

PREPARING AND CEMENTING AESTHETIC INLAYS/ONLAYS

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Inlay

A filling that is placed in the cavity in solid state and is fixed by cementation

Types of restorations

direct

indirect

inlay

onlay

inlay

onlay

overlay

Materials

aesthetic

composite

metal

gold alloys

silver-palladium

ceramic

hybrid ceramic

ceramic veneered metal

Ceramics

- Classification:
 - According to chemical structure (Schüller 1985):
 - Oxidceramics (pl. 3M Espe Lava)
 - Silicate ceramics (pl. Ivoclar Emax, Empress)
 - Non-oxide ceramics (pl. Vita Enamic hibridkerámia)
 - According to manufacture
 - Press ceramics
 - Sintered ceramics
 - Cast ceramics

Composite

often the same material can be used

Direct use
filling

Intraorally

- occlusal morphology shaped in mouth
- polymerization

Indirect use

inlay/onlay
temporary crown
veneering material

Extraorally

- occlusal morphology shaped on cast
- polymerization in chamber
nitrogen chamber
hyperbaric environment
heatcuring

Mechanical properties
Anatomical shape
Contact point

Indication of inlay/onlay preparation

- Restoring root canal treated teeth
 - „cuspal protection”
- Difficulty in reproducing contact point directly
 - >2,5mm distance between gingival margin of prepared cavity and neighbouring tooth
 - approximal cavity very wide or vestibularly
- Extensive caries
 - Cusp reduction rule
- Cusp fracture
- Aesthetic needs
- Bite elevation

Modifying factors

bruxism

ceramic

Steps of inlay preparation

1. Determining tooth shade
2. Checking occlusal points
3. Preparing cavity
4. Immediate Dentin Sealing
5. Taking impression
6. Temporary filling
7. Checking on cast
8. Checking in mouth
9. Absolute isolation and protecting neighbouring teeth
10. Cementation
11. Finishing
12. Checking occlusion, articulation
13. Polishing
14. Instruation, motivation

Determining tooth shade

- Before preparation
- In natural light/ using 5500K lamp
- Same shade guide as used by laboratory

Vita Classic

Vita Toothguide 3D Master

Easy Shade

Checking occlusal points

before preparation

Prepared cavity margin may not end on occlusal point! (fracture)

Guidelines for preparing inlay cavity

- Occlusal reduction 1,5-2mm
- Isthmus min. 1.5 mm
- Occlusal divergency 5-8°
- Curved inner angles, corners
- Prepared – non-prepared surfaces
meet in 90°
- No beveling! (fracture)

Immediate Dentin Sealing

prepared dentin surface sealed by composite

benefits of IDS:

- less postoperative sensitivity
- less chance for dentin contamination before adhesive technique

flow composite
adjusting undercuts

Taking impression

precisional-situational
impression

antagonistic
impression

registering
occlusion

double retraction cord
two-phase
one/two-time

alginate

wax bite
(or silicone bite
registering material)

Send to laboratory

1. Tooth shade
2. Precisional-situational impression
3. Antagonistic impression
4. Bite registration

Temporary filling

filling should be removed in one piece without the use of a bur



LC composite = Clip



chairside acrylic temporary inlay
(impression taken before prep)
Must be separated from composite lining!!!

Get from laboratory

on sectioned cast in articulator

on control cast

We check:

1. marginal seal
2. occlusion

1. anatomical shape
2. contact point

Mounting the inlay to a handinstrument

wax

OptraStick/ StickyStick

Control in mouth

without ~~X~~ pressure

check ~~X~~ occlusion

We check:

1. marginal seal
2. contact point
3. shade

Absolute isolation and protection of neighbouring teeth

isolation

Rubber dam!
no blood, saliva

protection of neighbouring teeth

polyester strip and wedge or
teflon strip

Inlay try-in

Without force and pressure!

Cementation

1. Surface treatment of the inlay

Hydrofluoric acid treatment:

- time depends on material
Pl. Emax: 20sec, composite sec
- protection of doctor and patient!
(glasses)
- washing
- drying

silanization

Cementation

2. Surface treatment of the cavity

- depends on adhesive technique
- most common:
 - self-adhesive dualcure resincement:
 - selective etching of enamel is required
 - washing and drying

Cementation

3. Applying the cement

usually: dualcure resincement

Cementation

4. Keeping the inlay in place, removing the surplus, polymerization

- remove the surplus with clean adhesive tip
- in gel phase with probe (after 2sec LC)
- LC min. 40 sec from every direction
- In case of vital tooth do not over heat (intermittent LC)

Checking occlusion, finishing, polishing

Articulating paper: occlusion
and articulating movements

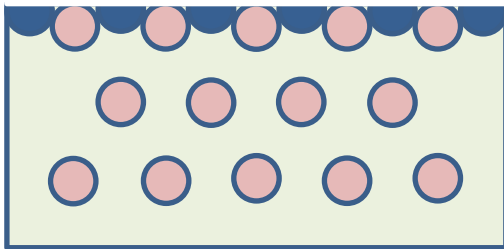
Finishing: white/yellow diamond, Arkansas
Polishing: rubber polish, approx. finishing strip

Instruction, motivation

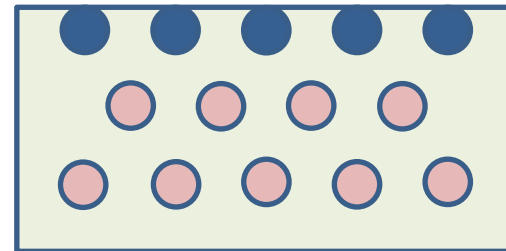
- Patient cannot eat for 1,5-2 hrs (dual cure)
- Cleaning approximal areas! (sec. caries prevention)

Surface treatments

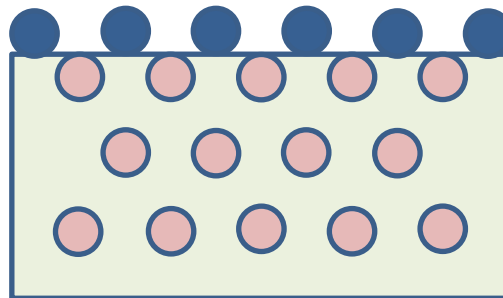
sandblasting



hydrofluoric acid/phosphoric acid



tribochemical silicate coating



According to adhesive techniques

etch&rinse adhesive + dualcure resincement

self-etch adhesive + dualcure resincement

self-adhesive dualcure resincement

etch&rinse adhesive + dualcure resin cement

Surface treatment of inlay Surface treatment of cavity

1. hydrofluoric acid
 E-max 20sec
 kompozit 60sec
2. washing
3. drying
4. silanization
5. drying

1. conditioning
 enamel 30-40sec
 dentin 15-20sec
2. washing
3. drying (wet-bond technique)
4. one-bottle adhesive+activator
 20sec rub in
5. cementation with dualcure
 cement
6. LC

self-etch adhesive + dualcure resin cement

Surface treatment of inlay Surface treatment of cavity

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 E-max 20sec
 kompozit 60sec
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1. conditioning
 selective etching of enamel
 15-20sec
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self-adhesive dualcure resincement

Surface treatment of inlay

1. hydrofluoric acid
E-max 20sec
kompozit 60sec
2. washing
3. drying
4. silanization
5. drying

Surface treatment of cavity

1. conditioning
selective etching of enamel 15-20sec
2. washing
3. drying
4. cementation with dualcure
cement wait 20sec for
Demineralization and adhesive penetration
5. LC