



# Black class I. and II. composite fillings Dental matrix systems and its use

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# Black Class I.

- ▶ definition
- ▶ extended fissure sealing



# Black Class II

▶ definition

▶ MO/OD/MOD

# Limits of the use of composites

Not indicated:

- ▶ problems with isolation
- ▶ full contact with opposite tooth
- ▶ bruxism



# Usual Steps of an Composite Restoration

- ▶ Medical history, diagnosis, (X-ray.) Anesthesia
- ▶ **Shade selection**
- ▶ Cavity preparation
- ▶ Isolation
- ▶ **Adhesive technique**
- ▶ **Inserting and curing the composite**
- ▶ Contouring and polishing the composite



# Shade selection

- ▶ Drying and dehydration of the tooth
- ▶ Isolation (before-, color)
  
- ▶ Applying and curing a small amount of the composite



# Adhesive technique



# Inserting and curing the composite

- ▶ Class I.
- ▶ Class II.



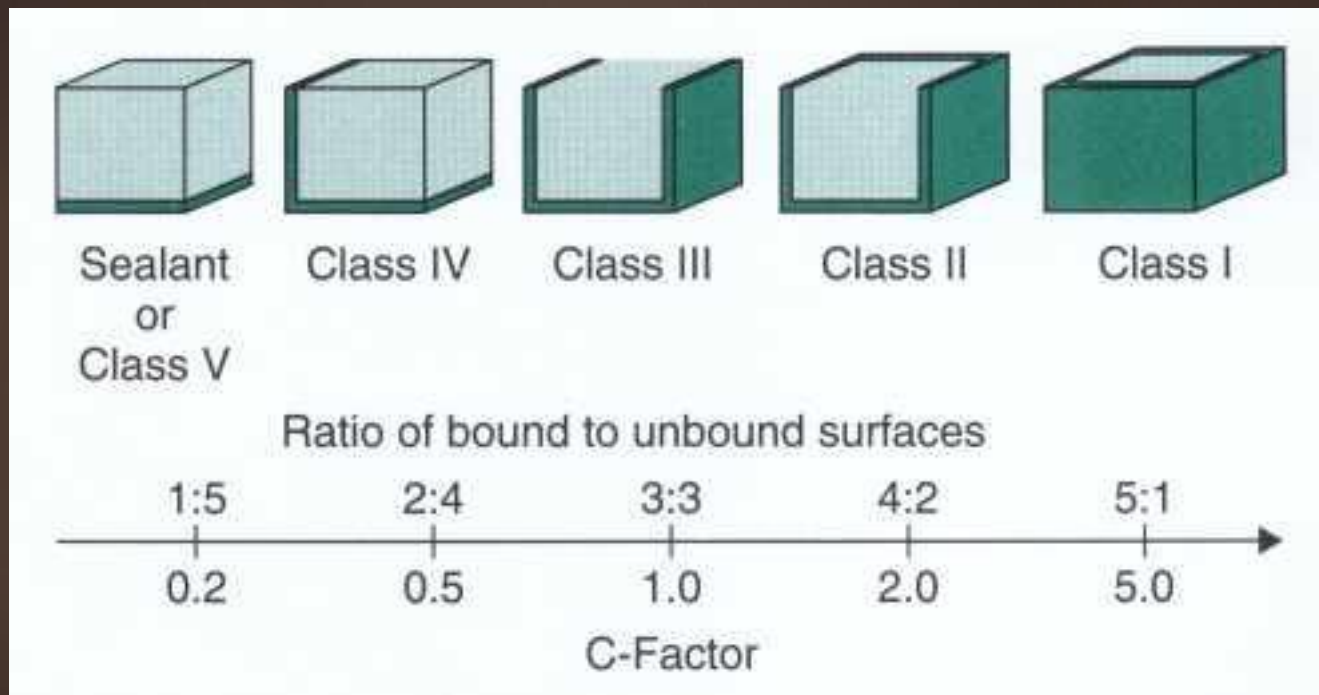


# Disadvantages of the composite

- ▶ Polymerization shrinkage
- ▶ Higher thermal expansion coefficient
- ▶ No adhesion or chemical bond
  
- ▶ Solution - adhesive technique

# C-factor (configuration-factor)

- ▶ The ratio of bound-to-unbound surface areas



# Methods of reducing the polymerization shrinkage

- ▶ Further development of the composite
- ▶ Incremental filling technique
- ▶ Direction of the curing light
- ▶ Method of the curing



# Incremental filling technique

- ▶ Horizontal – occlusogingival layering when cavity < 1/3 width of the tooth
- ▶ Oblique layering
- ▶ Faciolingual layering
- ▶ Bulk-fill
- ▶ Bio-mimetic
- ▶ Horizontal-split technique
- ▶ Centripetal technique

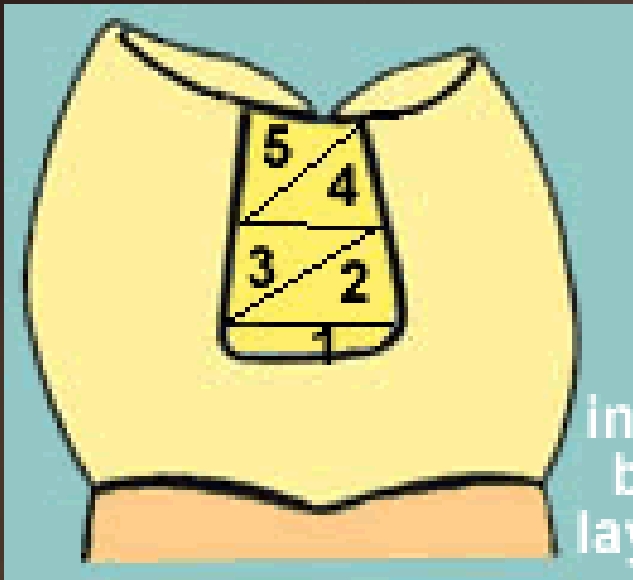


# Increment technic

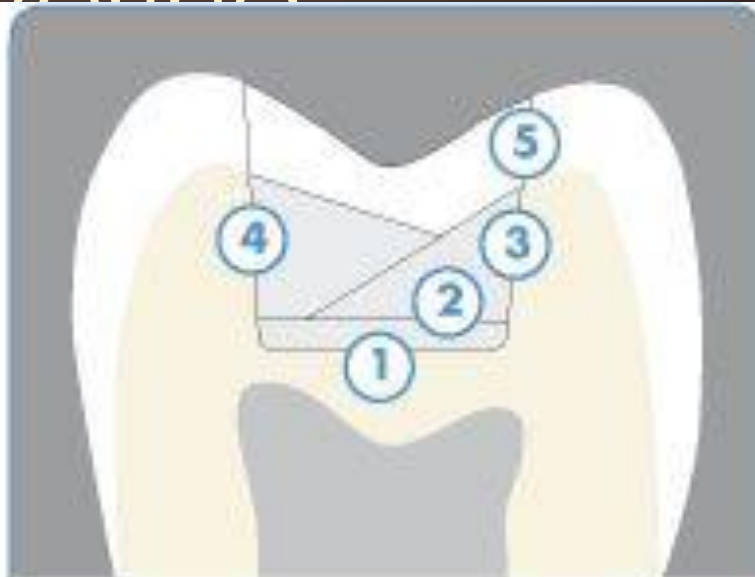
- occlusogingival layering

- ▶ Wide cavity – fracture

# Increment technic - oblique layering



in  
b  
lay



## Conventional layering procedure

- ① Application of Adhesive
- ② Flowable Liner
- ③ Increment 1: Universal Composite
- ④ Increment 2: Universal Composite
- ⑤ Increment 3: Universal Composite



Cal View

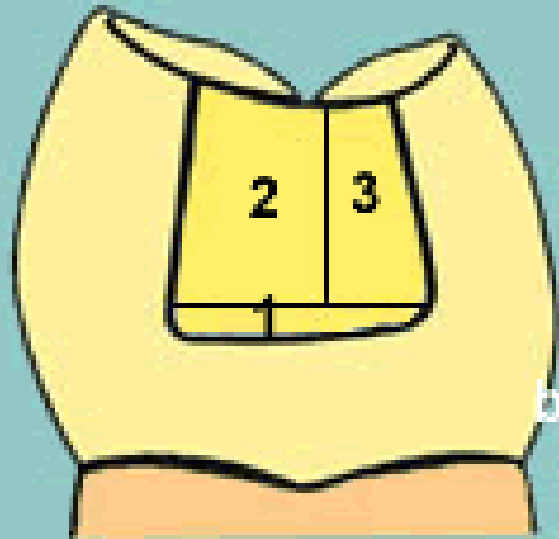


# Increment technic

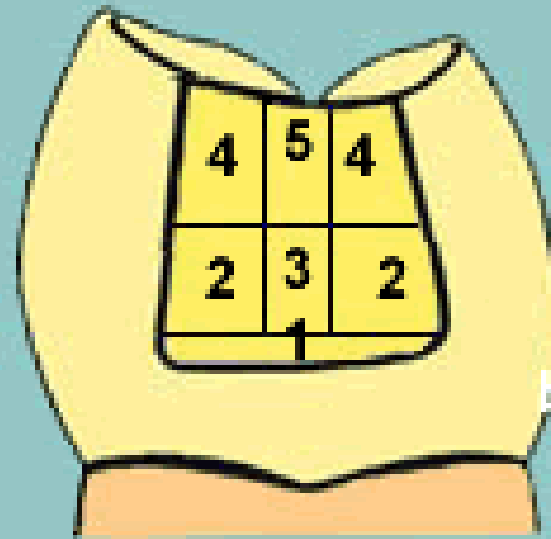
- use of flow composite

- ▶ Better marginal seal
- ▶ „Stress-breaker” function

# Increment technic - faciolingual layering



bucco-lingual  
build-up of  
layers 2 to 3



bucco-lingual  
build-up of  
layers 2 to 5



# Increment technic - bulk-fill

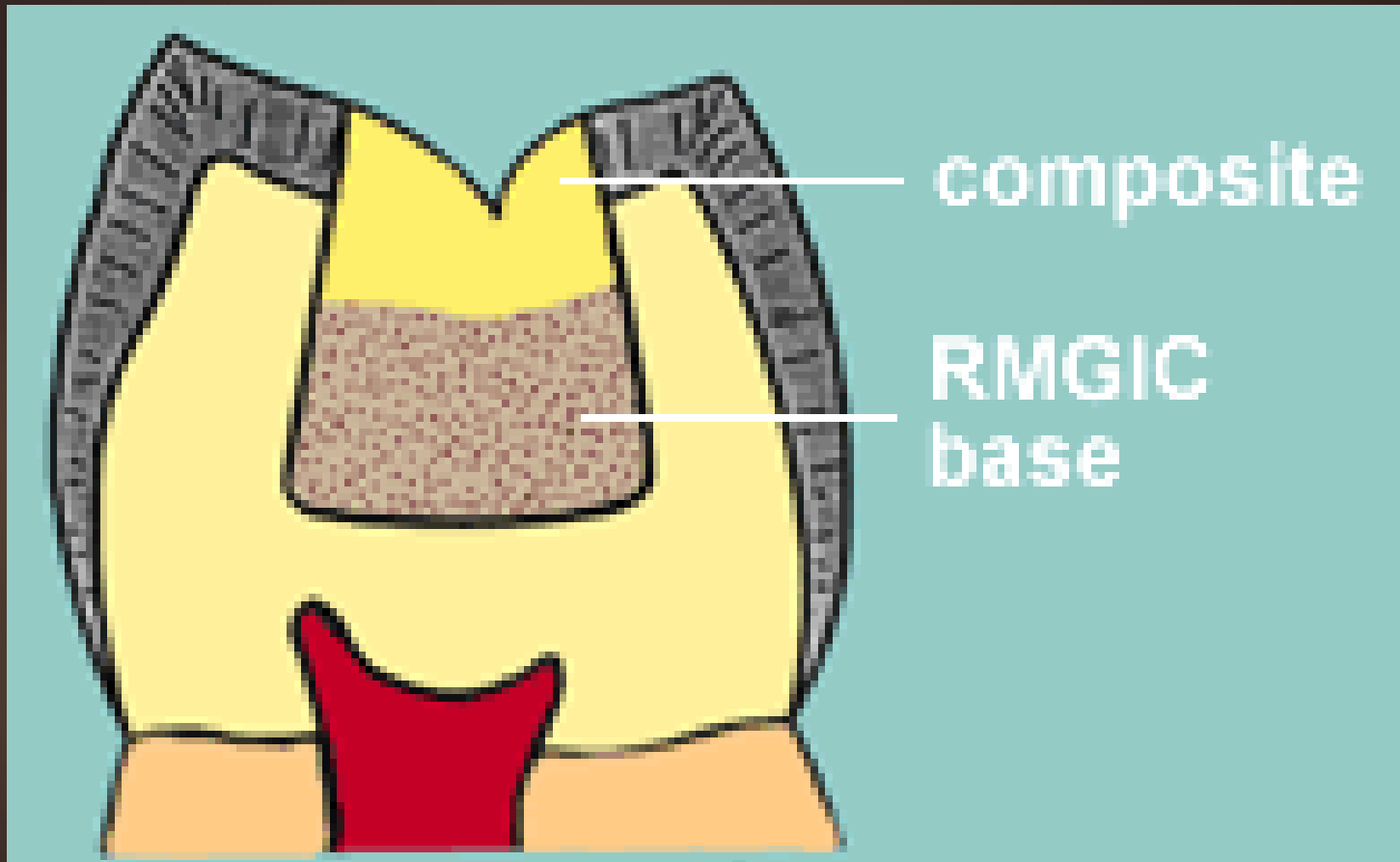


**SDR™**  
Smart Dentin Replacement

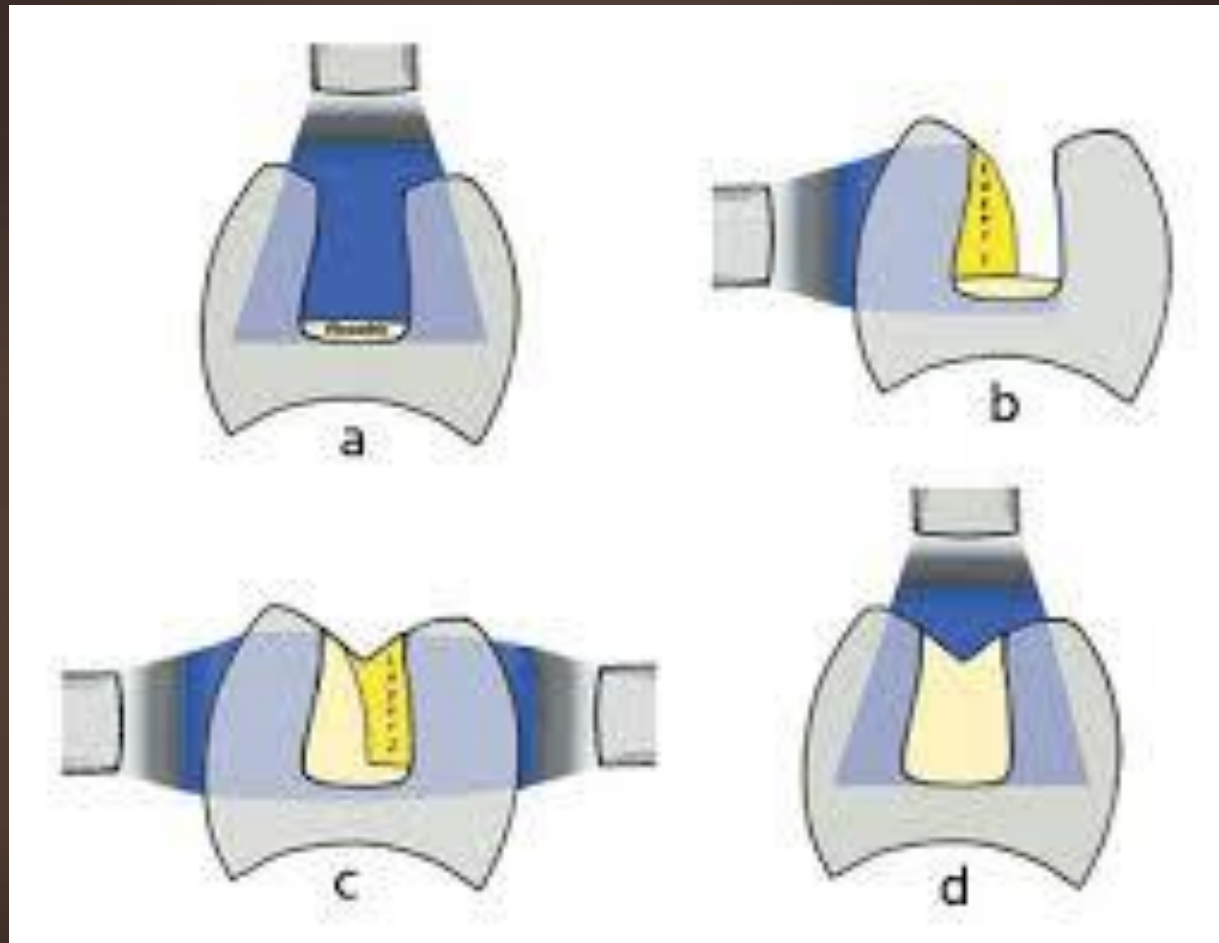
For better dentistry  
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# Increment technic - bio-mimetic

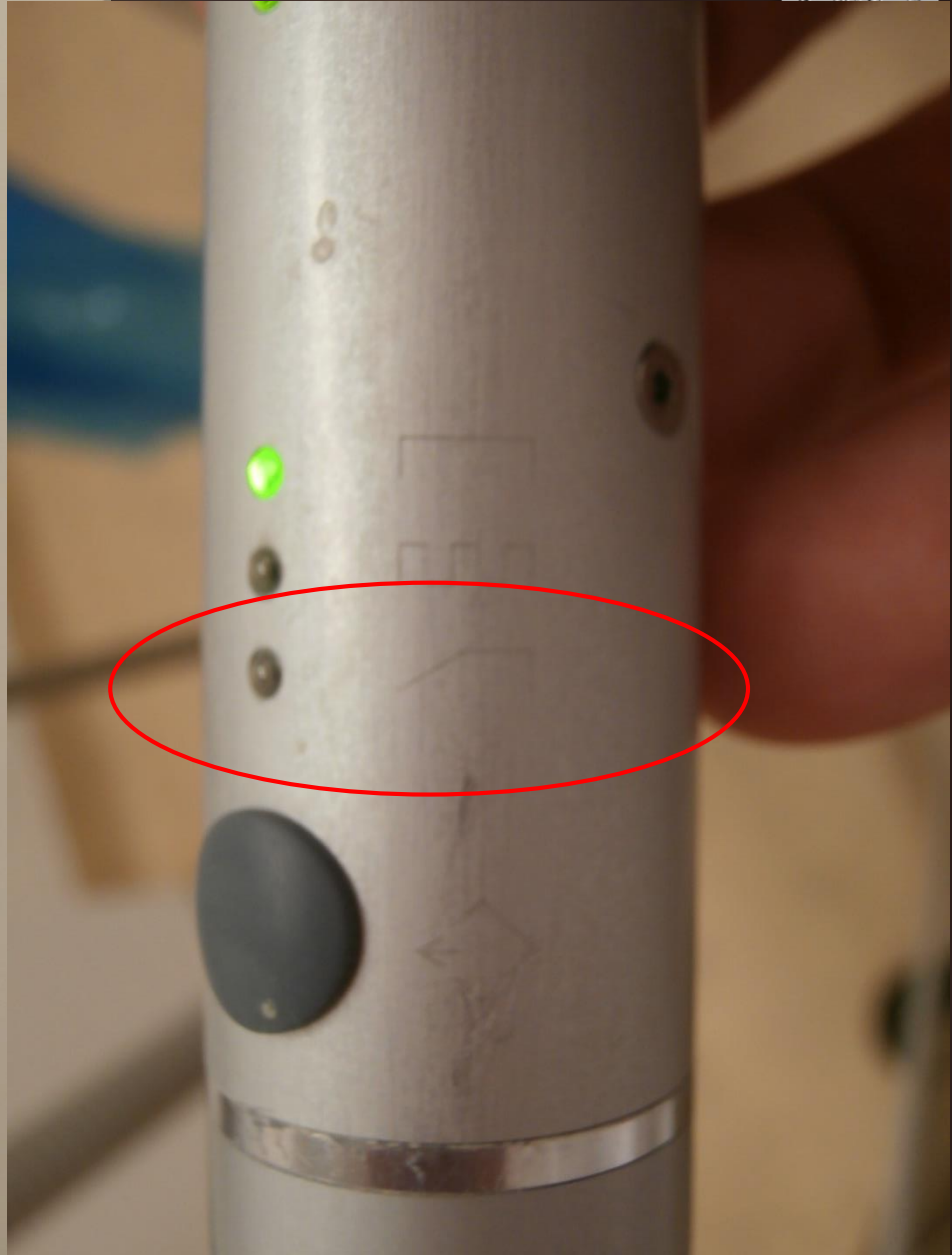


# Direction of the curing light



# Method of the curing

- ▶ „Soft start” polymerization
- ▶ As near as possible
- ▶ Metal matrix can inhibit
- ▶ Diameter of the light guide
- ▶ Cleanness of the light guide





# Method of the curing

- ▶ „Soft start” polymerization
- ▶ As near as possible
- ▶ Metal matrix can inhibit the effect
- ▶ Diameter of the light guide
- ▶ Cleanness of the light guide



# Black Class II. composite fillings







# When are the matrix systems necessary?

## ▶ Preparation

- ▶ to protect the neighboring tooth

## ▶ Plastic fillings

- ▶ to shape (proximal contact)
  - ▶ for replacement of missing wall(s)
- ## ▶ during the cementation of inlays/onlays

# Expectations - use of matrix system

- ▶ No gap, good seal
- ▶ Proximal contact
- ▶ Higher than the tooth
- ▶ Well fixed
- ▶ Easily removable
- ▶ Transparent
- ▶ Impermeable

# Matrix is usable when...

- ▶ There are some place between the teeth
- ▶ If not, we make
  - ▶ Horico strip
  - ▶ Fast-separation (wedge)





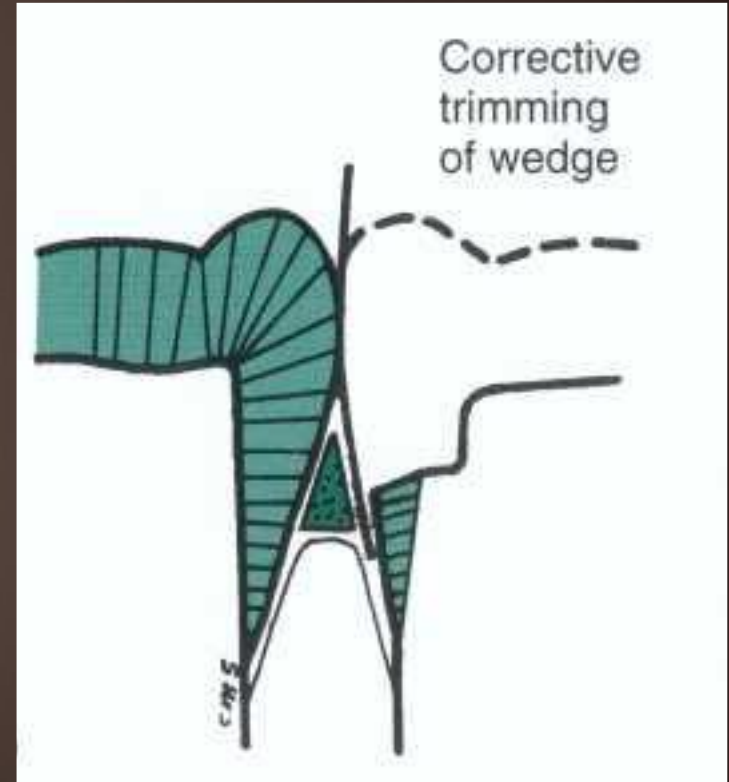
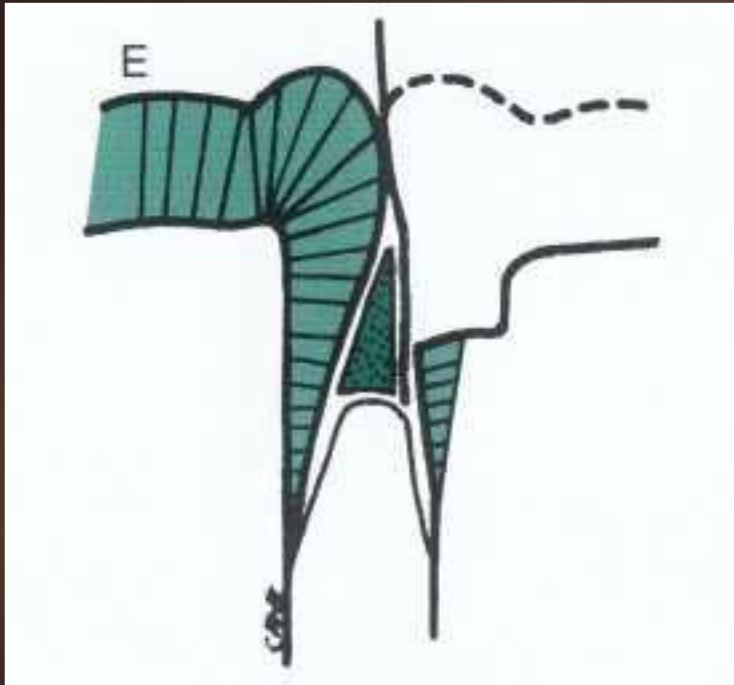
We use the matrix strip  
(fast every time) with a wedge



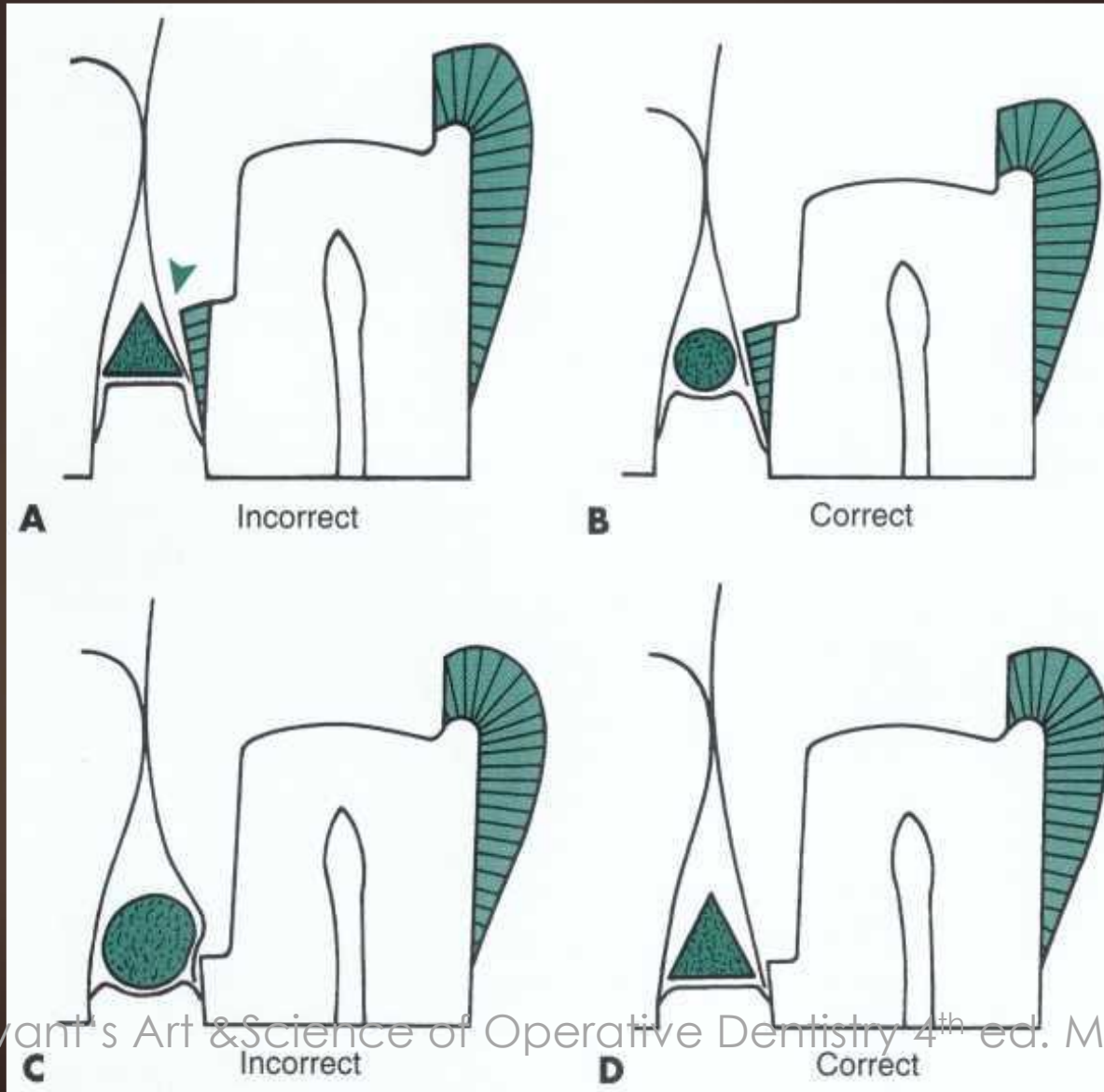
# Use of the wedge

- ▶ To put the matrix strip to the tooth
- ▶ To fix the matrix strip
- ▶ Separation
- ▶ (Bleeding control)
- ▶ To protect the interdental papilla
- ▶ Light transmitting wedge - polymerization

# The use of the wedge

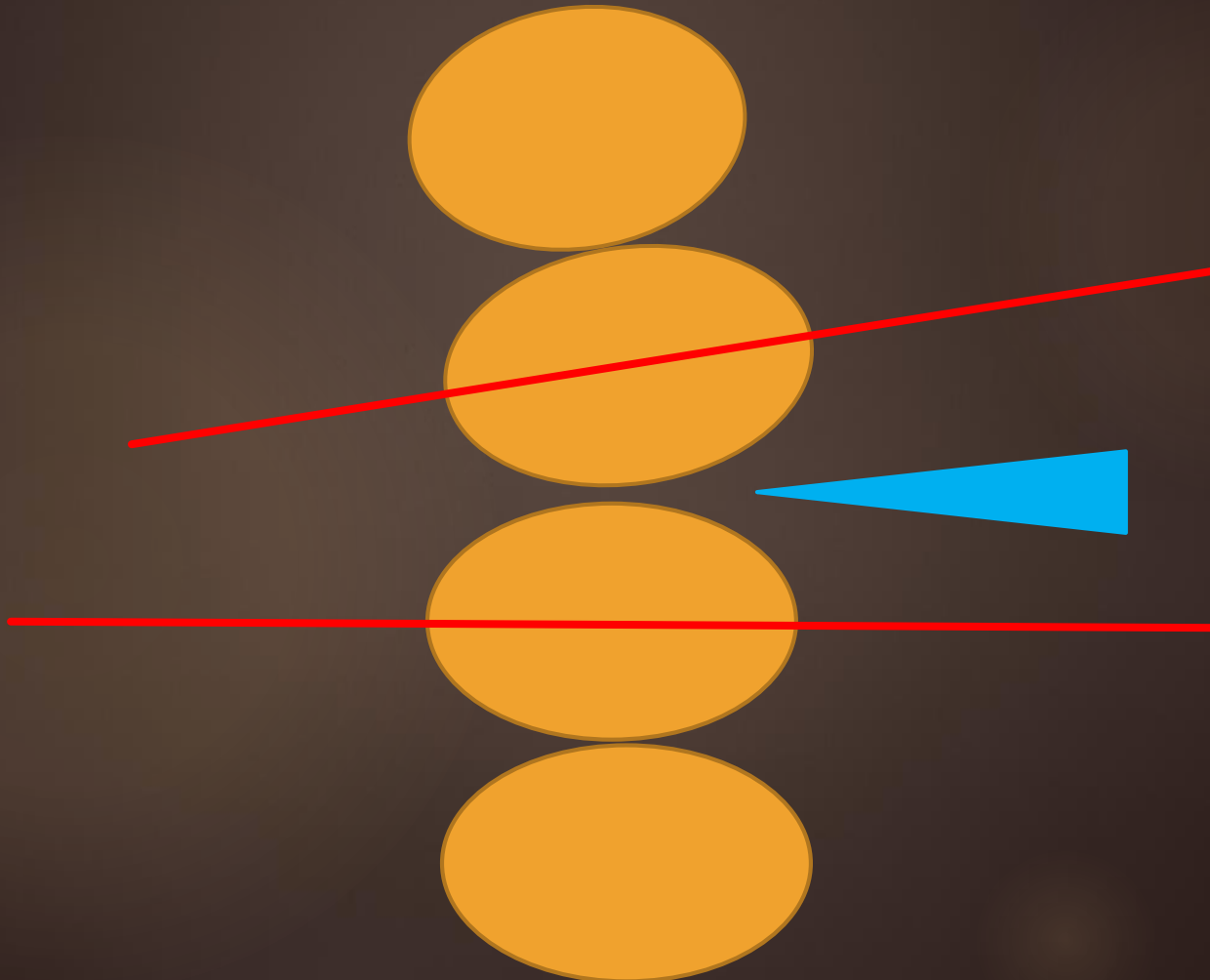


# The use of the wedge





# The use of the wedge



# Wedges

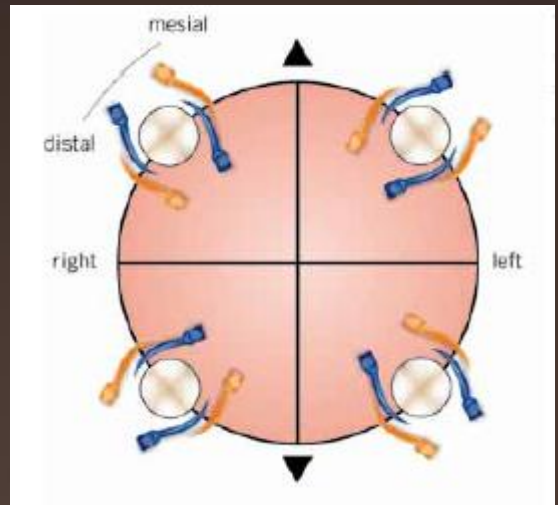
## ▶ Wooden



# Wedges

## ▶ Plastic

- ▶ Formed
- ▶ Curved (Curvy, VoCo)
- ▶ V-shaped
- ▶ Light transmitting



# During preparation

- ▶ Common metal matrix
- ▶ Special product
  - ▶ „Matrix”
  - ▶ Wedge



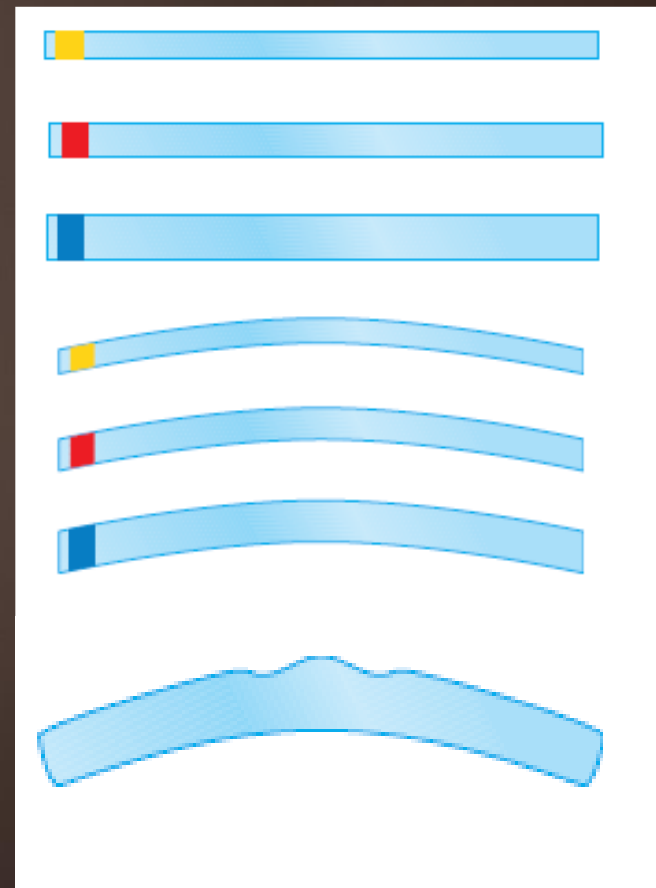


# Plastic fillings

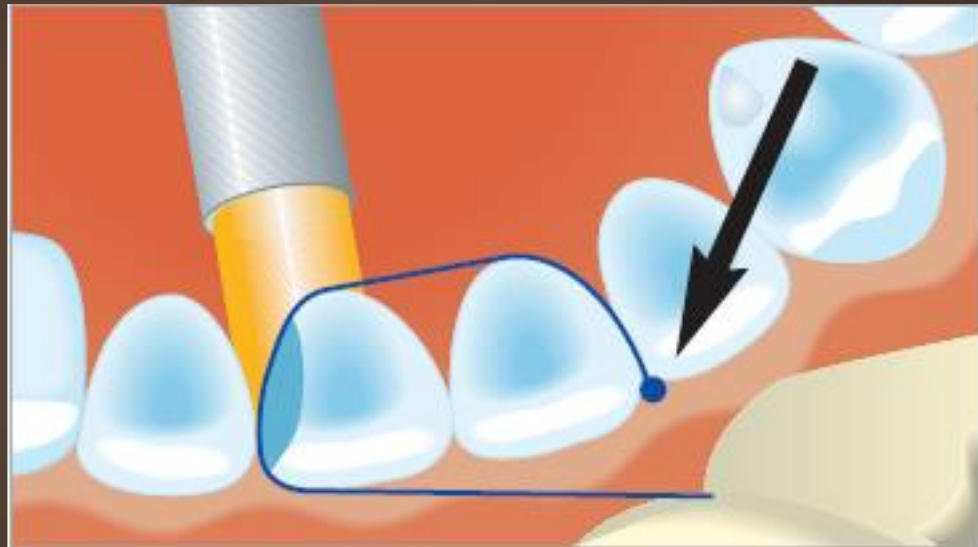
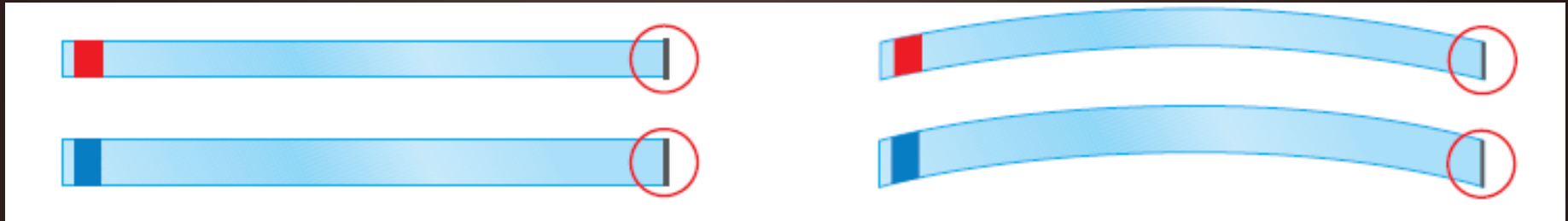
- ▶ Black Class III. and IV.
- ▶ Root surface fillings
- ▶ Black Class II.

# Front-teeth - Black Class III.

- ▶ Transparent matrix – polyester strip



# Hawe Stopsrip



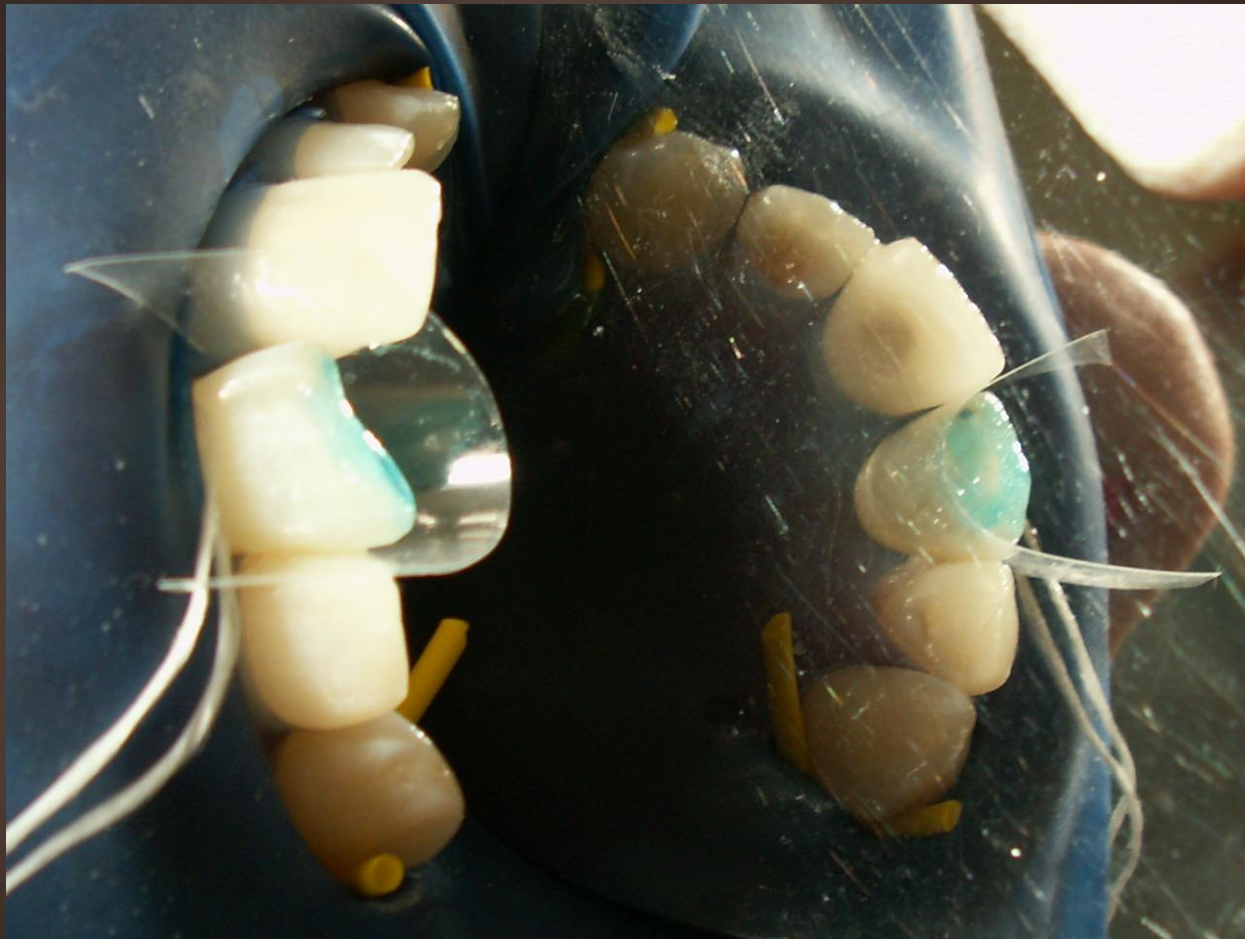


# Front-teeth Black Class IV.

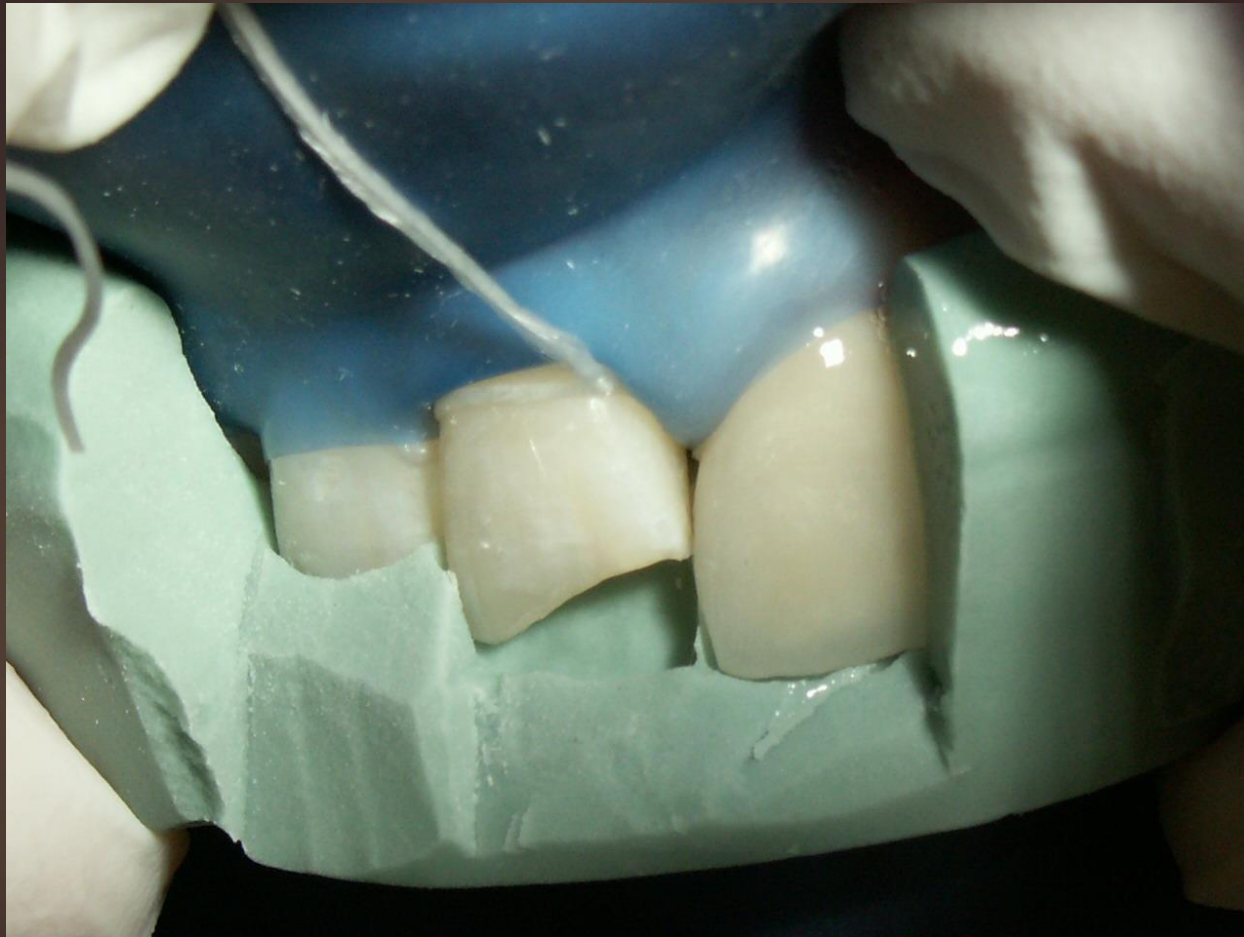
- ▶ Polyester strip
- ▶ Silicone key



# Use in U-shape (from Tuza E.)

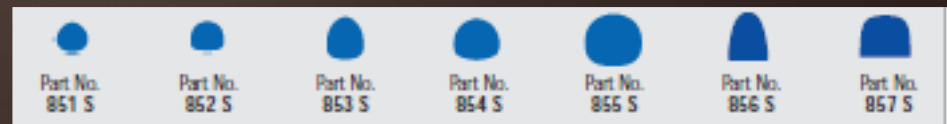
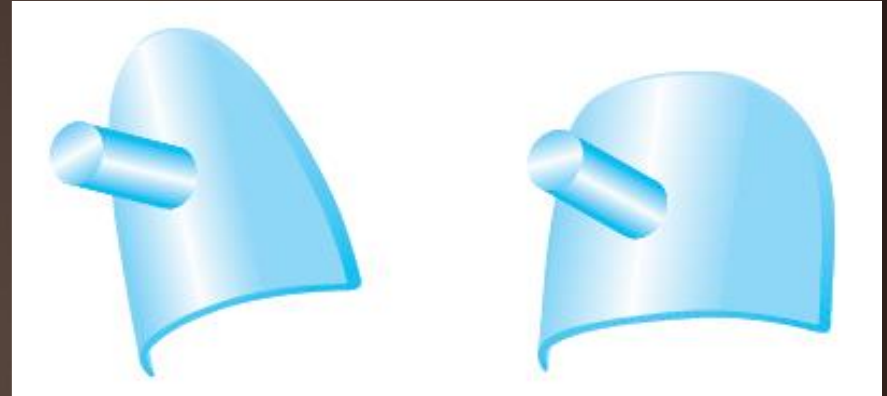


# Silicone key (from Tuza E.)



# Cervical fillings – cervical matrix

- ▶ Composite
- ▶ GIC



# Cervical fillings

 triodent  
**360**<sup>o</sup>  
cervical matrix





# Black Class II.

- ▶ Dental amalgam – metal matrix
- ▶ Composite –metal- or plastic matrix



Matrix + matrix retainer or holder together (wedged)



# Amalgam filling

- ▶ Dental amalgam is condensable - tight proximal contact

# MO or OD cavity

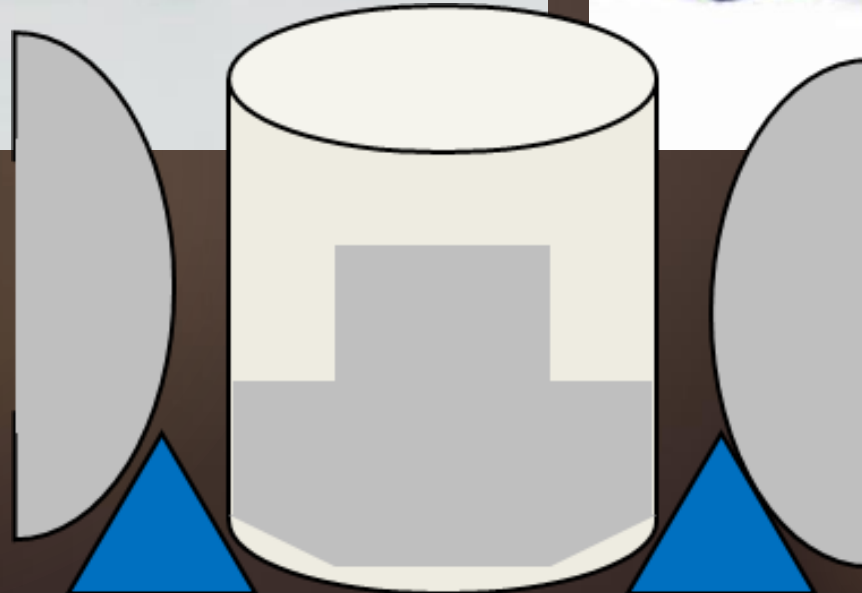
- ▶ Ivory matrix retainer + matrix band





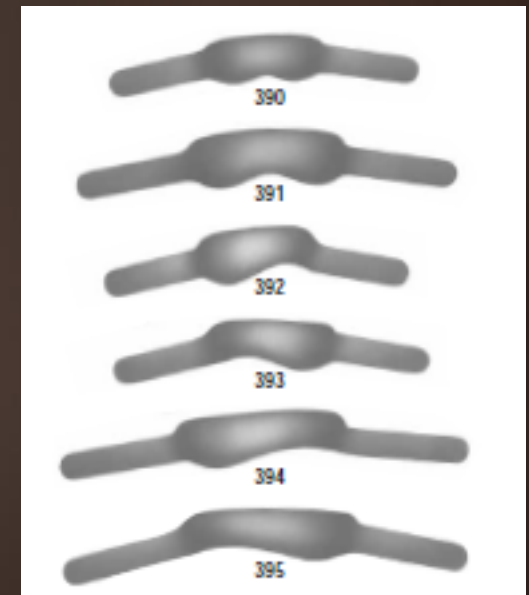
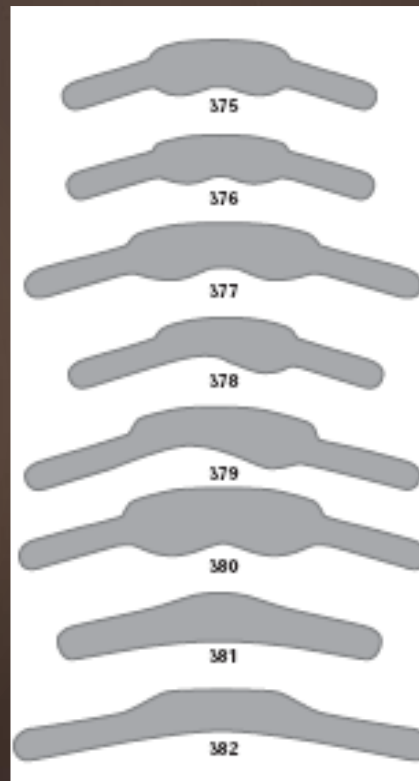
# MOD cavity

- ▶ Conventional matrix retainer – with matrix band



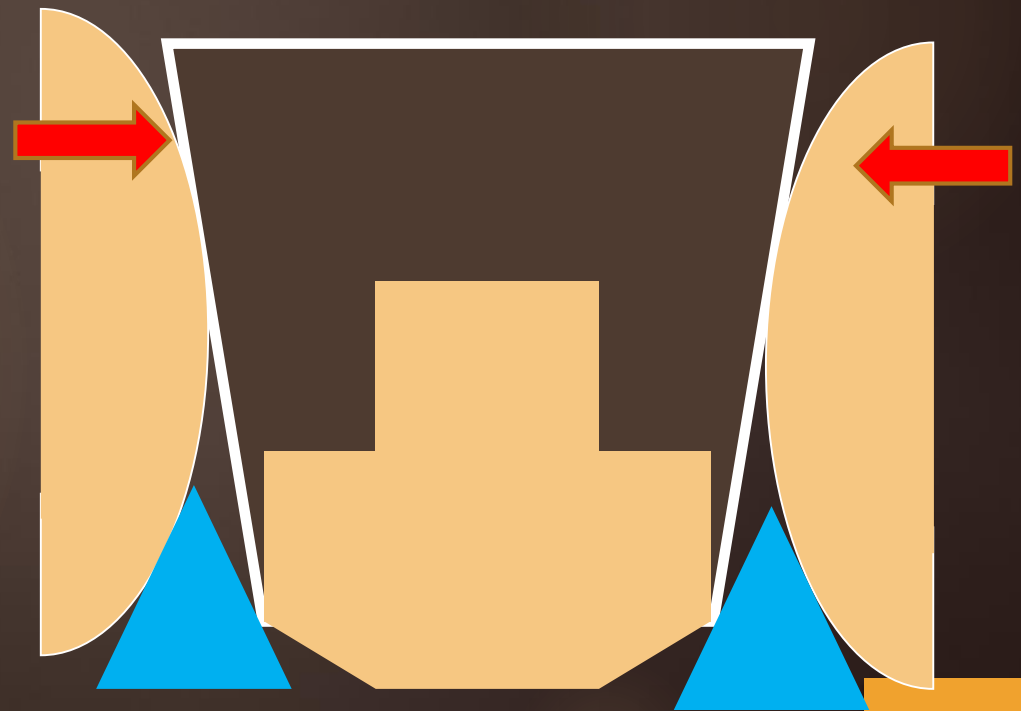
# MOD cavity

- ▶ Tofflemire matrix retainer with Tofflemire matrix band



# MOD cavity

- ▶ Tofflemire matrix retainer with Tofflemire matrix band



# Conic matrix band – disadvantageous form

- ▶ During finishing proximal contact disappeared
- ▶ Fracture of filling

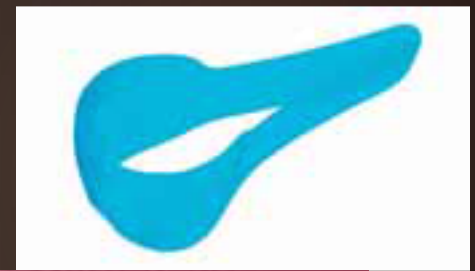




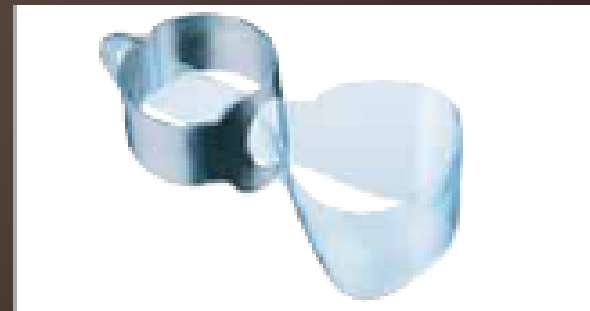
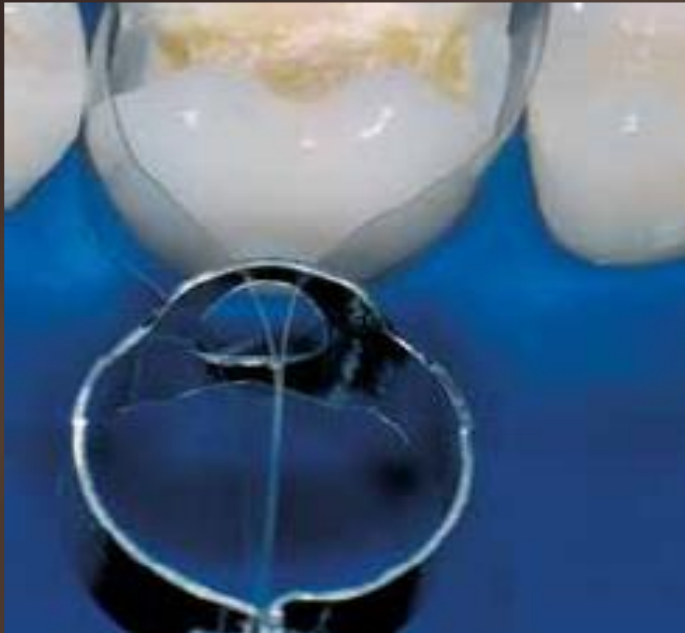
# Composite filling

- ▶ It could be difficult to achieve a tight proximal contact

# Tofflemire matrix retainer with plastic matrix band



# Lucifix (KerrHawe)



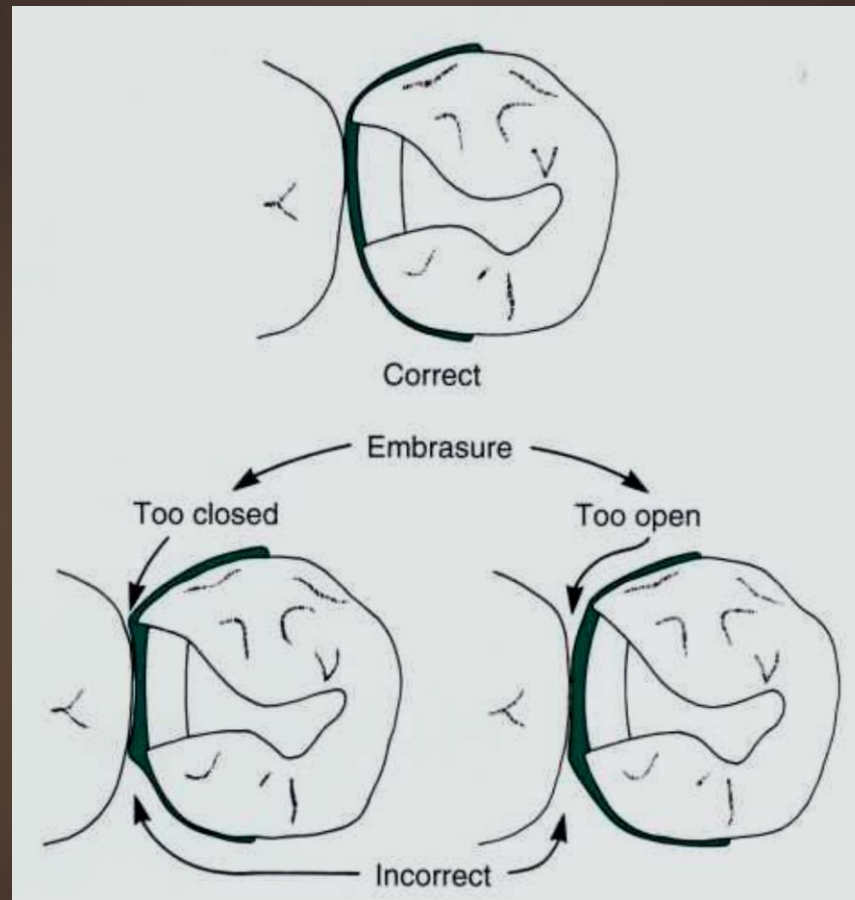
# Special matrix systems

- ▶ AutoMatrix (Dentsply)
- ▶ MaximatPlus (Polydentia)
- ▶ SuperCap (KerrHawe)





# The use of matrices



# Special matrix system – Walser



# Special matrix systems – sectional matrix

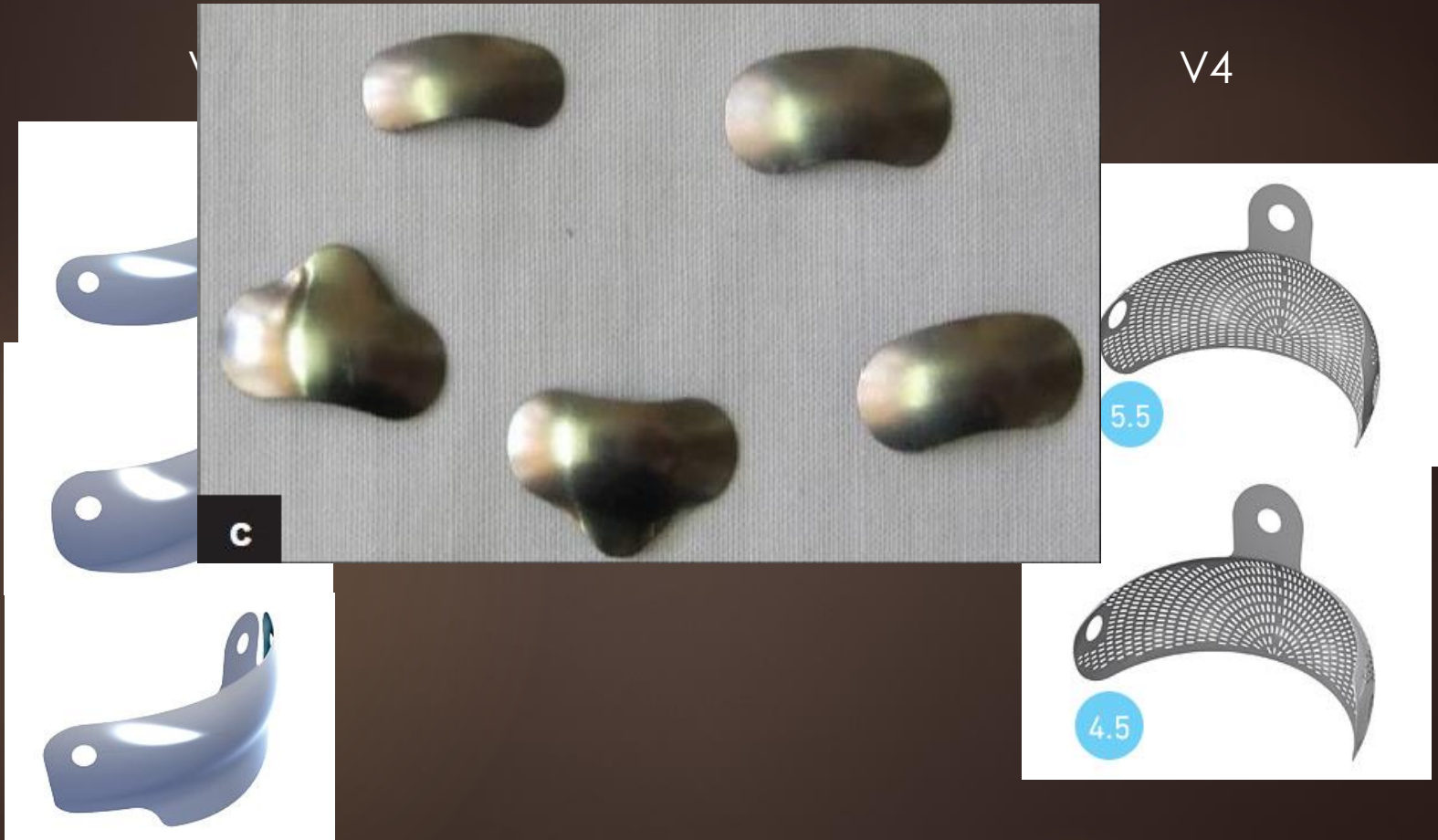
- ▶ Palodent / Palodent Plus (Dentsply)
- ▶ Hawe Adapt sectional matrix system (KerrHawe)
- ▶ Quickmat (Polydentia)
- ▶ V-ring (TrioDent)



# Special matrix systems – sectional matrix

- ▶ Matrix is formed
- ▶ Ring to fix
- ▶ Forceps

# Special matrix systems – sectional matrix



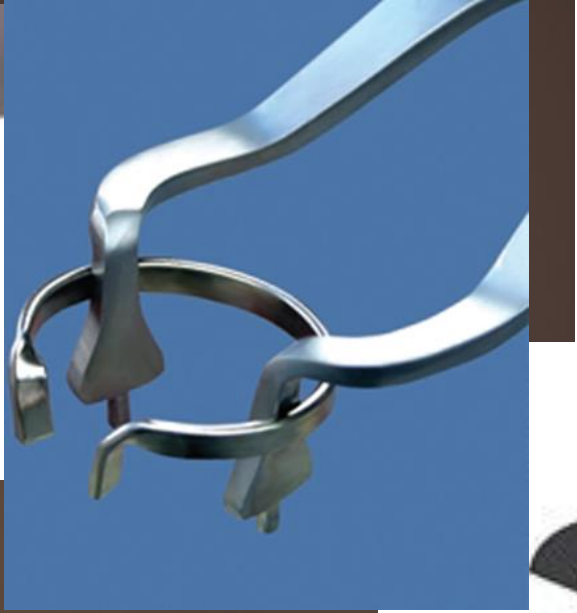
# Special matrix systems



# Special matrix systems – rings



# Special matrix system forceps





# Special matrix systems – the use





Thank you for your attention!