Endodontics I.

Morphology
Pulp disease
Indication
Contraindiction
Instrumentarium

Endodontics

Pulp and periodontal diseases – diagnosis, therapy, prevention

Aim of endodontic treatment

Healing of pulp diseases or removal bacteria from the root canal system and regeneration of damaged periodontal tissues. (Canal shaping, cleaning and filling)

„ Endodontist helps nature only “

W.D.Miller

Endodoncie I.

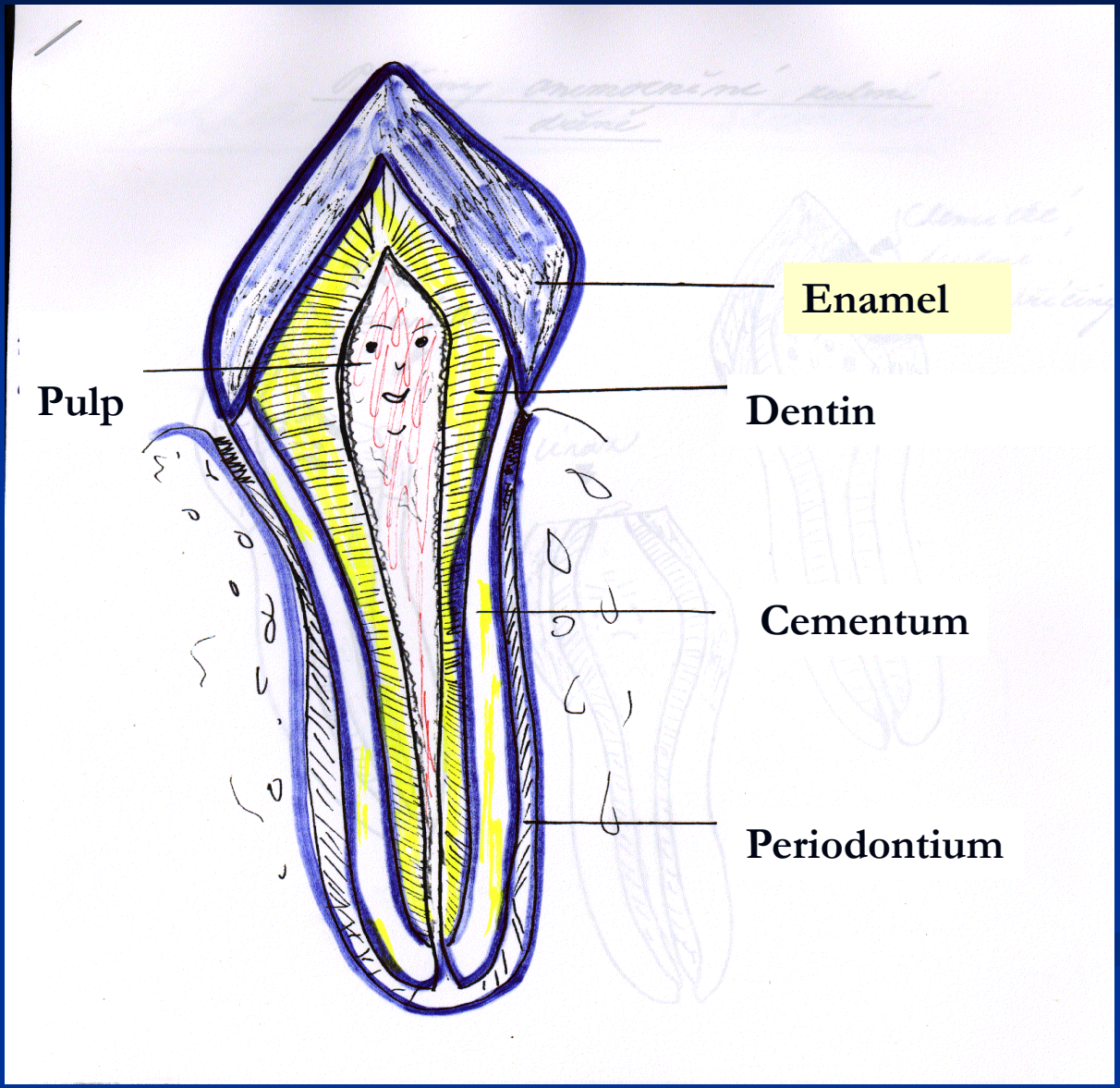
Morphology

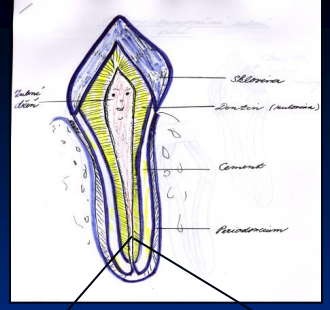
Onemocnění zubní dřeně

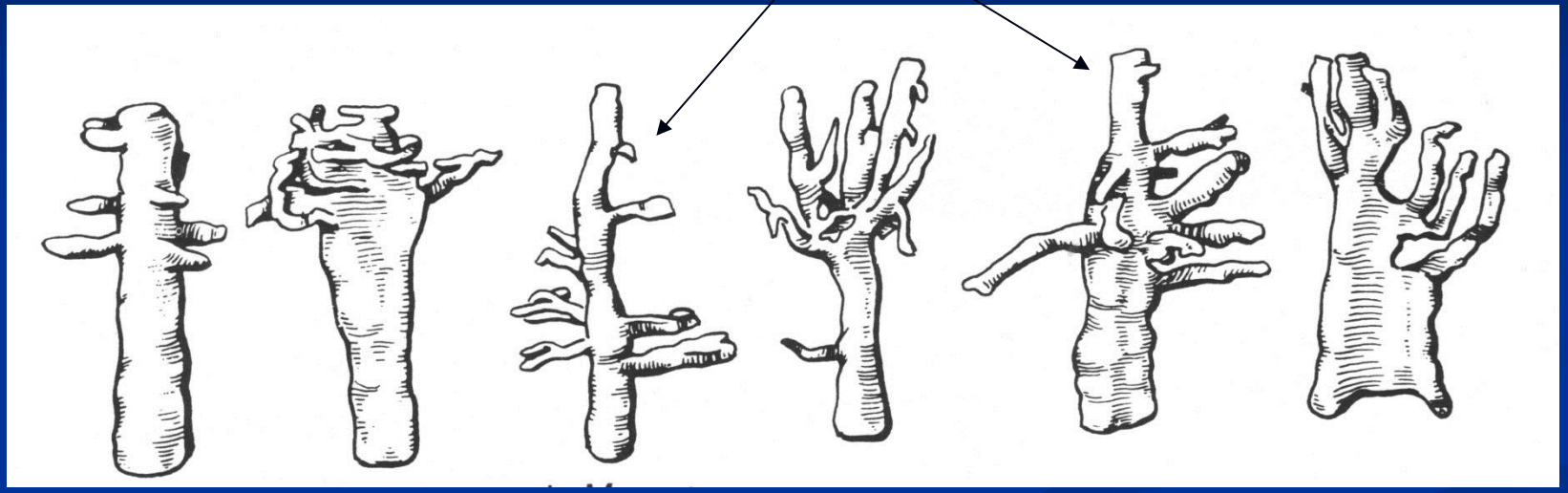
Indikace a kontraindikace endodontického ošetření

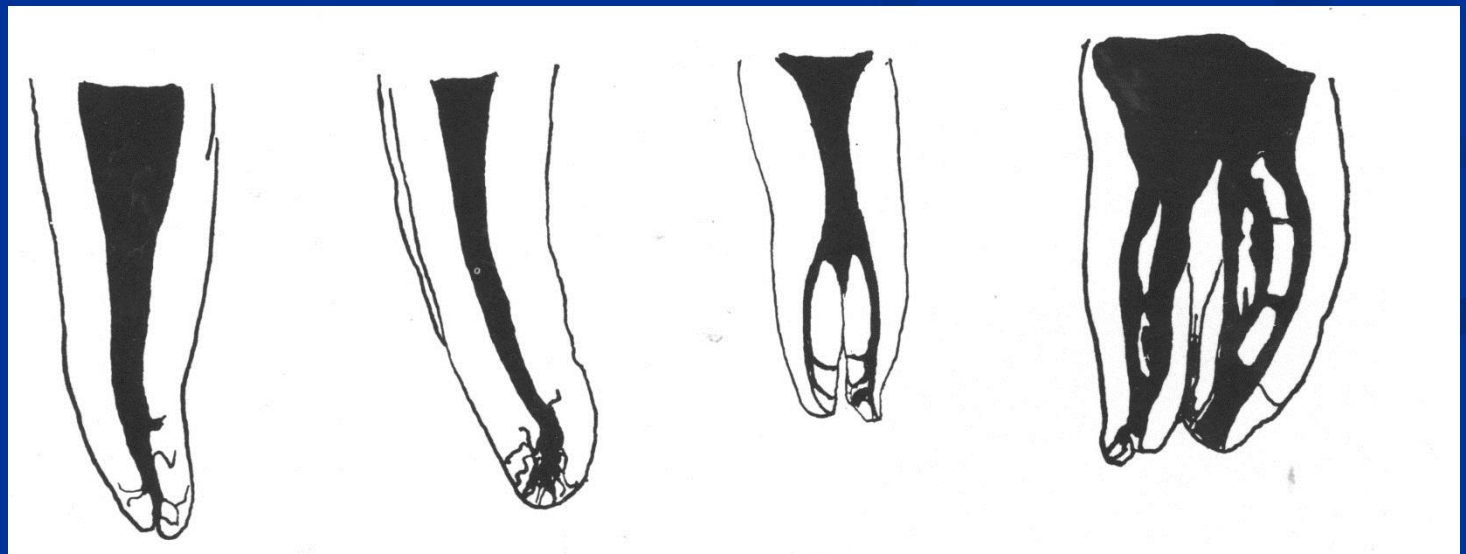
Instrumentarium

Morphology




Cemento
Pulpa





3D

Meyer´s conclusions

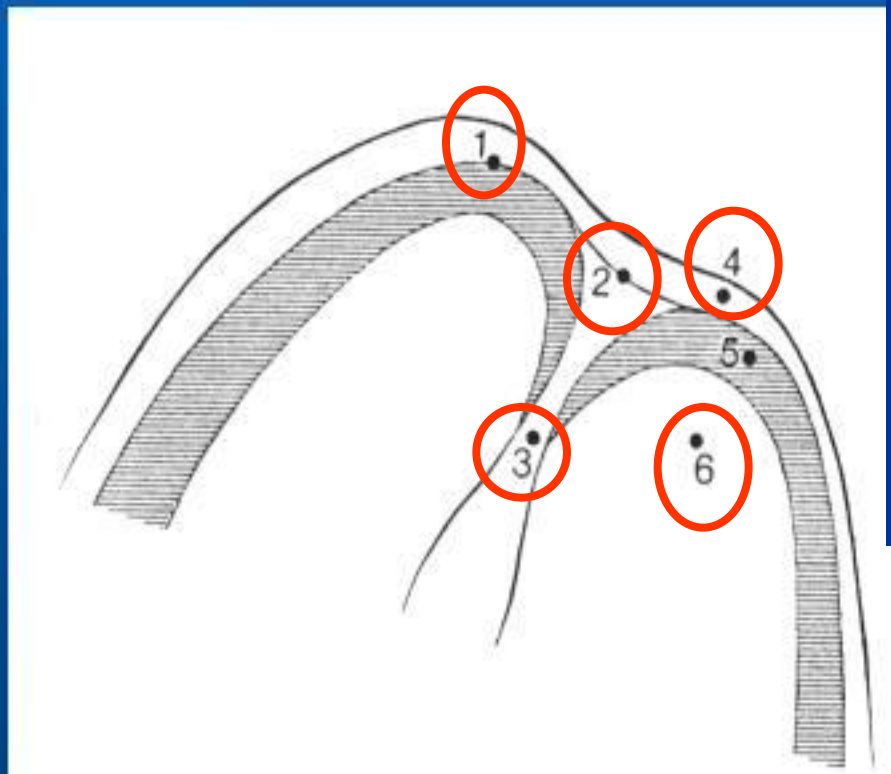
- The root canal is not round but oval (long axis mesiodistal)
- The root canal does not go straight but it deflects distal
- The outfall is not on the top of the root but below (distal or distooral)

Meyrś conclusions

- The root canal between apical constriction and apical foramen has divergent walls
- The root canal system has usually more orifices (ramifications)
- The ramifications are situated mostly in apical area (first apical mm)
- All foramina are situated in cementum

Basic forms of the root canal systém (Weine)

Apical morphology

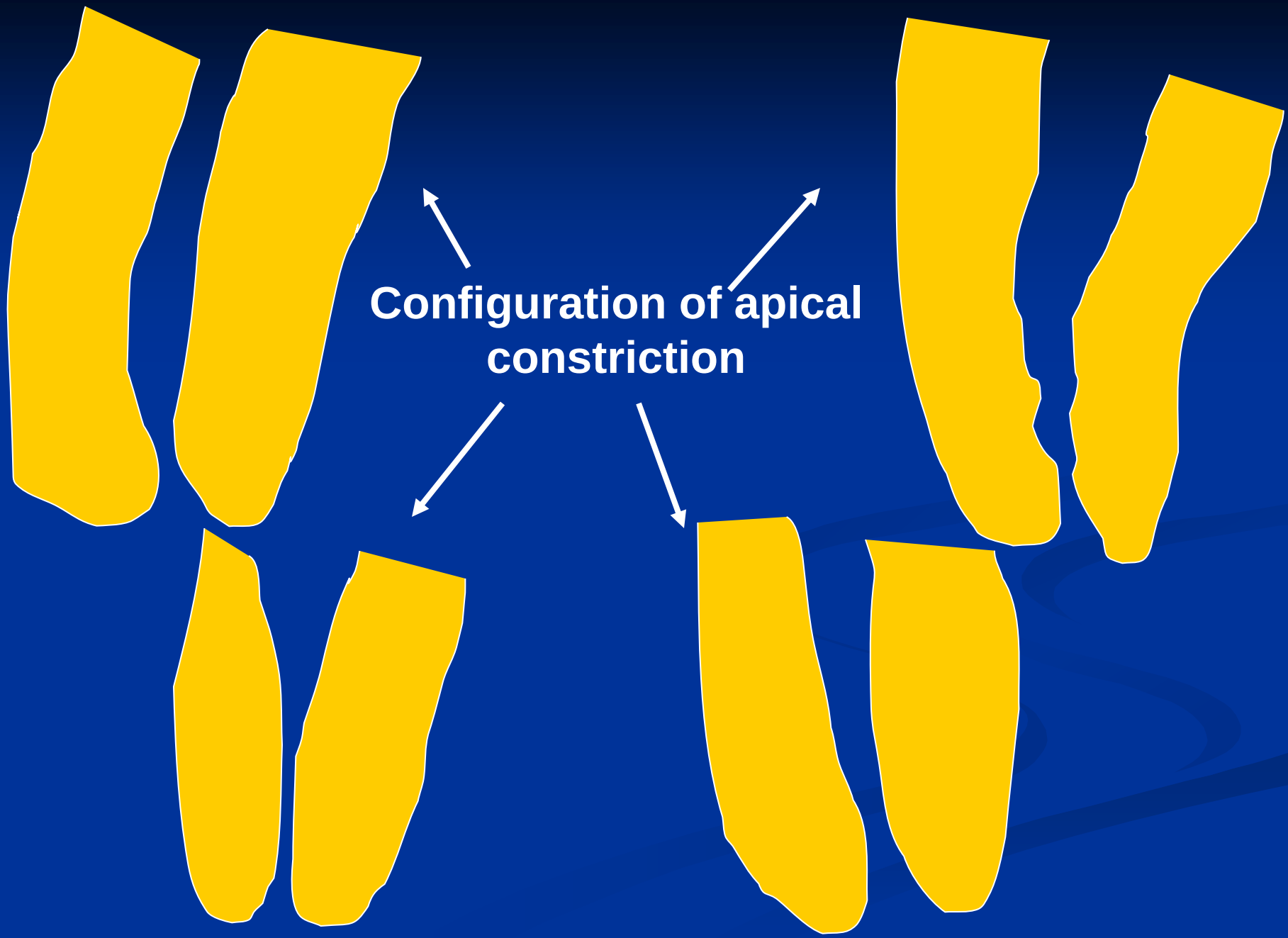


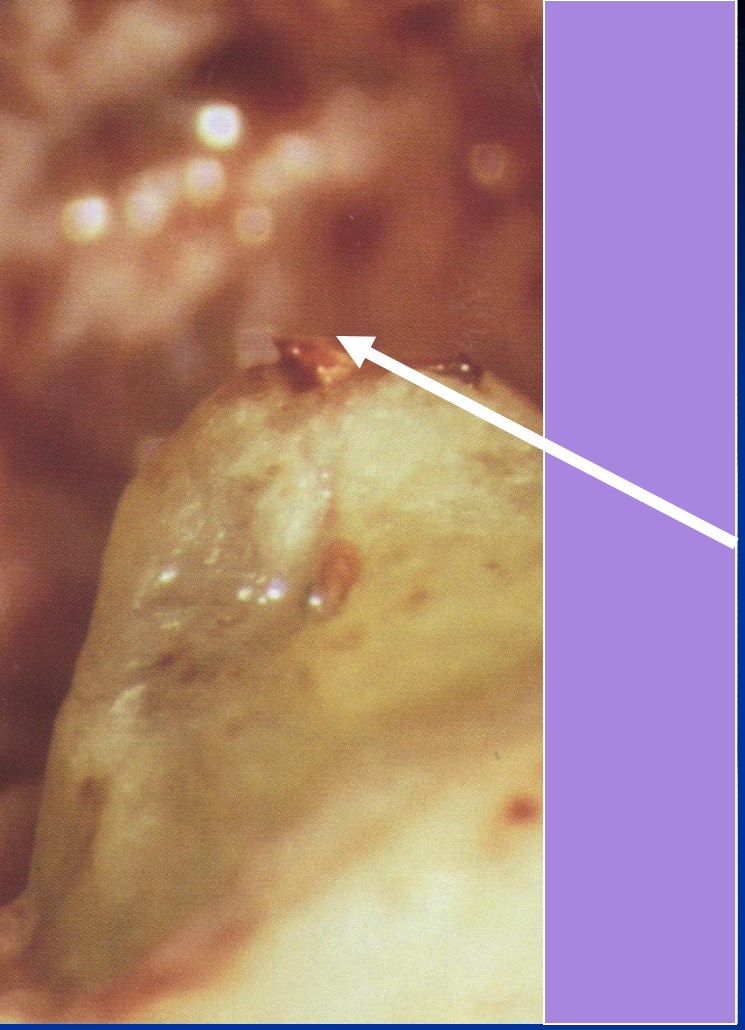
1. X – ray apex
2. Foramen apicale
3. Apical constriction
4. Periodontal ligament
5. Root cementum
6. Dentin

Acc. to Guldener a Langeland

Canal shaping terminates in apical constriction

- Small communication
- Less risk of periodontal damage
- Prevention of overfilling
- Prevention of apical transport of infectious material
- Possibility of good bacterial decontamination
- Possibility of good condensation of the root filling

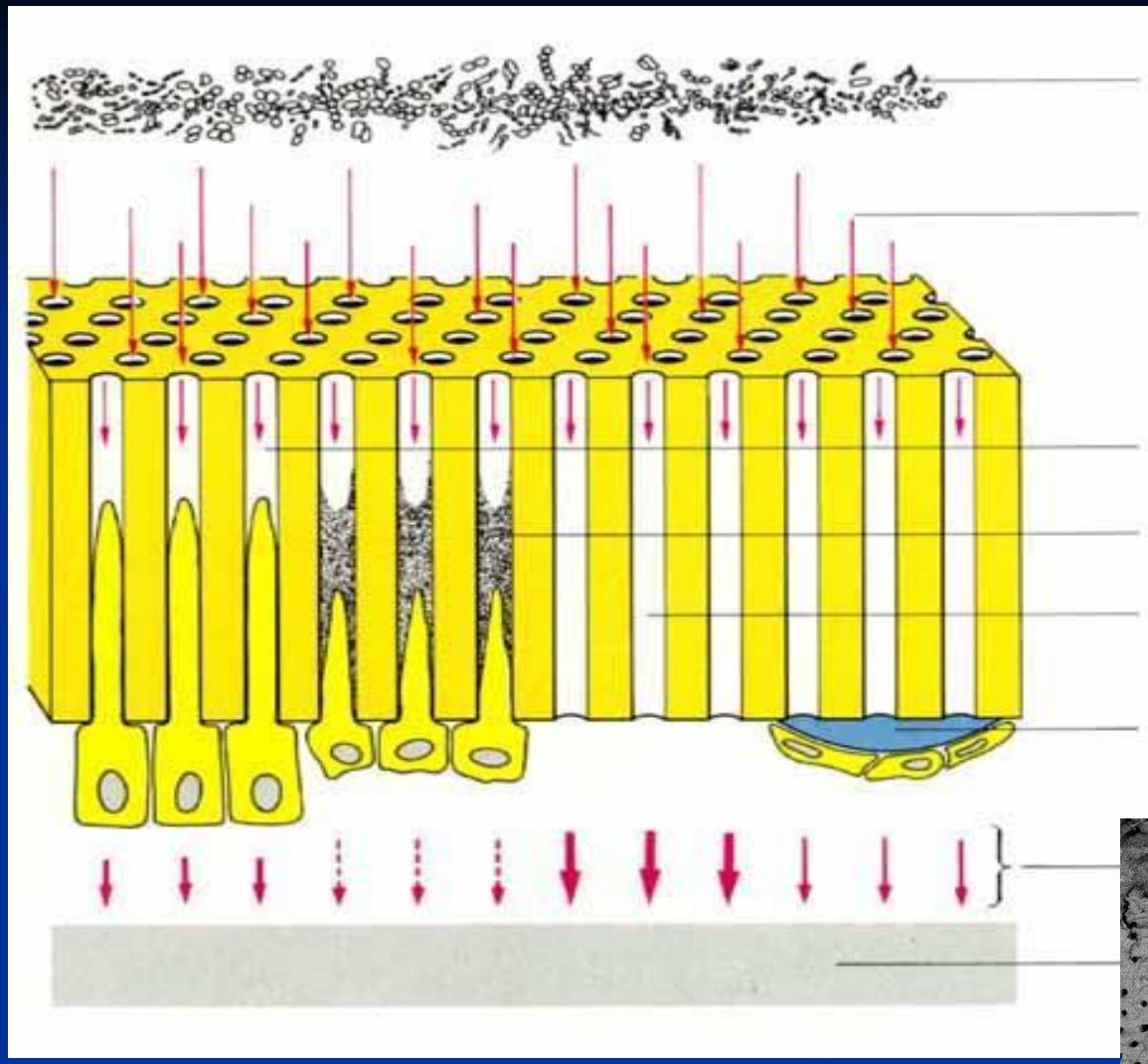

Configuration of apical constriction

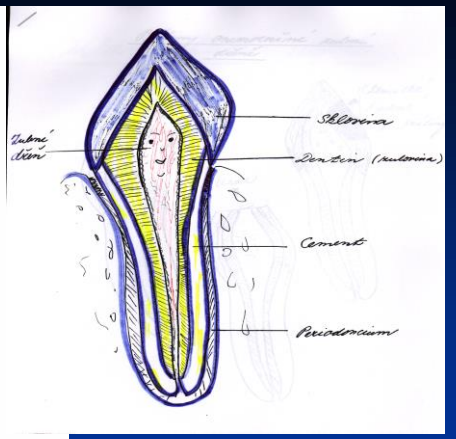


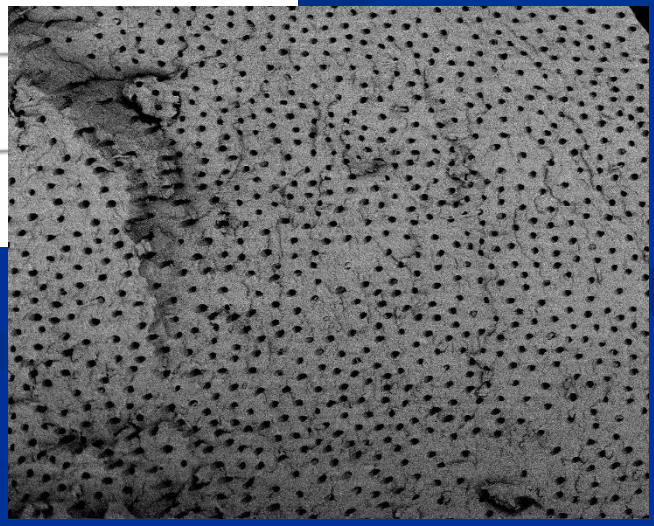
Real situation

X- ray apex

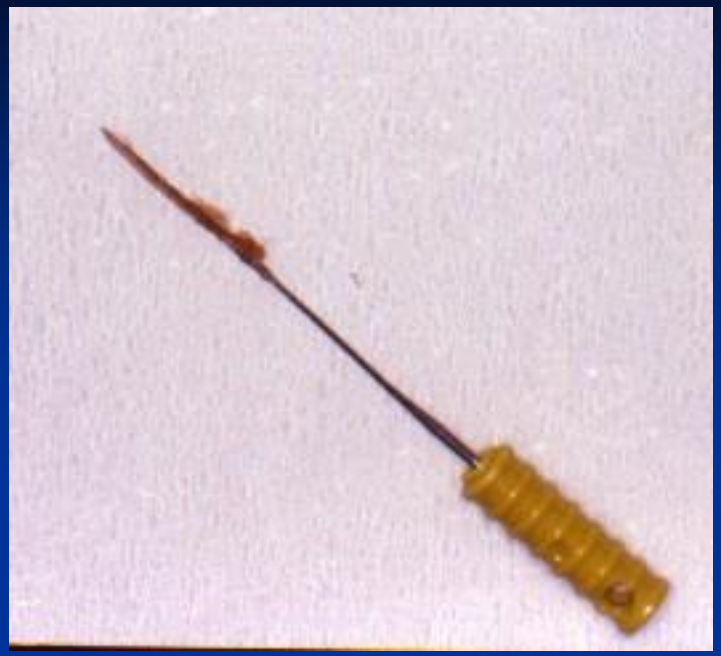
- Macrocanal system
- Microcanal system



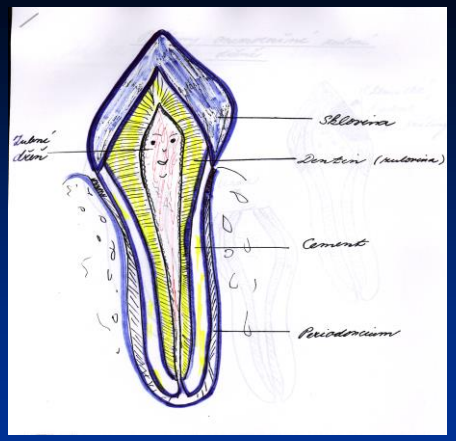


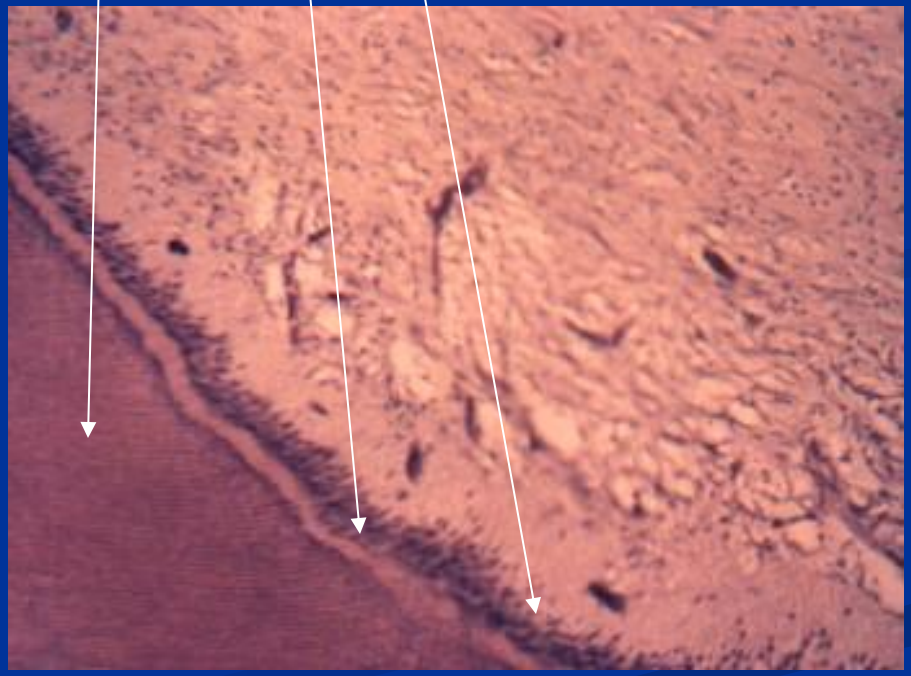


Endodont: dentin and pulp (morphological and functional unit)



Odontoblasty
Predentin
Dentin

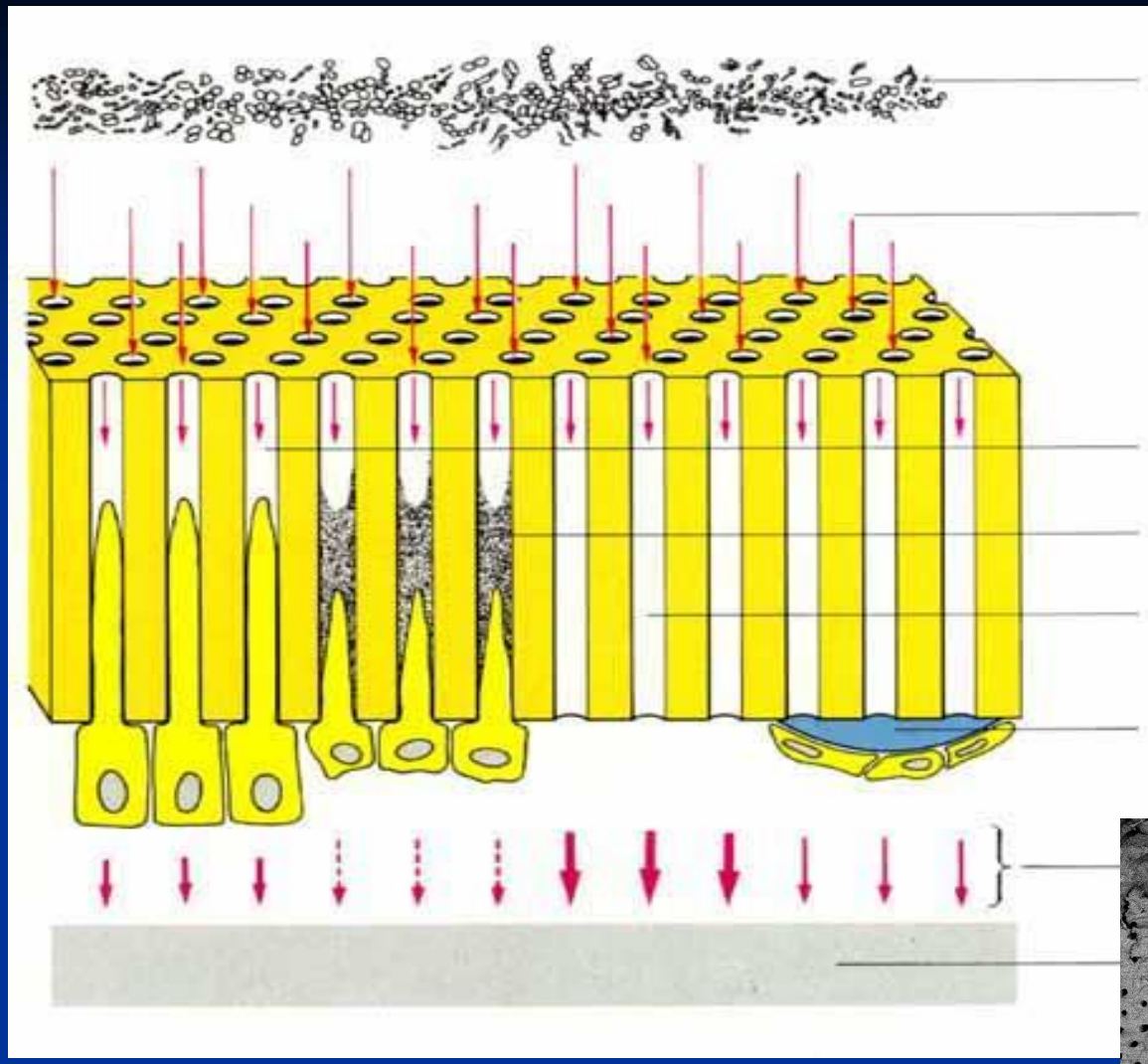


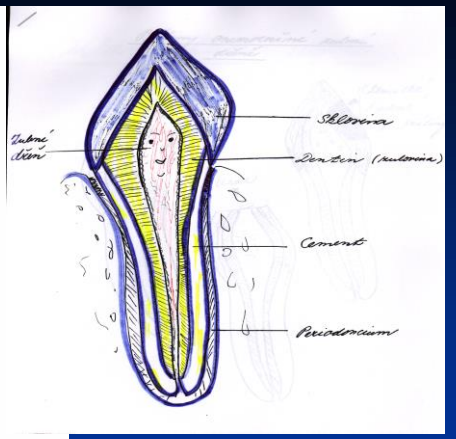


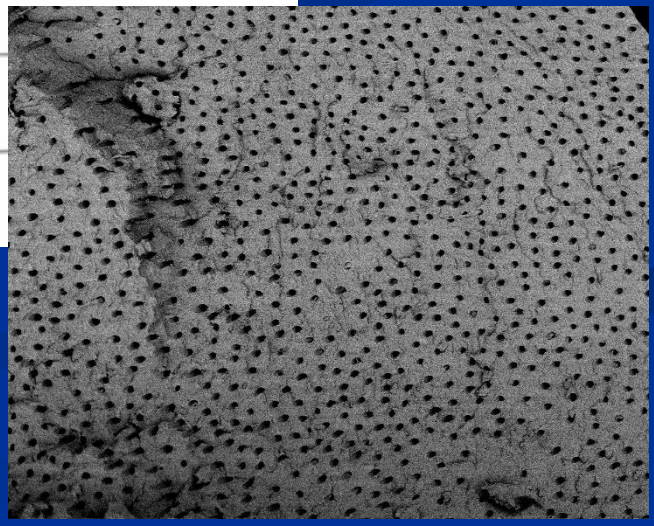
Dental pulp

Defense mechanisms of the pulp

- Sclerosis
- Tertiar dentin
- Dentin bridge







Pulpodentinální orgán - endodont

Pulp diseases

Inflammation - pulpitis

Consequences

- Necrosis (dental pulp became necrotic – it is not vital, the blood circulation stopped)
- Gangraena (infected necrosis, typical smell)
- Apical periodontitis (the inflammation reached periodontal space)

Reasons

- Bacteria
- Mechanical irritants (overinstrumentation, trauma)
- Chemické (esp. phenolic based inracanal medicaments, overfilling,irrigants)

Classification of pulp diseases

- **Histopatological**

Hyperemia pulpae

Pulpitis acuta serosa partialis

totalis

Pulpitis acuta purulenta partialis

totalis

Classification of pulp diseases

- Histopatological

Pulpitis chronica clausa

aperta

ulcerosa

polyposa

Classification of pulp diseases

Clinical

Reversible pulpitis

Pain does not linger after stimulus is removed

Pain is difficult to localize

Normal periradicular appearance

Teeth are not tender to percussion

Classification of pulp diseases

Clinical

Irreversible pulpitis

Pain may develop spontaneously or from stimuli

In later stages heat is more significant

Response lasts from minutes to hours

When the periodontal ligament is involved, the pain is localized

A widened periodontal ligament may be seen in later stages

Diagnosis

- **History**

Presenting complaint

Medical history

Dental history

Pain history

Location

Type and intensity of pain

Duration

Stimulus

Relief (analgetics, antibiotics, sipping cold drinks)

Diagnosis

Clinical examination

Extraoral (swelling, redness, extraoral sinuses, lymph nodes, degree of mouth opening)

Intraoral examination

Swelling, redness,palpation, percussion, sinus tract examination, teeth mobility,pockets

Diagnosis

Clinical examination

Pulp sensitivity tests, radiographic examination, transillumination.

Endodontic treatment

- Methods that keep the dental pulp vital
- Posible only whed dental pulp does not have any clinical symtoms – no spontaneous pain.
- Calcium hydroxide is used.

The methods are:

Indirect pulp capping

Direct pulp capping

Pulpotomy (partial or total)

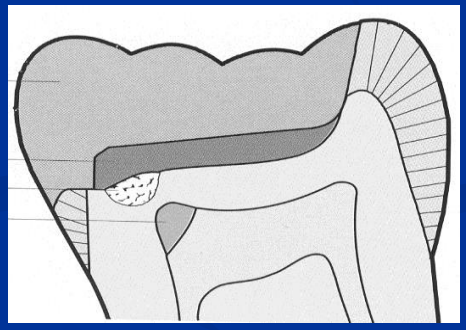
Indirect pulp capping

Indication:

Dental caries is deep (close to dental pulp)

Contraindication:

Spontaneous pain

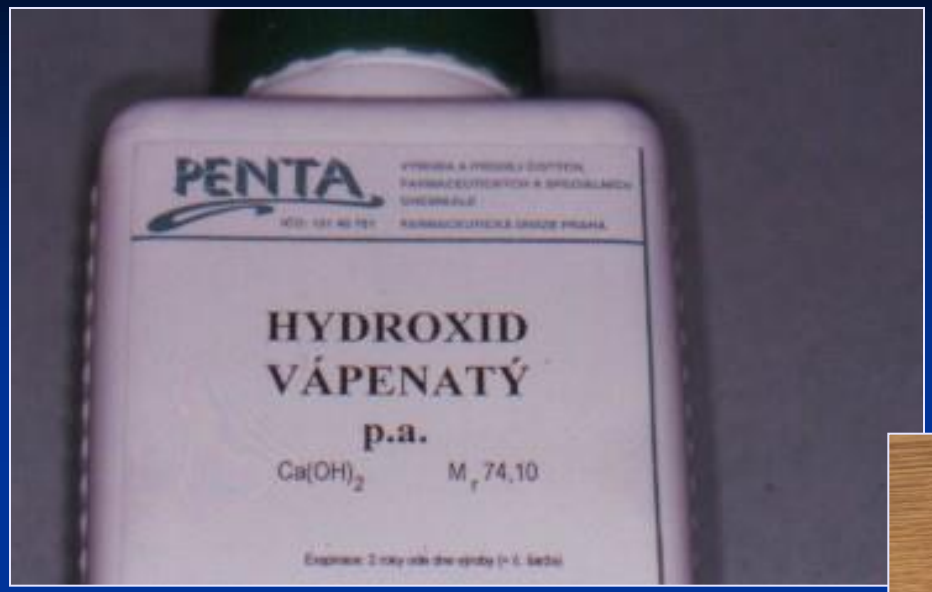


Procedure:

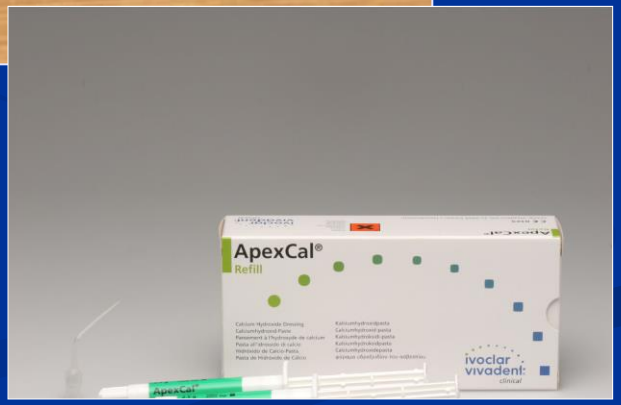
A small amount od calciumhydroxide

is placed itno the deepest part of the cavity

Base plus filling afterwards


PENTA
HYDROXID
VÁPENATÝ
p.a.
Ca(OH)2
Mr 74,10

$Ca(OH)_2$


ApexCal®
Refill
ivoclar vivadent

pH 12,5

Intermittent excavation

- Indication: Large caries, big amount of carious dentin, risk of perforation during preparation.
- Contraindication: Spontaneous pain
- Procedure:
- Preparation, some carious dentin is left, calcium hydroxide and temporary filling is placed.
- Approximately after 6 months the cavity is open again, excavation of carious dentin finished and the filling is placed.

Intermittent excavation

- Calcium hydroxide is used for improving of healing of dental pulp – reparative dentin is formed during the period of 6 months and there is no risk od perforation.

Direct pulp capping

- Indication: small perforation to the pulp due to preparation or trauma.
- Contraindication: Large perforation, perforation in carious dentin, spontaneus pain.
- Procedure:

Perforation must be in non carious area. A small amount of calcium hdyroxide is placed on the perforation, base and filling afterwards.

Pulpotomy

- Partial or total removal of dental pulp from the pulp chamber.
- Indication: Trauma in permament teethe thas do not finished the development of the root. These procedure can keep dental pulp vital in the root canal and the tooth can finish the roor development.

Pulpotomy - contraindication

- Permanent teeth that finished the development of the root. In these cases is better to do endodontic treatment (root canal shaping, cleaning, filling).

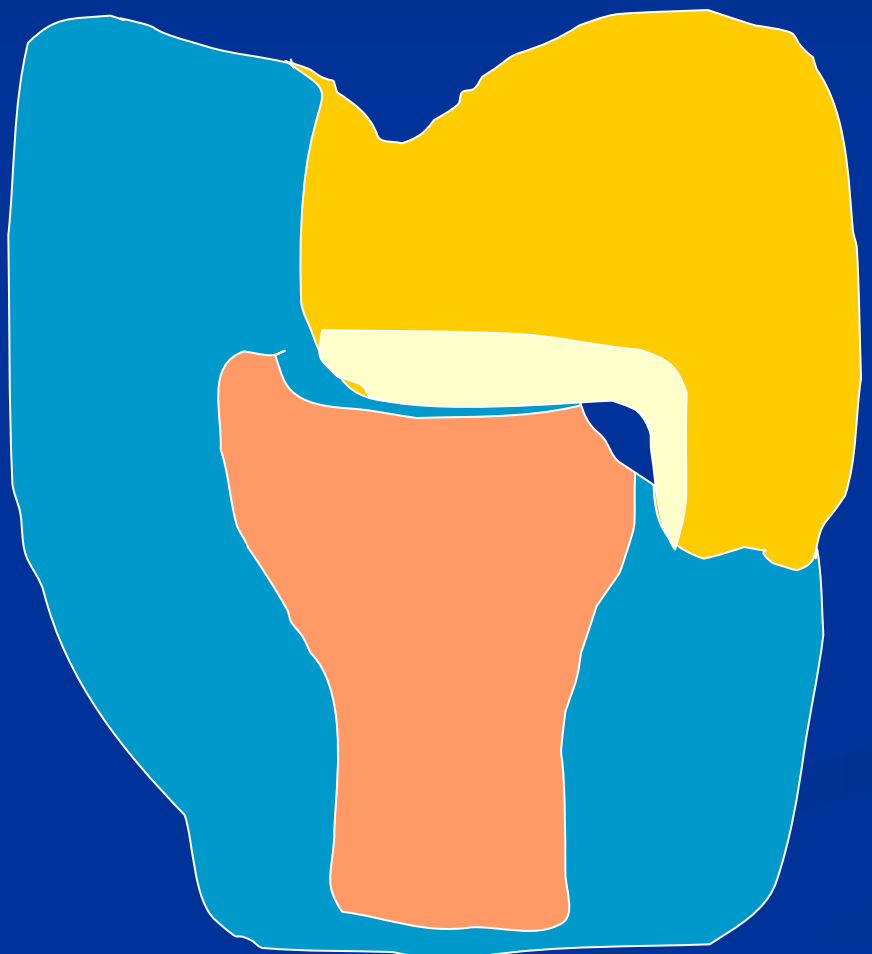
Pulpotomy – procedure:

See direct pulp capping

Calcium hydroxide

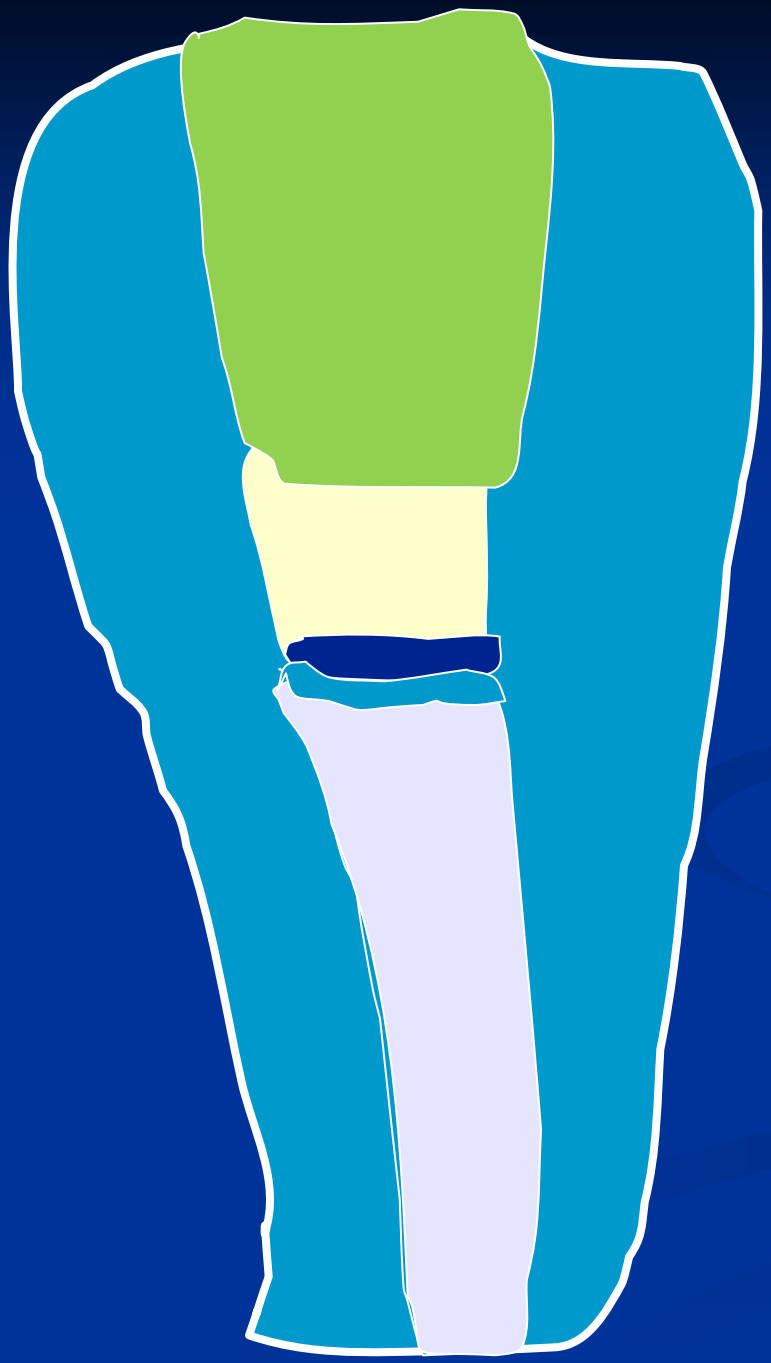
- High pH – 12,5, suspension or cement
- Can help to heal the inflammation if placed into the cavity
- Can improve formation of dentin – the perforation can close with dentin (dentin bridge)

Direct pulp capping



Small perforation

Surrounded with non carious dentin



Pulpotomy

Pulp removed partially or totally From the pulp chamber.