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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 composite fillings

Not indicated:

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

Usual Steps of a Composite Restoration

- ▶ Medical history, diagnosis, (X-ray.) Anaesthesia
- ▶ Shade selection
- ▶ Cavity preparation
- ▶ Isolation
- ▶ Insertion of Matrix
- ▶ Adhesive technique
- ▶ Insertion and curing the composite
- ▶ Contouring and polishing the composite

Shade selection

- ▶ Drying and dehydration of the tooth
- ▶ Isolation (shade selection first)
- ▶ Applying and curing a small amount of the composite
- ▶ Use of enamel- and dentin (opaque) shades
- ▶ Chameleon effect

Adhesive technique



Disadvantages of the composite

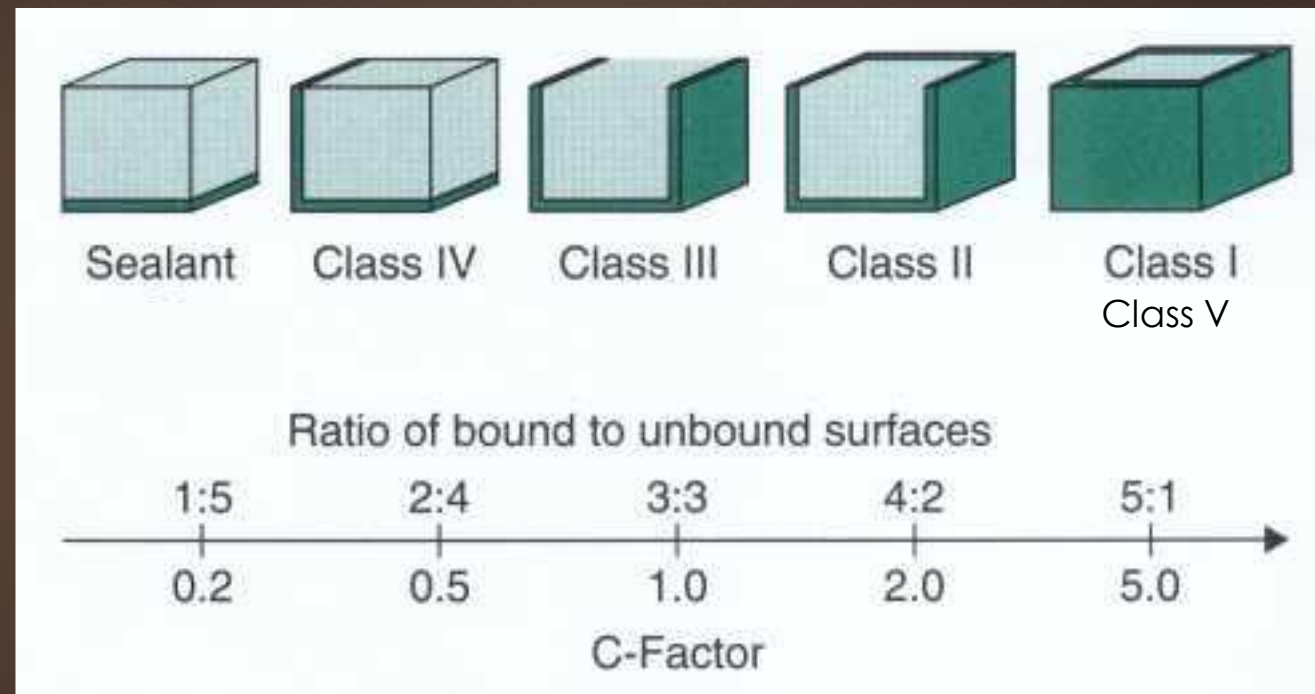
- ▶ Polymerization shrinkage - stress formation
- ▶ Higher thermal expansion coefficient
- ▶ No adhesion or chemical bonding

Solution - adhesive technique, multilayer technique

- ▶ Time consuming technique
- ▶ Sensitive method

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

Reduction of crack and stress formation

- ▶ Direction of the curing light
- ▶ Method of the curing

Incremental filling technique depending on dimensions of the cavity

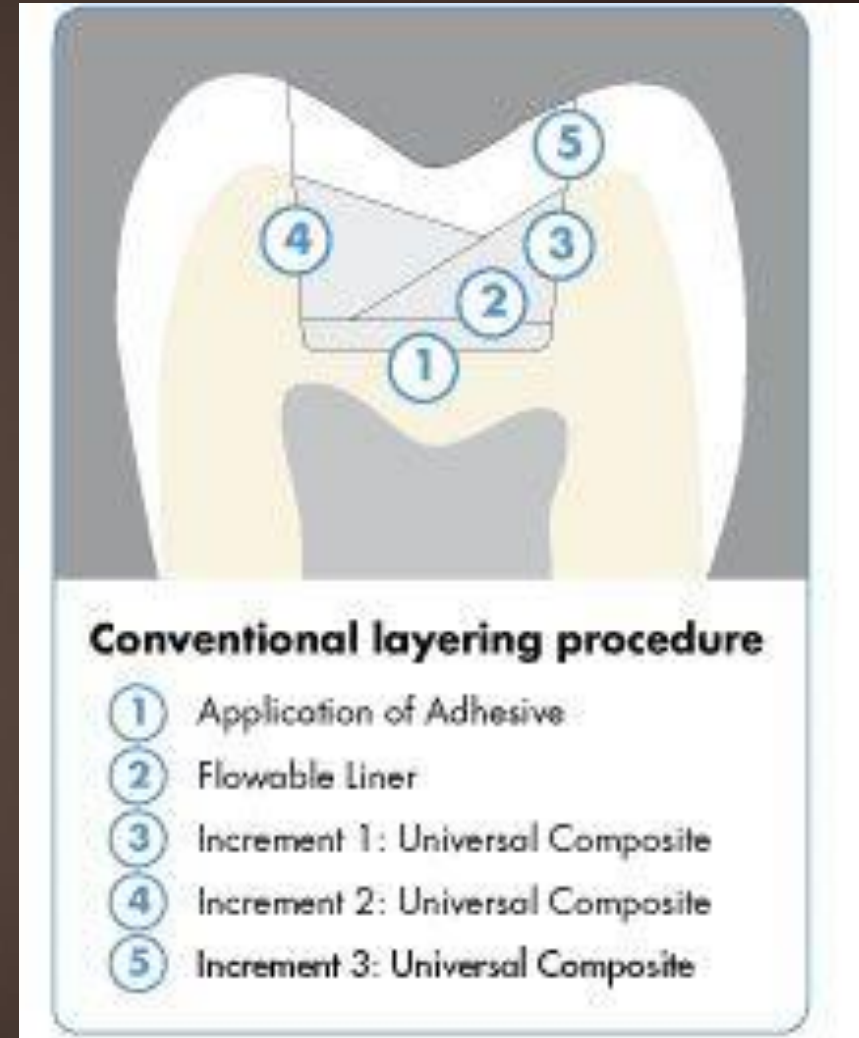
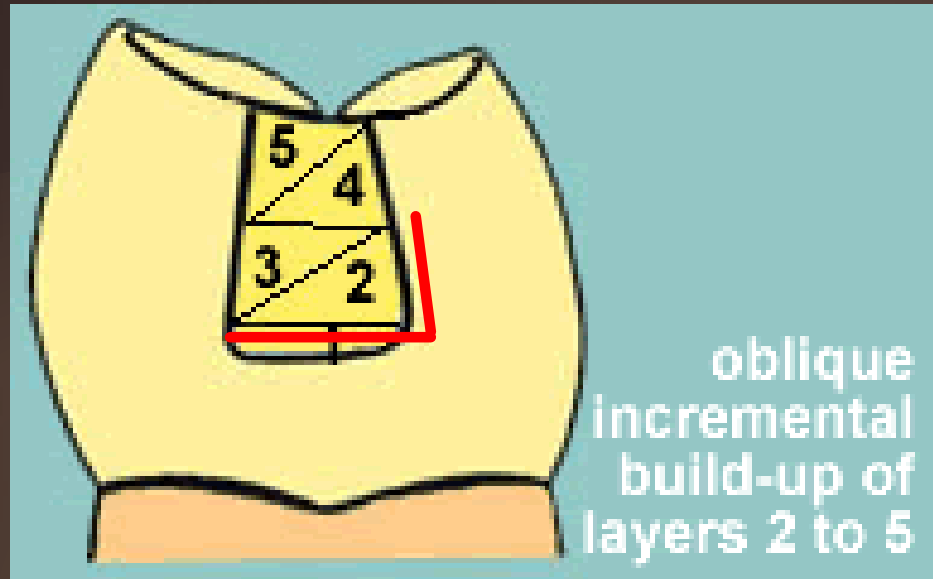
- ▶ Horizontal – occlusogingival layering
- ▶ Oblique layering
- ▶ Faciolingual layering
- ▶ Bulk-fill
- ▶ Bio-mimetic
- ▶ Horizontal-split technique
- ▶ Centripetal technique

Increment technic

- occlusogingival layering

- ▶ Only when cavity < 1/3 width of the tooth
- ▶ Wide cavity – fracture

Increment technic - oblique layering



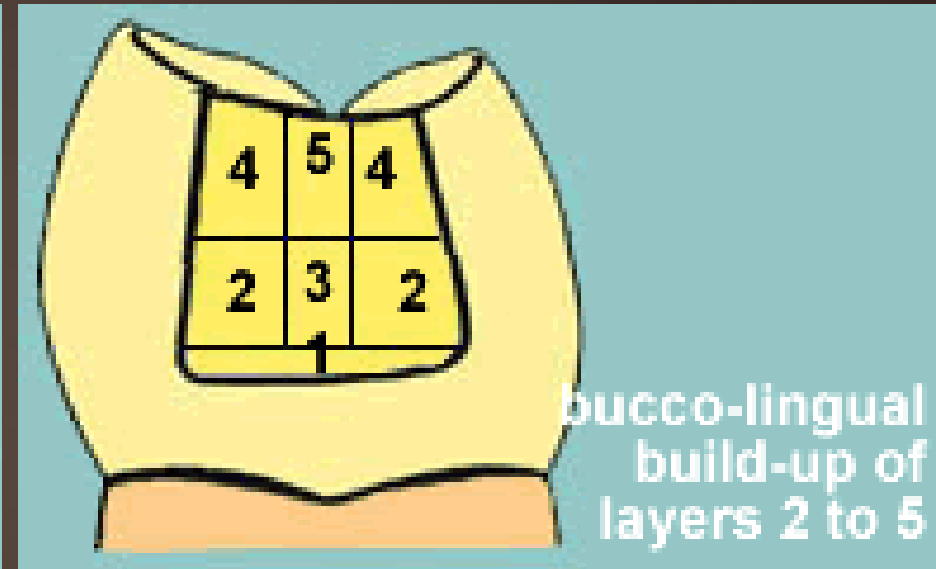
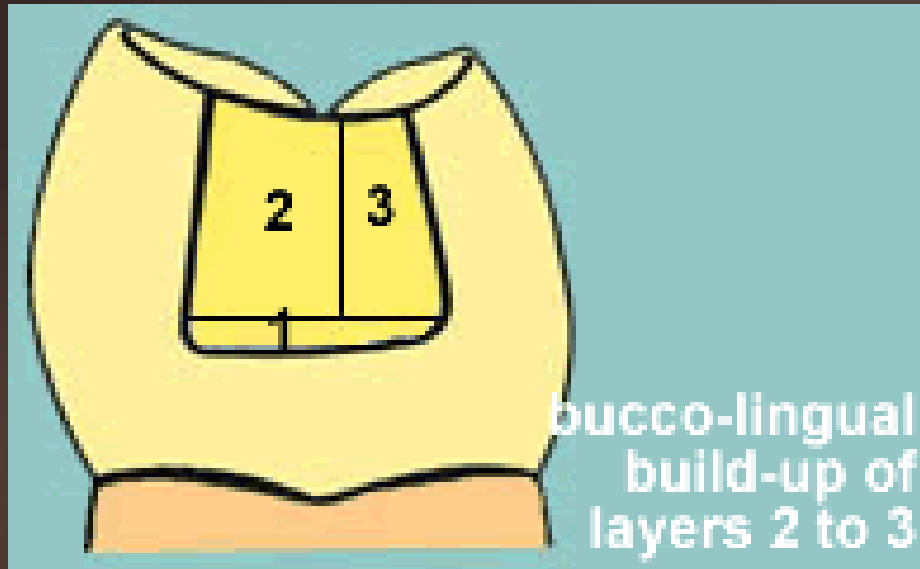
Increment technic

- use of flow composite

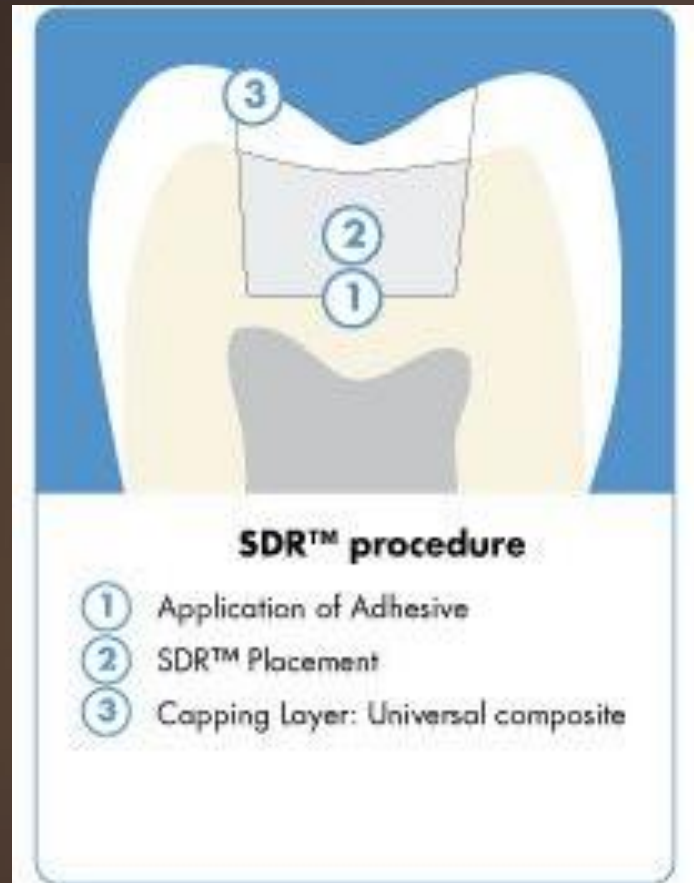
- ▶ Better marginal seal
- ▶ „Stress-breaker” function

Increment technic

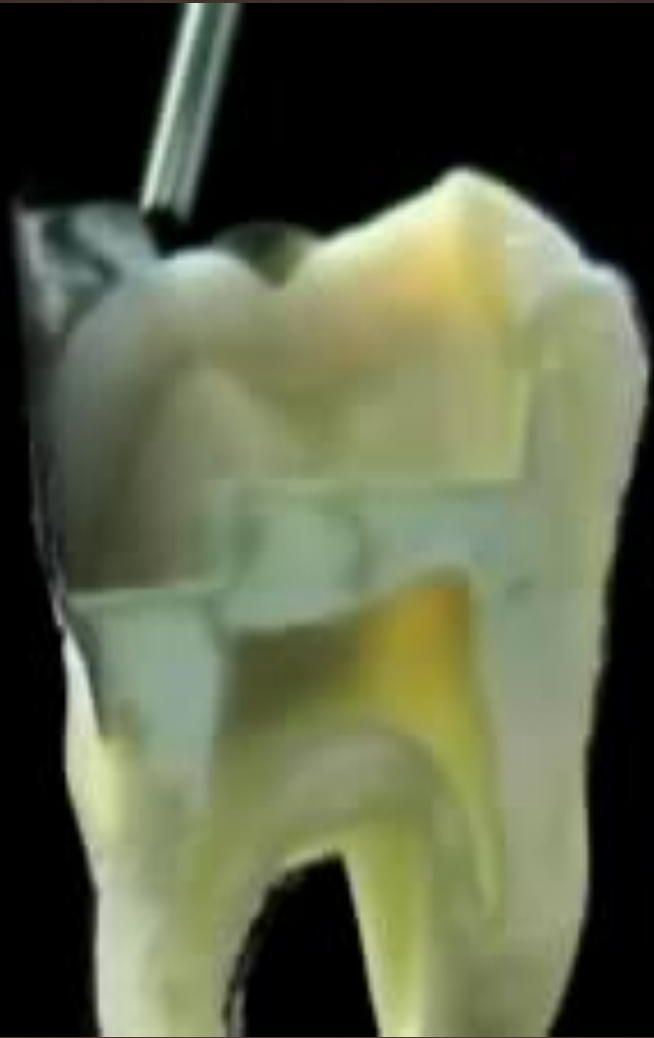
- faciolingual layering



Increment technic - bulk-fill

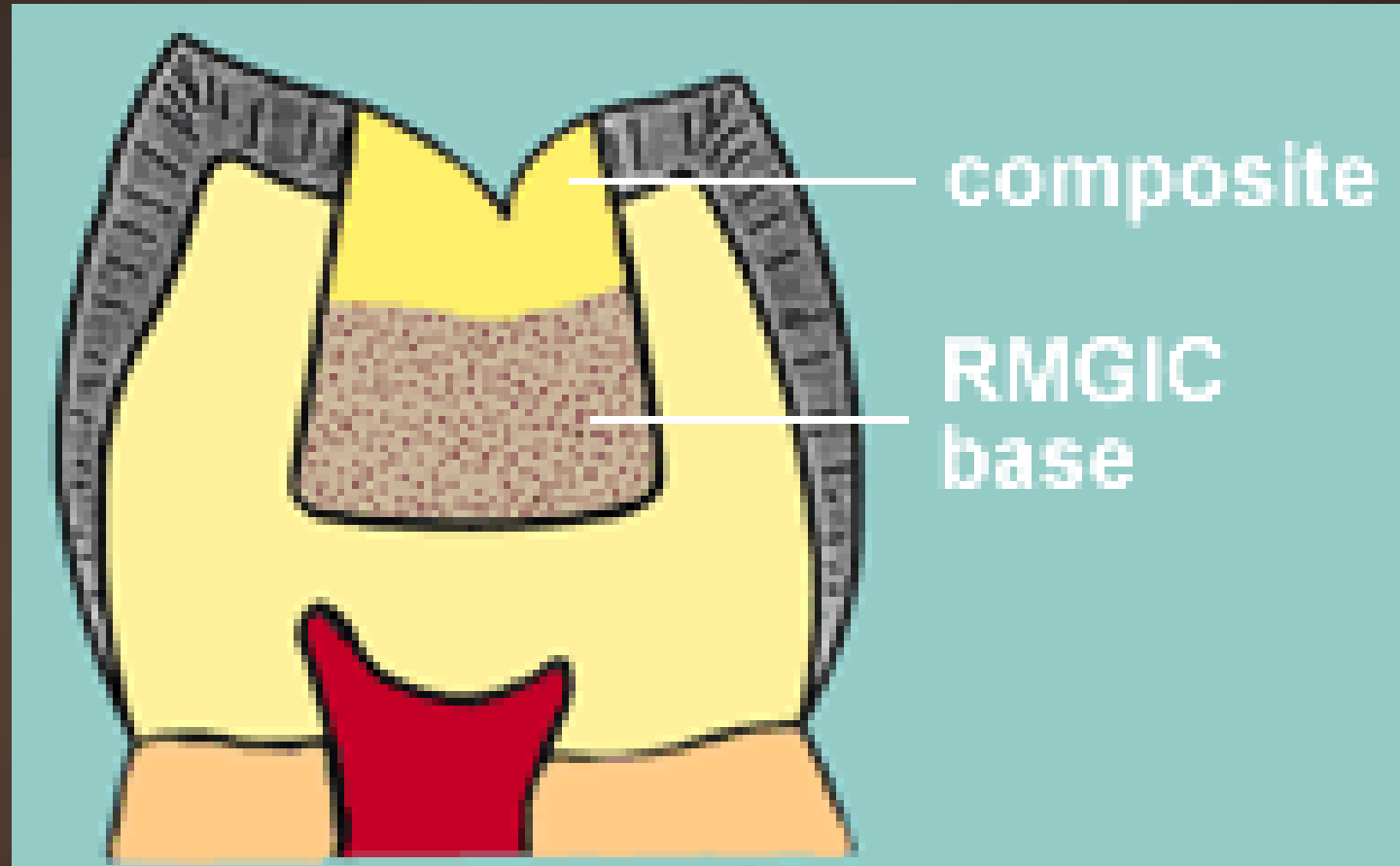


SDR™
Smart Dentin Replacement

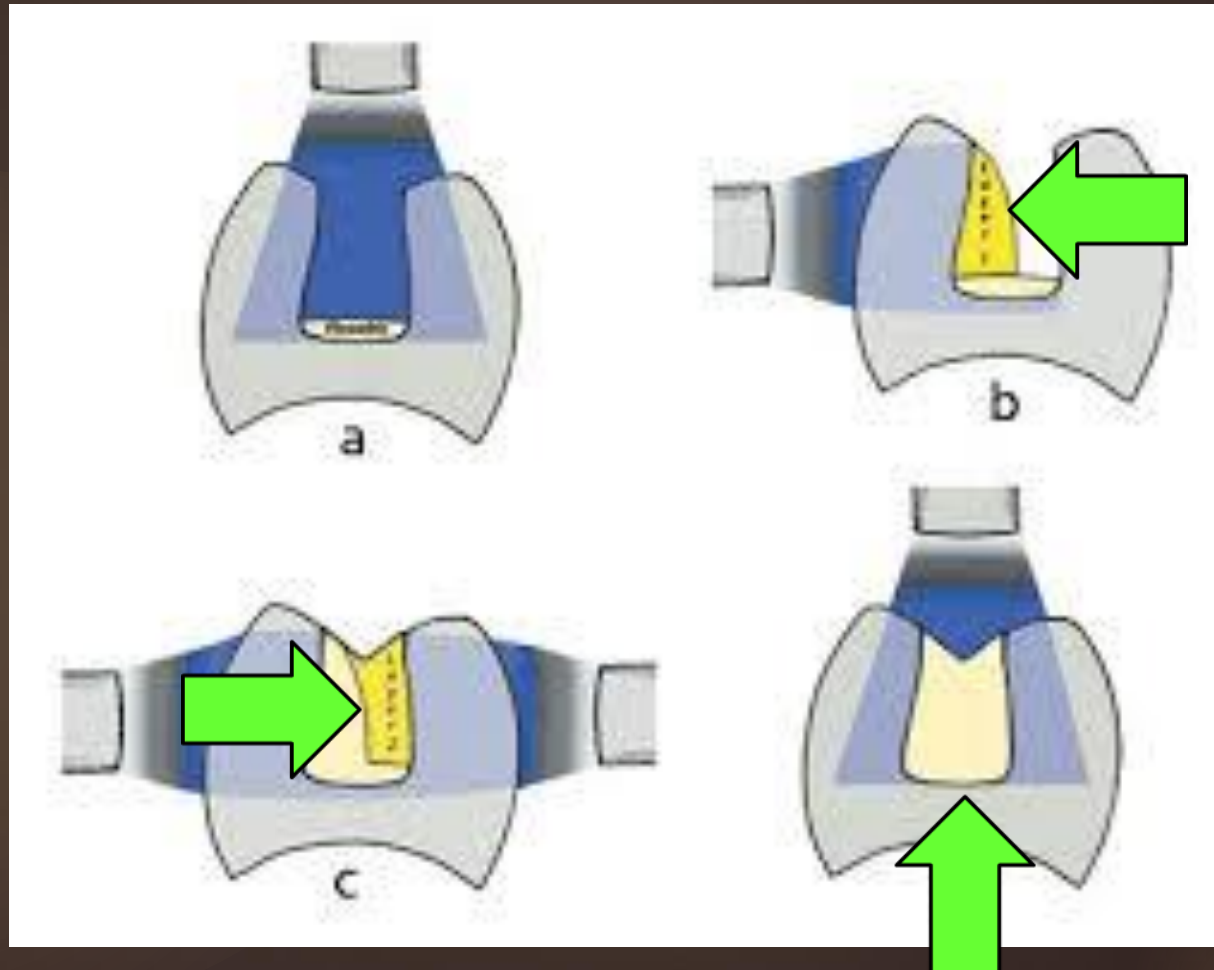


For better dentistry
DENTSPLY

Increment technic - bio-mimetic

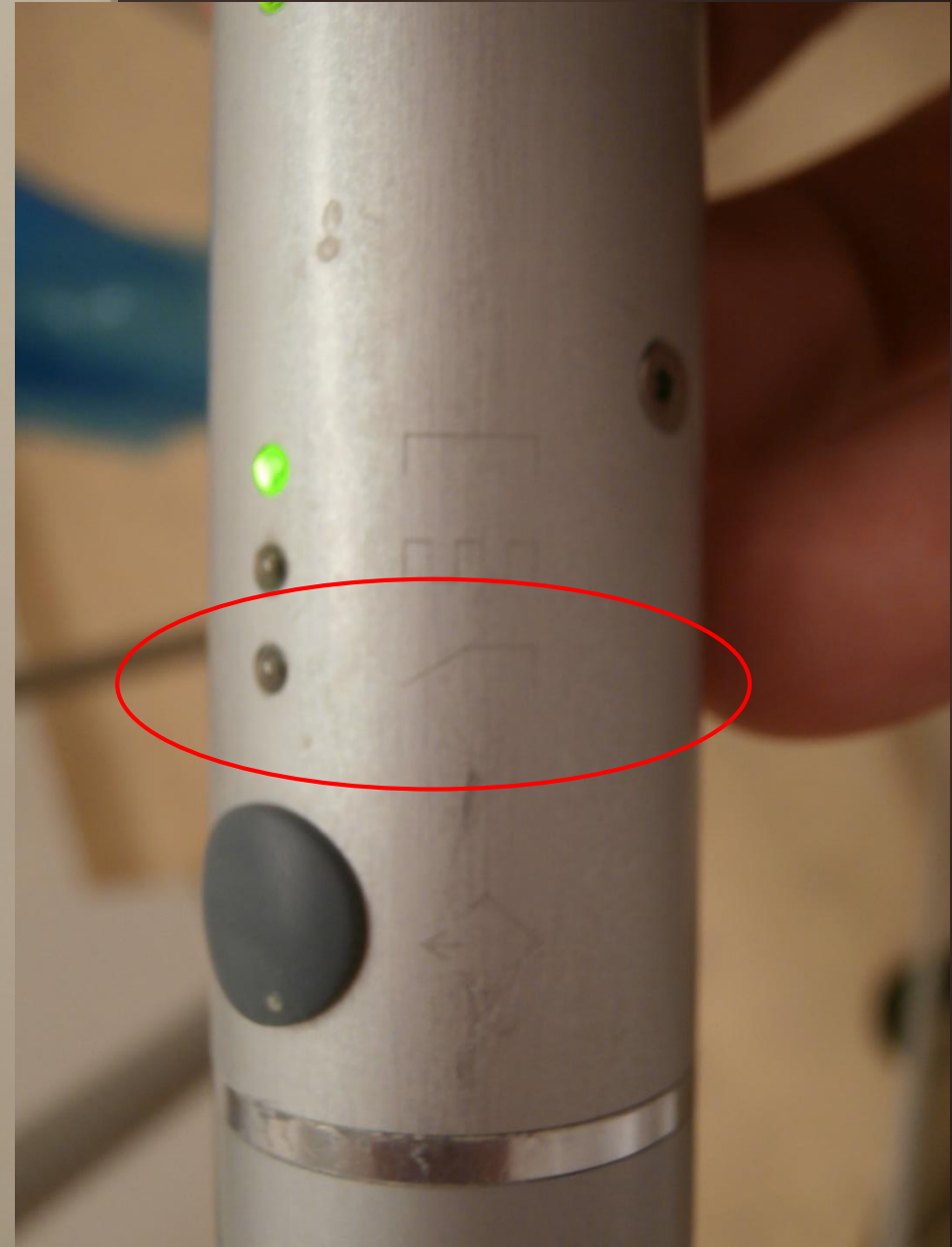


Direction of the curing light



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
- ▶ Diameter of the light guide
- ▶ Cleanness of the light guide
- ▶ Metal matrix can inhibit the effect

New lamps for polymerization



Problems with lamps...

- ▶ output
- ▶ Too hot!
- ▶ Pulp damage?

Black Class II. composite fillings

Why are the matrix systems necessary?

- ▶ Missing wall(s)
- ▶ Shape
- ▶ Optimal proximal contact

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

During preparation

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



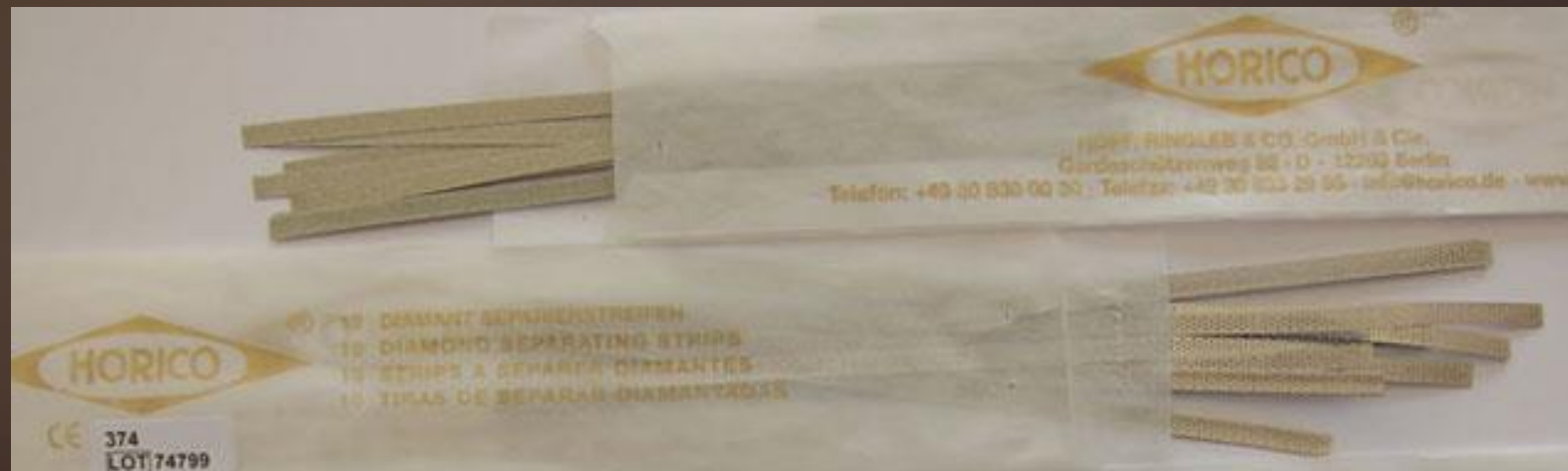
Expectations - use of matrix system

- ▶ No gap, good seal
- ▶ Anatomical form
- ▶ Perfect proximal contact
- ▶ Higher than the tooth
- ▶ Well fixed
- ▶ Easily removable
- ▶ Transparent
- ▶ Impermeable



Matrix is usable when...

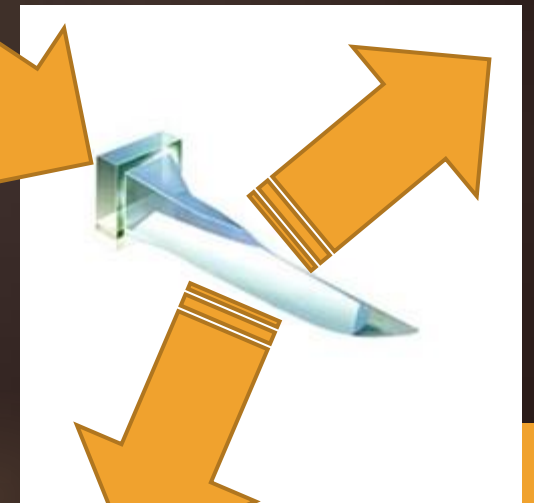
- ▶ There are some place between the teeth
- ▶ If not, we make
 - ▶ Fast-separation (with a wedge)
 - ▶ Horico strip



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



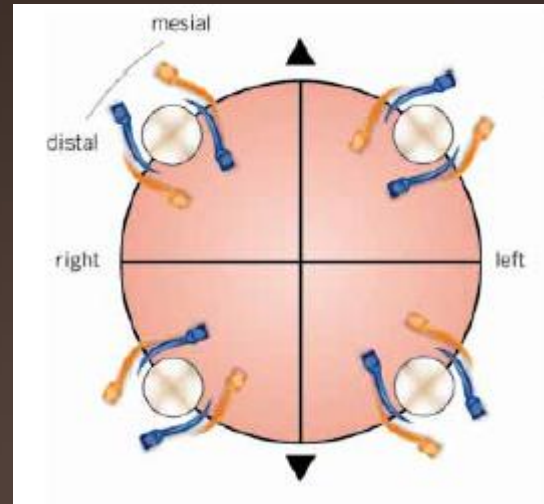
Wedges

► Wooden

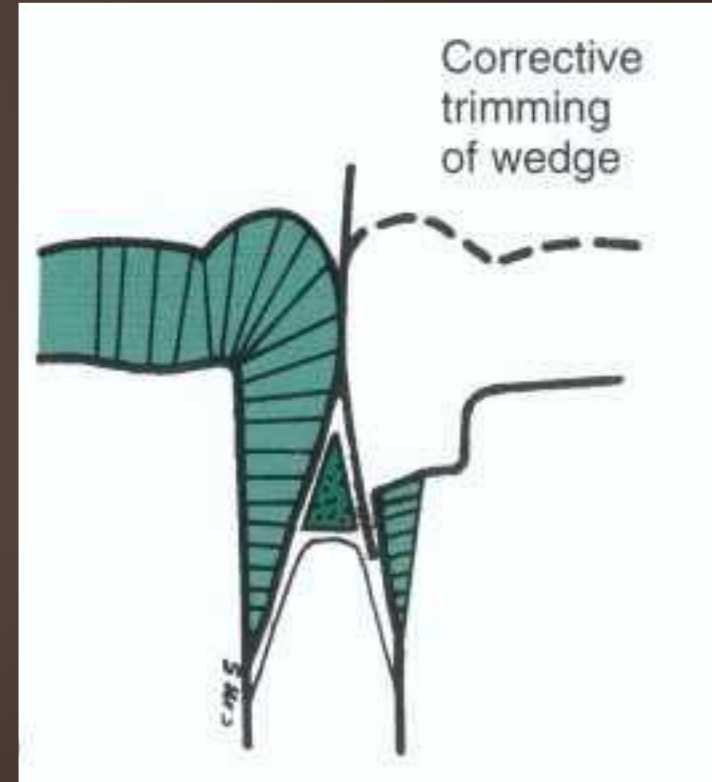
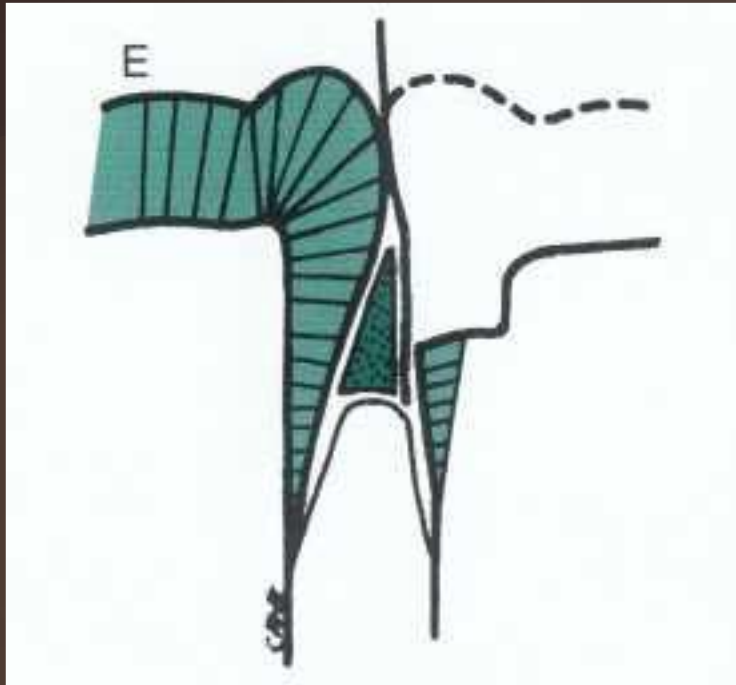


Wedges

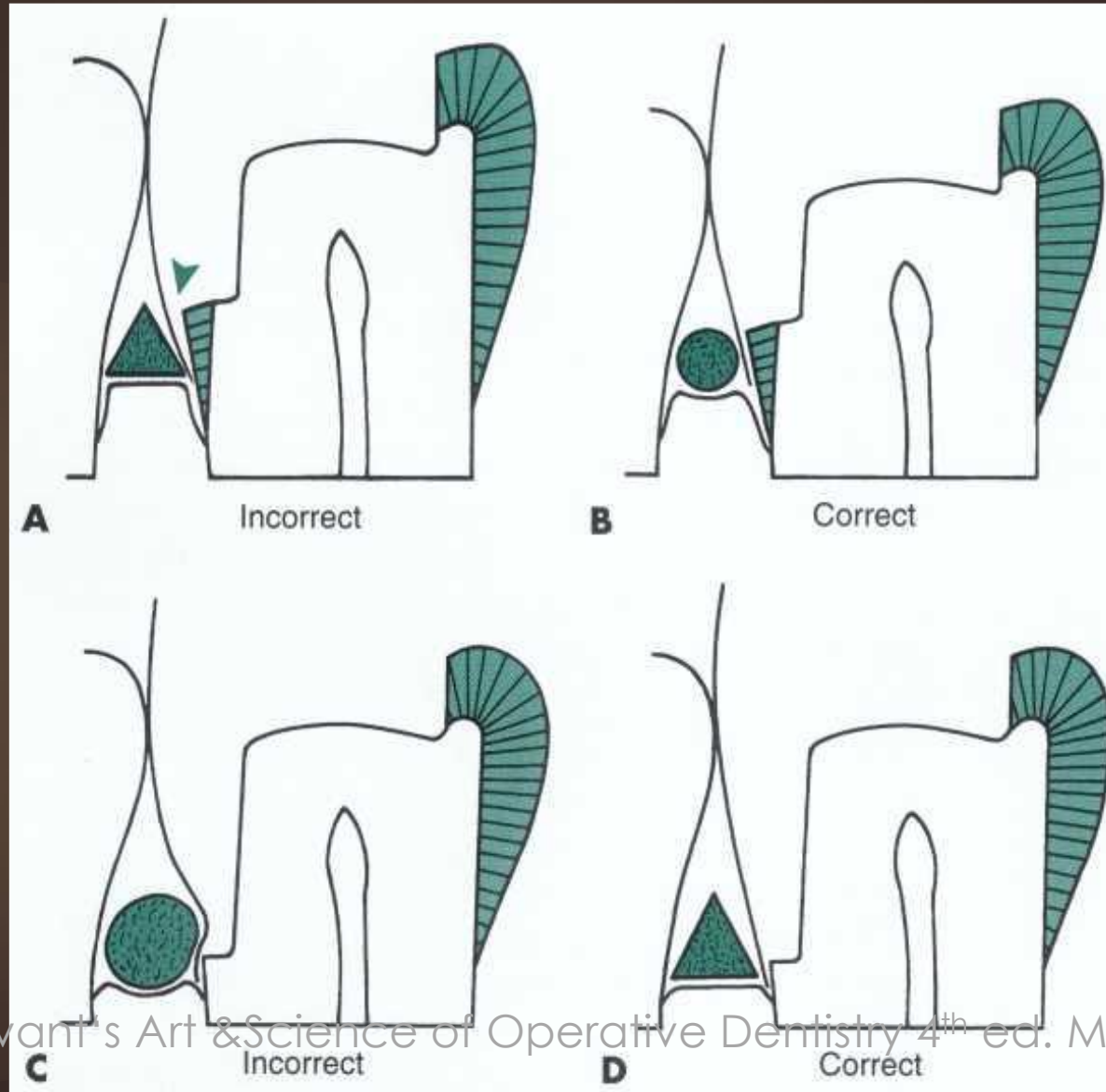
- ▶ Plastic
 - ▶ Formed
 - ▶ Curved (Curvy, VoCo)
 - ▶ V-shaped
 - ▶ Light transmitting



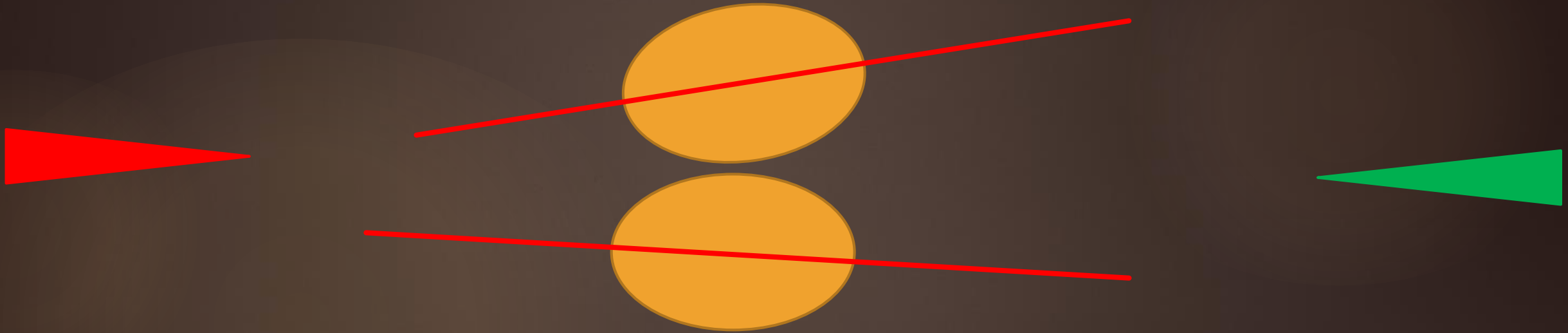
The use of the wedge



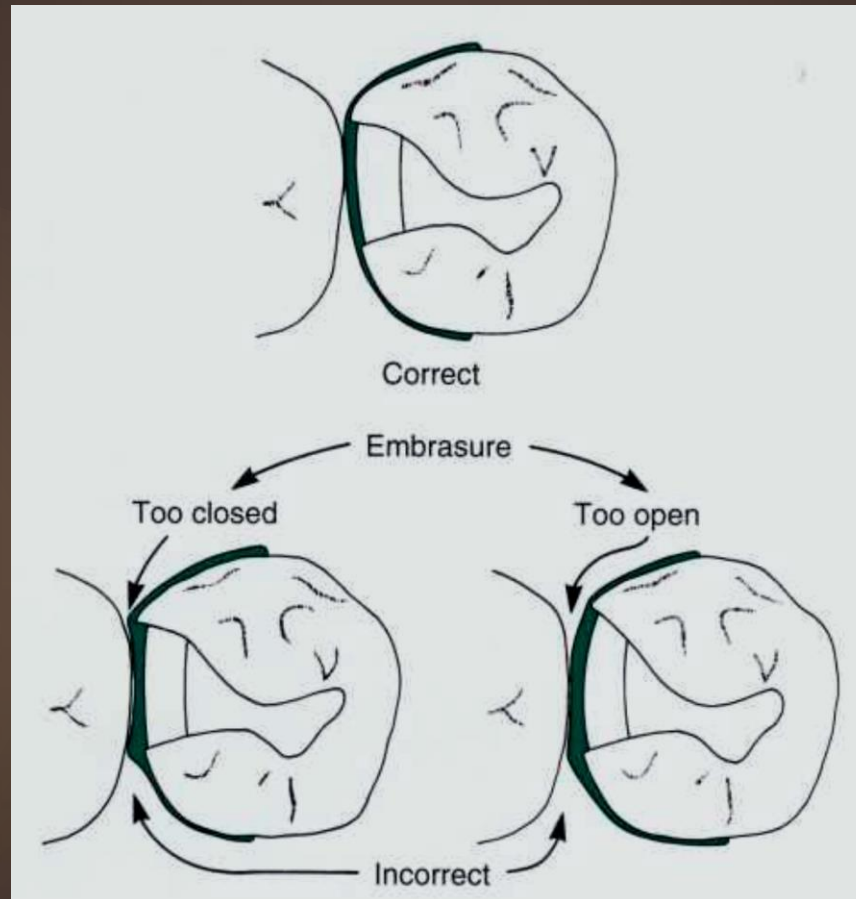
The use of the wedge



The use of the wedge



The use of matrices



Black Class II.

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

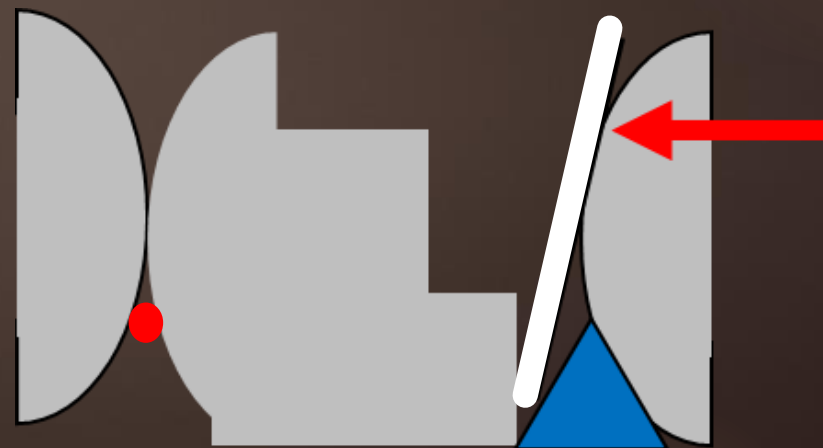
Matrix + matrix retainer or holder
together (wedged)

Amalgam filling

- ▶ Dental amalgam is condensable - tight proximal contact

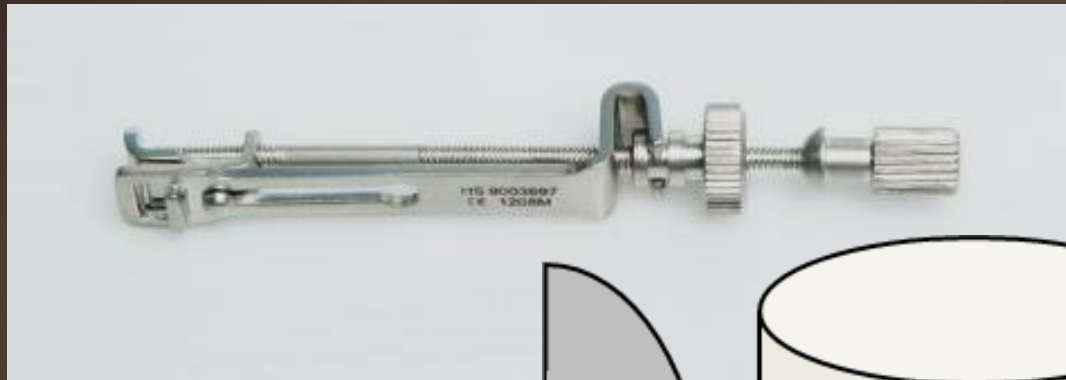
MO or OD cavity

- ▶ Ivory matrix retainer + matrix band



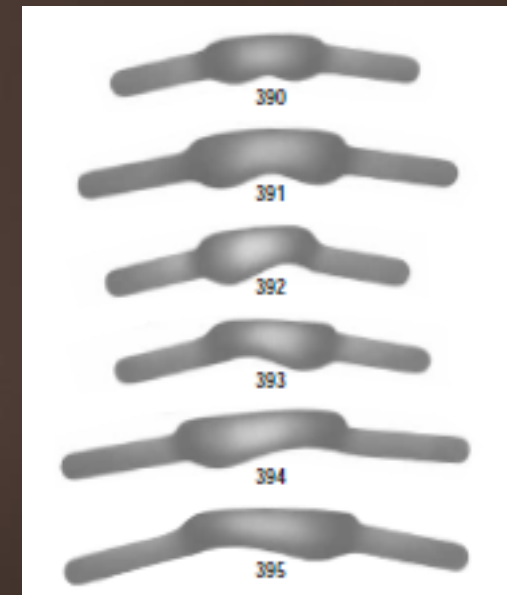
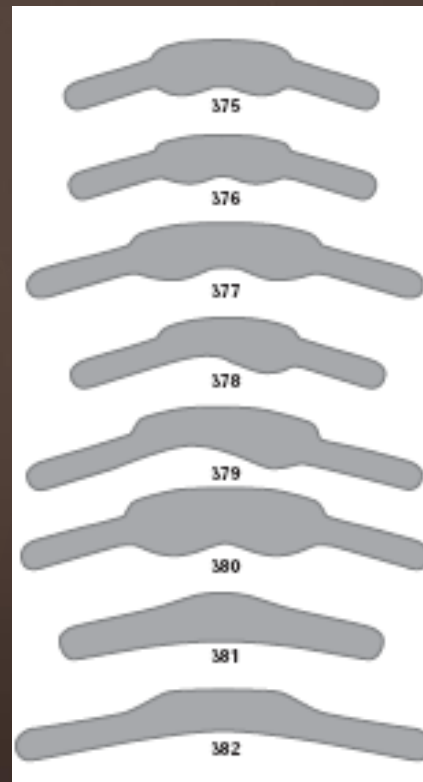
MOD cavity

- ▶ Conventional matrix retainer – with matrix band



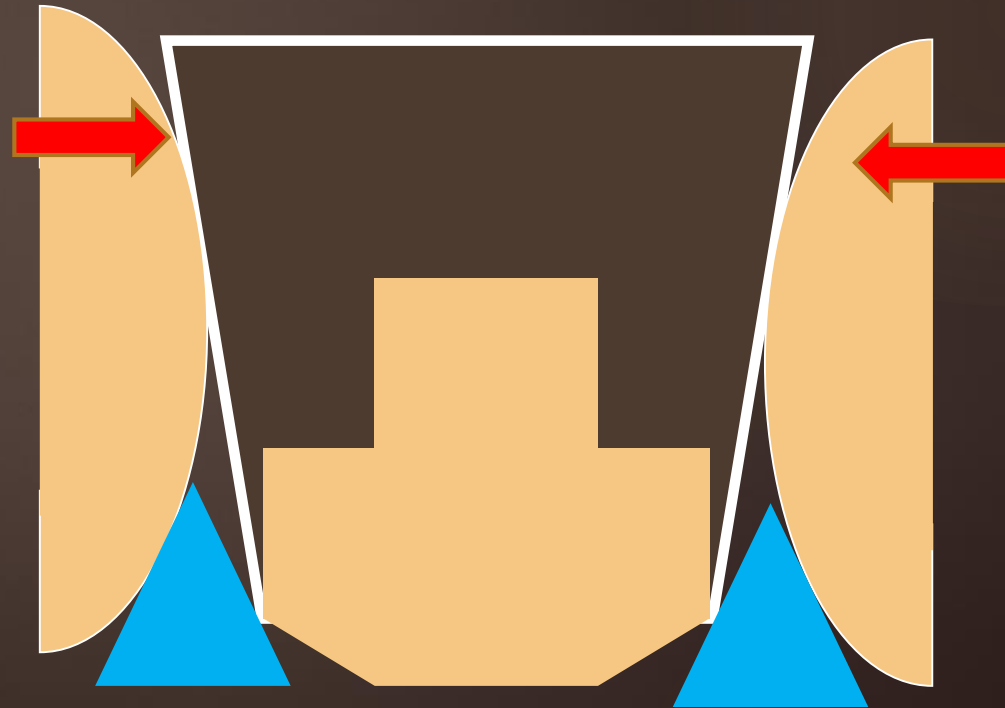
MOD cavity

- ▶ Tofflemire matrix retainer with Tofflemire matrix band

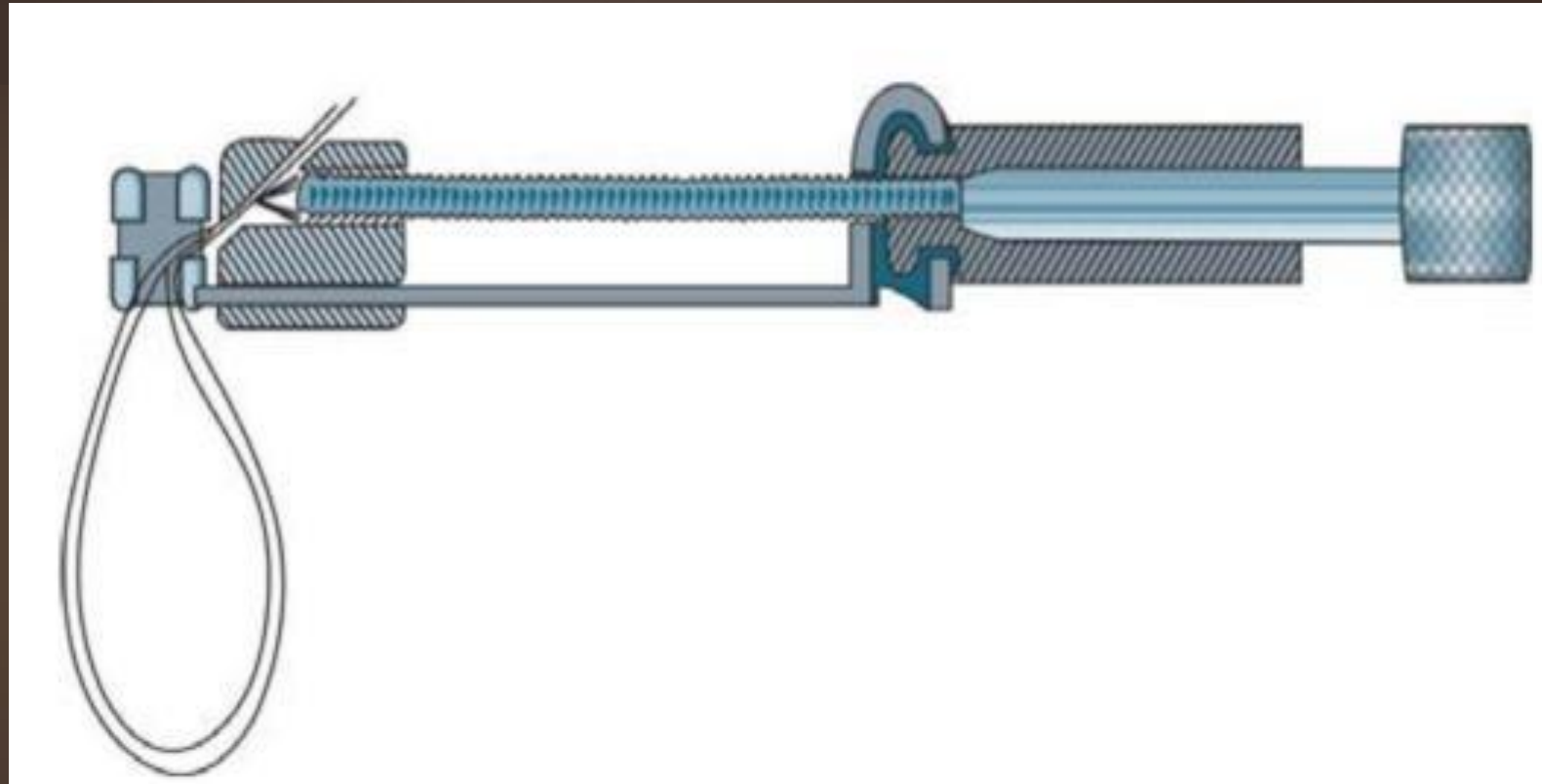


MOD cavity

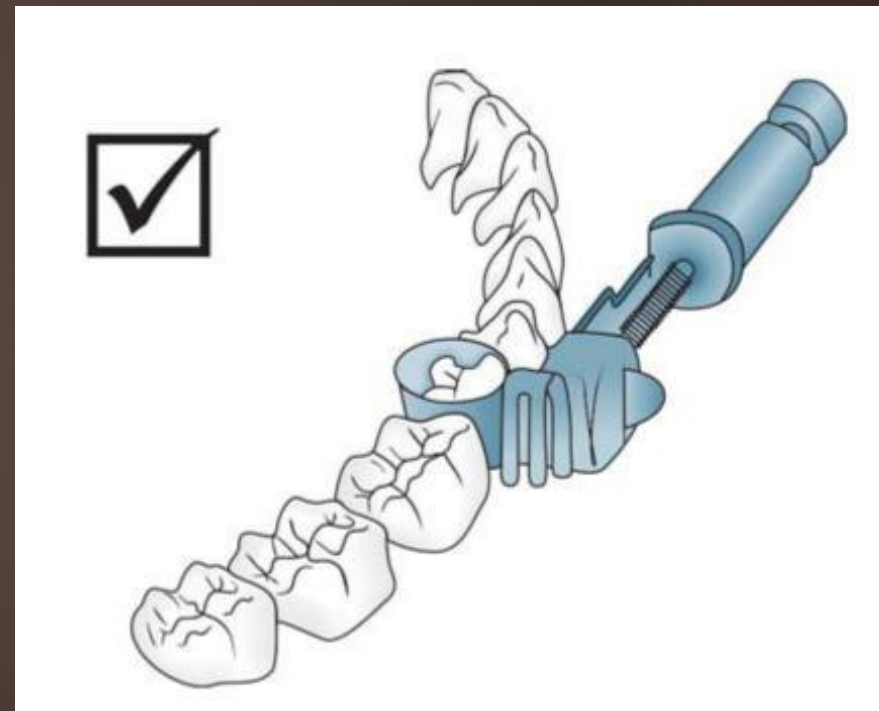
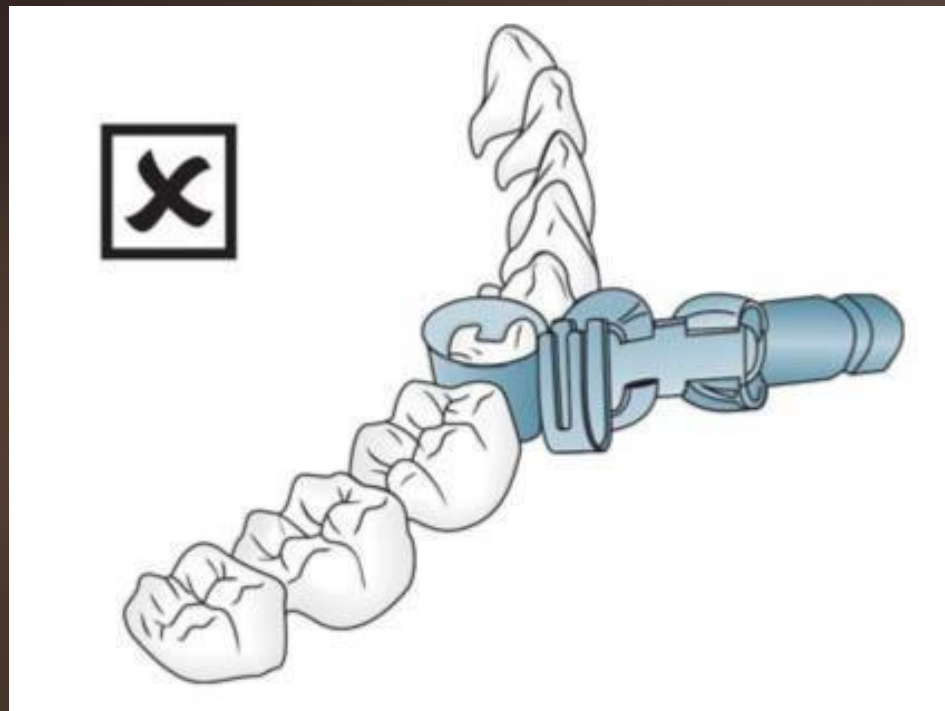
- ▶ Tofflemire matrix retainer with Tofflemire matrix band



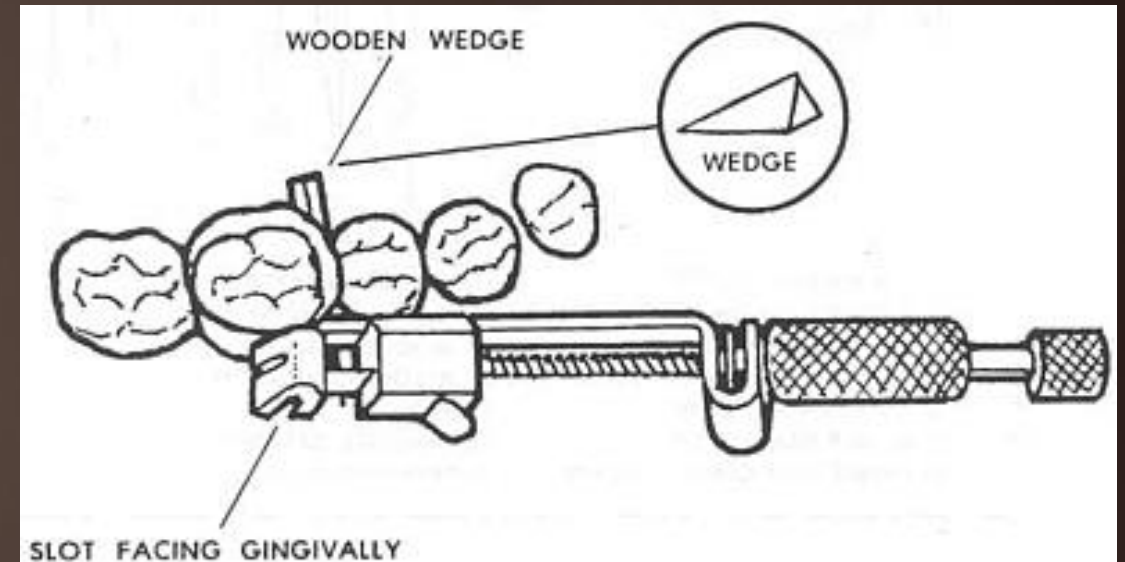
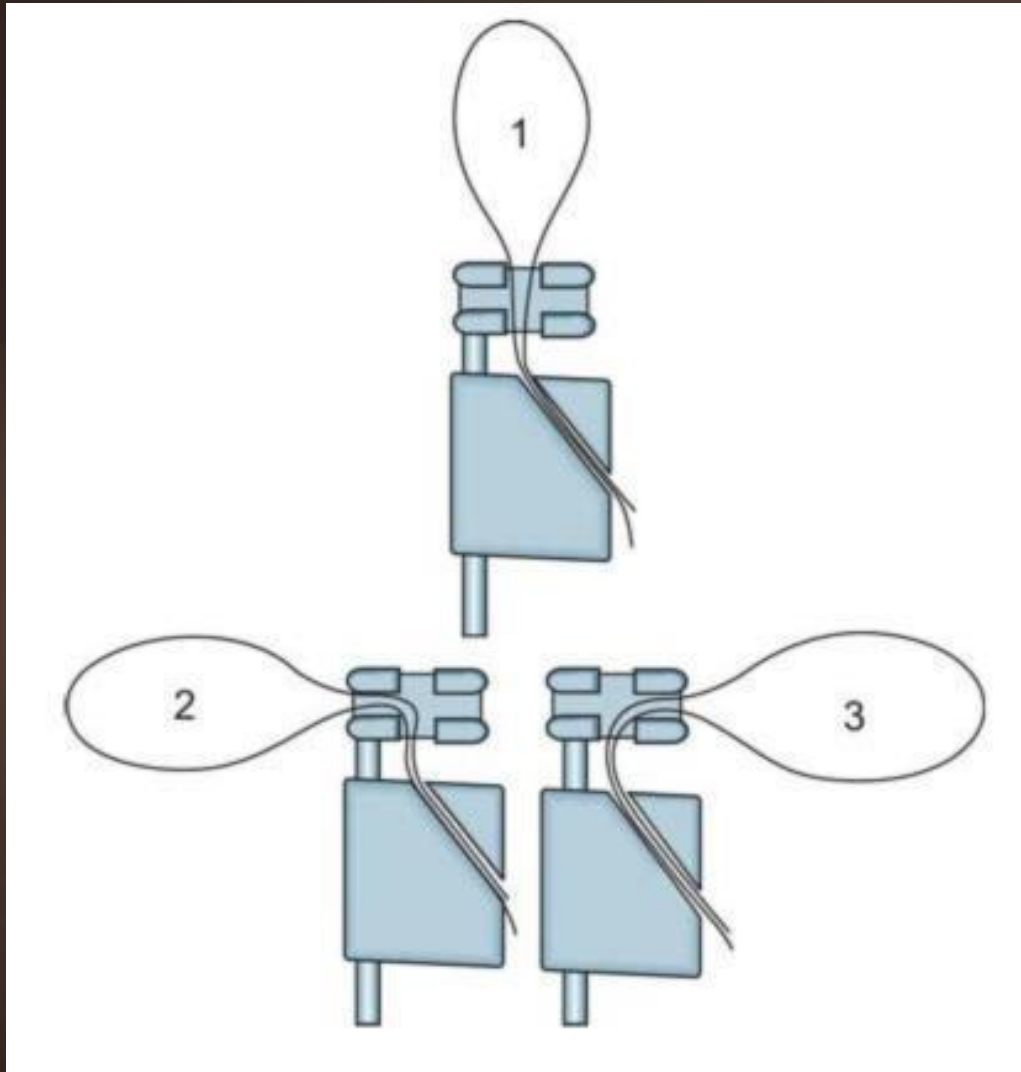
Tofflemire matrix retainer



Tofflemire matrix retainer



Tofflemire matrix retainer



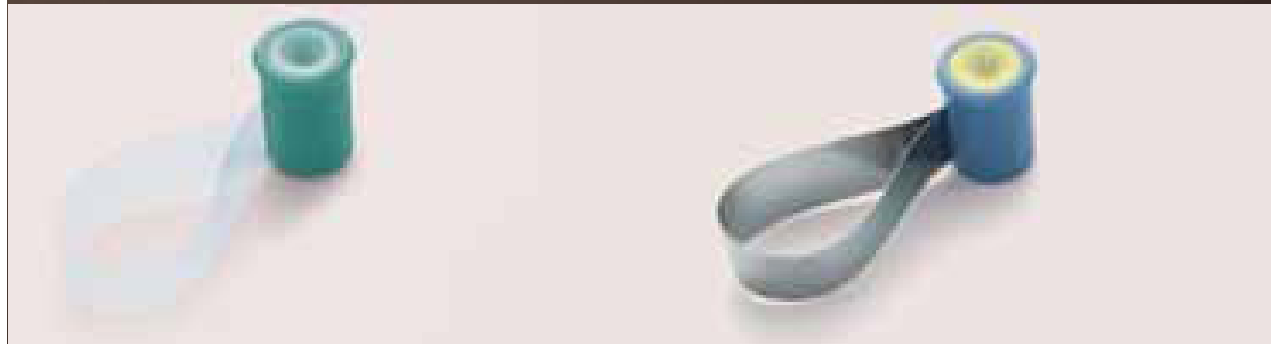
Conic matrix band – disadvantageous form

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



Special matrix systems

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



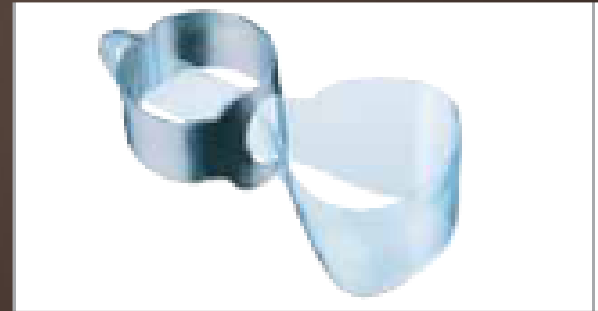
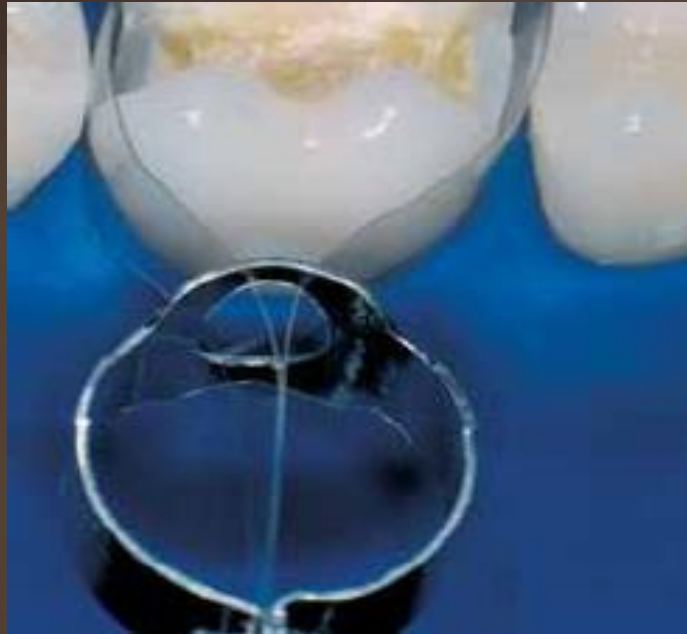
Composite filling

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

Tofflemire matrix retainer with plastic matrix band



Lucifix (KerrHawe)



Special matrix system – Walser



Special matrix systems – sectional matrix

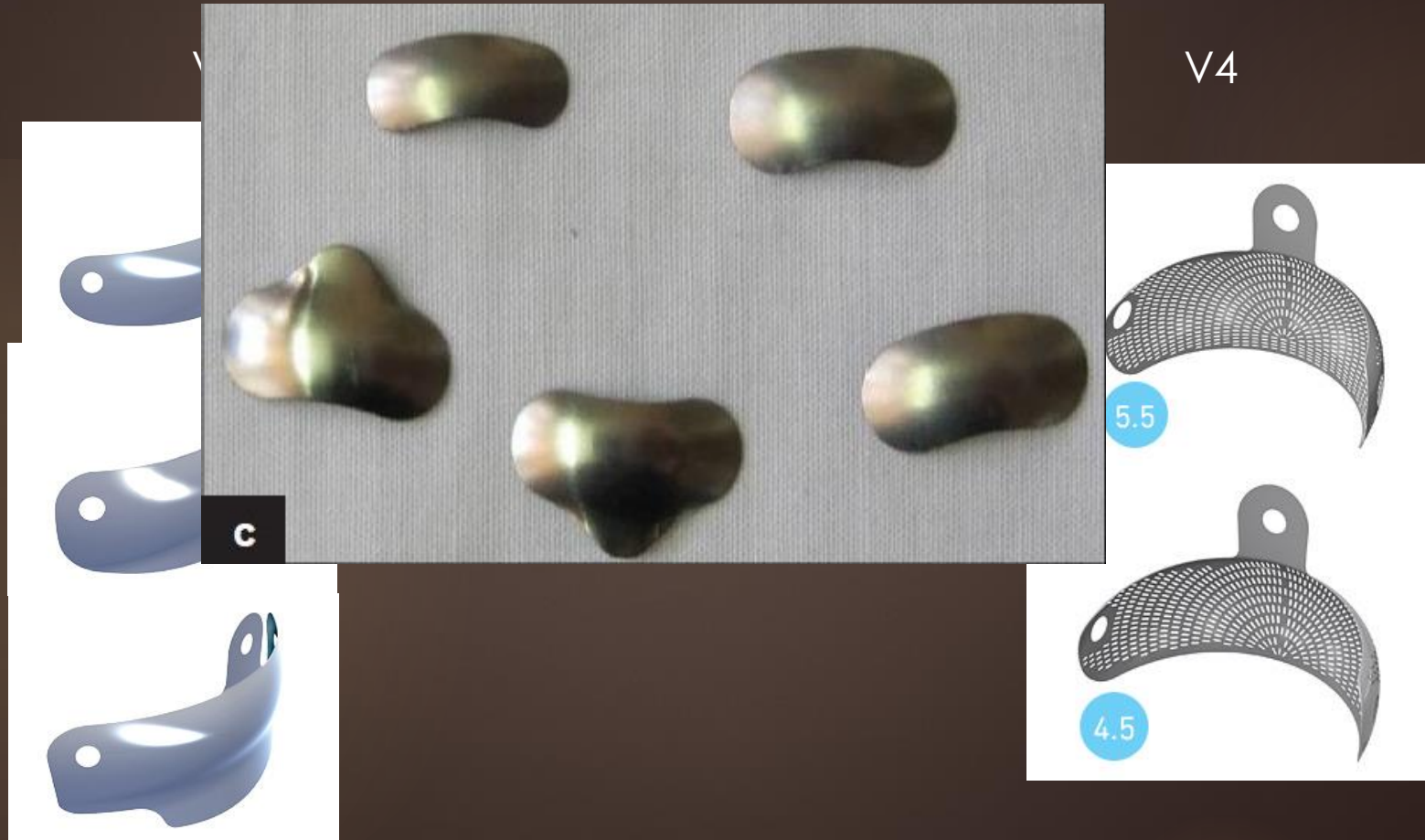
- ▶ Hawe Adapt sectional matrix system (KerrHawe)
- ▶ Quickmat (Polydentia)
- ▶ V-ring (TrioDent)
- ▶ Palodent / Palodent Plus (Dentsply)

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 systems – forceps



Special matrix systems – the use



The ring



Special matrix systems – the use







Thank you for your attention!