



# Fissure sealing

Prof. MUDr. Martina Kukletová

# Fissure sealing

Black's extension for prevention  
replaced

Sealing for prevention

- to prevent the occurrence of caries on occlusal surfaces and pits
- Component of the preventive restoration

glass ionomer cements

composite resin



sealant



# Effects of sealants

- mechanical sealing of pits and fissures with acid resistant material
- annulling the preferred habitat of *S. mutans* and other cariogenic microorganisms
- allowing for a better cleaning of pit and fissure areas

# Types of sealants

Bis-GMA polymers

Autocured

Light-cured

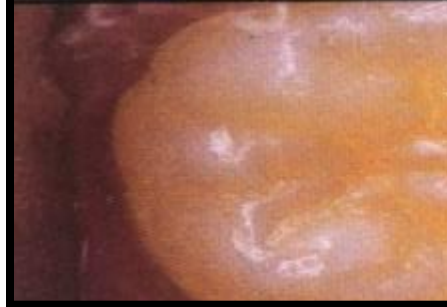
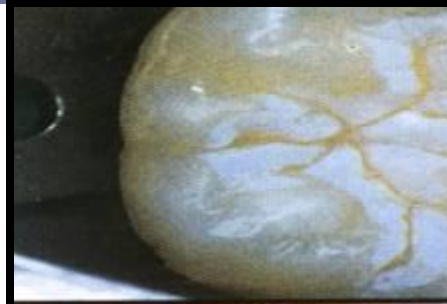
Urethane diacrylate

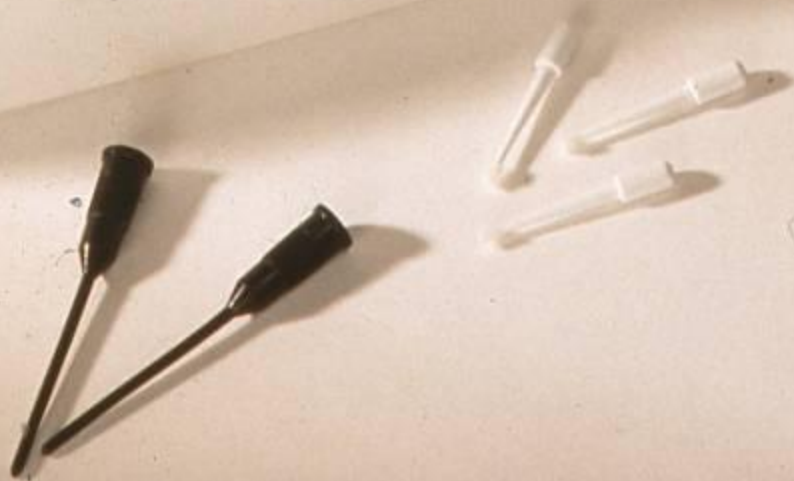
- unfilled resins
- filled 20-25% inorganic fillers (glass , quartz particles)=greater wear resistance
- colored
- uncolored (without pigments)
- transparent

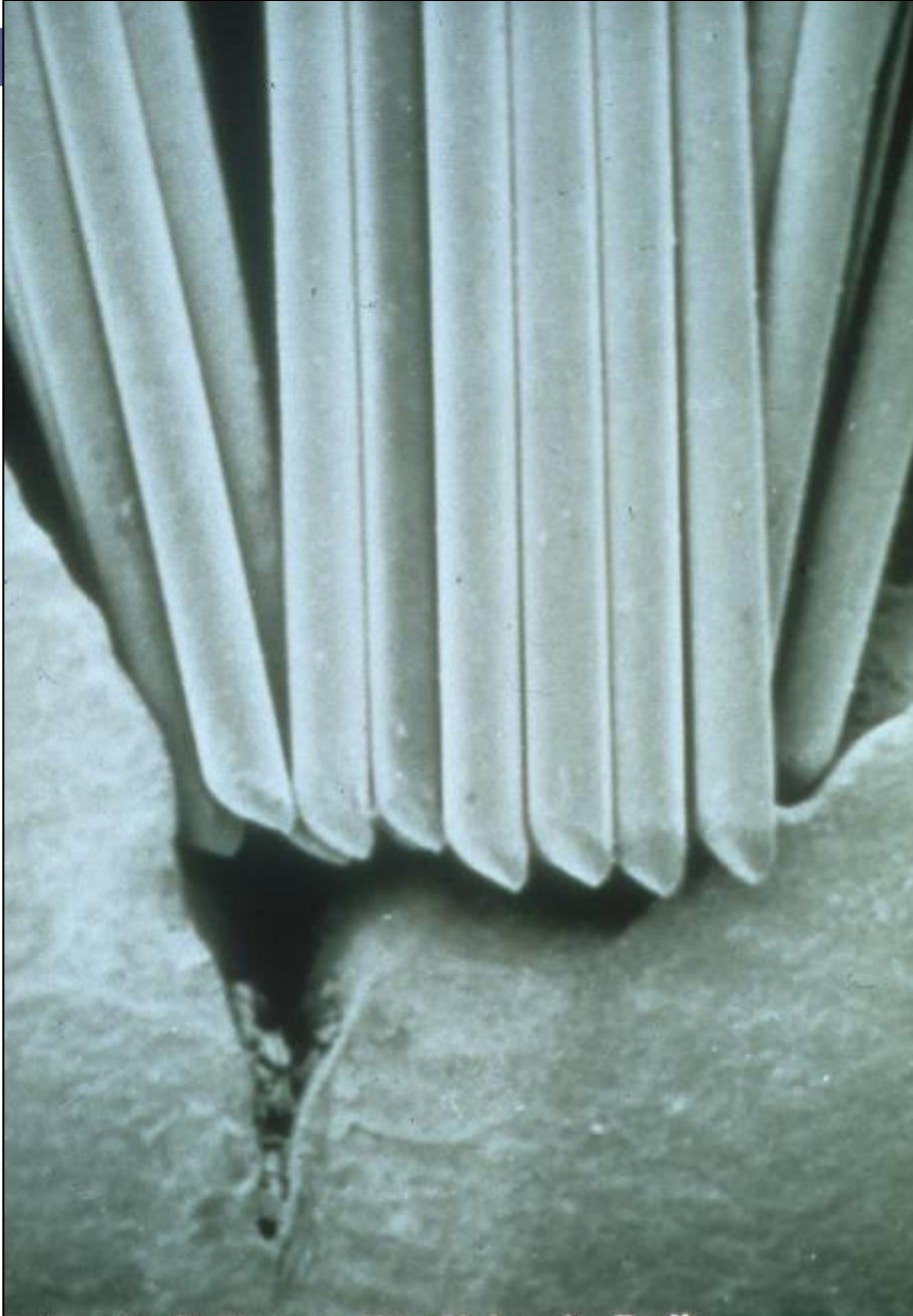


# Indication

1. recently erupted teeth-deep pits and fissures  
free of caries(difficult to clean)
2. teeth of physically handicapped patients-  
motorical difficulties to performe dental  
hygiene
3. adults-reduction of the saliva flow



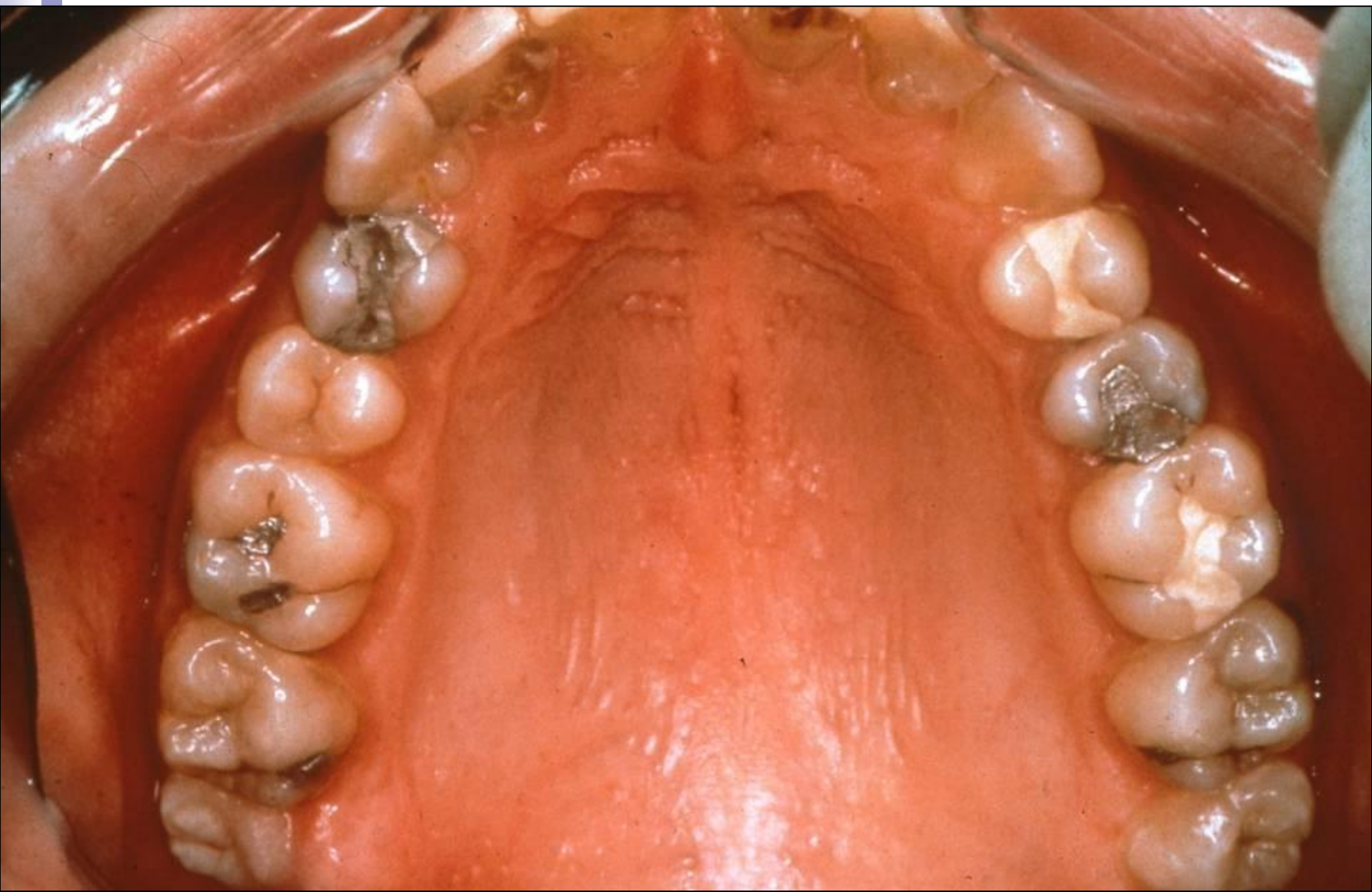




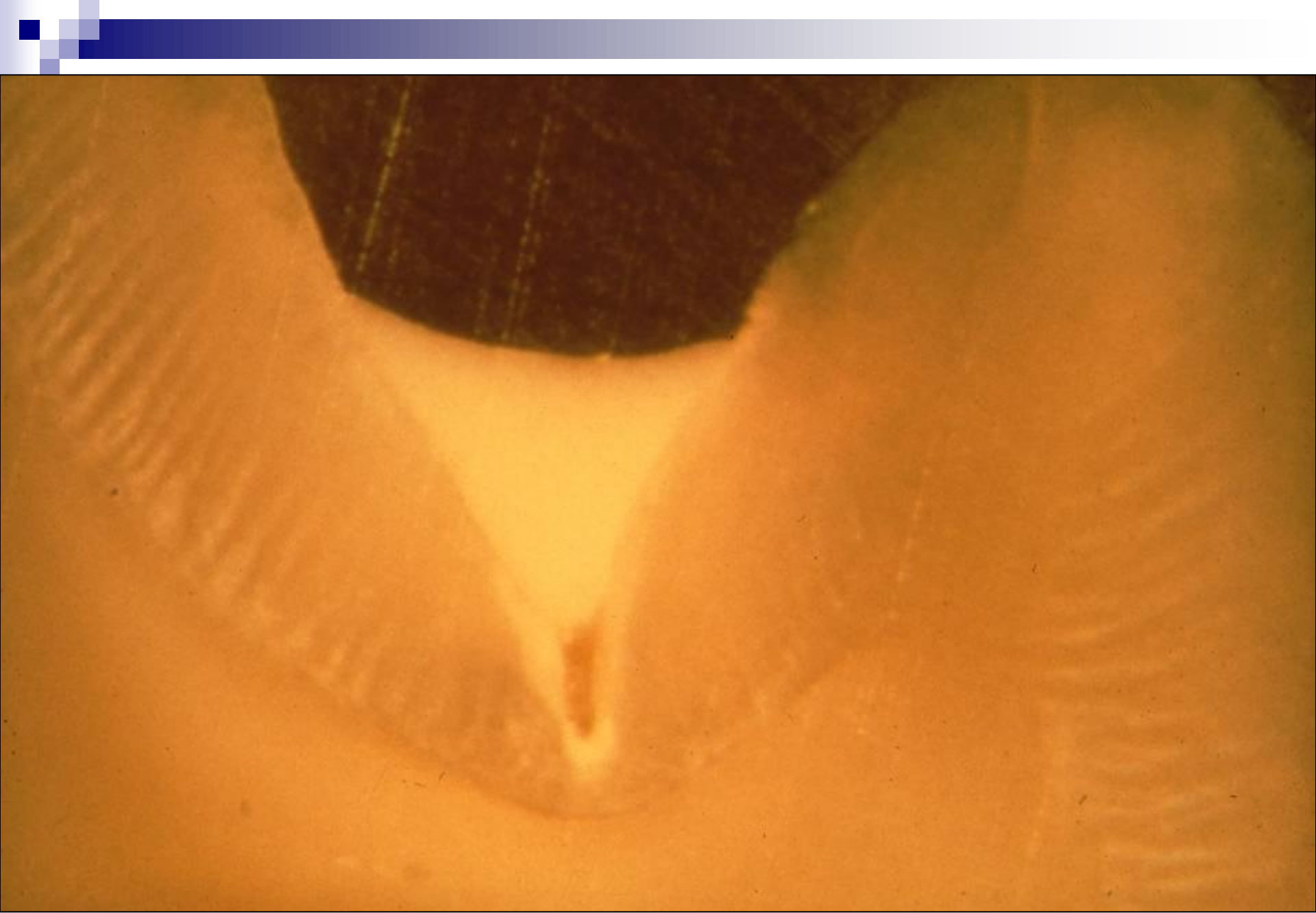
courtesy Dr. S. Zimmer, Free University Berlin

20 0 kll 1mm AMPA

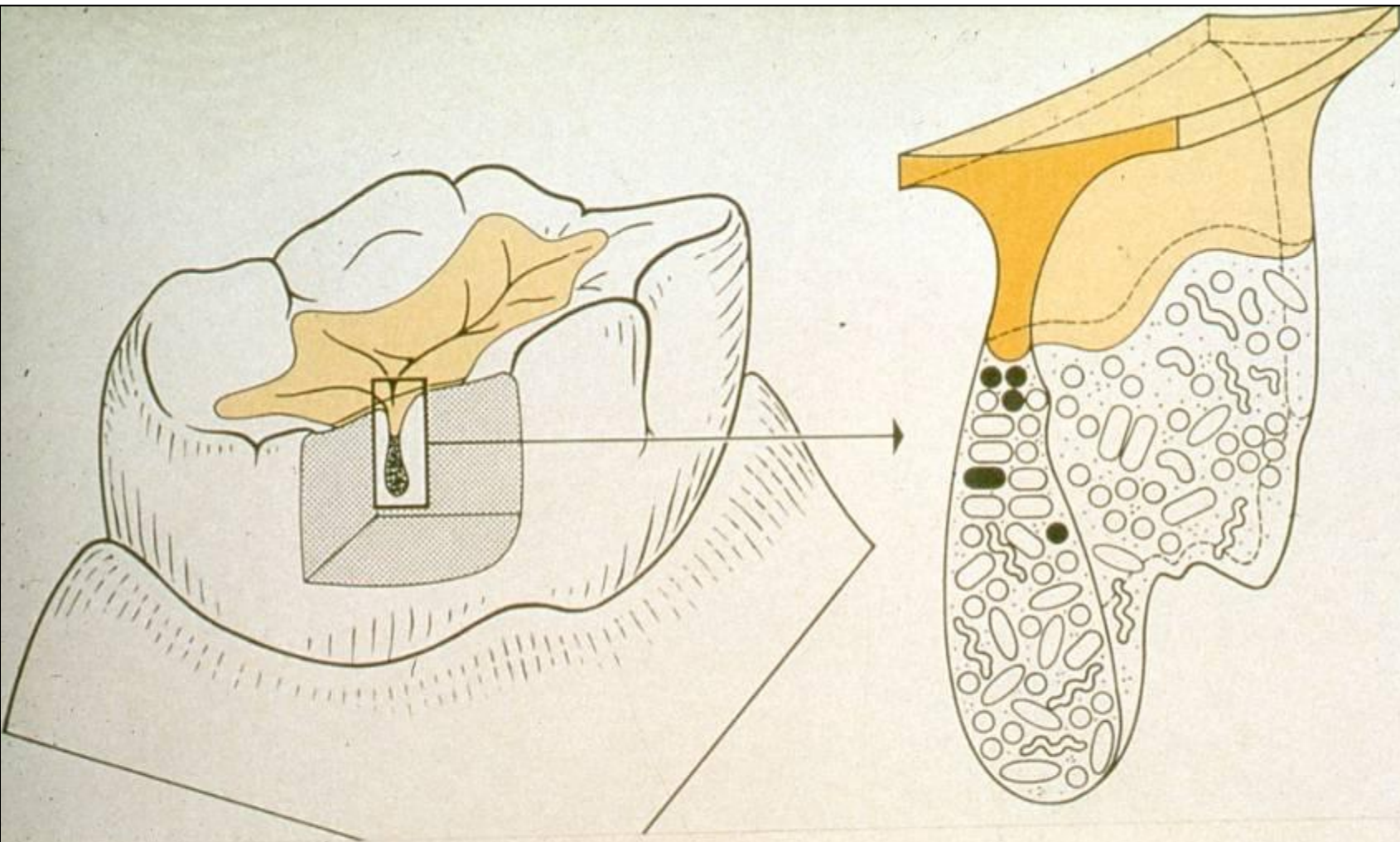






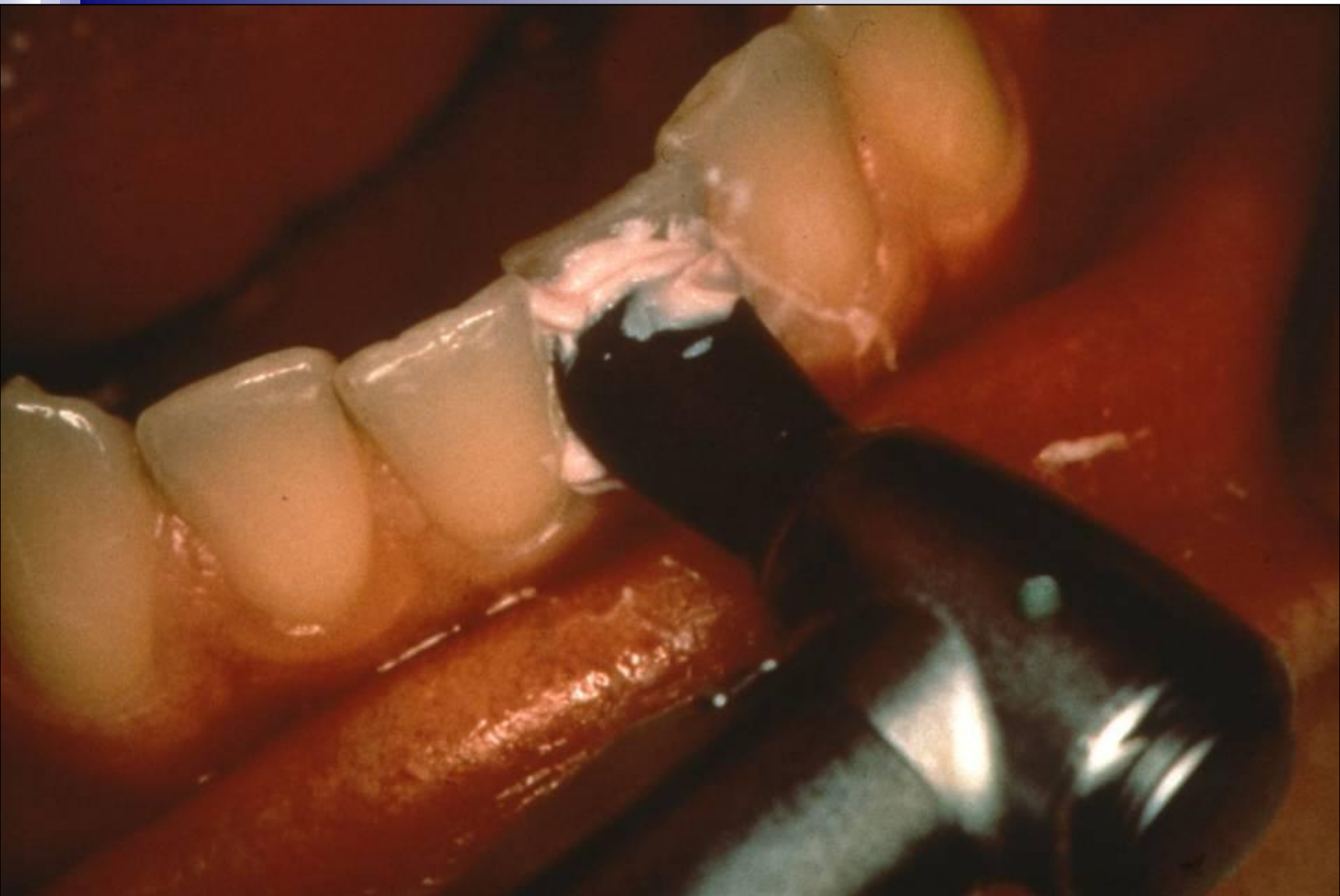


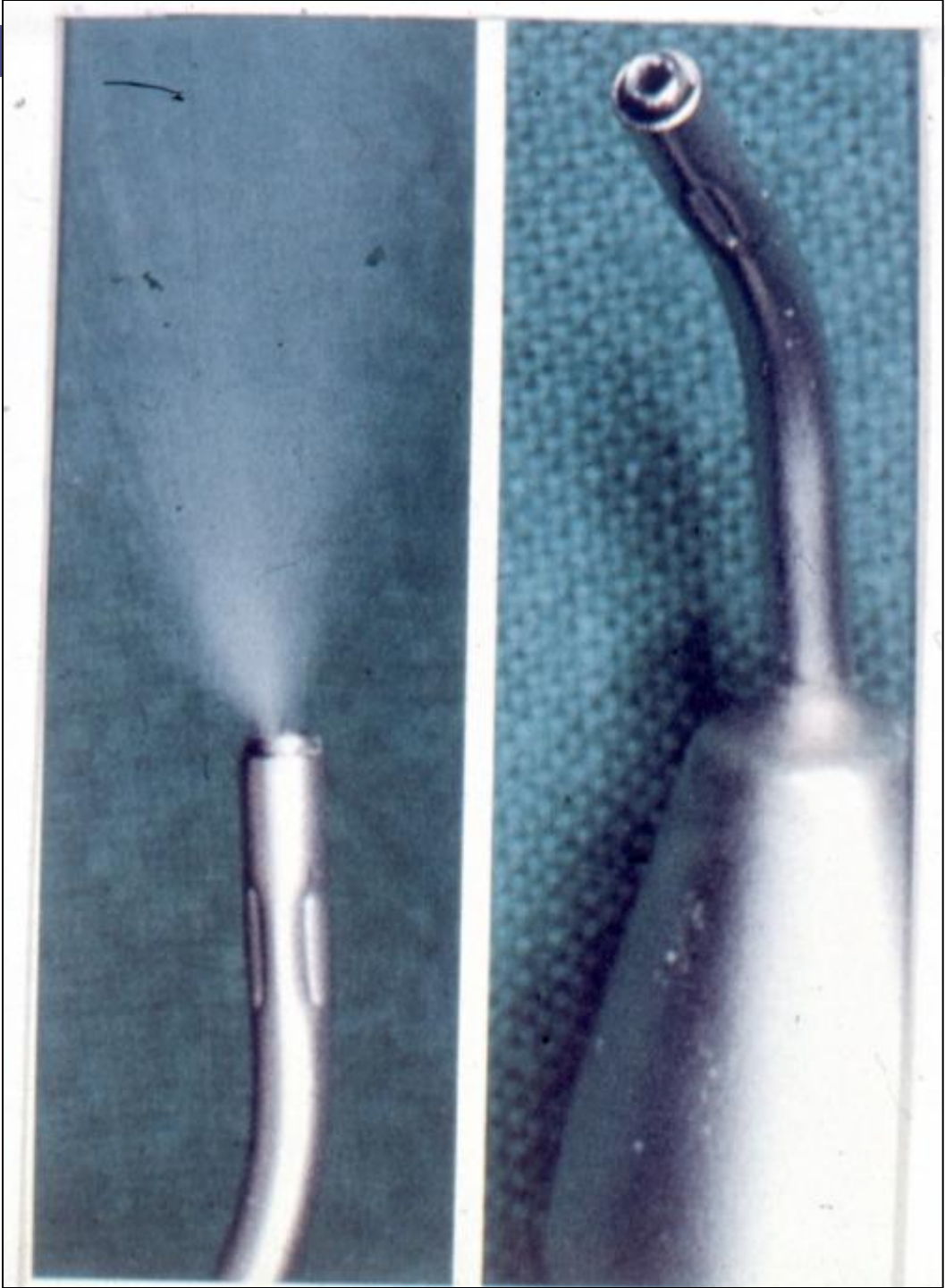




K.-D. Hellwege: Die Praxis der zahnmedizinischen Prophylaxe  
Güthig Verlag Heidelberg, 1991

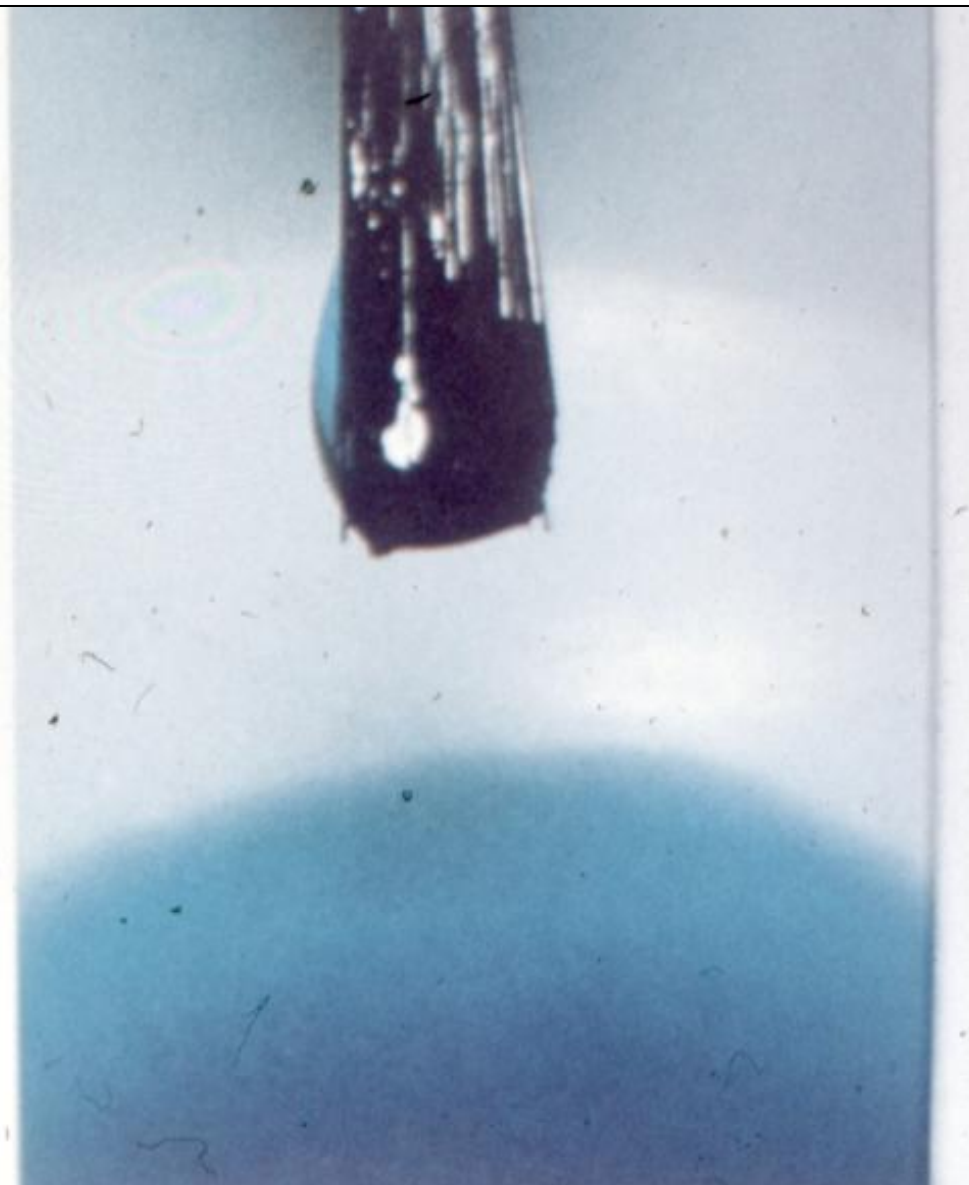


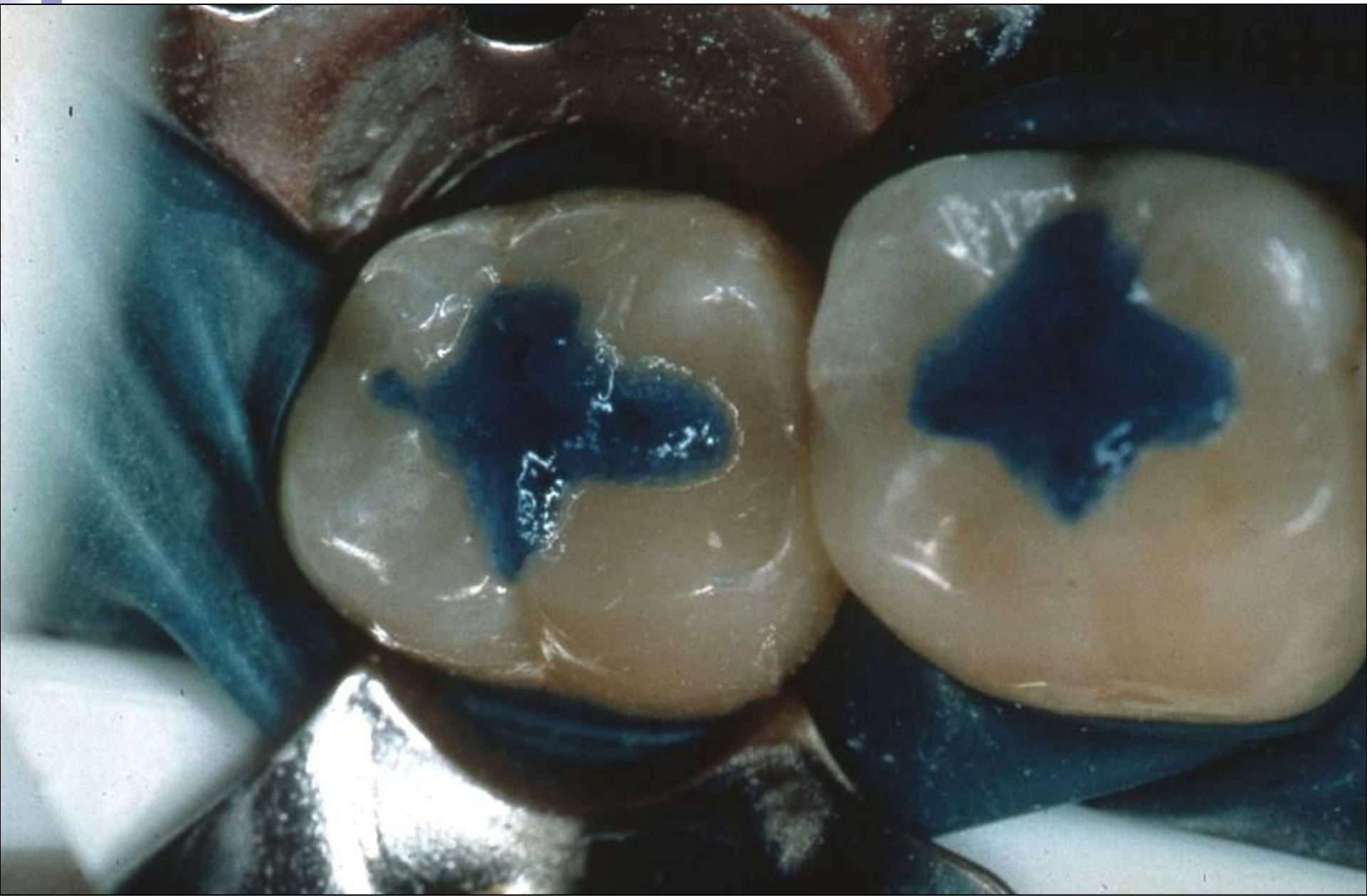


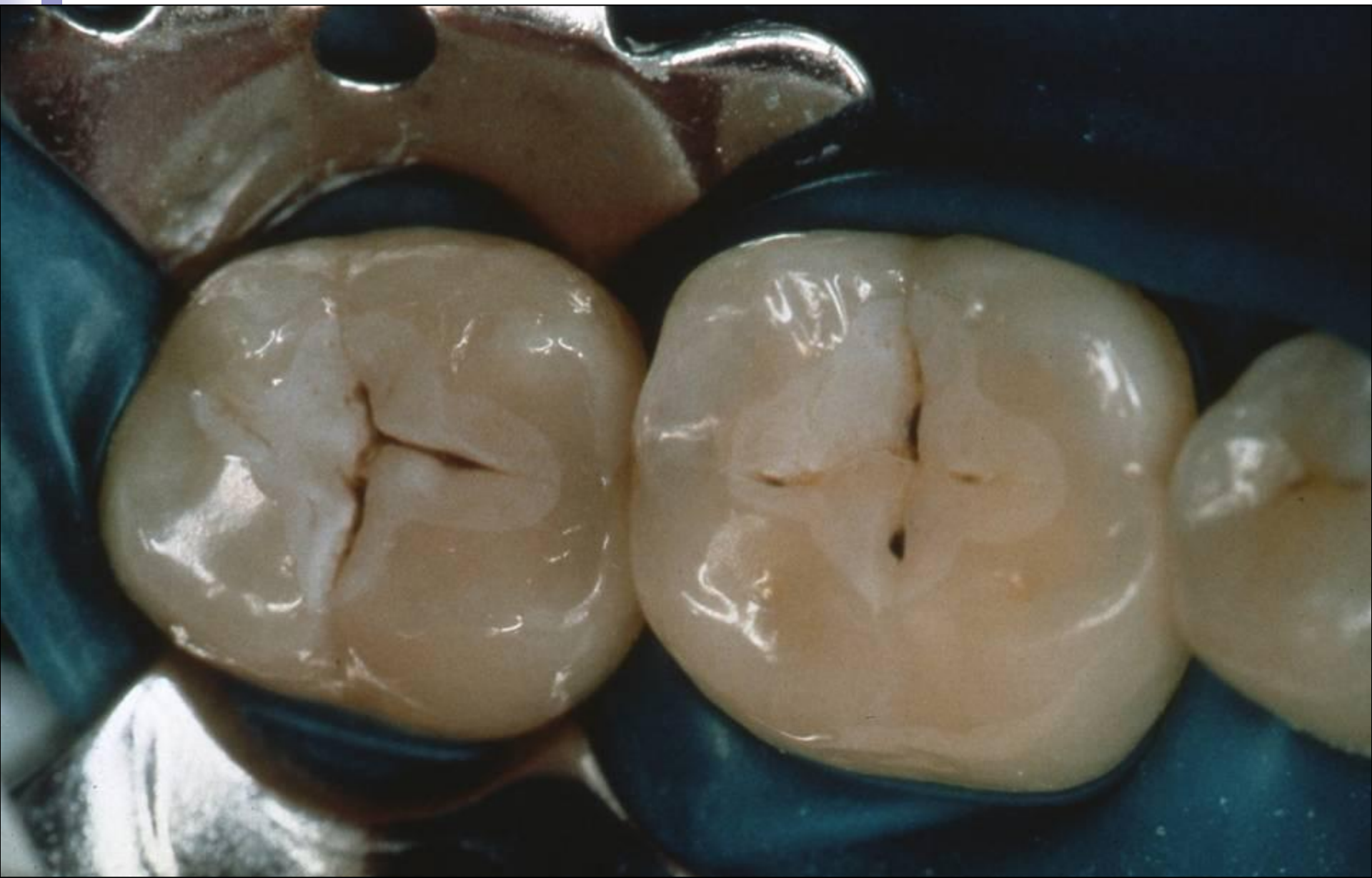


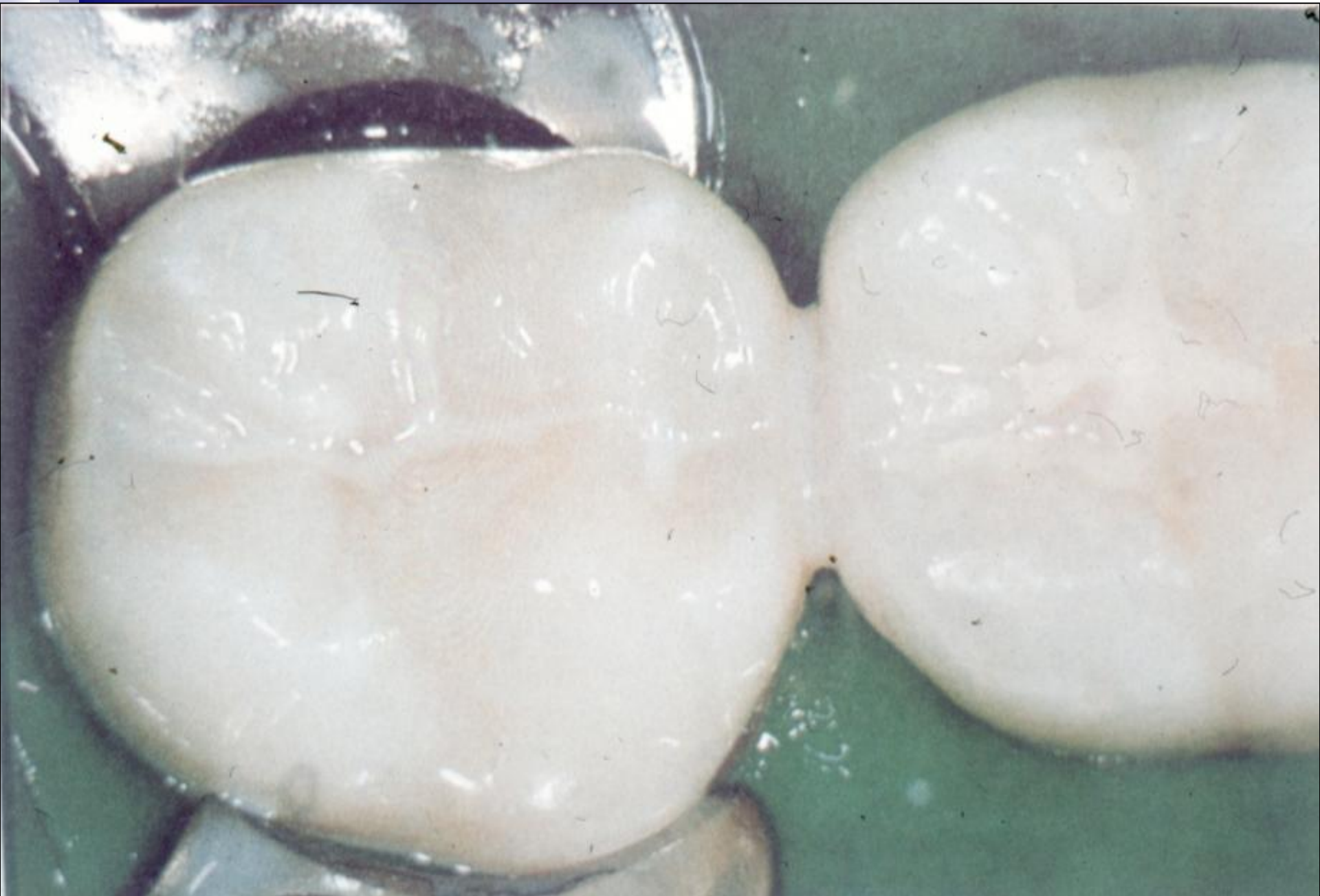




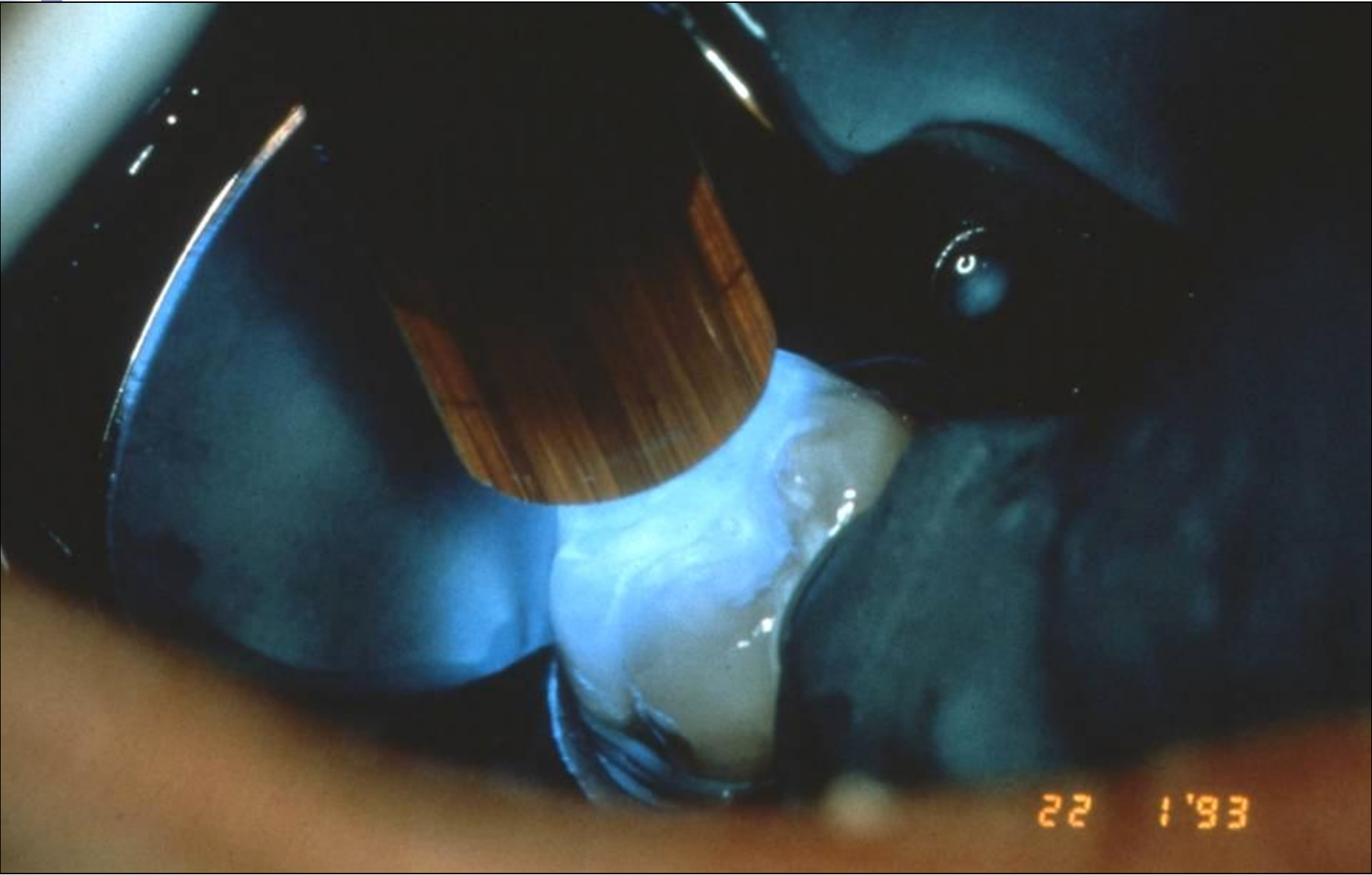










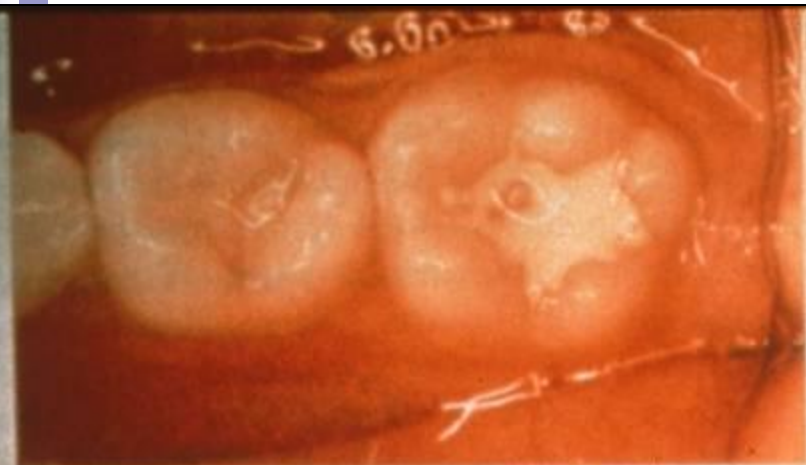


22 1'93

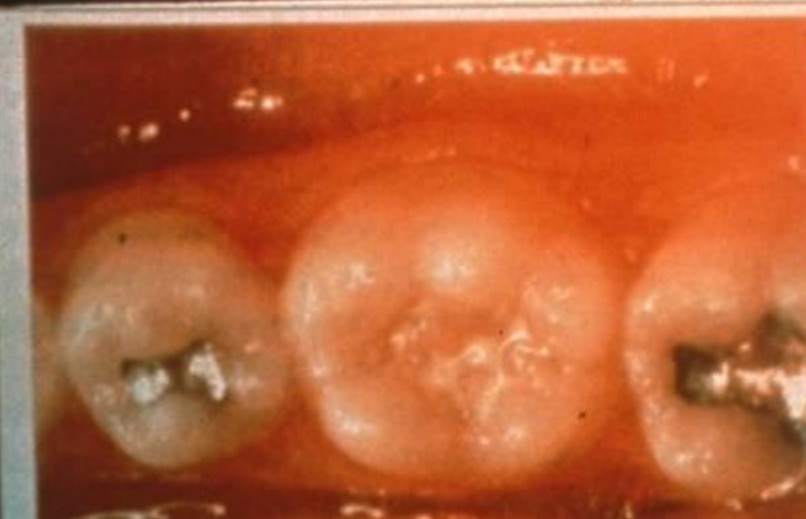




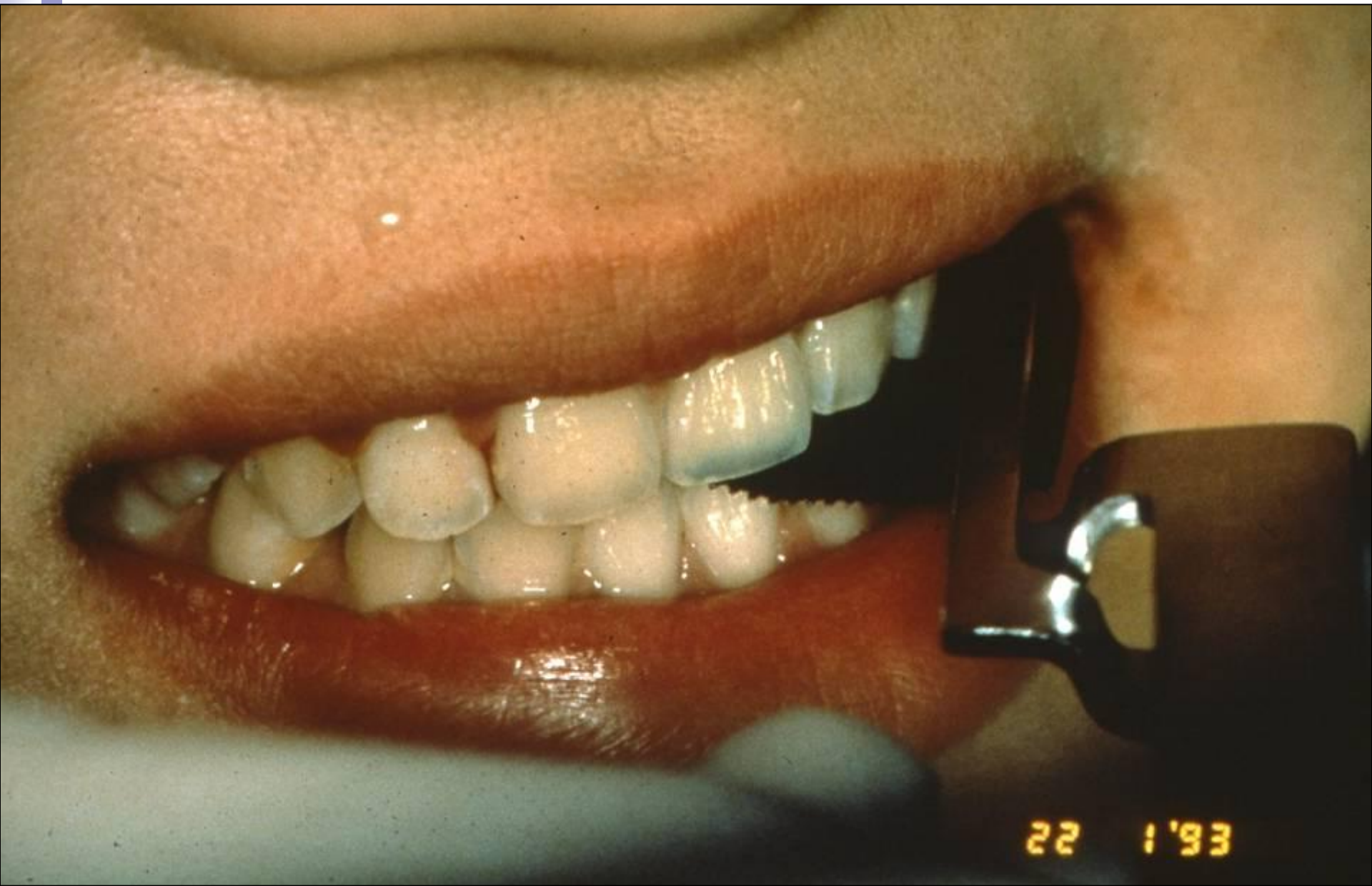




Quelle: R.J. Simonsen: "Cost effectiveness of pit and fissure sealant at 10 years" Quintessence Int. 1989; 20:75-82







22 1'93

# Clinical procedures

1. Isolation
  - cotton rolls,
  - rubber dam
  - suction
2. Cleaning of pits and fissure
  - 3% $H_2O_2$
  - sodium bicarbonate(prophy set)
  - depuration paste-brush
3. Rinsing
  - water, 10"
4. Acid etching
  - phosphoric acid,
  - liquid, gel=60"
5. Rinsing
  - air/water spray
  - 20" (after liquid)
  - 60" (after gel)
6. sealant application
  - according to manufacturer's instructions
  - brush
  - cannula
  - explorer
7. Polymerization
  - light cured
  - self cured
8. Removal of nonpolymerized layer
  - water soaked cotton pelleet
9. Occlusion
  - articulation paper
10. Fluoridation
  - local (topical) application
  - elmex-fluid, protect gel
  - Checking-on 6month's intervals



# Preventive restorations

Glass ionomer

Composite resin

Sealant

Removal of isolated carious sites

Conservation of healthy pits and fissures

Restoration-composite resin

All pits and fissure areas-sealant



# Preventive restoration

## Advantage

1. healthy tissue-preserved
2. possible reduction of marginal leakage
3. prevention of secondary caries in adjacent pits and fissures
4. loss of restoration-easy to replace

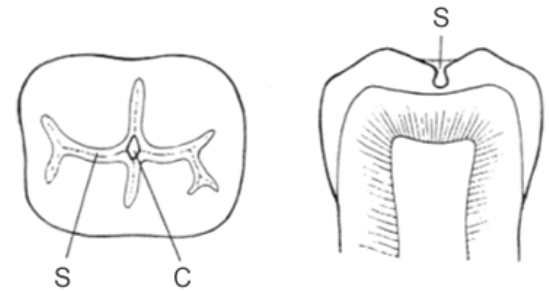
## Disadvantage

1. need for total absence of moisture
2. longer working time
3. longevity-has not yet been determined

# Preventive restoration

## 1. sealant filling

- caries confined to enamel of pit or fissure, only sealant. The technique is used rather exceptionally, D1, D2, and D3 (just below dentino-enamel junction) are treated by prophylactic procedures)



□ sealant    C - cavity

## 2. preventive filling

- caries in pits and fissures, reaching to dentine
- preventive composite filling
- preventive glassionomer filling

### □ **indication:**

- primary molars, premolars, permanent molars
- caries lesion D3 and more
- small caries lesion

### ■ **contraindication:**

- approximal caries on the treated tooth, more extensive caries (more than 1/3 of intercuspatal distance), open approximal defects on any tooth, DMFT/dmft >5,



▨ composite resin  
□ sealant

▨ cement base



# Clinical procedures

1. Isolation
    - cotton rolls-suction,
    - rubber dam
    - suction
  2. Cleaning of pits and fissures
    - 3% $H_2O_2$
    - sodium bicarbonate
    - paste, brush
  3. Caries removal dentin reached
    - round bur
  4. Cleaning of the cavity
    - water
    - polyacrylic acid (25%)  
(dentine exposure)
  5. Base
    - glass ionomer cement
  6. Enamel wall cleaning
    - explorer, probe, diamond bur  
(excess cement)
  7. Etching
    - phosphoric acid  
liquid, gel=60"
  8. Rinsing
    - water spray  
20"-after liquid  
60"-after gels
  9. Composit resin application
    - bond(fluid resin)-air spray
    - composite resin, posterior type
    - sealant
  10. Light curing
  11. Fluoridation
    - local (topical) methods, elmex fluid, protect gel
  12. Occlusion  
Removal of excess material
    - scaler, dental floss
- } whole ensemble

