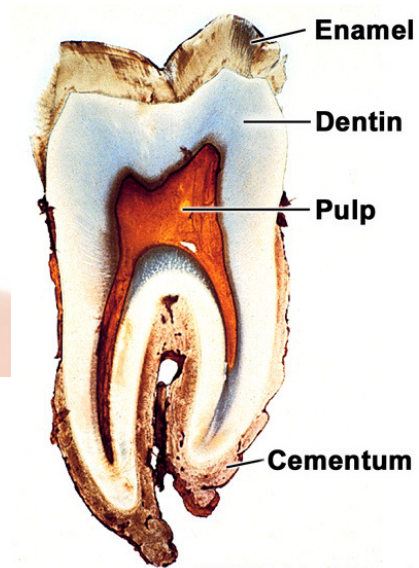


Tandorganet

Introduktion af tandens væv

23. sep 2022

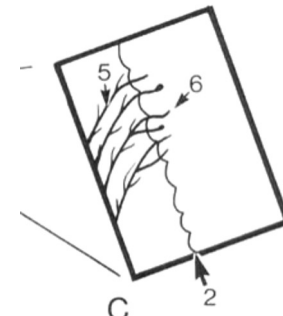
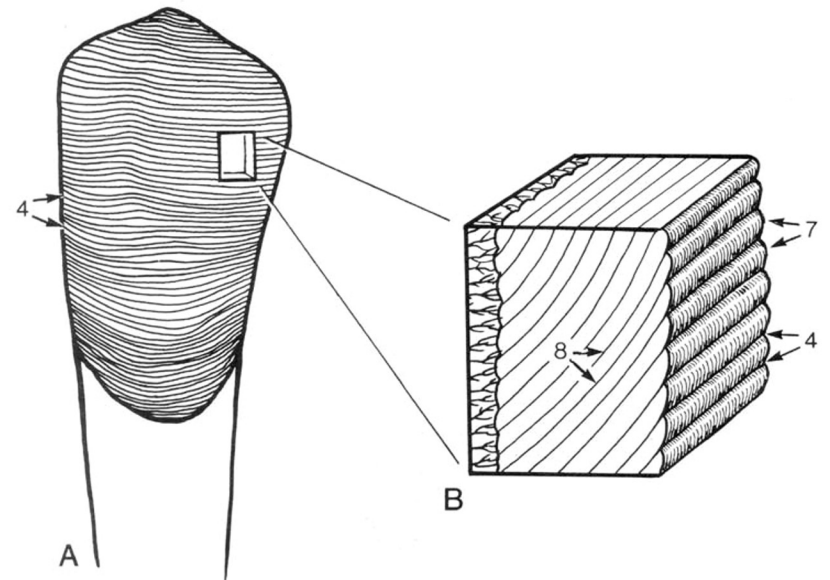
TANDENS MIKROANATOMI



EMALJENS OVERFLADER



- YDRE
 - Emaljehinde
 - Emaljeoverflade
 - Perikymatier





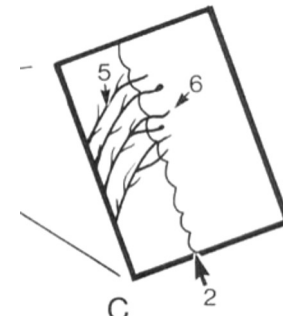
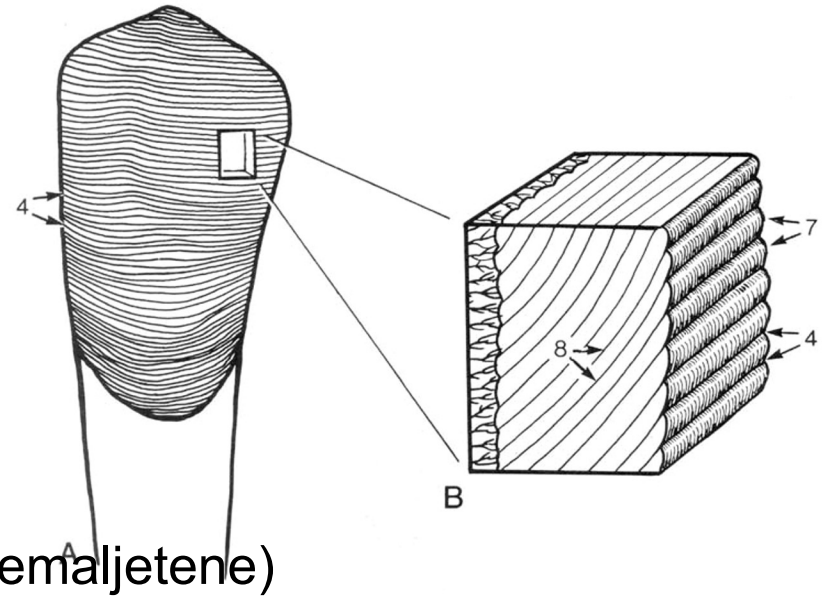
EMALJENS OVERFLADER

- YDRE

- Emaljehinde
- Emaljeoverflade
- Perikymatier

- INDRE

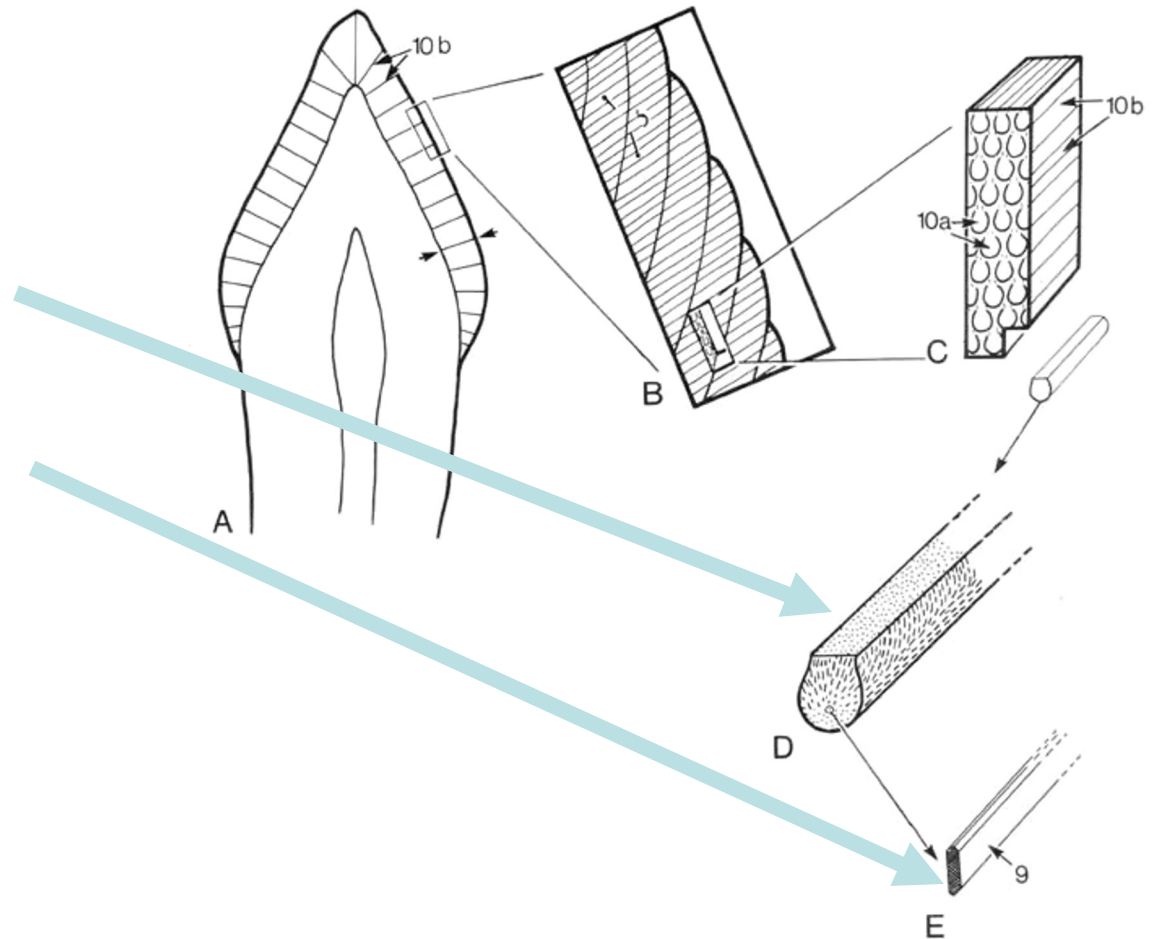
- Emaljedentingrænse
- Odontoblastudløbere fra dentin (emaljetene)



EMALJENS MINERALISERING



- Prismer
- Krystaller

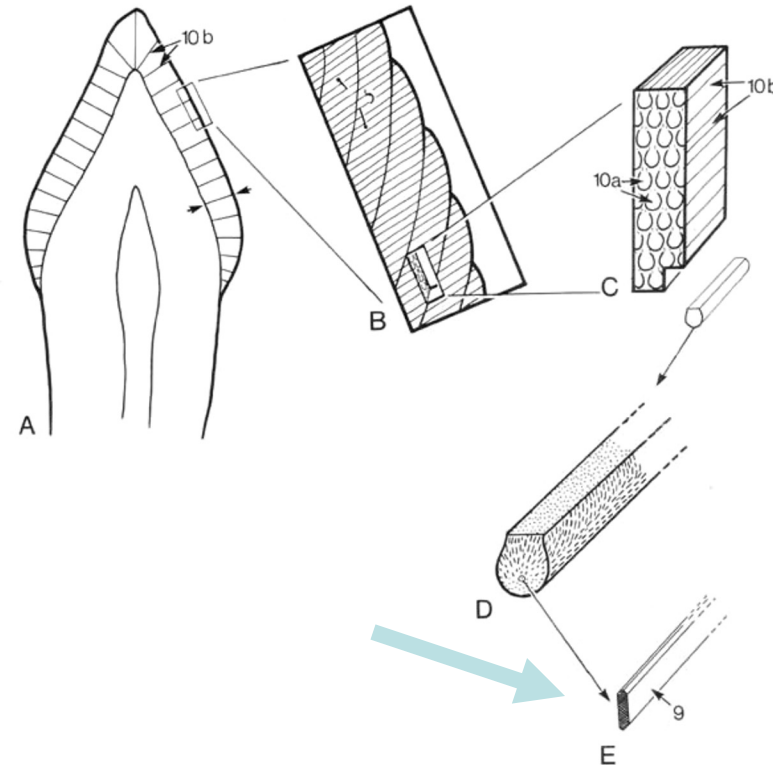


EMALJENS MINERALISERING



- Krystaller

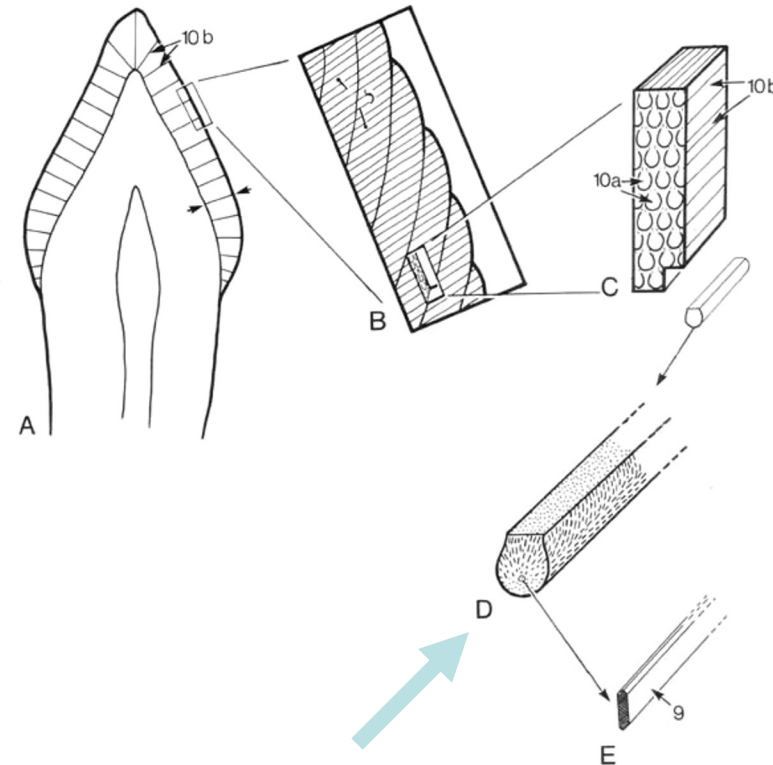
- Submikroskopiske (EM)
- "Små krystalitter"



EMALJENS MINERALISERING



- Krystaller
 - Submikroskopiske (EM)
 - “Små krystalitter”
- Prismer
 - “Større enheder”
 - Stavformede og afrundede i tværsnit
 - 3-6 μm i tykkelse
 - Tykkest mod ydre emaljeoverflade
 - Næsten vinkelret på overflader



SPECIELLE EMALJESTRUKTURER

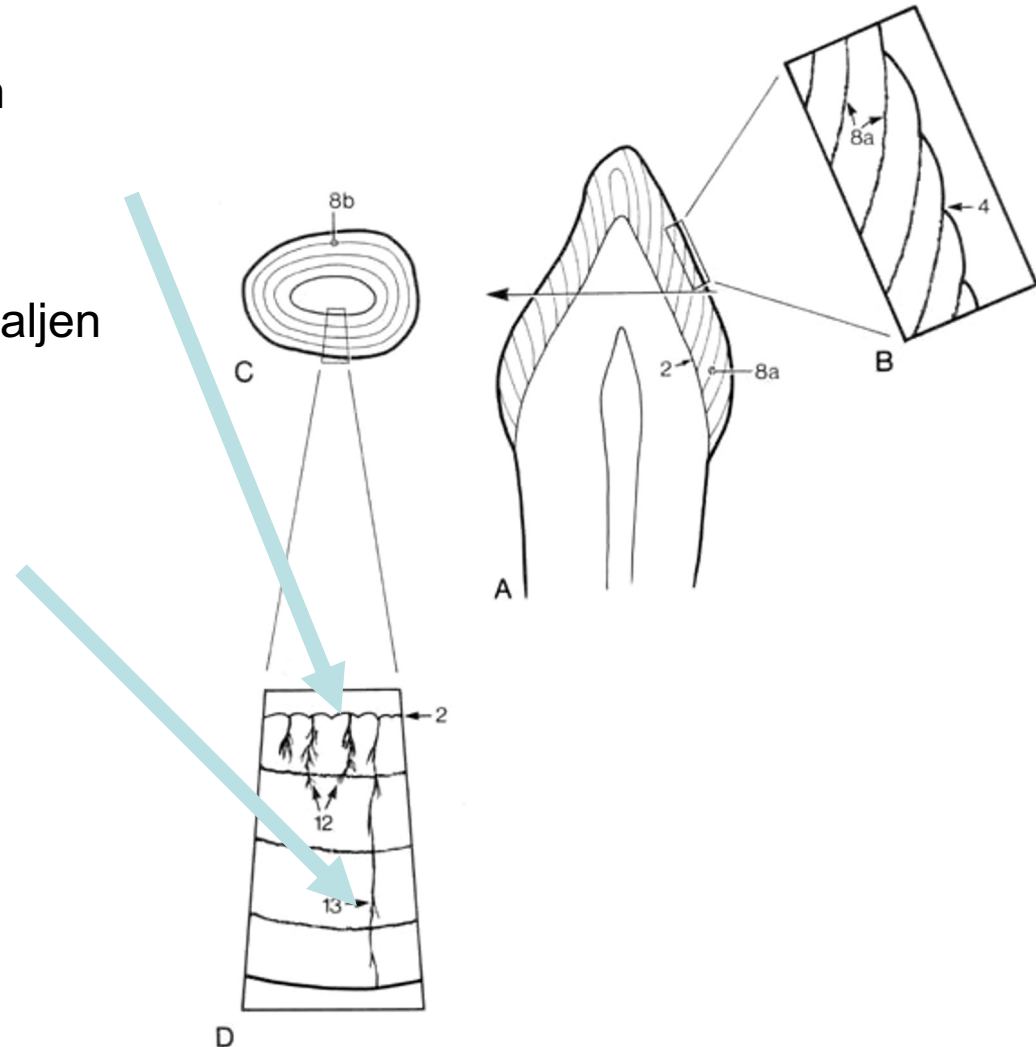


- Emaljebuske

- Kort stykke ud i emaljen
- proteinholdige

- Emaljelameller

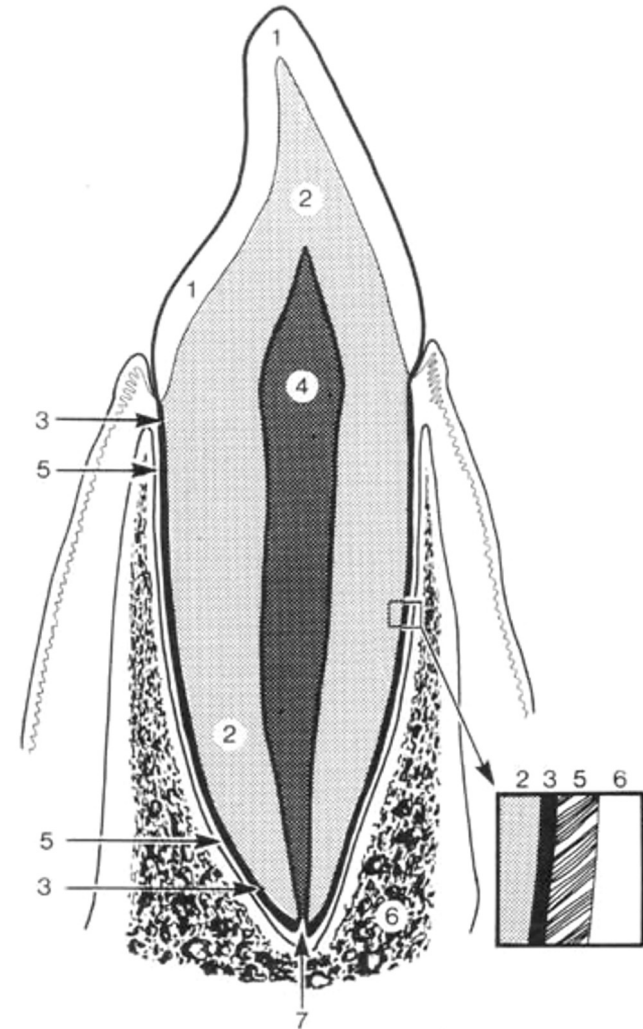
- Hele vejen igennem emaljen
- proteinholdige



DENTIN



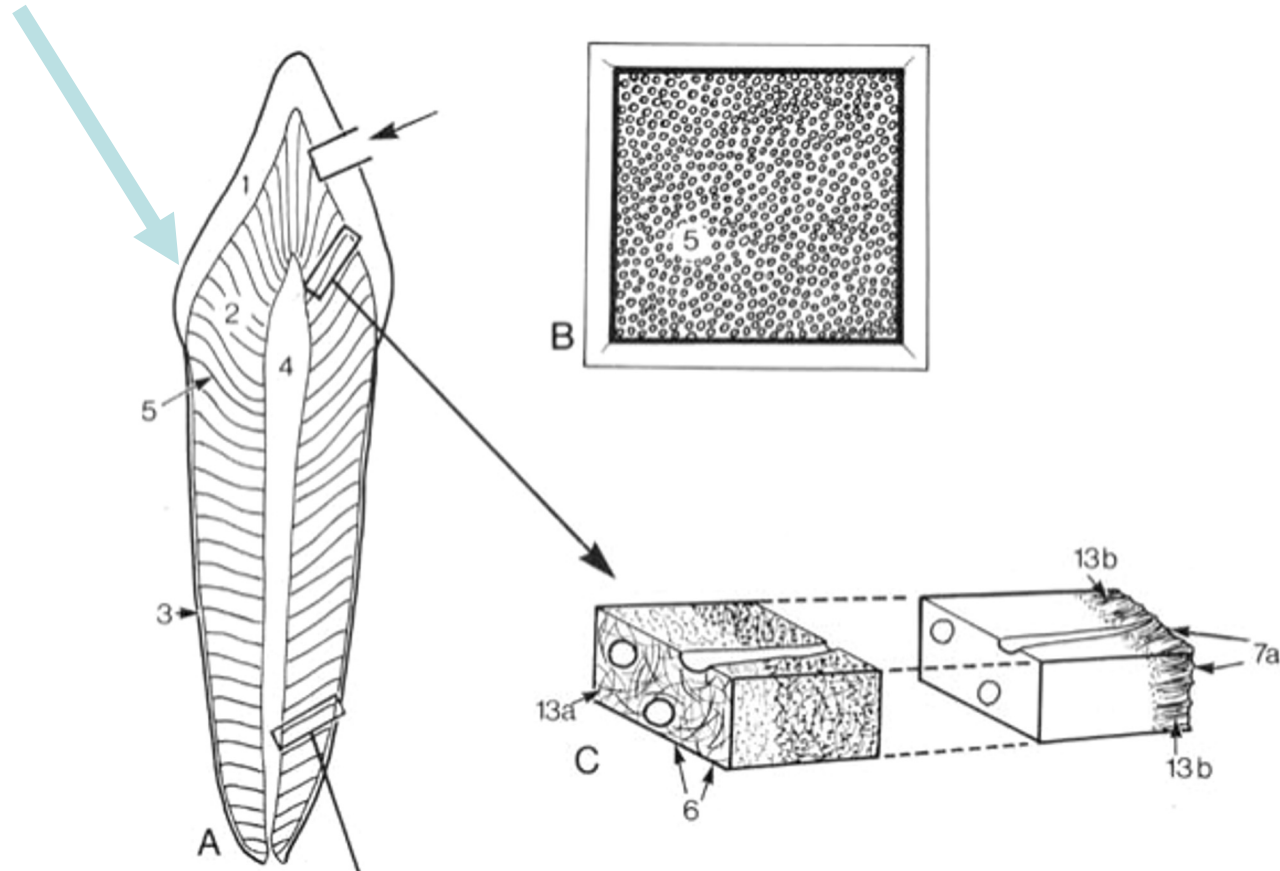
- Gullig, hård
- Støttevæv
 - kollagene fibriller
 - amorf grundsubstans
 - mineralsalte



DENTINKANALER



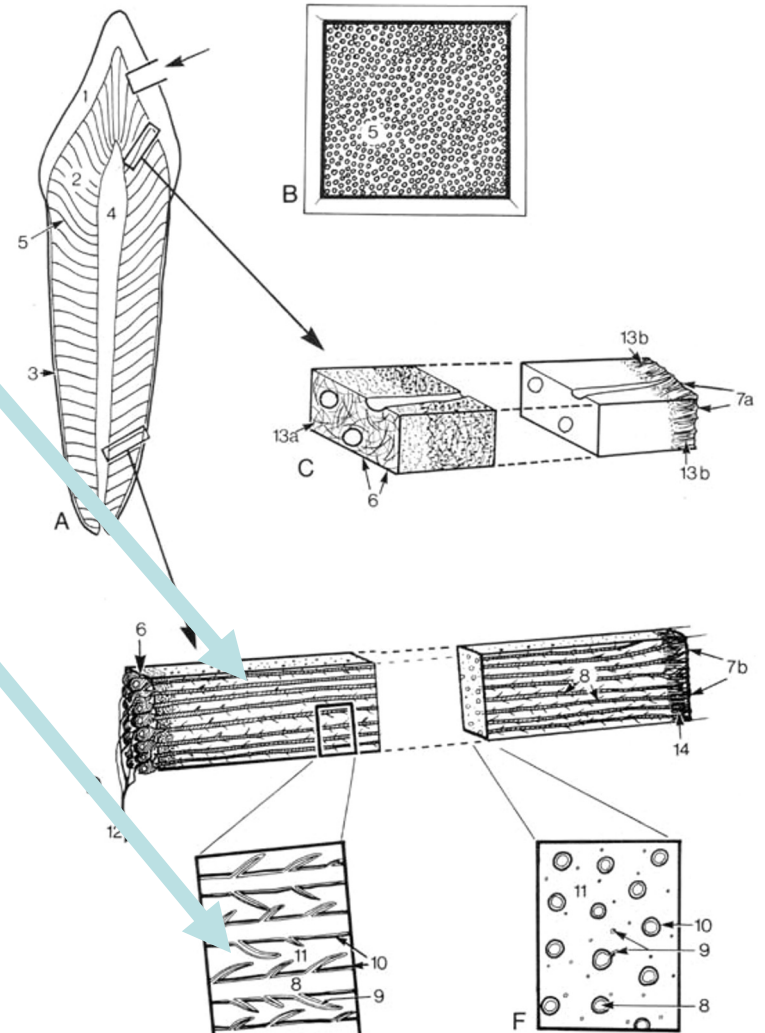
- S-formet forløb
- celleudløbere



DENTINKANALER



- Indhold
 - odontoblastudløbere
 - ofte forgrenede
 - extracellulær væske
 - enkelte nervetråde

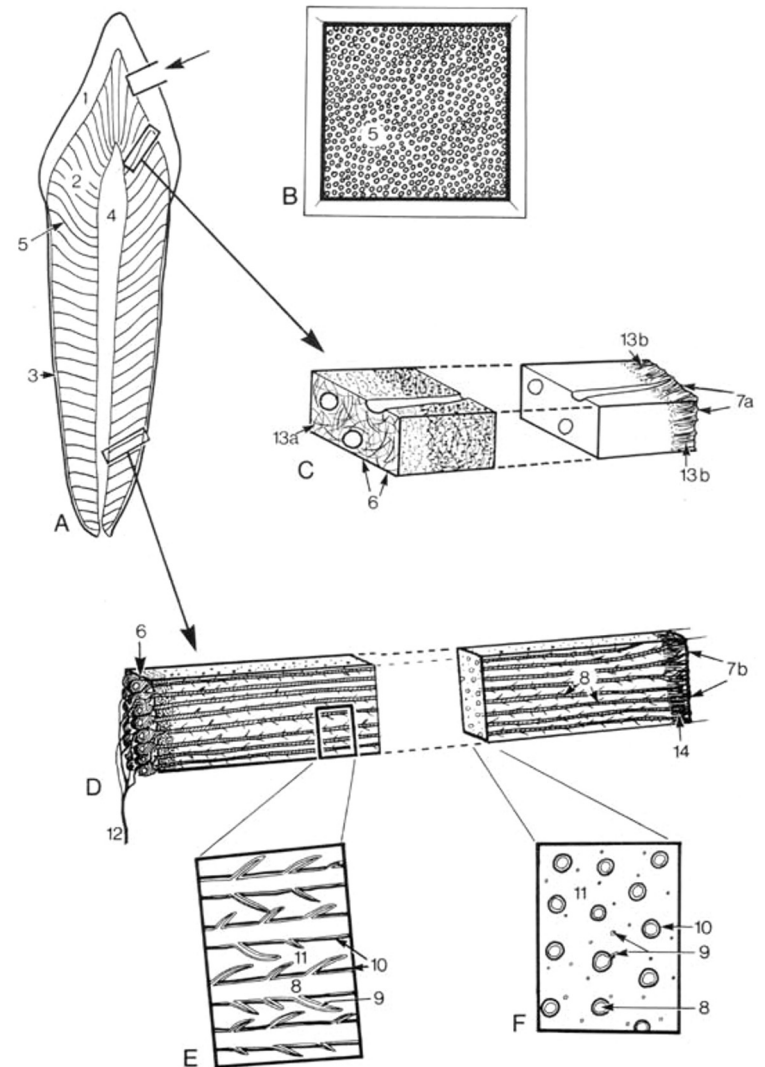


DENTINKANALER



- Antal

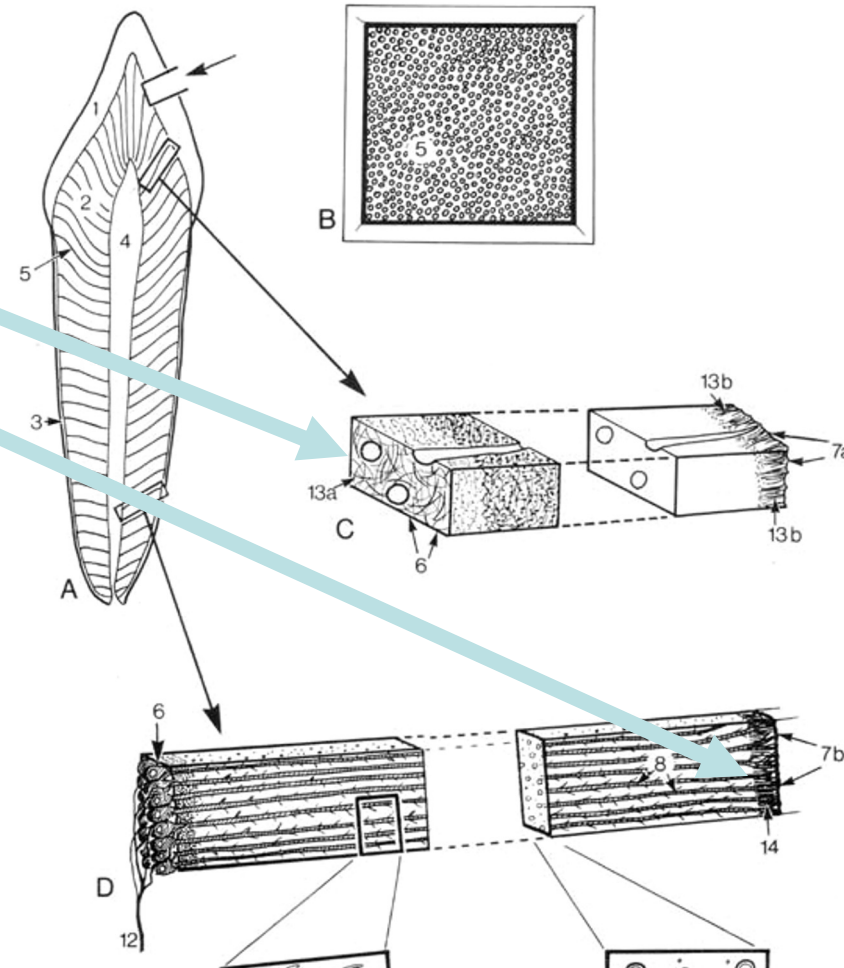
- fra 12.500 / mm² (perifert)
- til 50.000 / mm² (centralt)
- mindre diameter i dentintubuli perifert



DENTIN



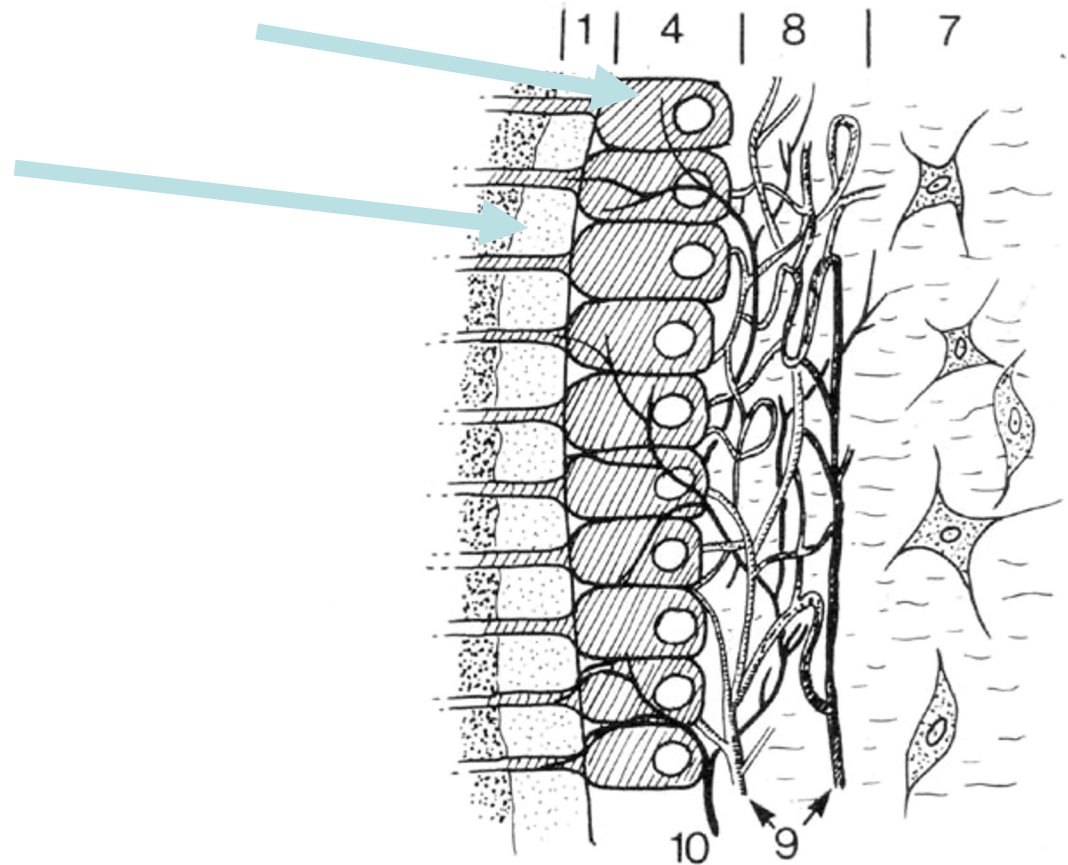
- Kollagenen er uorganiseret
 - parallelt med overflade (for det meste)
 - ydre kappedentin vinkelret på overflade



DENTIN



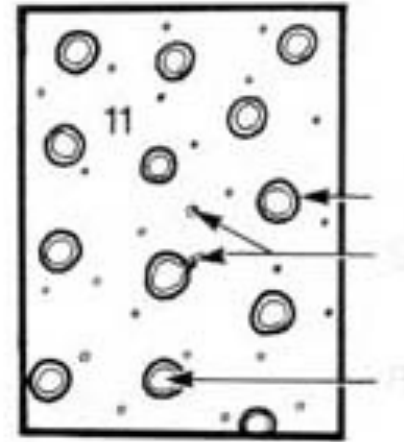
- lag af odontoblaster
- lag af prædentin
 - umineraliseret
 - tynd bræmme



DENTIN



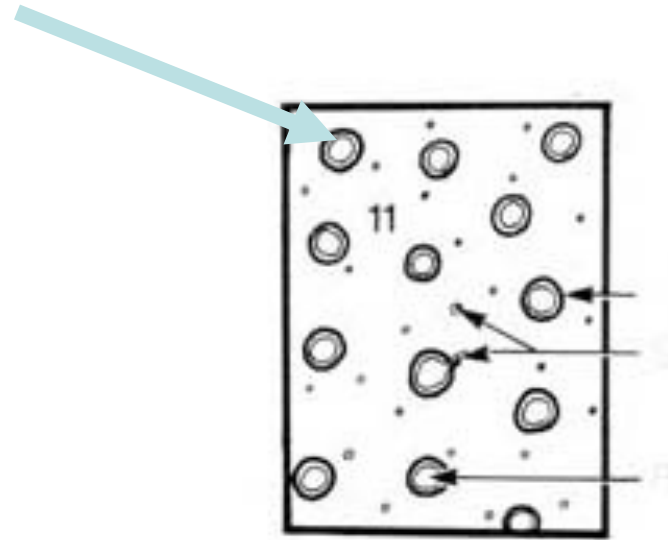
- peritubulær dentin
- intertubulær dentin



DENTIN



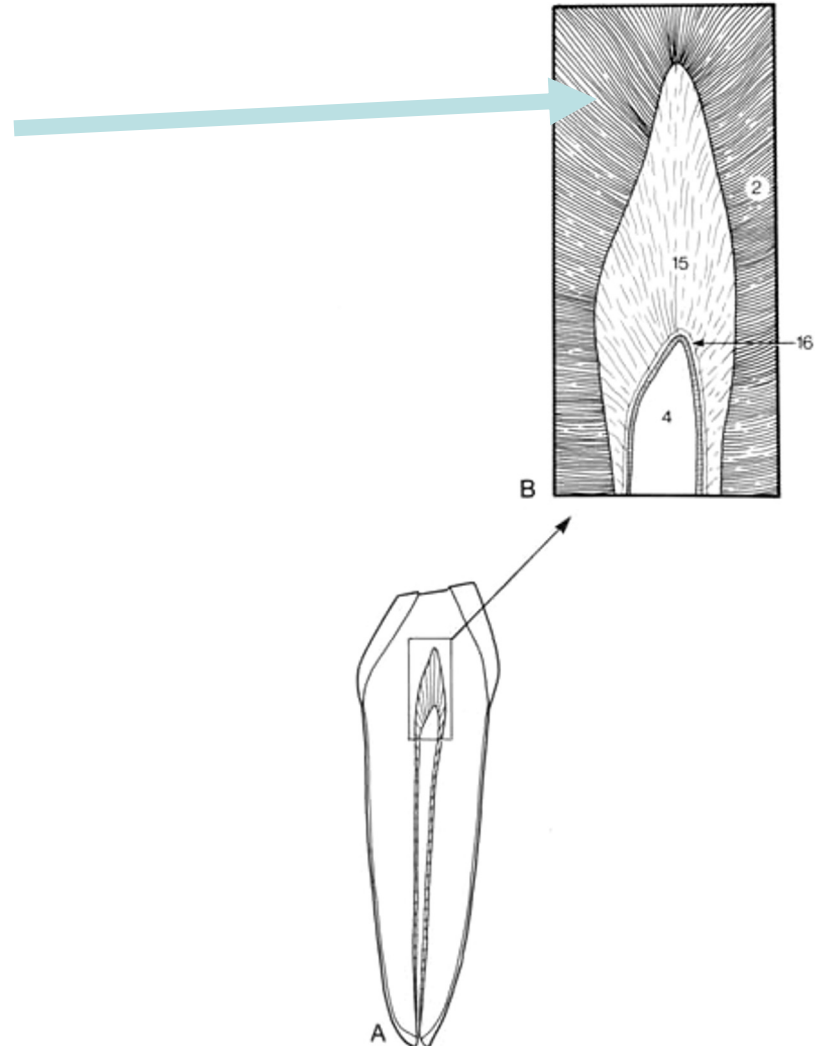
- peritubulær dentin
 - i væggen af tubuli
 - meget mineraliseret
- intertubulær dentin



DENTIN



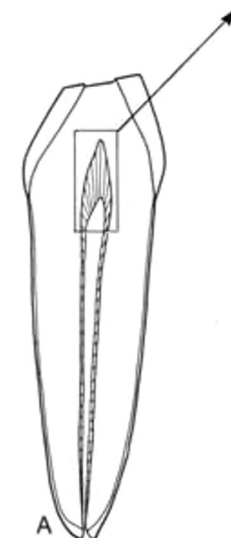
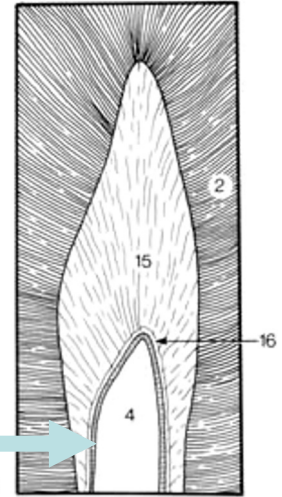
- primær dentin:
 - dannes indtil tand er færdigudviklet



DENTIN



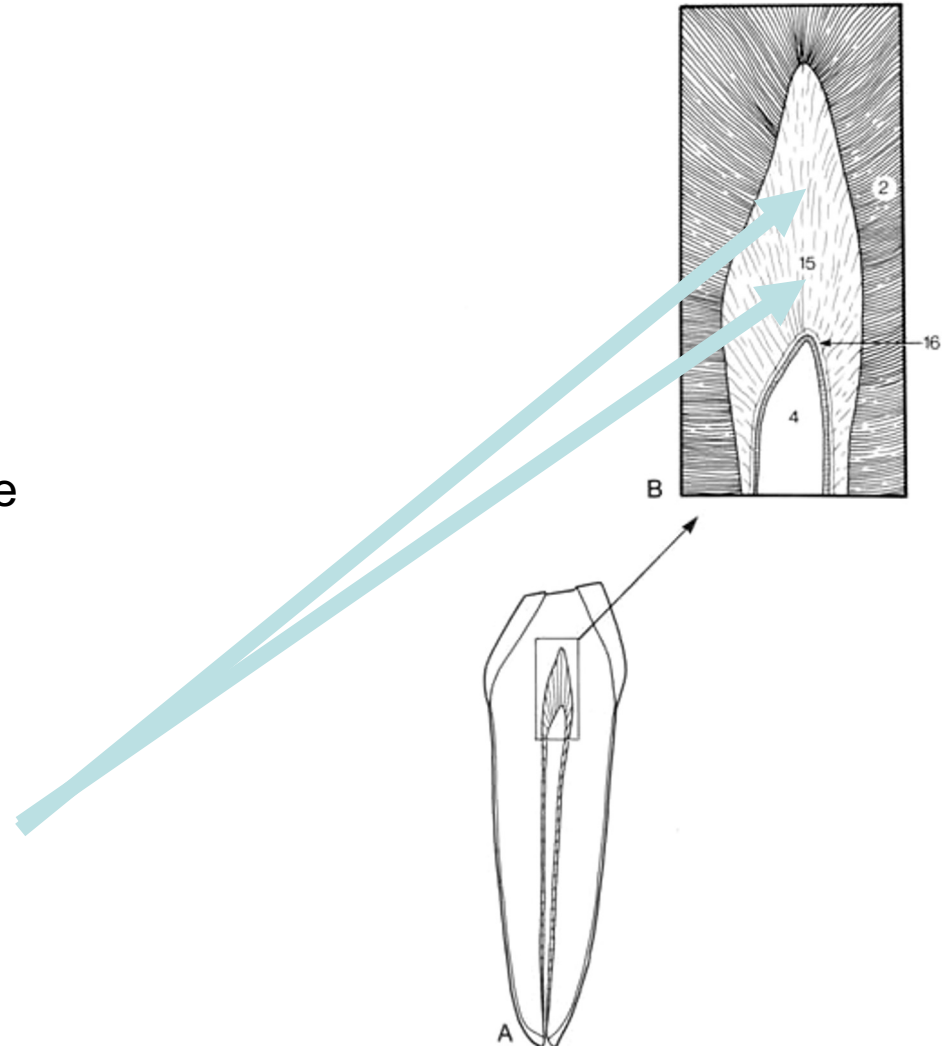
- primær dentin:
 - dannes indtil tand er færdigudviklet
- sekundær dentin
 - dannes fysiologisk hele livet igennem



DENTIN



- primær dentin:
 - dannes indtil tand er færdigudviklet
- sekundær dentin
 - dannes fysiologisk hele livet igennem
- tertiær dentin
 - mere uregelmæssig



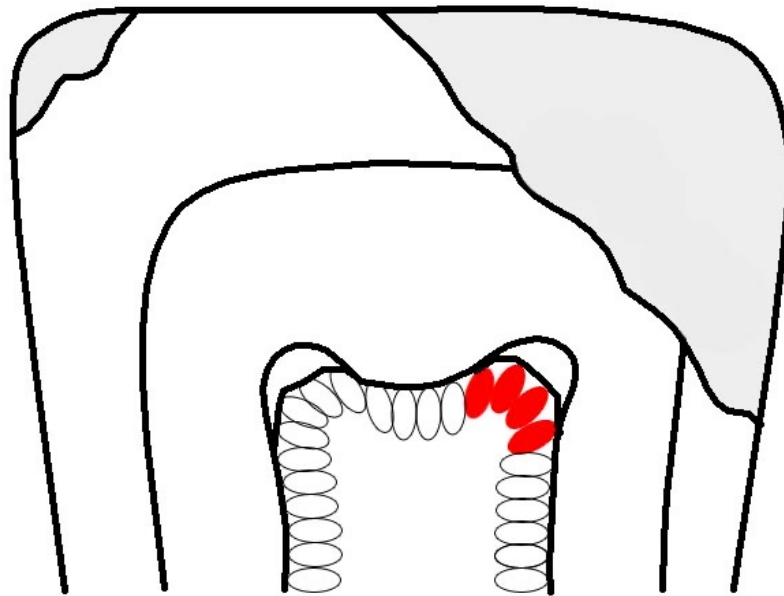
Tertiær dentinogenese



Gode udtryk:

reaktionsdentin (samme celler)

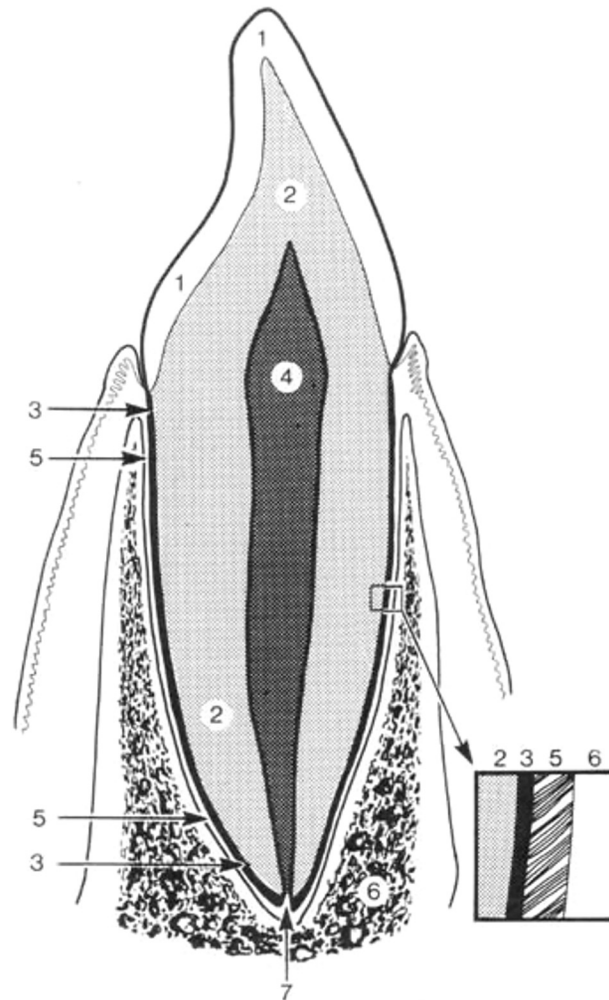
reparativ dentin (nye celler)



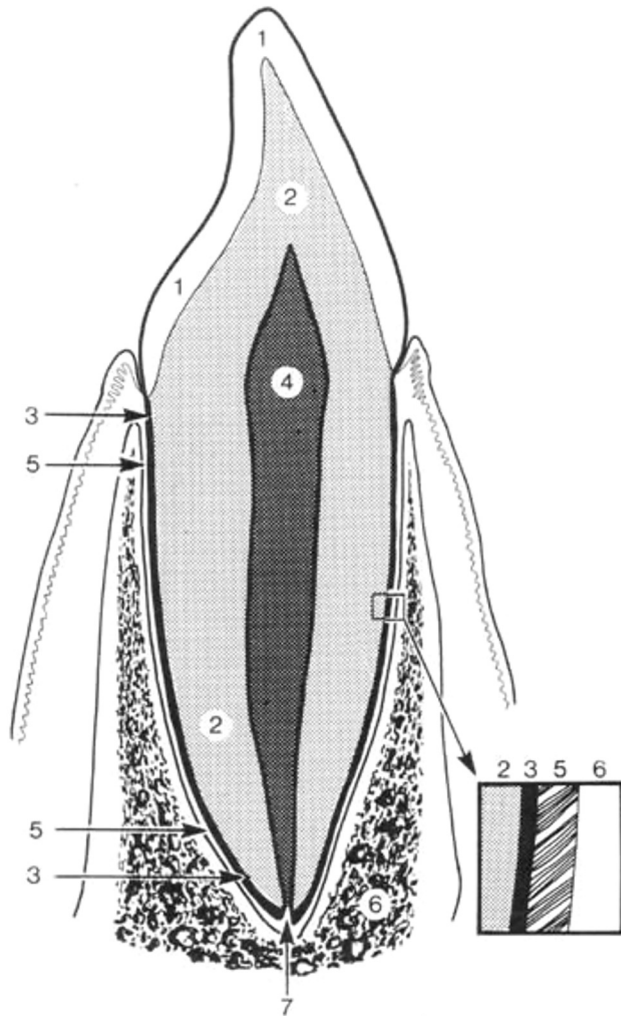


Dentin:

- har ingen kar
- indeholder ikke cellelegemer
- bliver ikke remodeleret



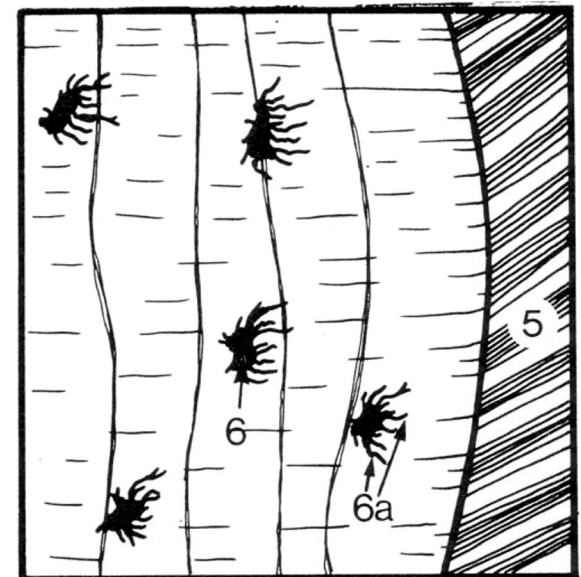
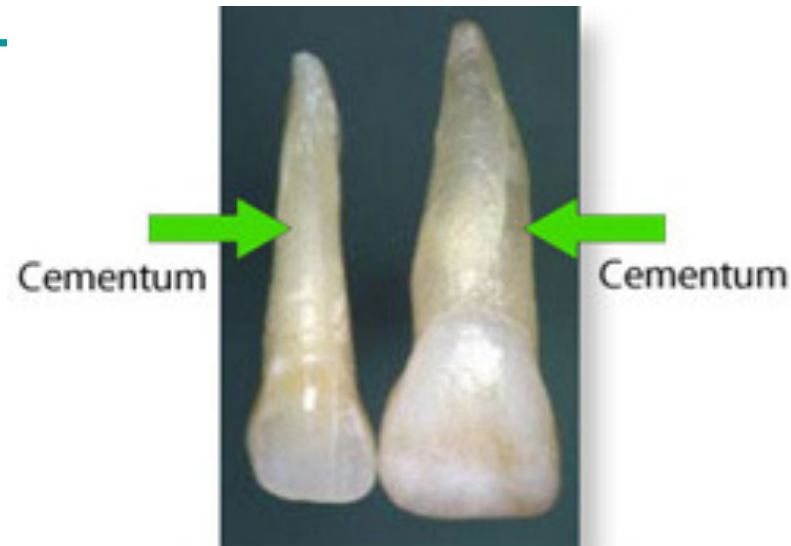
Tandens støtteapparat



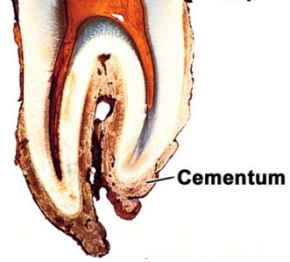
- Cement
- Rodhinde
- Alveoleknogle

CEMENT

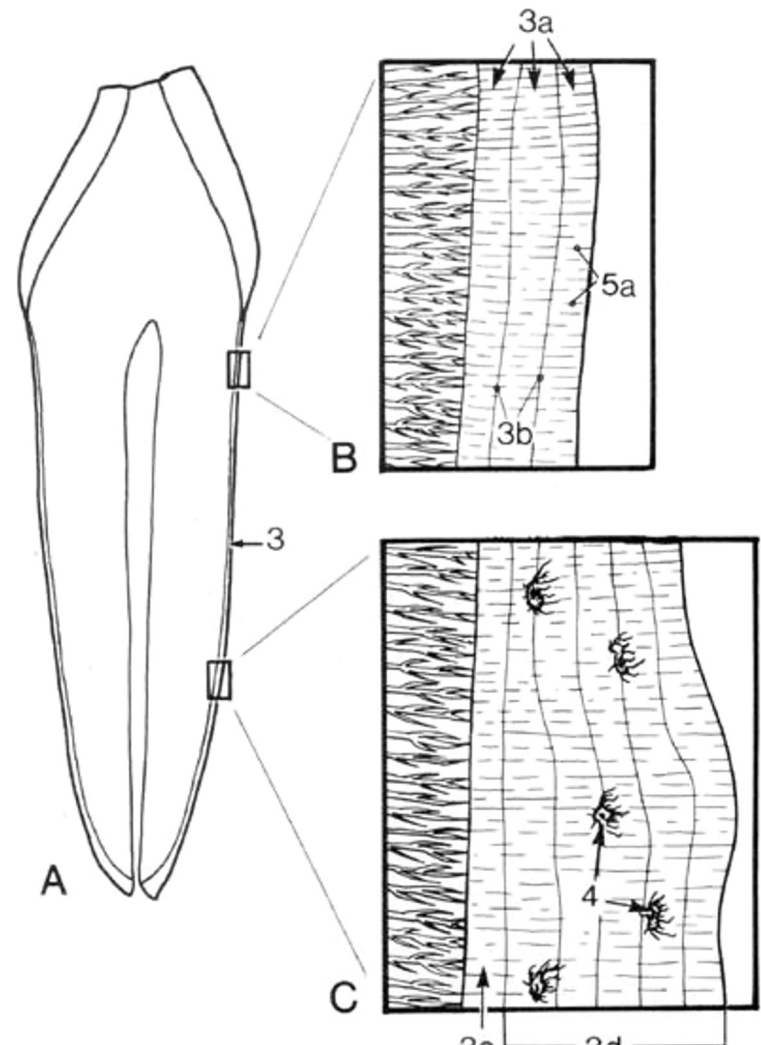
- gulligt, hårdt lag på roden
- fæster fibrilbundter fra rodhinde
- Sharpey's tråde (fibrilbundter)



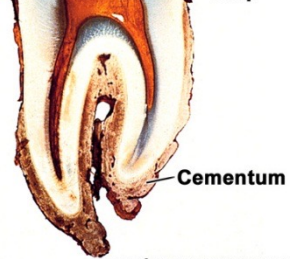
CEMENT



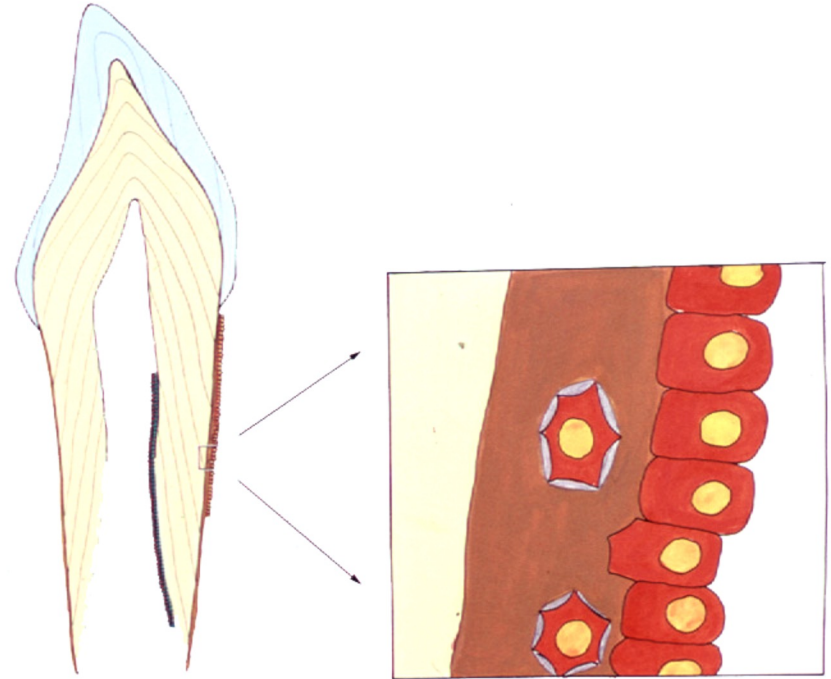
- cellefri cement
 - ind mod roddentinen
- celleholdig cement
 - udenpå flere steder
 - bl a i apikale 1/3
- cementlinier
 - er synlige vækstlinjer
 - sv t lameller i knogle



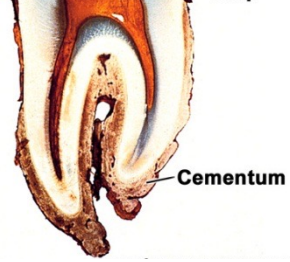
CEMENT



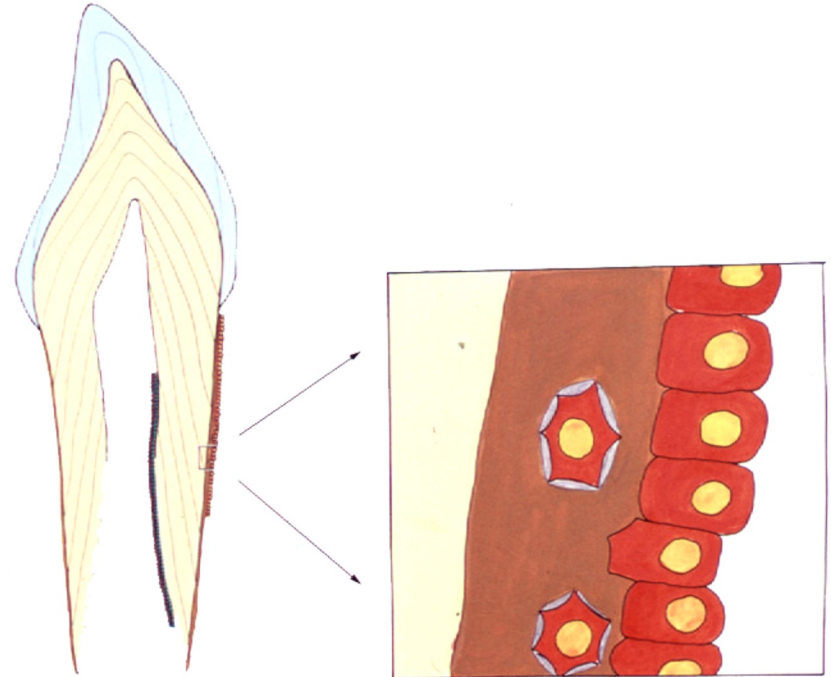
- cementoblaster på overfladen



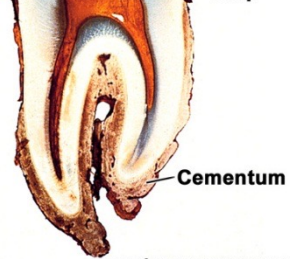
CEMENT



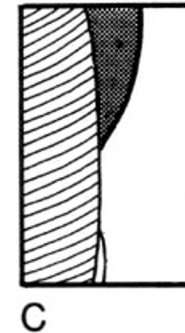
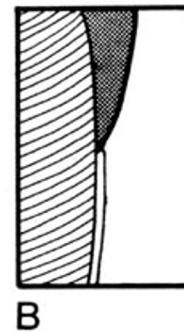
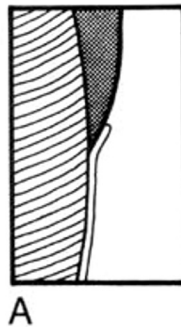
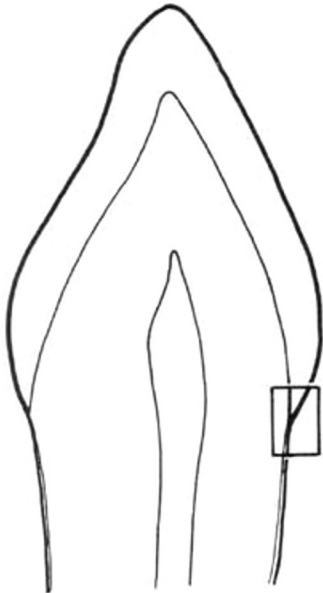
- cementoblaster på overfladen
- cementocytter indlejret i cement



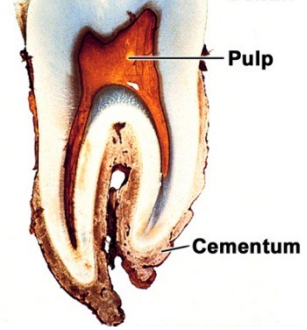
CEMENT



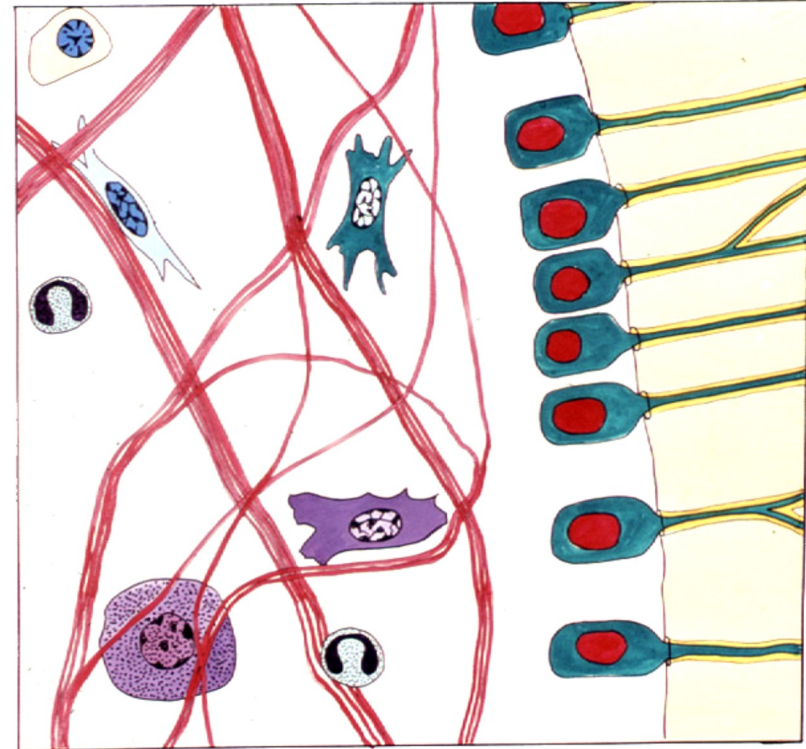
- undertiden mangler overlap mellem emalje og cement (er følsomt for patienter)
- det skyldes at Hertwig's rodepitel persisterer



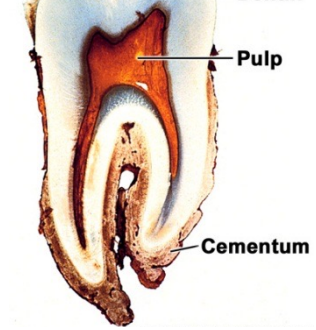
PULPA



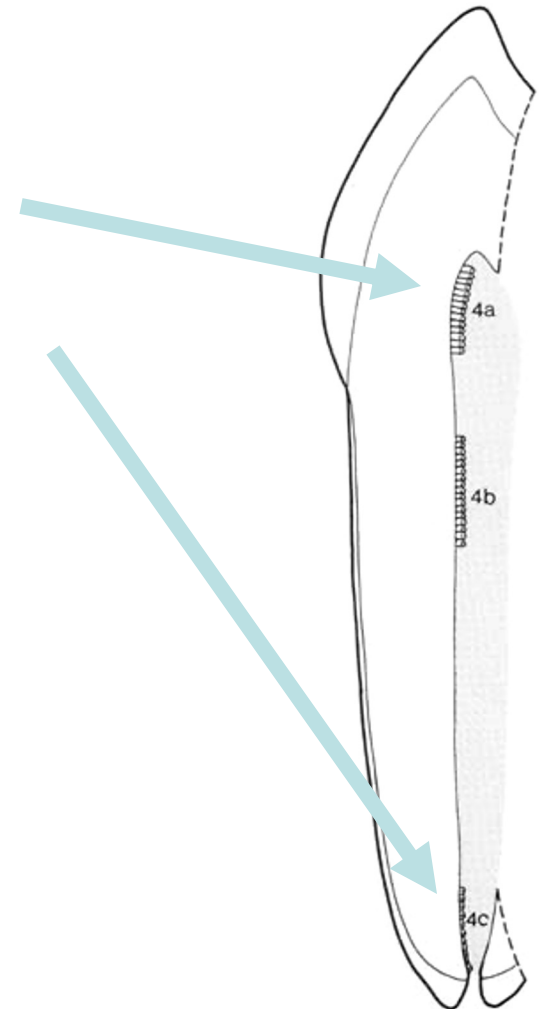
- Løst bindevæv
 - Celler
 - Kollagene fibriller
 - Amorf grundsubstans



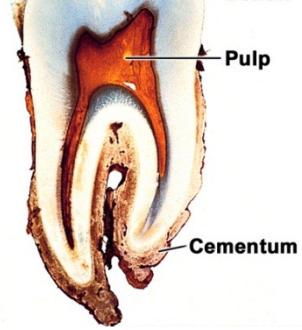
PULPA



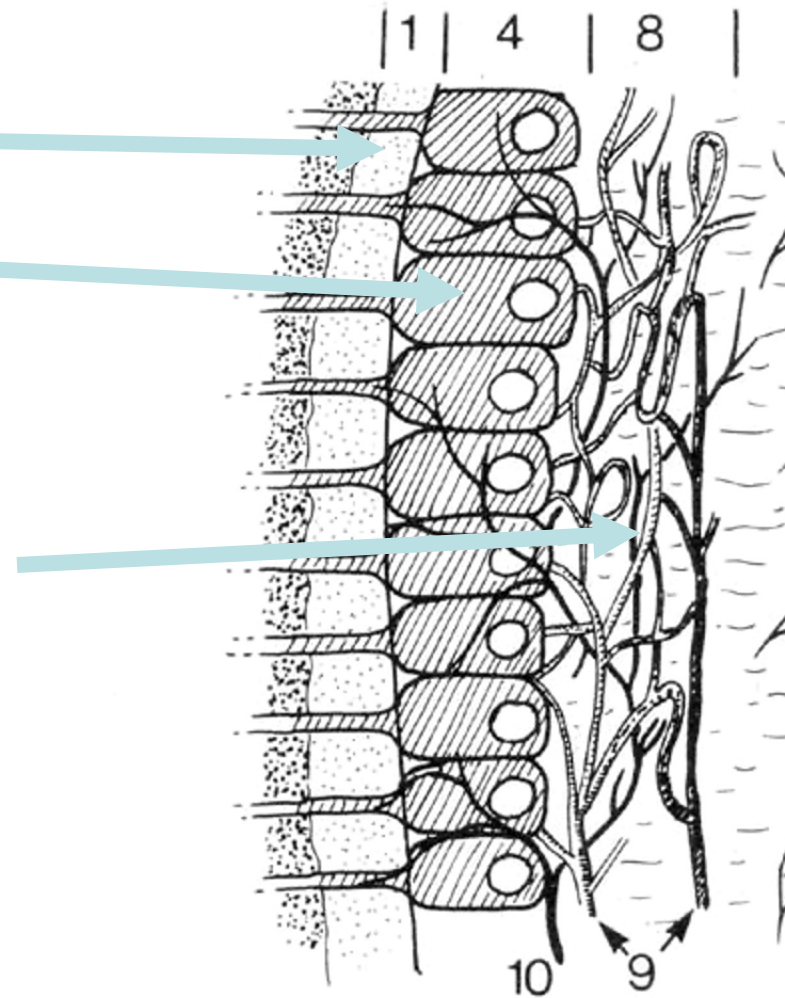
- Odontoblastlaget:
 - Prismatiske celler i kronen
 - Kubiske eller flade celler i roden



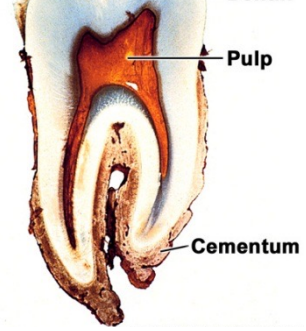
PULPA



- Prædentin
- Odontoblastlaget
- Weil's zone (cellefattig)
 - subodontoblastiske kapillærslynger
 - subodontoblastiske nerveplexus

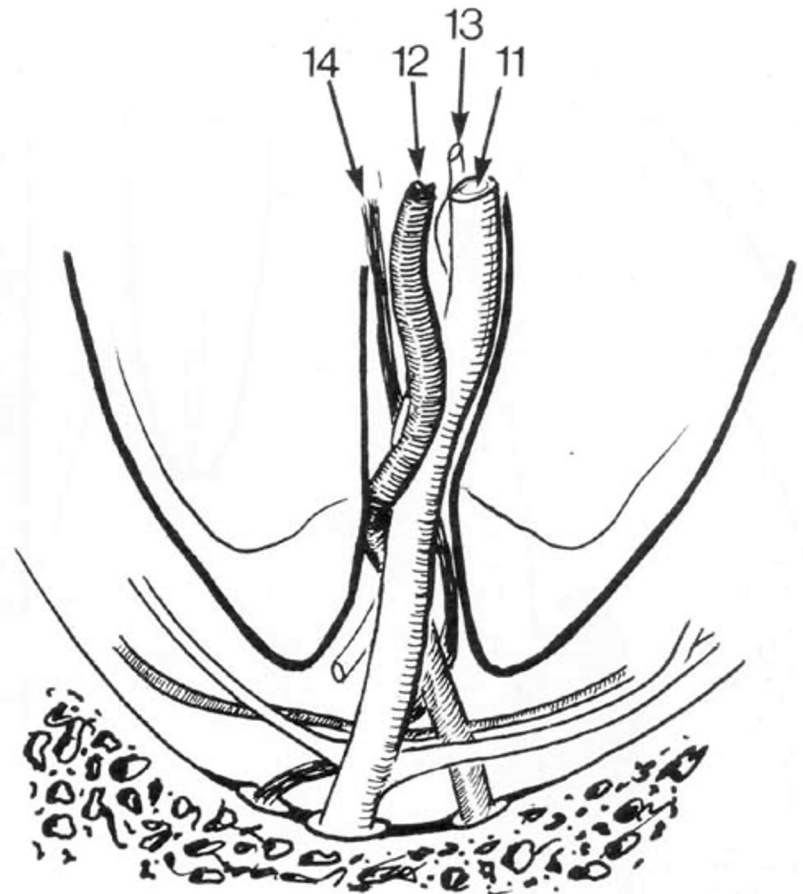


PULPA

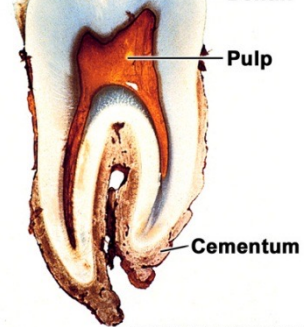


Karforsyning:

- Arterie
- Vener
- Lymfekar

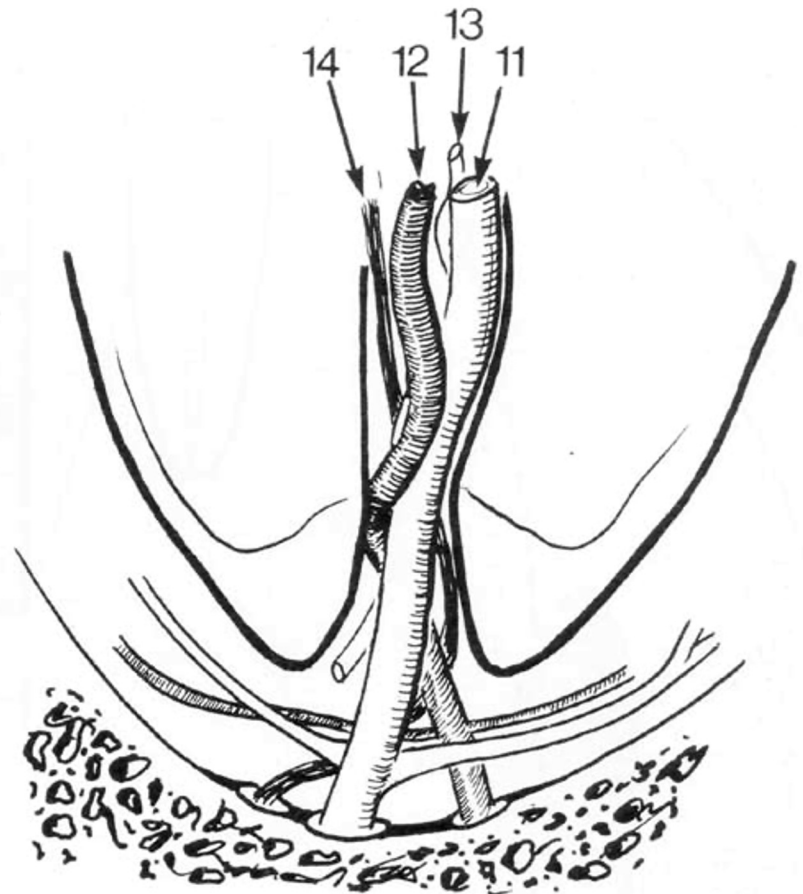


PULPA

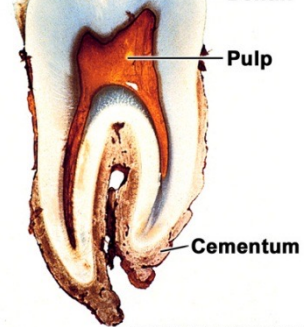


Nervetråde:

- 5-10 tynde nervetrådsbundter

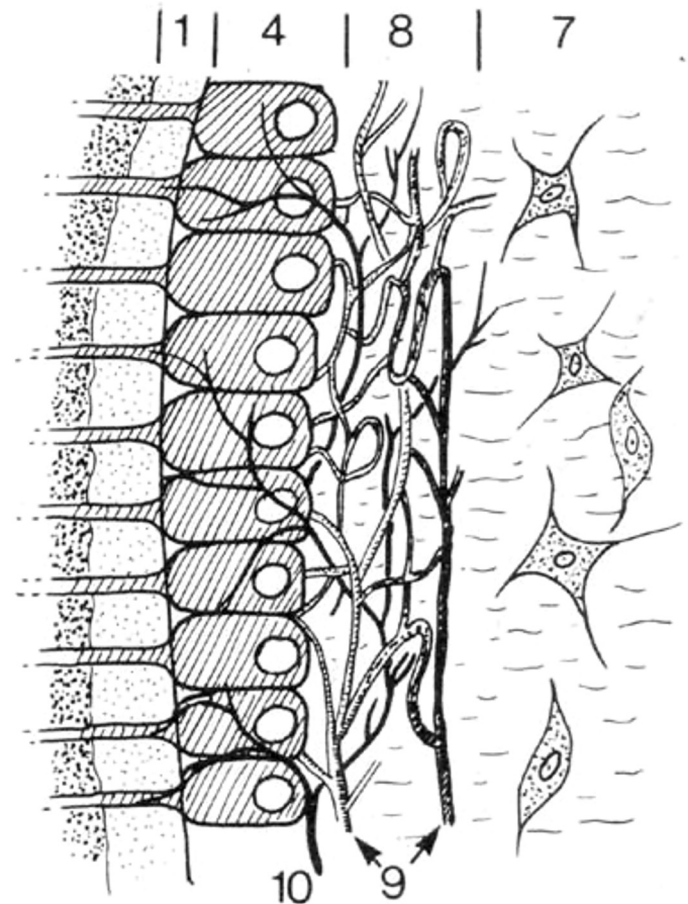


PULPA

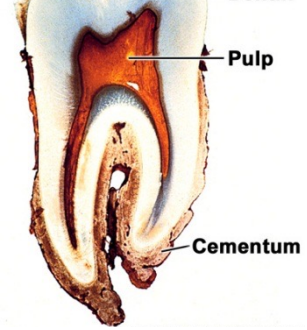


Nervetråde:

- har alle frie nerveender
 - dvs ingen specialiserede receptorer
 - de fleste er sensitive (med/uden myelinisering)
 - resten er sympatiske tråde til kar (uden myelinisering)

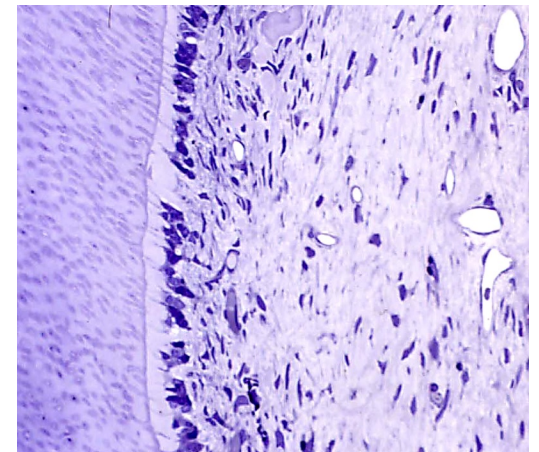


PULPA

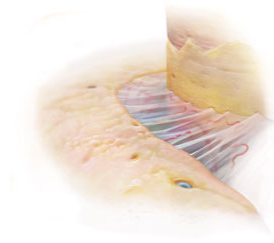


Aldersforandringer:

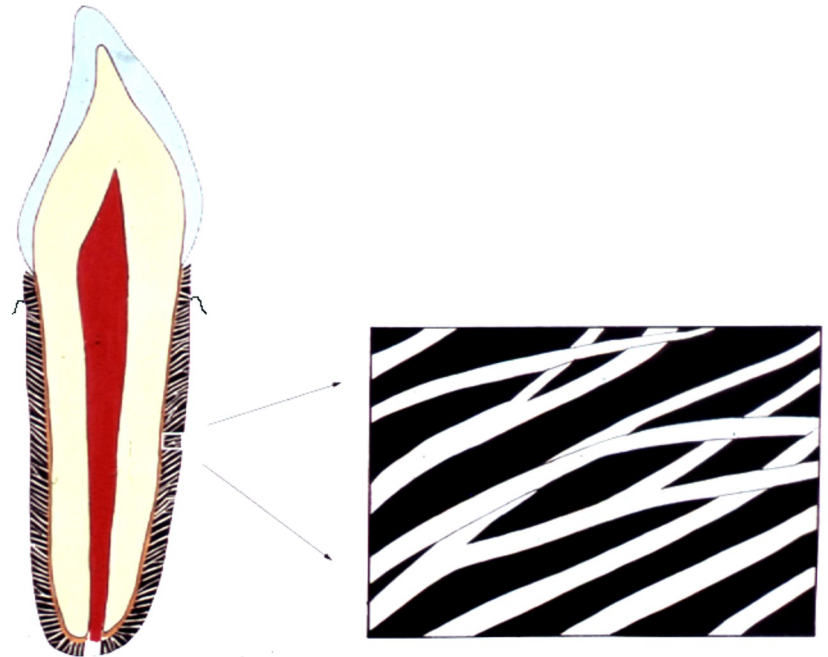
- Celletal falder
- Fibrilantal stiger
- Sekundær dentin mængde stiger



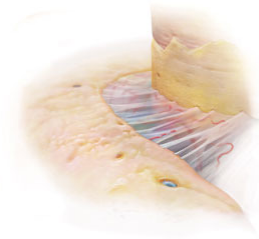
RODHINDE



- Ligger i periodontalspalte
- Forbinder tandrod og knogle
- Er ca 0,25 mm tyk

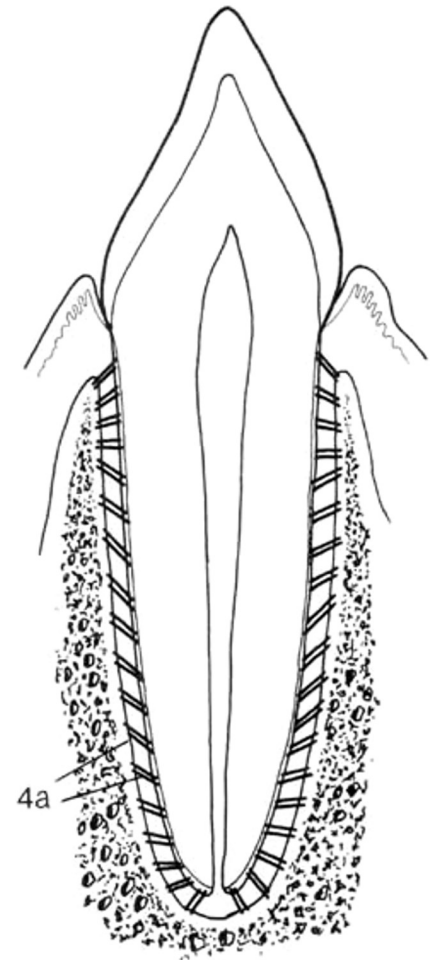


RODHINDE

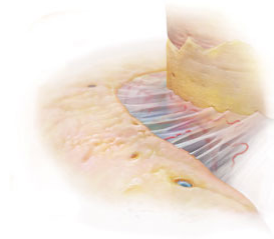


Nervetråde:

- Smerteførende
- Proprioceptive

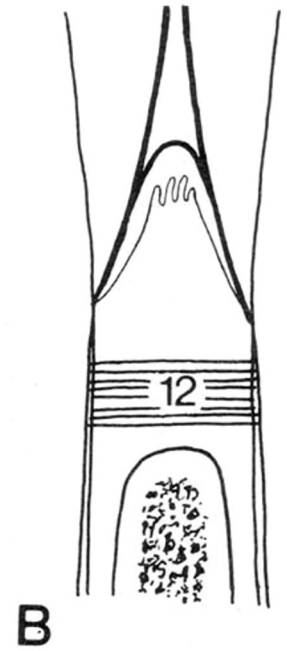
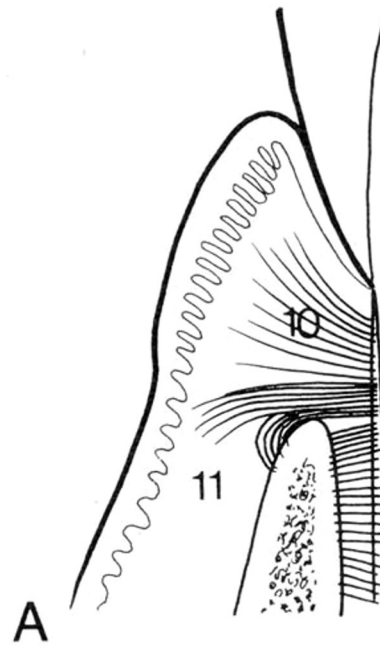


RODHINDE

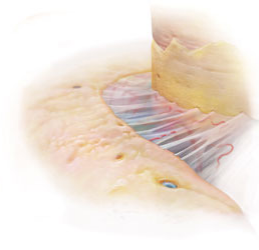


Fibre:

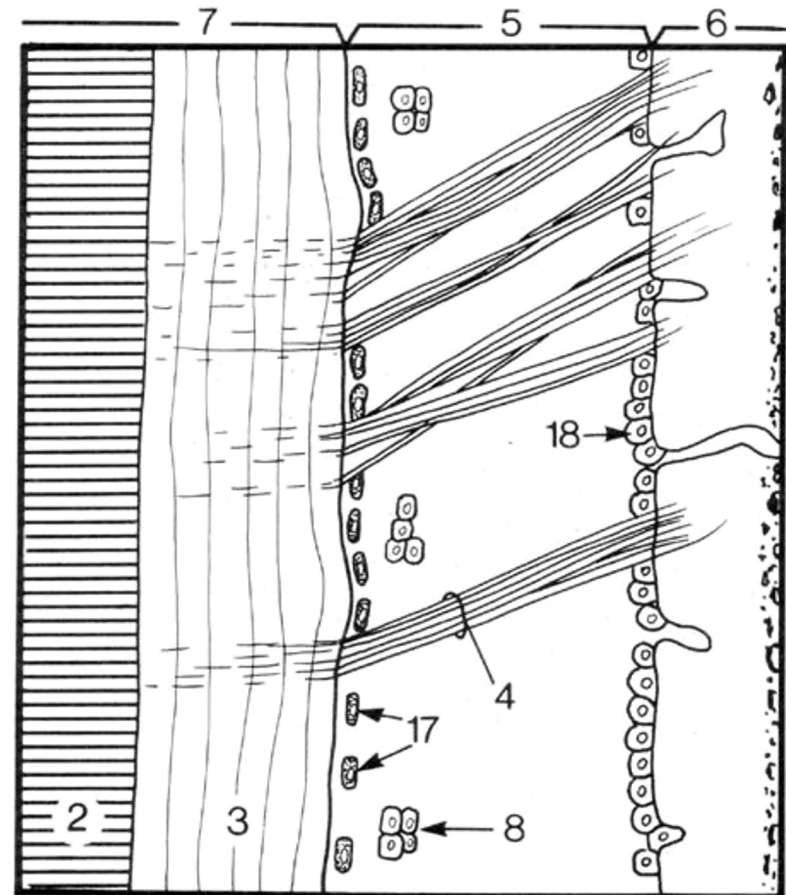
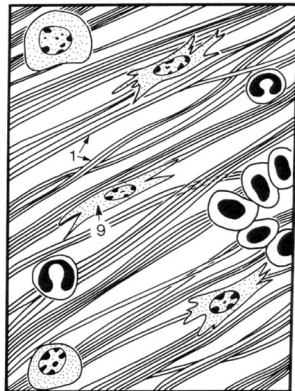
- Dentogingivale
- Dentoperiostale
- Dentoalveolære
- Transeptale



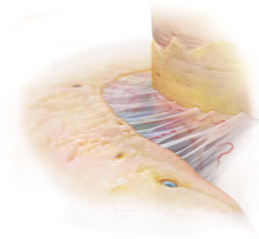
RODHINDE



- stamceller i rodhinden kan differentiere til:
 - fibroblaster
 - osteoblaster
 - cementoblaster

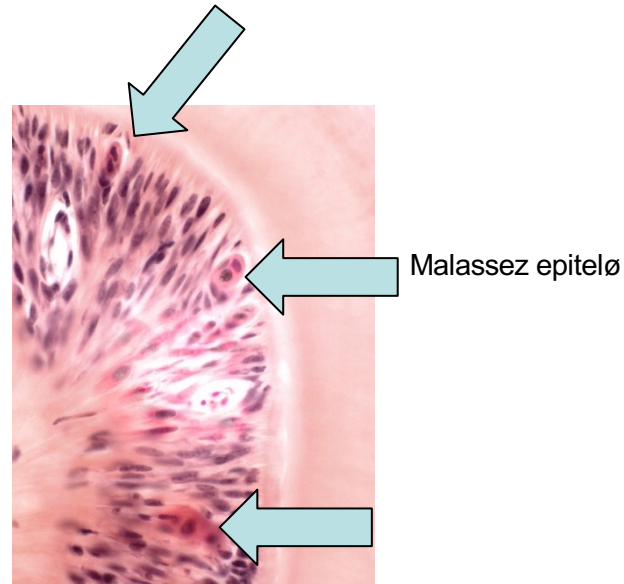


RODHINDE

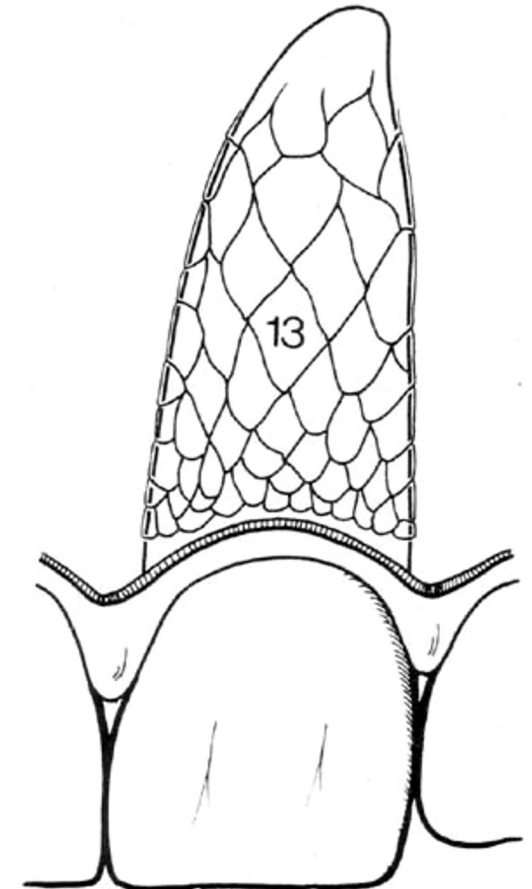


Rester af Hertwig's rodskede:

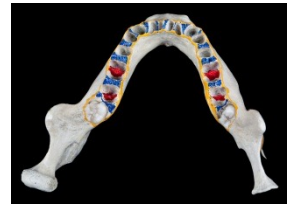
- Malassez epiteløer
- i den inderste del af rodhinde
- danner et net
- kan udvikles til cyster
- hvis det går tabt bliver det gendannet



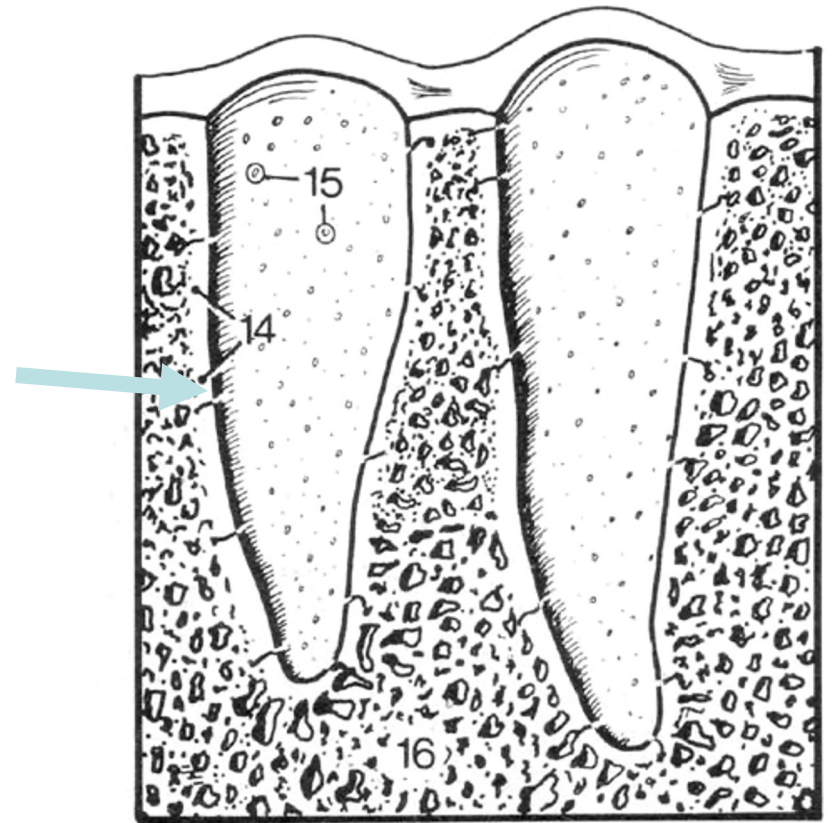
Rodhinde mellem tand og knogle



ALVEOLEKNOGLE



- Substantia spongiosa
- Substantia compacta
 - har huller til mindre kar der forsyner rodhinden



GINGIVA



- er rosa, mat, let nubret ("chagrineret")

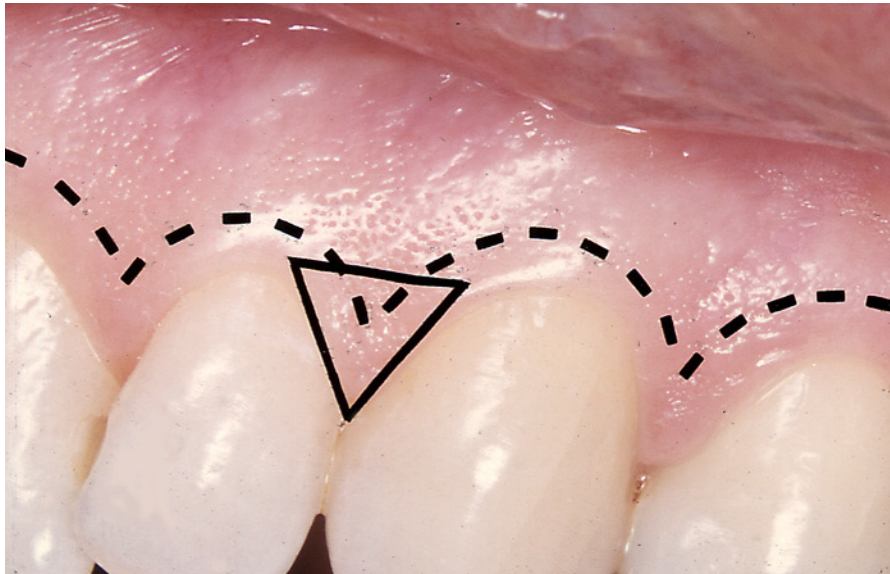




GINGIVA

Stiplet linie afgrænser:

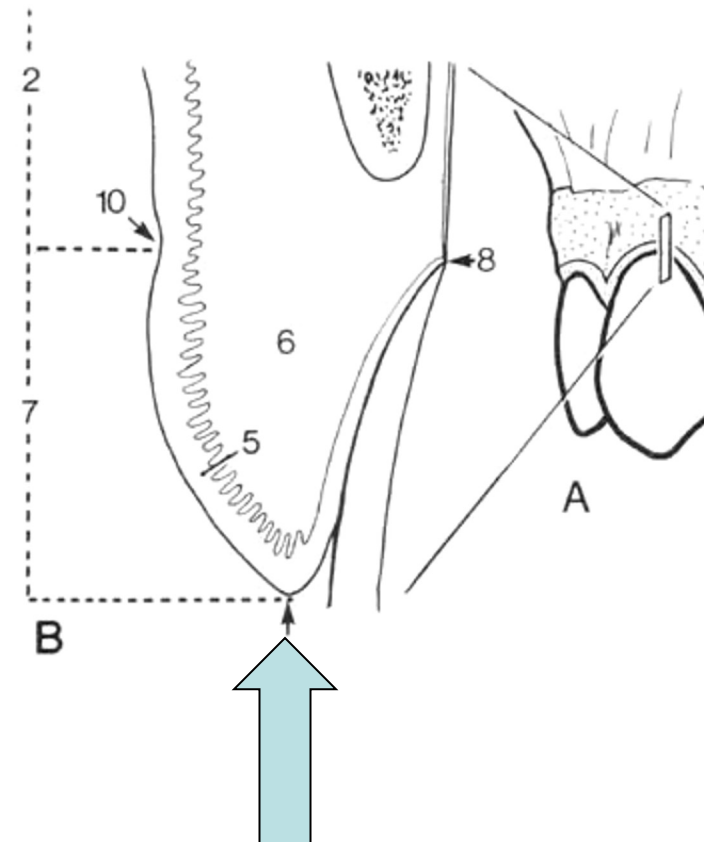
- Fast bundne gingiva
- Frie marginale gingiva



GINGIVA



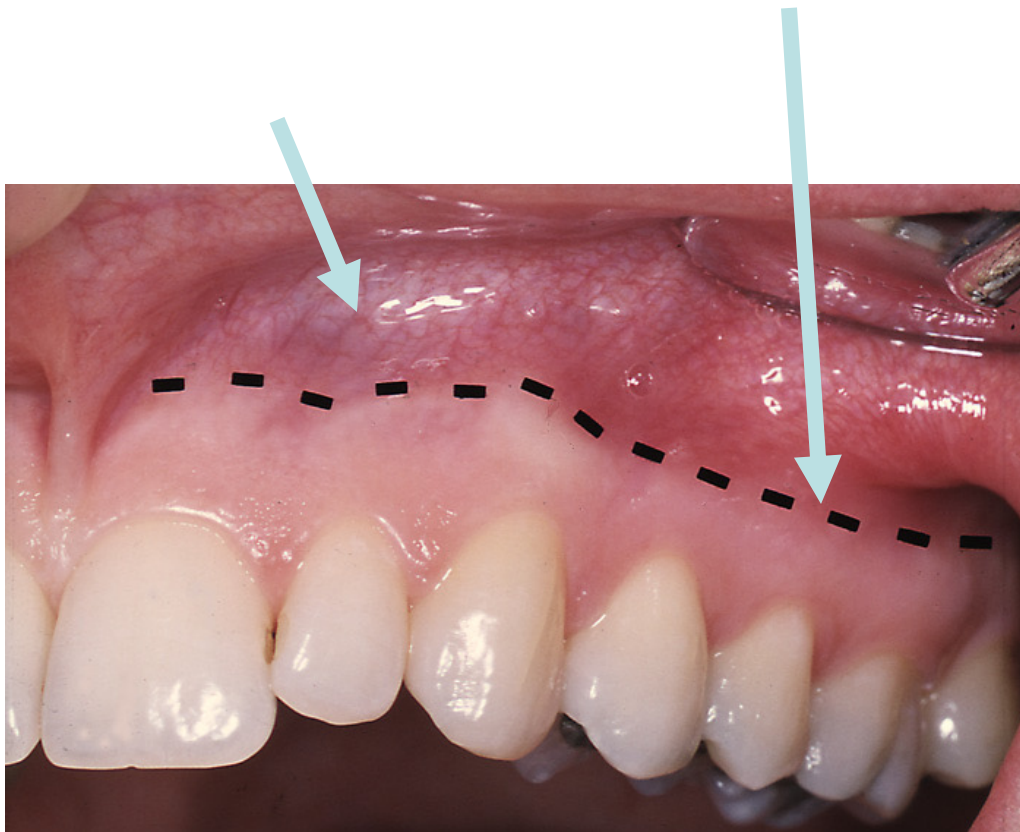
- Gingivalranden





GINGIVA

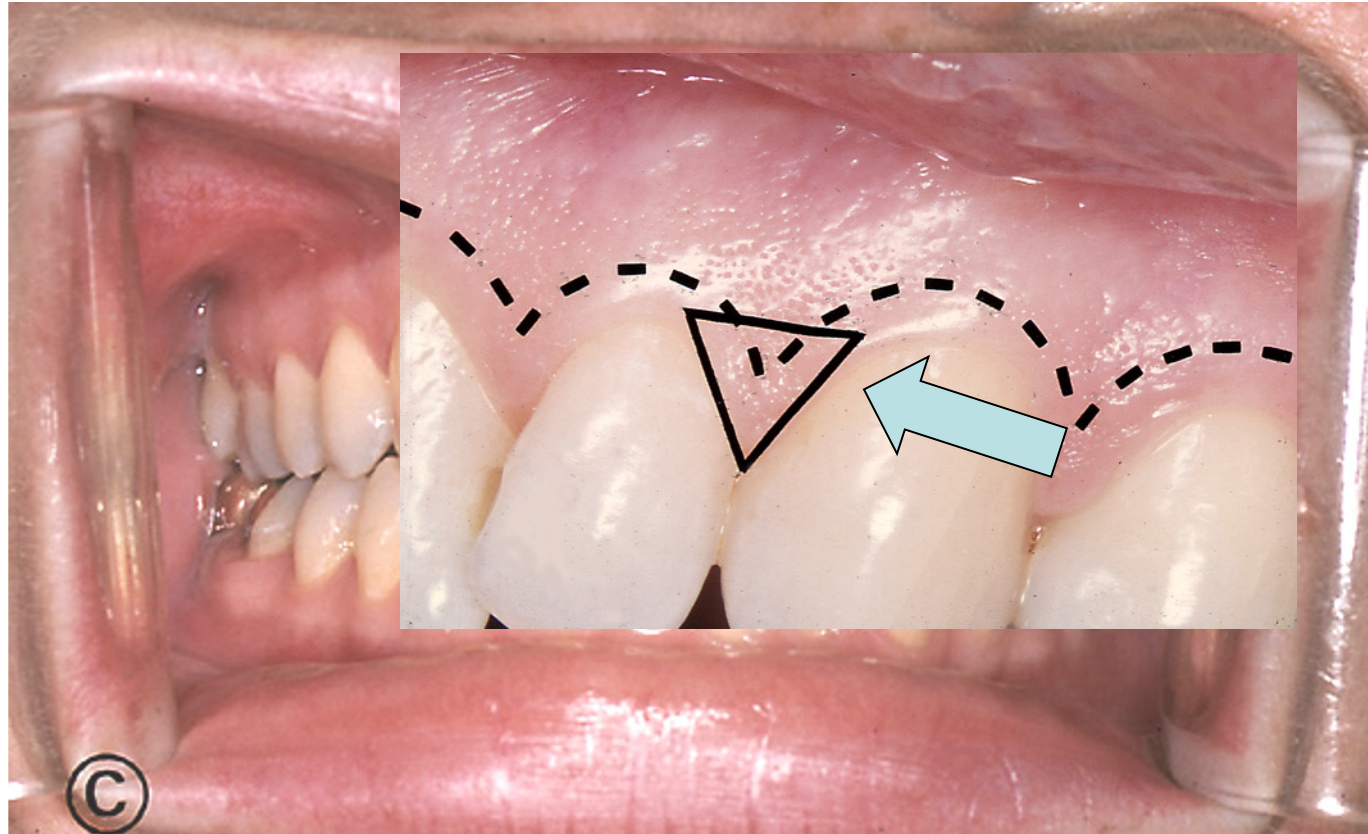
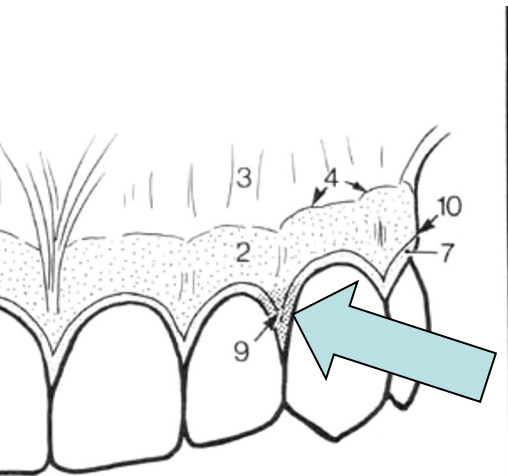
- Mucogingivale grænse
- Alveolære mucosa





GINGIVA

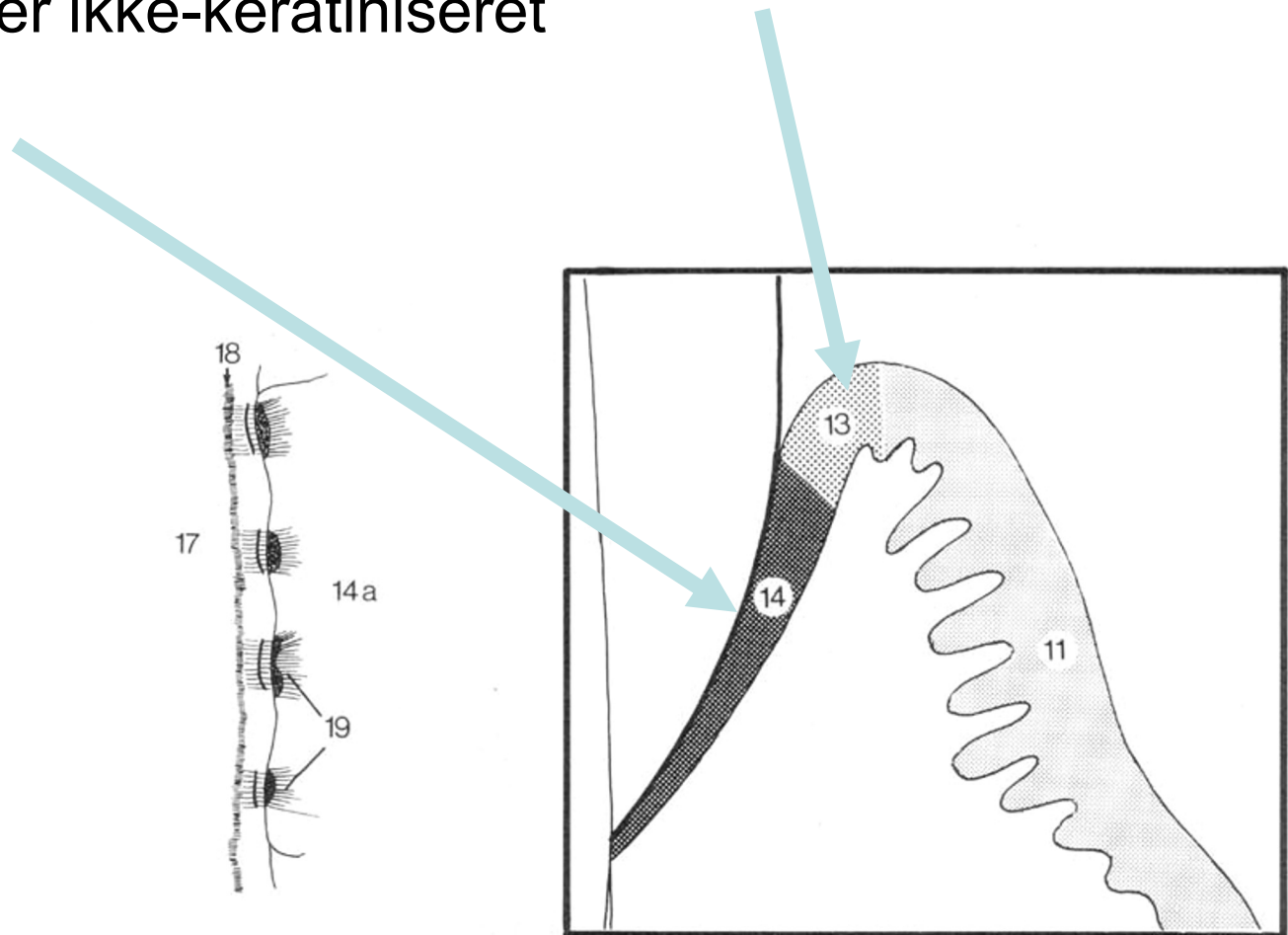
- Interdentalpapiller





GINGIVA

- Oralt sulcusepitel (ikke i tandkontakt)
- Kontaktepitel er ikke-keratiniseret

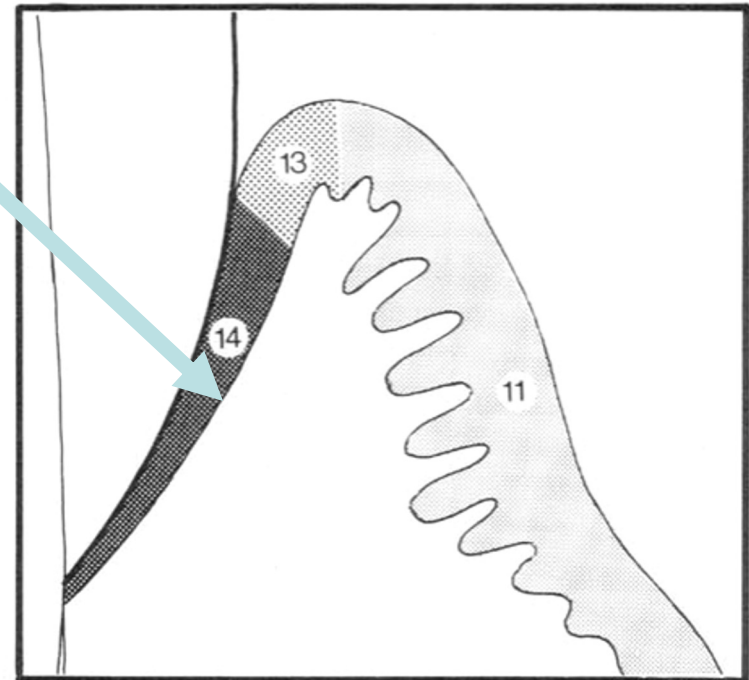




GINGIVA

Kontaktepitel

- har **ikke** lamina propria papiller
- få cellelag

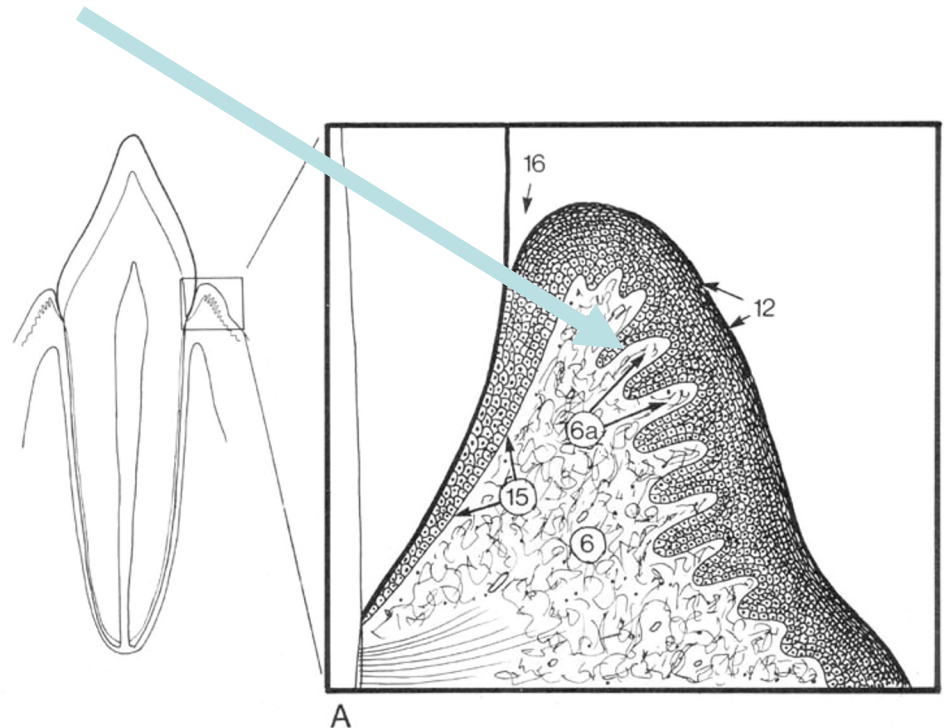


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Oralt epitel

- har lamina propriapapiller
- keratinisering:
 - orto-keratiniseret (uden kerner)
 - para-keratiniseret (med kondenserede pyknotiske kerner)

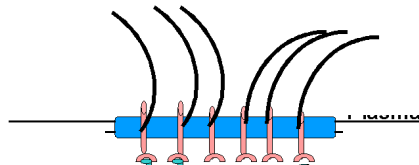
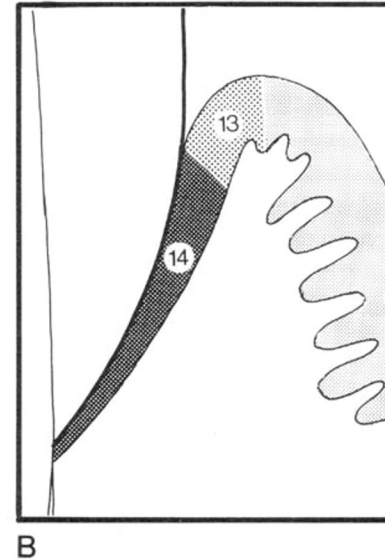
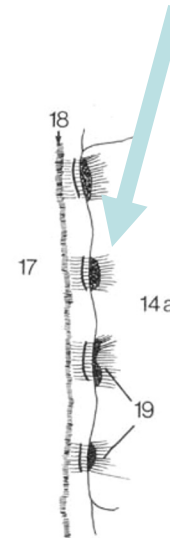


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Kontaktepitel:

- danner attachment
- hemi-desmosomer



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Lamina propria:

- fibrillært, kollagent, fast
- uorganiseret, bindevæv
- mange papiller

