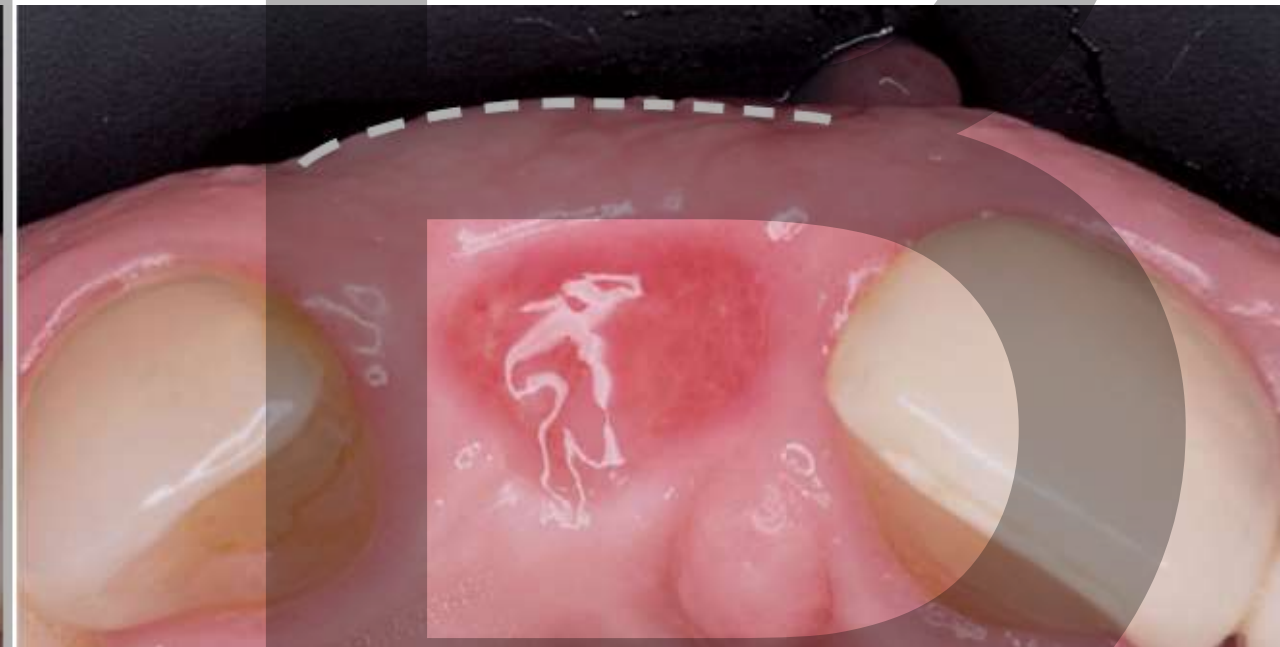
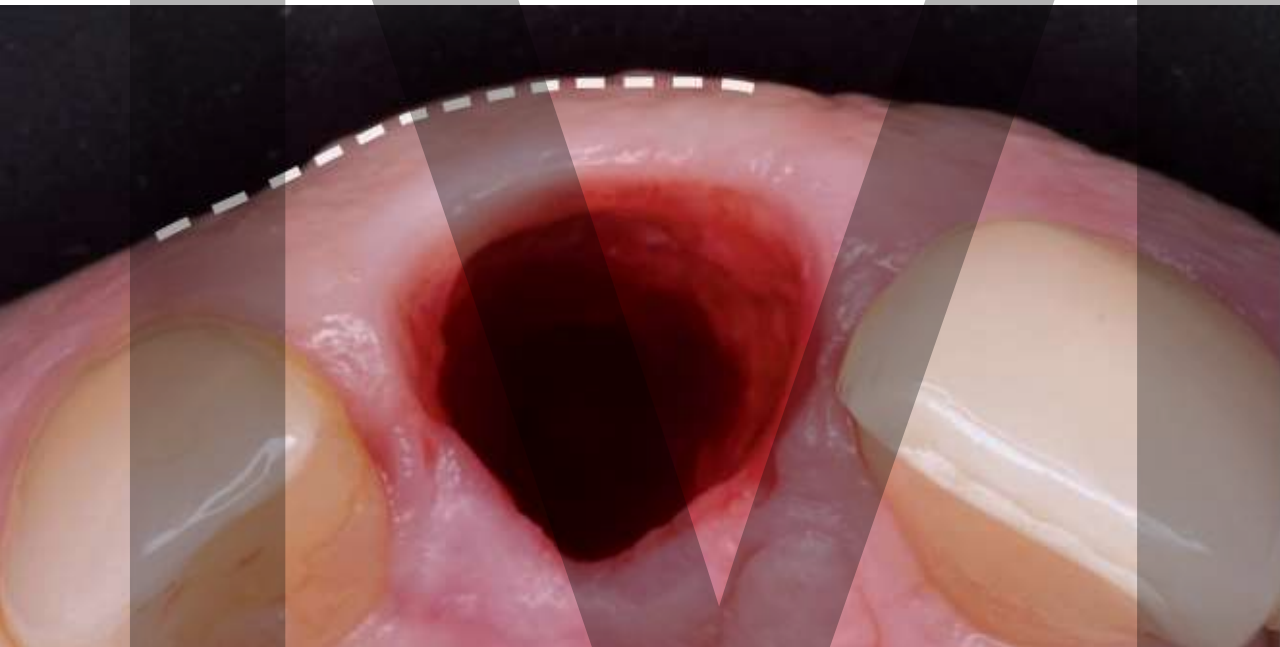


Anatomy of the teeth, suspensory apparatus and related structures – clinical correlations

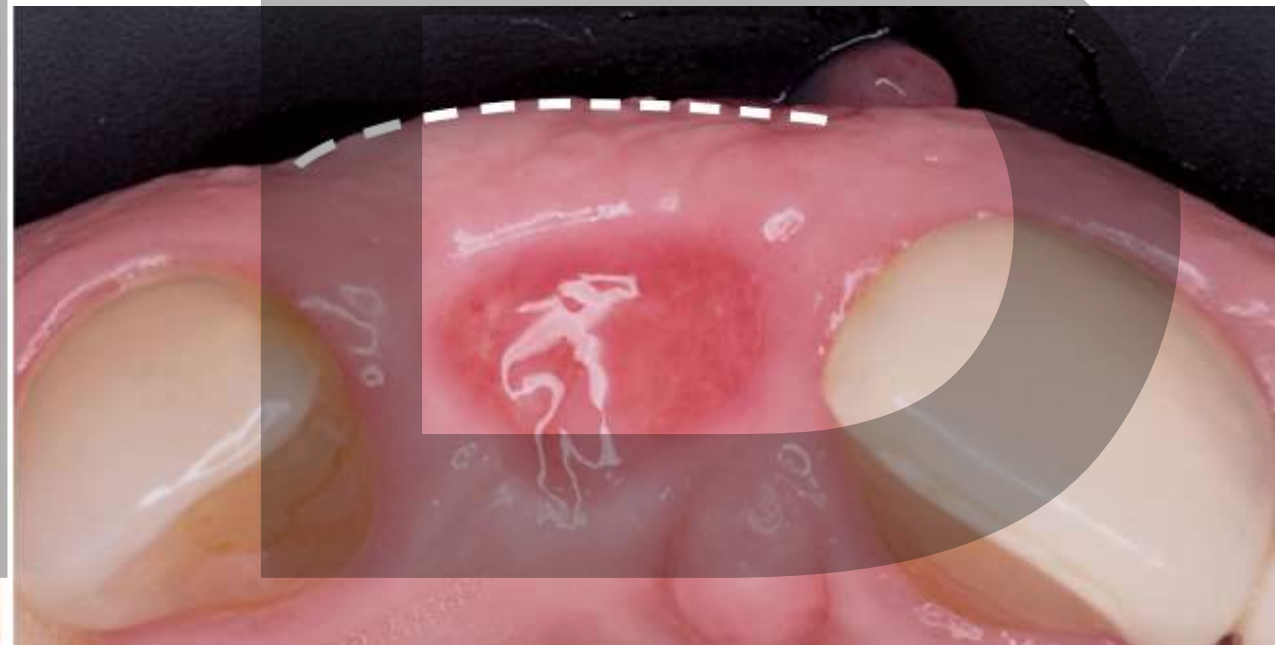
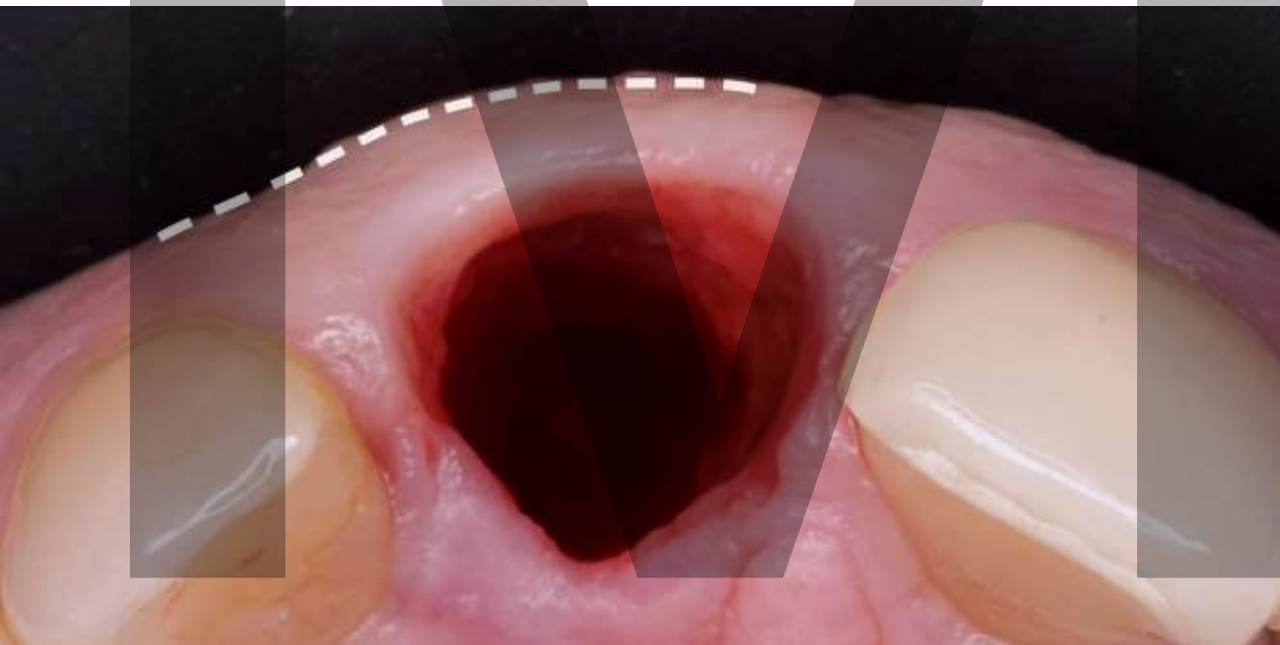
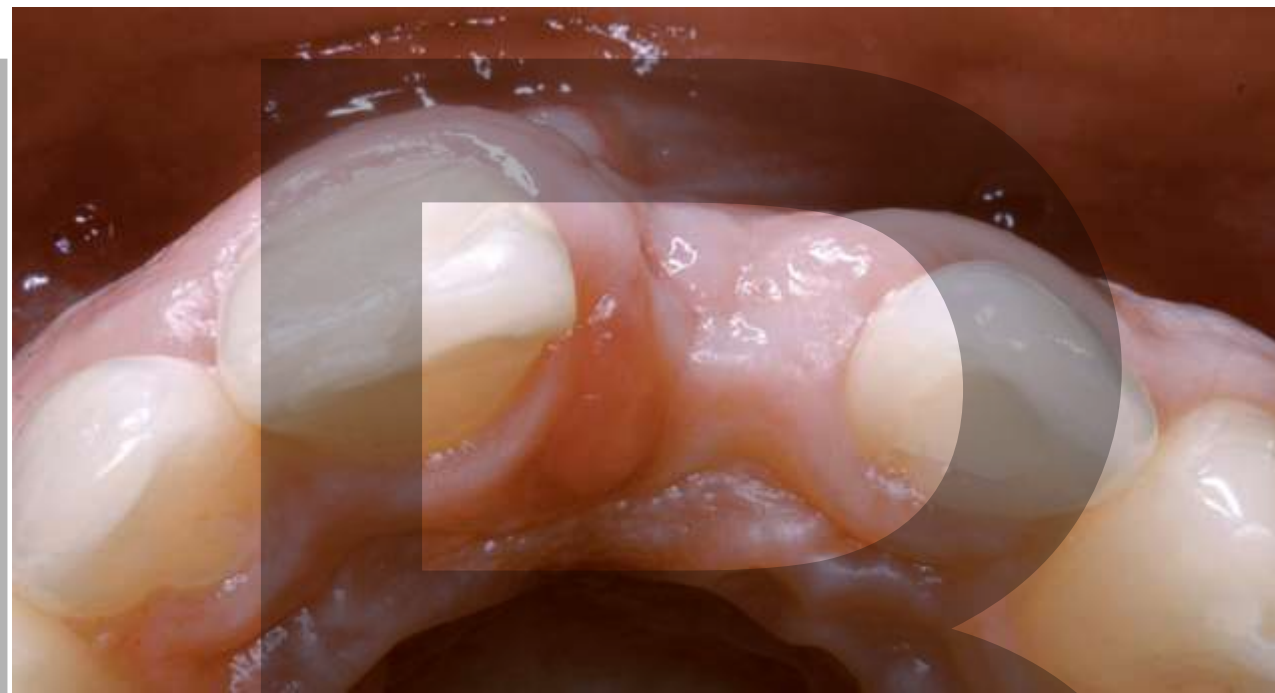
Martin Bartoš, MD, DMD, PhD
Institute of Dental Medicine and Institute of Anatomy
First Faculty of Medicine Charles University

Anatomy and tissue biology



Geistlich Co.

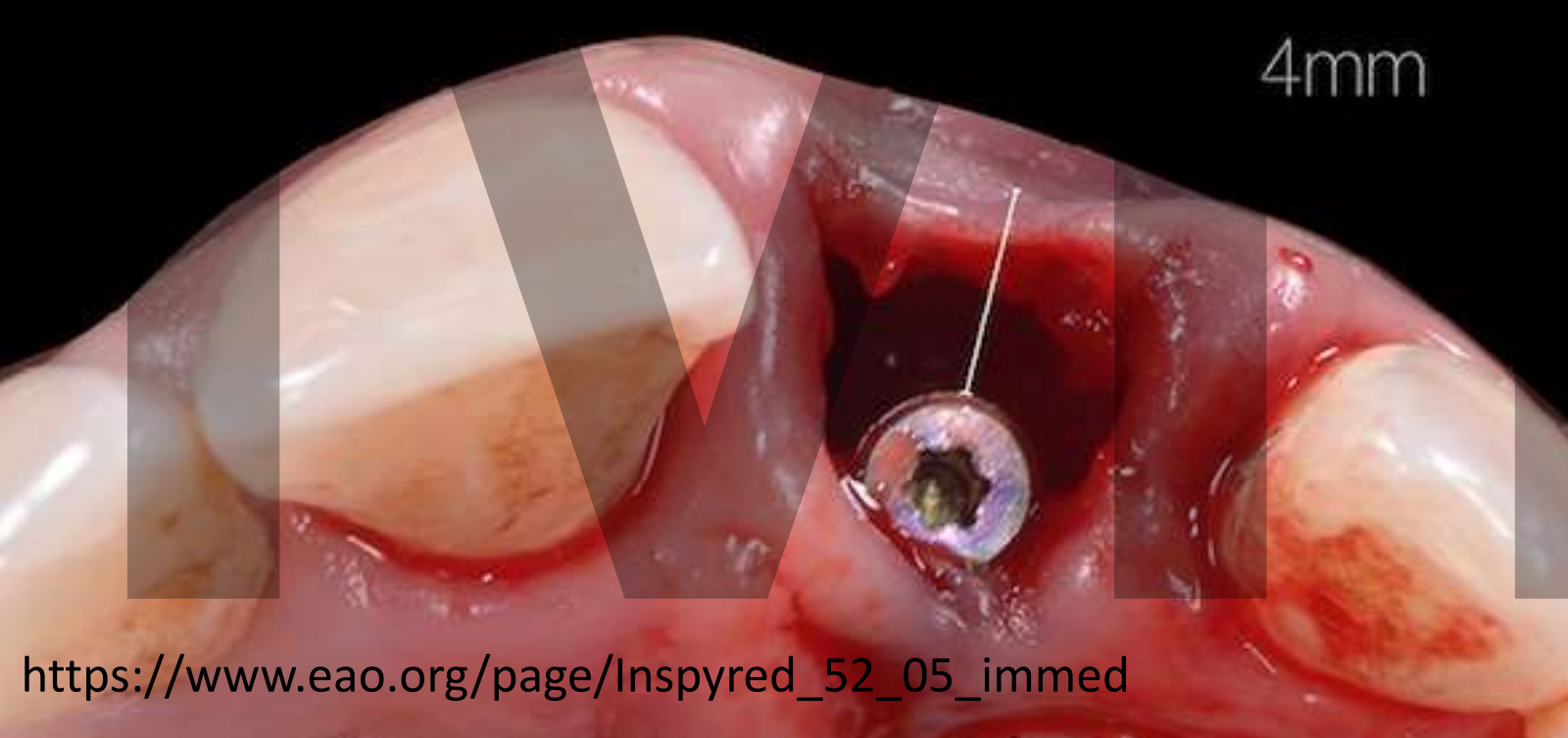
Atraumatic extraction
Socket preservation



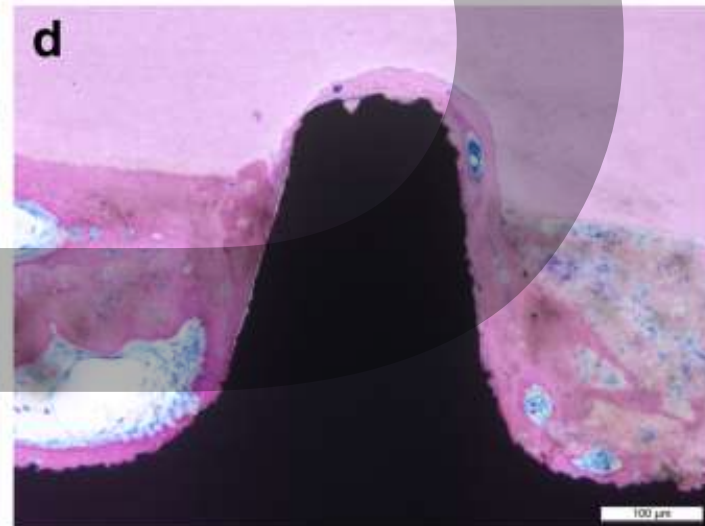
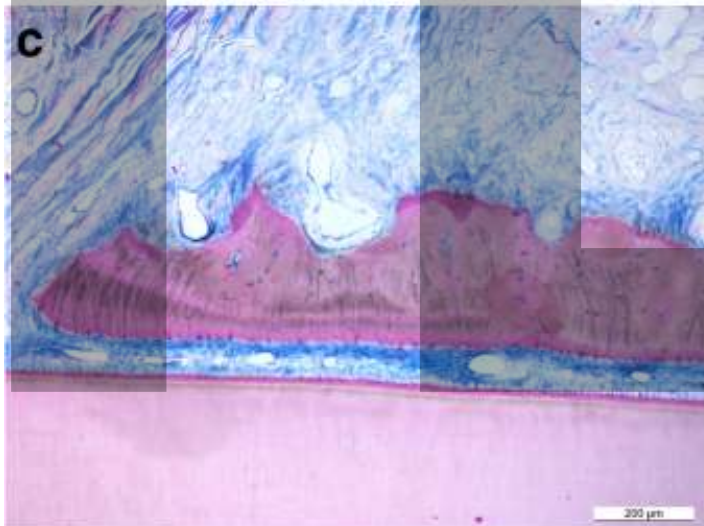
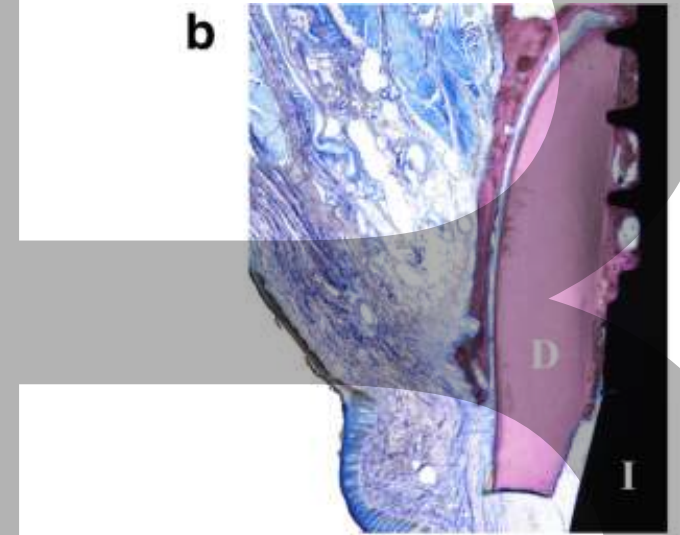
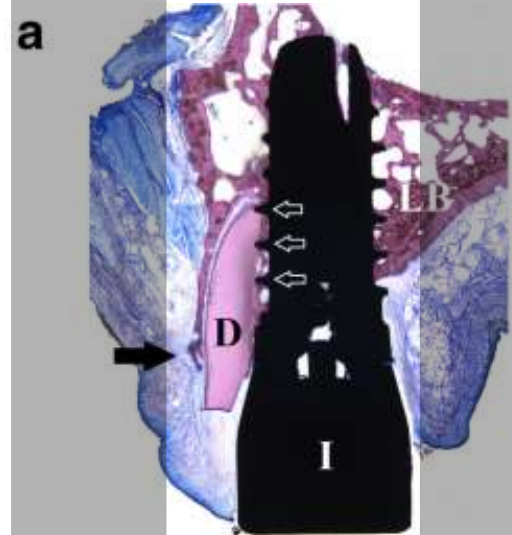
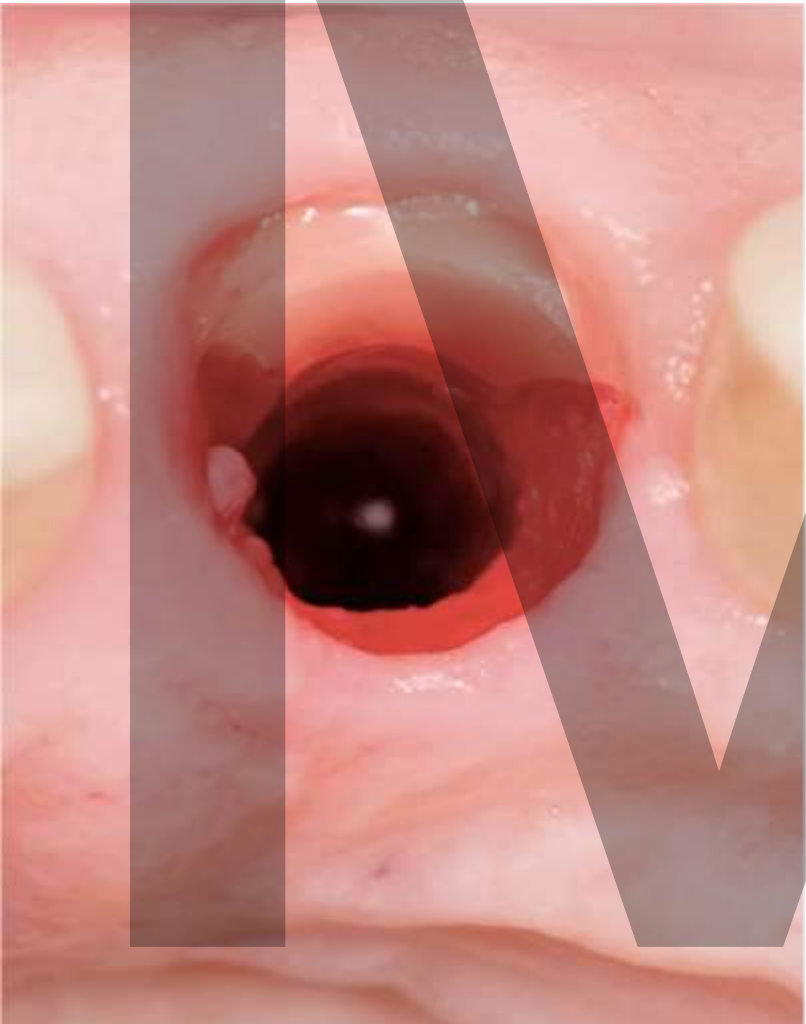
Immediate implant placement



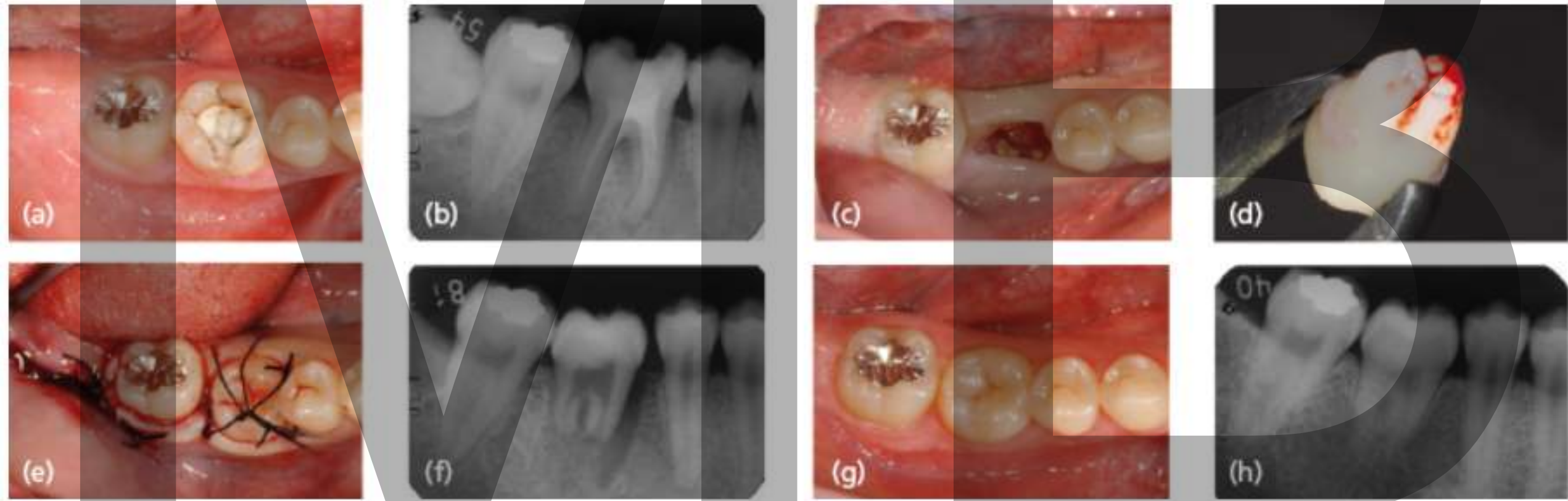
4mm



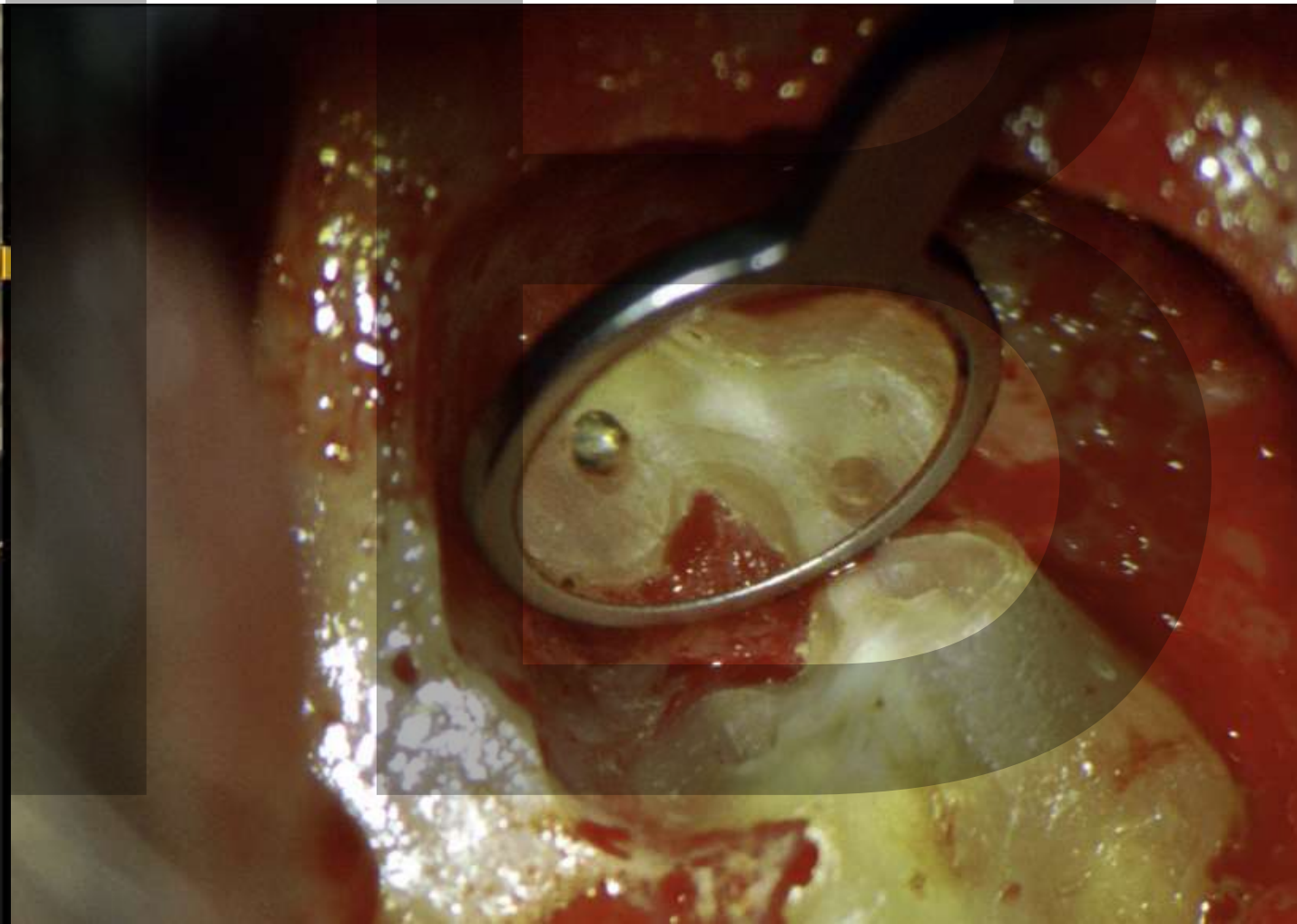
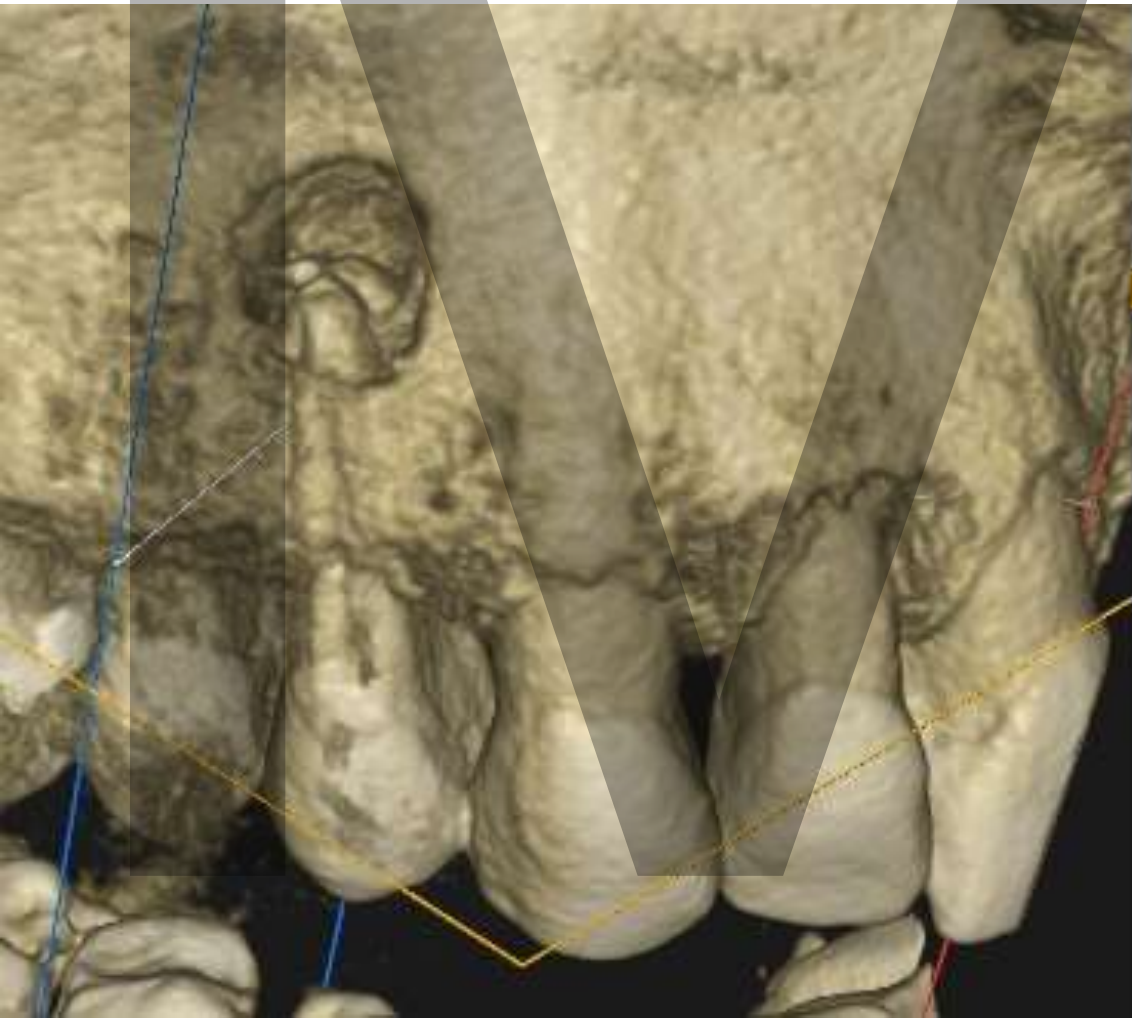
Socket shield technique



Autotransplantation



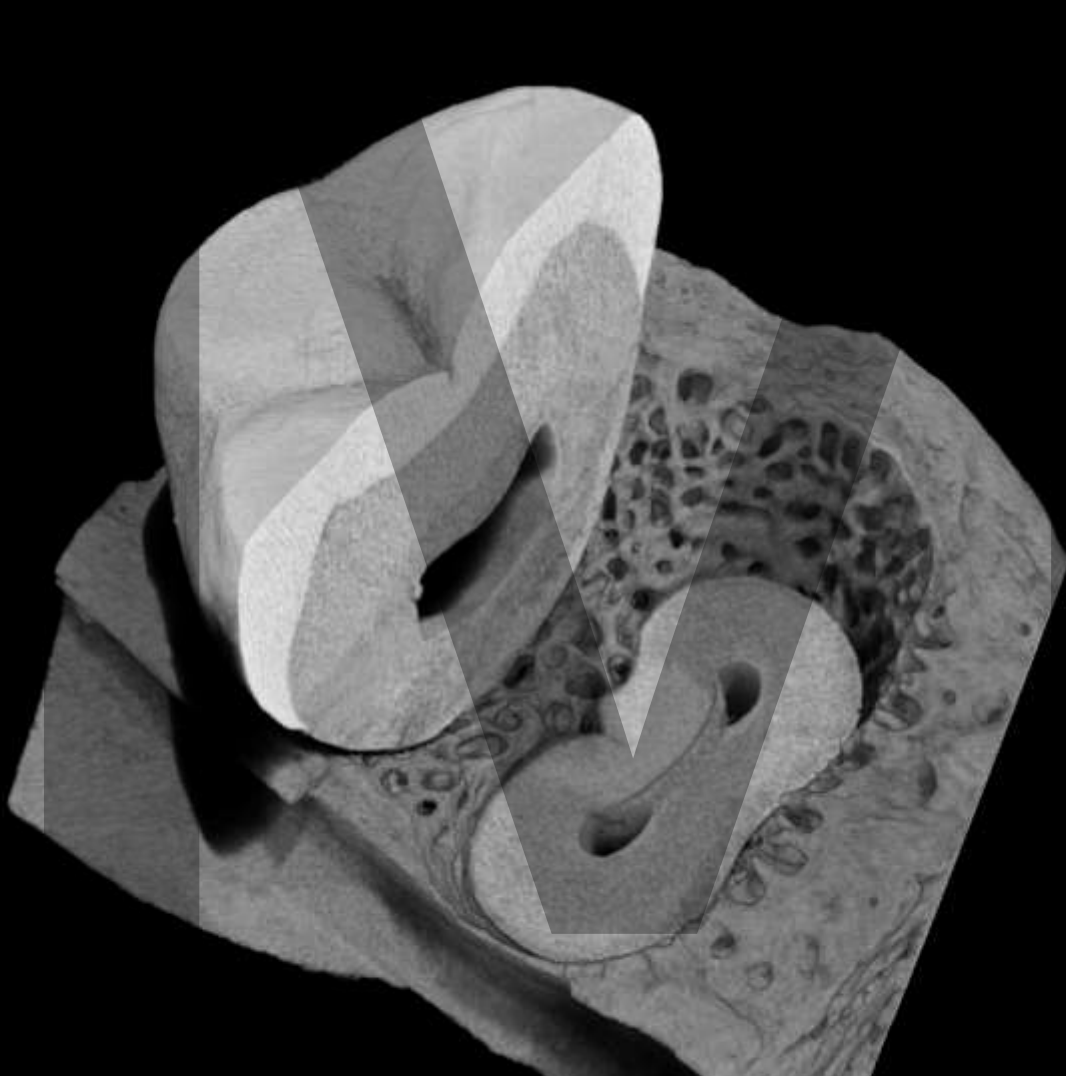
Root apex surgery



MM

BB

Tooth anatomy and suspensory apparatus



Gingiva
Alveolar bone
Periodontal ligaments
Cementum

Parodont

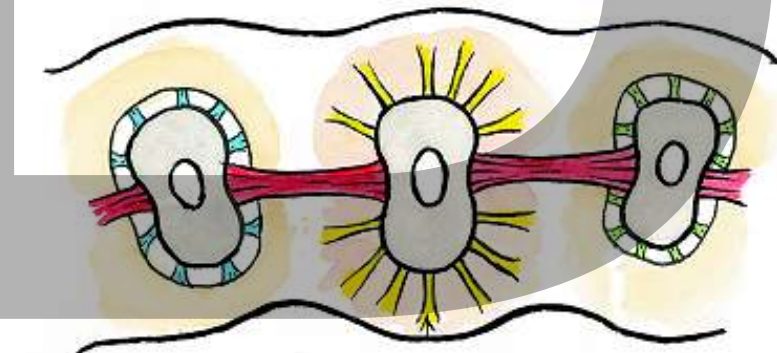
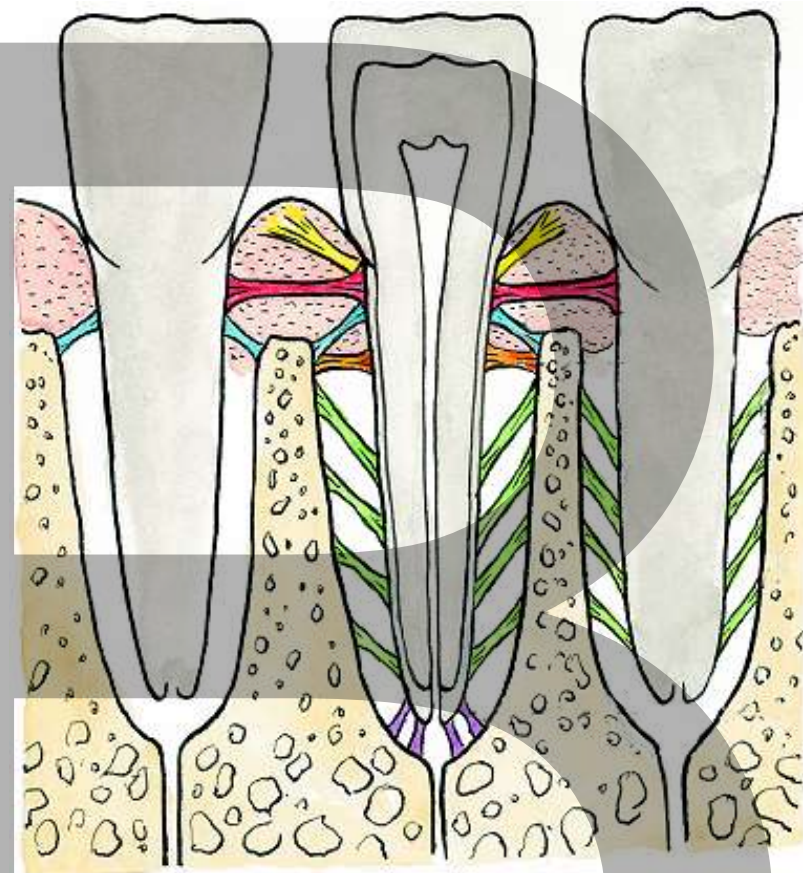
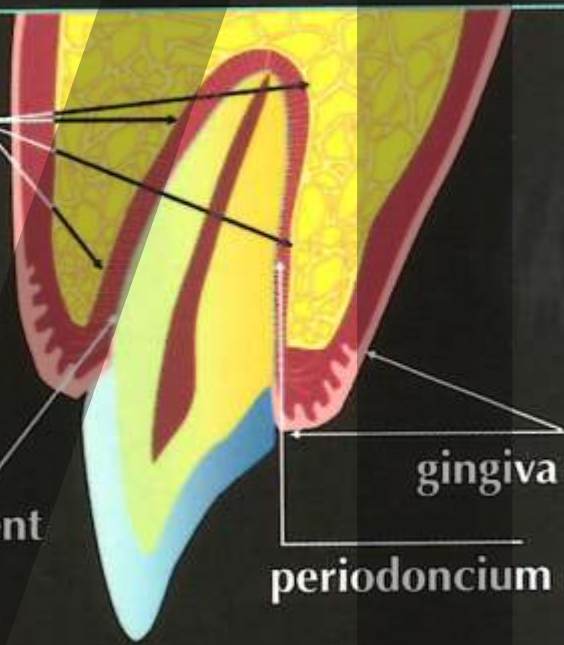
Anatomická struktura

vlastní alveolární kost

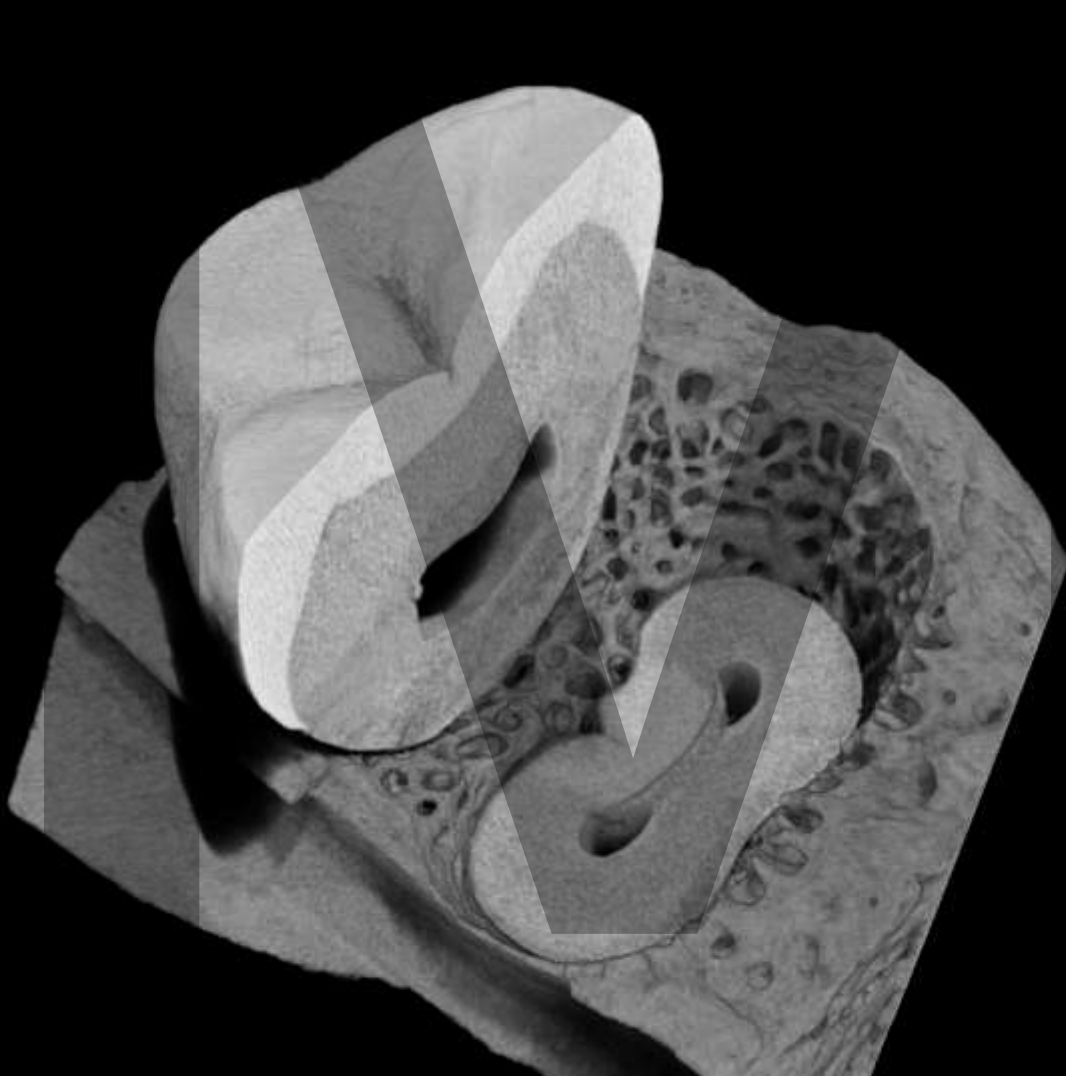
kořenový cement

gingiva

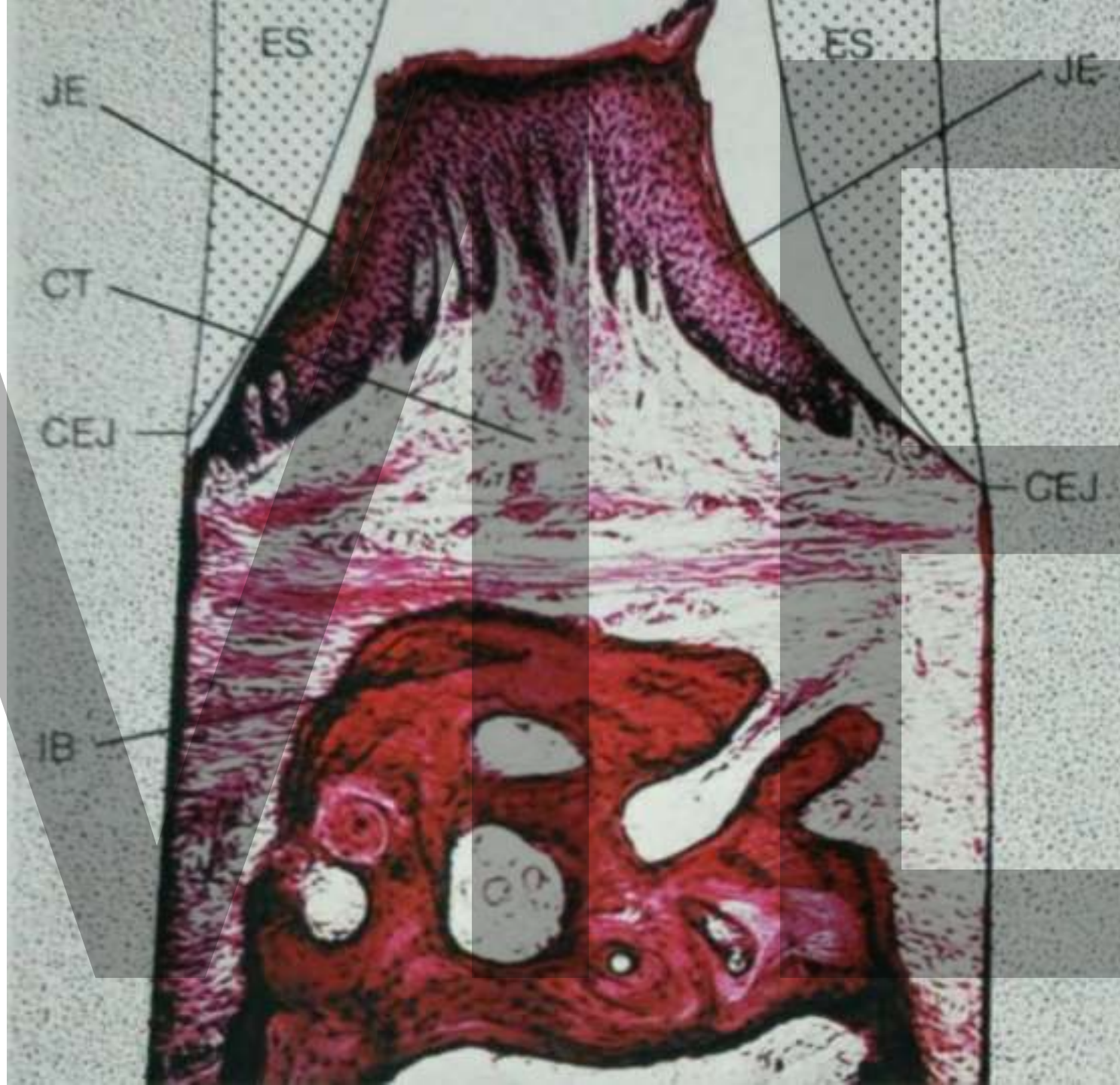
periodoncium



Inner layer of compact bone



N

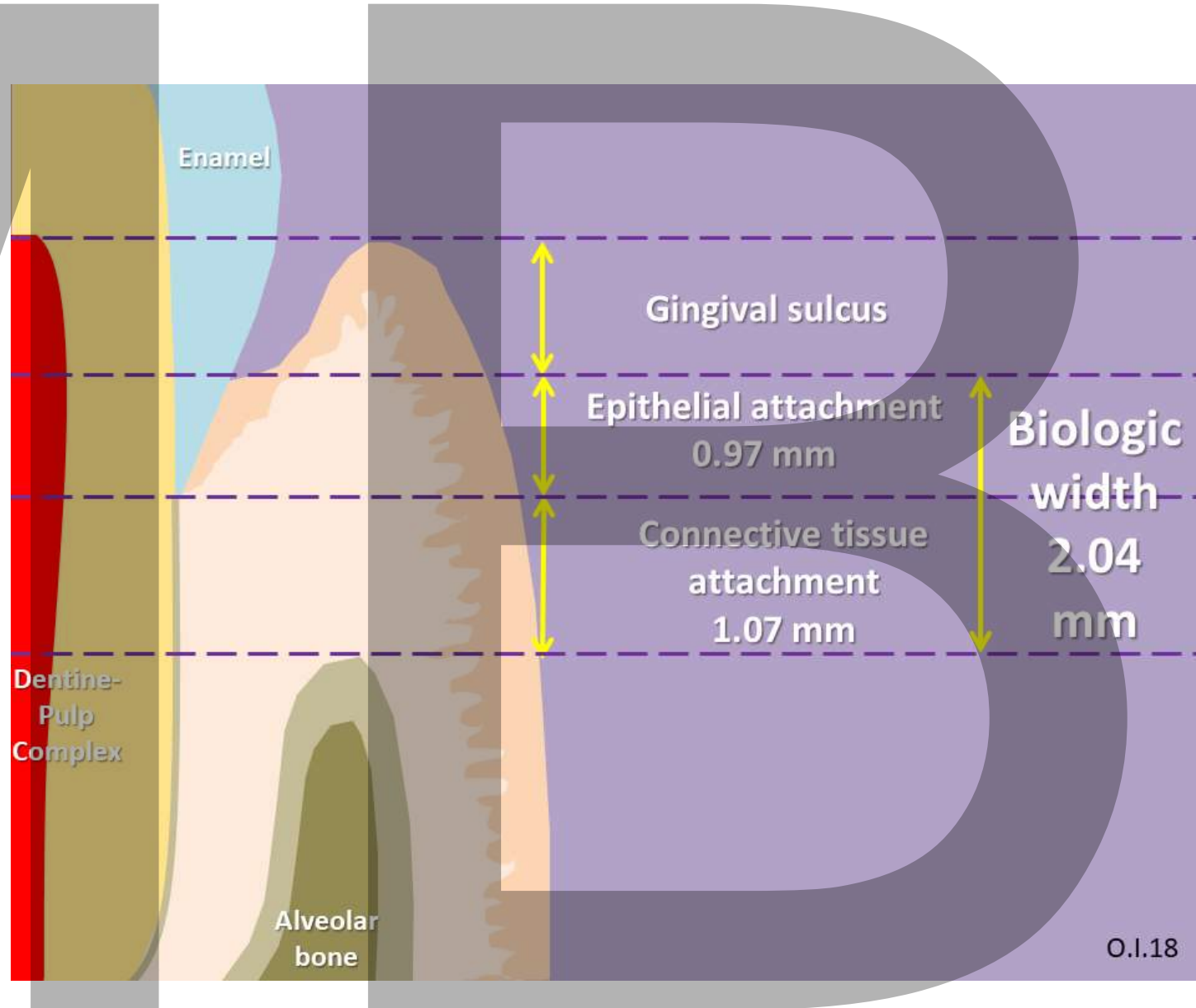


B

Biological width

(supracrestal tissue attachment)

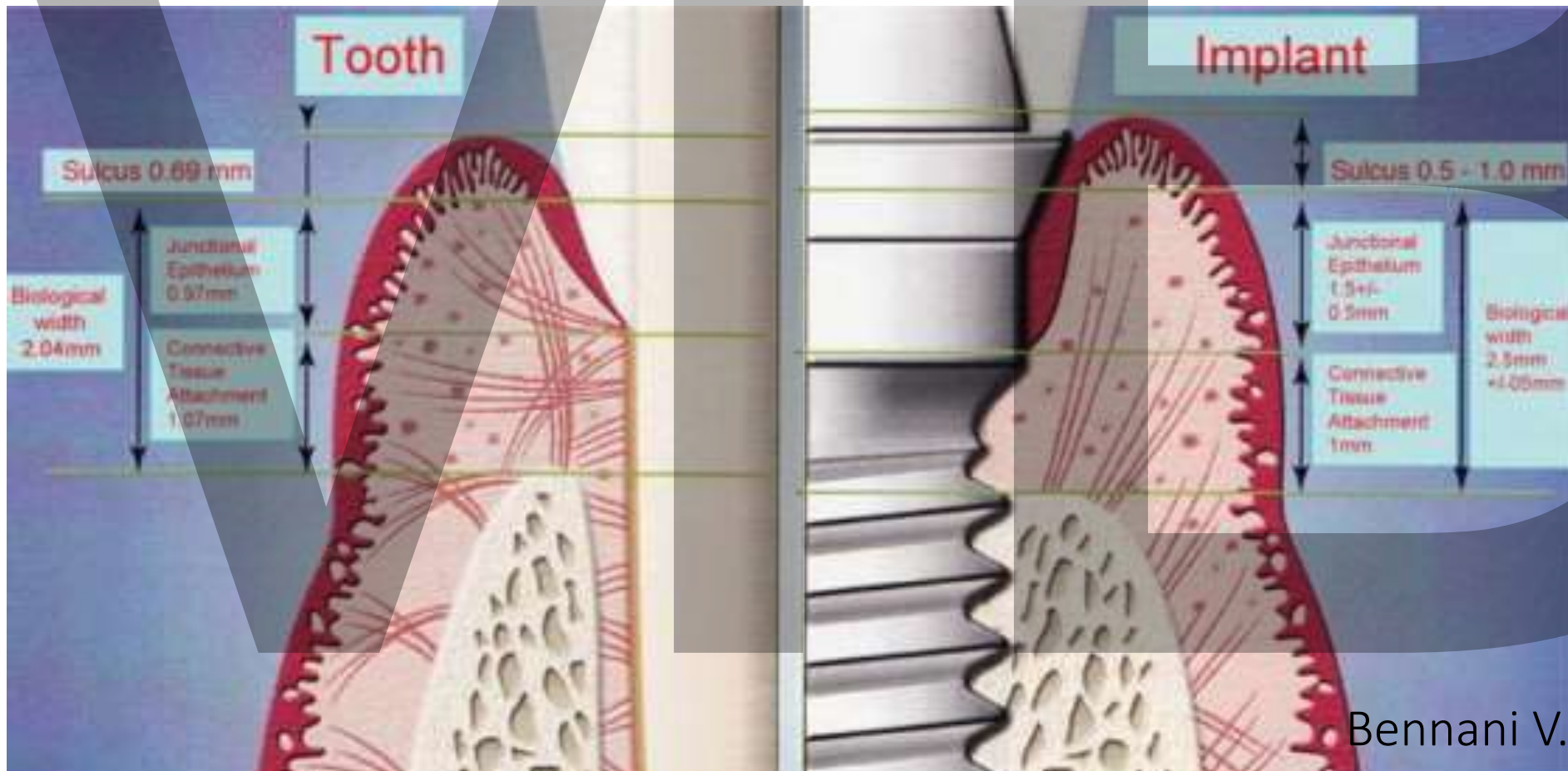
the dimension of the soft tissue, which is attached to the portion of the tooth coronal to the crest of the alveolar bone



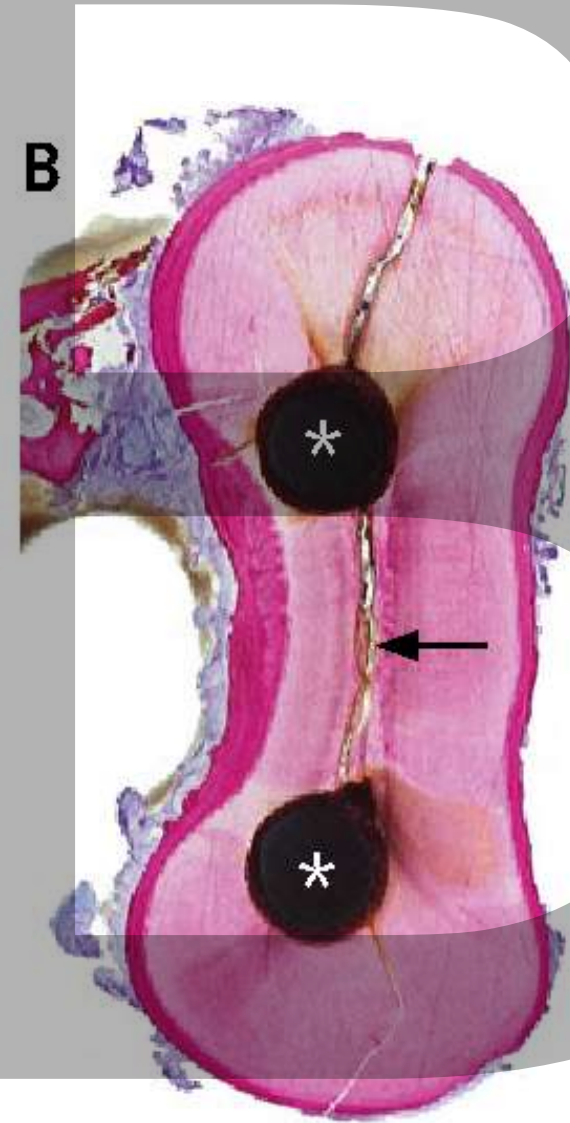
O.I.18

Biological width: tooth vs implant

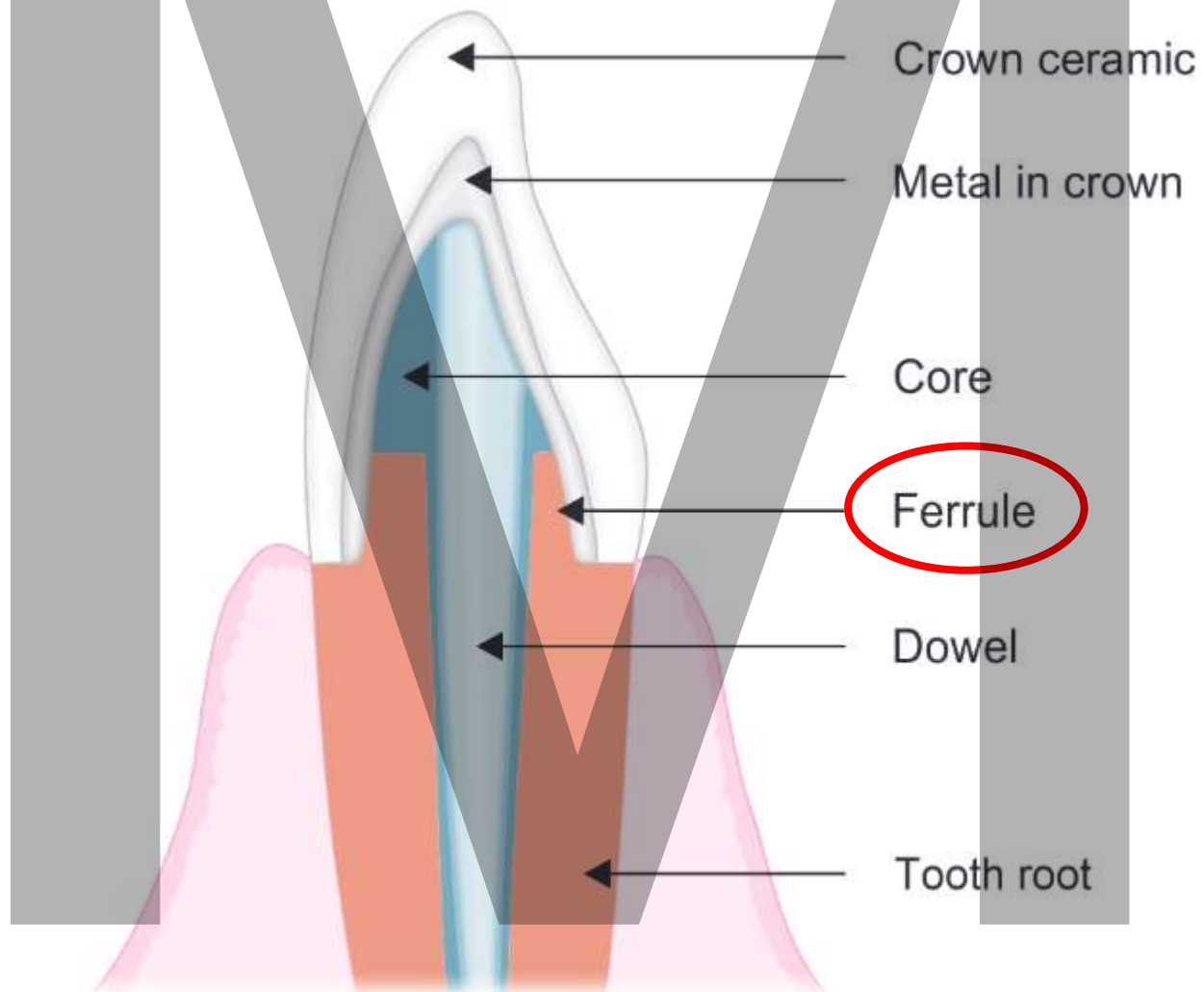
- Differences in reaction to its violation



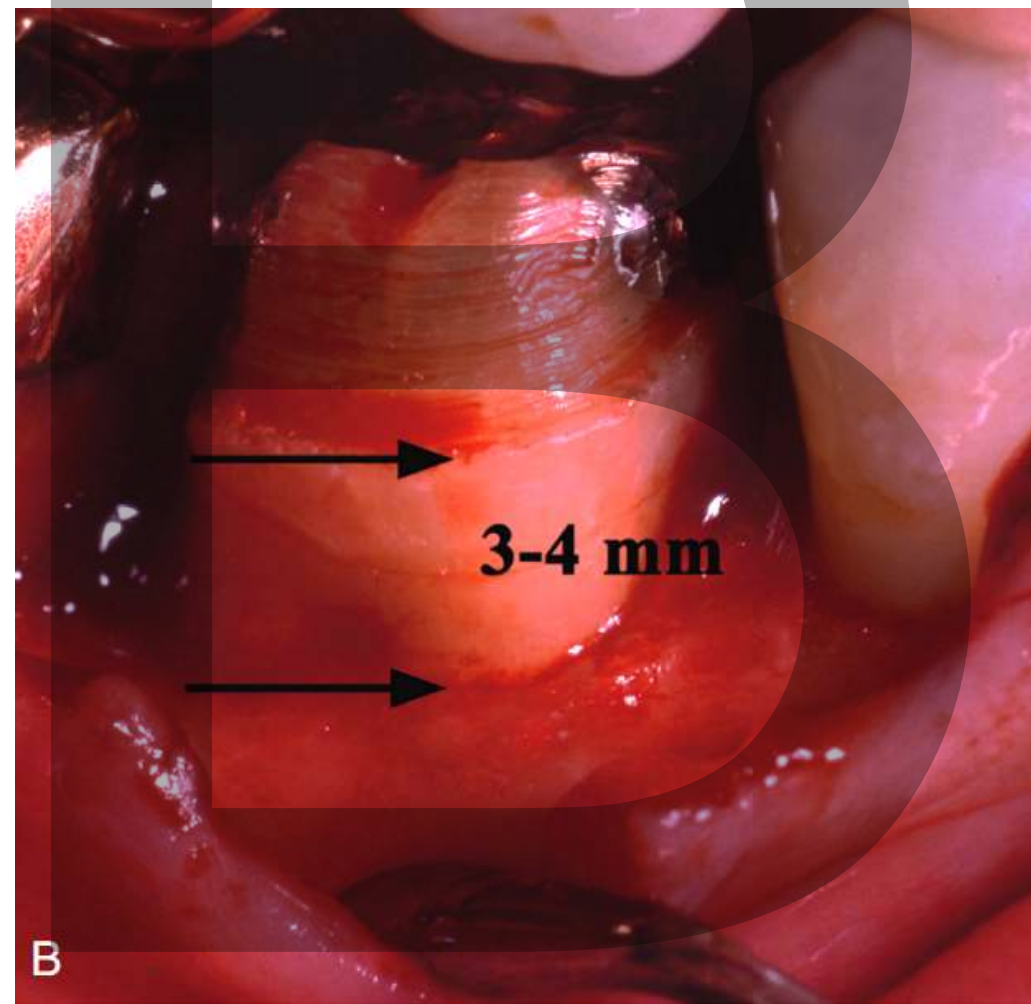
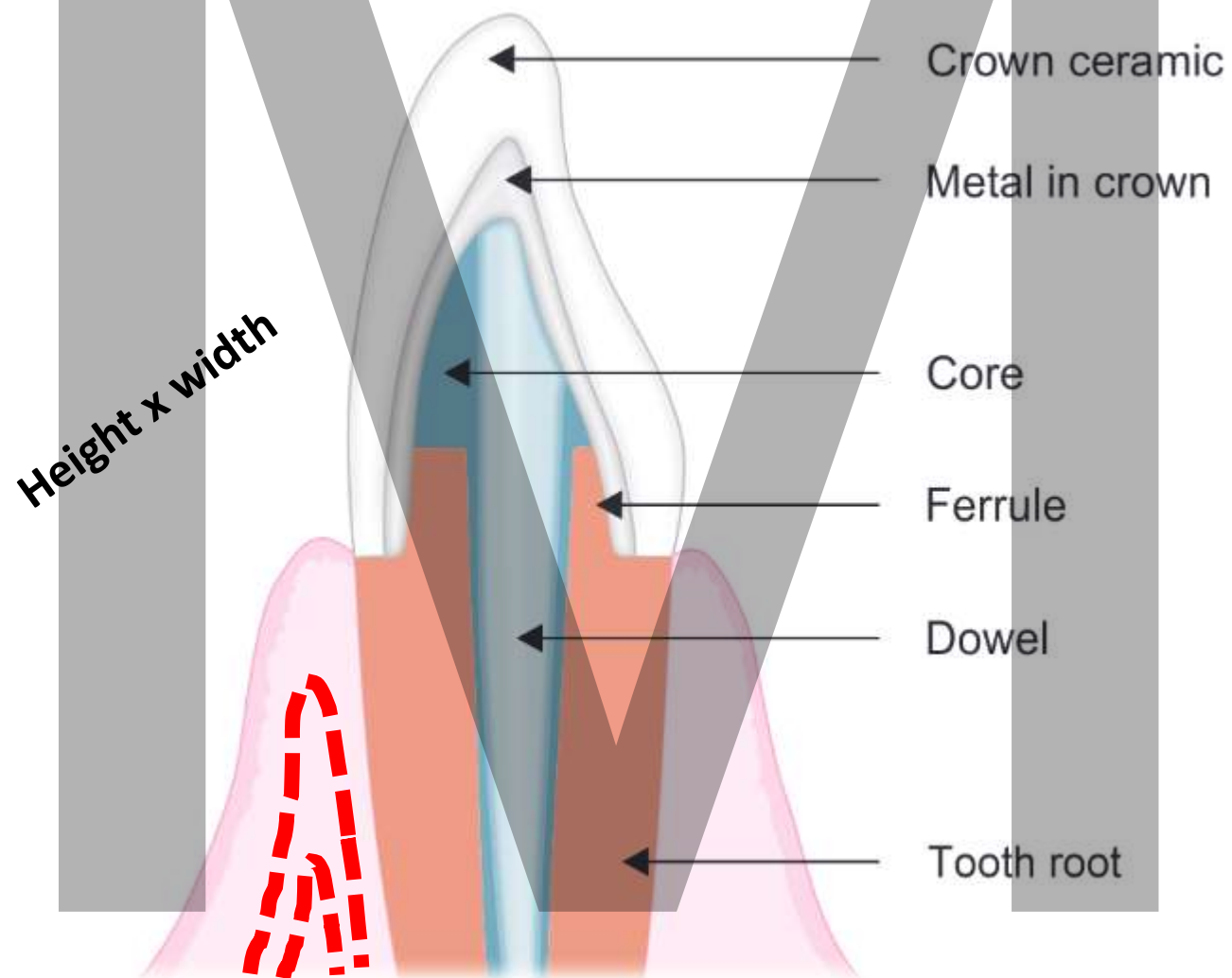
Vertical root fracture...



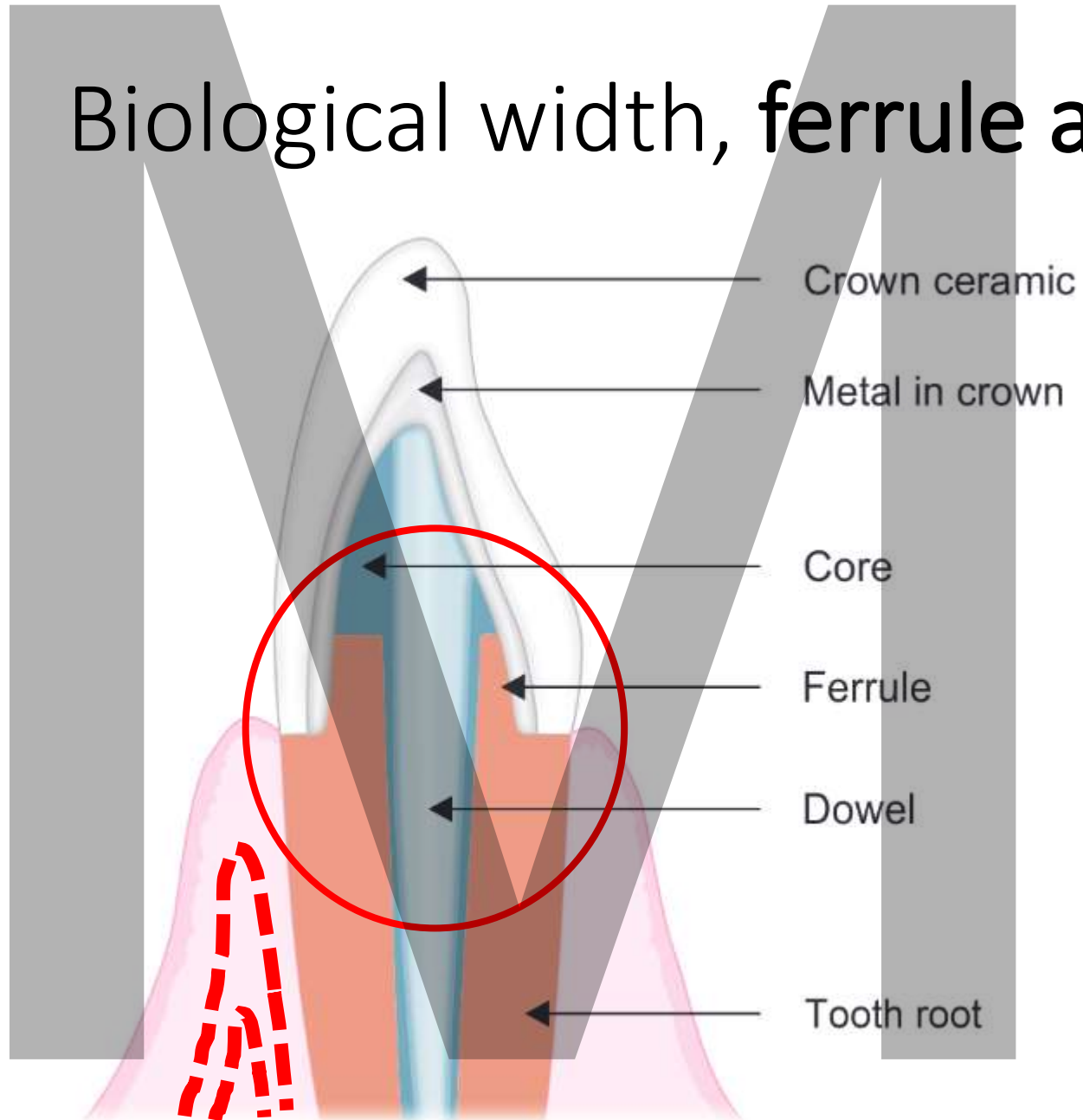
Biological width and ferrule



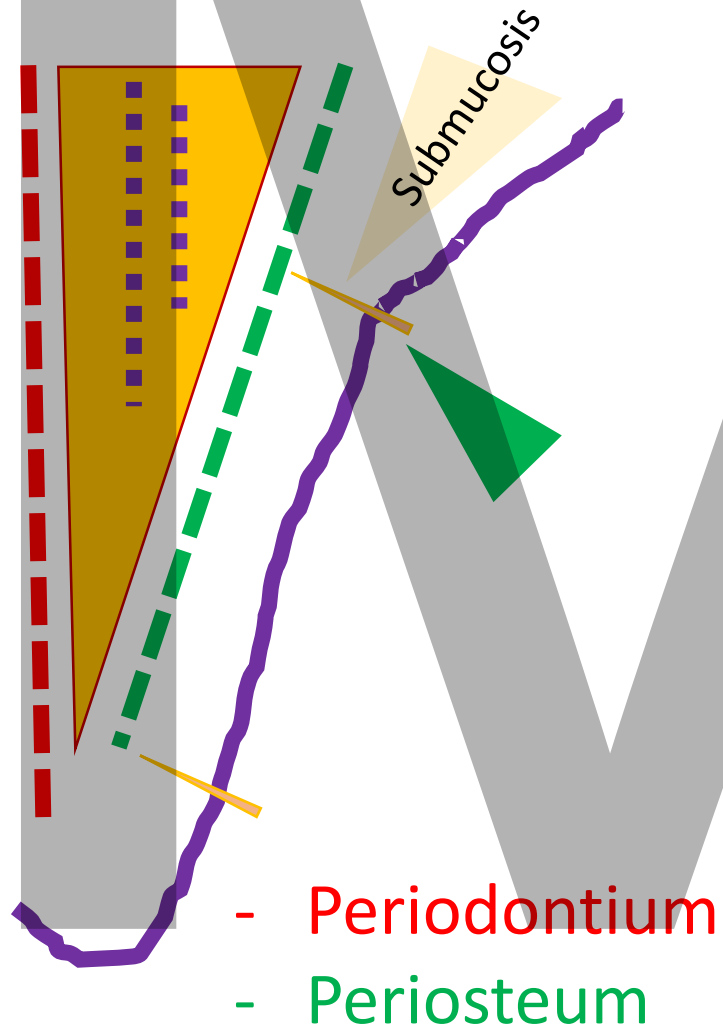
Biological width and ferrule



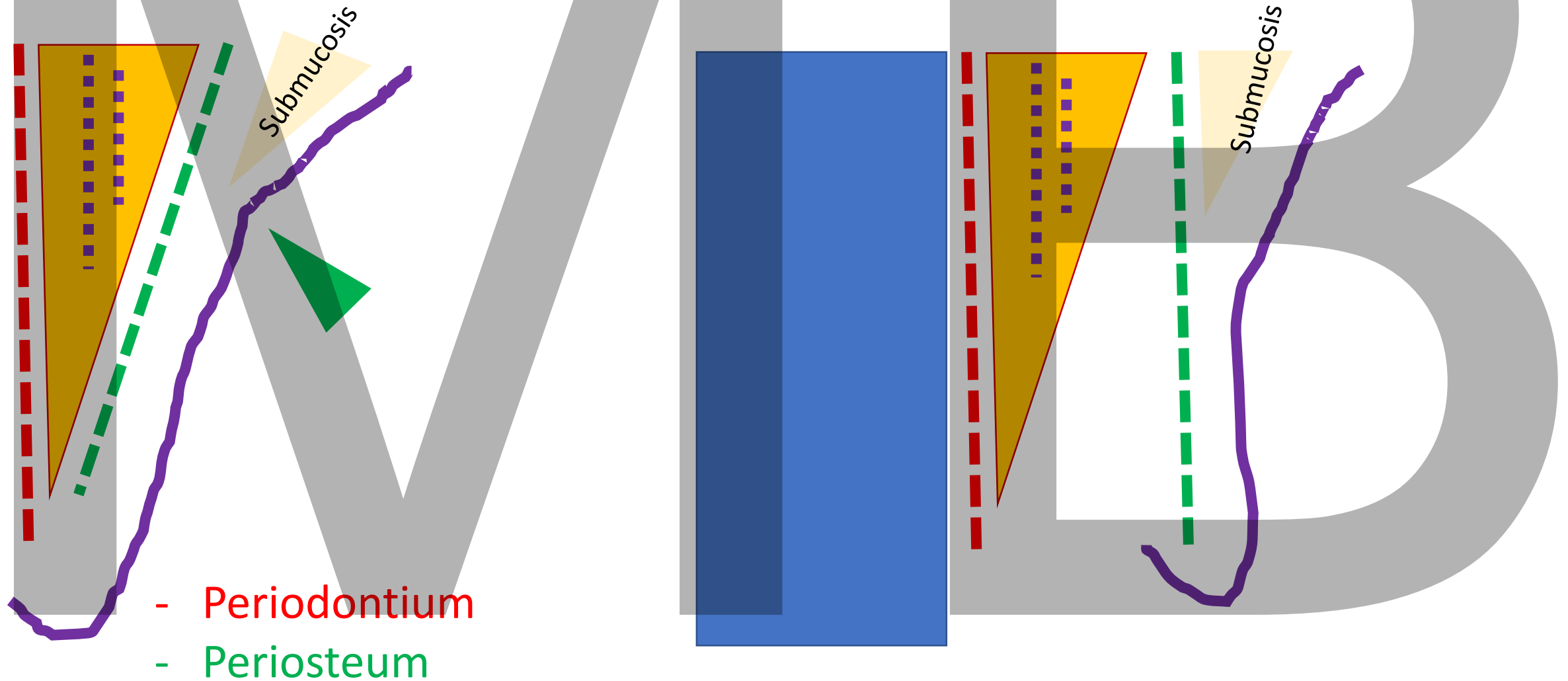
Biological width, ferrule and pericervical dentin



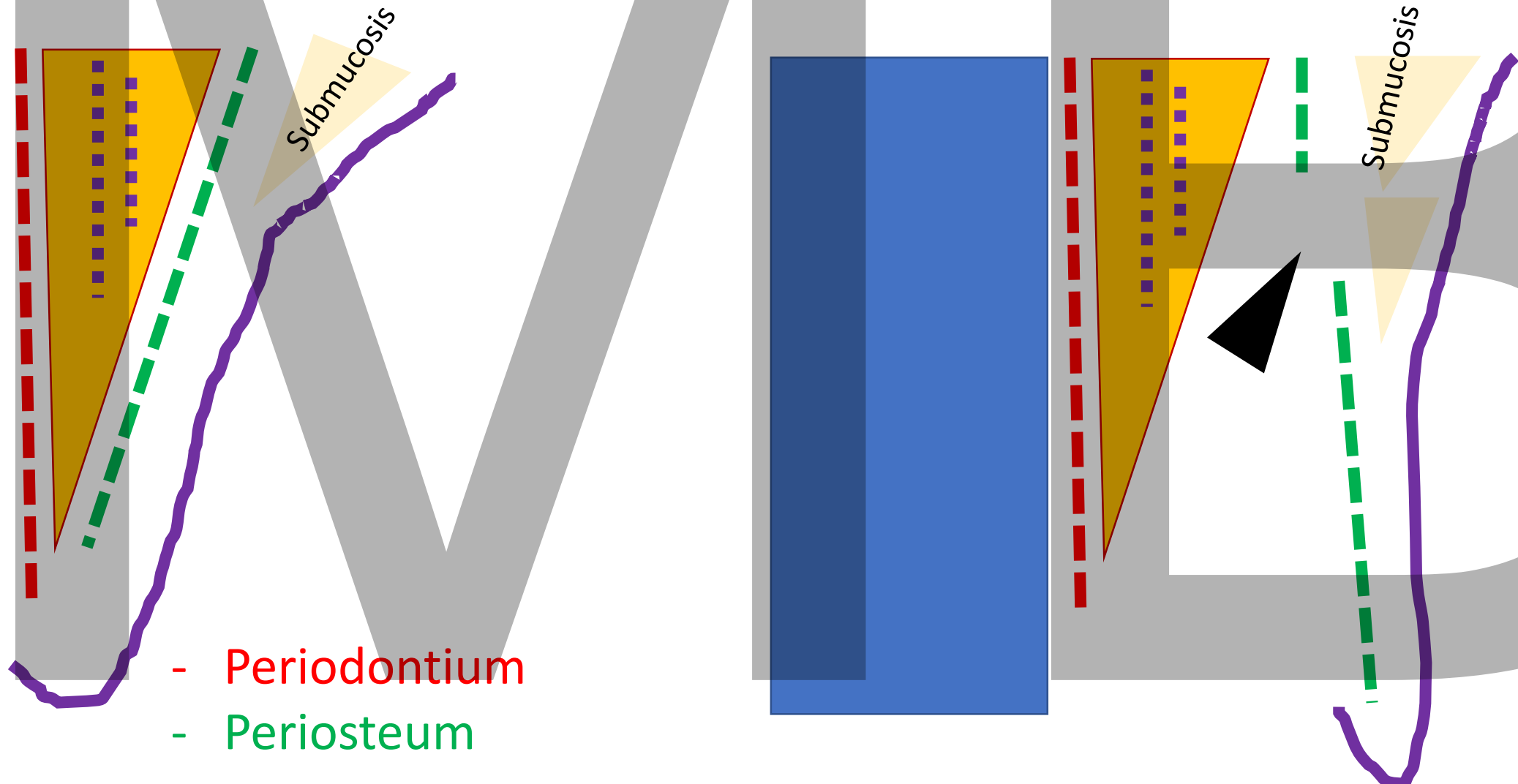
Gingiva and mucogingival junction



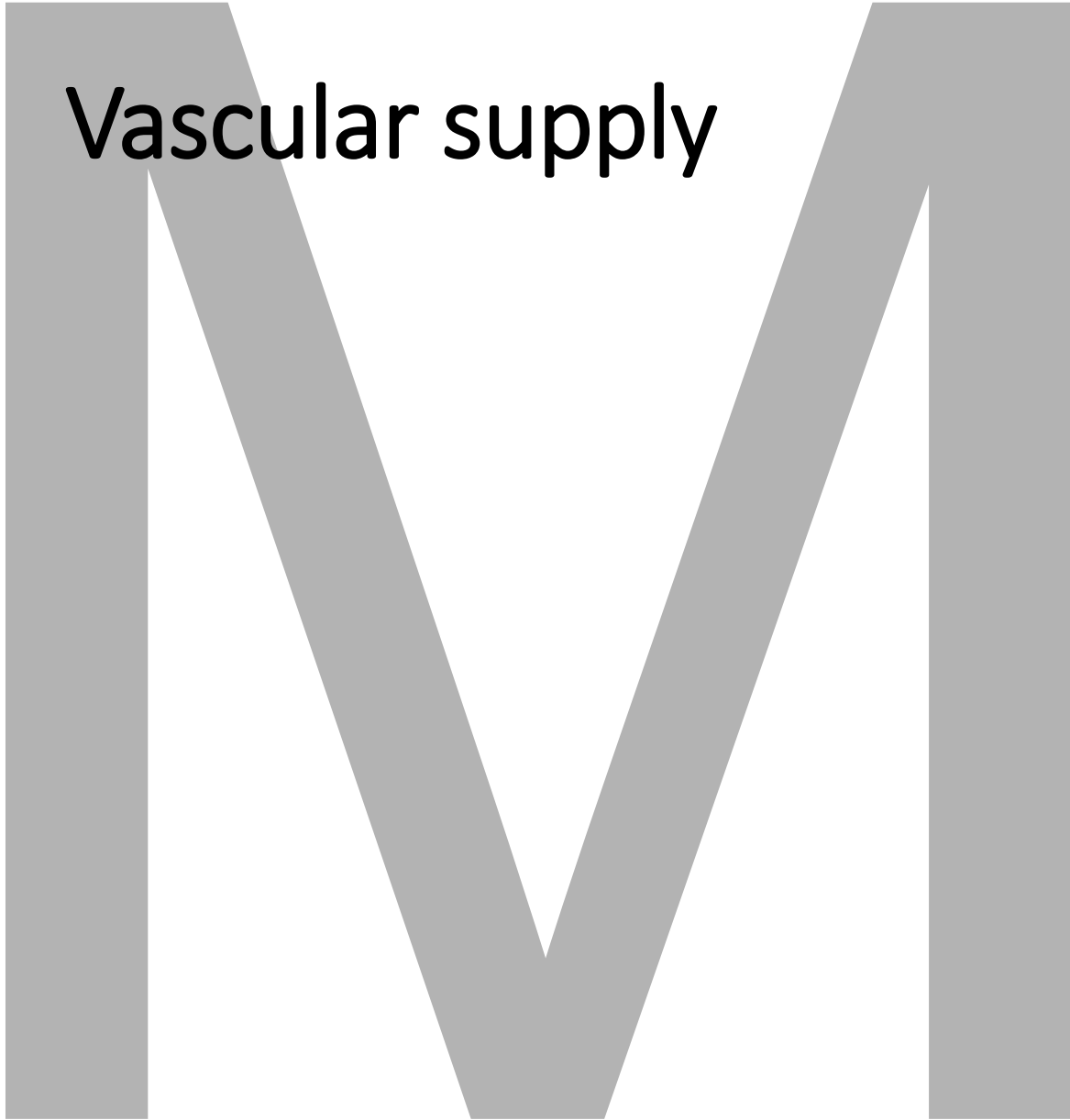
Gingiva and mucogingival junction



Gingiva and mucogingival junction, periosteotomy



Vascular supply



ramus pterygoideus lateralis
et musculus pterygoideus lateralis

arteria supraorbitalis

arteria supratrochlearis

arteria ophthalmica

arteria dorsalis nasi

arteria angularis

arteria infraorbitalis

arteriae alveolares
superiores

posterior
media
anterior

arteria et nervus buccalis

arteria pterygoidea medialis et
nervus pterygoideus medialis

raphe pterygomandibularis

nervus lingualis

arteria facialis

arteria mentalis

arteria submental

anterior

posterior

arteriae et nervi temporales profundae

arteria masseterica et nervus massetericus

articulatio temporomandibularis
- ligamentum laterale

arteria meningea media

nervus auriculotemporalis

arteria maxillaris

arteria temporalis superficialis

arteria auricularis posterior

nervus facialis

arteria et nervus
alveolaris inferior

ligamentum sphenomandibulare

arteria mylohyoidea et nervus
mylohyoideus

musculus digastricus (venter posterior)

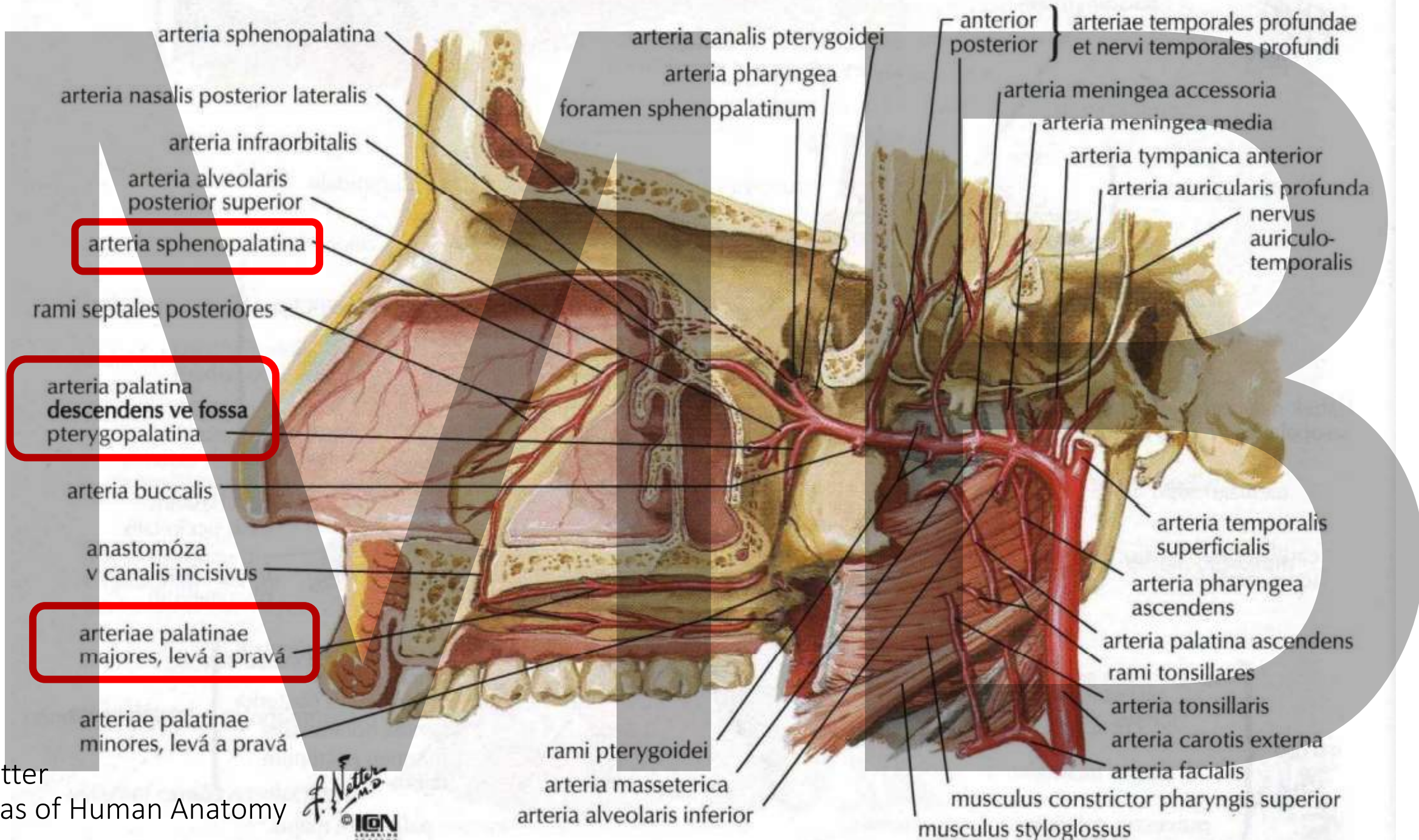
musculus stylohyoideus

arteria carotis externa

arteria facialis

arteria lingualis

Netter
Atlas of Human Anatomy



arteria sphenopalatina

arteria nasalis posterior lateralis

arteria infraorbitalis

arteria alveolaris posterior superior

arteria sphenopalatina

rami septales posteriores

arteria palatina descendens ve fossa pterygopalatina

arteria buccalis

anastomóza v canalis incisivus

arteriae palatinae majores, levá a pravá

arteriae palatinae minores, levá a pravá

arteria canalis pterygoidei

arteria pharyngea

foramen sphenopalatinum

rami pterygoidei
arteria masseterica
arteria alveolaris inferior

anterior } arteriae temporales profundae
posterior } et nervi temporales profundi

arteria meningea accessoria

arteria meningea media

arteria tympanica anterior

arteria auricularis profunda
nervus auriculo-temporalis

arteria temporalis superficialis

arteria pharyngea ascendens

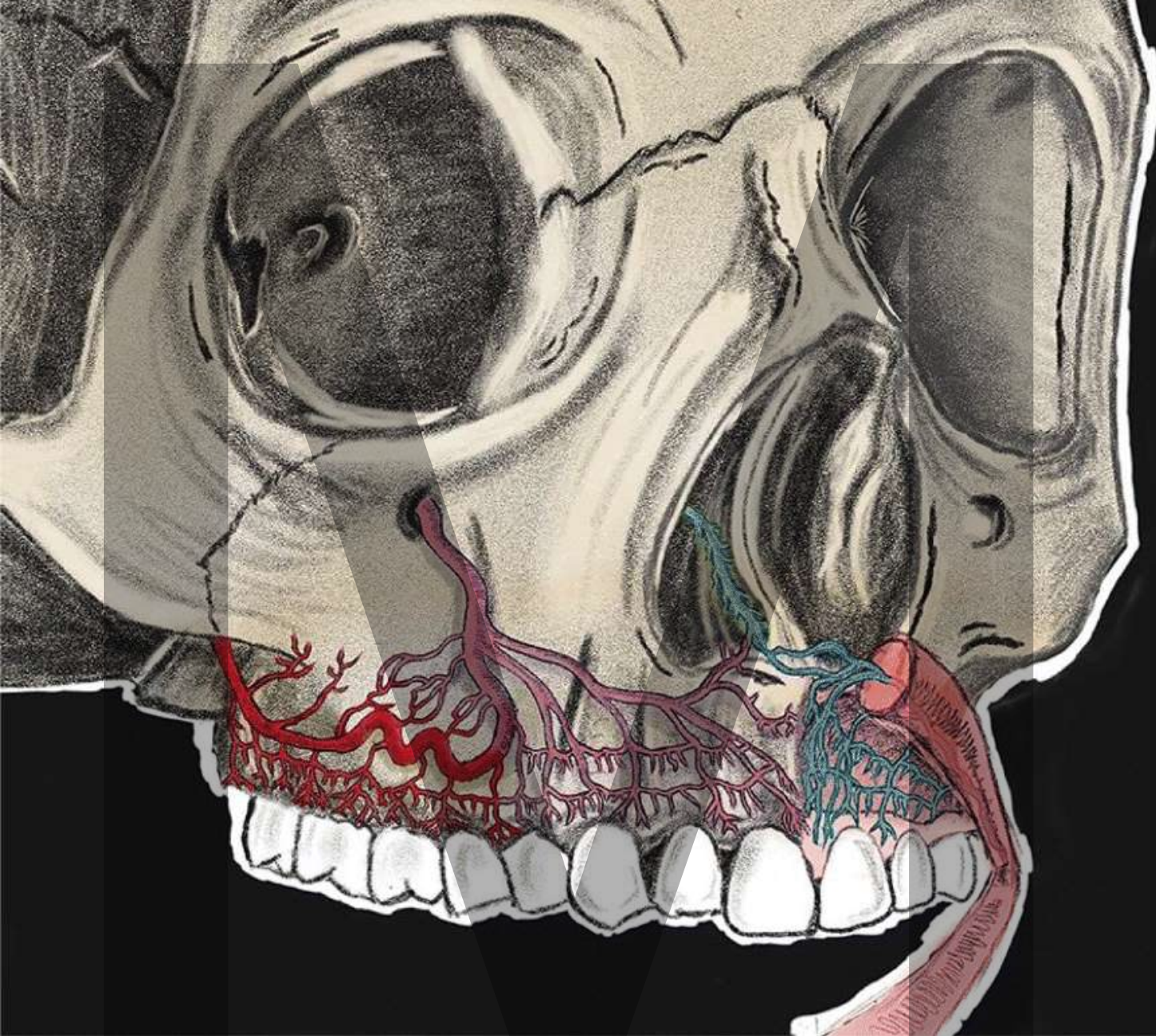
arteria palatina ascendens
rami tonsillares

arteria tonsillaris

arteria carotis externa

arteria facialis

musculus constrictor pharyngis superior
musculus styloglossus



Shabazi A., 2021, Vascular survey of the maxillary vestibule and gingiva—clinical impact on incision and flap design in periodontal and implant surgeries

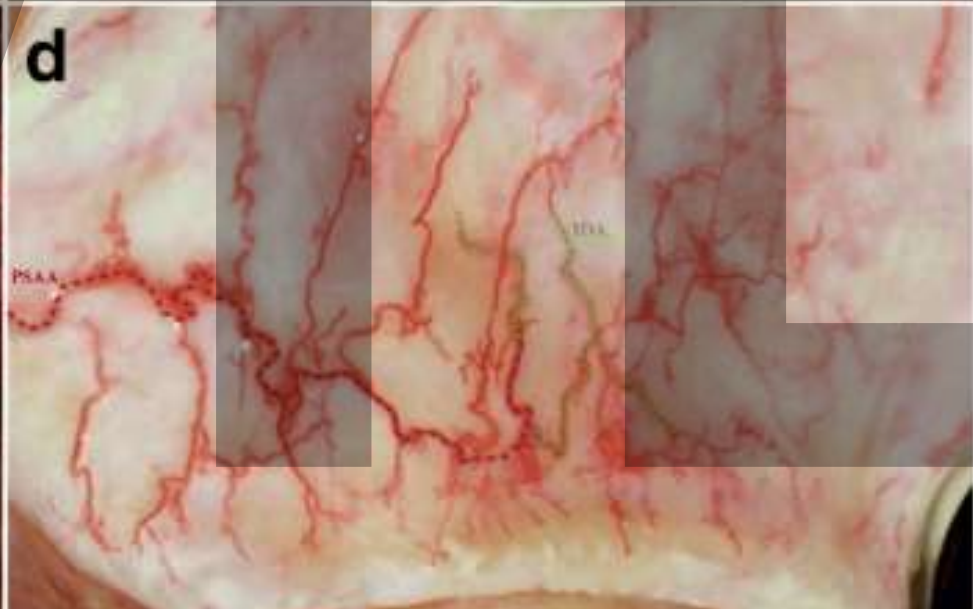
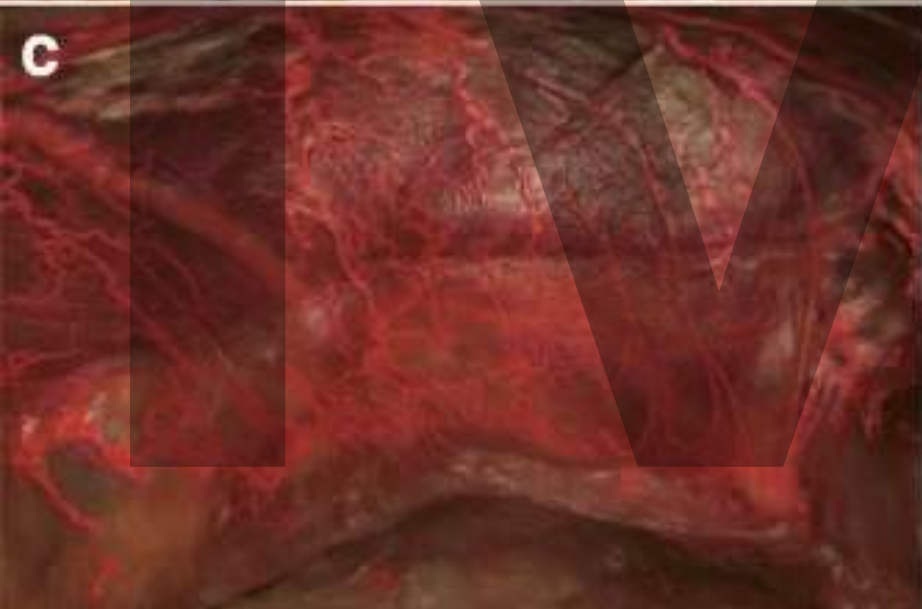
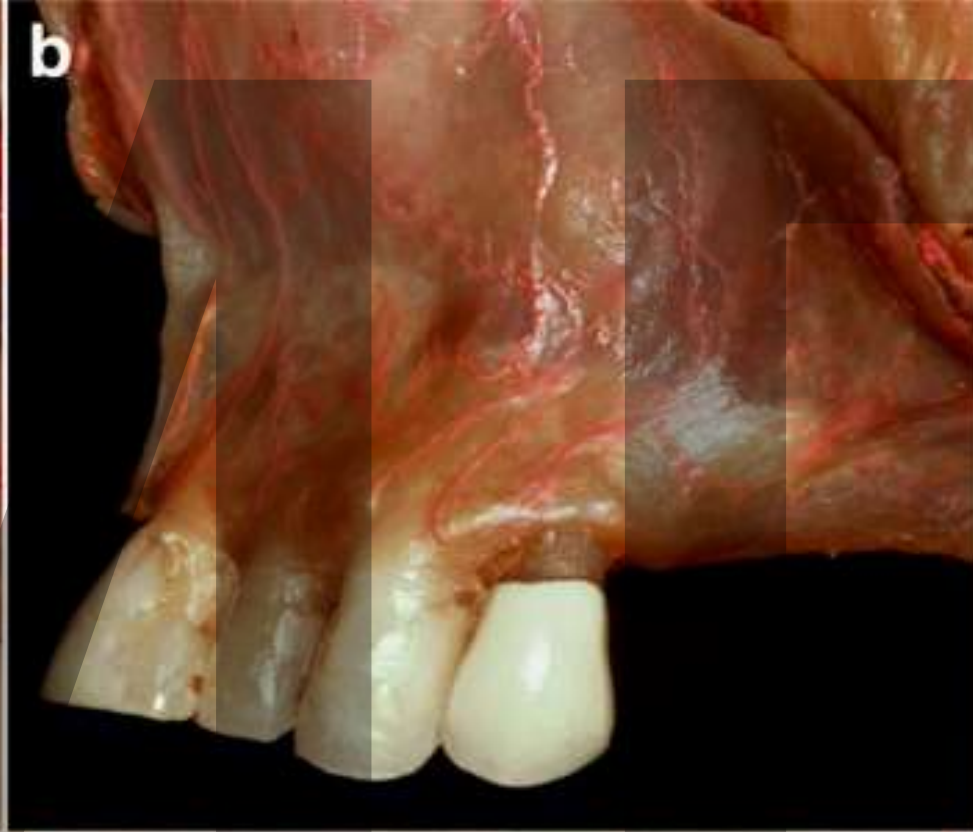
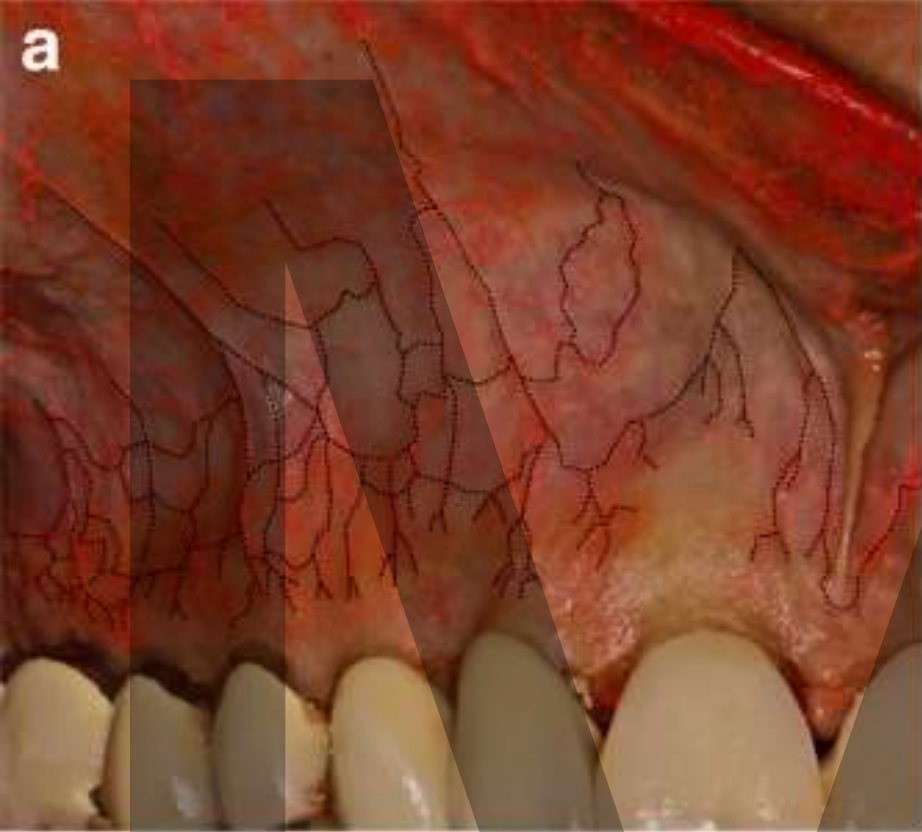


Fig 1-18 Periodontal blood supply. The periodontal tissue receives its blood supply from periodontal (PER), alveolar (ALV), and supraparosteal (SP) blood vessels. IN: internal network (postcapillary venule plexus), EN: external network (subepithelial capillary loops).



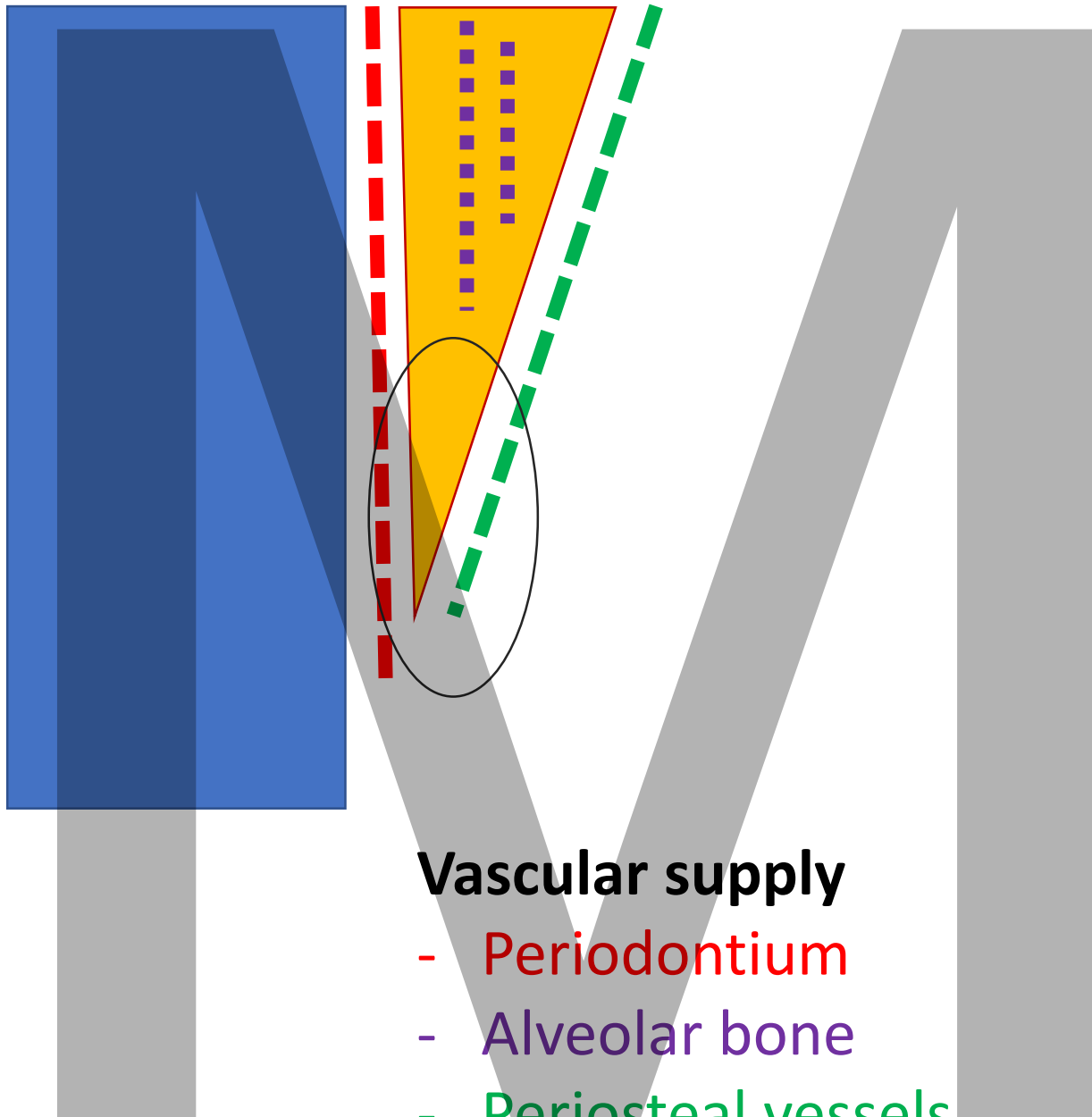
NAB



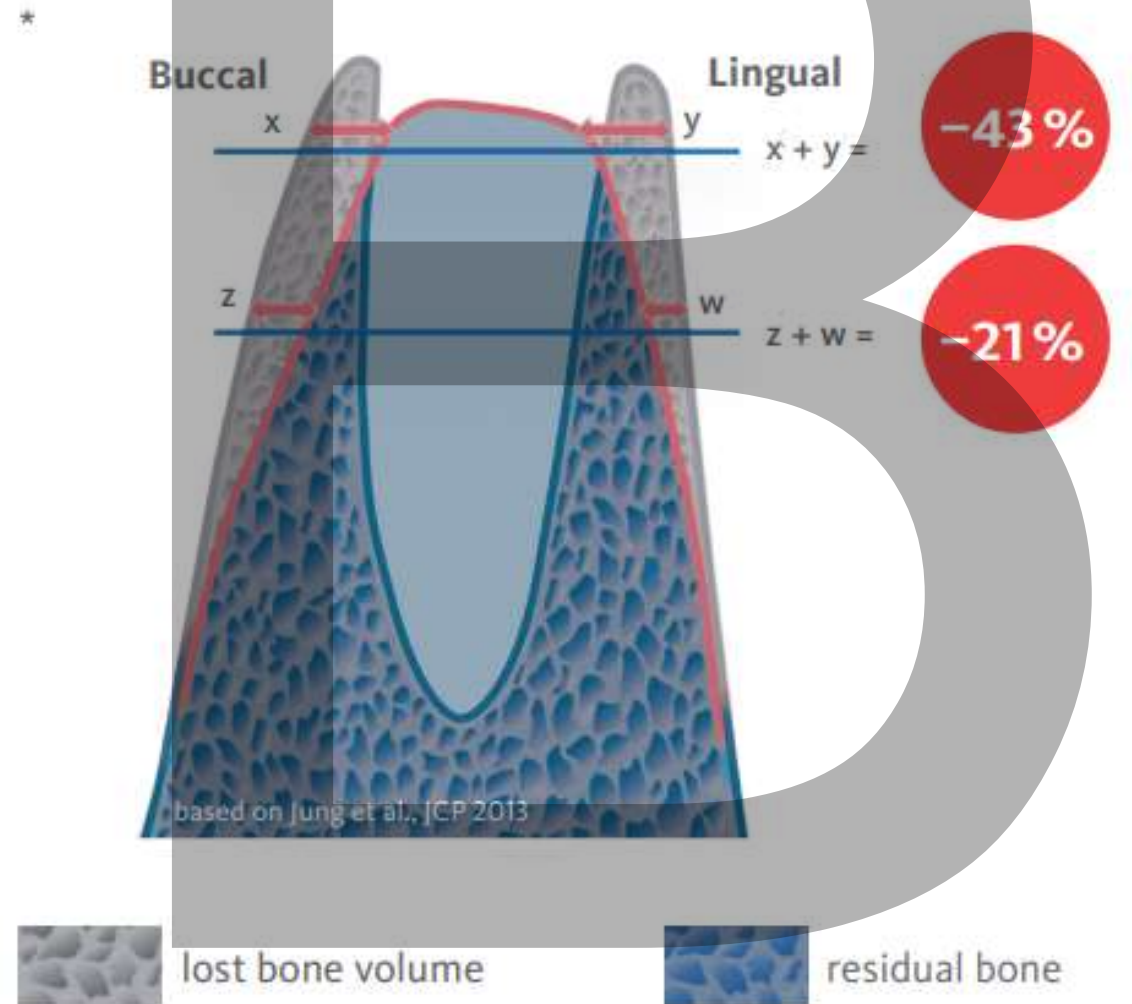
Extraction socket - healing

- Volume changes
- Importance of anatomy
- Type of procedure
(trauma, flap elevation...)
- Maximal bone volume required!
 - implantation
 - fixed / removable prosthesis

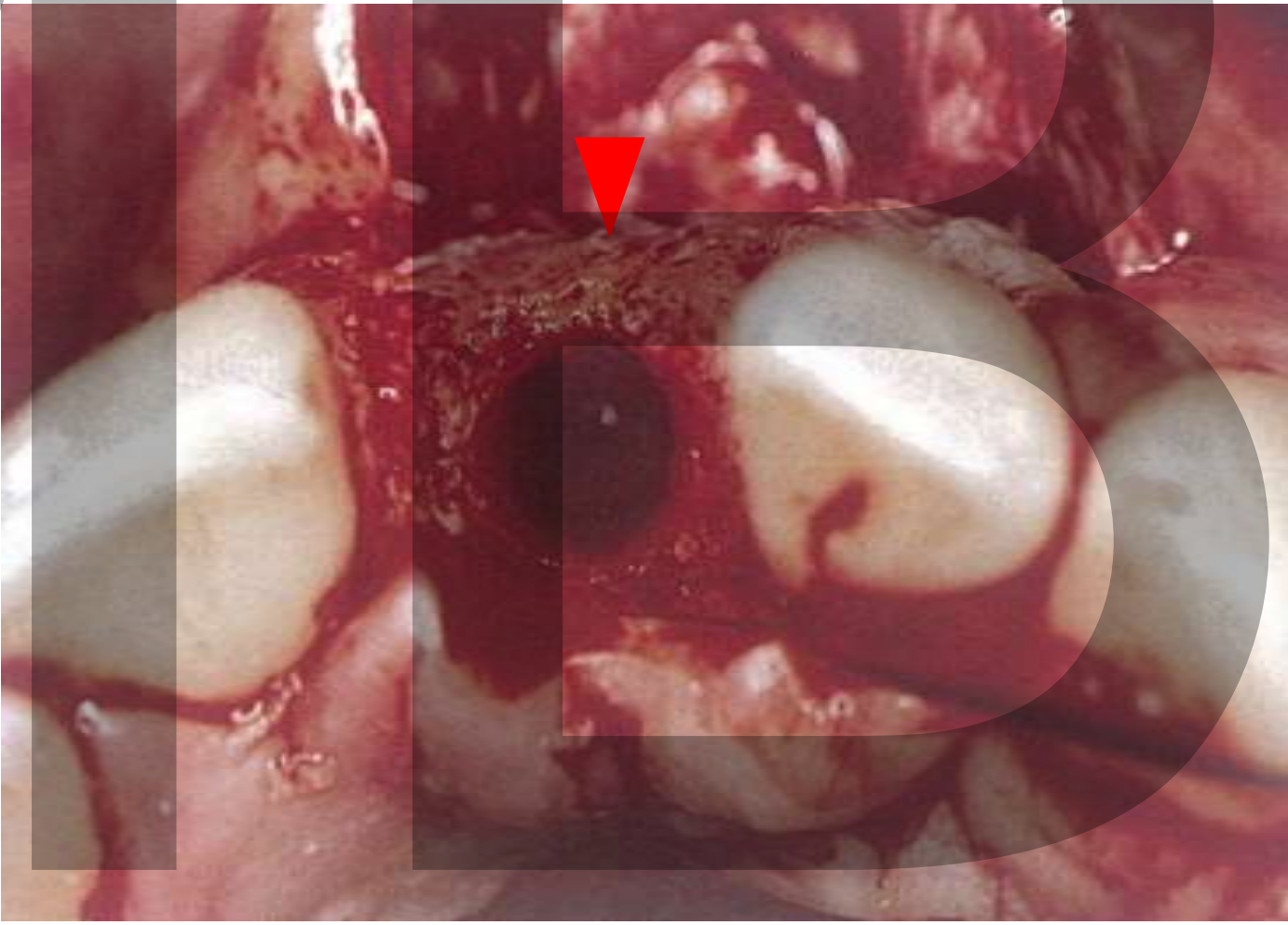




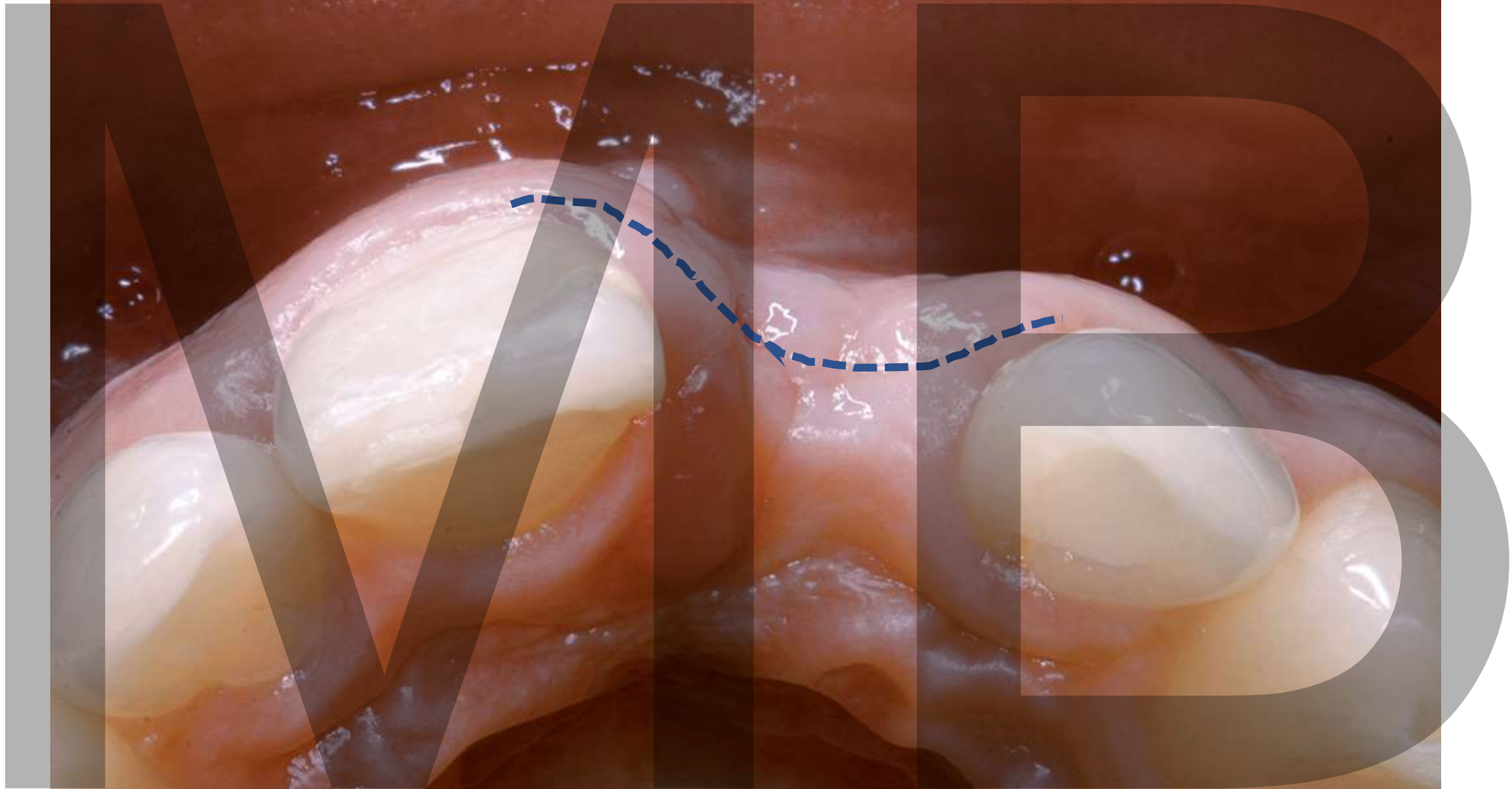
Bone resorption after extraction



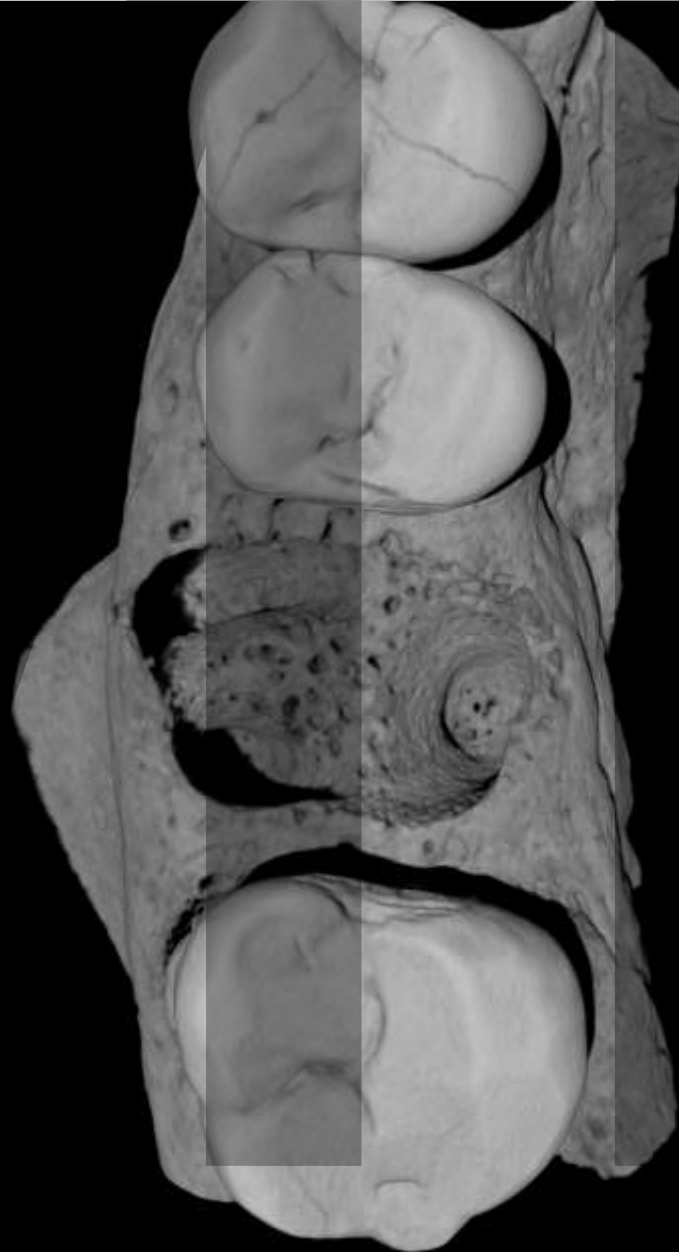
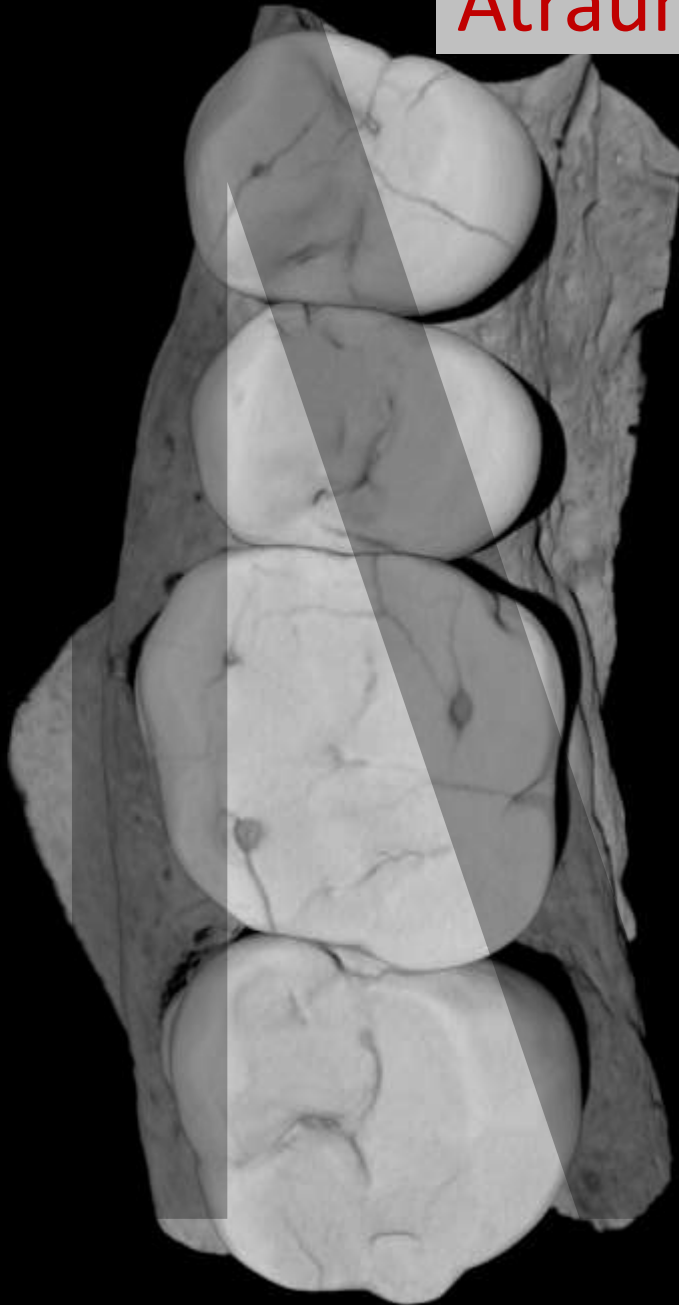
Dental implant: 1,5 – 2 mm of bone around the implant



MARBLE

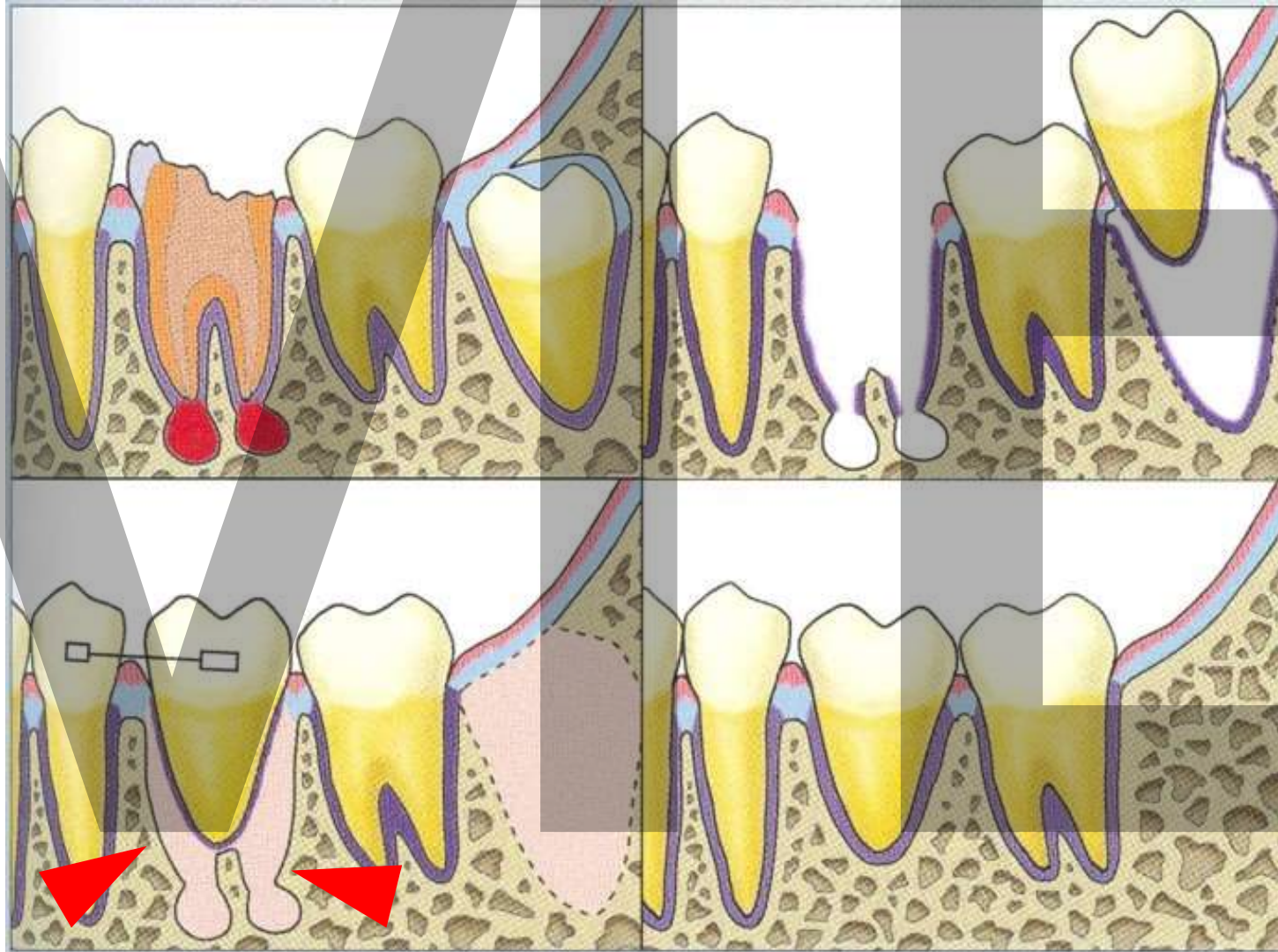


Atraumatic extraction and root separation...



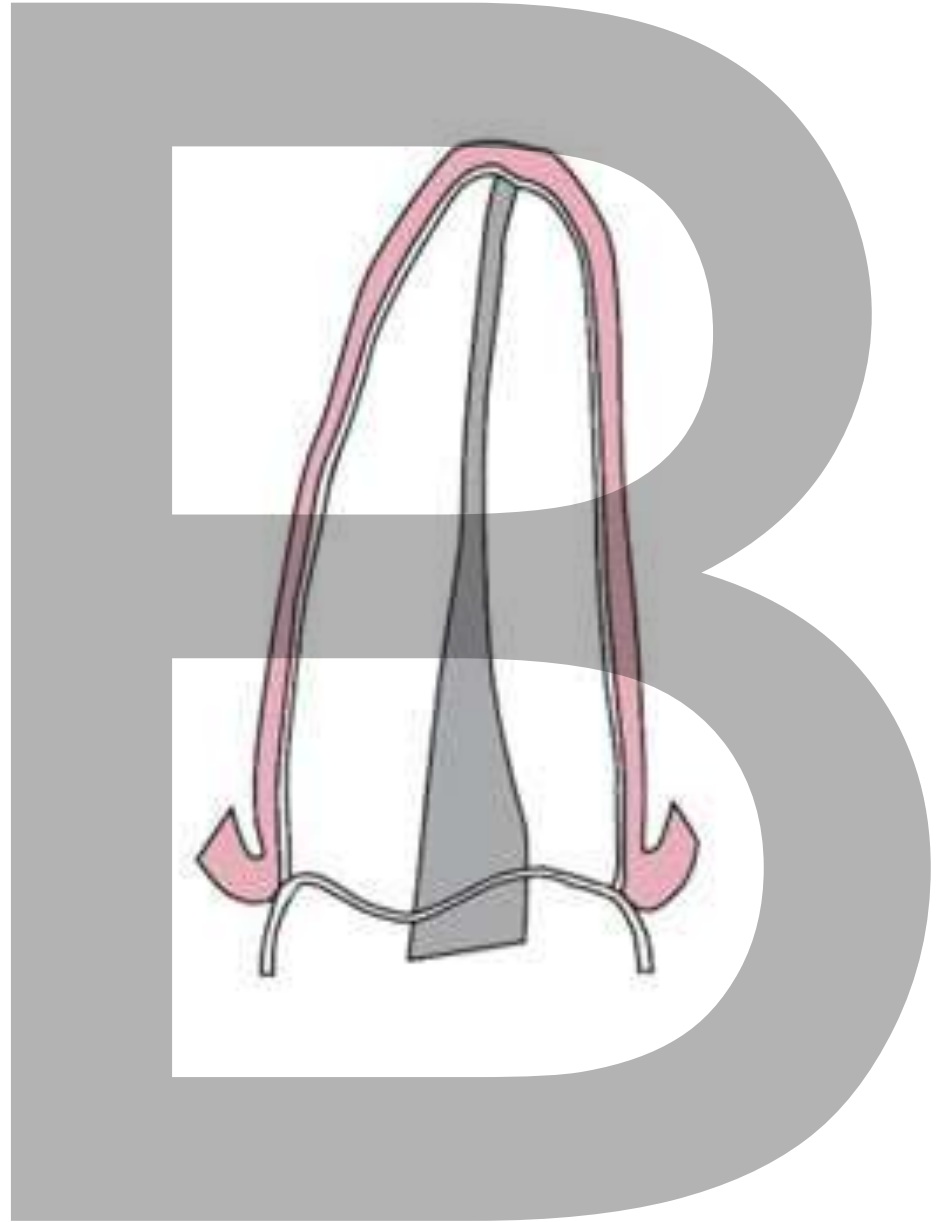
Cementum

- Barrier against resorption (cementoid)
- Orthodontics, autotransplantation, surgical extrusion



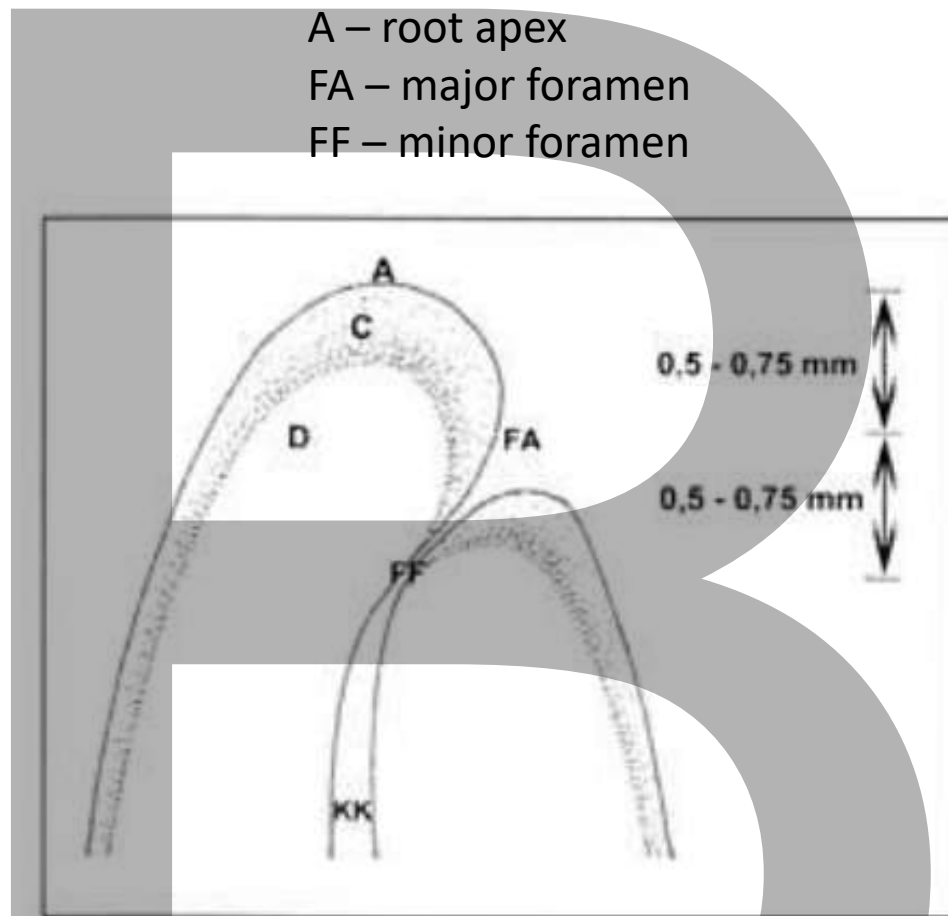
MM

Do you believe in this?



Root apex anatomy

- Critical for success of RCT
- Very often anatomically complicated
- Risk of complications



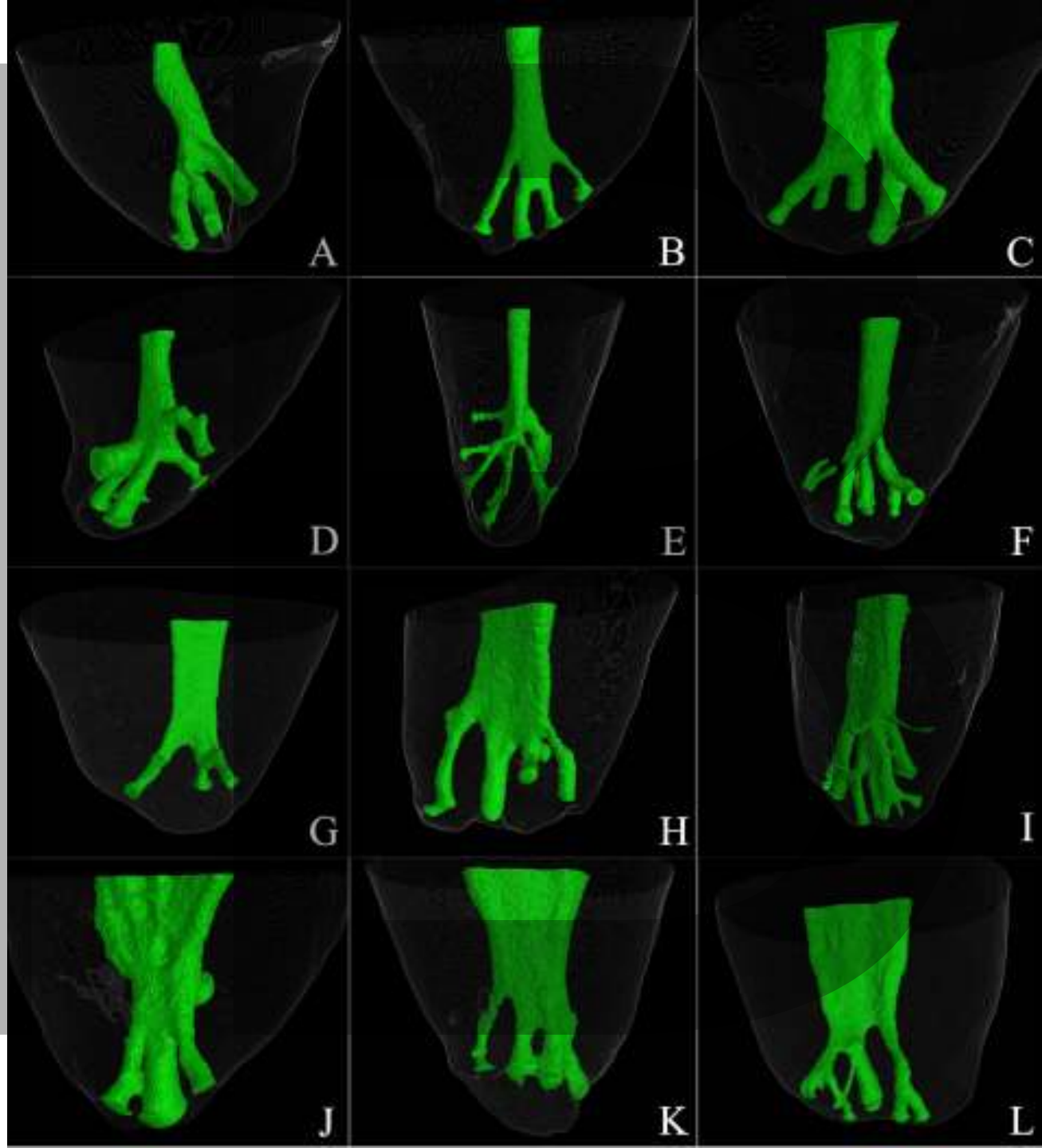
Obr. 5.5 Apikální struktury: C – cement, D – dentin, KK – kořenový kanálek, FF – foramen physiologicum, FA – foramen anatomicum, A – anatomický apex, vzdálenost mezi apexem a foramen anatomicum, vzdálenost mezi foramen anatomicum a foramen physiologicum.

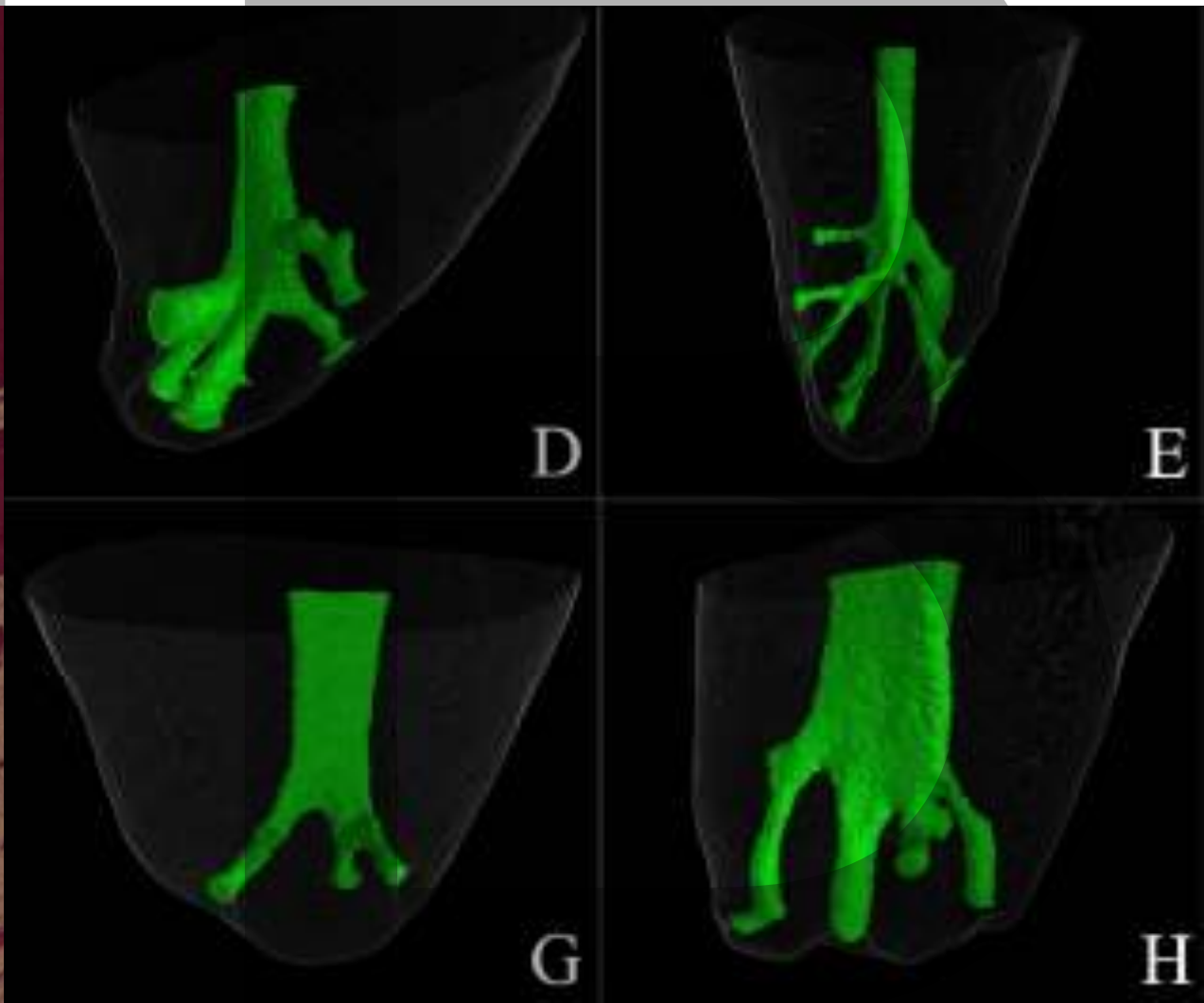
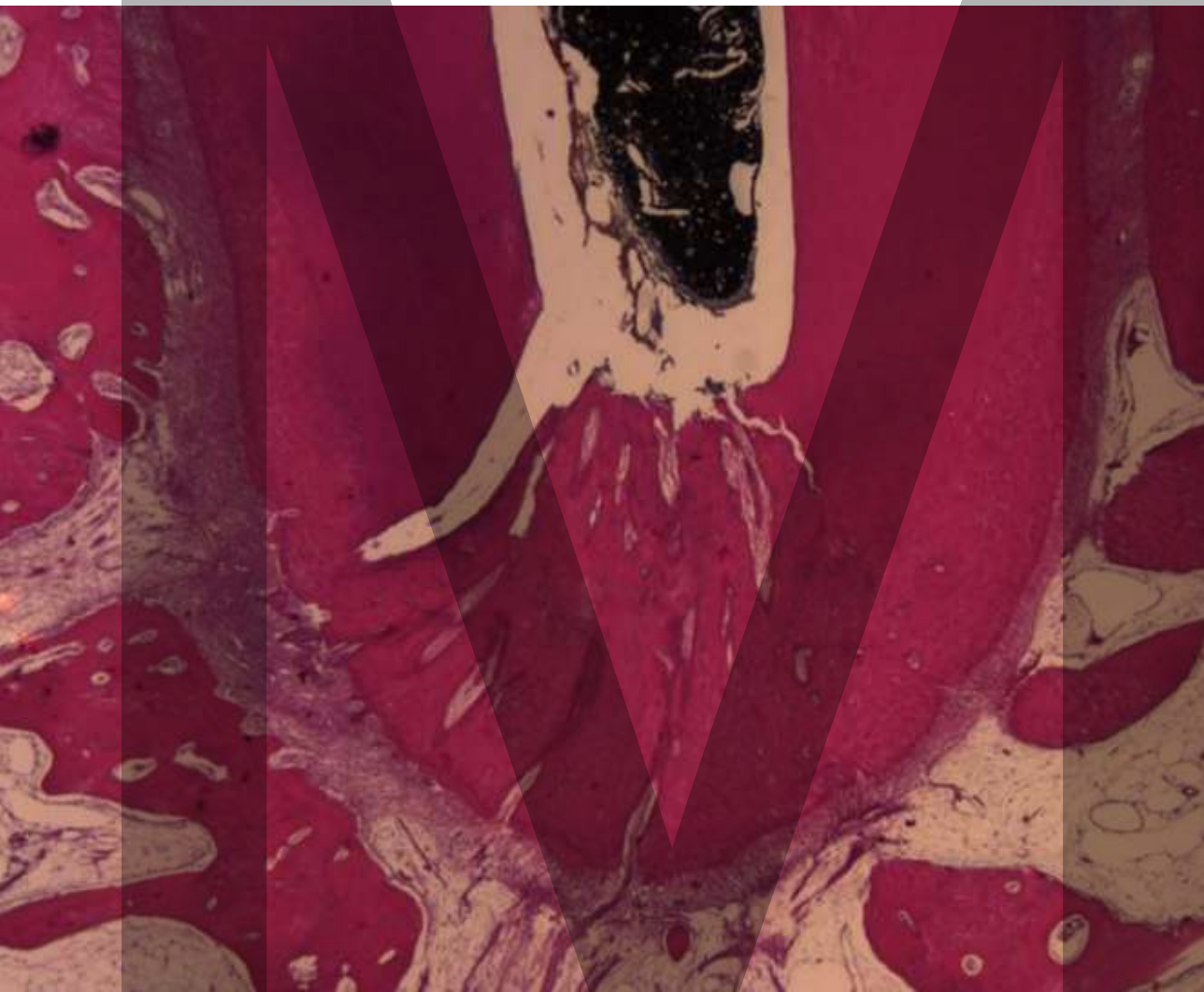
Root apex anatomy

3D PREPARATION

IRRIGATION

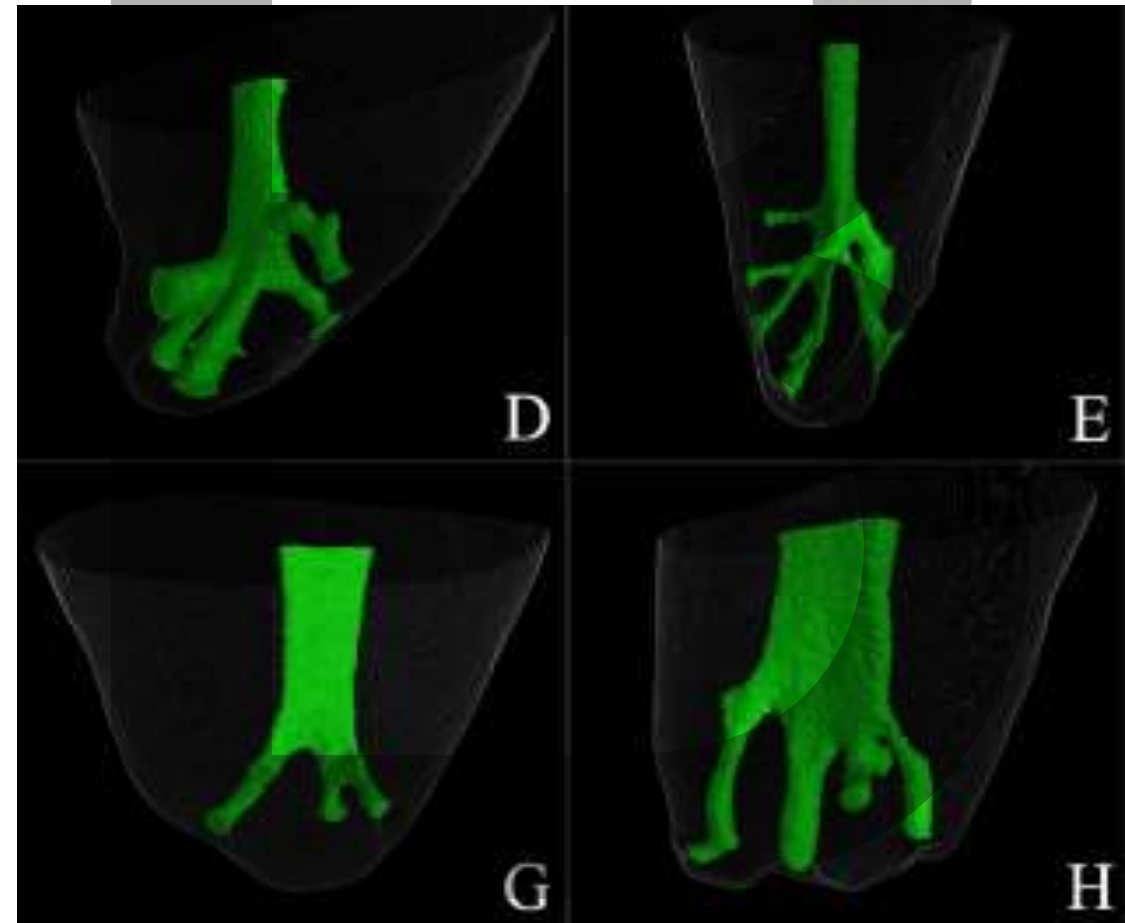
3D OBTURATION



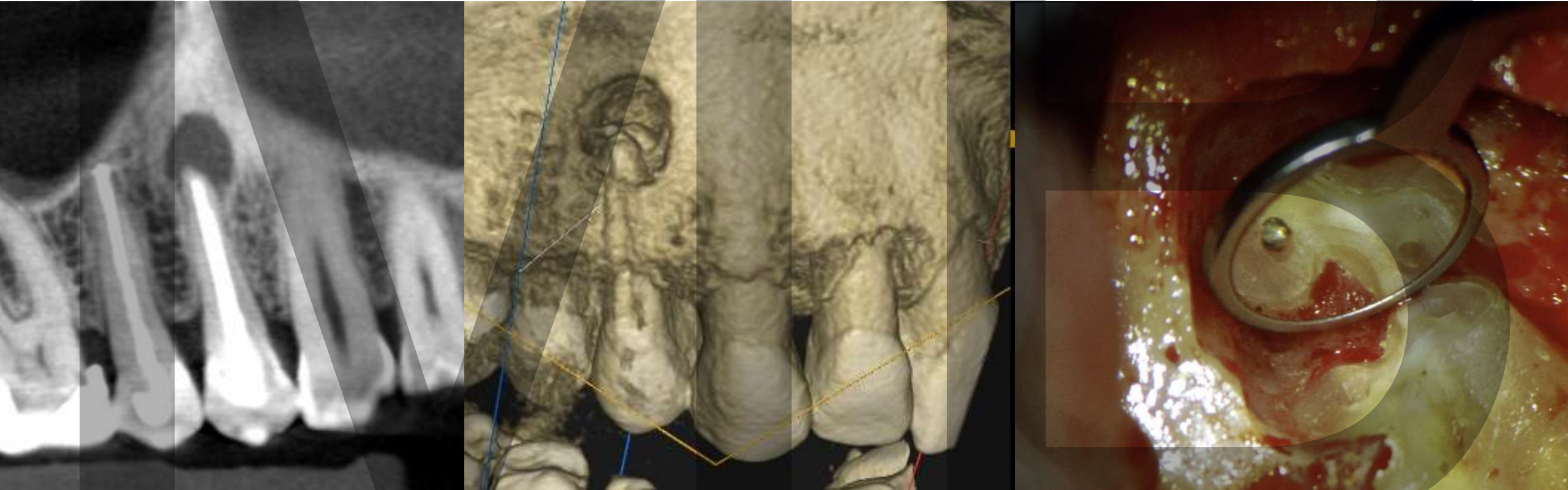


Anatomy as a potential reason for treatment failure

- 2-3 mm apex
- Root end resection (3 mm)
- Preparation
- Obturation with CS material



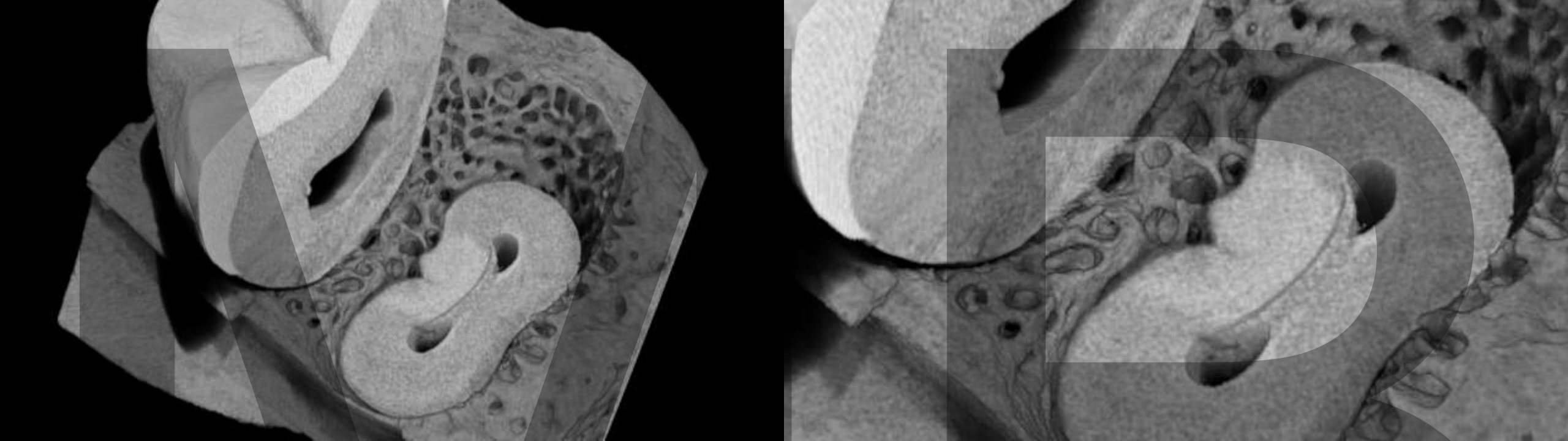
Root apex surgery (apicoectomy)



very often not indicated...

Refferal:
„37 - root end surgery.
Thank you!“

Illustration image:
American Association of Endodontists
G. Blasquez, A Concise Guide to Pathology
within Endodontics



martin.bartos@lf1.cuni.cz

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First Faculty of Medicine Charles University