

# 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

- 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

- $0^\circ$  - maximum
- $6^\circ$  - very good
- $15^\circ$  - acceptable
- $20^\circ$  - insufficient

Optimum  $6^\circ$  -  $15^\circ$ .

# Crown inlays

## Indications

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

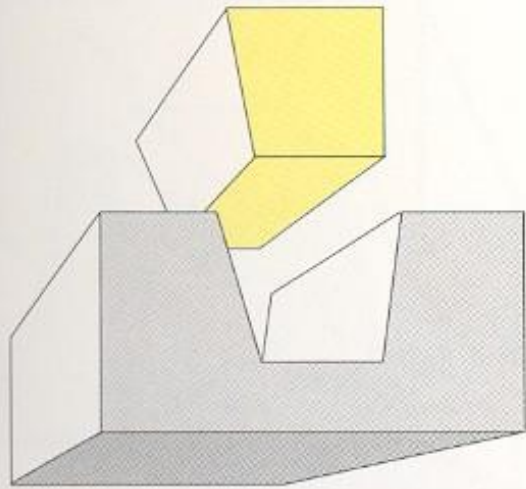
# Crown inlays

## Contra - indication

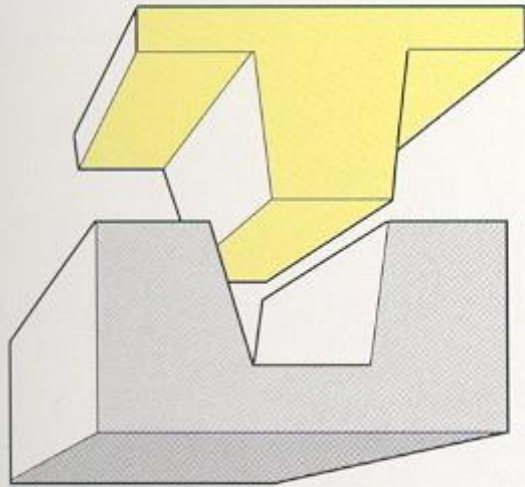
1. *Too small - shallow (flat) cavities*
2. *High caries risk*
3. *Frontal area (metallic)*



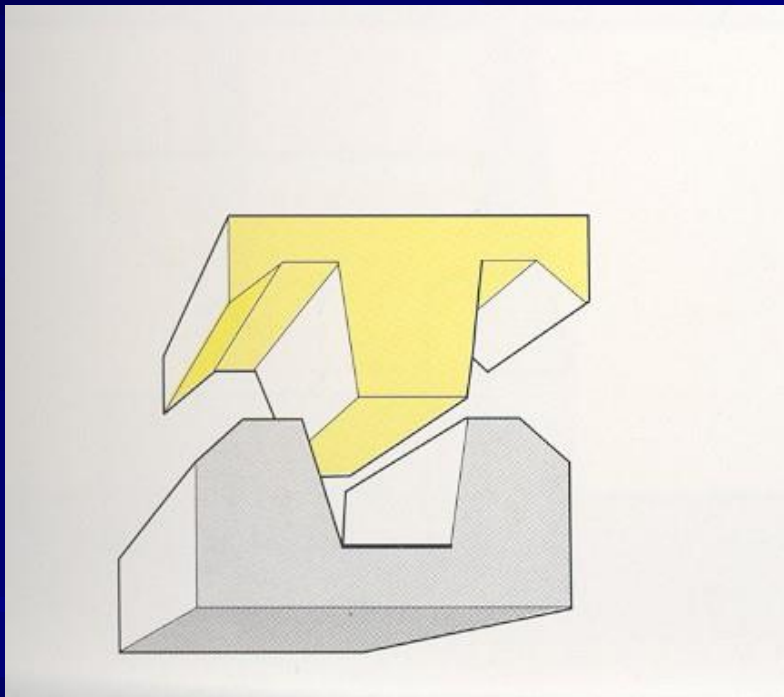
# Inlay



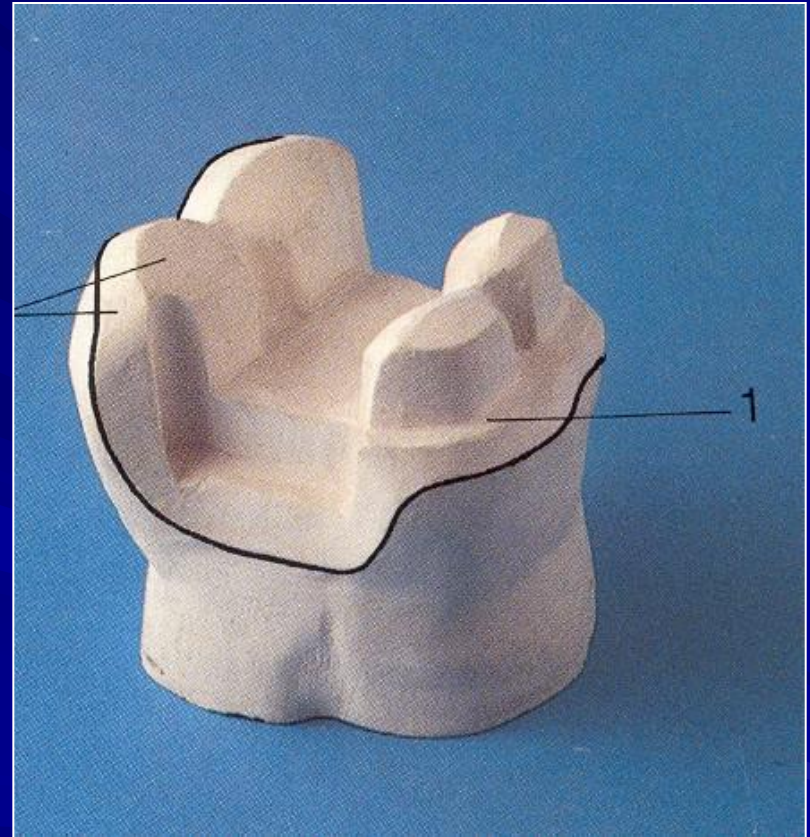
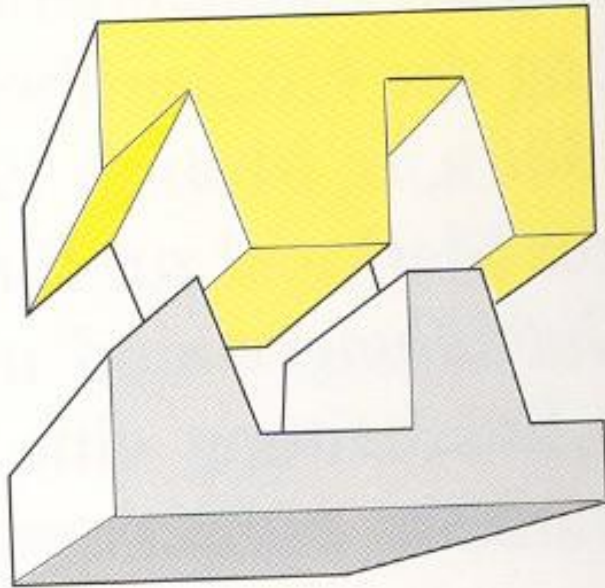
# Onlay



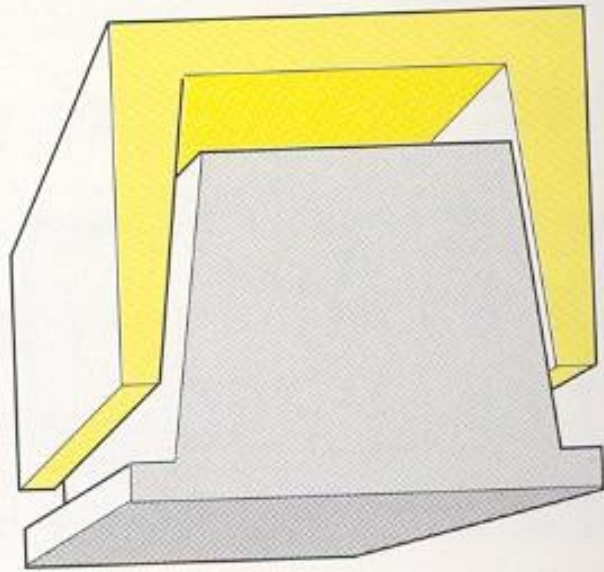
# Overlay



# Partial crown



# Crown



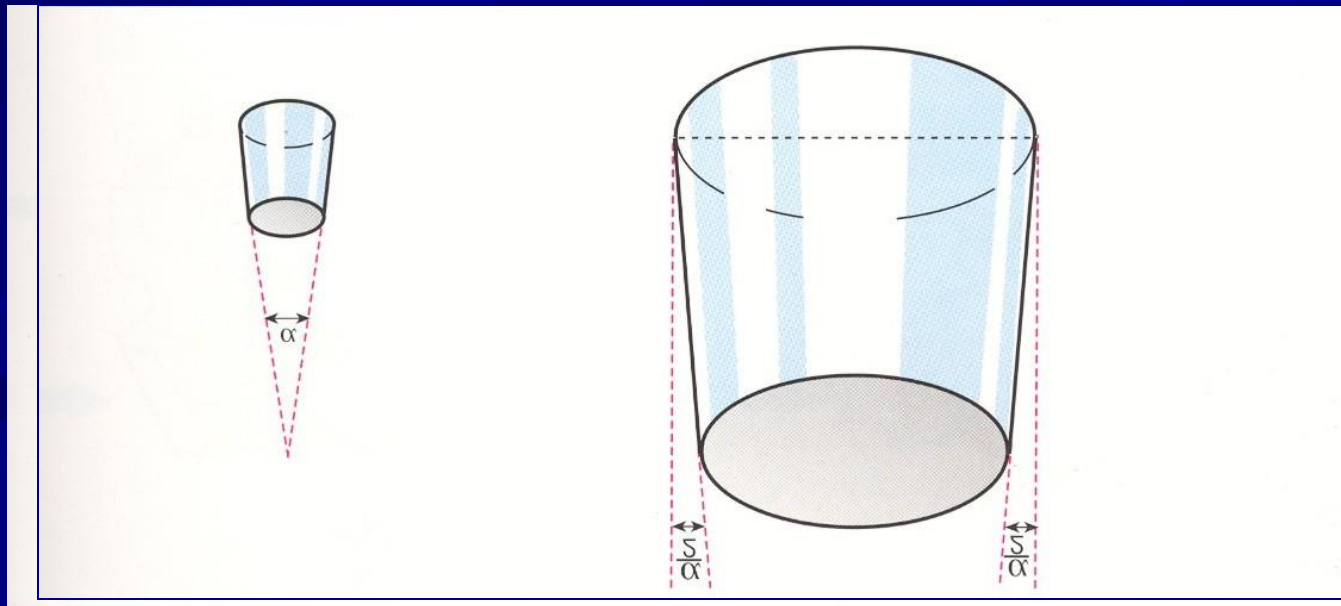
# Retention of rigid fillings

Whitstand capability against axial forces:

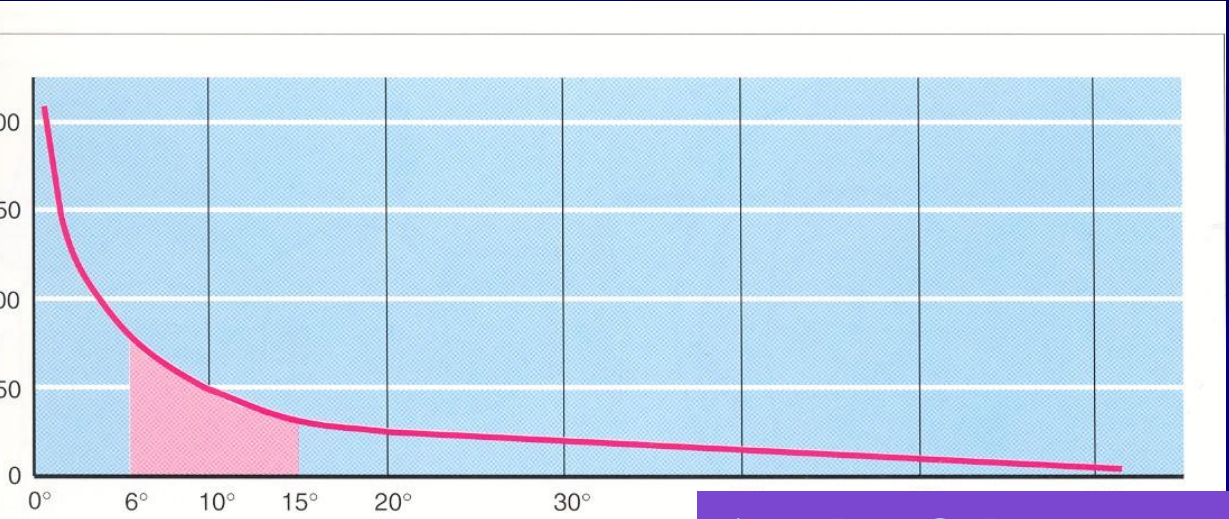
*Geometry of the preparation*

*(facilitating shape)*

*Quality of the luting material*

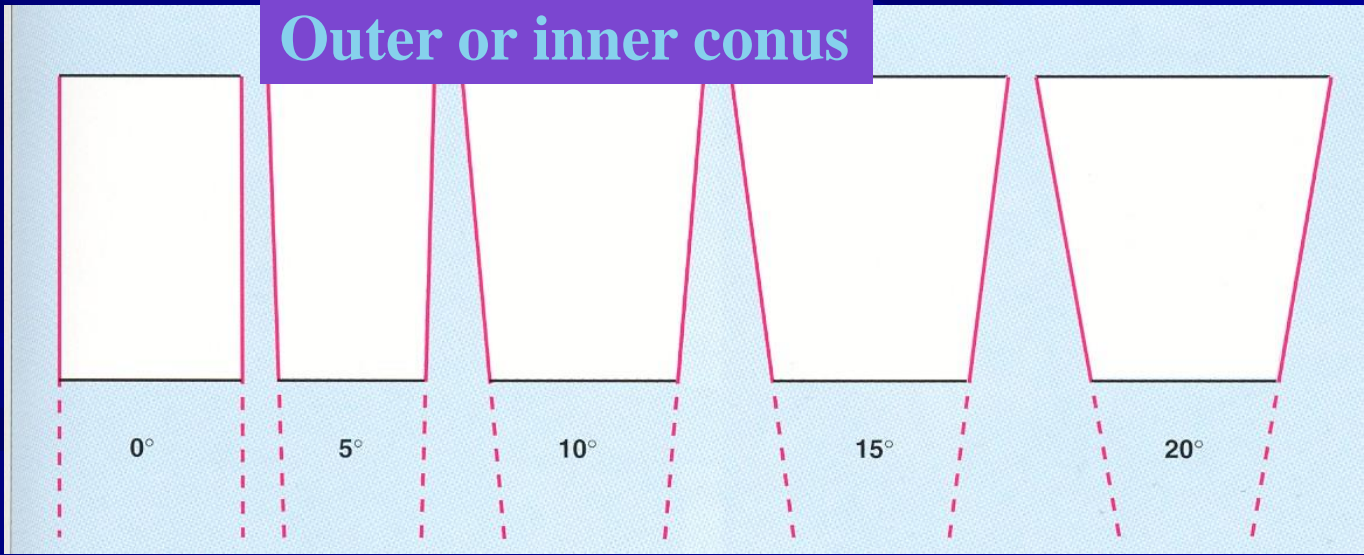


Retention g/mm<sup>2</sup>



Angle of the convergence

Outer or inner conus

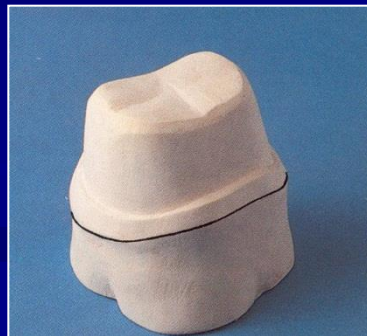


# Retaining areal

- 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

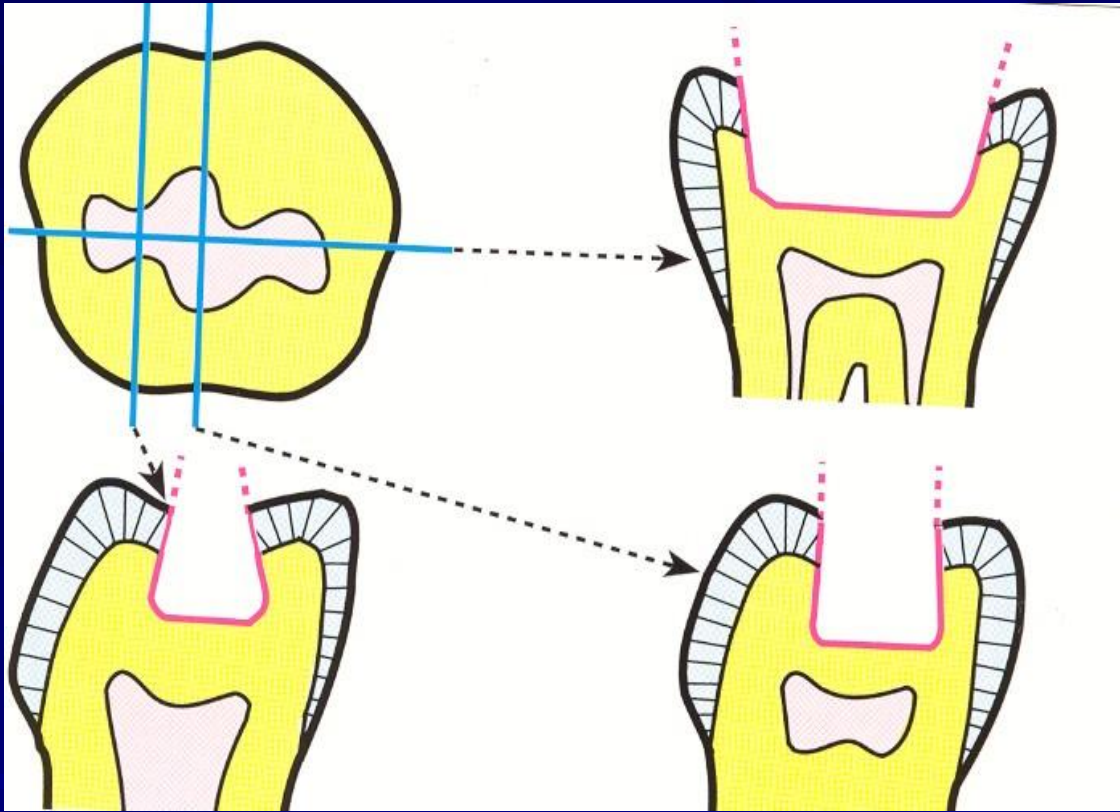
- Box
- No undercuts
- Light divergence of the walls (facilitating shape)

# Box

Undercuts

Simple box

Facilitating form

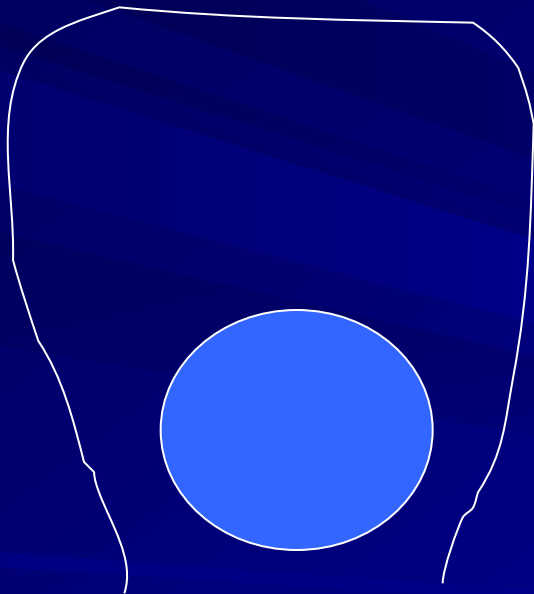


# Inlay of metal alloy

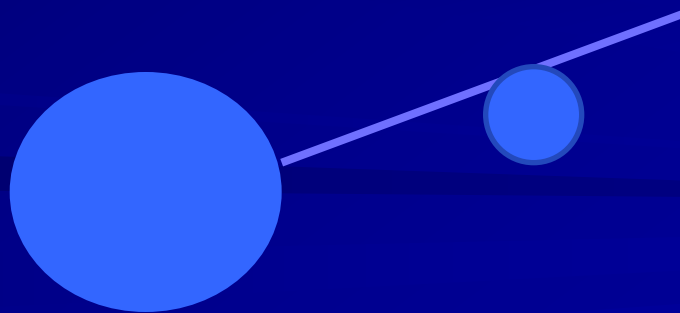
- Direct method
- Indirect method

# 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

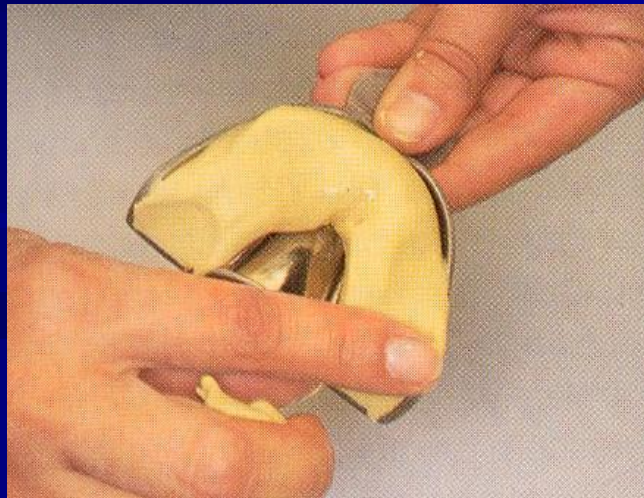
Model

Modellation of the casting wax,  
(special polymers)

Sprue pin

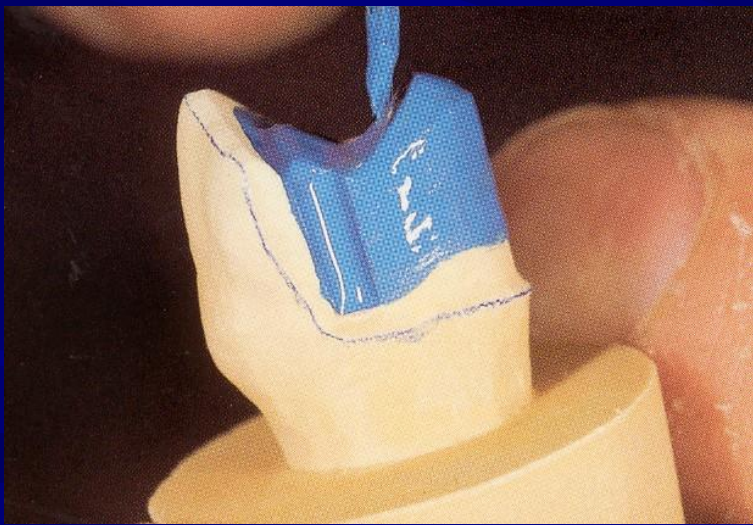
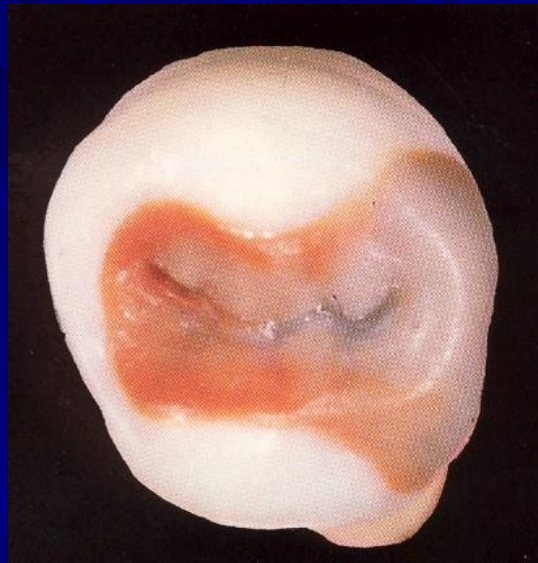
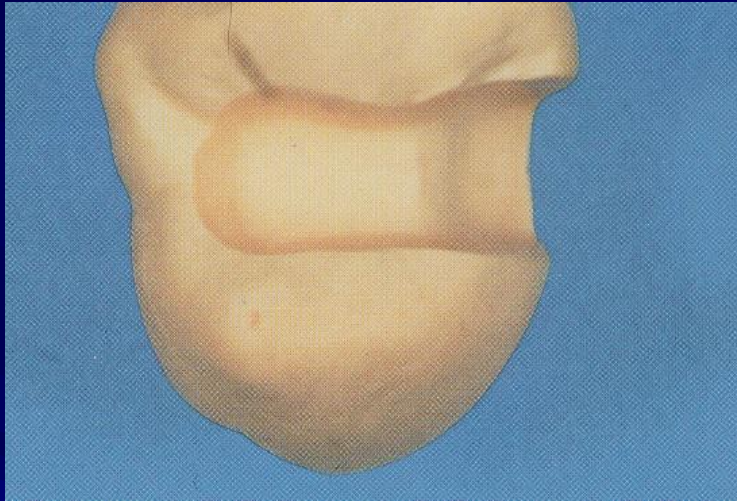
Investment

Method of the lost wax



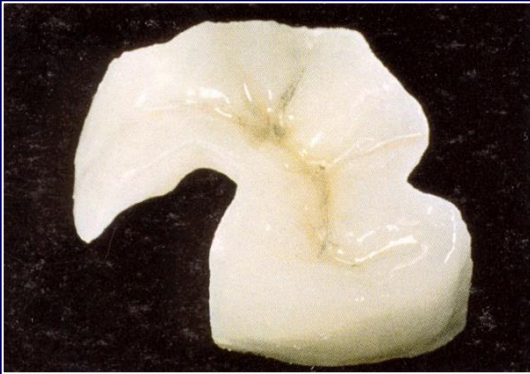








# Aesthetic inlays – composite materials, ceramics



Special procedure



Indirect method always

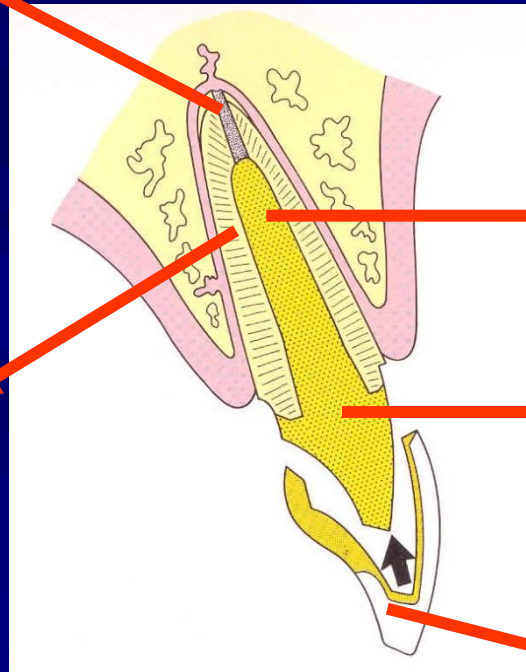






# Root canal inlay

Root canal filling



Root

Root post

Core

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

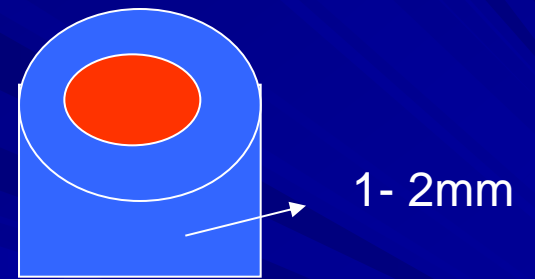
# Root canal inlay - preparation

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

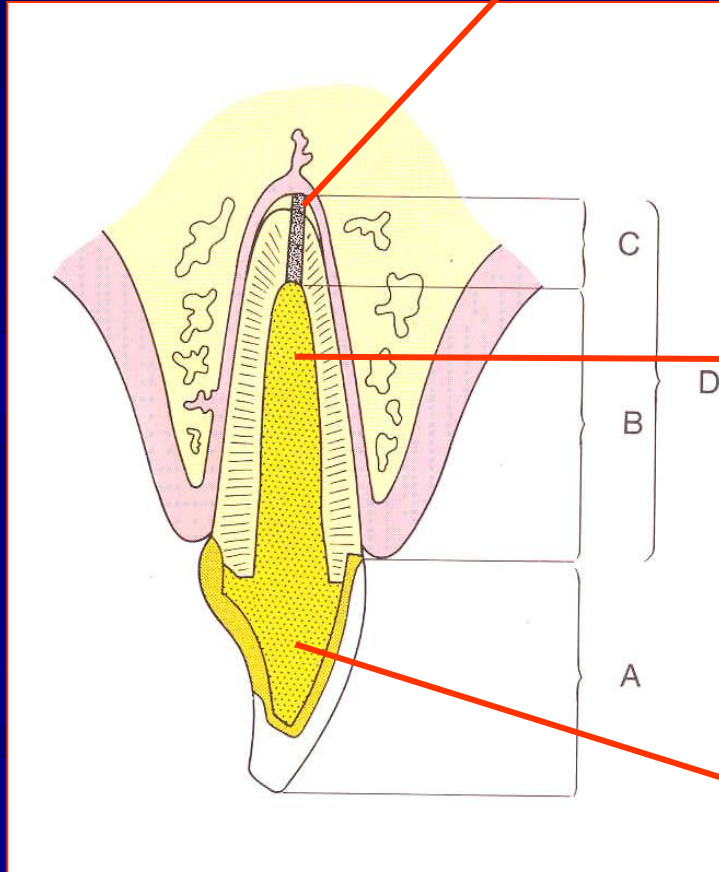
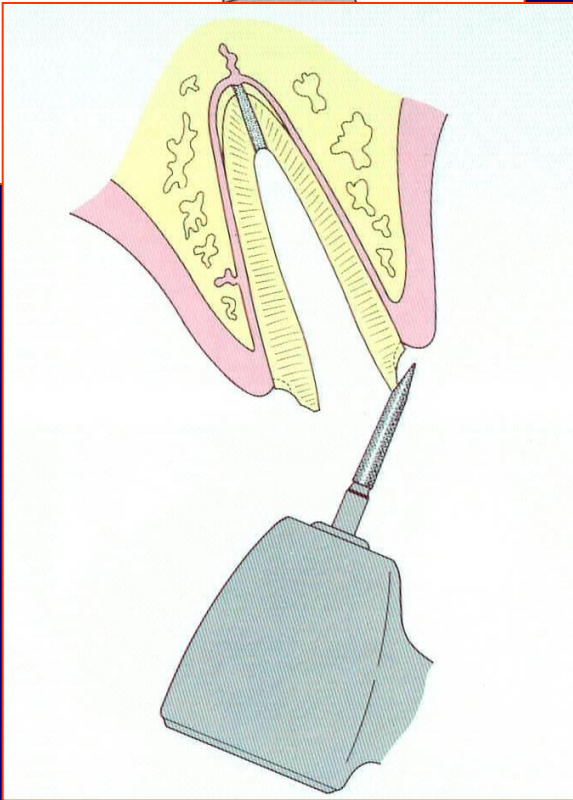
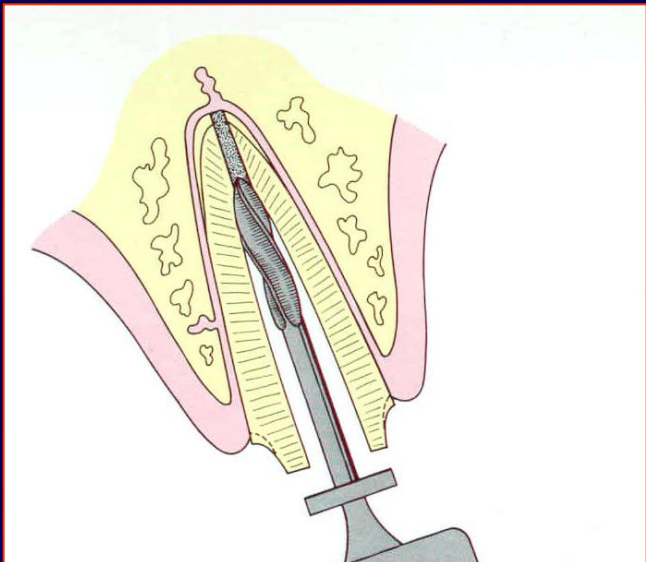
Gates, Peeso – Largo,

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

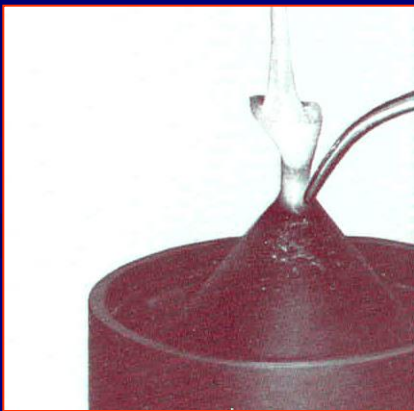
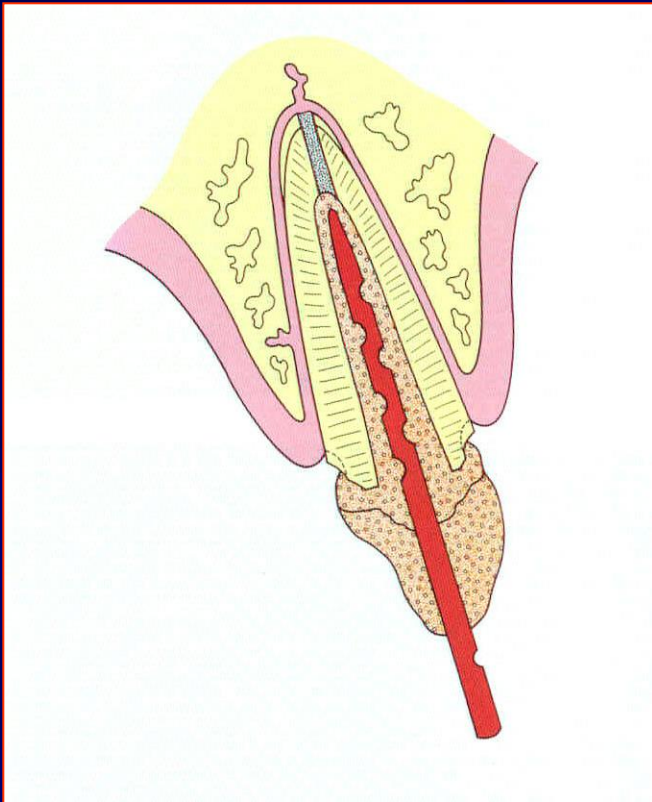
Sprue pin with reservoir

Sprue cone

Investment

Lost wax method

(burntout in the special oven)



# Indirect method

Impression

Model

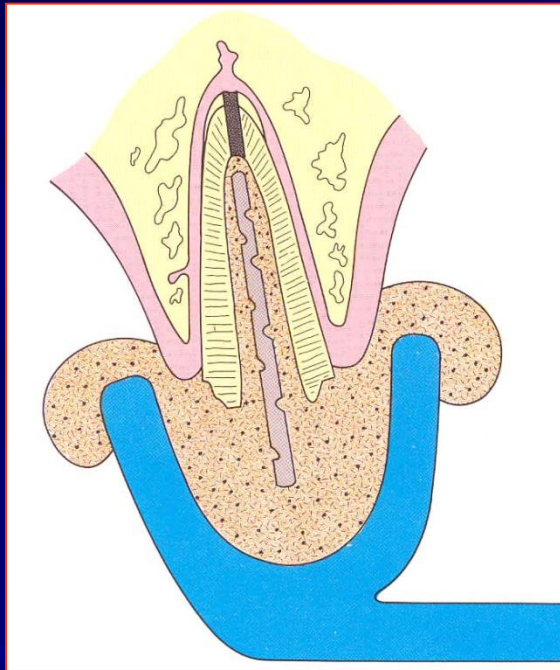
Modelling – casting wax, heated, flowing

Sprue pin

Investment

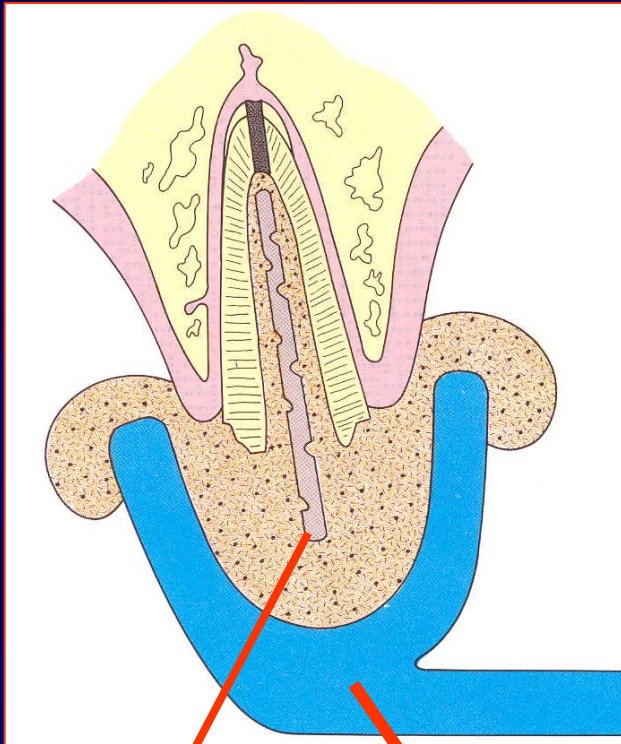
Lost wax method

(burntout in the special oven)



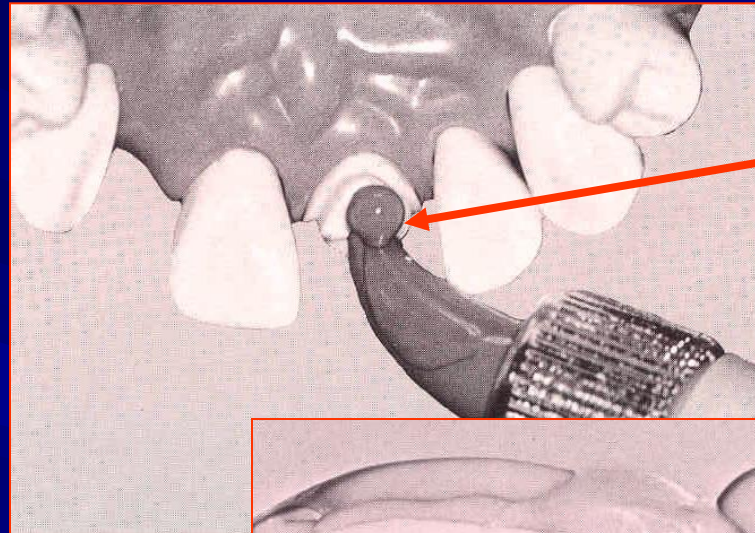
# Indirect method

## Impression

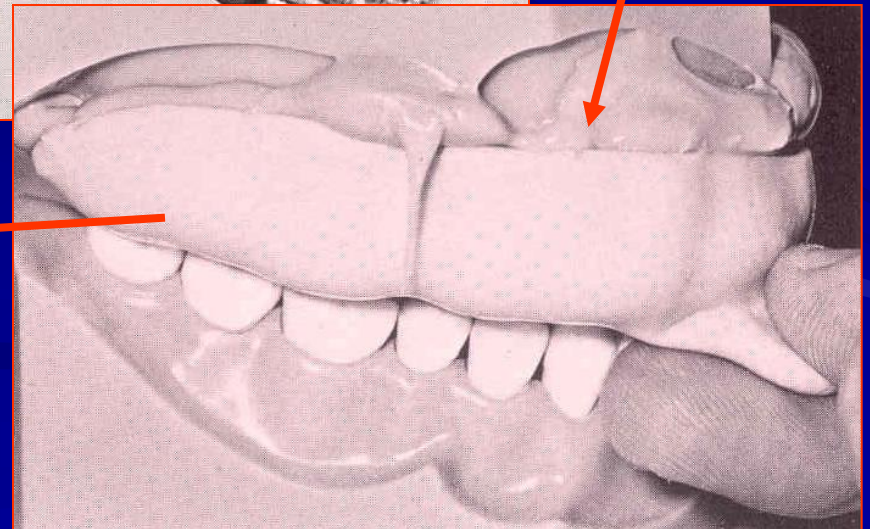


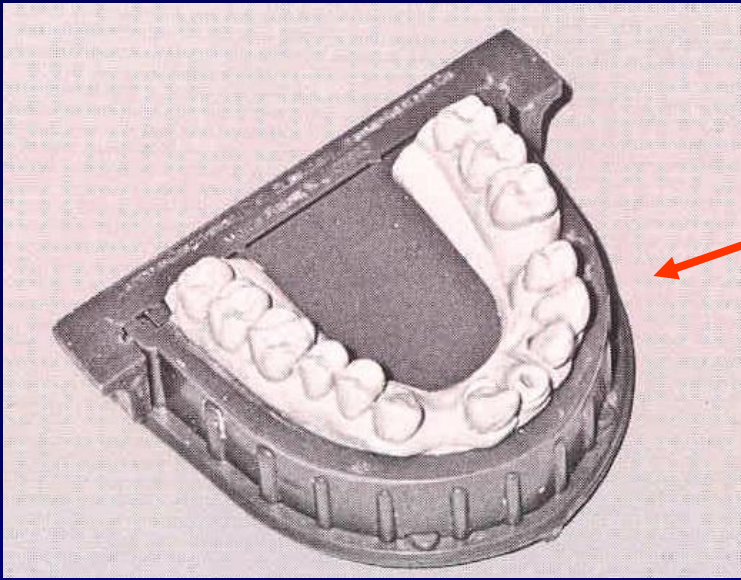
Wire

Impression tray



Impression material

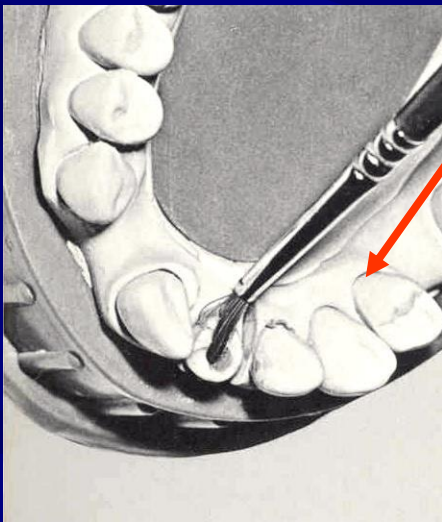




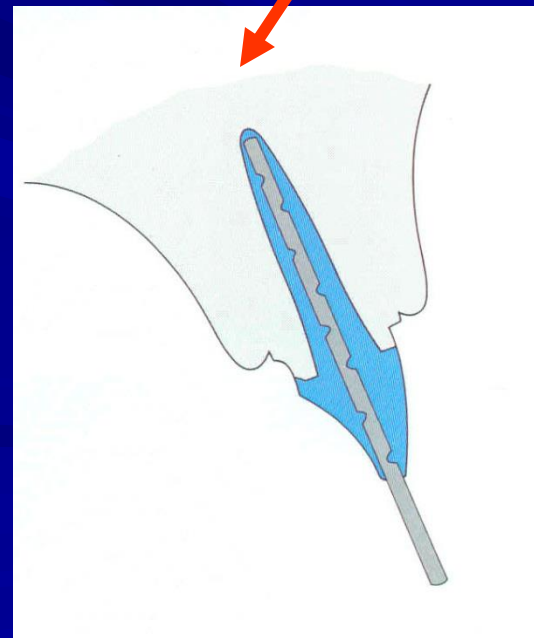
**Model**



**Insulation**



**Modellation**



# Indirect method

Impression

Model

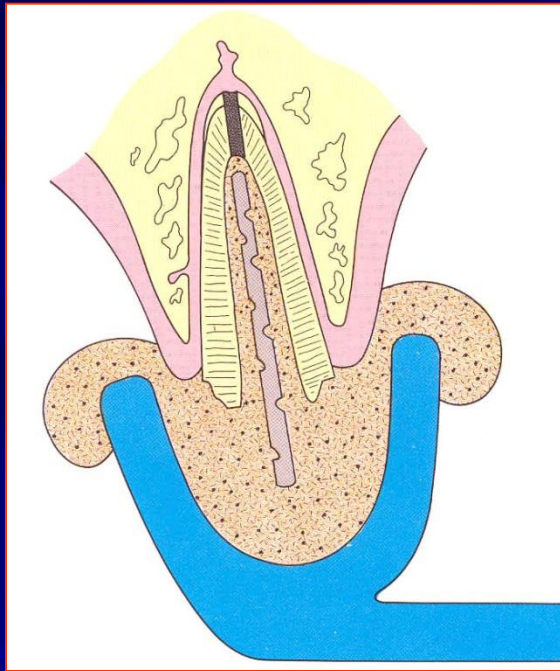
Modelling – casting wax,  
heated, flowing

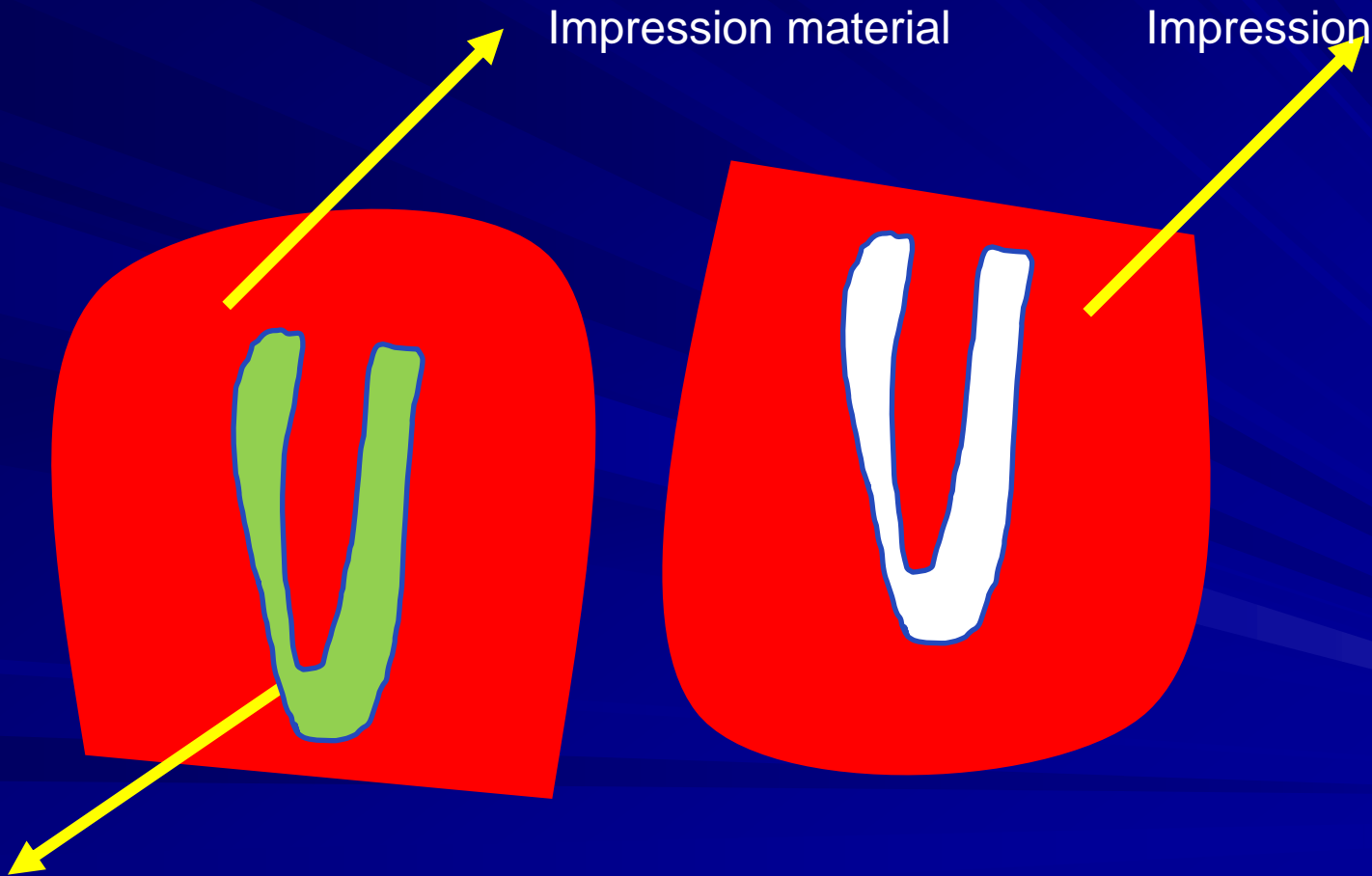
Sprue pin

Investment

Method of the lost wax

(burntout in the special oven)





Impression material

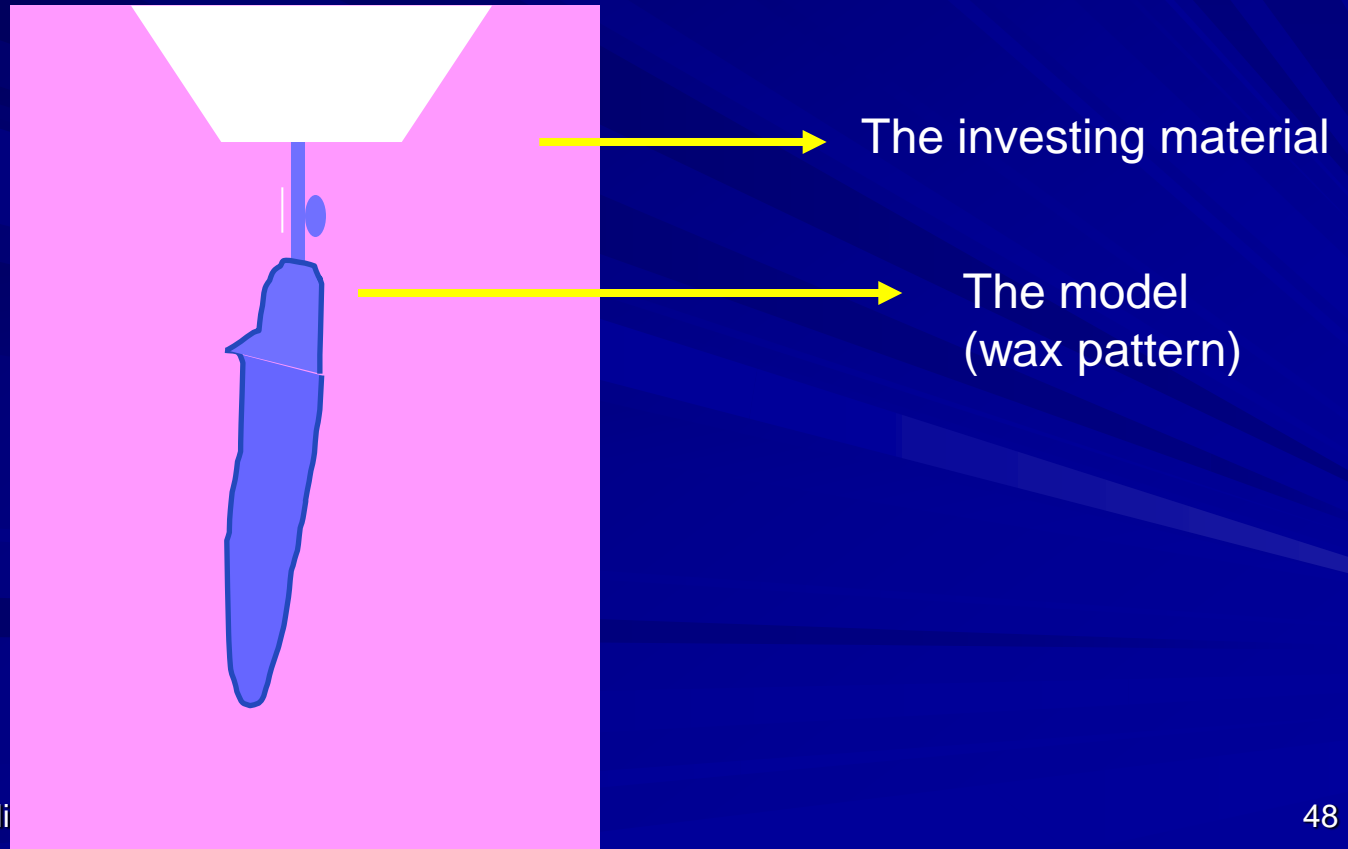
Impression

Tooth

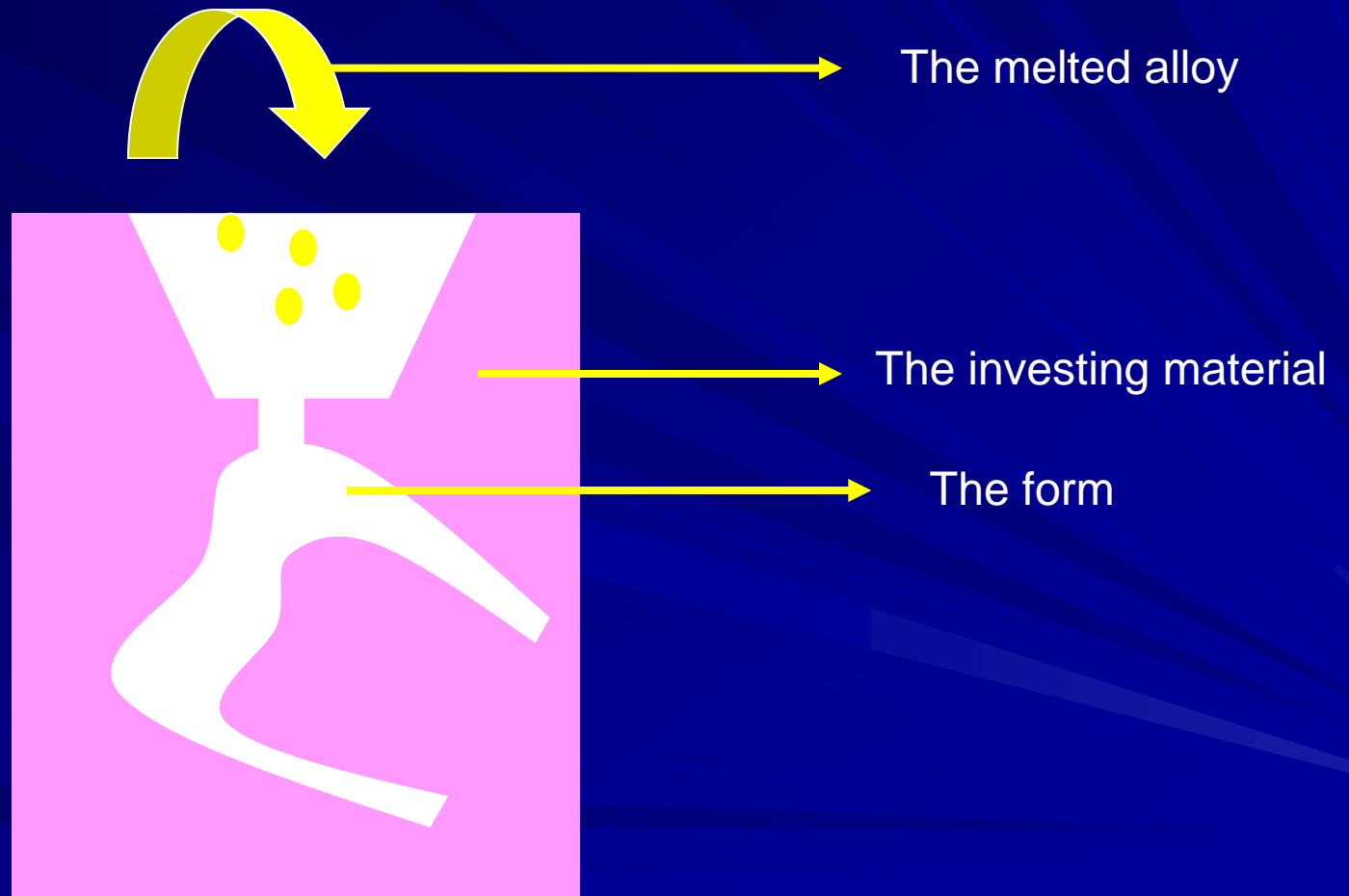
Plaster

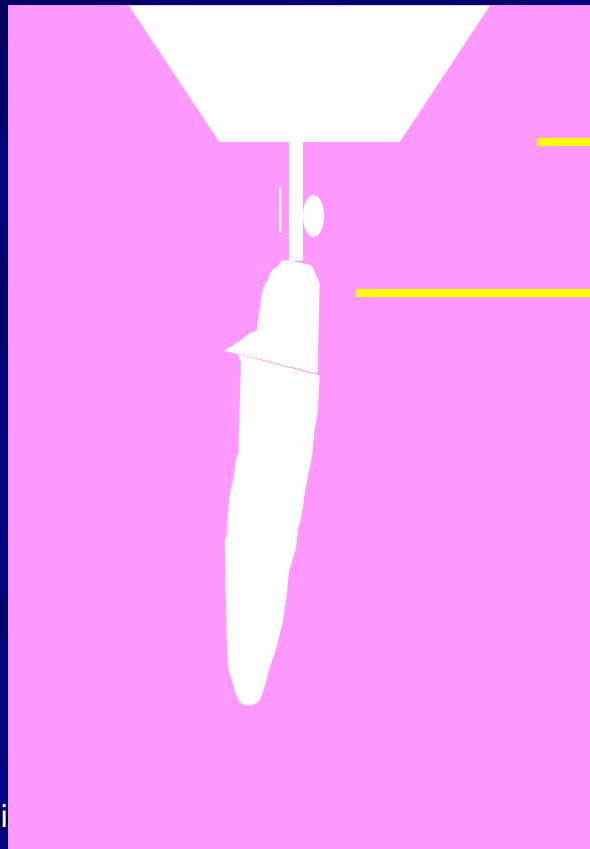


Model



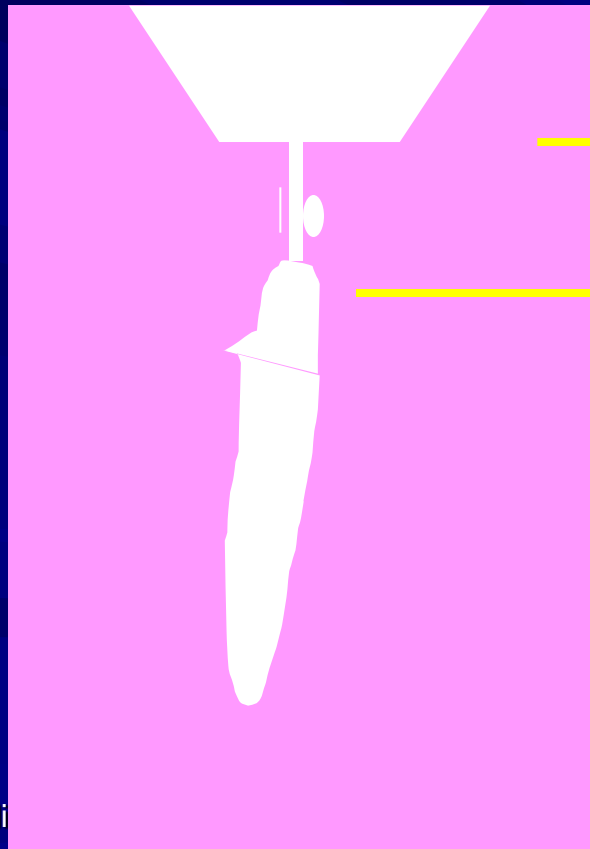






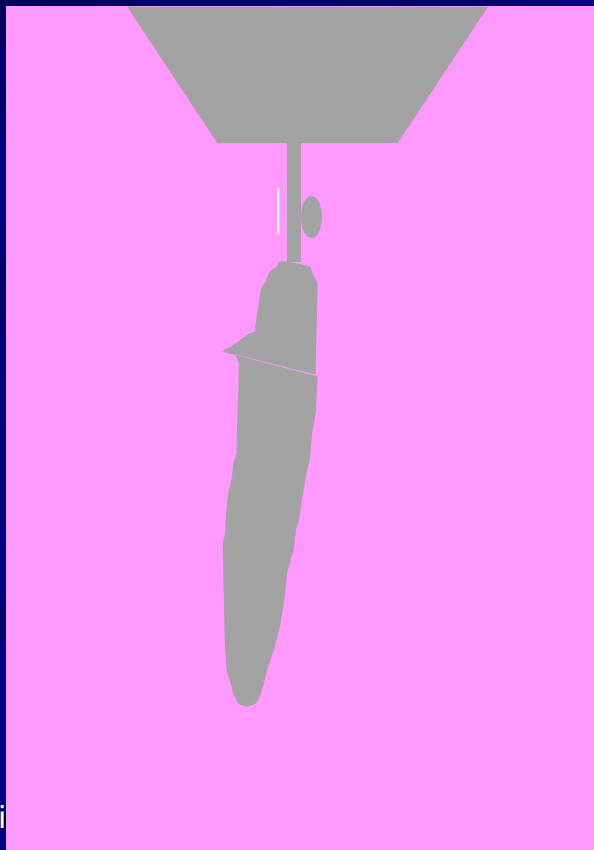
→ The investing material

→ 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

