

Calcium hydroxide

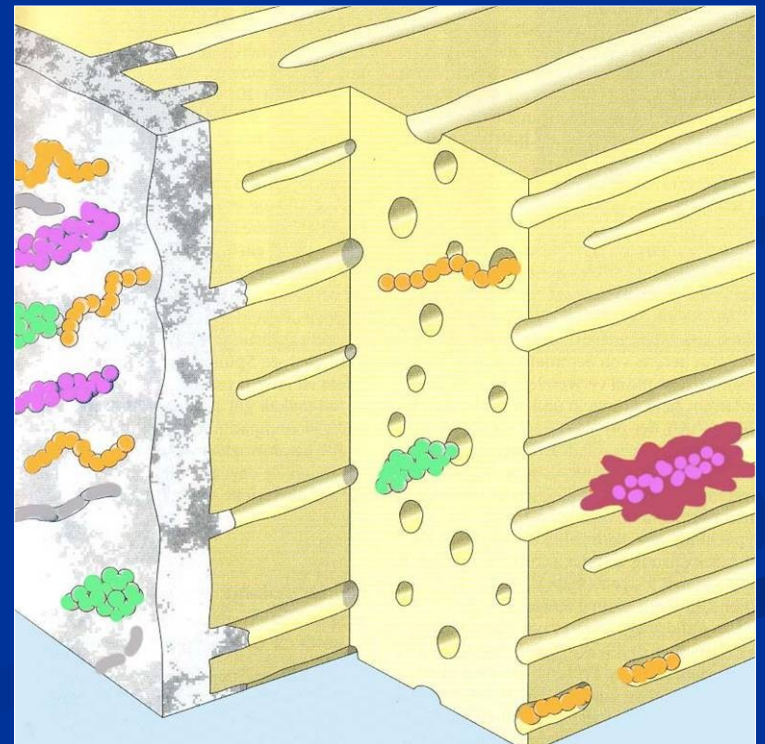
Temporary root canal filling

Subbase

Component of sealers



Dressing



Calcium hydroxide

- Short term action

1 – 2 weeks

Desinfection, haemostasis

Calcium hydroxide

- Middle term action

2 – 3 months

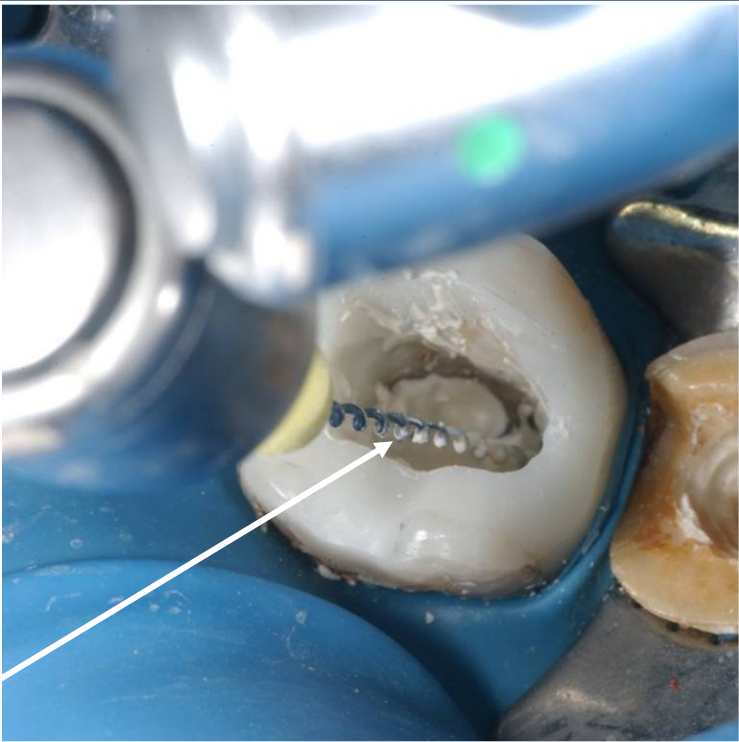
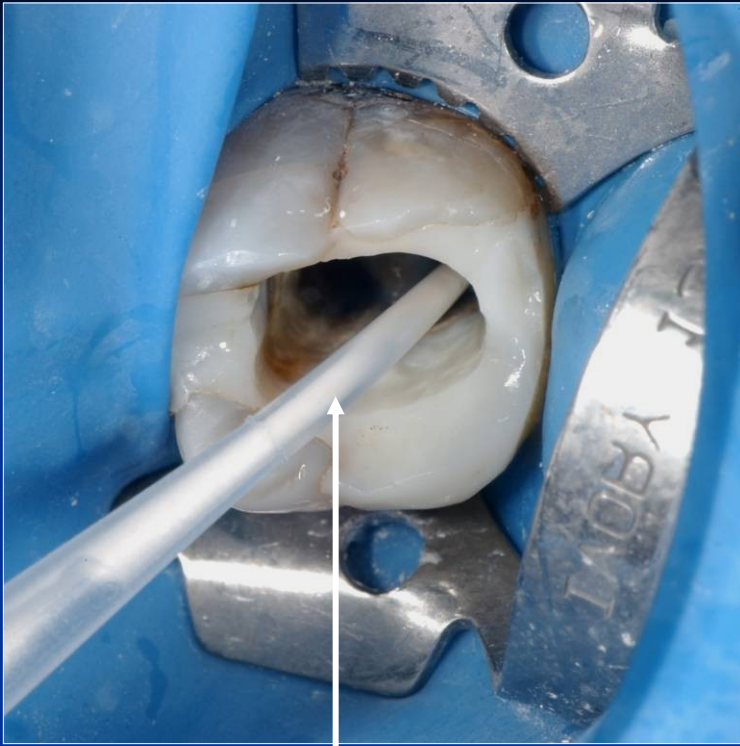
Apexification

Chronic form of apical periodontitis

Calcium hydroxide

- Long term action
3 months and more

Prevention of resorption



Magistraliter

The powder is mixed with distilled water

Lentule 2 mm less than WL !!!!



Apexit® Plus

ApexCal®

Root canal filling

Ideal root canal filling (Grossman 1988)

1. Easy mixing
2. Sufficient working time
3. Good seal
4. X- ray contrast
5. Easy removal
6. No shrinkage
7. Long term volume stability
8. No bacterial growing
9. No permeability for fluids
10. Biocompatibility
11. No staining

Classification of root canal fillings

- Solid
- Semisolid
- Pastes

Guttapercha

Dried juice of the Taban tree (*Isonandra percha*)
(gutta)

1,4 - polyisoprene

Crystallin structure (60%)

Brittle

Guttapercha

■ Beta phase

■ Alpha phase 42 – 49 °C

- plastic

- **Gamma phase** 56 – 62° (amorfní)

Cooling process

very slowly (less than 0,5°C) – alpha phase

normal cooling– beta phase

Composition of guttapercha materials in endodontic

Guttapercha 19% – 22%

Zinc oxide 59 - 79%

Heavy metal salts 1% - 7%

Wax or resin 1% - 4%

Resilon

(Pentron)

- Thermoplastic synthetic polymer
- Points or material for injection

Composition:

Polyester polymers

Bioactive glass

Radioopaque fillers (bismuthum oxichlorid a and baryum sulphate)

Silver or titanium cones

- No good seal
- Silver cones - corrosion

Sealery

Chemically curing plastic materials

Good adhesion to root canal walls as well as solid cones

X- ray contrast

Biocompatibility

Sealers

Zinc Oxide-Eugenol

Chloropercha

Calciumhydroxide

Resins

Glasionomer

Silicone

Sealers

Importance

Filling of the spaces between the solid cones



Seal of the root canal filling

Zinc - Oxid Eugenol

Powder:

Zinc oxide

Liquid:

Eugenol

Acidic resins

Good adhesivity, antimikrobial effect, cytotoxic.
(resorbable)

Zink Oxid Eugenol sealers

Pulp Canal Sealer (Kerr, USA))

Tubuli- Seal (Kerr, USA)

Caryosan (Spofa Dental, ČR)

Chloropercha

Powder

Canadian balsam

Resins

Guttapercha

Zinc oxide

Liquid:

Chloroform

Resins

Chloropercha

Vlastnosti:

Good adhesivity

Shrinkage

Toxicity

Calciumhydroxide sealers

Base (powder)

Calcium hydroxide

Zinc oxide

Other components and vehicula

Kalciumhydroxidové sealery

Catalystr (paste)

Zinc stearat

Titanium dioxide

Baryum sulphate

or

Eugenol, Eukalypt

others

Kalciumhydroxide sealers

- Increase of the healing potential of periapical tissues
- Antibacterial effect
- Easy manipulation

But!

Resorbable if not homogeneous

Not suitable for the single cone technique

Resins

➤ Rezorcin formaldehyd

➤ Epoxide

➤ Polyketone

➤ Metacrylate

Rezorcín formaldehydové pryskyřice

Toxicity

N2, Endomethason, Riebler's paste, Foredent

Epoxide resin

➤ Base (powder, paste)

Bismuth oxid

Titanium dioxide

Hexametylentetramine

(Silver)

➤ Catalyst (liquide, paste)

Bisphenoldiglycidylether

Epoxide resin

Advantages

- Long working time
- Hydrophilic (good penetration)
- Good adhesion to the root canal walls
- Volume stability
- No dissolution
- Antibacterial

Epoxide resin

(disadvantages)

- Difficult removal
- Staining
- Initiatory toxicity

No suitable for the single cone technique !

Polyketone

- Base

Zinc oxide

Bismuth phosphate

Hexametylentetramine

- Lequid

Bisphenolglycidylether and other components

Polyketone

(advantages and disadvantages)

Advantages

Good adhesion

No contraction

No dissolution

Disadvantages

High stickiness

Not removable

Products: Diaket, Diaket A (3M ESPE)

Methacrylate resins

Endo ReZ (Ultradent) – UDMA

For injection – single cone technique

Epiphany (Pentron)

Bis- GMA, etoxy bif- GMA, hydrophilic bifunctional methacrylates

Calcium hydroxide, baryum sulphate, baryum glass silica.

Sealer in combination with Resilon

Glasionomer sealers

➤ Base (powder)

Aluminium silicate glass

➤ Liquid

Polyacrylic acid, polymaleic acid, tartaric acid

Glasionomer sealers

(Advantages and disadvantages)

Advantages:

Curing under wet conditions, chemical bonding to hard dental tissues, no staining

Disadvantages

Short working time, difficult removal,
porous

Products

Ketac Endo (3M ESPE), Endion (VOCO)

Silicon based sealers

Polyvinylsiloxane (ev. in mixture with powdered guttapercha)

Biocompatibility

Hydrophilic

Further investigation desirable.

Root canal fillings - forms

- **Points (Cones)**
- **Materials for injection**
- **Plastic materials**