

Prosthetics II.

Fixed dentures
Inlay, root canal inlay

Fixed dentures

- Cemented (fixed) on/in pilots, abutment teeth.
- Inlays (inlays, onlays, overlays, partial crowns).
- Crowns
- Bridges

Inlays

Composit, cermic

Metal





Fixed dentures

- Cemented on the teeth – crowns, bridges, inlays



Fixed bridge

Fixed dentures

- Material – metal alloy, ceramics



Removable dentures

- Partial
- Complete (full)



Procedures

- In dental surgery
- In dental laboratory
- Special instruments
- Basic (main) materials
(metal alloys, ceramics, polymers)
- Auxilliary (accessory) materials
(impression, carving, die, insulating investing, grinding, polishing)

Manufacturing of dentures

Model of gypsum (plaster) – model of a denture (wax pattern).

Model of a denture (wax pattern) directly in the mouth – rarely.

Denture is formed without a wax pattern in the dental lab.

Manufacturing of dentures

Model of gypsum (plaster) – model of a denture (wax pattern).

Impressions of the jaw - negativ

The impression is filled with a casting material (gypsum) – poured into



Model
(various purpose)

Models

- Working model – the denture is produced on this model (special procedures)
- Opposing model (antagonal) - necessary for the recognition of intermaxillary relationship
- Bite registration - wax

Manufacturing of dentures

- The denture (not the denture itself but the model of the denture) is produced on the working model.
- The model of the denture is made of the carving wax.
- The wax is replaced by the main (base) material.

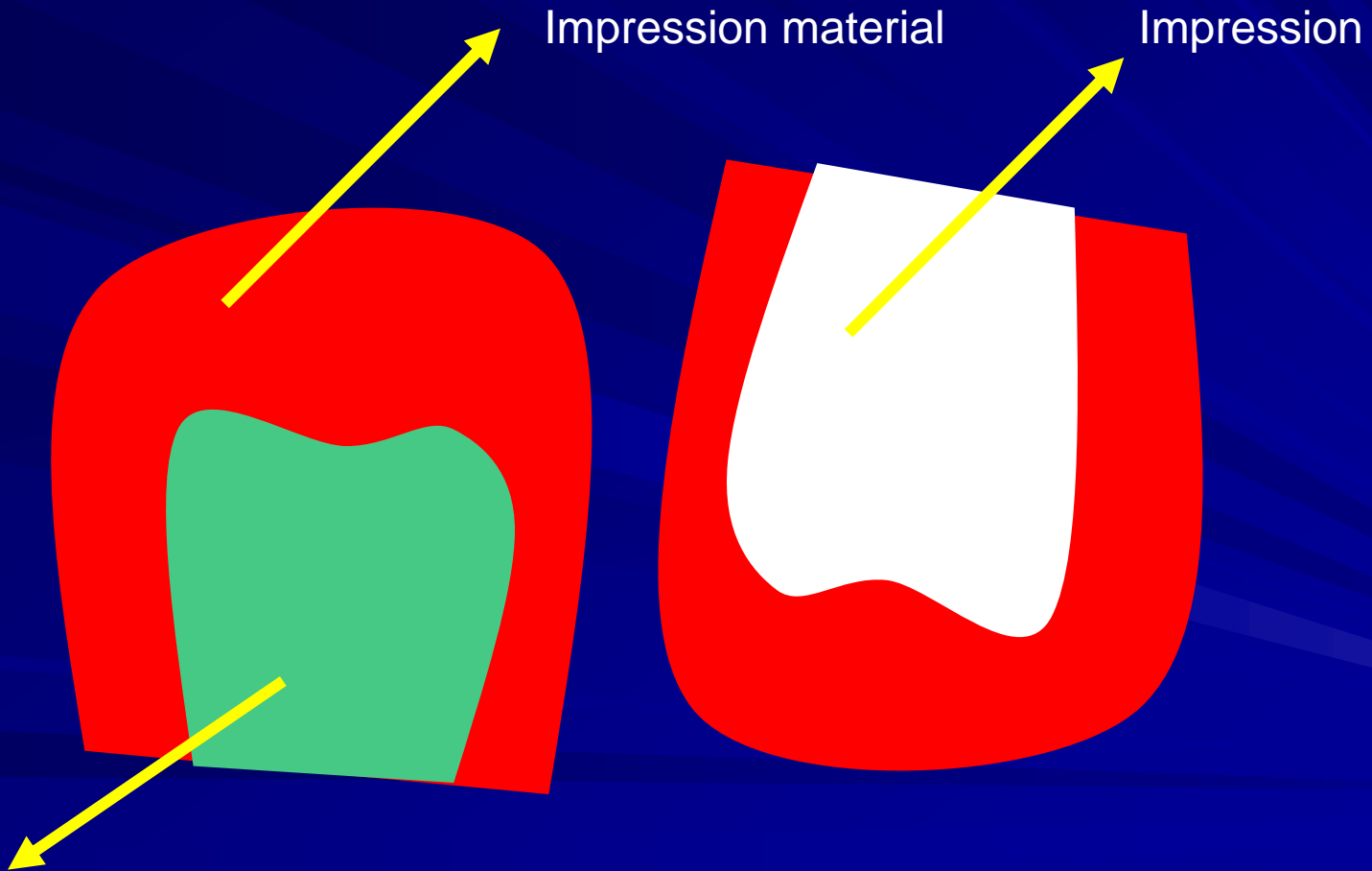
Fabrication of dentures

The model (wax) of the denture is invested

The wax is removed from the form and the base material is placed into the form.

Wax removal:

*The wax is burned out (for metal alloys)
or removed by hot water (for polymers)*



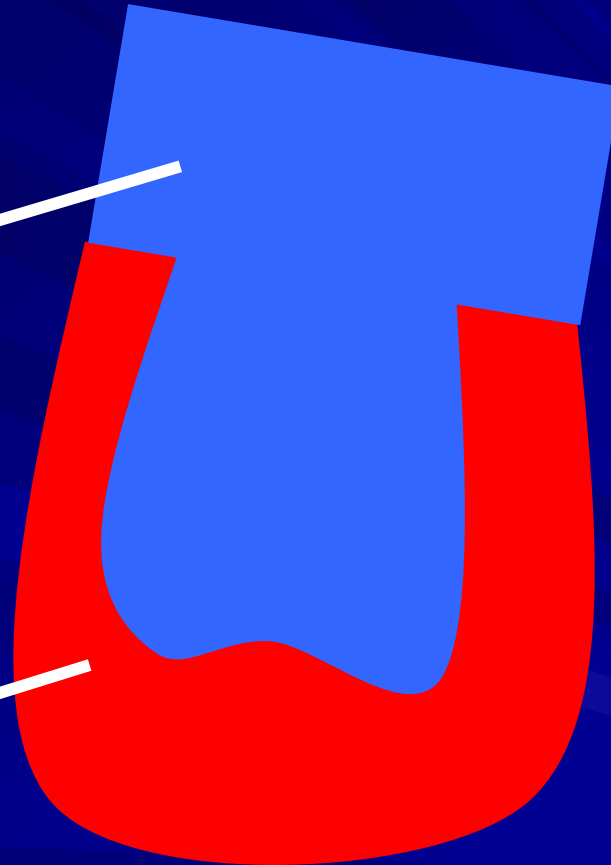
Impression material

Impression

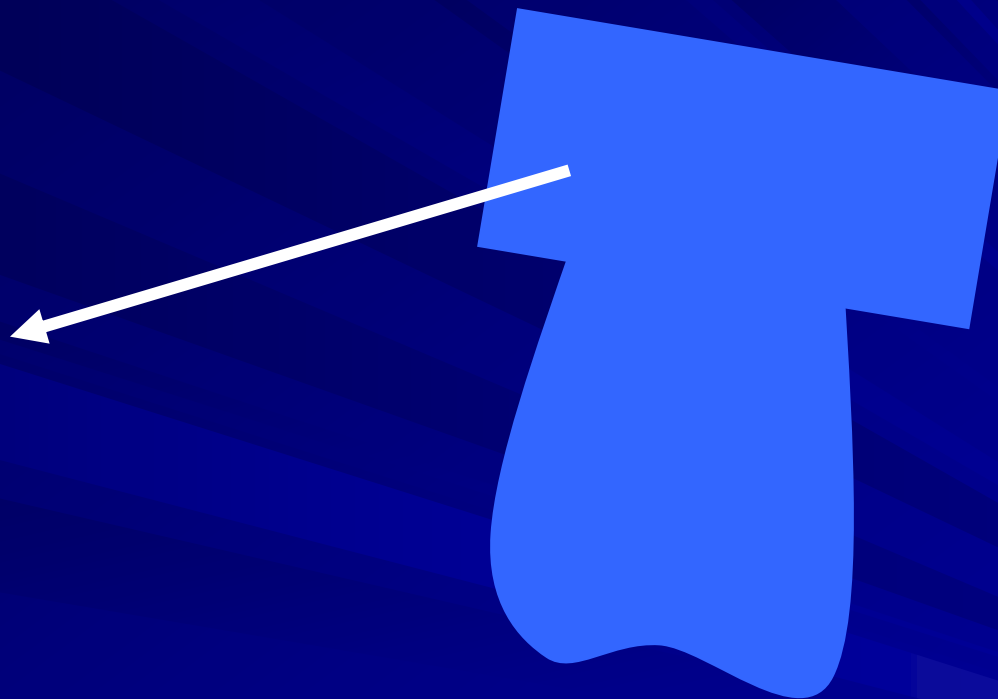
Tooth

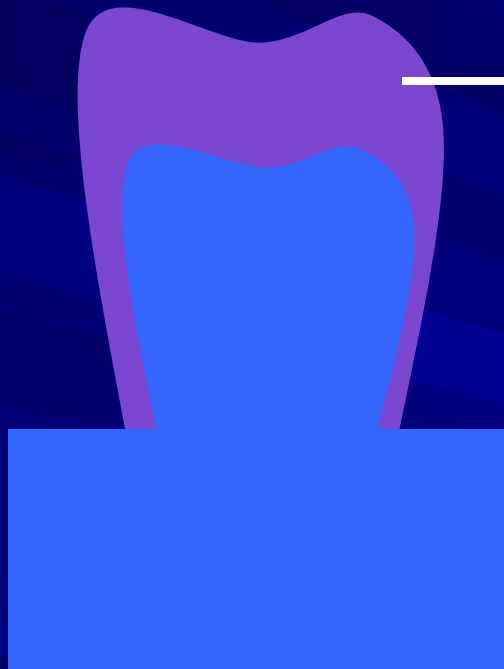
Gypsum

Impression

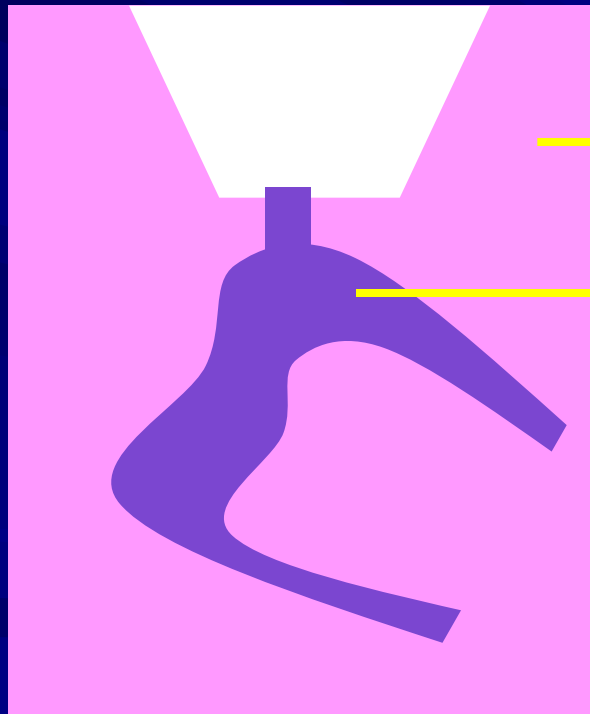


Plaster



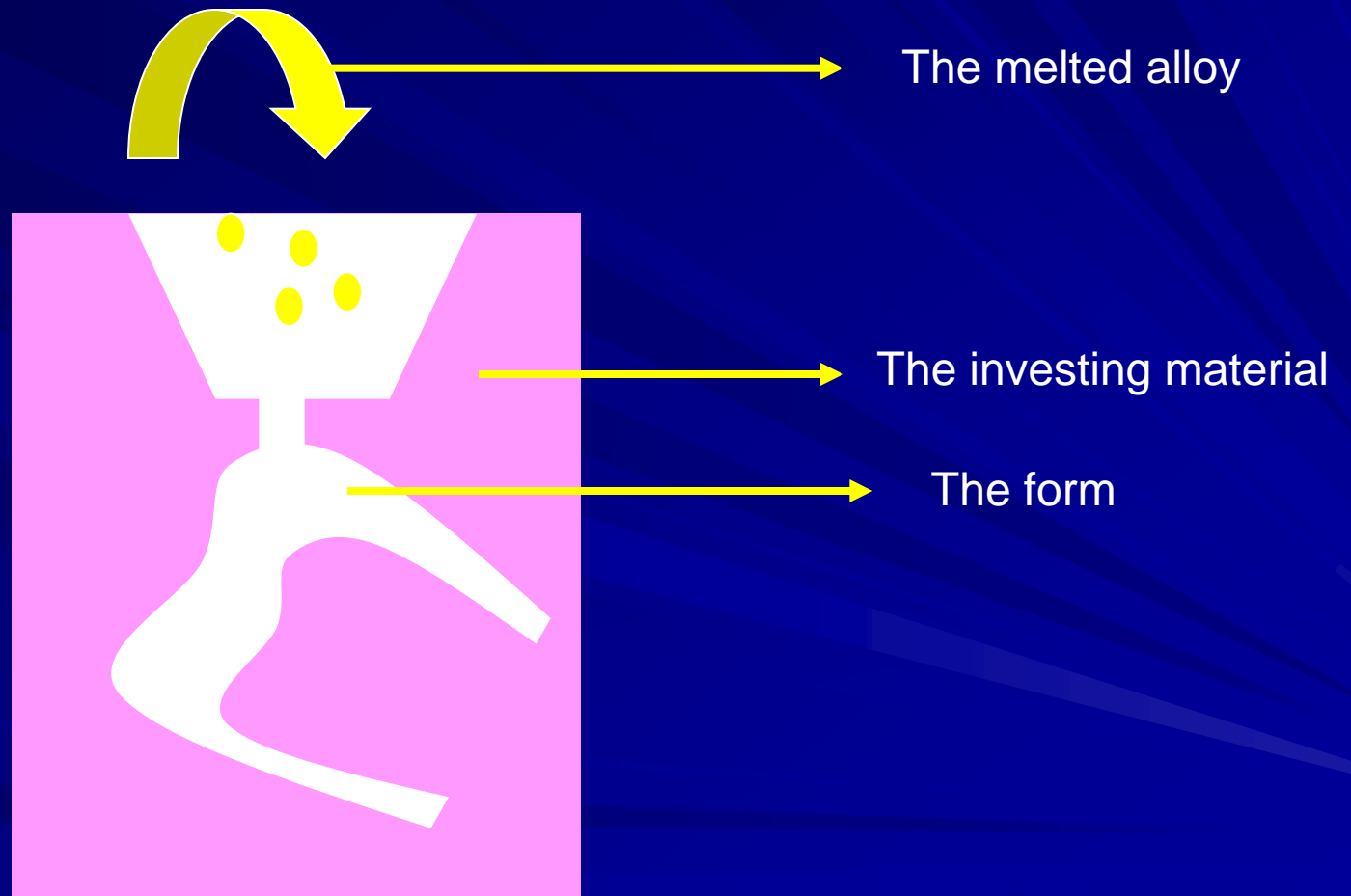


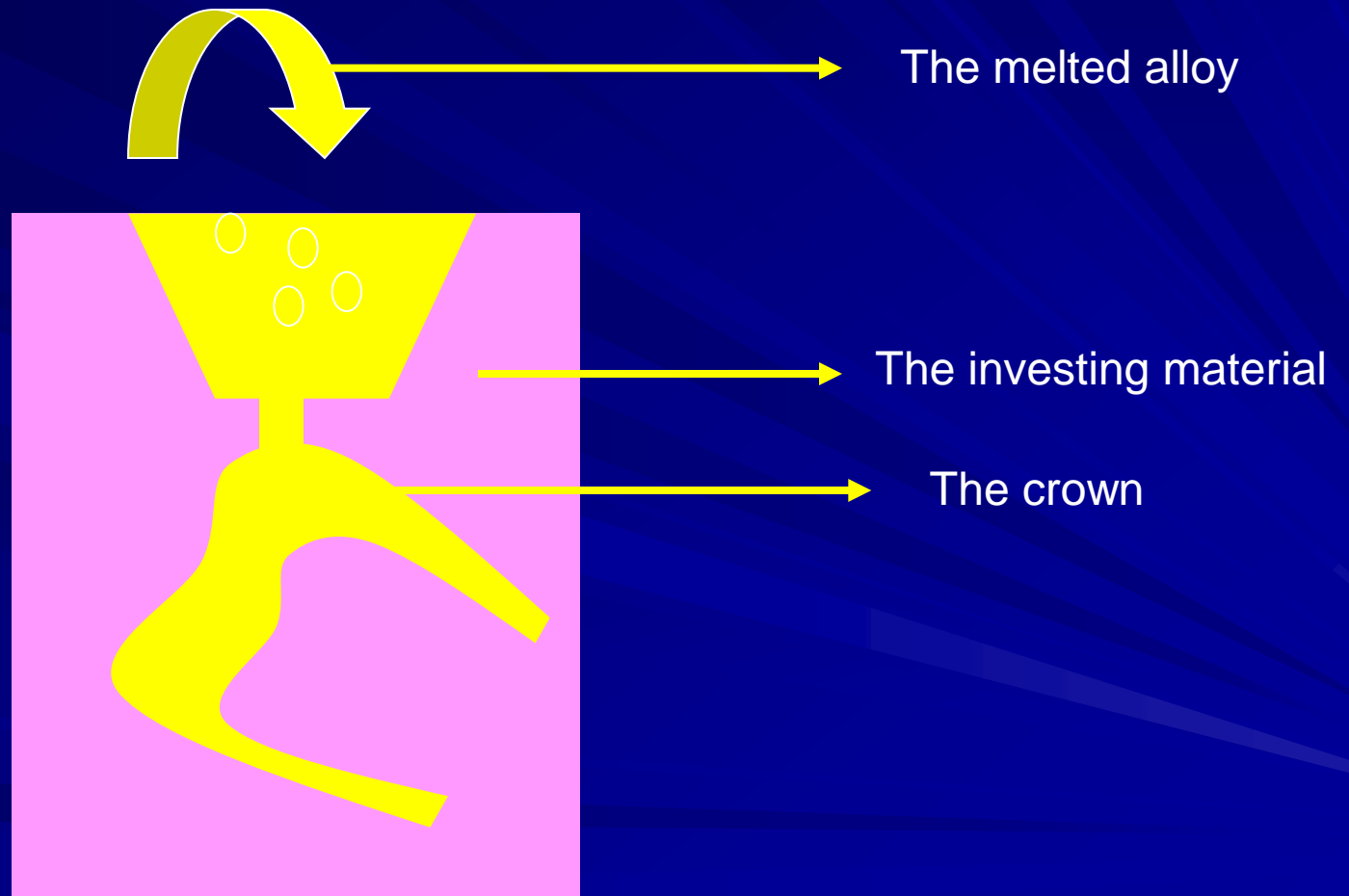
The model (wax pattern)

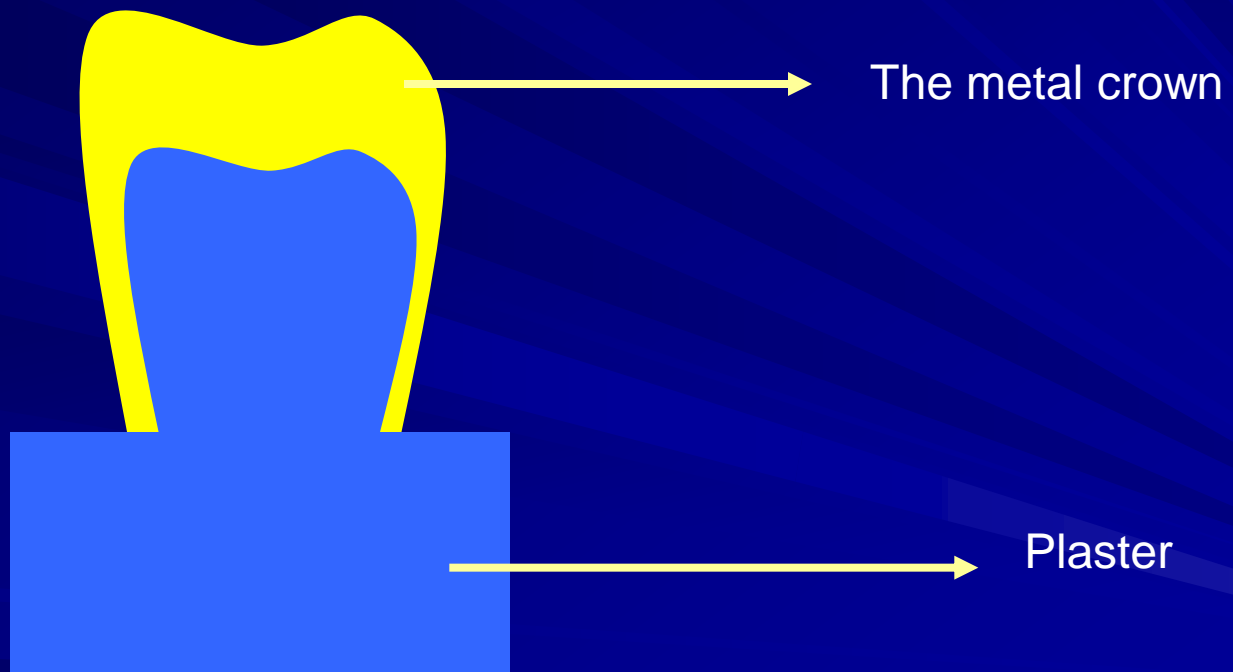


The investing material

The model
(wax pattern)







Manufacturing of dentures

The method described above = indirect method



Manufacturing of dentures

Direct method

Manufacturing of dentures

Direct method

No impression

The model of the denture is made directly in the mouth

For inlays only

Inlays

- Rigid fillings
- Manufactured in a dental lab
- Direct or indirect method
 - Direct method rarely
 - Indirect method most common

Inlay

■ Crown inlay

- a part of a clinical crown is replaced

■ Root canal inlay

- The inlay is cemented into the root canal and replaces a crown (abutment tooth – stump, snag)

Crown inlay

Material

- *Composit*
- *Ceramics*
- *Metal Alloys*



Angle of convergence

- 0° - maximum
- 6° - very good
- 15° - acceptable
- 20° - insufficient

Optimum 6° - 15° .

Crown inlays

Indications

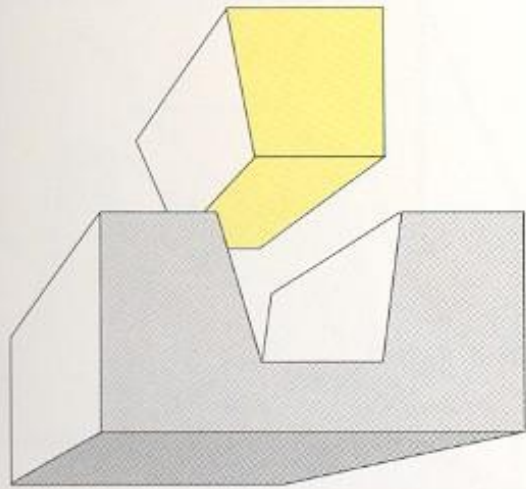
- A big lost of dental tissues
- Big interdental spaces
- Next to the crowns and bridges made of metal alloy

Crown inlays

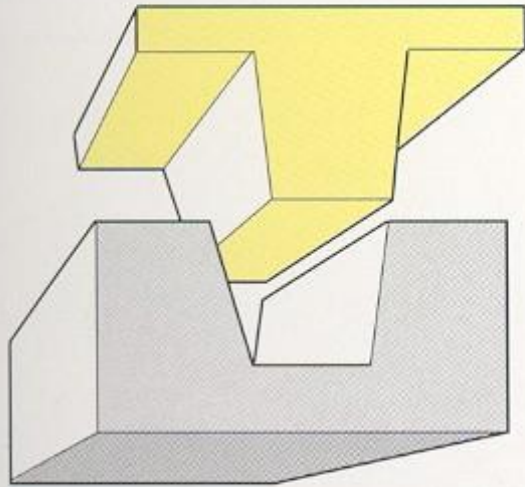
Contra - indication

1. *Too small - shallow (flat) cavities*
2. *High caries risk*
3. *Frontal area (metallic)*

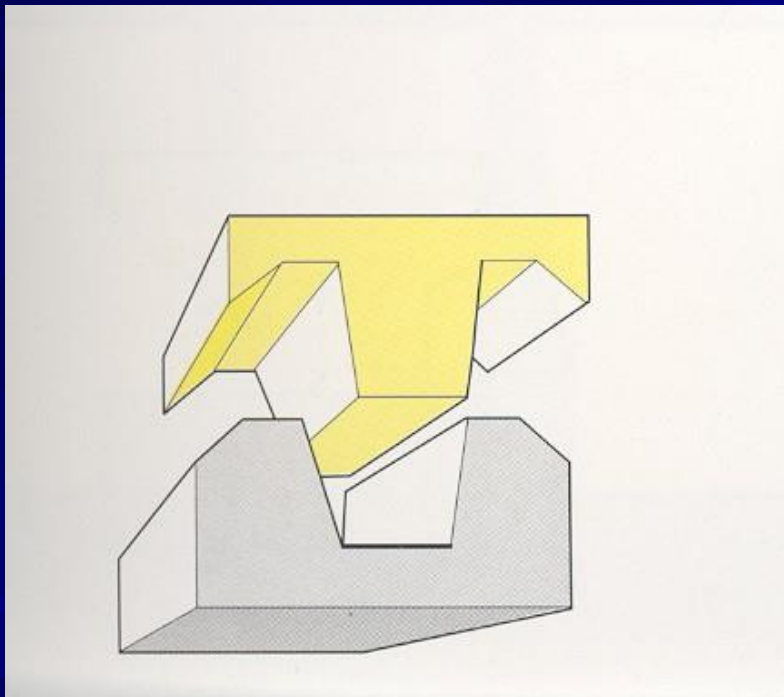
Inlay



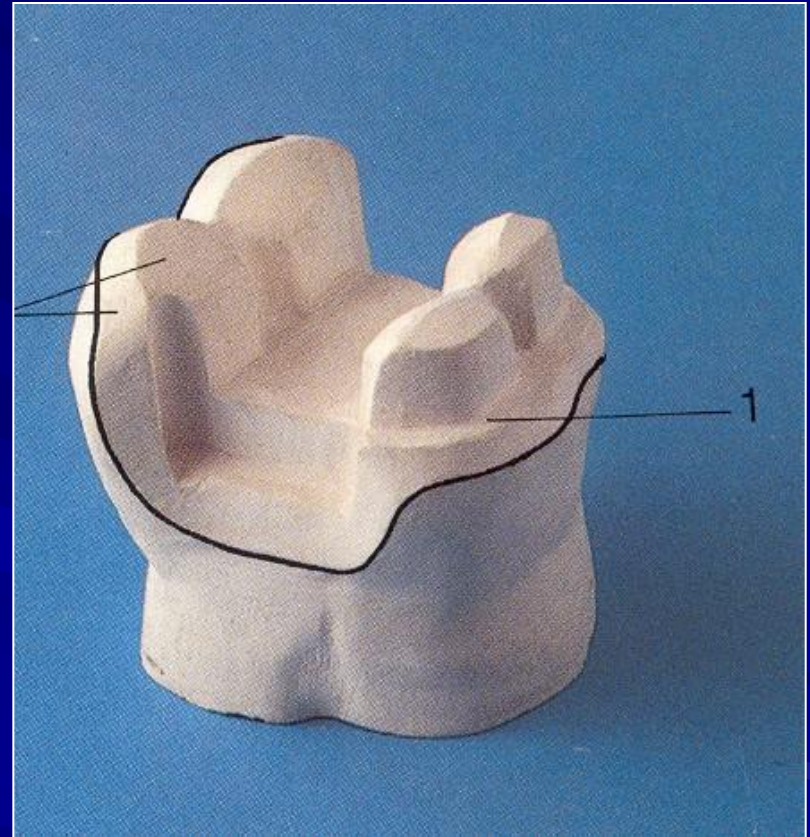
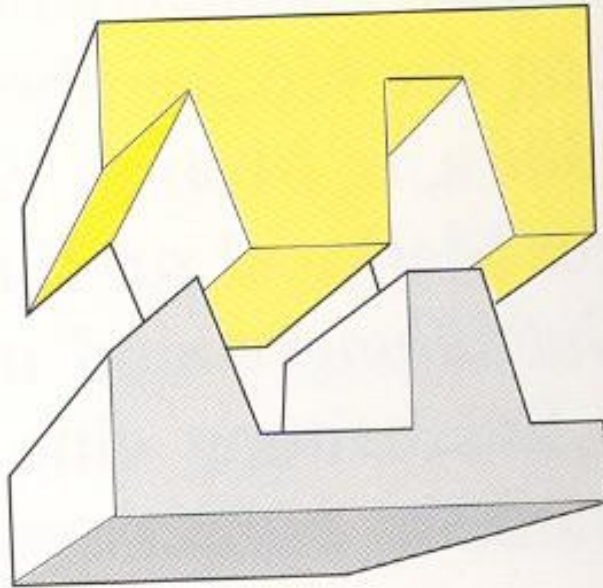
Onlay



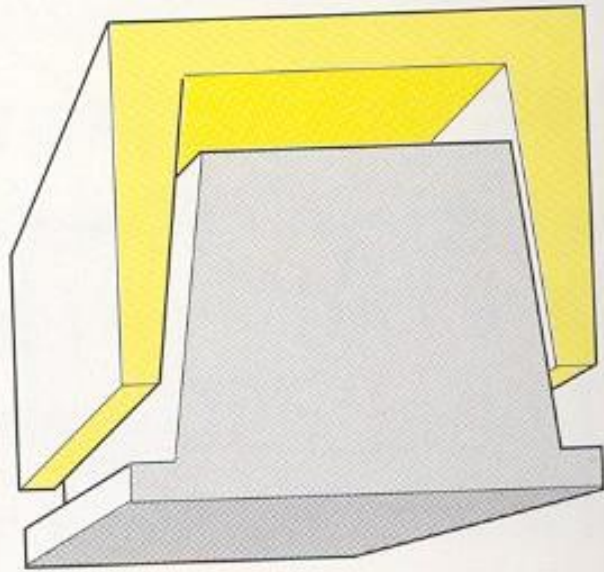
Overlay



Partial crown



Crown



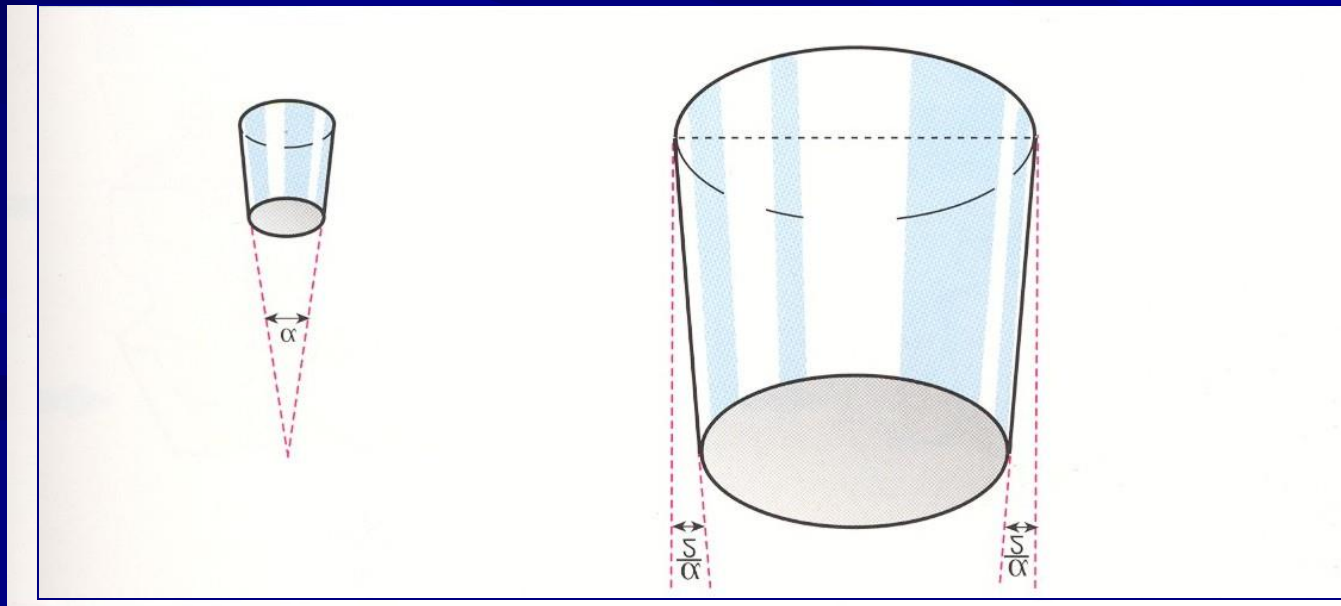
Retention of rigid fillings

Whitstand capability against axial forces:

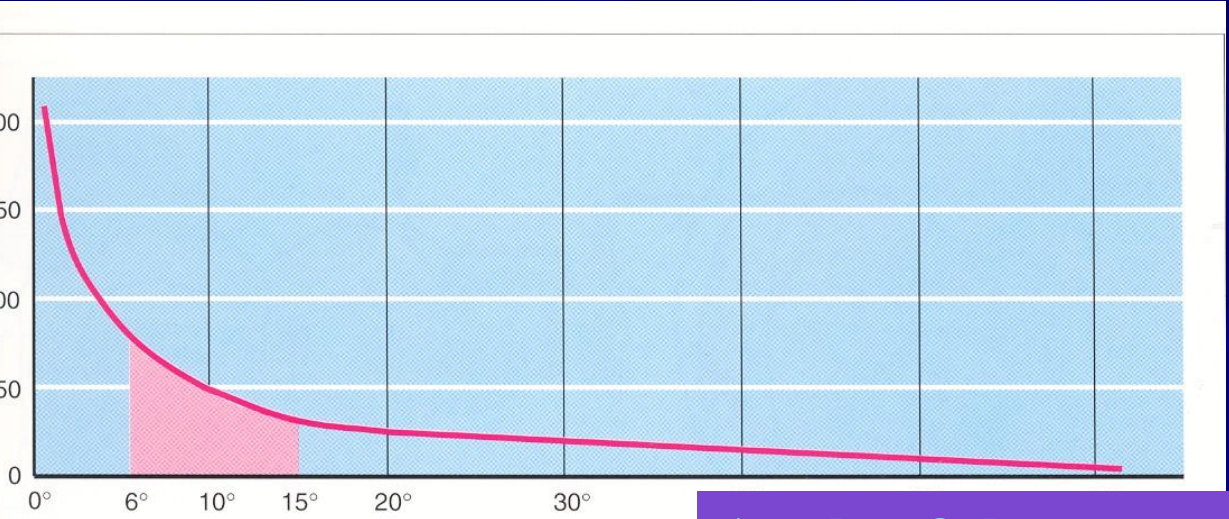
Geometry of the preparation

(facilitating shape)

Quality of the luting material

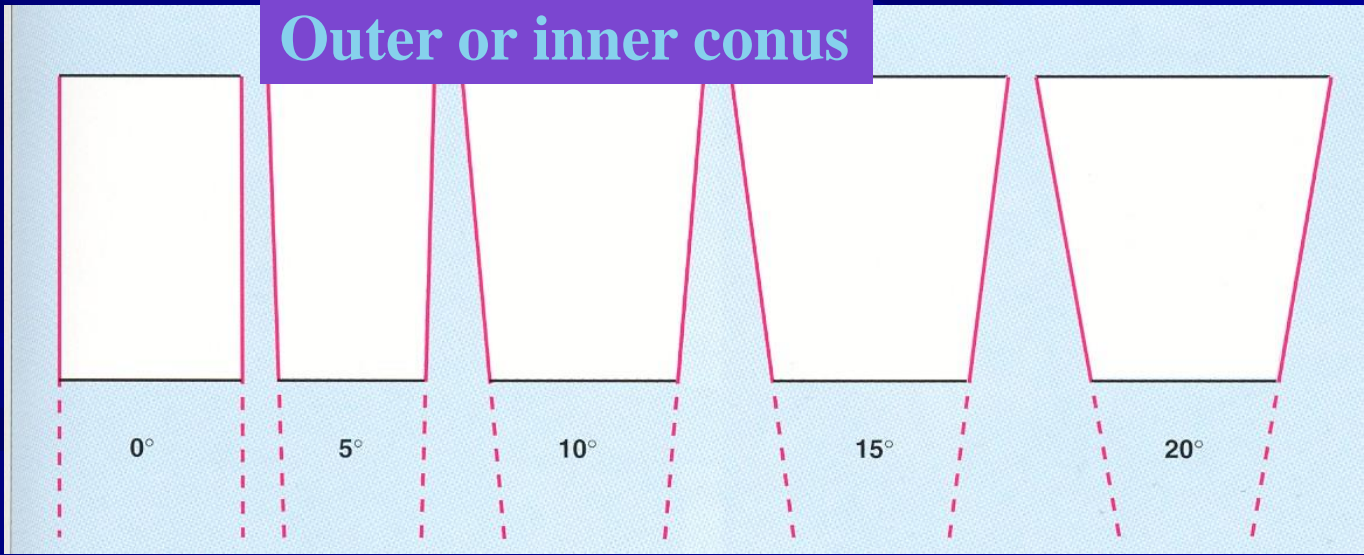


Retention g/mm²



Angle of the convergence

Outer or inner conus

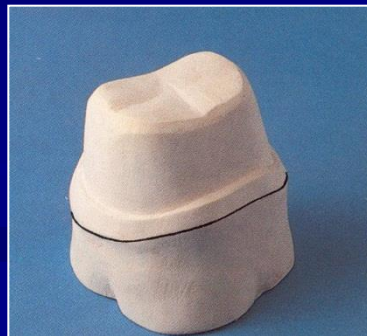


Retaining areal

- Surface of contact

Rigid filling

Inlay or crown (internal, outer, combined)



Stability of rigid fillings

Whitstand capability against horizontal forces

Angle of convergence

Axial length contact surface





Basic rules of cavity preparation

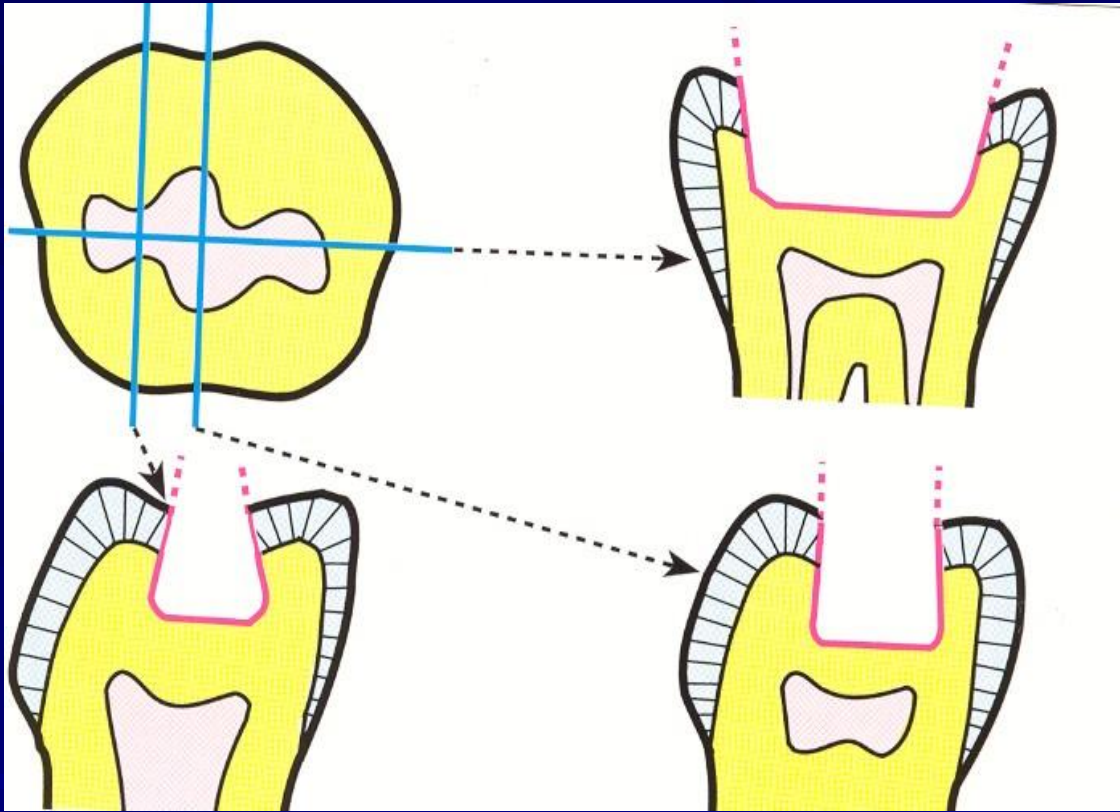
- Box
- No undercuts
- Light divergence of the walls (facilitating shape)

Box

Undercuts

Simple box

Facilitating form

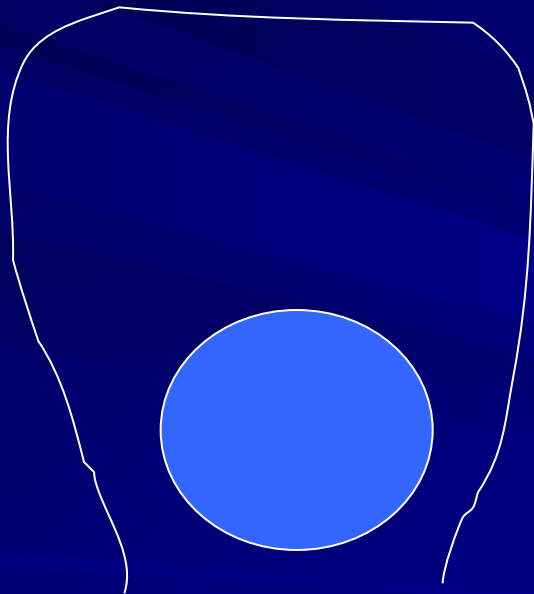


Inlay of metal alloy

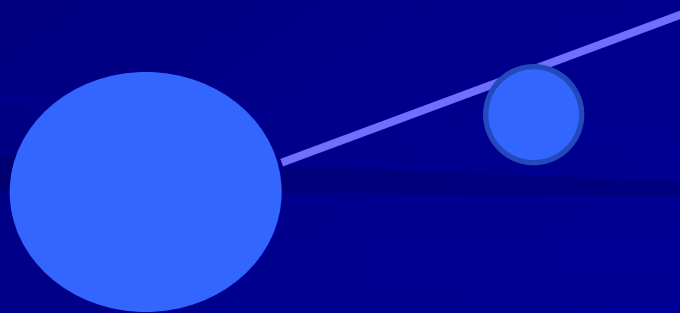
- Direct method
- Indirect method

Inlay of metal alloy

➤ Direct method



Direct modelling in the mouth
Special wax – casting wax,
(special polymers)
Sprue pin
Investment
Method of the lost wax



Inlay of metal alloy

Direct method

- Central cavities (class I., class V.)
- Root canal inlays

Inlay of metal alloy

Indirect method

Taking of the impression

Model

Modellation of the casting wax,
(special polymers)

Sprue pin

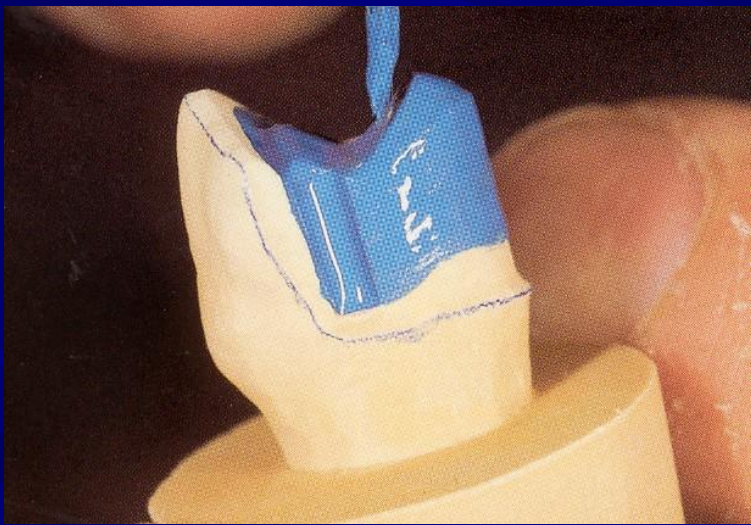
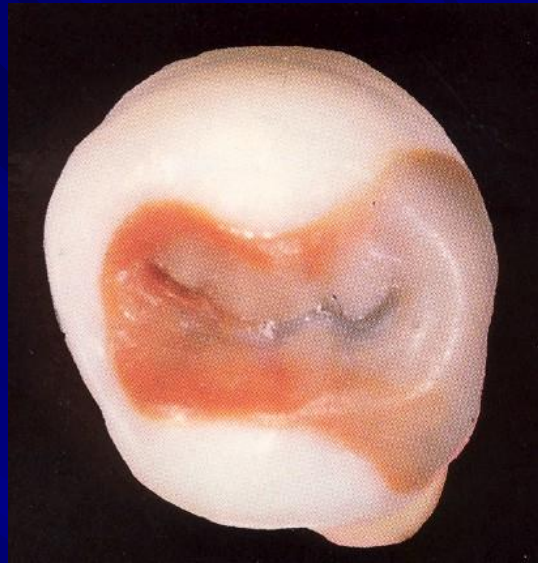
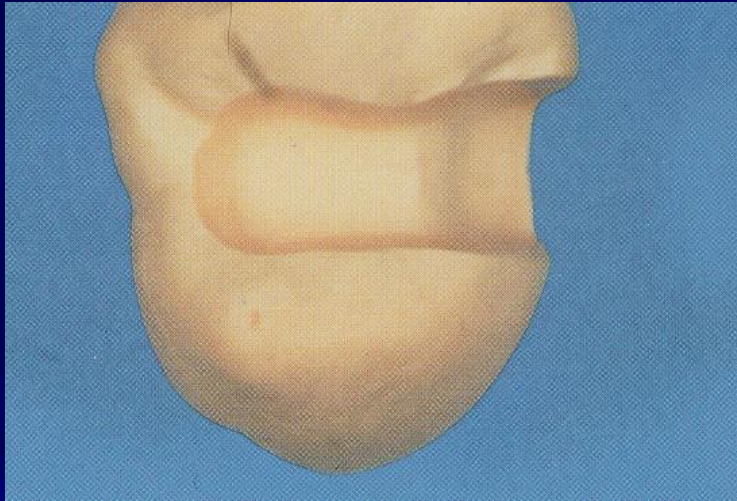
Investment

Method of the lost wax





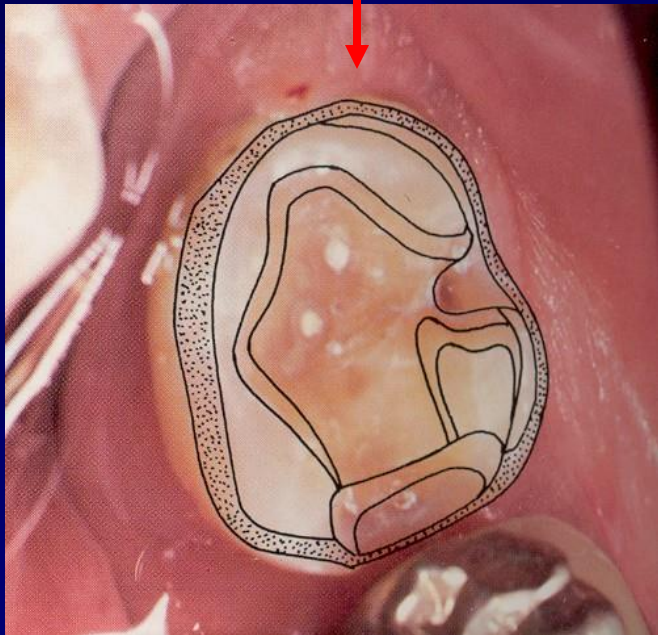


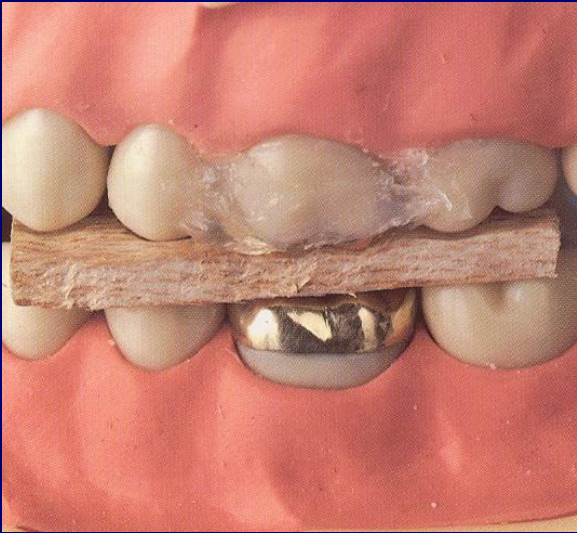
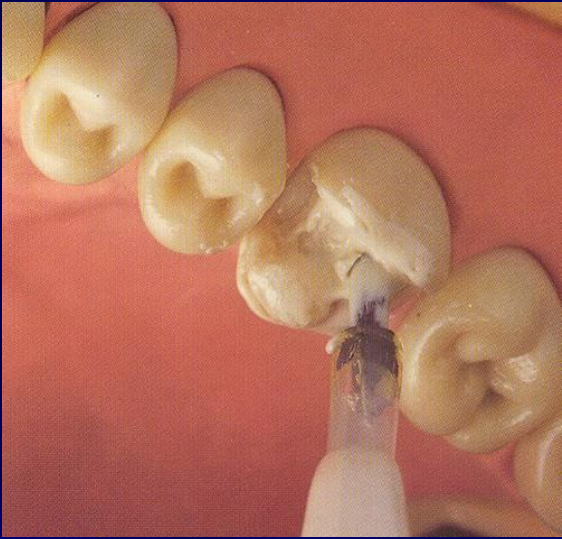




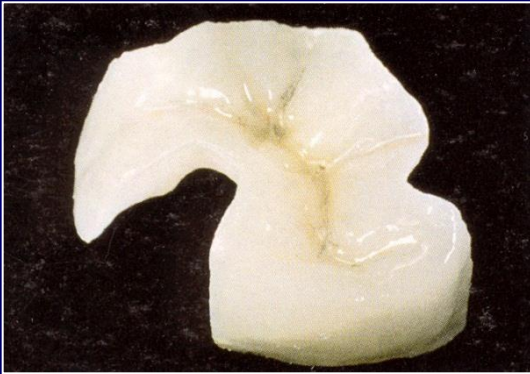
Dokončená preparace

Nasazená rekonstrukce





Aesthetic inlays – composite materials, ceramics



Special procedure



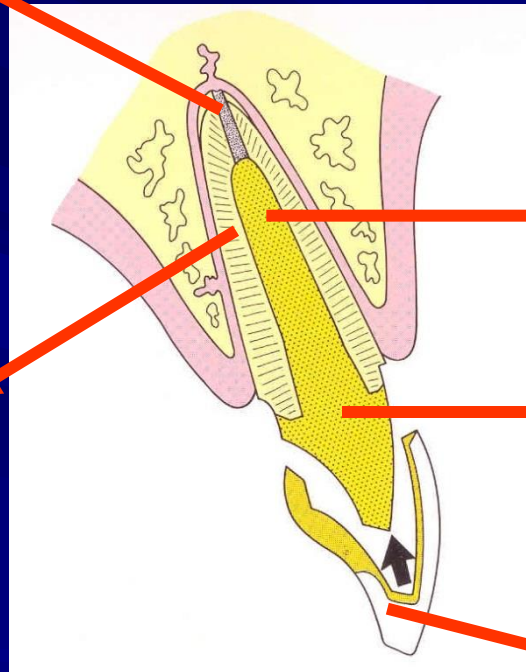
Indirect method always





Root canal inlay

Root canal filling



Root post

Core

Root

Crown

Root canal inlay

Indication :

Restoration for teeth with lost crown
(cca 2/3 of the crown)

It is anchored in the root canal

(the tooth must be endodontically treated)

The coronal part is formed as a stump for
the crown

It enables to treat this teeth with crown

Contraindication

- Teeth that cannot be treated endodontically
- Decay of the root or coronal part of the crown
- Less than 1mm hard dental tissues supragingivally
- Destruction of root canal walls circularly

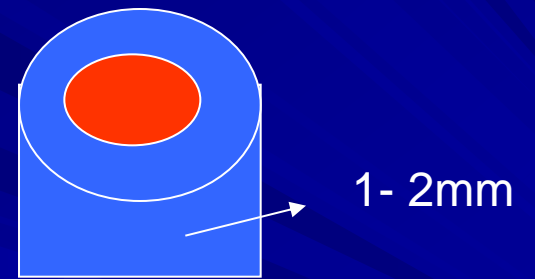
Root canal inlay - preparation

- Removal of the root canal filling (2/3), 4 mm of the root canal filling must be left.
- The third rule

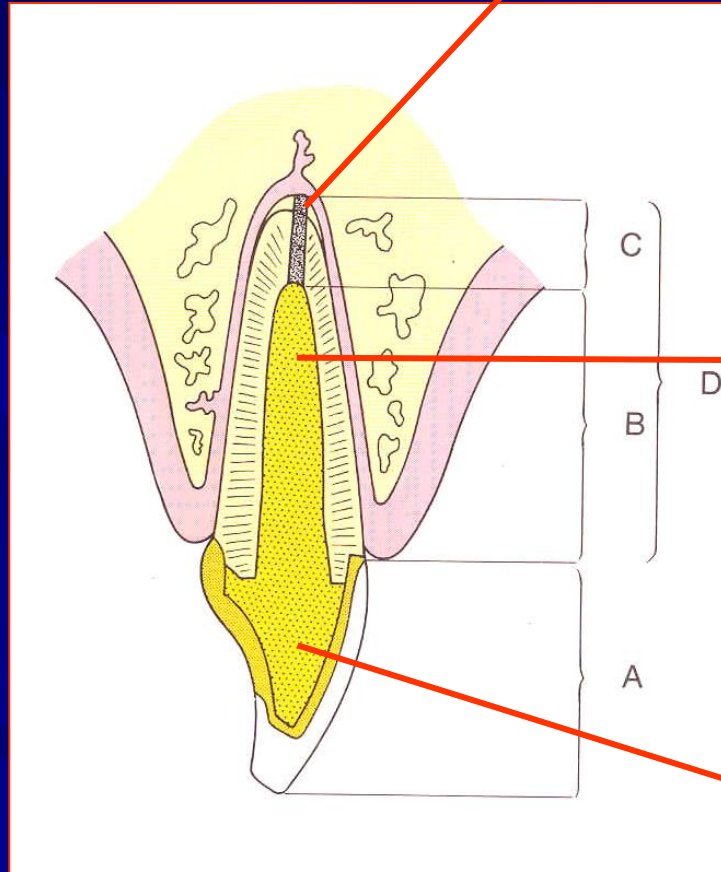
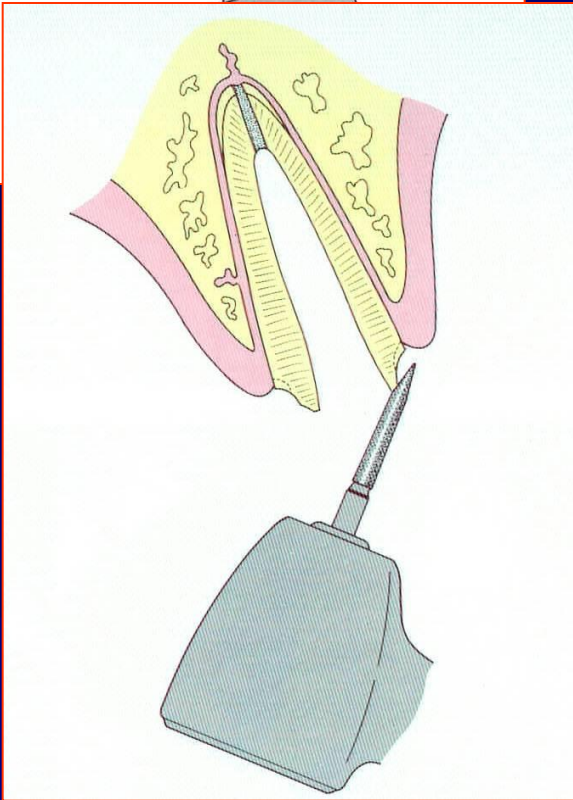
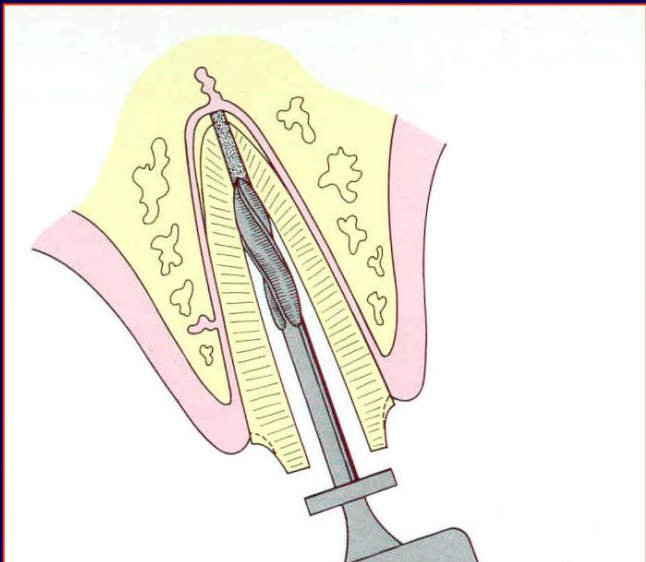
Gates, Peeso – Largo,

Beutelrock – these burs has „flame form“





Preparation



4mm at least

2/3 of the
root canal length

1/4 of the total length

Direct method

Isolation

Modelling – casting wax,
heated, flowing

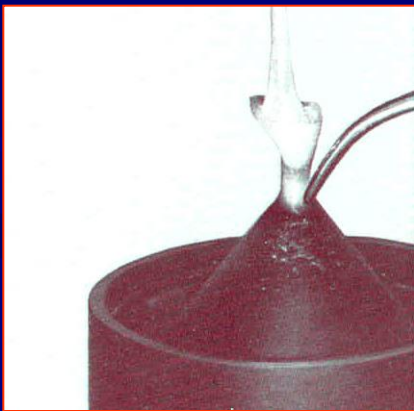
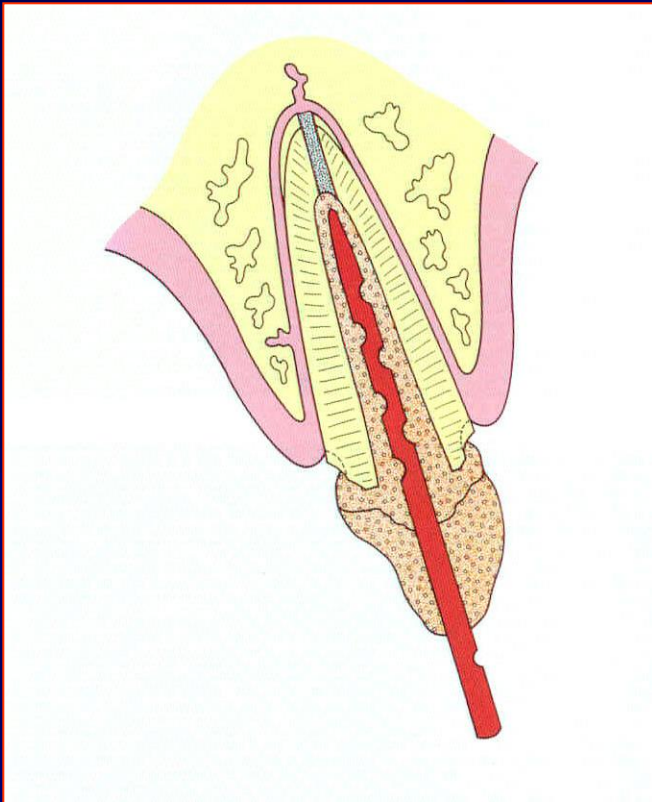
Sprue pin with reservoir

Sprue cone

Investment

Lost wax method

(burntout in the special oven)



Indirect method

Impression

Model

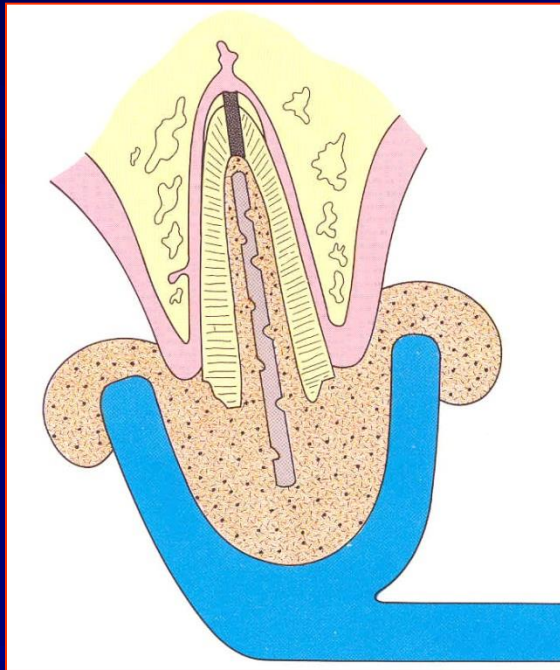
Modelling – casting wax, heated, flowing

Sprue pin

Investment

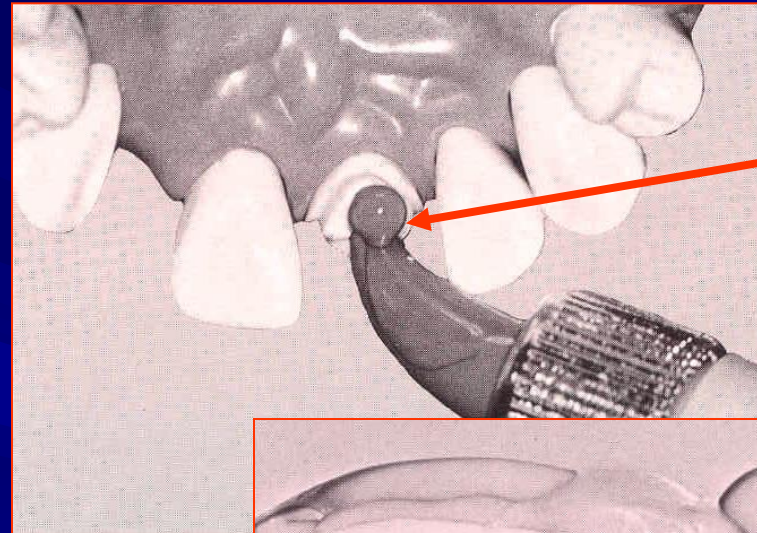
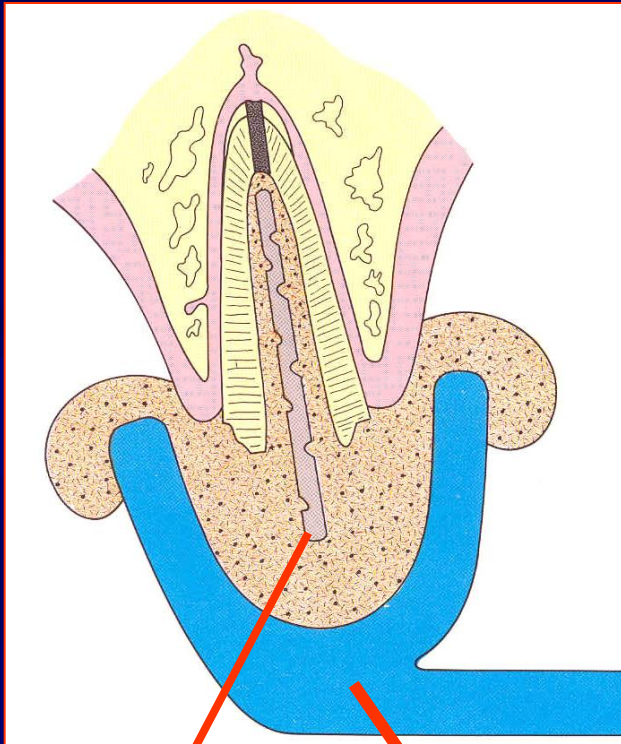
Lost wax method

(burntout in the special oven)

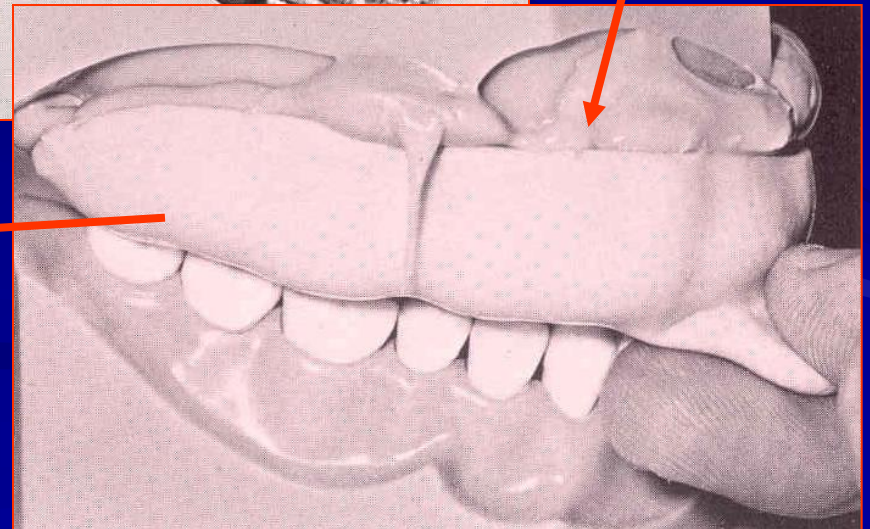


Indirect method

Impression

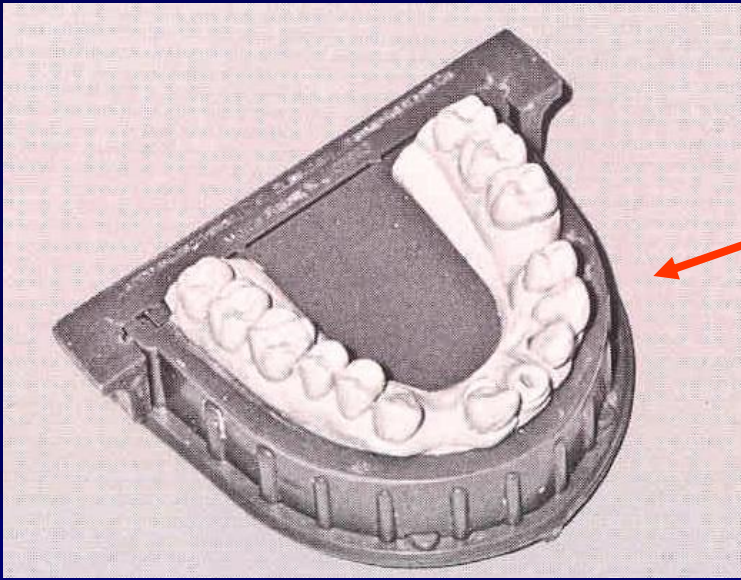


Impression material



Wire

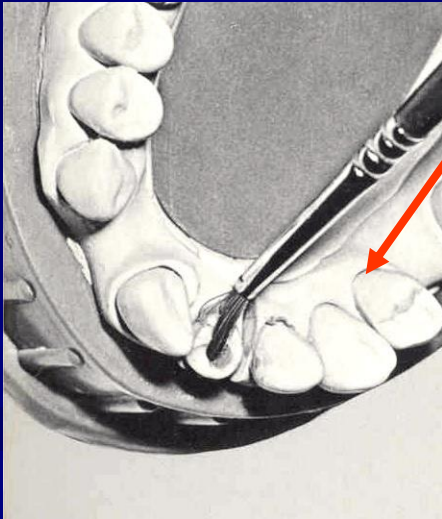
Impression tray



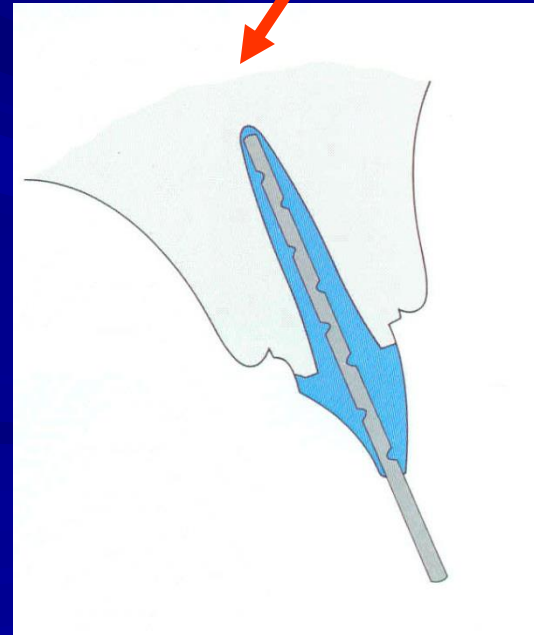
Model



Insulation



Modellation



Indirect method

Impression

Model

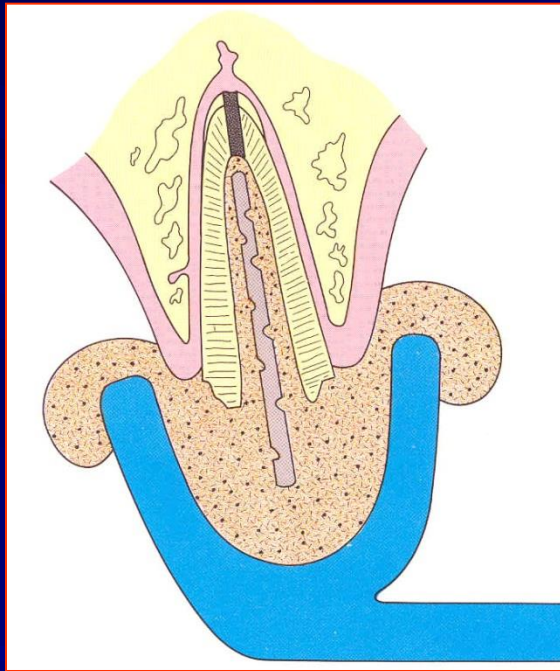
Modelling – casting wax,
heated, flowing

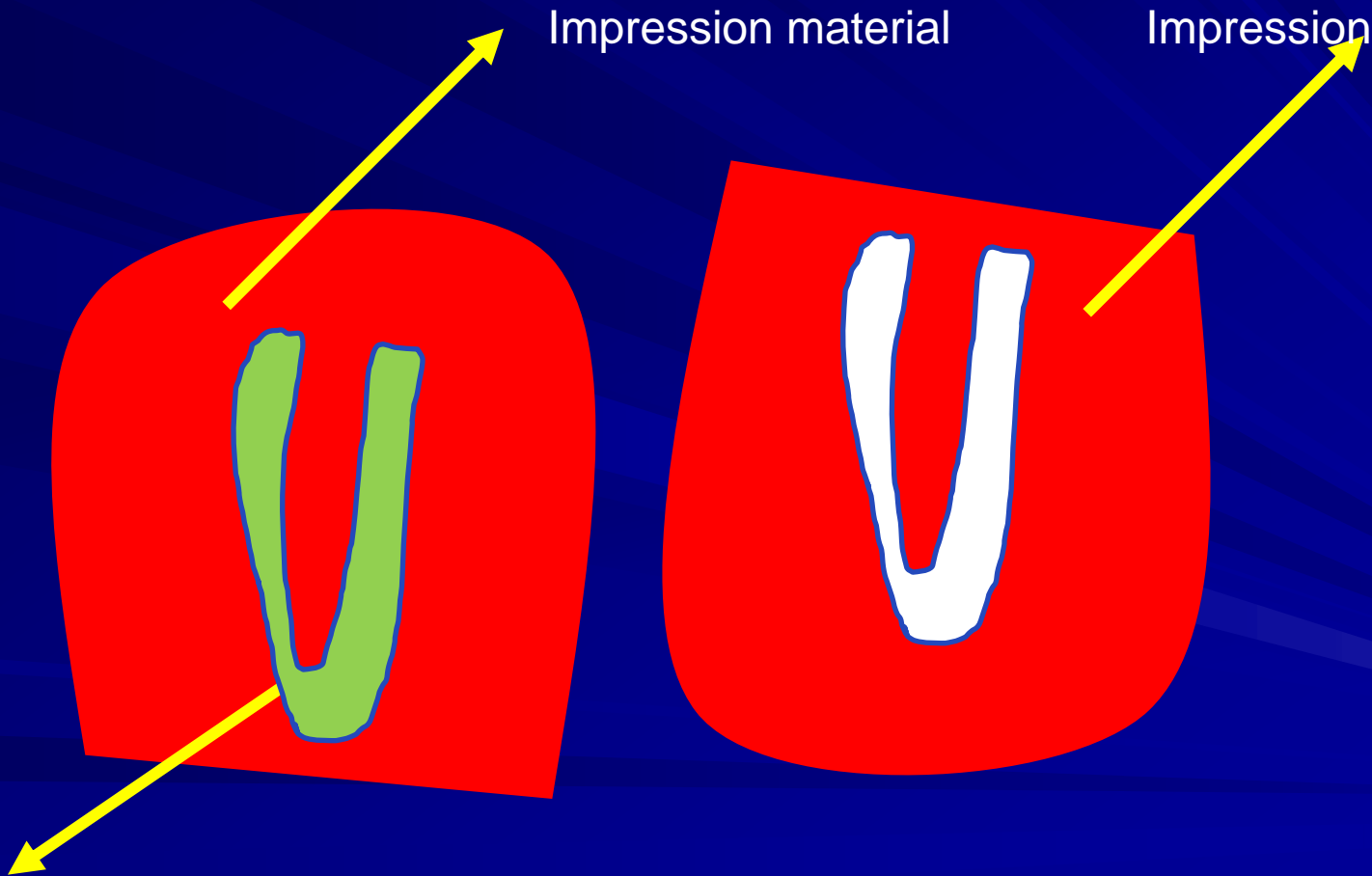
Sprue pin

Investment

Method of the lost wax

(burntout in the special oven)





Impression material

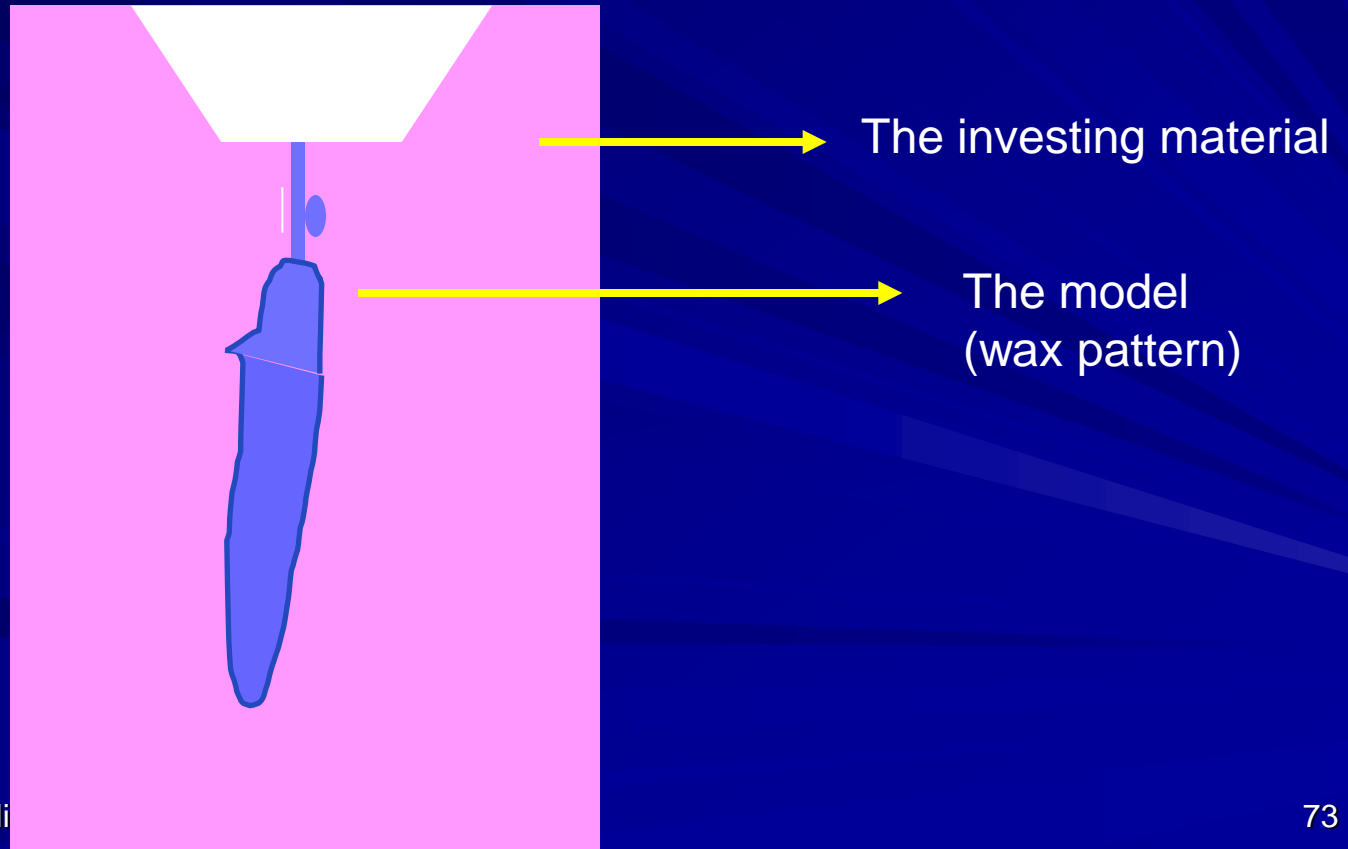
Impression

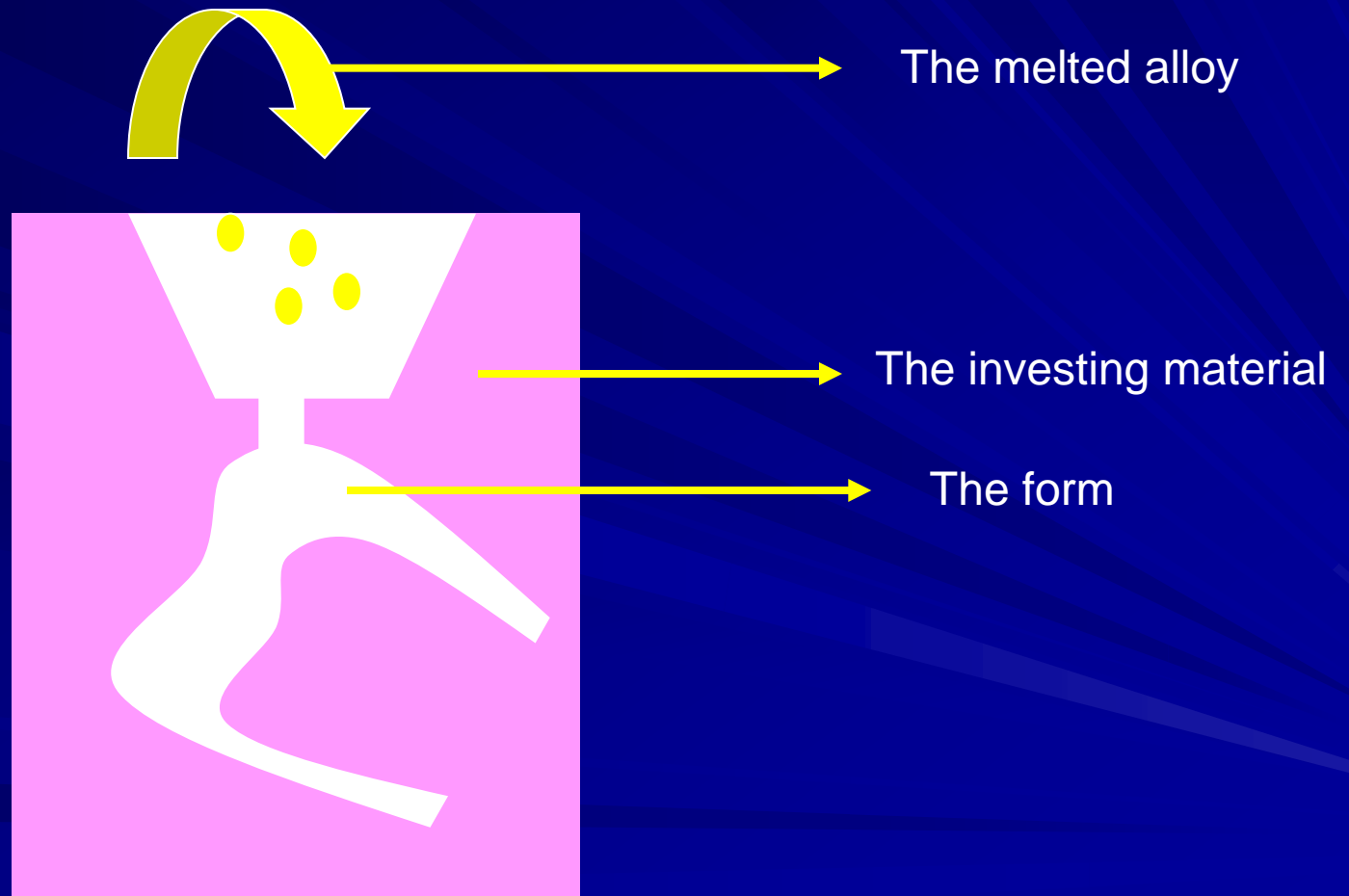
Tooth

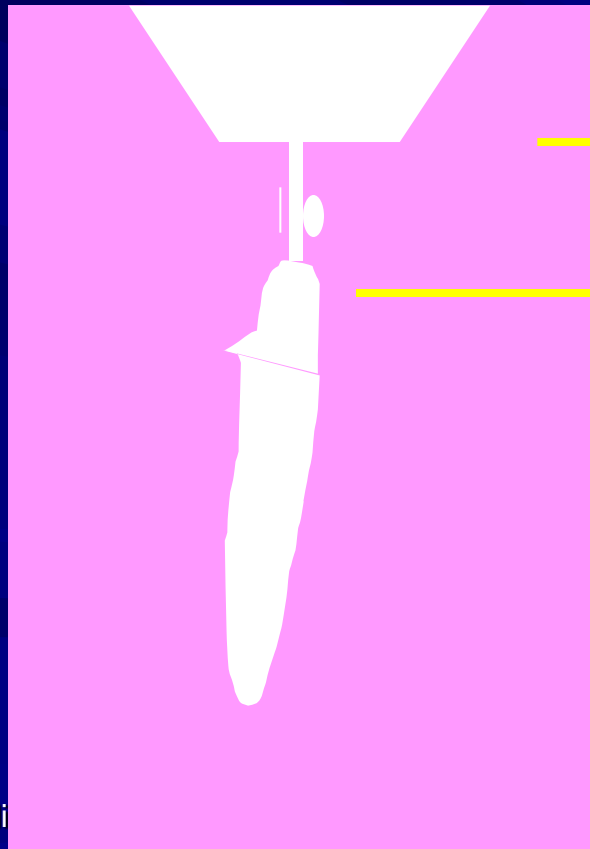
Plaster



Model

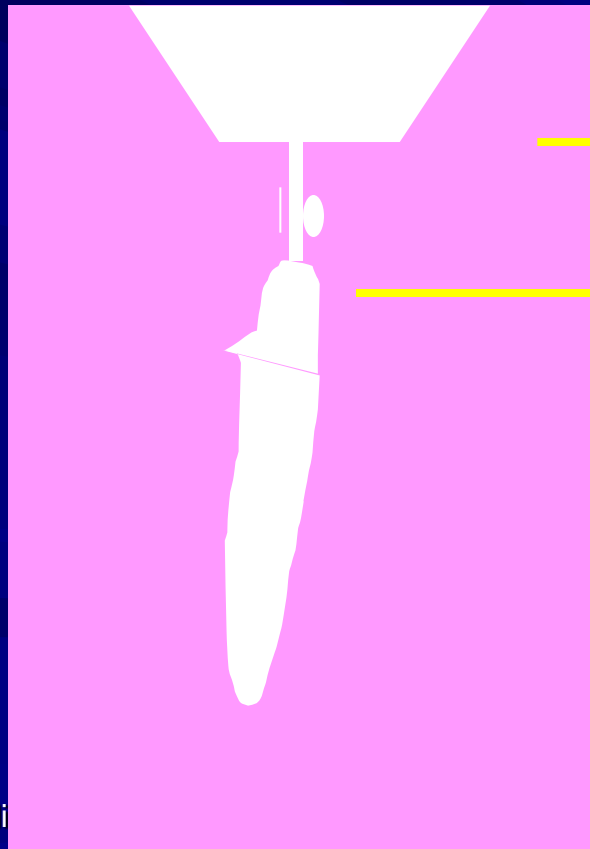






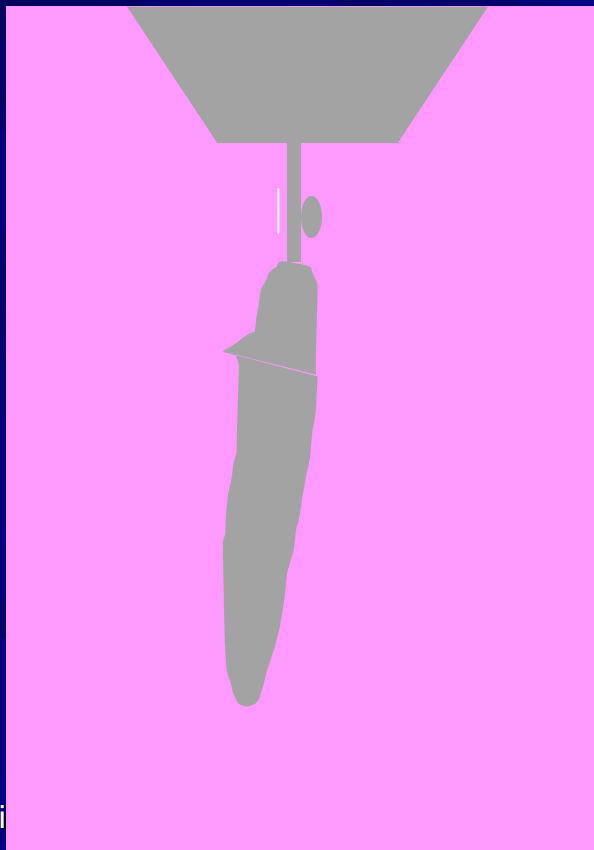
→ The investing material

→ The model
(wax pattern)



→ The investing material

→ The model
(wax pattern)



■ Final product



Cementation

- Zinkoxid phosphate cement
- Lentulo
- Vaseline
- Removal of access of the cement

