Preclinical Dentistry

I.

Dental Caries
Non carious lesions: trauma, erosion, abrasion,wedge shaped defects

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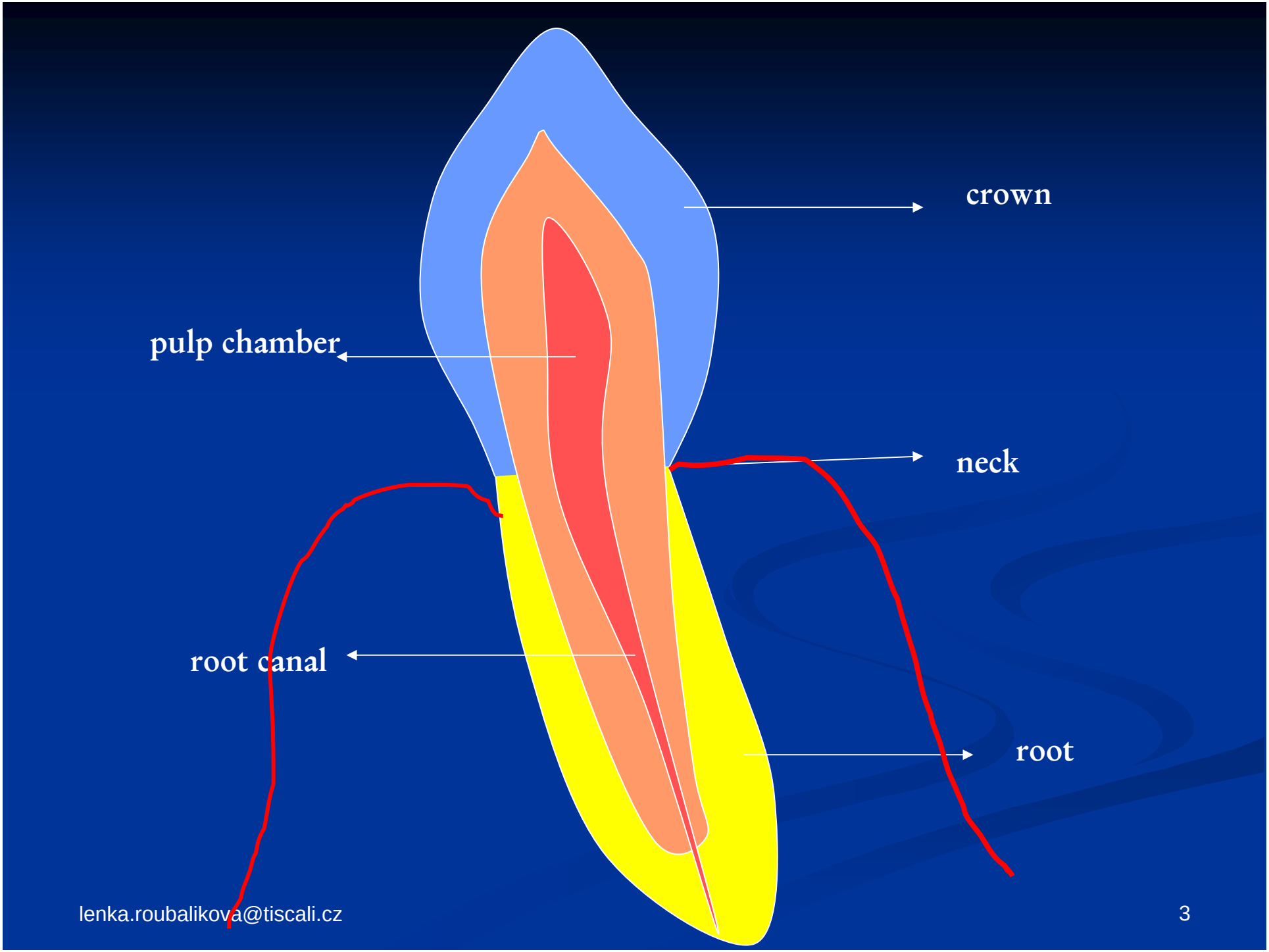
Understanding dental caries



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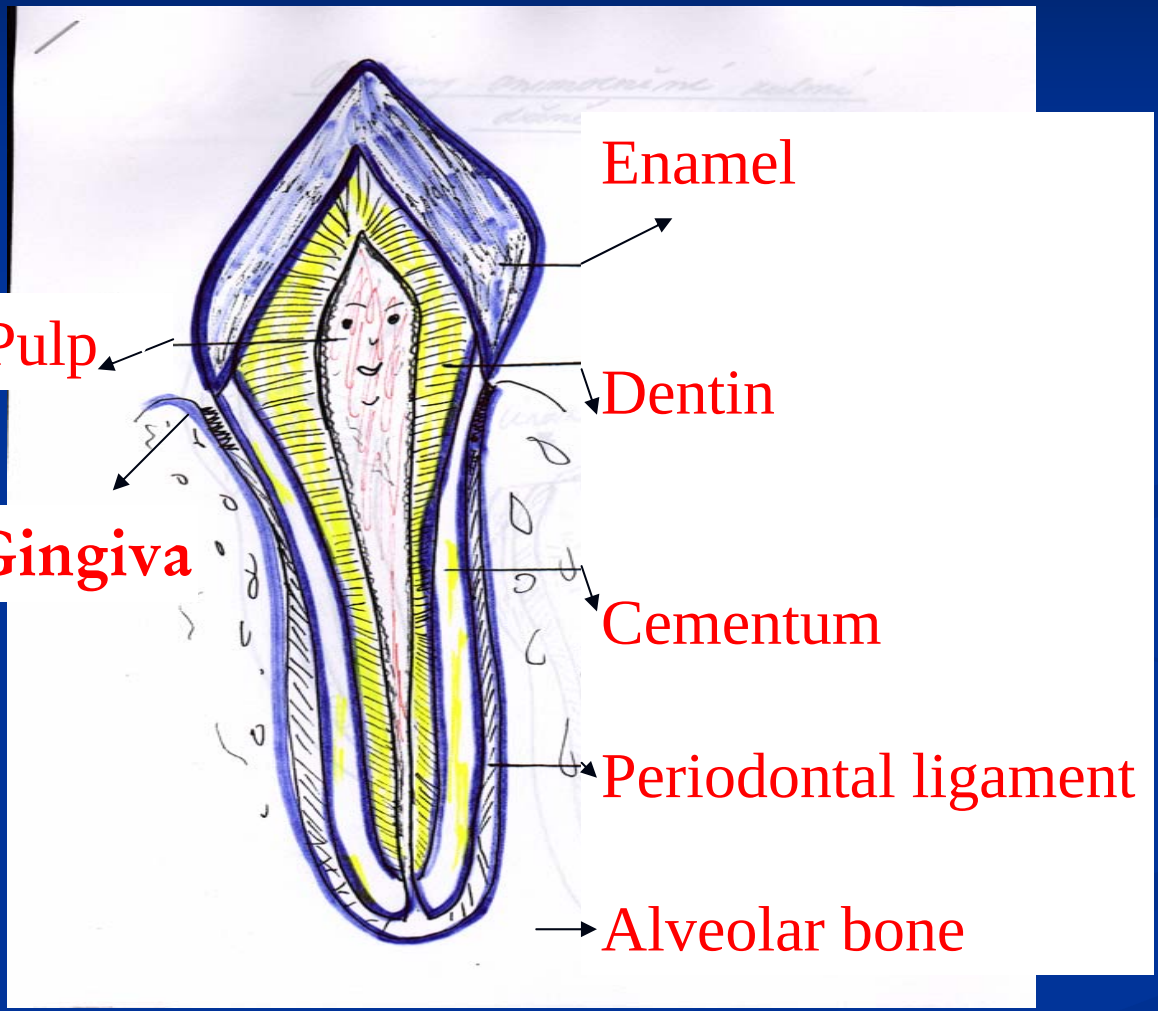
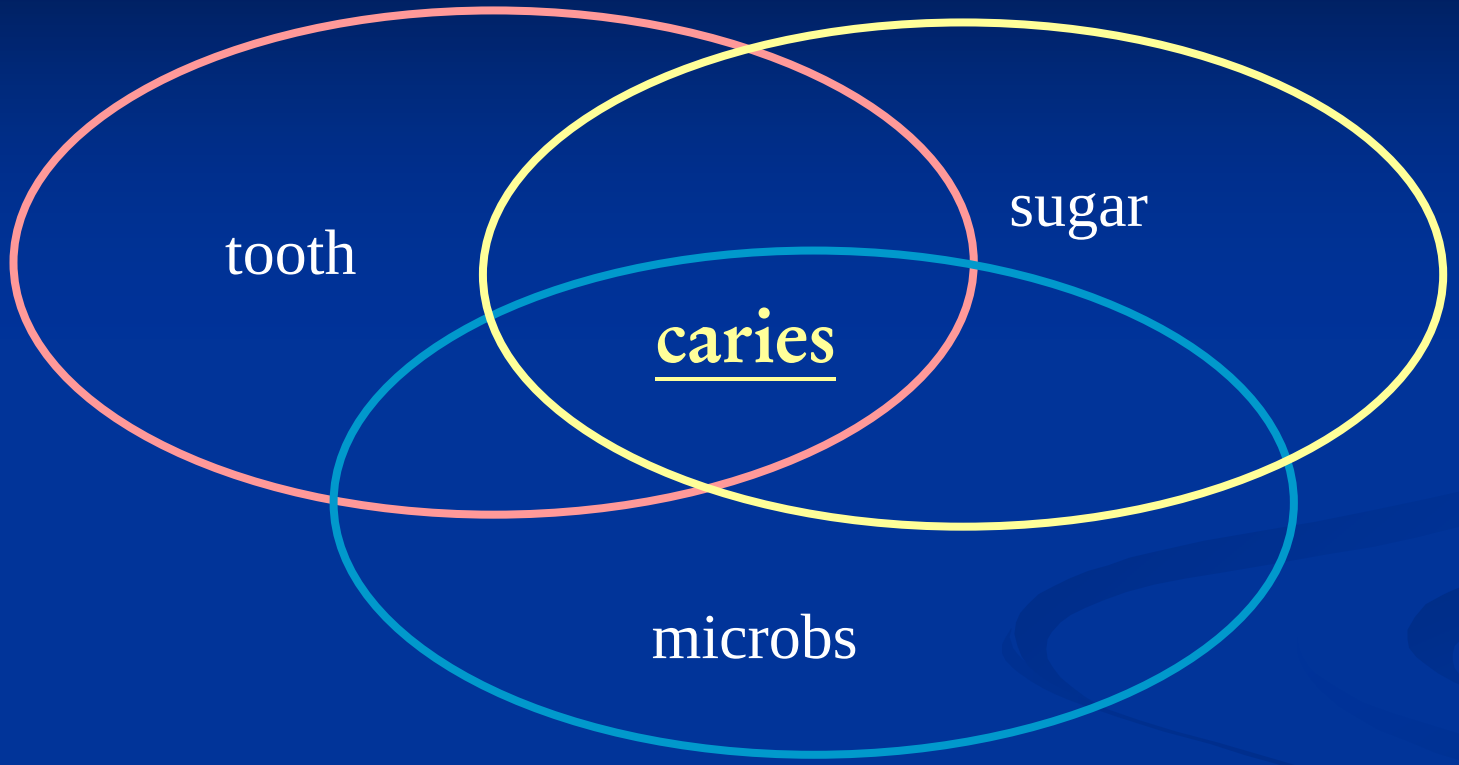
Dental Tissues



Dental caries



time

Dental Caries

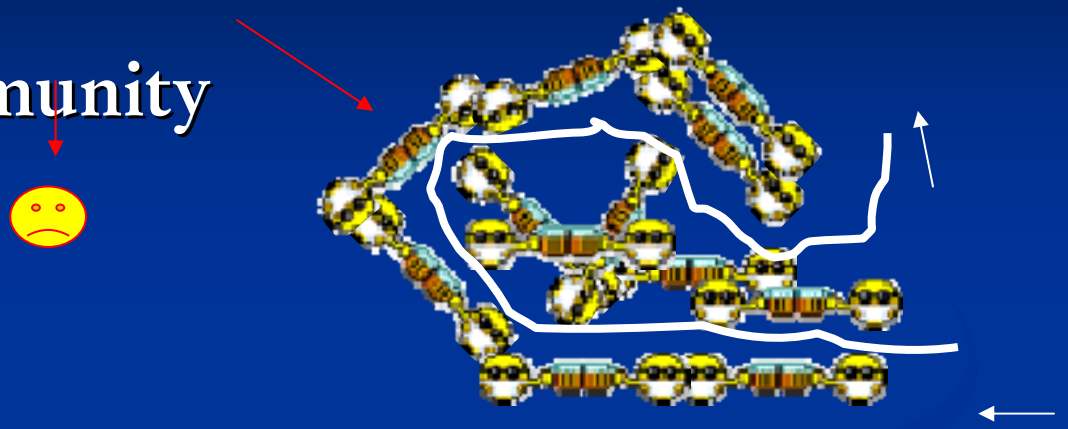
Infectious microbiological disease of the teeth that

results in localized dissolution and destruction of

the calcified tissues

Biofilm – Dental Plaque

Complex community



Simple circulation

Better conditions to survive

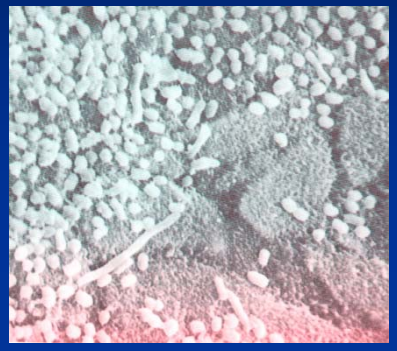
Dental Biofilm – Dental Plaque

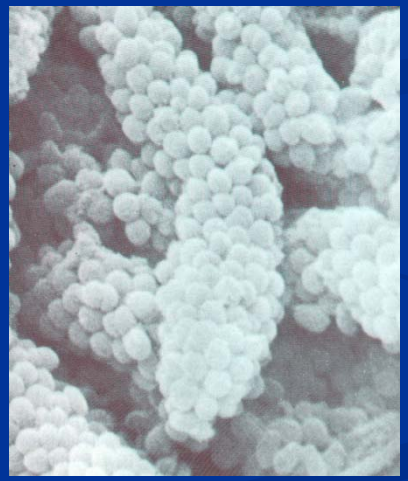
A gelatinous mass of bacteria adhering to the tooth surface.

No shedding

Dental biofilm

- Adhesion
- Colonisation
- Maturation





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Sugar

Fermentable (mono-, di- tri- sacharides)

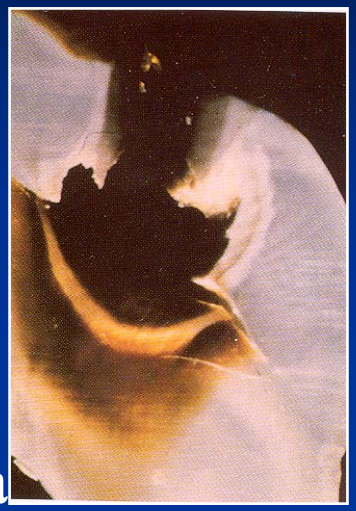
Sucrose, glucose, lactose → Acids

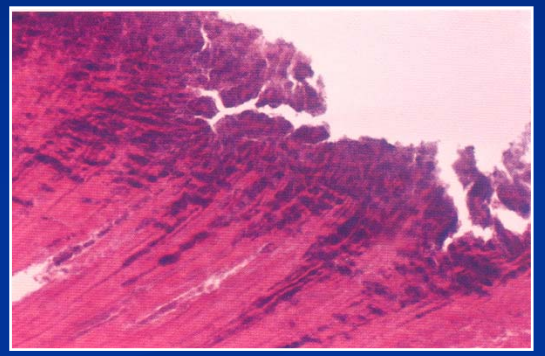

Demineralization

Ireverzibilní: kavitované

Demineralizace

Reverzibilní: Nekavitova





Čas

Saliva

- Plaque formation
- Microbial source
- Mineral source
- Microbial clearence
- Buffer capacity

Caries danger areas habitually (predictable) dirty places

- Pits and fissures
- Proximal surfaces
- Cervical area

No self cleaning

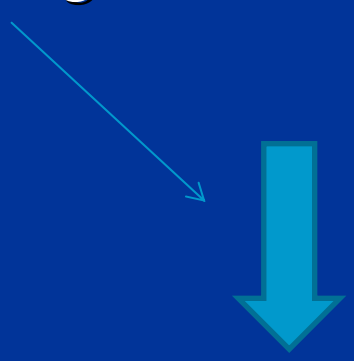
Predictable clean places

- Cusps
- Proximal ridge, oblique, transverse ridge
- Incisal edge
- Buccal or oral surface upon the maximal convexity
- Proximal surface upon the contact point

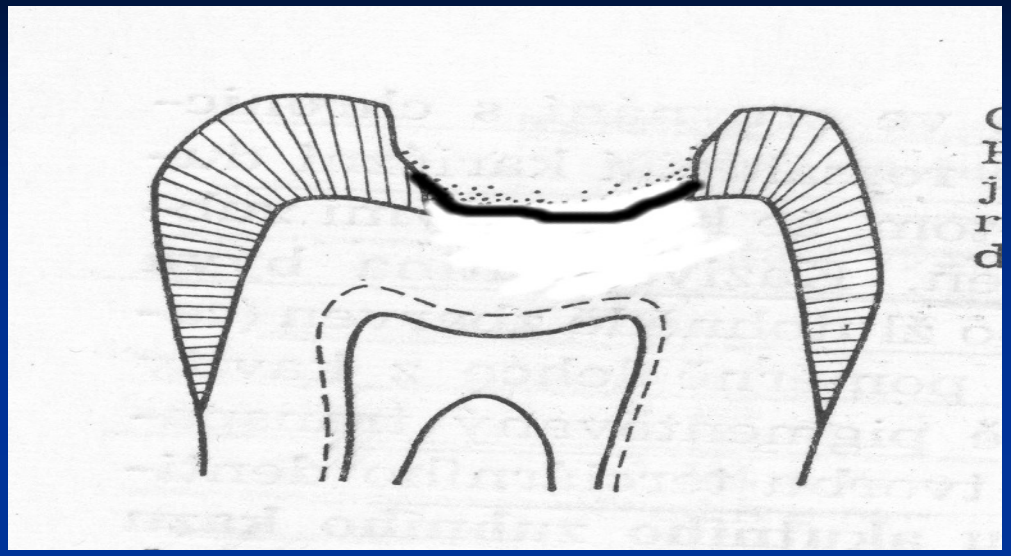
Self cleaning

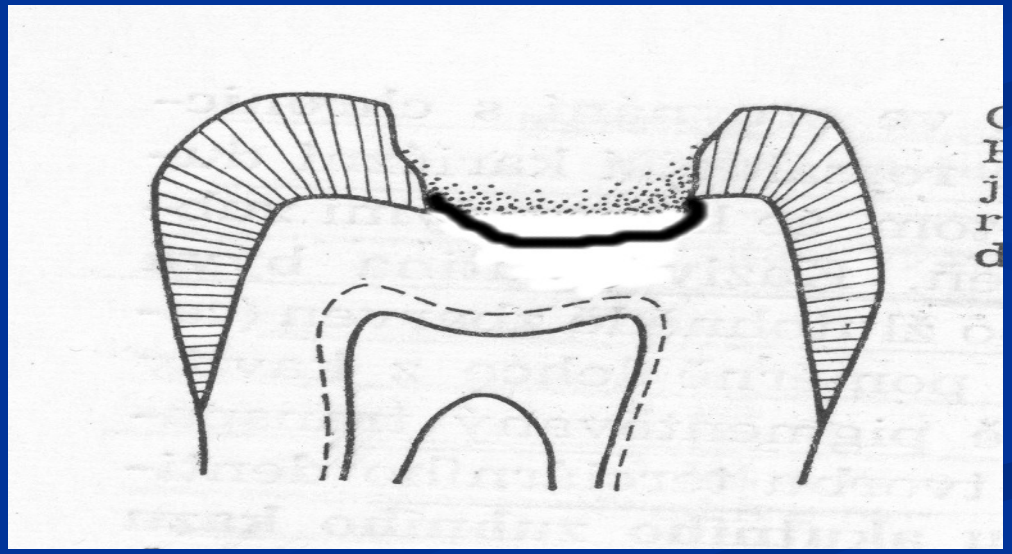
Caries - depth

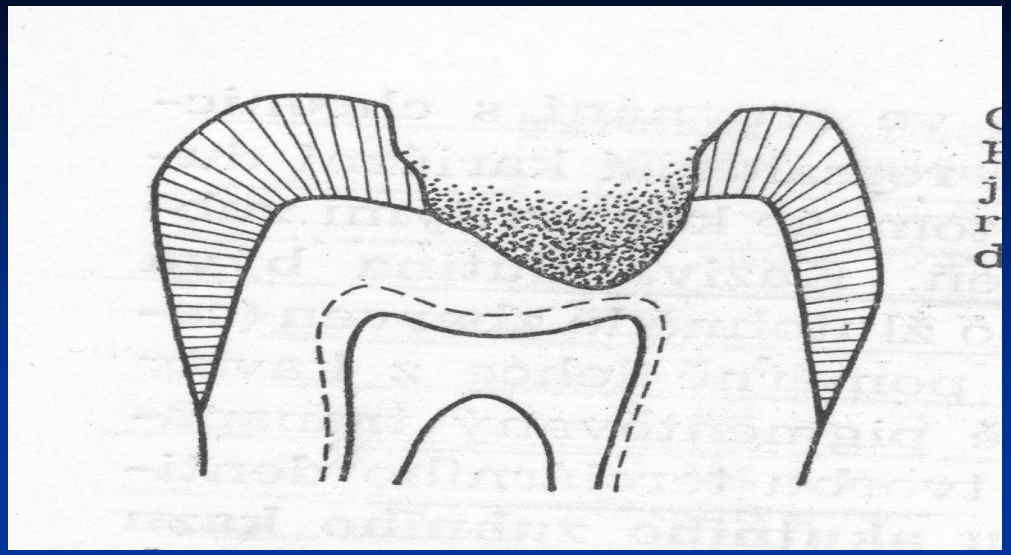
- Surface caries (caries superficialis)
- Middle caries (caries media)
- Caries close to pulp (caries pulpae proxima)
- Caries penetrating into the pulp (caries ad pulpam penetrans)

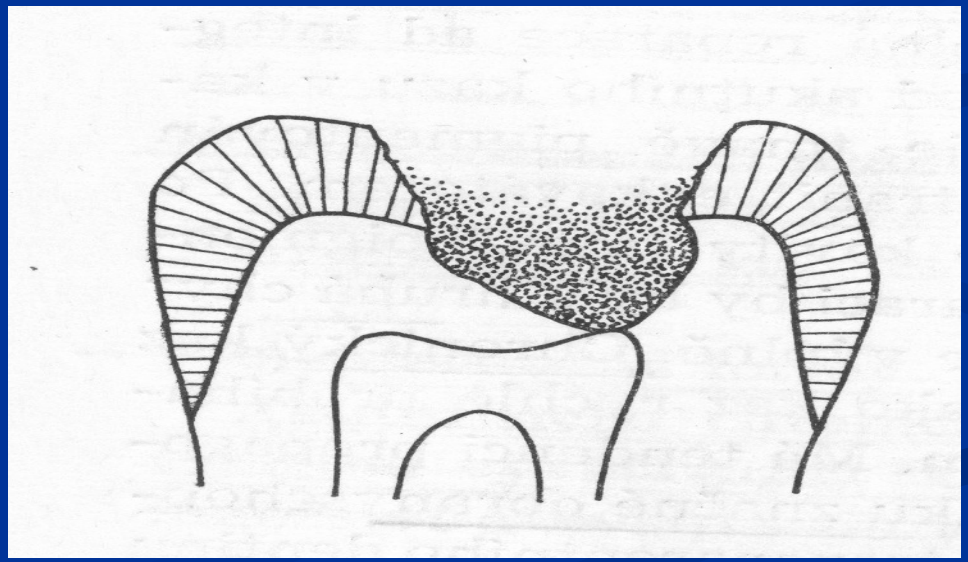


Deep caries









Caries - Topography

- Coronal caries
- Root surface caries

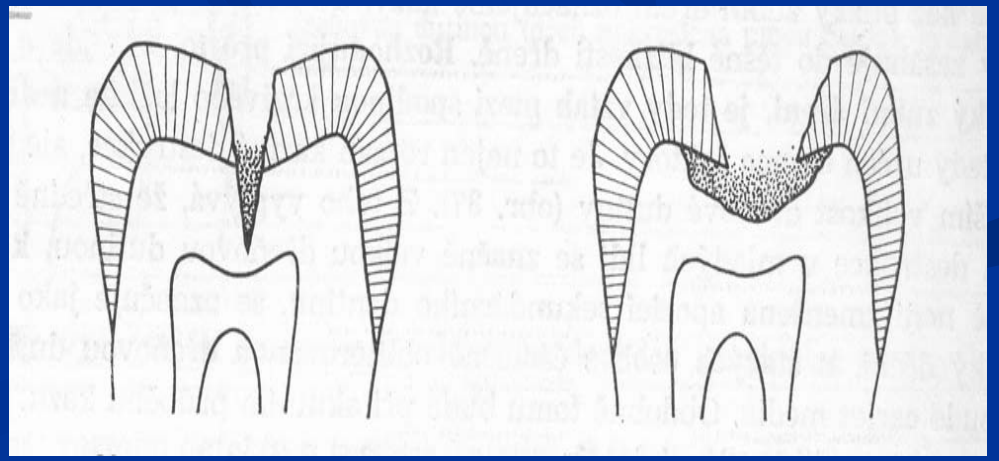
- Enamel caries
- Dentin caries
- Cementum caries

Caries

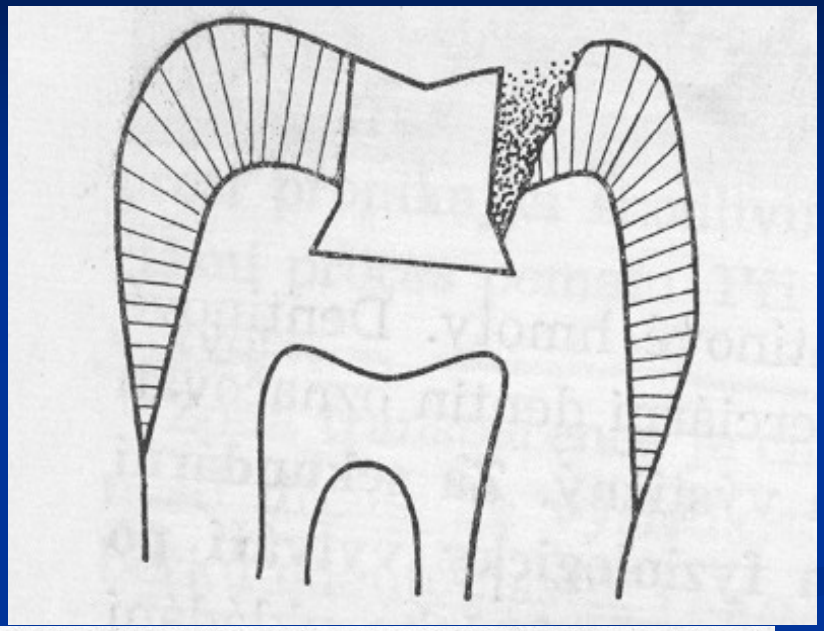
- Acute
- Chronic
- Arrested

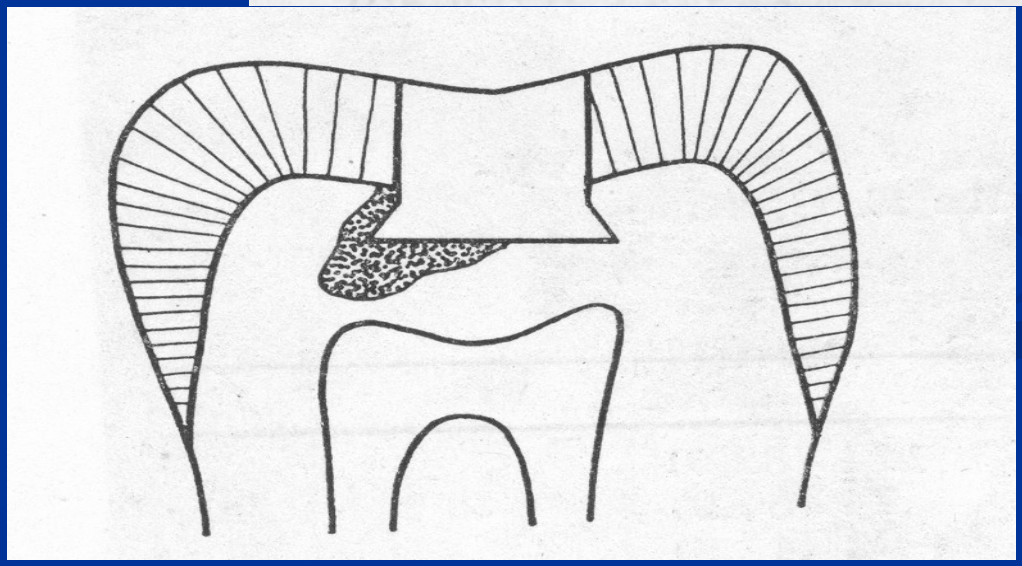
} Acc to its history

- Penetrating
- Undermining



Primary caries
Secondary caries
Recurrent caries





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Patient assesment

Clinical examination

Diagnosis

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Diagnosis of dental caries

Investigation

- Mirror
- Sharp Probe
- Illimunation
- Magnification

Dark spot, hole, defect

- X- ray, other methods i.e. transillumination, infrared laser fluorescency

Dental Caries - Treatment

- Non cavitated lesion:

On molecular basis

- Dental hygiene
- Fluorides, Calcium, Phosphates
- Diet
- Antimicrobial agents

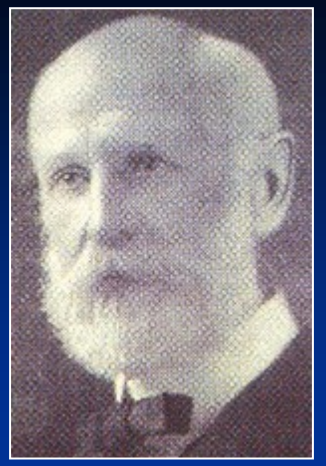
Dental Caries - Treatment

- Cavitated lesion:

Preparation
Filling

Drill anf fill

Preparation



Instrumental treatment

Remove caries

Leave the rest of the dental tissues

- to be restored
- to be resistent against the bite forces
- to be prevented against the recurrent caries

(Black 1914)

Classification of cavities according to Black

Class I.

Caries in fissures and pits – occlusal surfaces of premolars and molars

Class II.

Proximal surfaces of molars and premolars

Class III.

Proximal surfaces of incisors and canines without loss of the incisal edge

Class IV

Proximal surfaces of incisors and canines with the loss of incisal edge

Class V.

Cervical area

Classification acc. to Black

- Class I.

Pit and fissure caries

Classification acc. to Black

- Class II.

Proximal surfaces in premolars and molars

Classification acc. to Black

- Class III.

Proximal surfaces of incisors and canines without

lost an incisal ridge

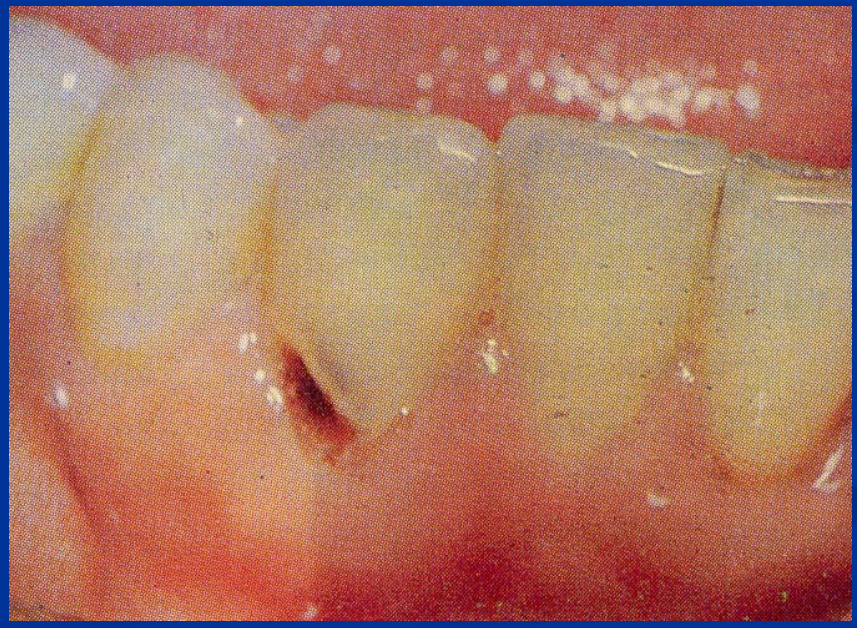
Classification acc. to Black

- Class IV.

Proximal surfaces of incisors and canines with lost an incisal ridge

Classification acc. to Black

- Class V. cervical lesions



Charting and records
the most important notation

- Caries /
- Filling P
- Tooth for extraction X
- Extracted tooth +
- Crown
- Pontic
- Tooth in removable denture 0

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Instruments for investigation – investigative instruments

Explorer (probe):
Sharp, straight or bow shaped:
Caries detection – lght motion without any pressure: dental surfaces, fillings.

Periodontal explorer (probe): not sharp, calibrated, investigation of periodontal pockets

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Instruments for investigation – investigative instruments

- Mirror – flat or concave
- To see less available regions
- To illuminate
- To move off soft tissues (cheeks, tongue etc.)

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Instruments for investigation – investigative instruments

Tweezer

To grip various instruments and supplies.

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Instruments for cavity preparation

Hand instruments for cutting

Two main materials:

Stainless steel (loses keen edge)

Carbon steel (corrode)

Excavator

Chisel- cleaver

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Instruments for cavity preparation

Power driven instruments for cutting

- Rotary instruments

Comon design characteristics

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Shank

- The part that fits into the handpiece
- Accepts the rotary motion from the
- handpiece
- Provides a bearing surface to control the
- alignment and concentricity of the
- instrument

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Straight handpiece shank

- Simple cylinder
- held in the handpiece in a metal chuck

Latch angle handpiece shank

- Shorter length – access to posterior regions

Handpiece – contra angle, metal bur tube.
The end of the instrument fits into D-shaped socket at the bottom of the bur tube. The *instrument* retained by a retaining latch that slides into the groove found at the shank end of the instruments.

Friction grip handpiece shank

Smaller design, simple cylinder.

Held in the handpiece by friction in plastic or metal chuck.

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Neck design

Intermediate portion of an instrument that connects the head to the shak

Tapered, shorter or longer.

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Head design

Burs – cut of steel or tungsten carbid

Diamond (diamond burs)– covered with the diamond bort

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Head design

Burs classification systém

Round
Inverted cone
Pear shaped
Straight fisure
Tapered fissure

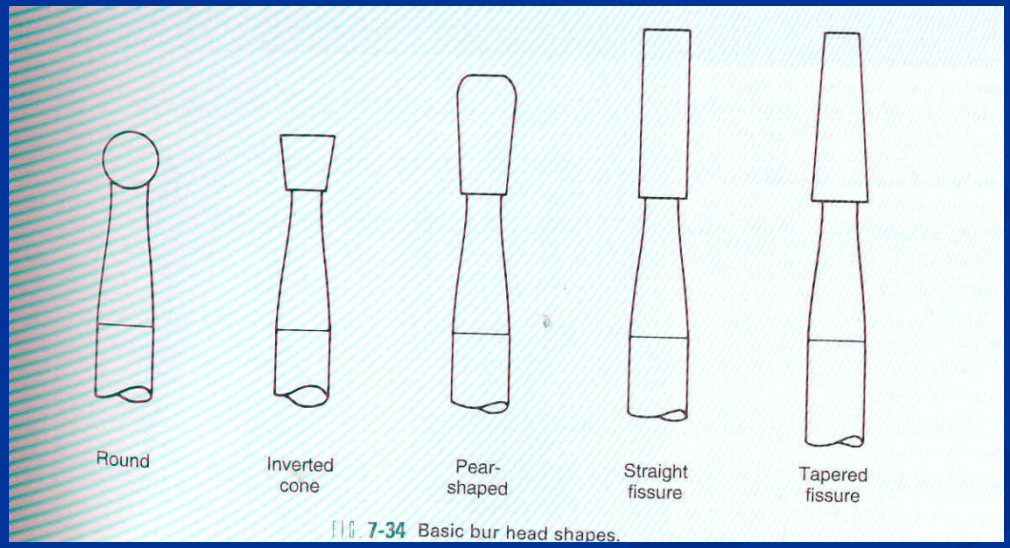

FIG. 7-34 Basic bur head shapes.

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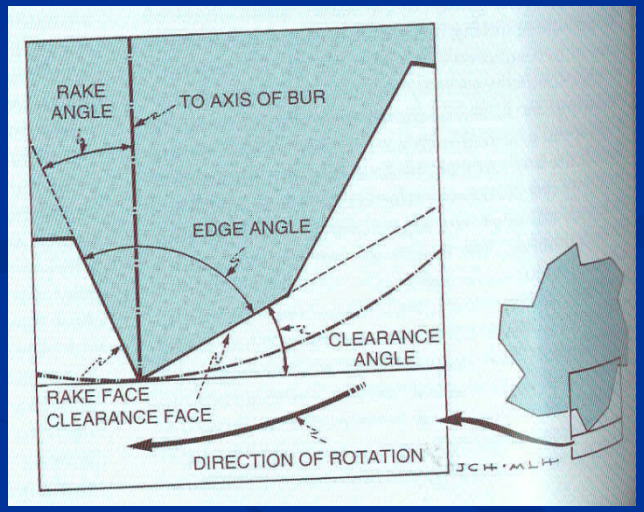
Bur blade design

- Rake face (towards the direction of cutting)
- Clearence face



Rake angle – slightly negative

Edge angle – appr 90°

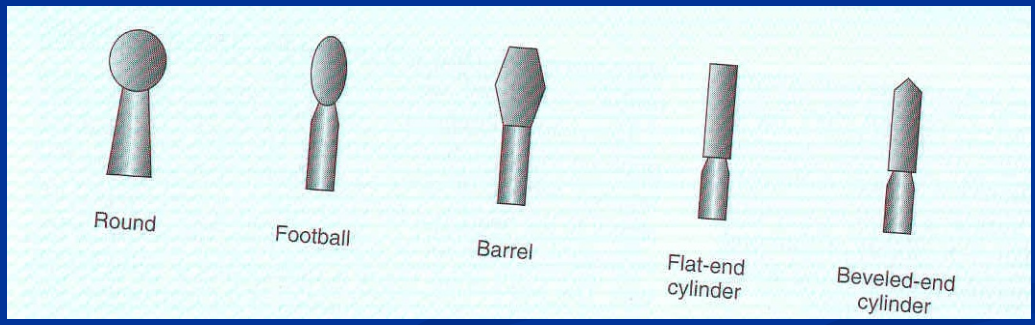
Clearence angle

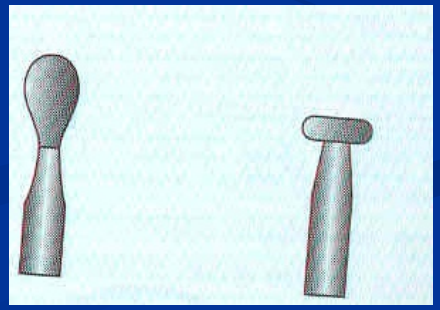
Clearence face rounded or two surfaces.

Head design

Diamond classification systém

Round
Inverted cone
Pear shaped
Cylinder
Taper
Lens
Needle etc.





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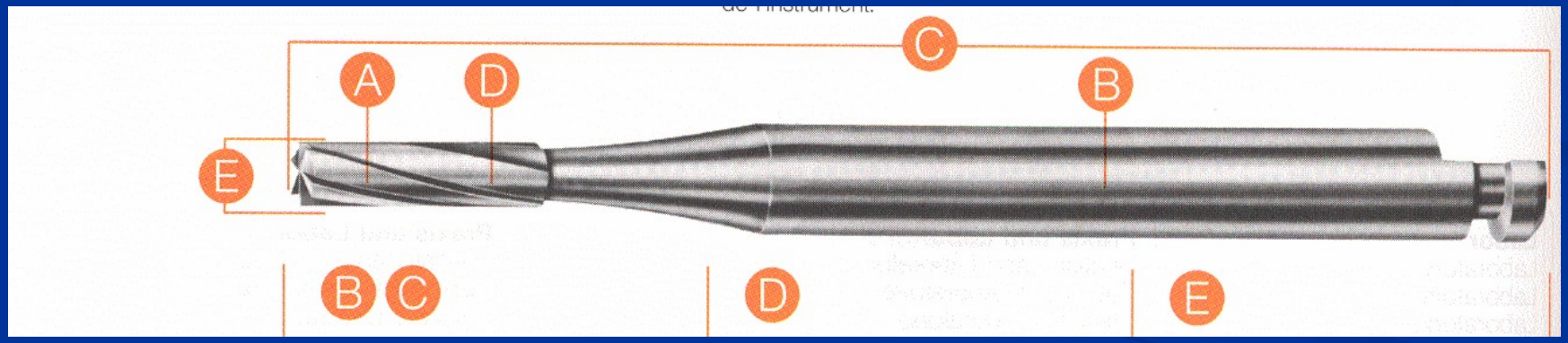
Preparace strojová - nástroje

Rotační nástroje jsou konstruovány podle normy ISO 6360



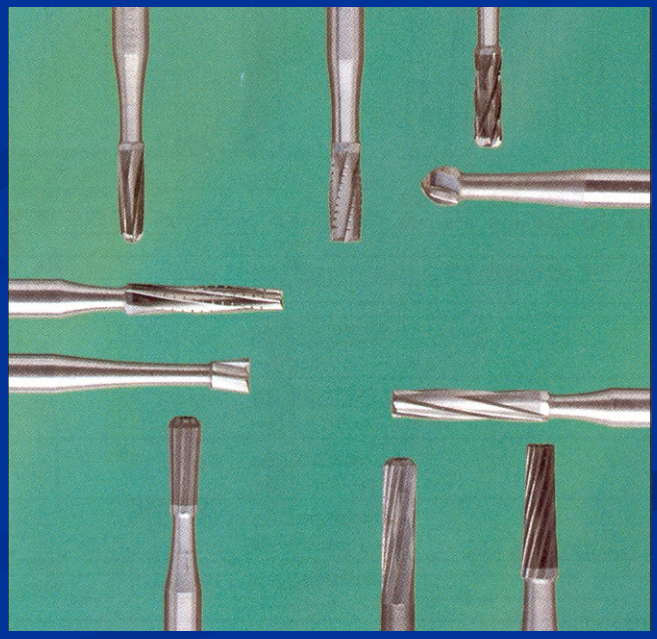
Vrtáčky

- Mají být zhotoveny z vysoce kvalitní tvrdokovové slitiny.
- Slouží k mnoha účelům

v ordinaci i laboratoři

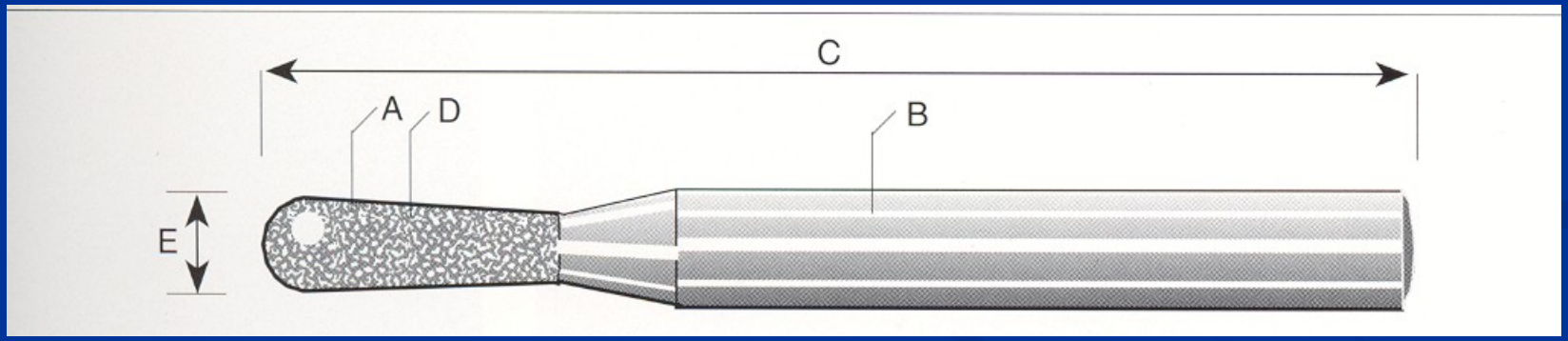
břity odkrajují materiál

rýhy odvádějí materiál



Brousky-diamantované

- karborundové
- korundové



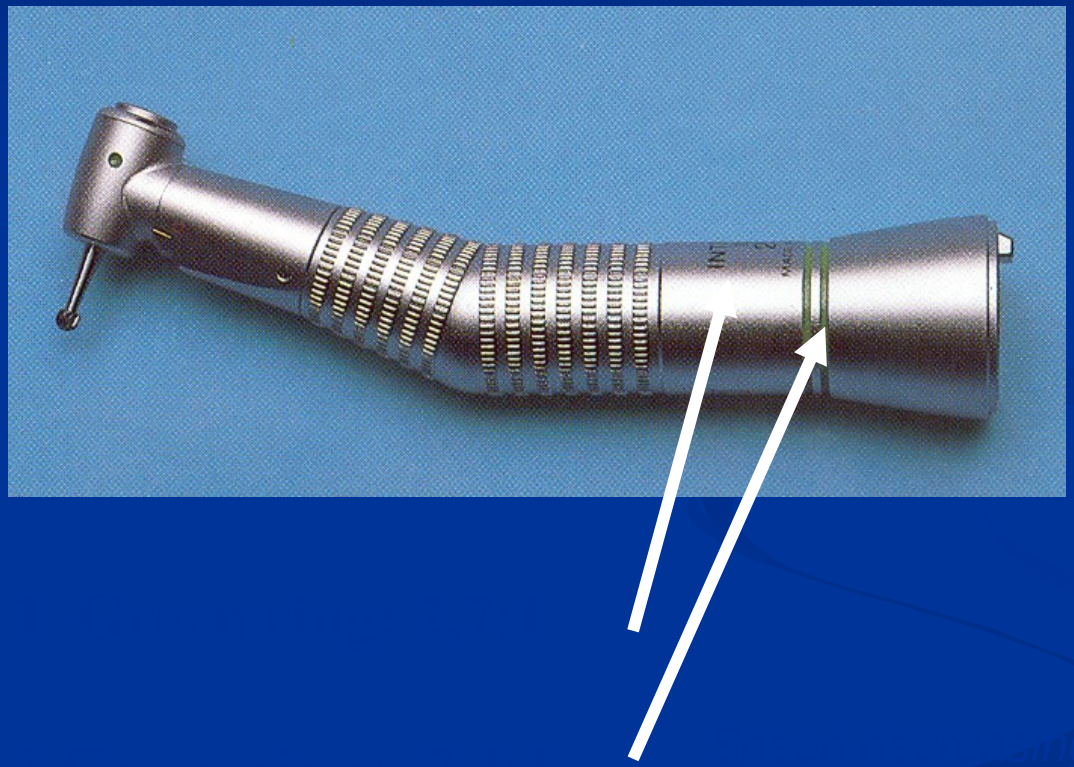
Diamond abrasive instruments

Diamond bort – small aharp particles in softer matrix. Cutting occurs at a large number of points.

Metal blank
Diamond powder
Metallic bonding material

Preparation speed

- Low (slow) speeds – below 12.000 rpm
- Medium or intermediate speeds 12.000 – 200.000 rpm
- High or ultrahigh speeds above 200.000 rpm



Spitting box with amalgam separator

Hoses – uper leading

Cavity preparation

- Power driven
- Hand

400.000 rpm

Electromotors – maximum 40.000/min

Blue code – gear 1:1

Airmotors – maximum 20.000/min

Gearing to fast speed

Gearing to slow speed

Oscillation

1:5

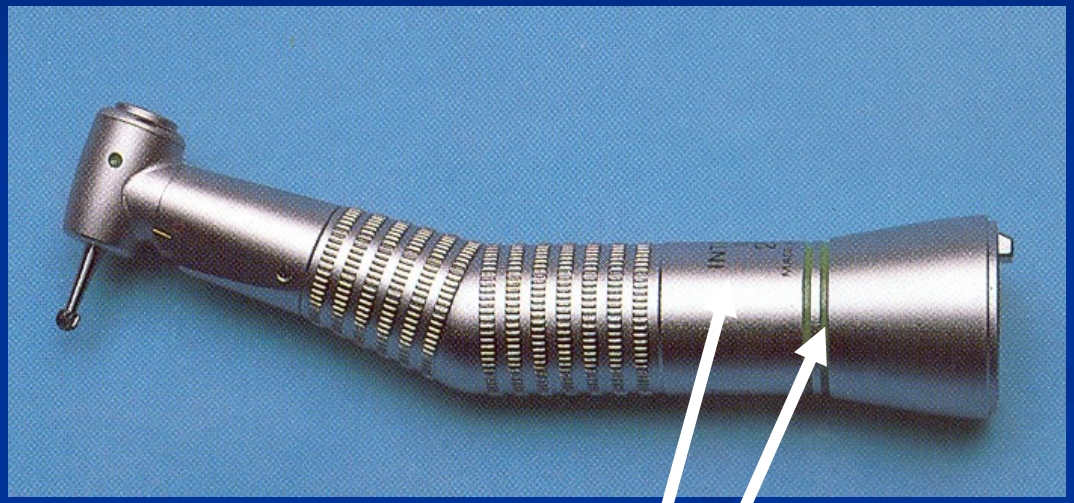
2,7 :1 or 7,4 :1

1 : 1 as far as 40.000 rpm

Red coded handpiece

1:4 až 1:5 as far as 160.000 – 200.000 rpm

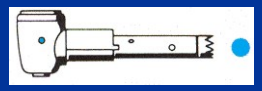
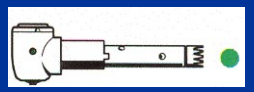
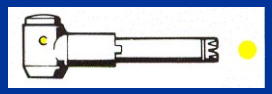
Preparace strojová - pohony

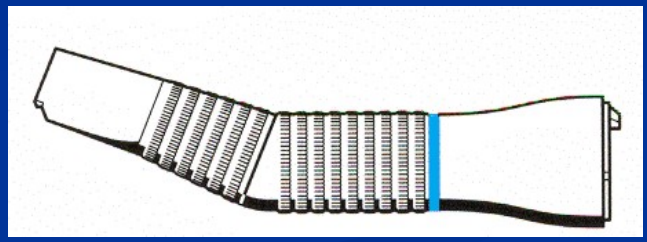


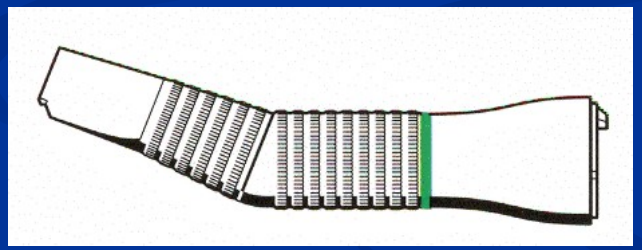
2,7:1
7,4:1

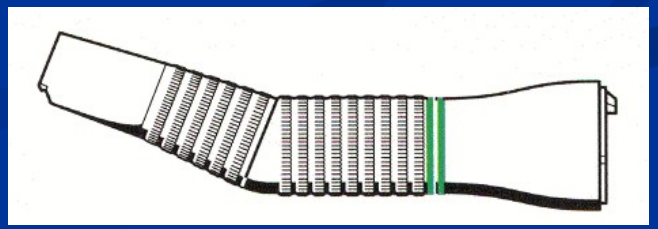
Blue and green coded handpiece

Hanpieces combined

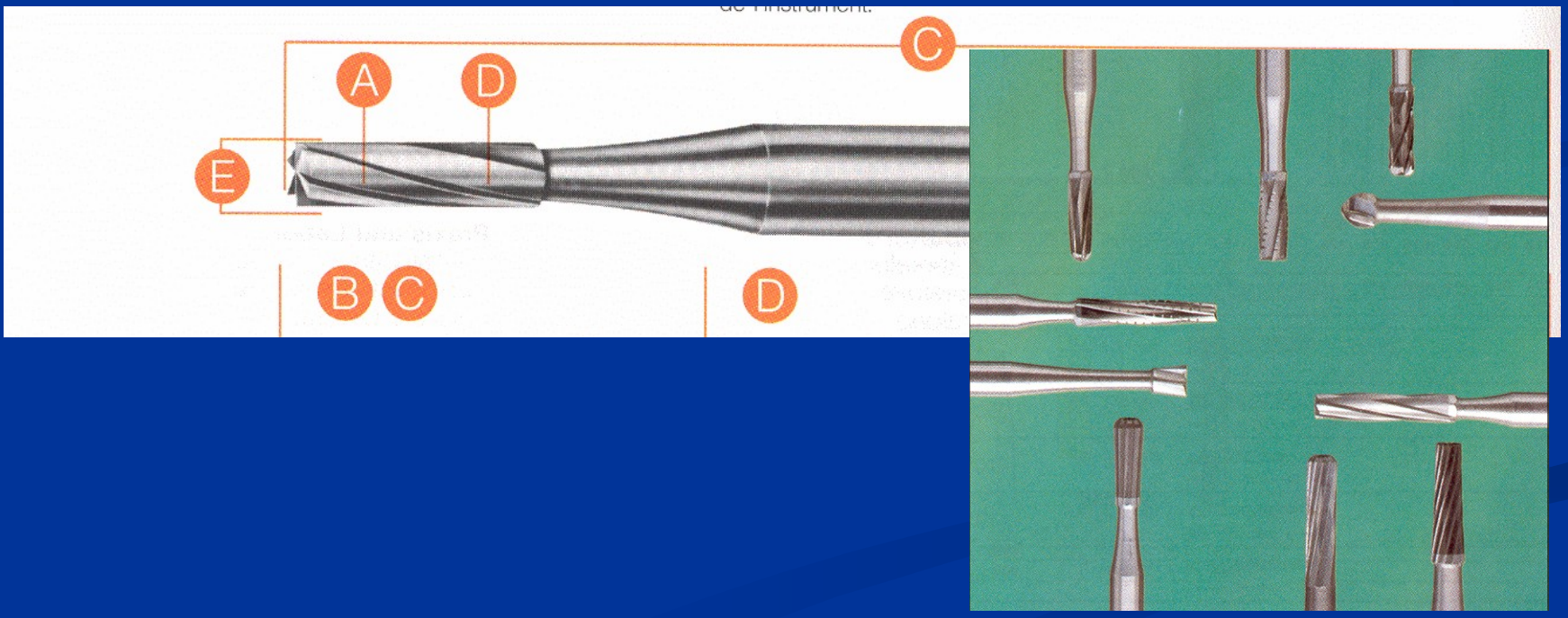
- 1:1 
- 2:1 
- nerotuje 

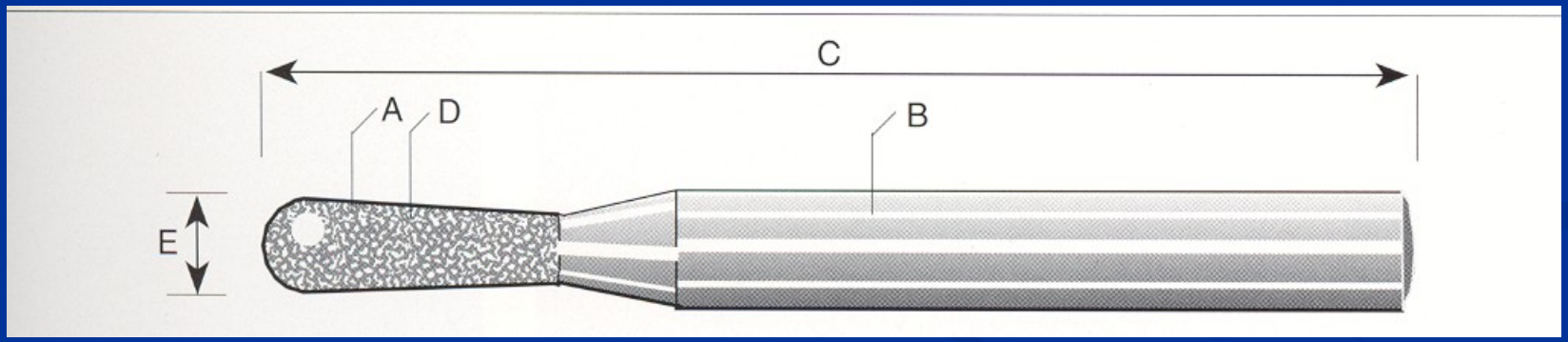






ISO 6360




C
A
D
B
E

Filling materials

Temporary

Zinkoxidsulphate cement

One component cements based on gypsum and organic lute

Zinoxidphosphate cement

Definitive

Amalgam

Composites

Filling materials

Amalgam:

Mercury

Powder – metal alloy:

Silver

Tin

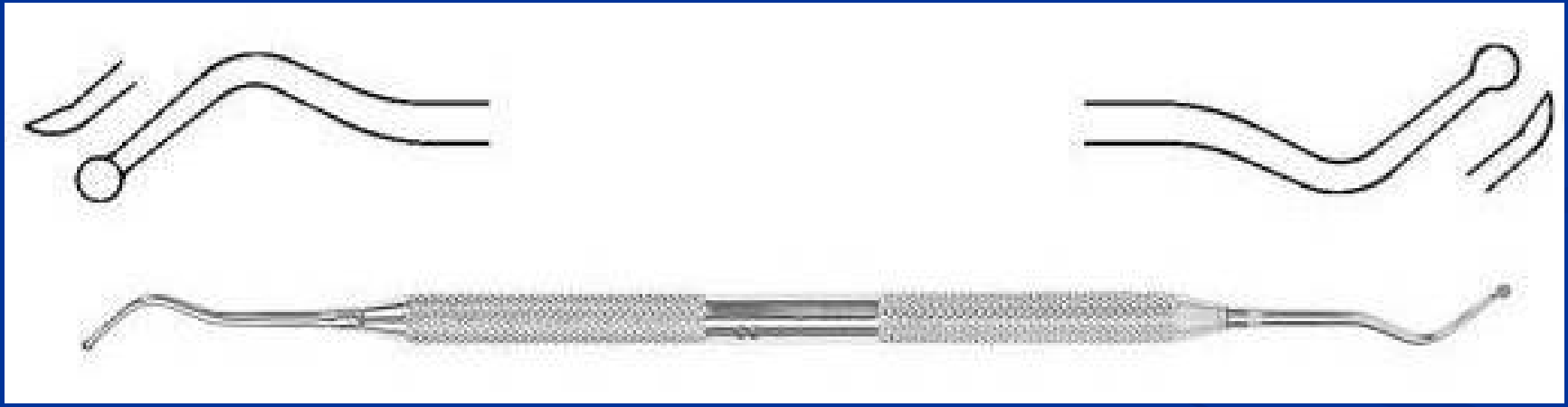
Copper

Zinc

Chisel – for enamel
Cleaver

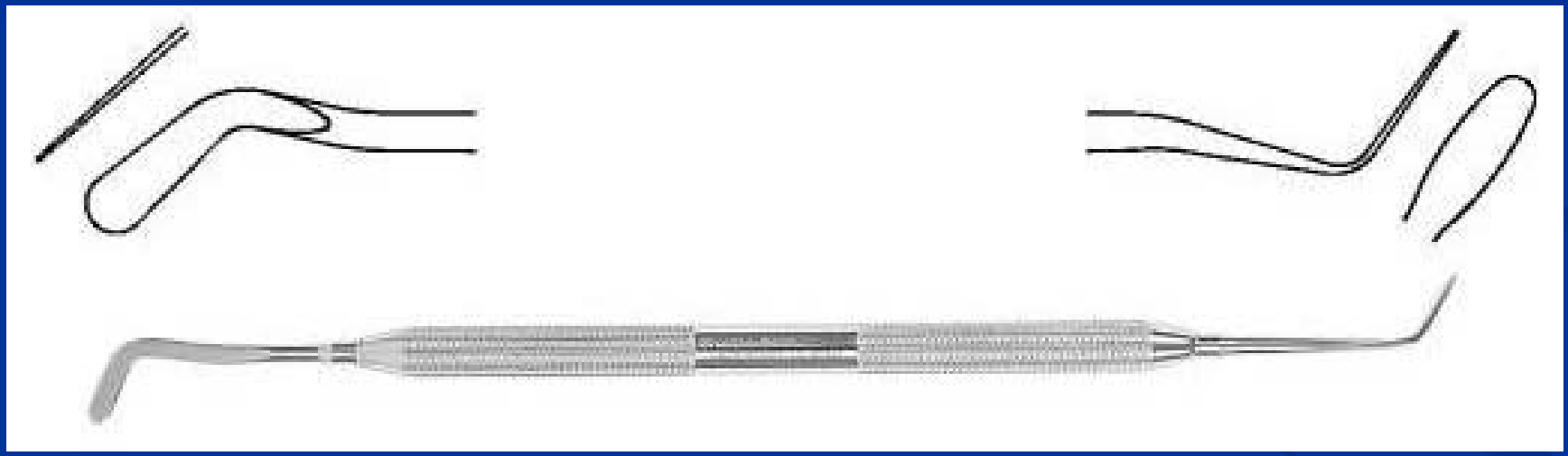
Chisel for enamel

Excavator

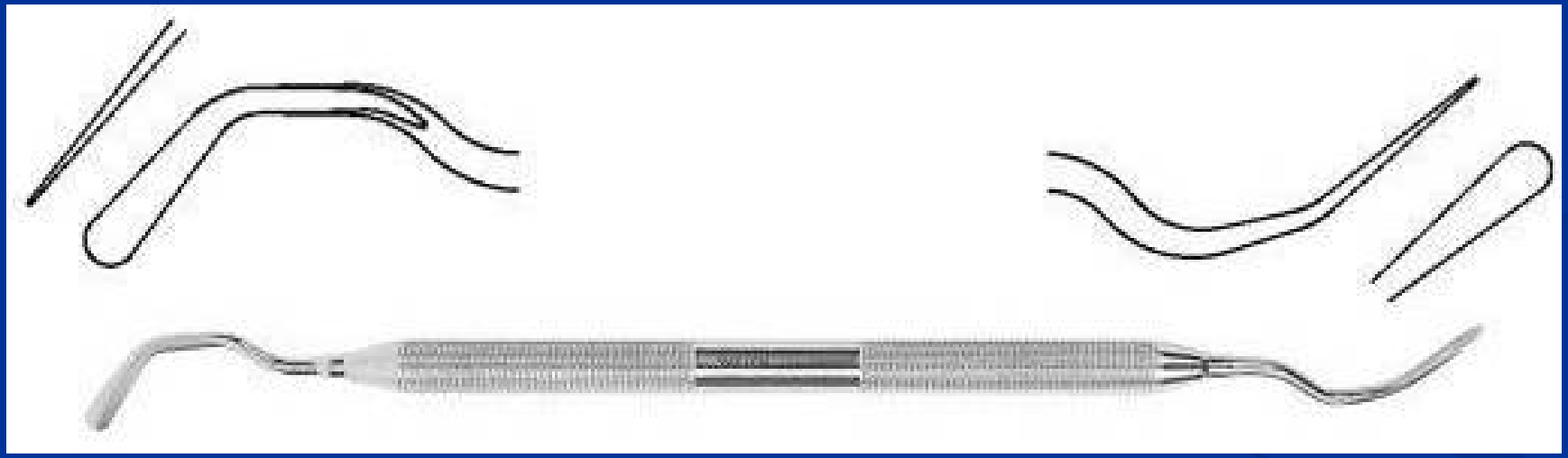


Filling instruments

Burnisher -plane
Angular- trough edge trough face

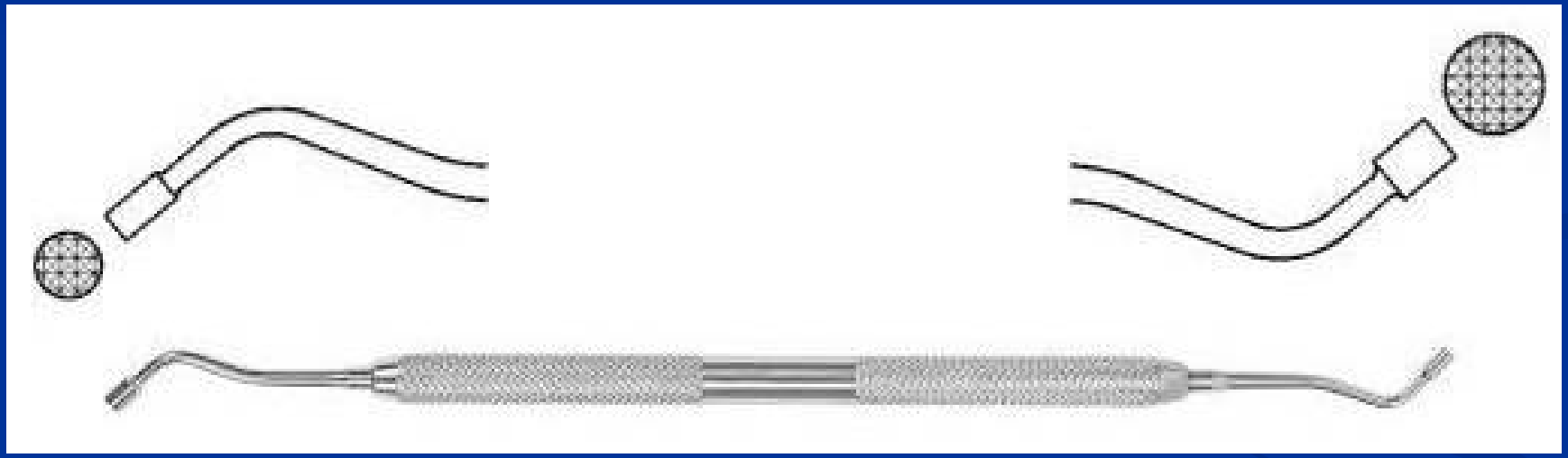


Burnisher – angular three face



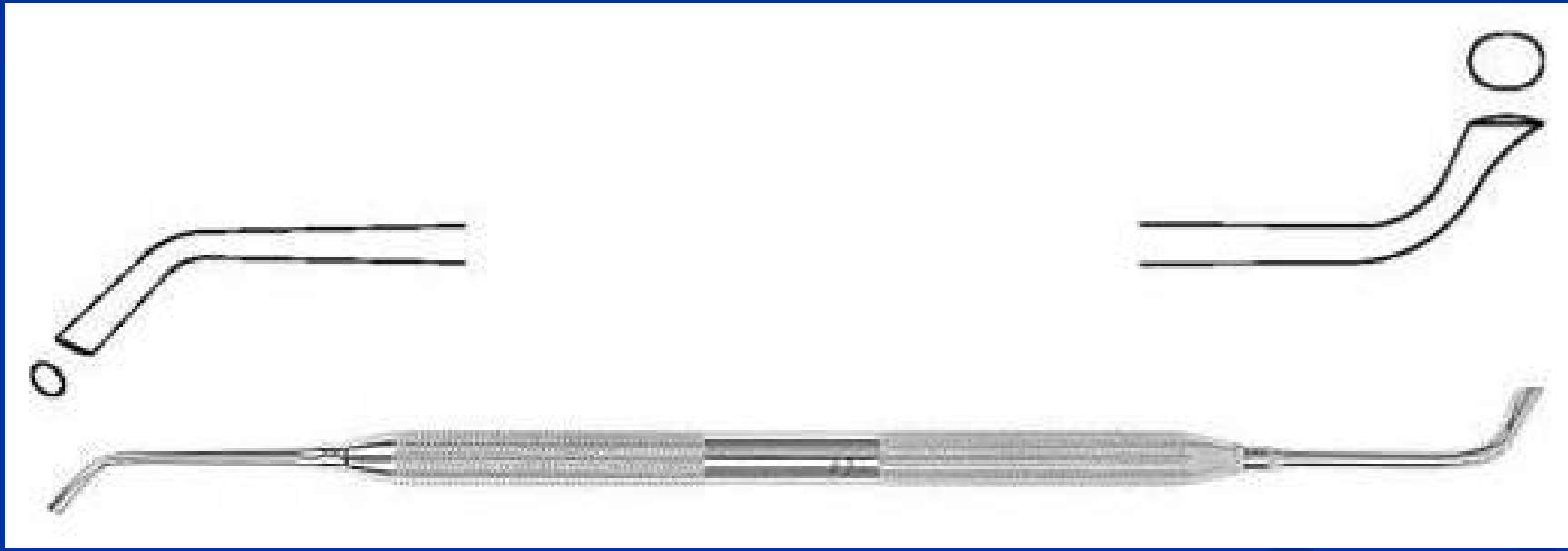
Condensor and burnisher combined

Amalgam carrier

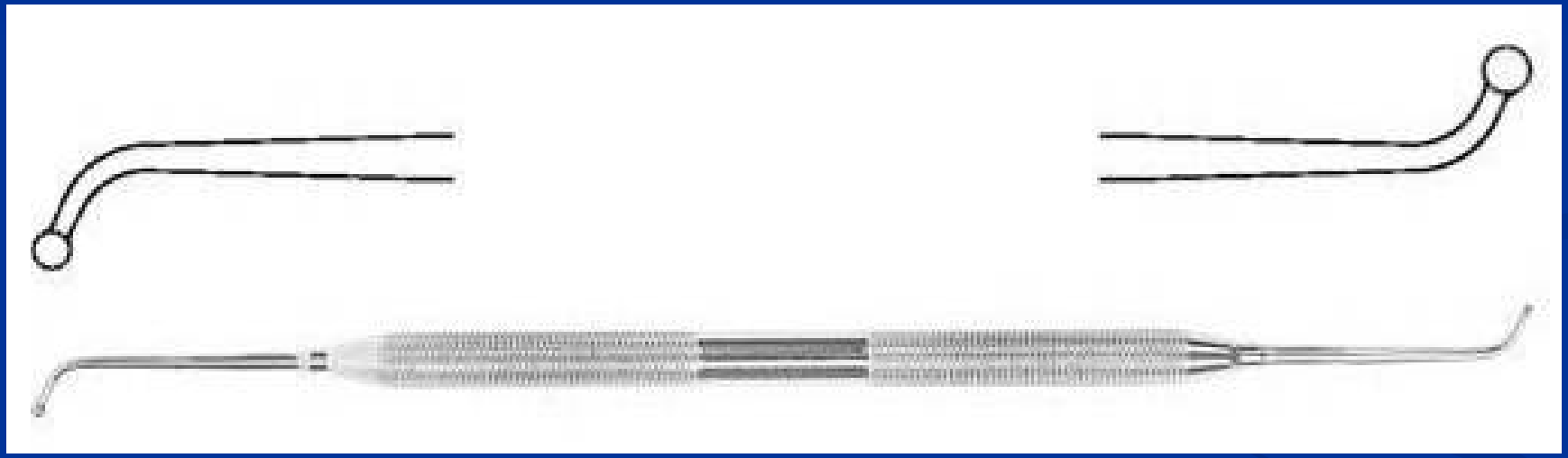


Condensor for amalgam

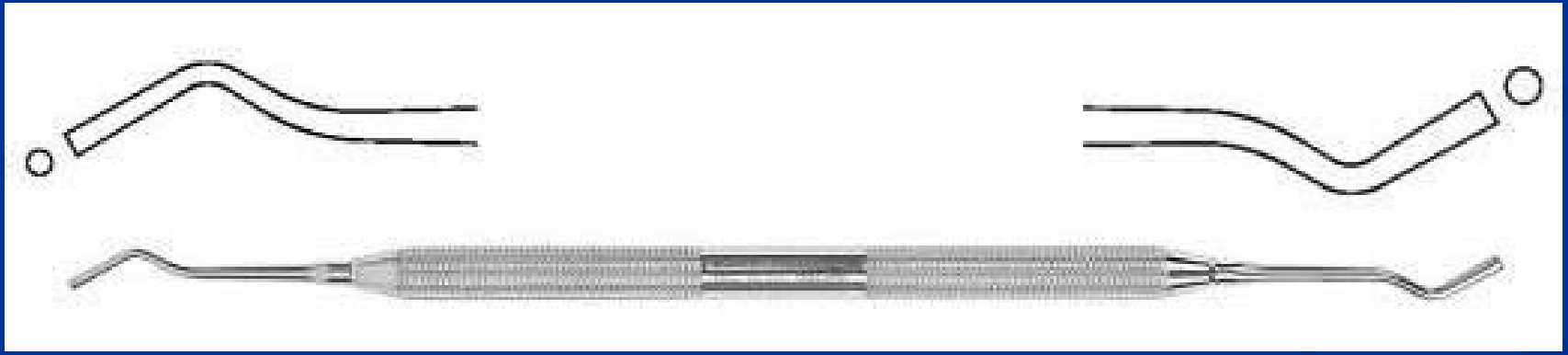
Condensor for guttaprecha - hoof



Ball condensor

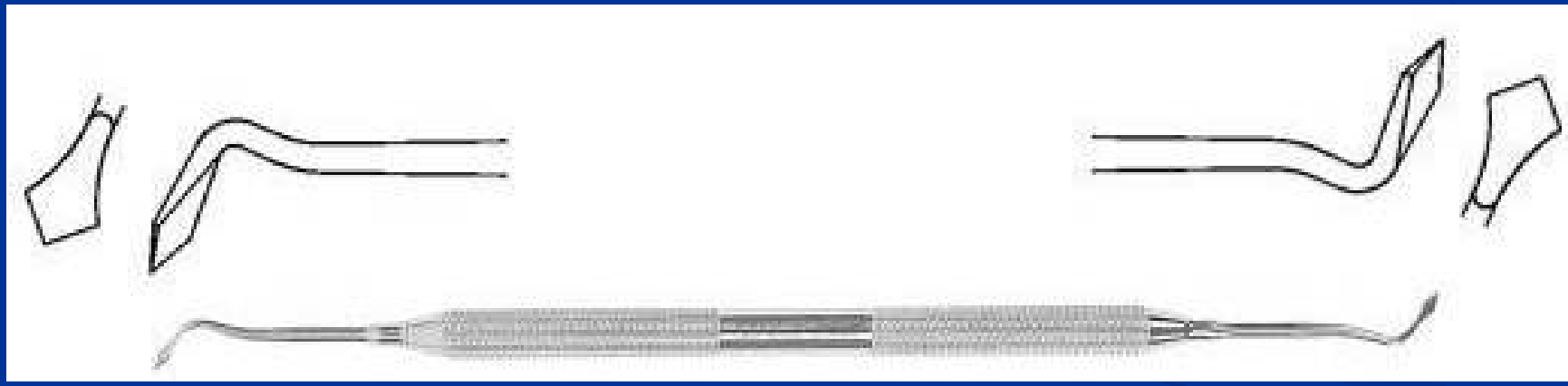


Condensor –stamen



Fosterflagg

Frahm



Carver: Discoid - Cleoid