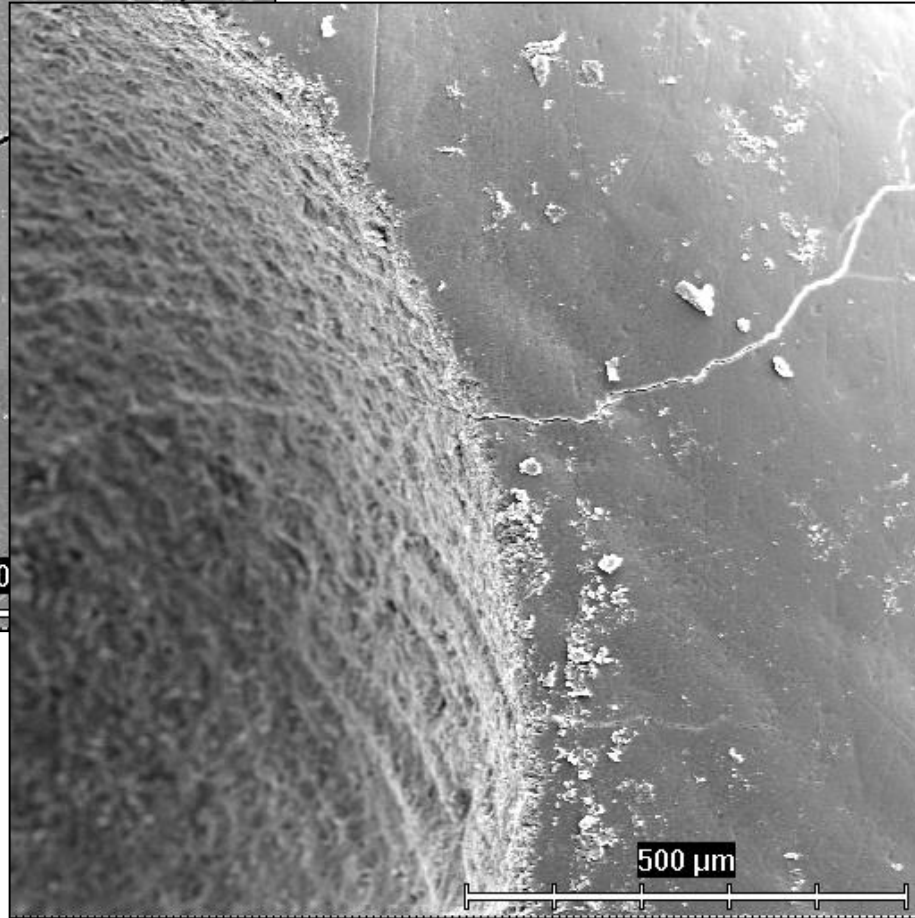
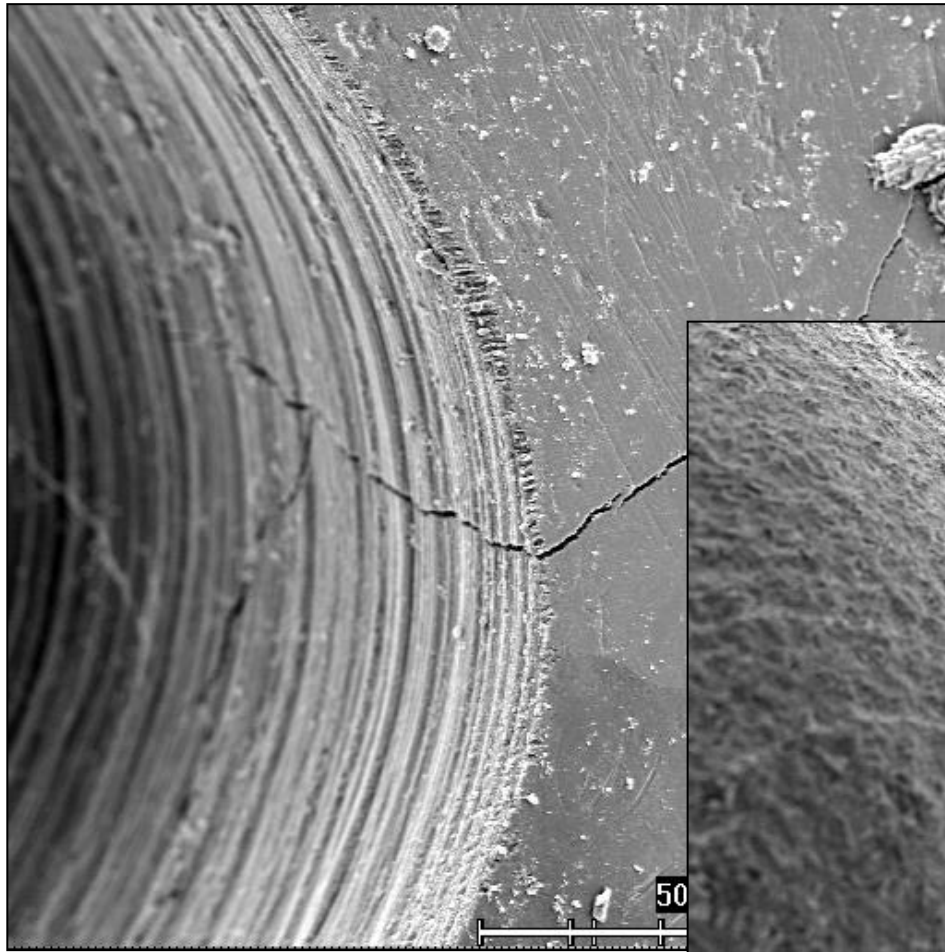
Success?

1. Low caries risk
2. Compliance
3. Marginal ridge without infracture
4. D3



➤ Sonic and ultrasonic preparation – oscillating instruments







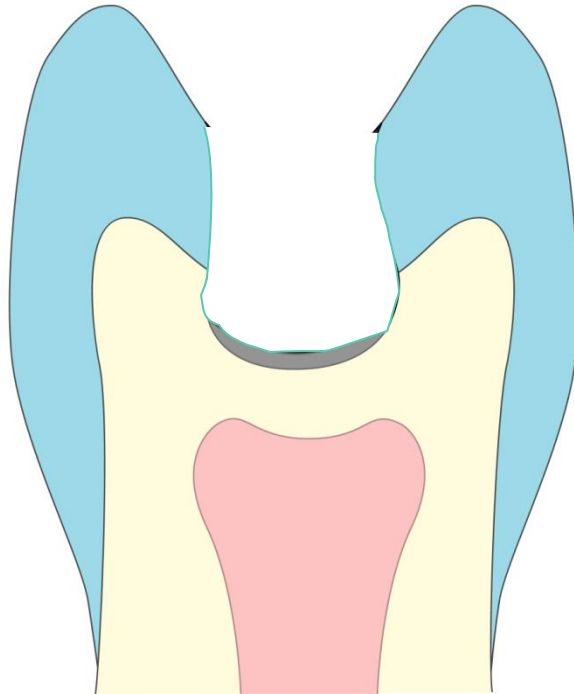
Ultrasonic preparation

- ✓ *Walls are smoother in comparison to rotary preparation*
- ✓ *Time of the preparation is significant longer*
- ✓ *Exkavation of carious dentin is nor sufficient*
- ✓ *Marginal adaptation of composite filling is not significantgly better*

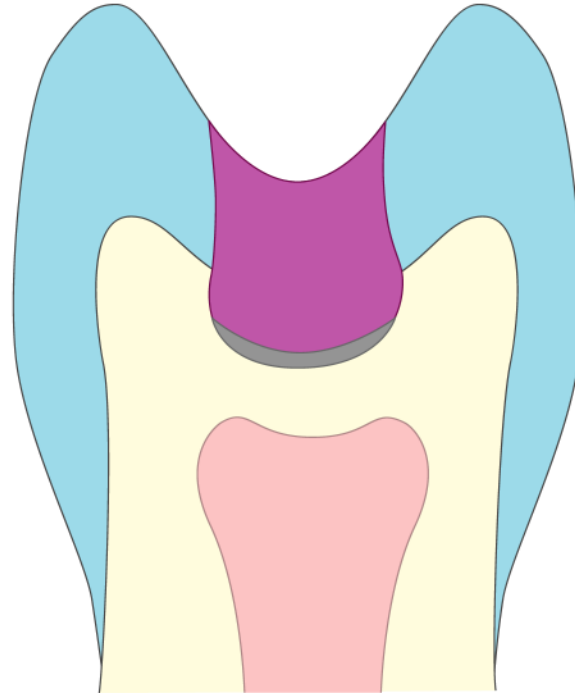
Roubalíková L. Ultrasonická preparace v ošetření zubního kazu , PDD 2004.



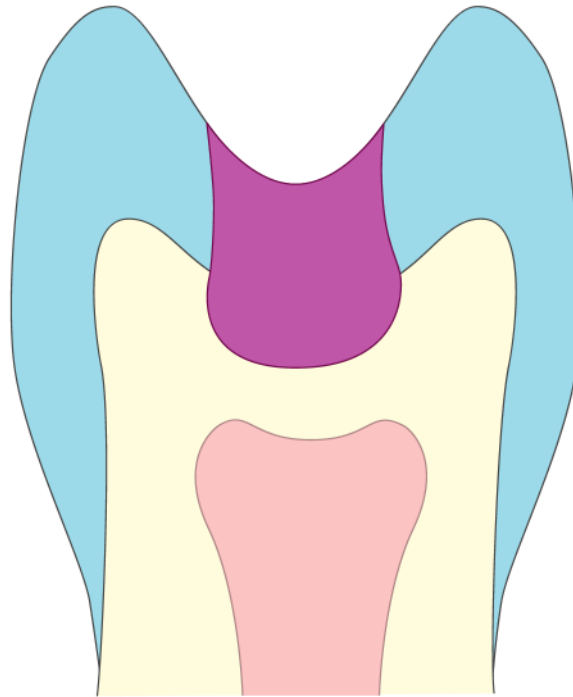
➤ ART



➤ ART



➤ ART –atraumatic restorative technique

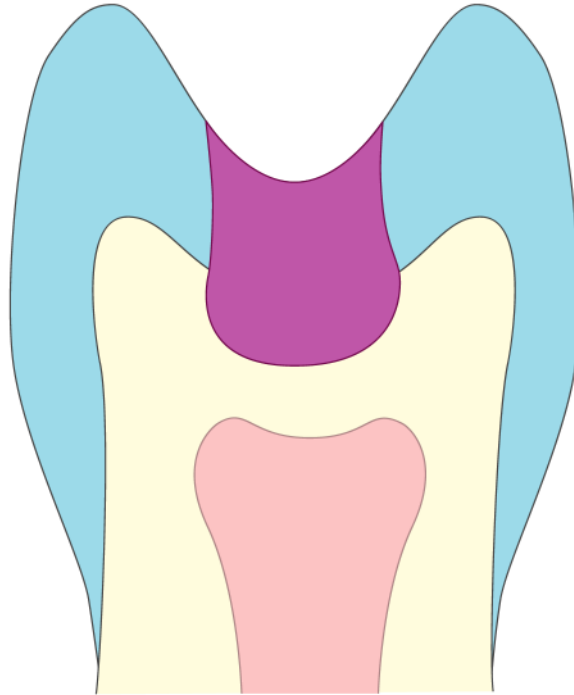


ART

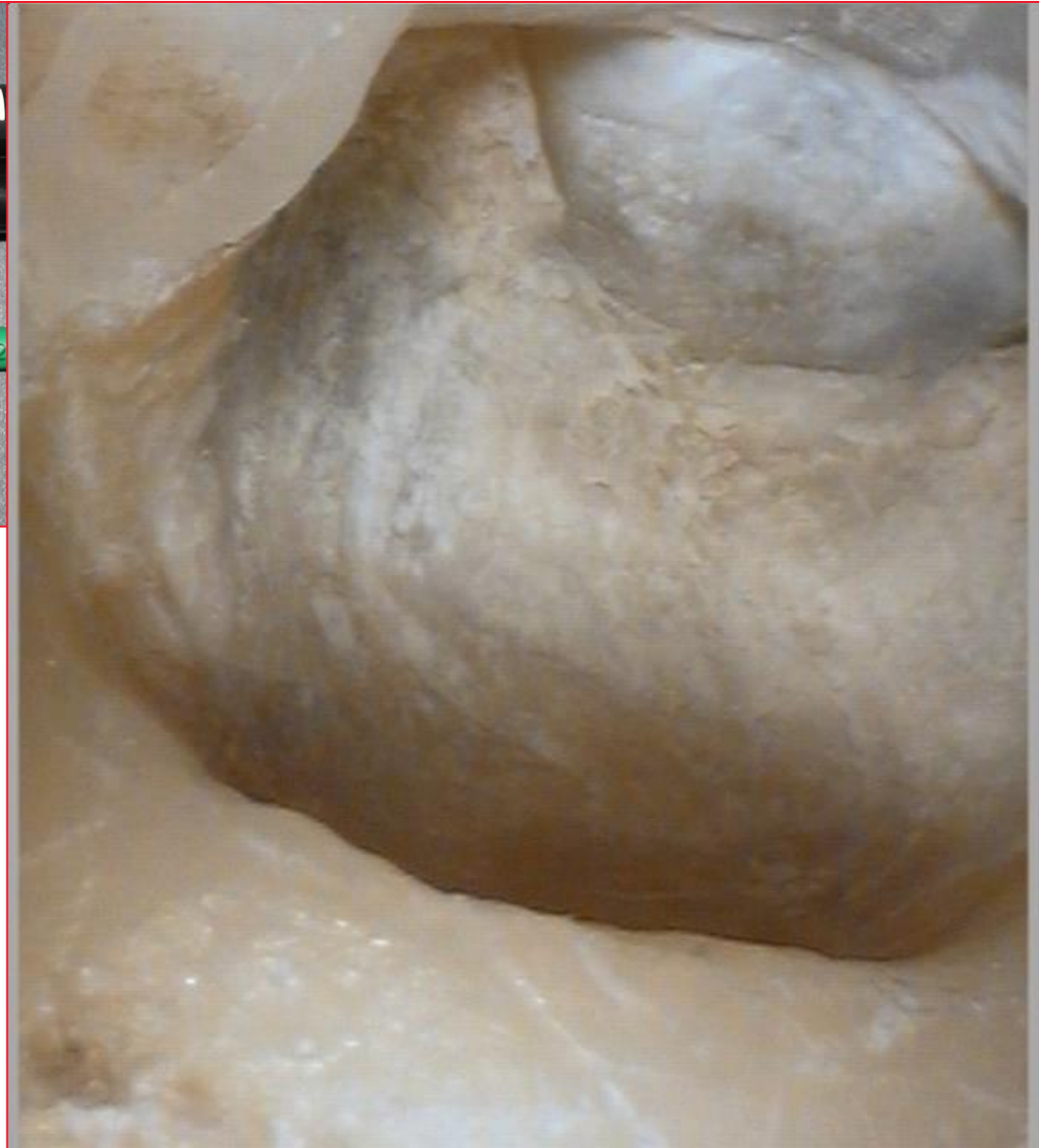
- ✓ Miniinvasive
- ✓ Remineralization
- ✓ Large lesions
- ✓ Children
- ✓ Disabled patients



➤ Chemomechanical preparation



➤ Chemo – mechanical preparation

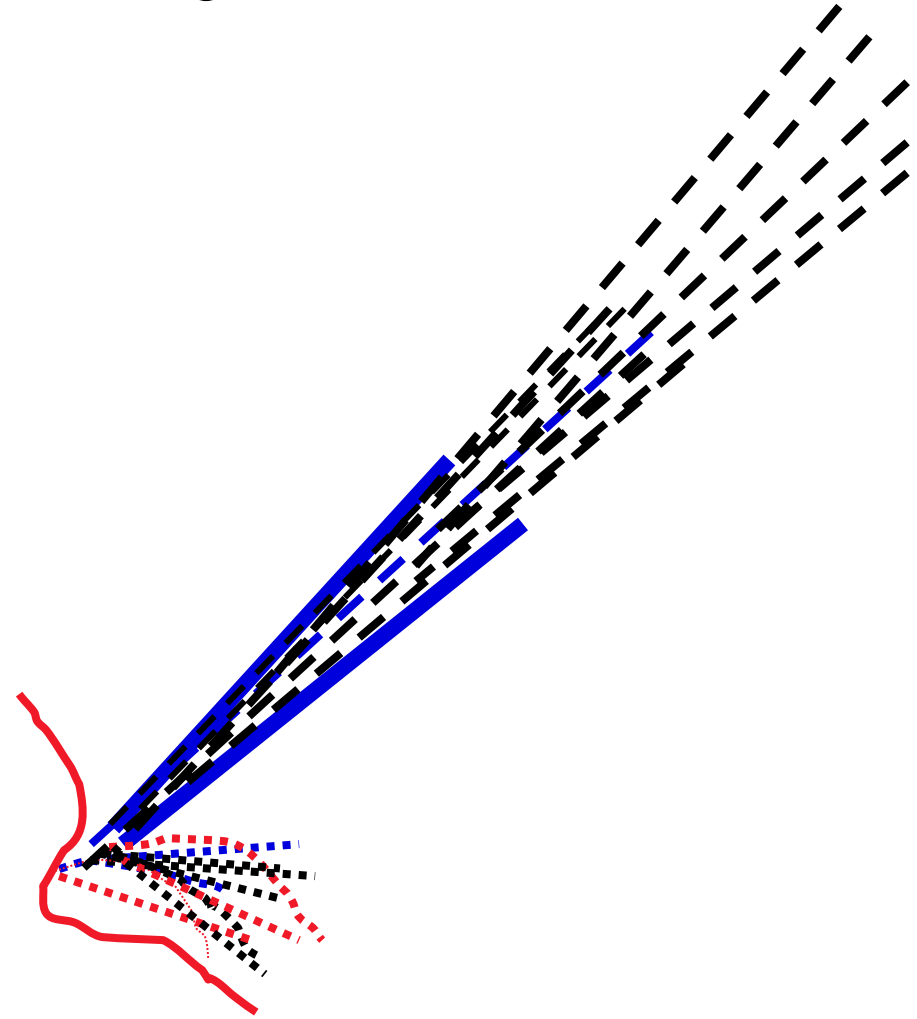


- ✓ **No anesthesia needed**
- ✓ **Smell of chlor**
- ✓ **No noise**
- ✓ **For anxious and disabled patients**
- ✓ **Time consuming**

*Rafique S, Banerjee A, Fiske J.
Clinical trial of an air-abrasion/Carisolv gel regimen
for restorative treatment for dentally anxious patients.
Caries Res 2002; 186 (Suppl.3)36:39.*



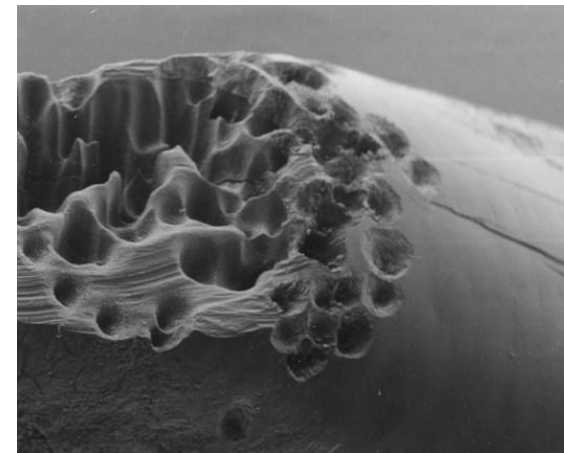
➤ Kinetic preparation – sandblasting – air abrasion



- ✓ ***Good accepted by patients***
- ✓ ***Time consuming***
- ✓ ***Excavation of dentine is not sufficient***
- ✓ ***Rough borders***
- ✓ ***Dust***

Pietrini DR. Air abrasion for 21st century. Dent Today 2000;19:106-108

➤ **Laser**



Er,Cr:YSGG Laser Er: YAG







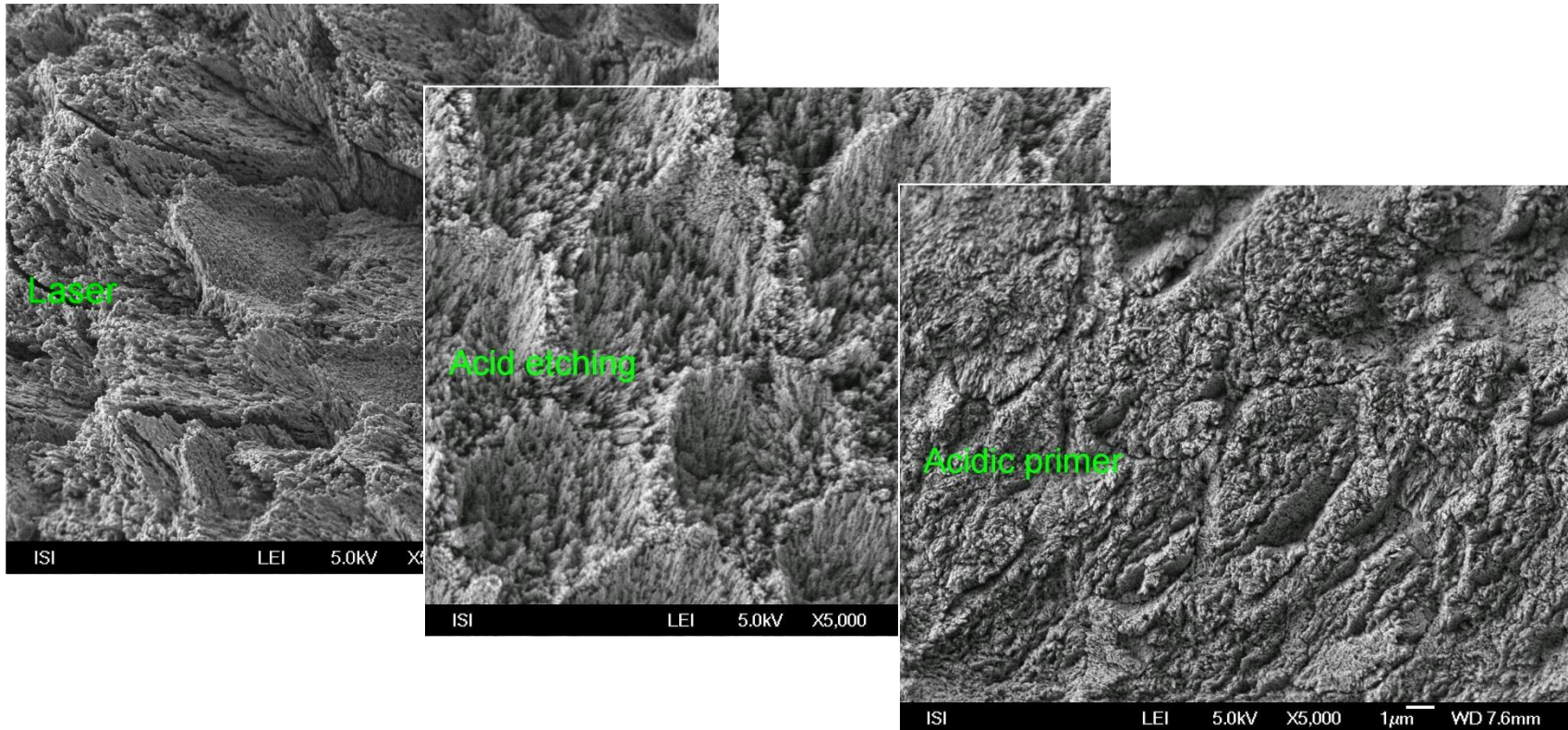
*Roubalíková L, Wilhelm Z, Bilder J. : Use of Er:YAG laser
in non carious cervical lesions. Clin Oral Invest, v tisku, 2004.*





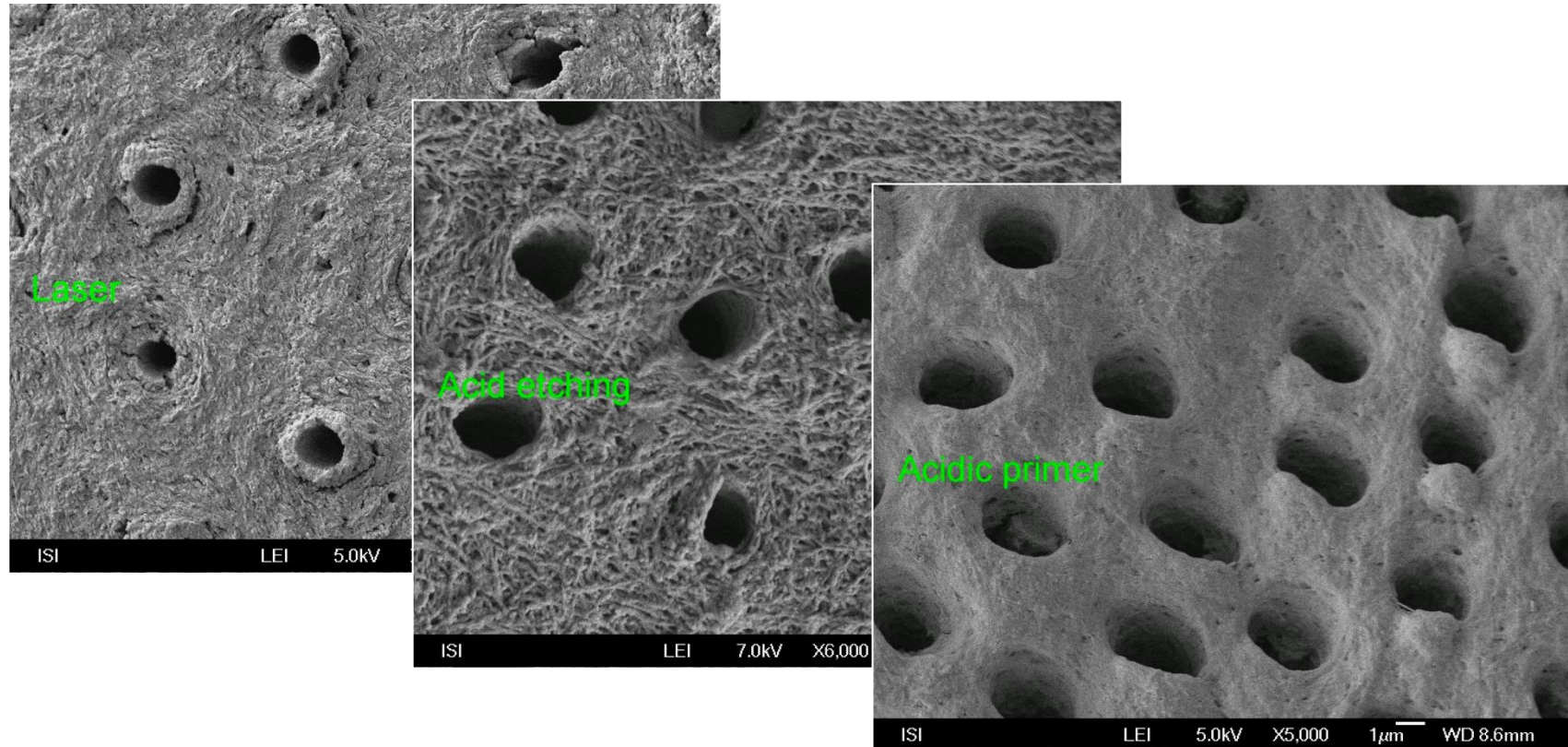
Adhesive preparation

Sklovina



Adhesive preparation

Dentin



- ✓ ***Good accepted***
- ✓ ***Time consuming***
- ✓ ***Antimicrobial effect***
- ✓ ***Risk of perforation of pulp chambre***
- ✓ ***Price***



Thank you !

