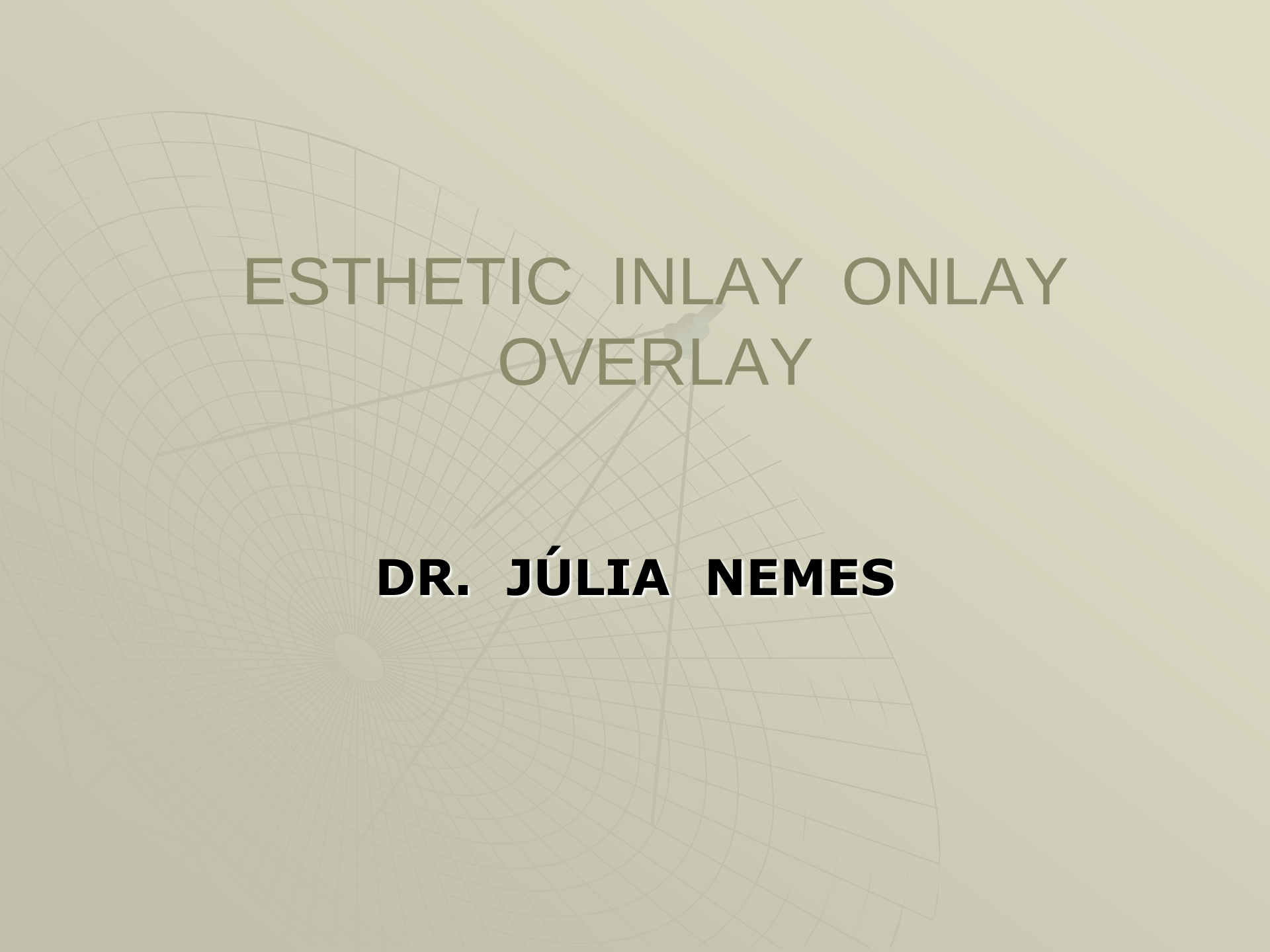




ESTHETIC INLAY ONLY OVERLAY

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مرکز تخصصی پروتزهای دندانی هایک دنت

طراحی و ساخت انواع پروتزهای دندانی بویژه ایمپلنت
برگزار کننده دوره های آموزشی تخصصی و جامع دندانسازی و...

با ما همراه باشید...

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INDIRECT RESTORATION

Cast metal

Gold 22 karat

Gold alloy

gold-platinum

Silver-Palladium

Esthetic

ceramik

composit

metal-ceramik

gold-ceramik

Requirement

Adhesive-technic and Rubber dam isolation

Indication

- ◆ Esthetics
- ◆ Size of the defect
- ◆ Oral hygiene
- ◆ Root canal obturation
- ◆ Cusp fracture

Contraindication

- ◆ Haevy occlusal forces
- ◆ Deep subgingival preparation
- ◆ Small tooth crown, big pulp-chamber
- ◆ Cusp incline is steep(?)

ADVANTAGE

- ◆ Polymerisation shrinkage
- ◆ Physical properties
- ◆ Control of contact-point, and contour
- ◆ Biocompatibility

DISADVANTAGE

- ◆ Number of appointment
- ◆ Cost, and time
- ◆ Technique sensitivity
- ◆ Brittleness of the material

Type of CERAMIK indiret restoration accordomg to the manufacturing process

1. (Feldspatic porcelan) or Fired porcelan:

Optec

Inlay, fired on refractory die (master die)

2. Glass-ceramik

„Lost-wax“ casting process

Dicor, Ceraperl (casted)

Empress (pressed) (not centrifugeted)

3. CAD/CAM System: Computer Aided Designe/Computer Aided Manufacturing 1986 Cerec (optical impression)

Type of composit inlay according to the manufacturing process

- ◆ **Direct method:** inlay is made into the mouth. Preparation, isolation of tooth, modelling, light-polymerisation, remove from the tooth, and second polymerisation (light+heat+pressure)
- ◆ **Semi-direct method:** (chair-side): not in lab, but next to the chair, but not into the mouth! Preparation, impression, but impression stay in office.
- ◆ **Indirect method:** Inlay is made in lab.

Type of **composit** inlay

1. **First generation Laboratory Composit Resin:** 1986

Isosit 1986 (inhomogen mikrokomposit)

low flexural strength(60-80 MPa),

low resistance to wear, low % of inorganic filler

2. **Second generation Laboratory Composit**

Resin:(mikrohybrid kompozit, nanohybrid kompozitok), filled polymers, polymer glasses...

ArtGlass,Colombus, Belleglass Filtek Z 500, Gradia:

f.s:120-160MPa, Filler:70-80% or more, different in form,size

Decision!

Indication, Contraindication, Advantage, Disadvantage

Cavity preparation

In the rules of **preparation** are **small differences** in case of **ceramic** and **composit** indirect restoration, therefore we speak about the preparation together!

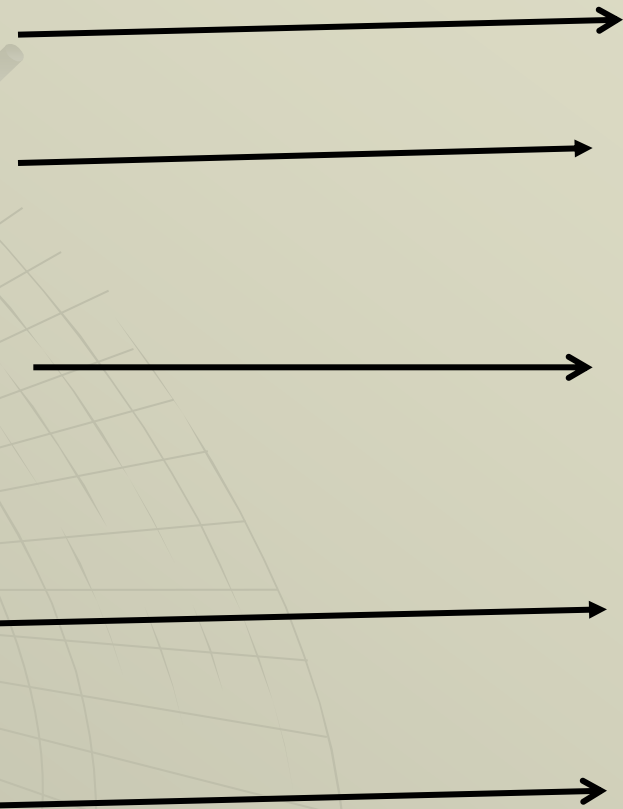
The **technics** follow the general rules of the cast metall restoration. Primer (initial) preparation (occlusal, proximal), secondar (final) preparation

Consideration of making inlay

Metal inlay

- ◆ Most cases we have to remove more toothstructure.
- ◆ We can not leave big undercuts into the cavity.
- ◆ The contact with the neighbouring tooth has to be eliminate. (minimum distance of 0,5mm)
- ◆ The direction of place in is important. Orientation of the bur! MOD
- ◆ The contact with the antagonist tooth may not be at the cavosurface margin of the inlay.

Esthetic inlay



Rules of making esthetic inlay

- ◆ The retention is not the friction . The retention is **microretention! (Difference in luting material!)**
- ◆ The **cavosurface margins are not beveled!**
- ◆ **Avoid strong line angle and point angle**
- ◆ **„Secondary Retentionelement“** are not or rare used.

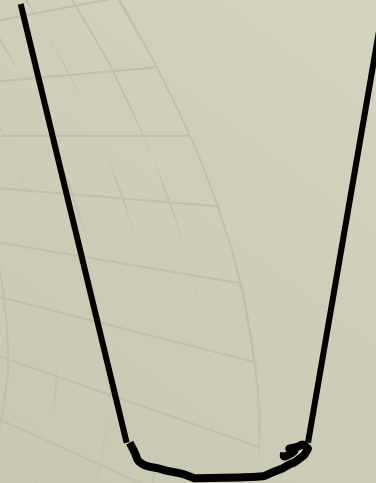
Primer (initial) preparation

- ◆ **Instrument:** Speed, Handpiece, bur
Tapered fissure bur (hard metal or diamond)
with slightly rounded angles

Conicity:

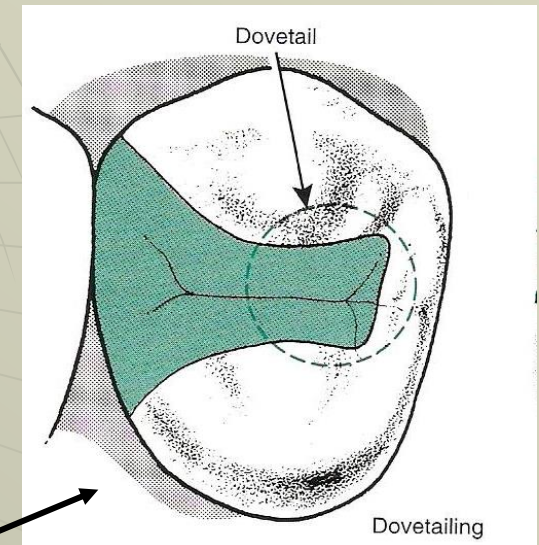
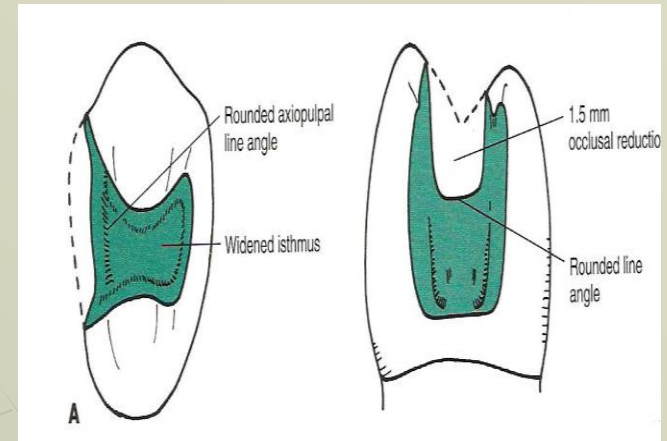
cast metal inlays 3-5°

esthetic inlay 6-10°



Primer (initial) preparation for esthetic inlay

- ◆ **Depth:** of the cavity is 1,5- 2 mm.
- ◆ **Width:** The occlusal extension is more.
- ◆ **Isthmus** is wider
- ◆ **Walls:** have to diverge in occlusal direction, more than in case of cast metal inlay **6-10°**.
- ◆ **Line and point angles** are rounded more.



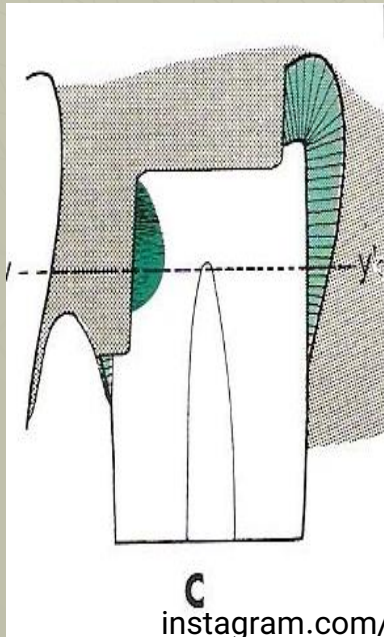
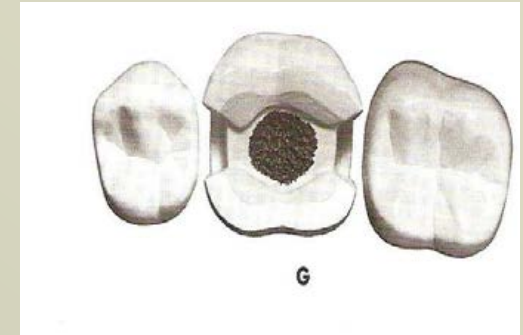
Final (secondary) Preparation

- ◆ Removal of any remaining infected dentin and/or old restoration and Pulp-protection
- ◆ Preparation of cavosurface margins. **Different**
 - in occlusal cavity (at about 90°)
 - in proximal cavity
 - on the vestibulo-oral walls (60°)
 - on the gingival walls (straight)
- ◆ Finishing the walls

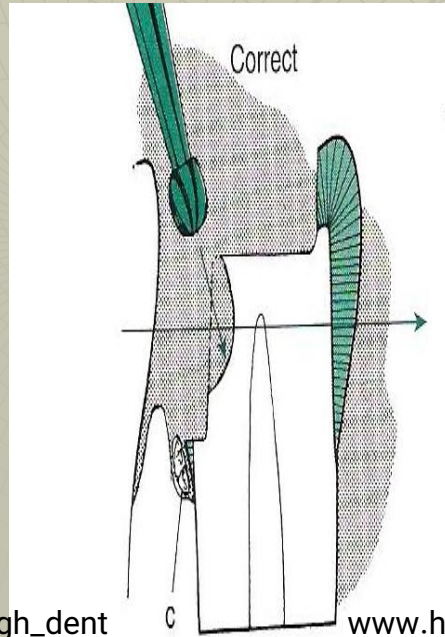
Final (secondary) preparation

Removal of any remaining infected dentin and/or old restoration and Pulp-protection

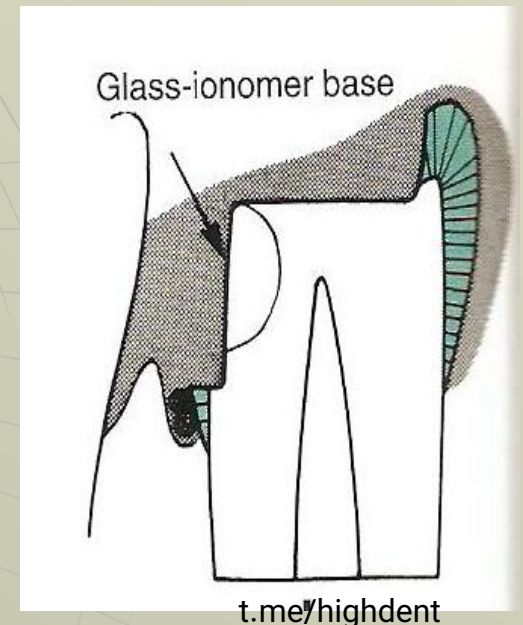
With round metalbur (hard or steel)
(Calcium-hydroxid)+ Glassionomer



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Final (secondary) preparation for esthetic inlay

Preparation of **occlusal** cavosurface margins.

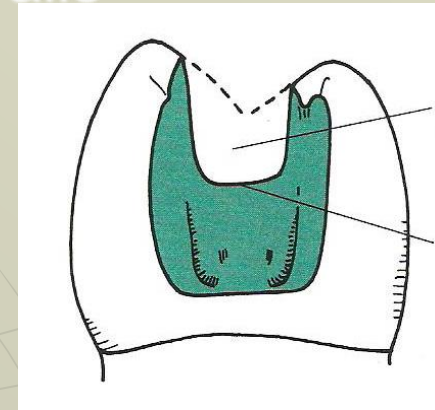
Preparation of **proximal cavosurface margins**

on the vestibulo-oral walls

- **Occlusal** cavosurface margins

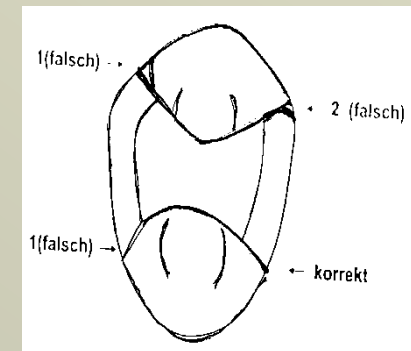
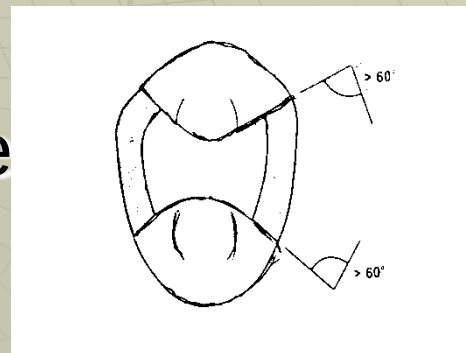
enamel at about **90°**

No bevelling!



- **Proximal** cavosurface margins

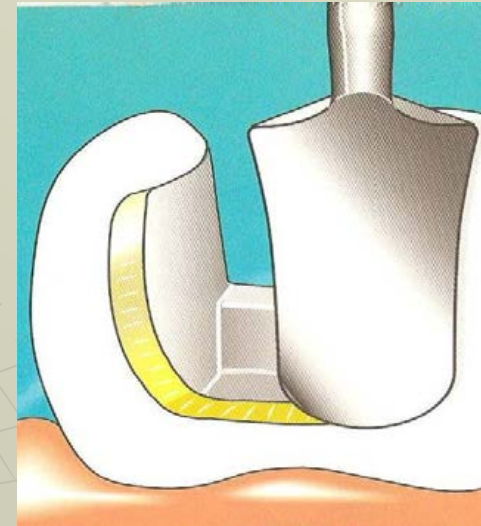
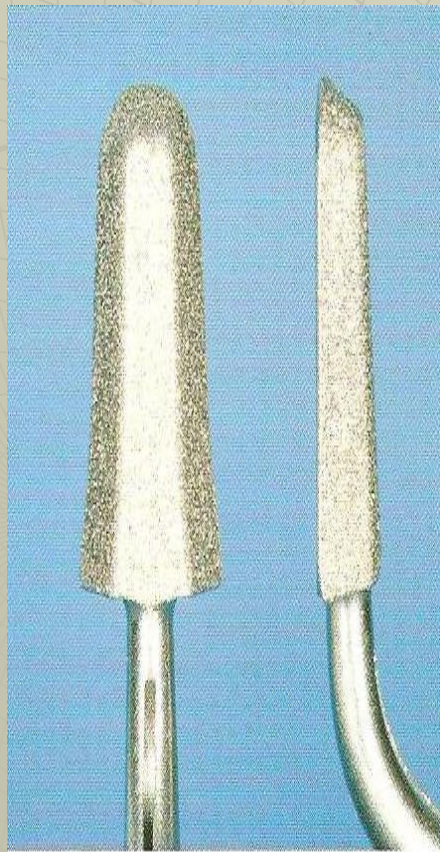
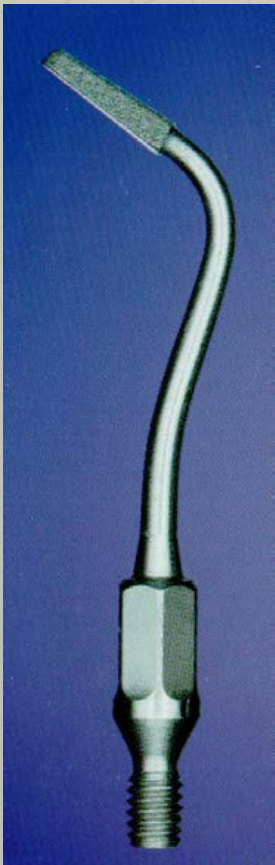
enamel at about **60°**



Final (secondary) preparation

Preparation of proximal cavosurface margins on the buccale, linguale walls.

SONICflex 60°

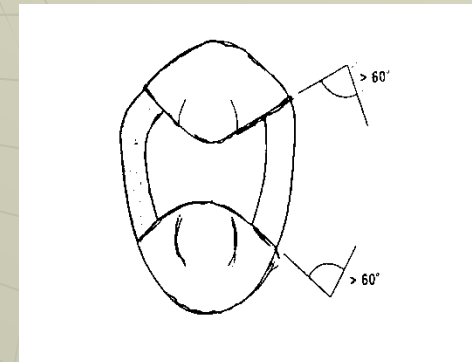
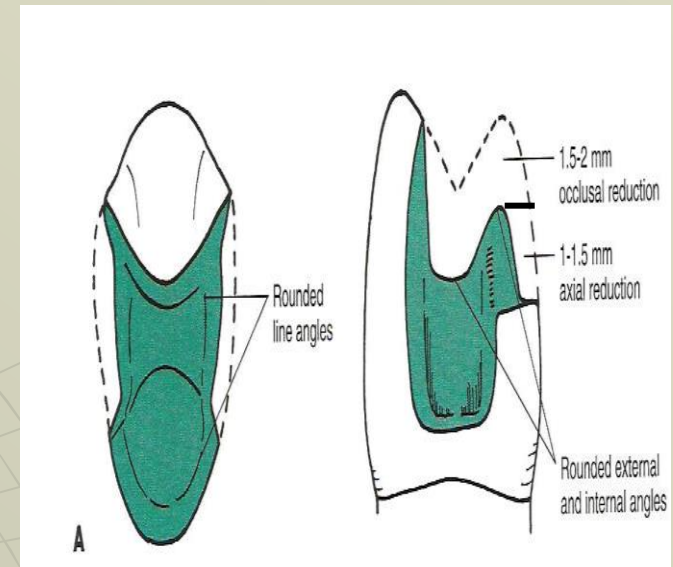


the proximal cavosurface margins **60°**, the gingival cavosurface margin **75°**

The laterale and gingivale surfaces are rounded.

Preparation for esthetic onlay/overlay

- Cusp reduction: 2 mm
- No counterbevels or reverse bevel** preparation
- Axial reduction : 1-1,5 mm
- Shoulder: without beveled**
- Proximal preparation: **60°**



The steps of making esthetic inlay /indirect method/

1. Shade selection, Preparation
2. Impression, Temporary filling
3. Tray-in
4. Cementation
5. Finishing, polishing

2. Impression, temporary filling

What kind of impression?

What kind of temporary filling?

3. TRAY-IN WITHOUT PRESSURE

- check the **cavosurface margin** and
- check the **proximal contact**



**NO OCCLUSAL
KONTROLLE !**

- wax (weaker)
- adhesive (stronger)



4. Fixation of inlay (cementation) /adhesive insertion /

Mikromechanical retention!

- **Isolation:** (absolut) rubber dam, plastic matrix strip, wedges, dental floss;
- **Preparation of inlay:** (inner surface)
depends on : ceramic or composit
- **Preparation of tooth:**
depends on the specific luting system
(acid etching, priming, bonding) setting!?
- **Insertion of inlay: with resin cement**

LUTING AGENT

(in case of esthetic restoration)

Nowdays: always (**COMPOSIT**) **RESIN** cement

-Viscositi:

- low-viscositi composit with konventionelle technic
- high-viscositi composit with USI or SI
vibration can change the viscositi
(ultrasound or sound tecnic) without water

-Setting: dual curing!

Glycerin-gel: for covering the surface of luting komposit!
Oxigen disturbs the polymerisation of the last layer of komposit

Preparation of tooth:

depends on the specific luting system

1. „Etch-and rinse” (total) bond + **resin cement** (dual-cured bond)

(RelyX ARC)

2. „Self-etch” bond + **resin cement** (Panavia F)
(**dual cured bond**)

-
3. „**Self-adhesive**” **resin cements** (self adhering cements used without application of any adhesive system)
(SmartCem, RelyX Unicem G-Cem)

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Preparation of ceramic inlay

-Sandblasting in the laboratory

-**HF acid** : for fired ceramic

1-2 minutes for the inner surface of inlay

remove with water

Concentration of HF acid: 4-10 %

-**Ammonium bifluoride**: 10 % remove with water

Glas ceramic

Dicor, Empress

-**Silan**: helps the contact between the ceramic and luting cement (ceramic-**silan**-resin cement bond tooth)

Preparation of composit inlay

- ◆ This can be different depending on the used composit material
- ◆ Roughened the surface
- ◆ Sandblasing in the laboratorium
- ◆ **HF acid: Belleglass**
- ◆ **Not HF acid: Gradia**

5. finishing, polishing

Checking the occlusion now!

When, and how to remove the excess luting material?

Finishing:

- fine grit diamant instrument (yellow, white)
- 16-30-40 fluted carbide burs

Polishing:

- rubber
- polishing paste

Accuracy of inlay

The weakest point of inlay is the cavosurface margin

- ◆ Cast metal: 20-50 μm
- ◆ Ceramic: 40-80 μm
- ◆ Composit: 40-100 μm



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Adhesivtechnik and Rubberdam-application

