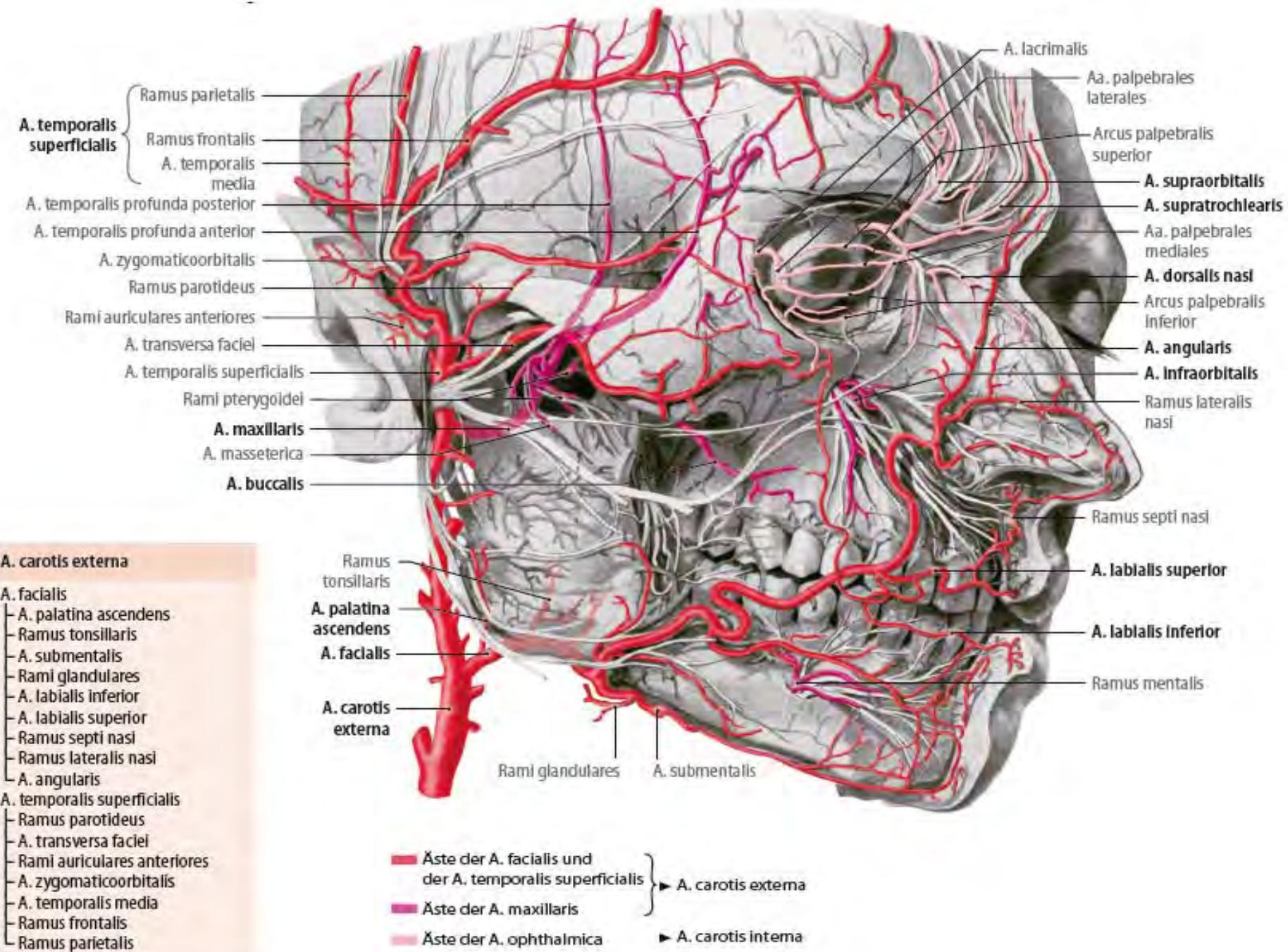
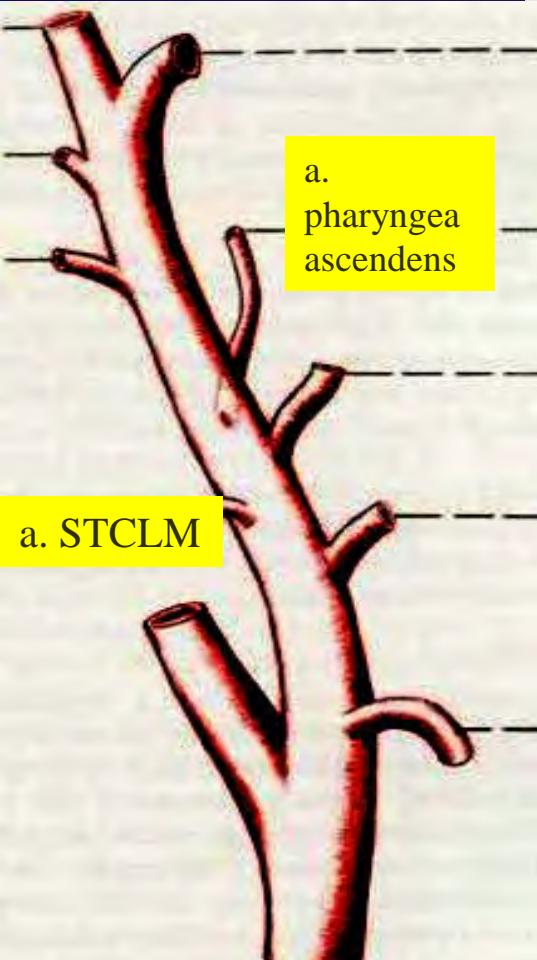


**External carotid
artery, its branches
and anastomoses**

**TOPOGRAPHIC
REGIONS
and SPACES**



Arteria carotis externa ACE

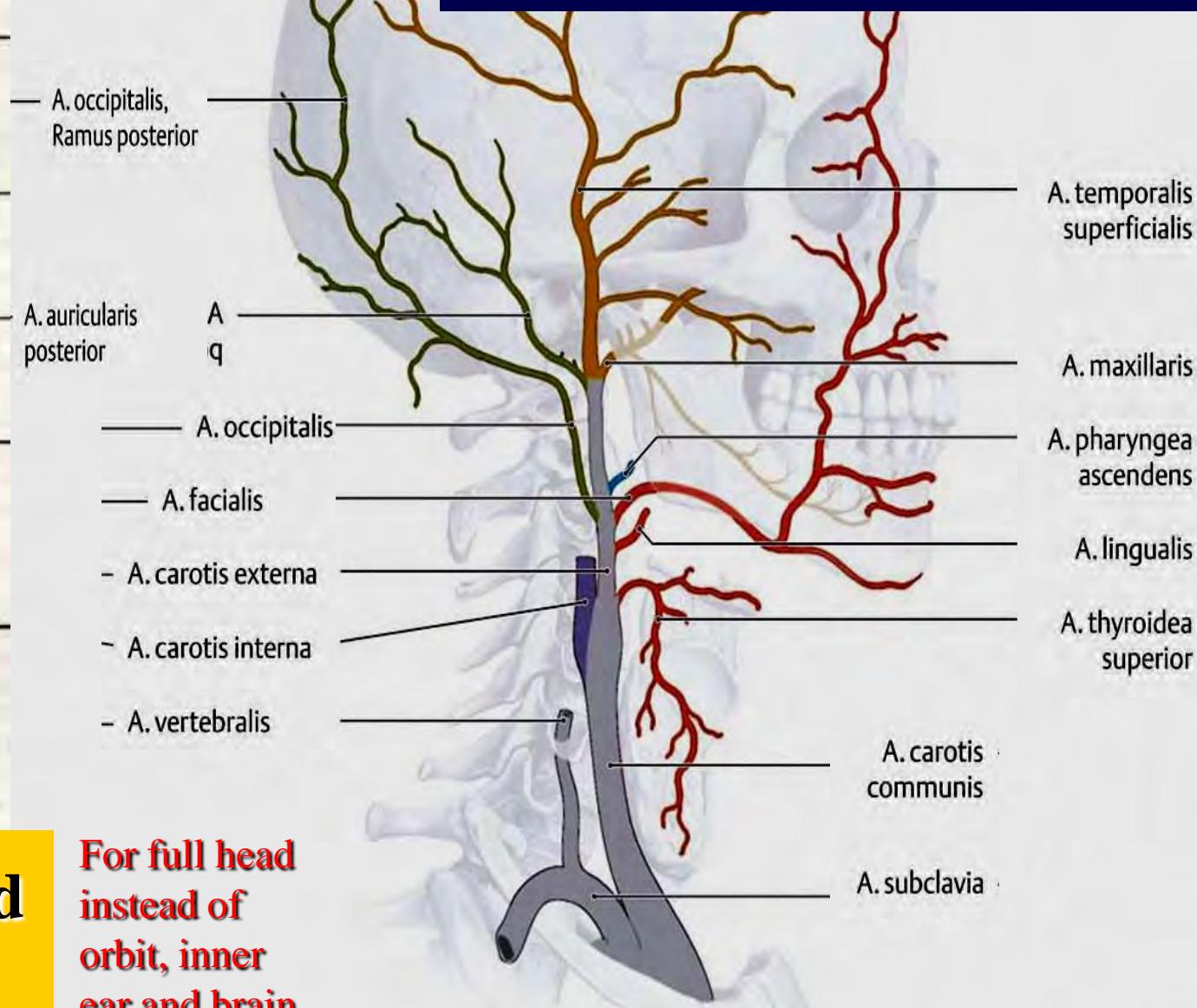


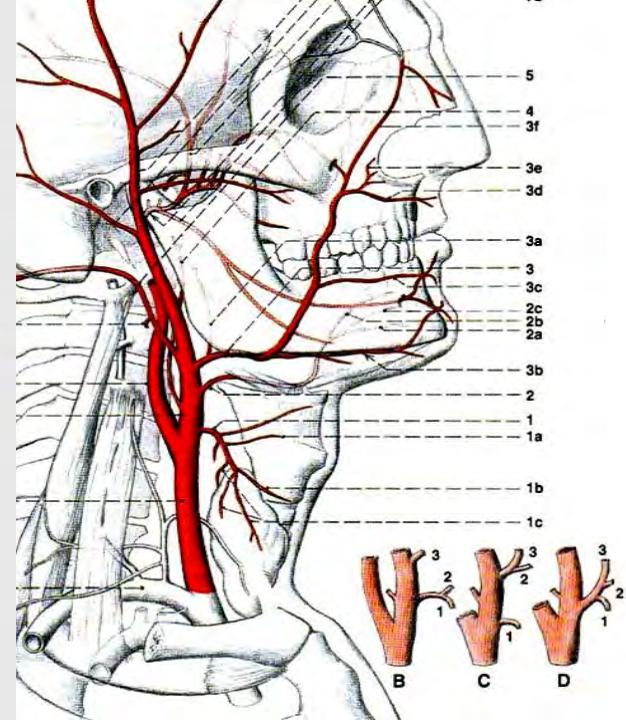
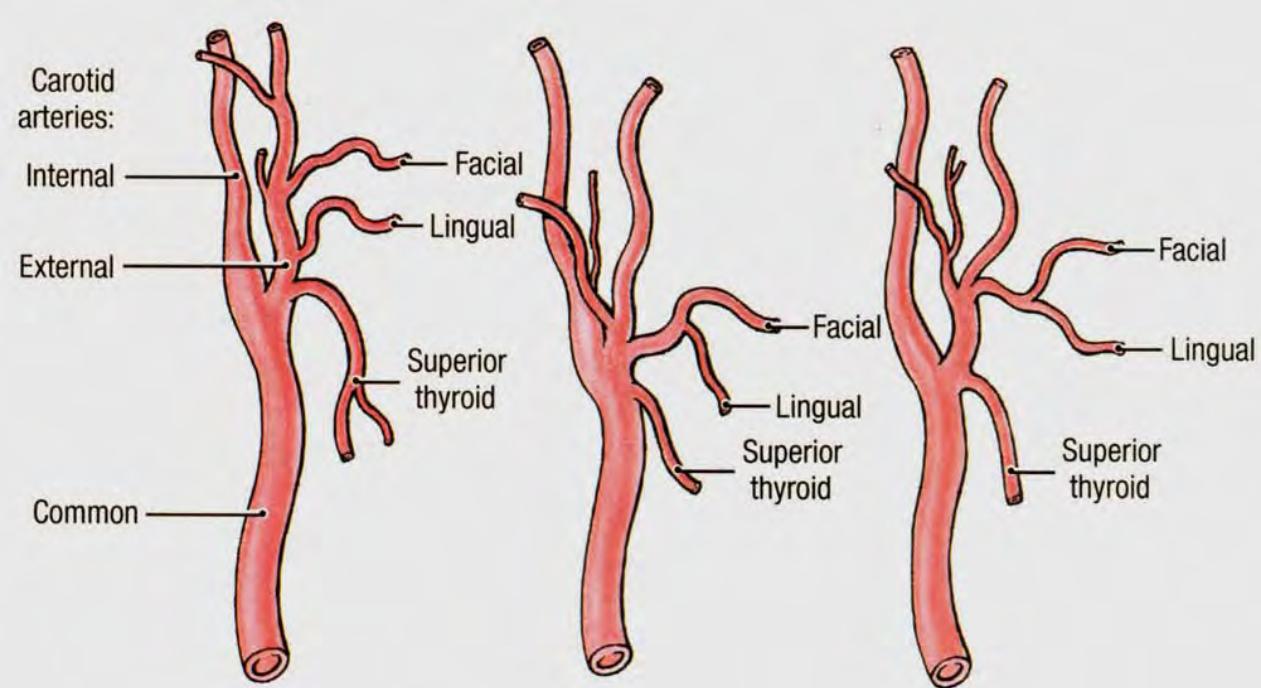
External carotid artery ECA

For full head instead of orbit, inner ear and brain

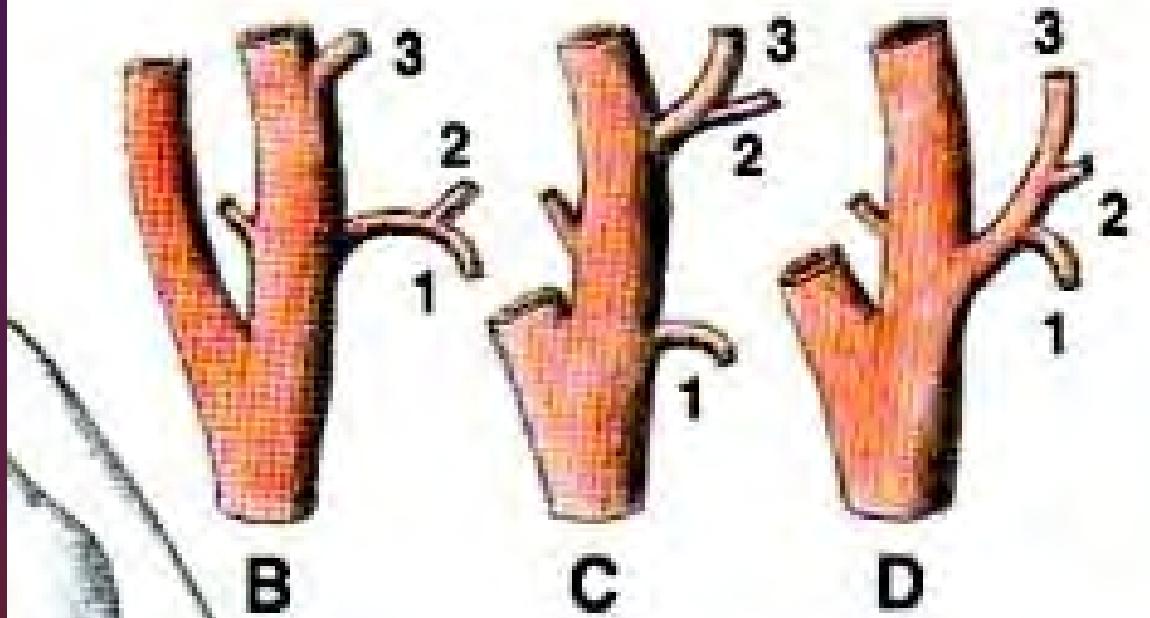
branches:

Temporalis superficialis, maxillaris,
thyroidea sup., lingualis, pharyngea
ascendens, auricularis posterior, occipitalis





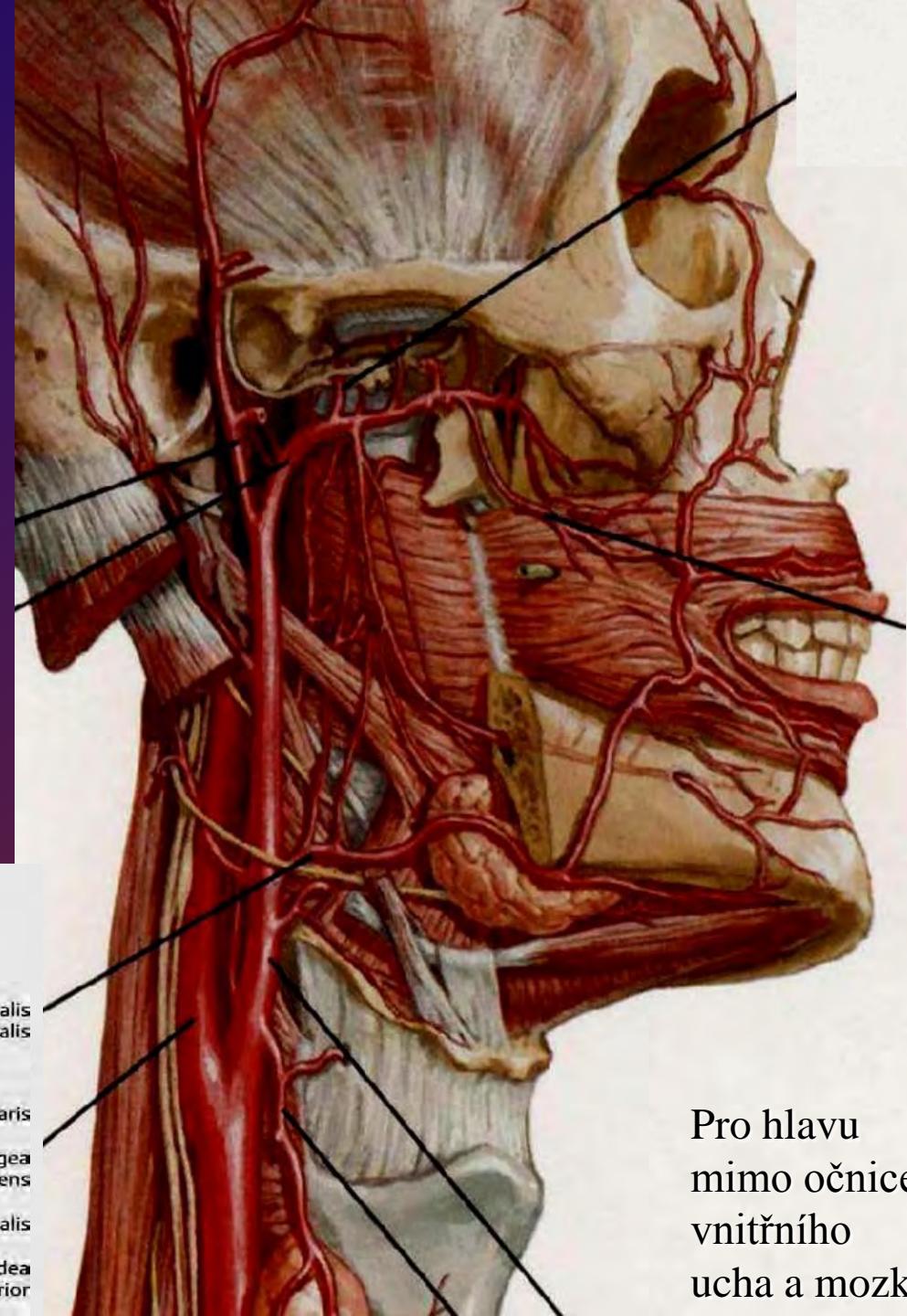
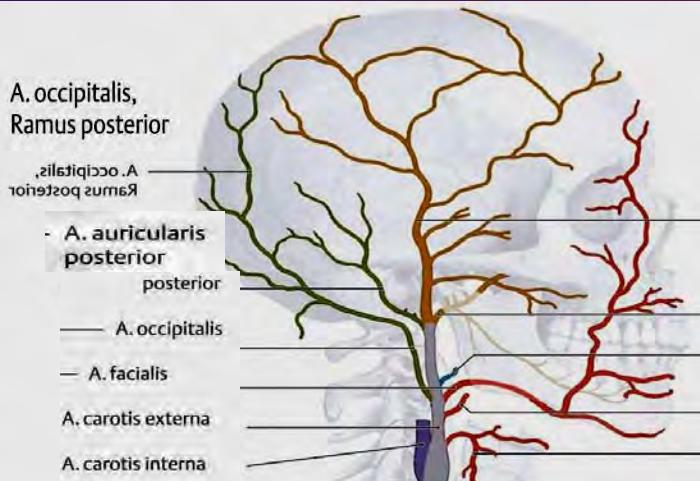
Variety Varieties



External carotid artery ECA

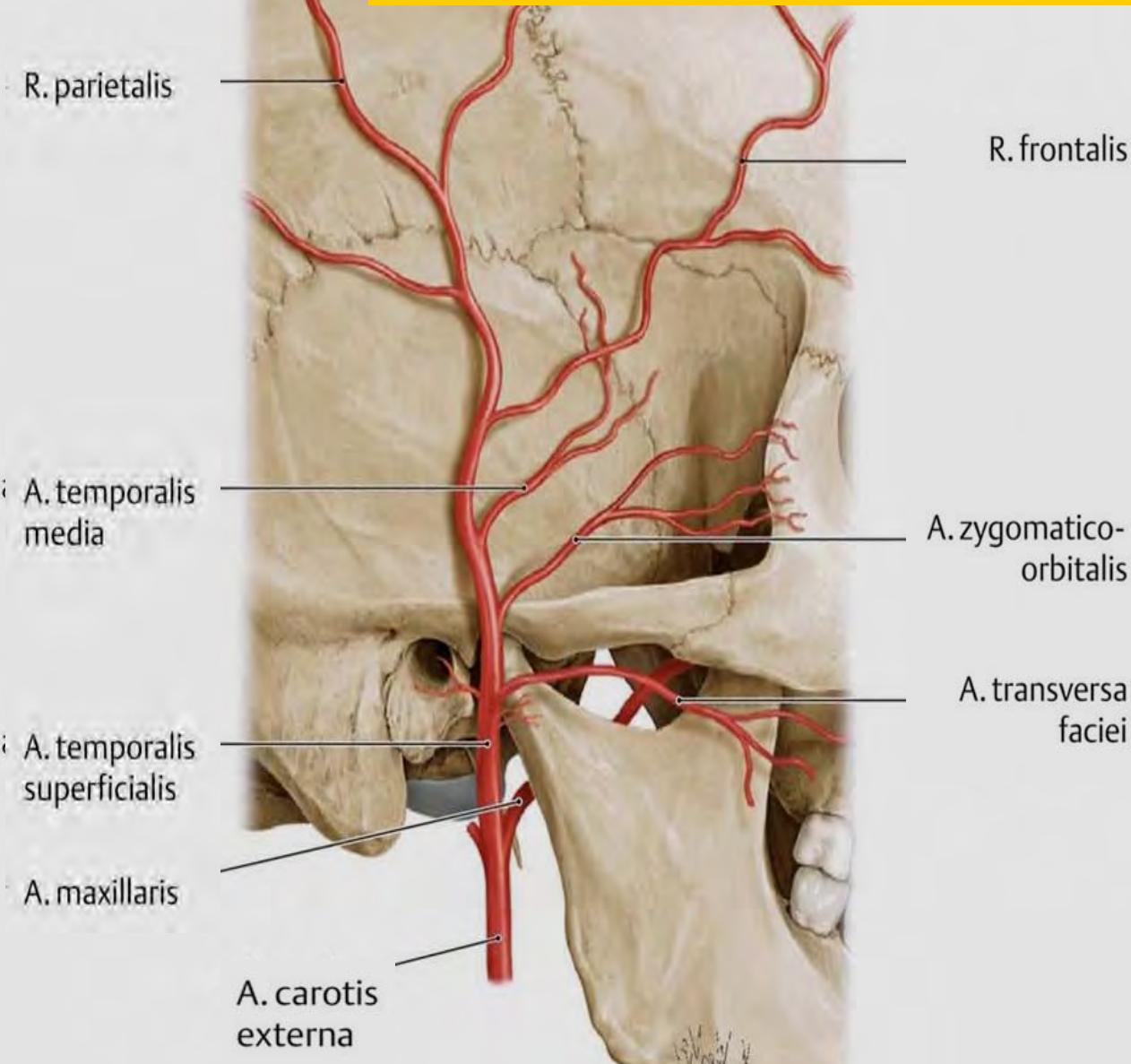
Anterolaterally – STCLM,
n. XII., glandula parotis and
branches from n. VII., fascia
and skin

Medially – pharyngeal
wall, ICA, m.
stylopharyngeus a ramus
pharyngealis n. X.



Pro hlavu
mimo očnice
vnitřního
ucha a mozku

Superficial temporal artery



for gl. parotis, TMJ, m. orbicularis oculi, m. temporalis;

- rr. glandulares
- a. transversa faciei
(pro mimické svaly)
- rr. auriculares anteriores
(capsule TMJ)
- a. zygomatico-orbitalis
- a. temporalis media
- r. frontalis
- r. parietalis

A. maxillaris

Pars retromandibularis

- A. auricularis profunda
- A. tympanica anterior
- A. alveolaris inferior
 - Rami dentales
 - Rami peridentales
 - Ramus mentalis
 - Ramus mylohyoideus
- A. meningea media (Abb. 2.164)
[A. pterygomeningea]

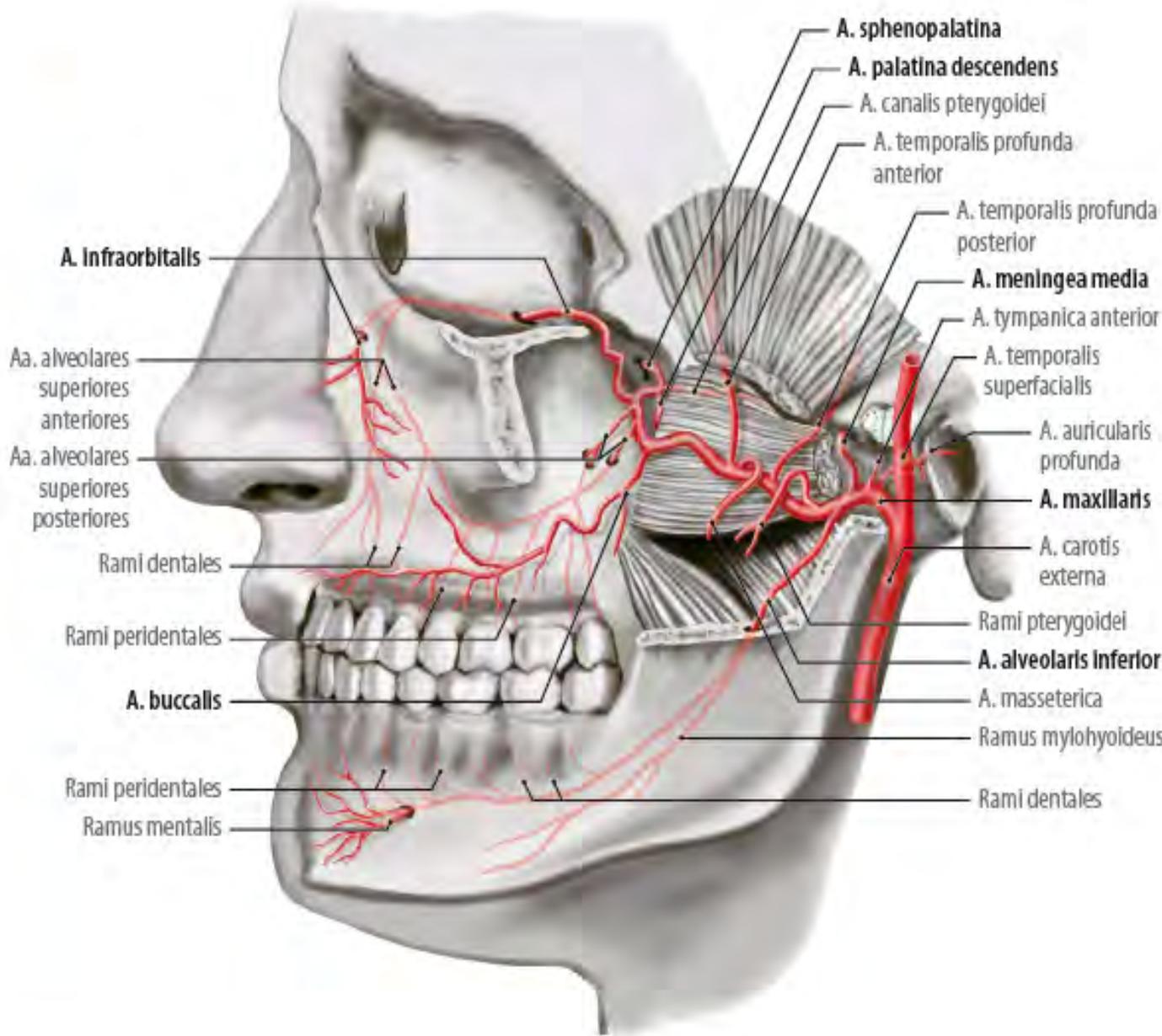
Pars intermuscularis

- A. masseterica
- A. temporalis profunda anterior
- A. temporalis profunda posterior
- Rami pterygoidei
- A. buccalis

Pars sphenopalatina

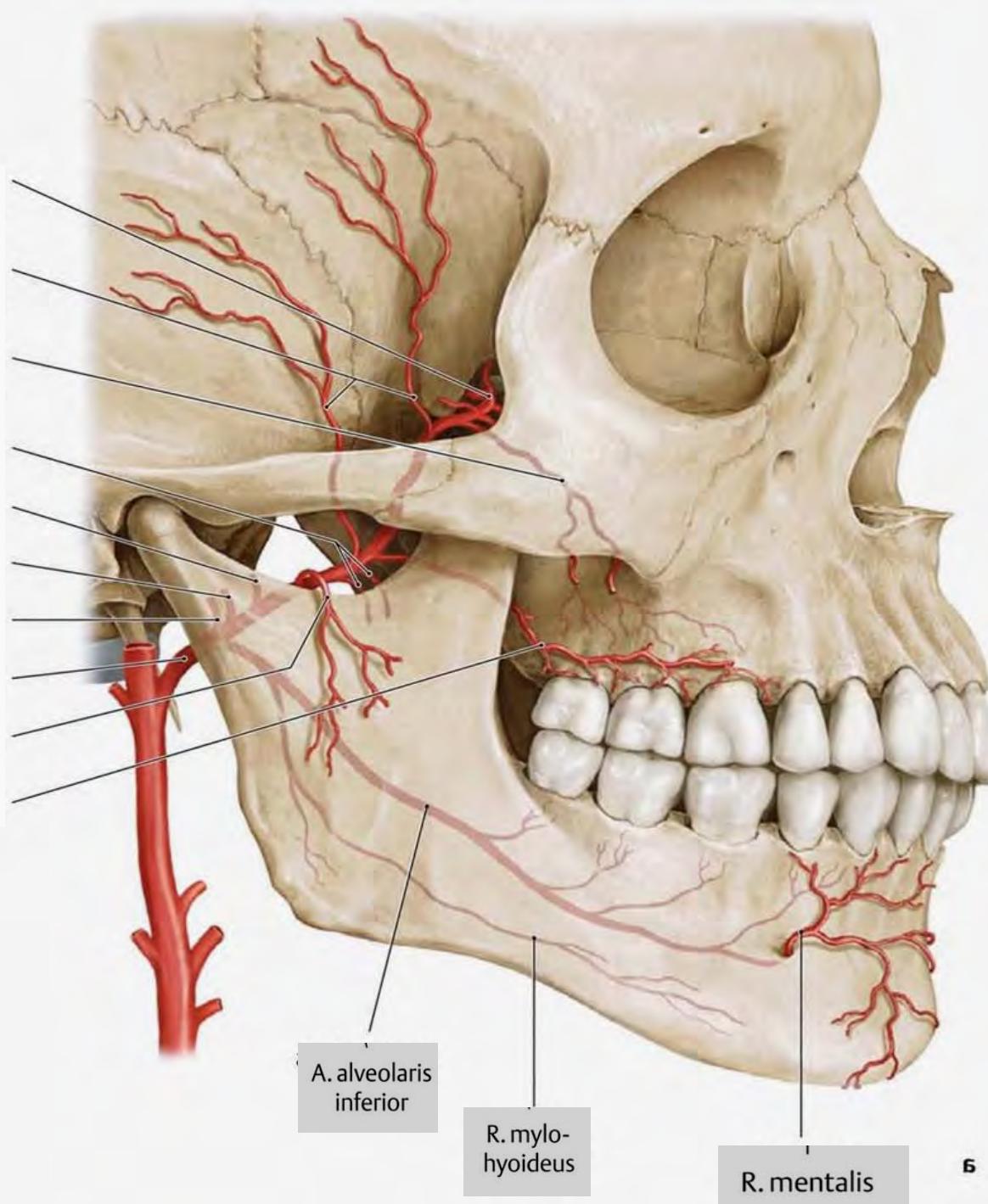
- A. alveolaris superior posterior
 - Rami dentales
 - Rami peridentales
- A. infraorbitalis
 - Aa. alveolares superiores anteriores
 - Rami dentales
 - Rami peridentales
 - A. canalis pterygoidei
 - A. palatina descendens
 - A. sphenopalatina (Abb. 2.95)

[] nicht sichtbar



Arteria maxillaris – branches

- A. sphenopalatina
- Aa. temporales profundaes
- A. alveolaris superior posterior
- Rr. pterygoidei
- A. meningea media
- A. auricularis profunda
- A. tympanica anterior
- A. maxillaris
- A. masseterica
- A. buccalis



Three segments:
Retromandibular
Pterygoid
Pterygopalatine



Maxillary artery – retromandibular part

A. sphenopalatina

Aa. temporales profundae

A. alveolaris superior posterior

Rr. pterygoidei

A. meningea media

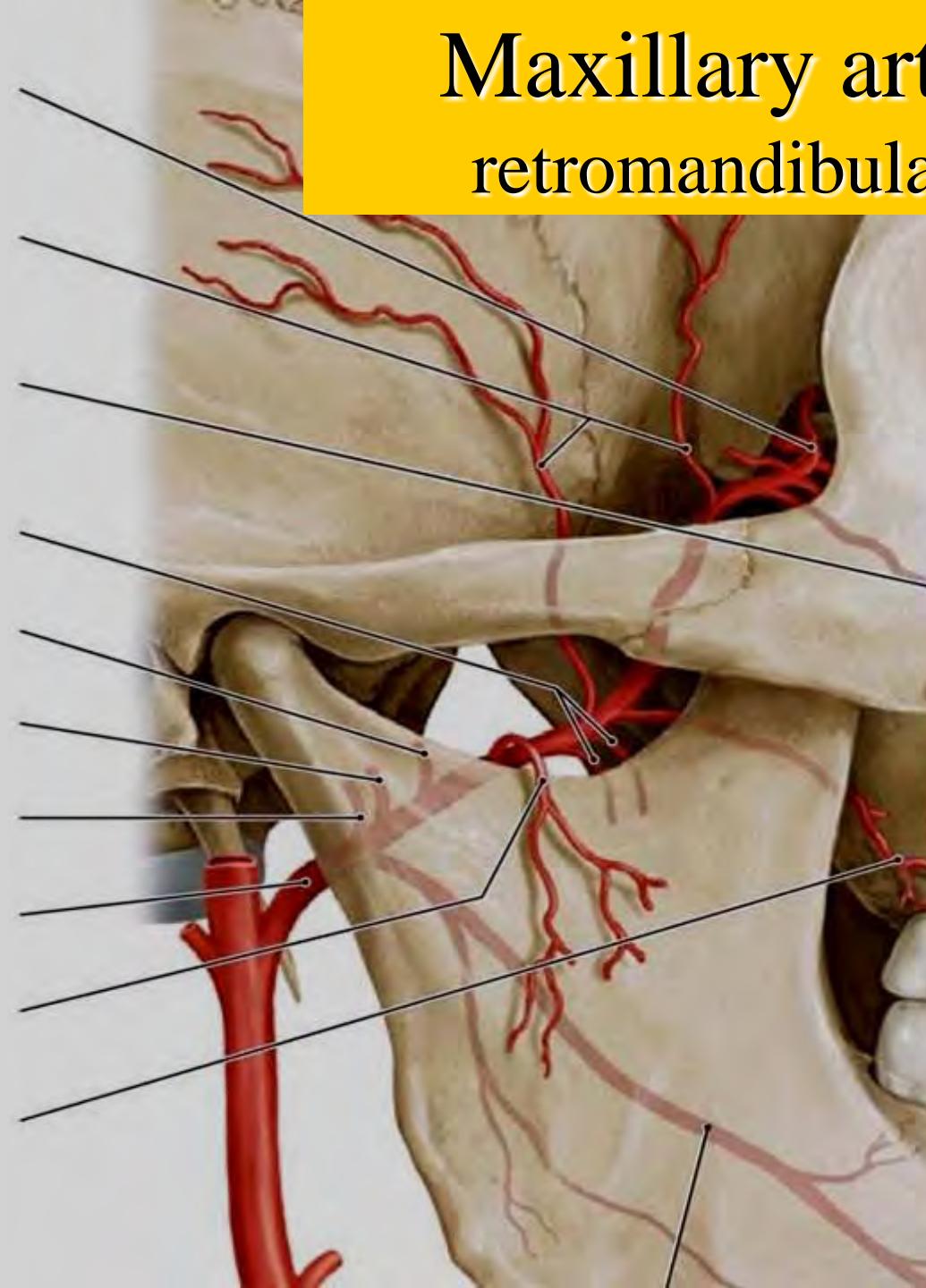
A. auricularis profunda

A. tympanica anterior

A. maxillaris

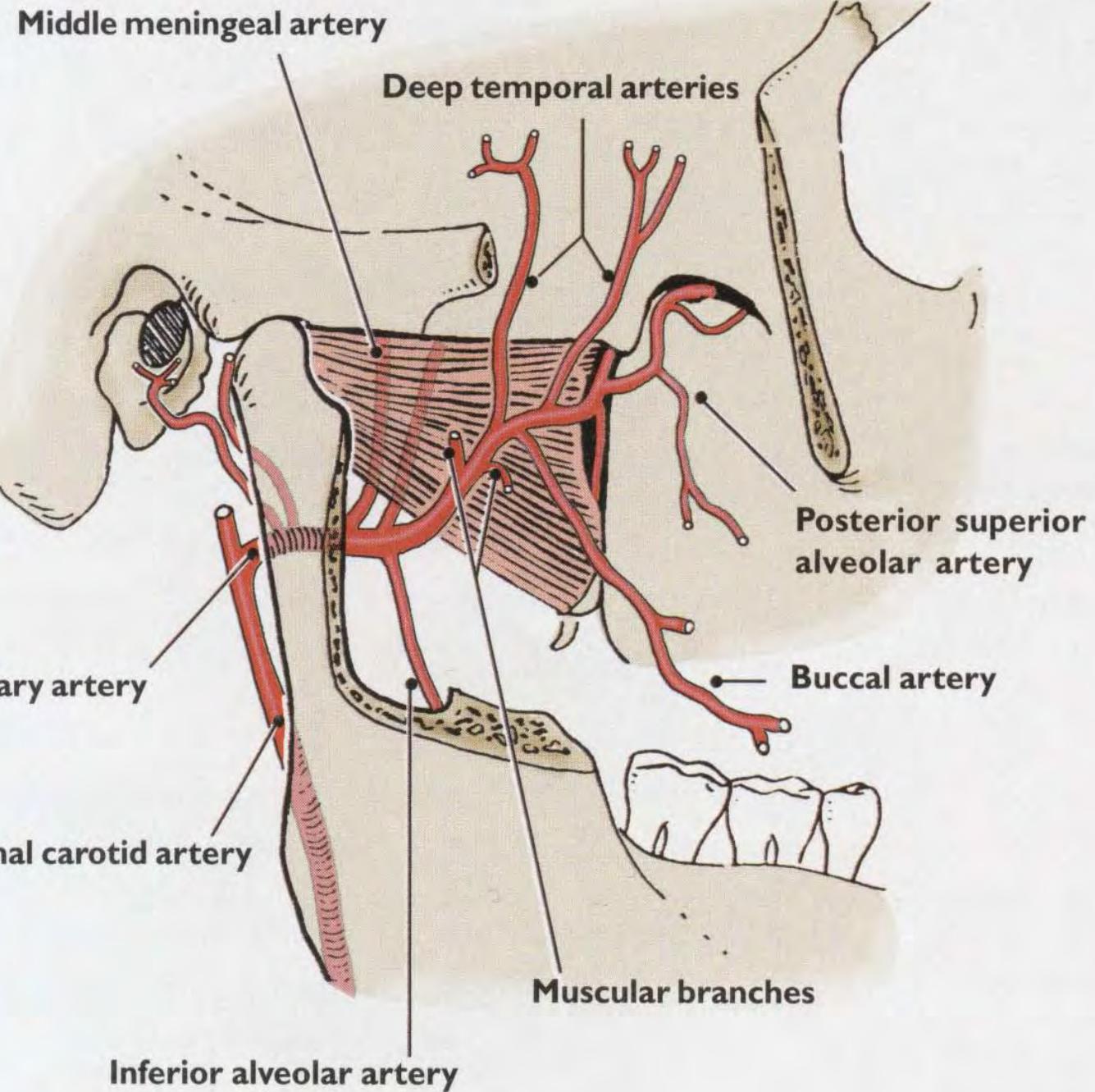
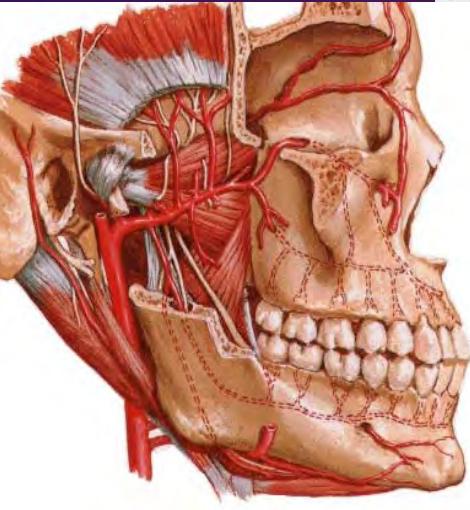
A. masseterica

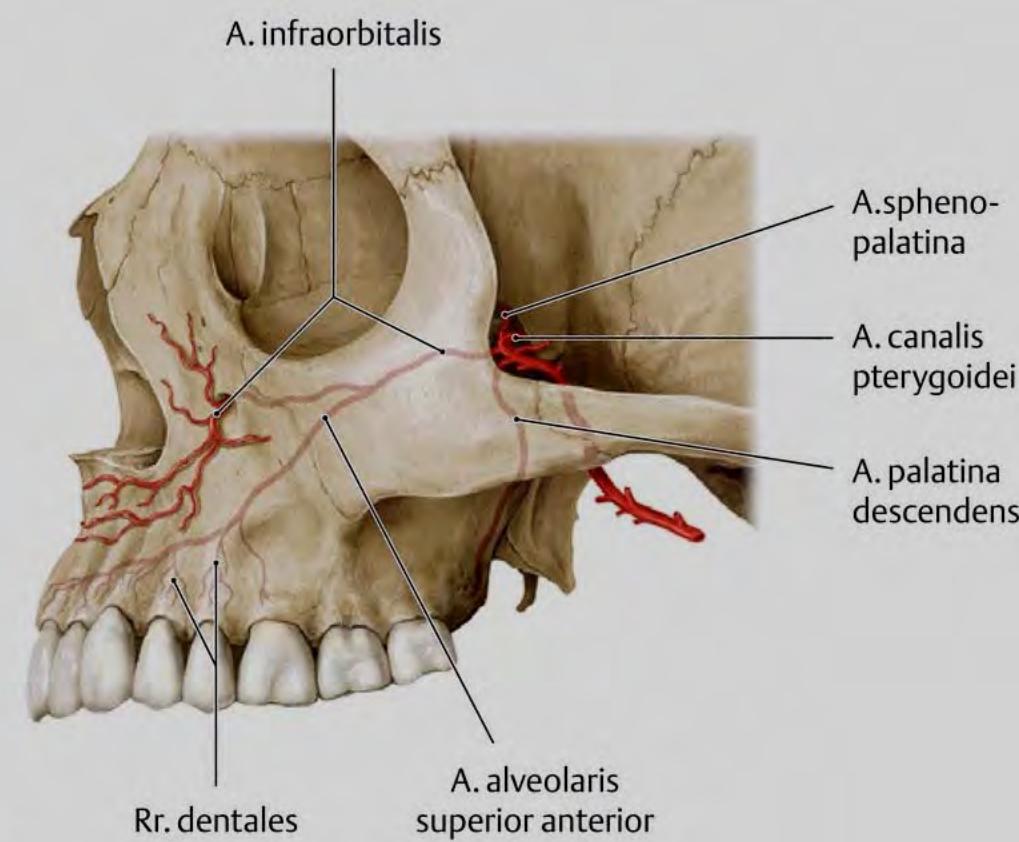
A. buccalis



- a. auricularis profunda
- a. tympanica anterior
- a. meningea media
- a. alveolaris inferior

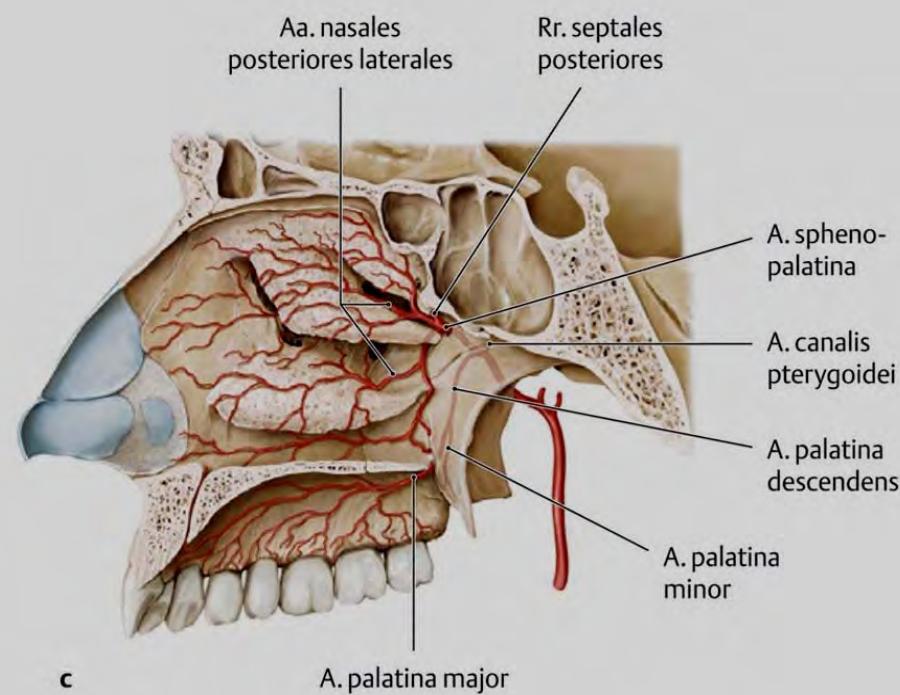
Maxillary artery – pterygoid part

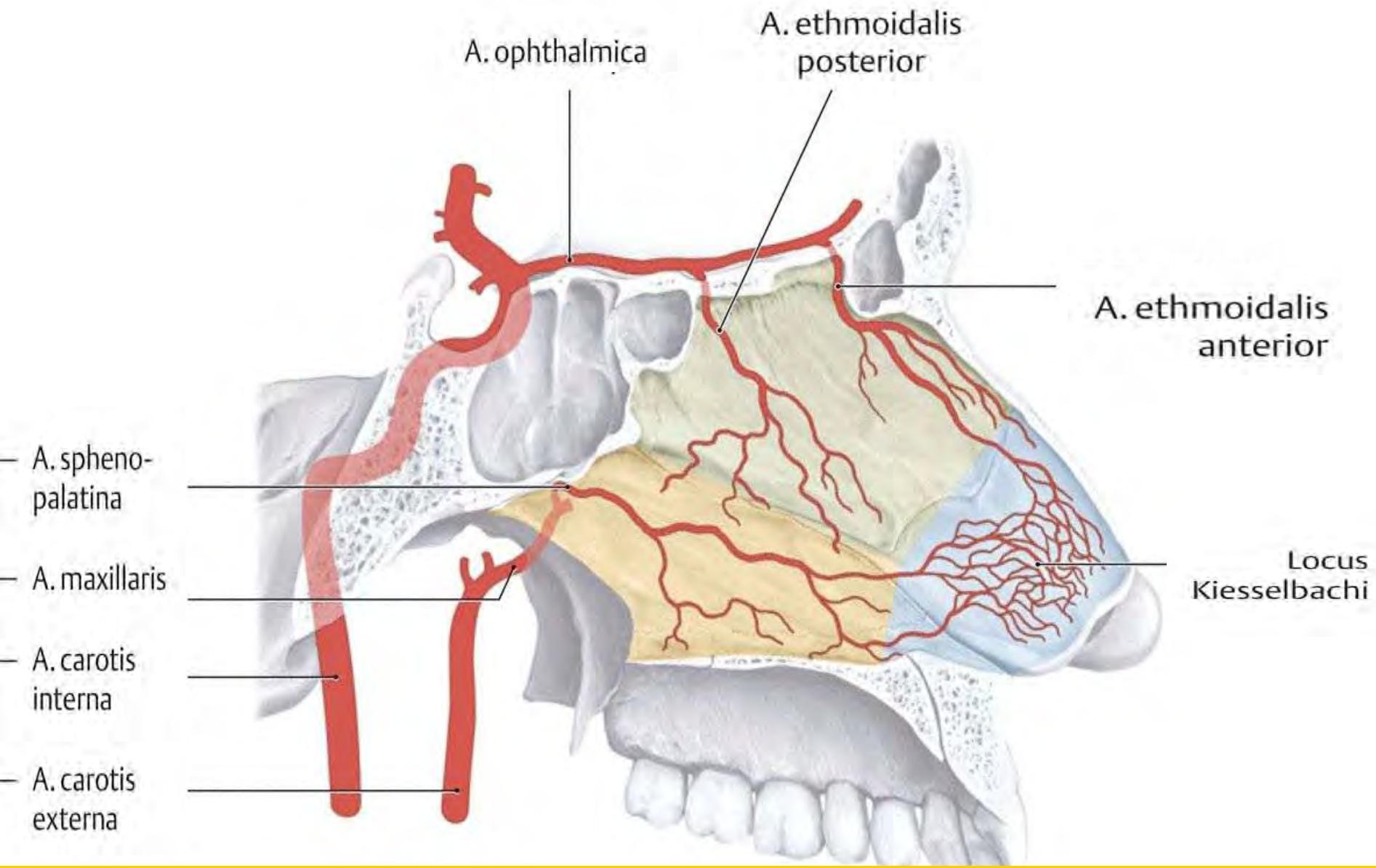




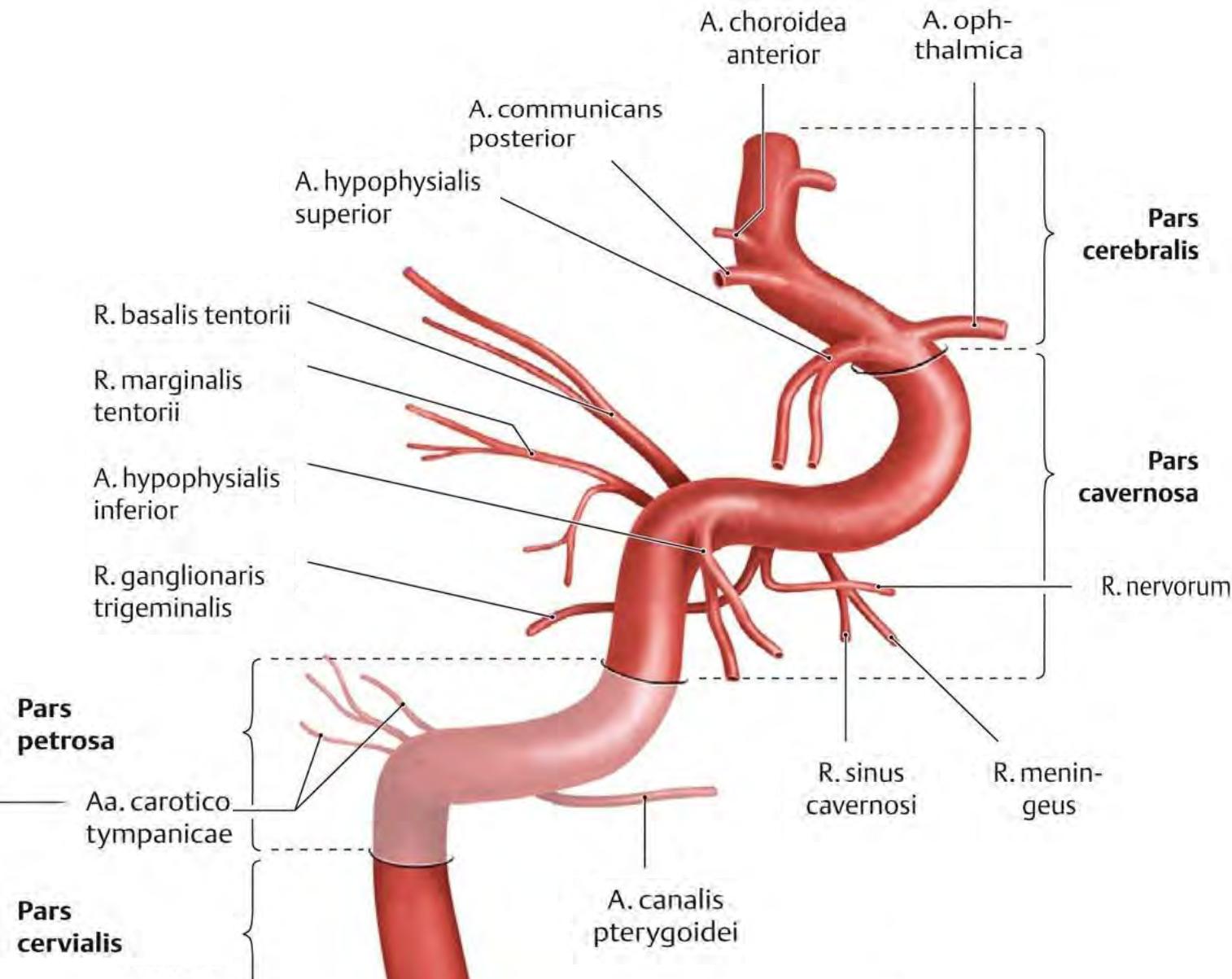
- Superior posterior alveolar a.
- Infraorbital a.
- Palatine descendens a.:
 - a. palatina major et minores
 - a. canalis pterygoidei
- a. sphenopalatina:
 - a. nasales posteriores laterales et nasales posteriores septales

Maxillary artery – branches from pterygopalatinous part

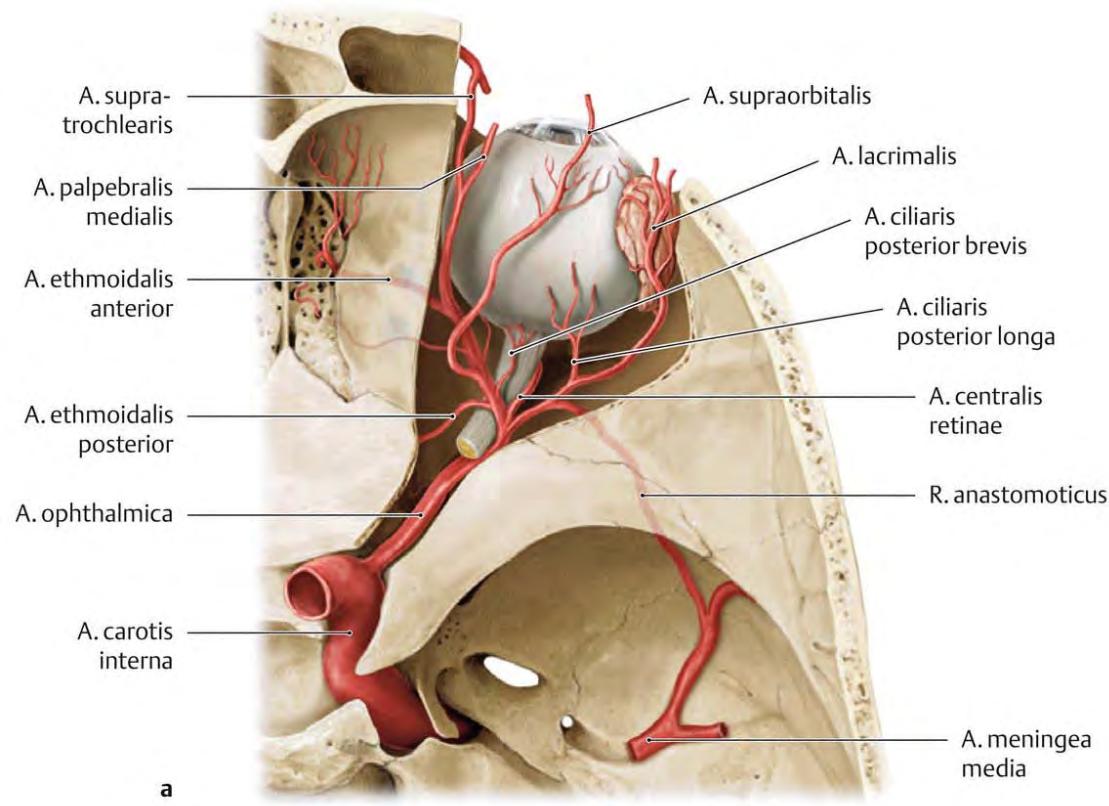




Anastomoses between maxillary artery and ACI on nasal septum

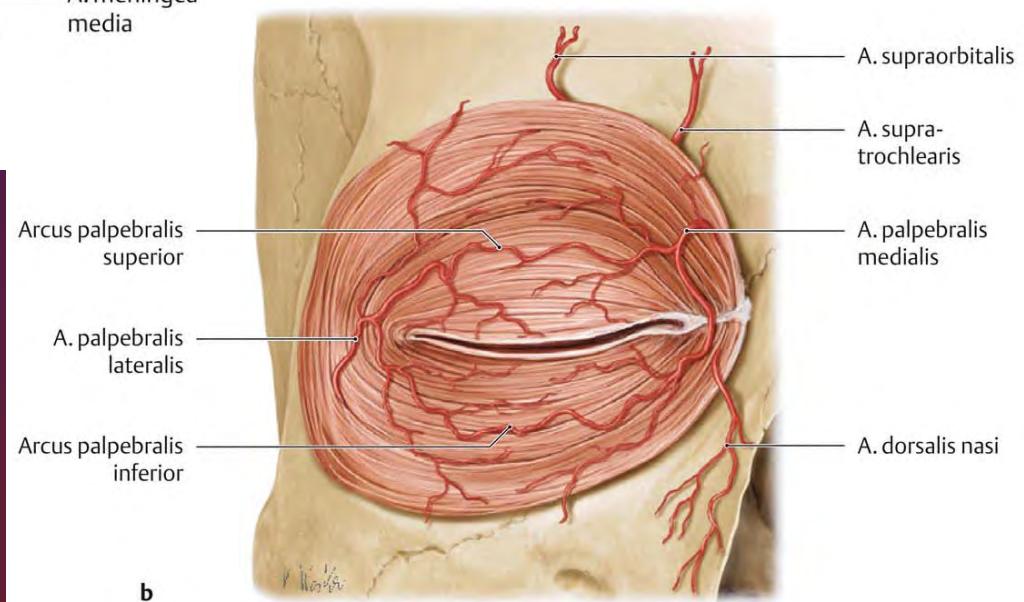


Internal carotid artery – intracranial
branches



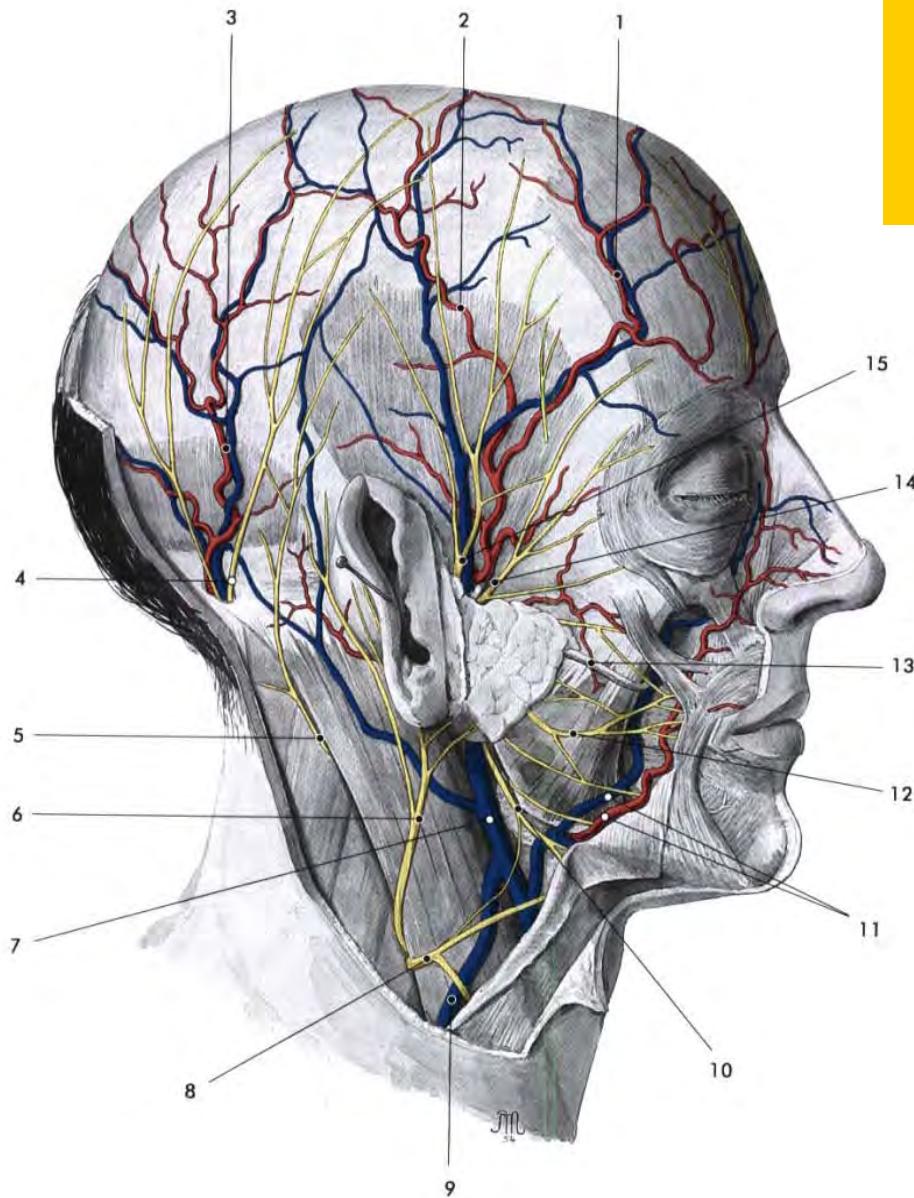
B A. ophthalmica

Ophtalmic artery



B A. ophthalmica

Facial artery



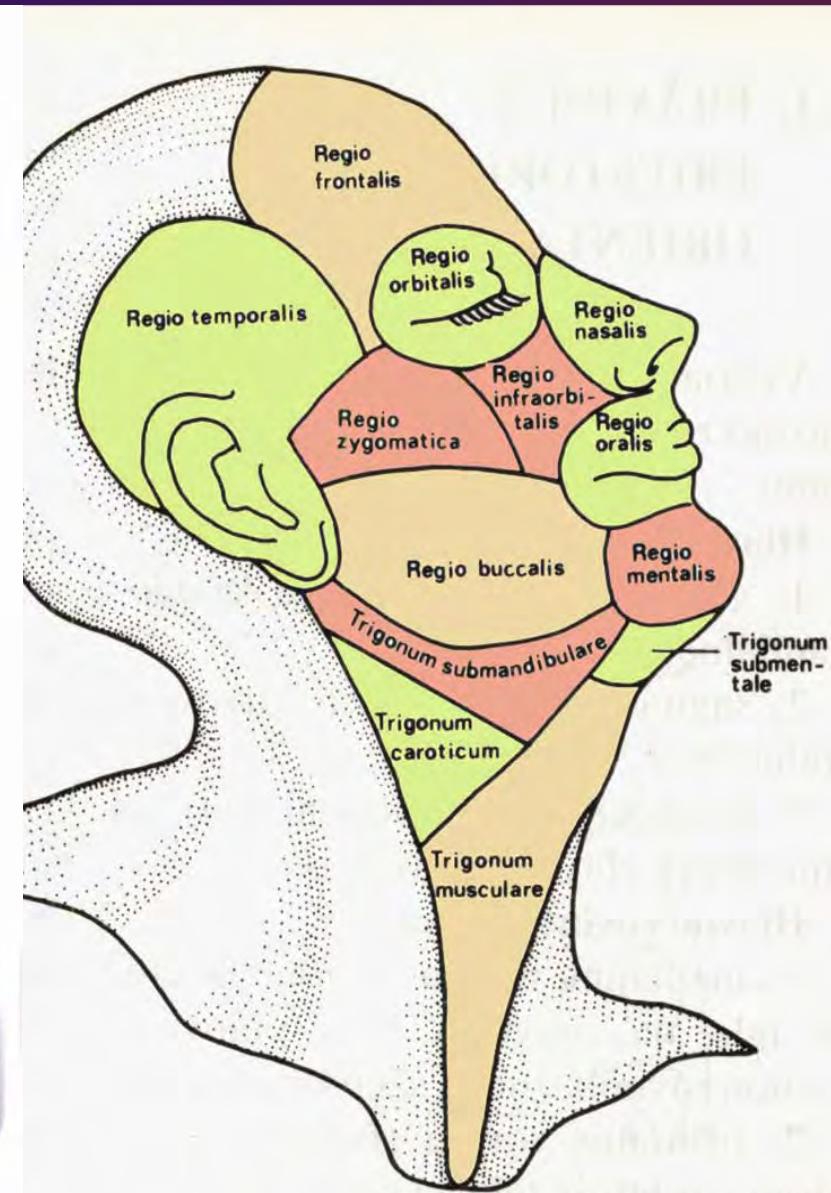
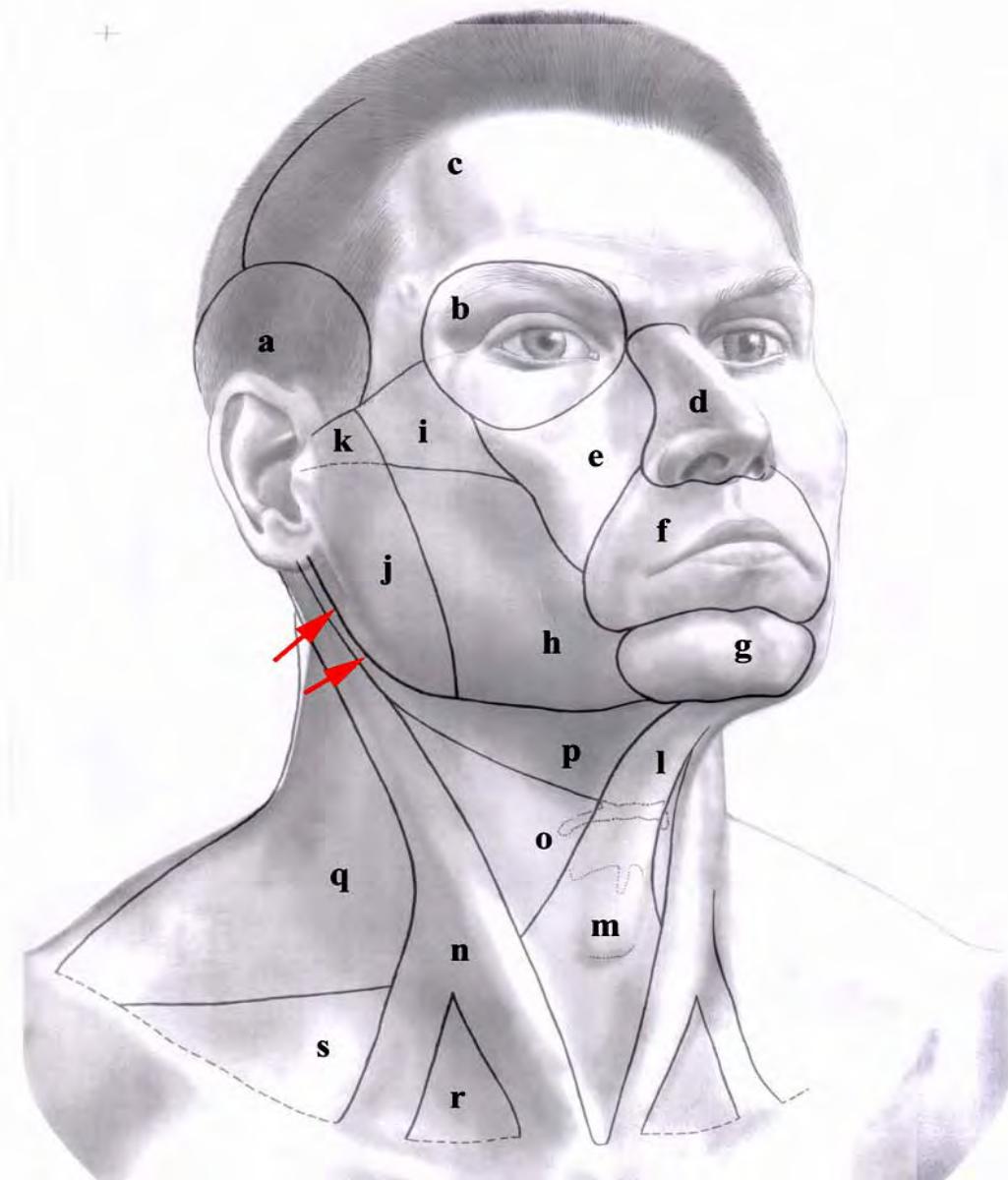
Obr. 13.7. Povrchové krajiny obličeje, pohled ze strany. 1 – r. frontalis a. temporalis superficialis, 2 – r. parietalis a. temporalis superficialis, 3 – a. et v. occipitalis, 4 – n. occipitalis major, 5 – n. occipitalis minor, 6 – n. auricularis magnus, 7 – v. retromandibularis, 8 – n. transversus colli, 9 – v. jugularis externa, 10 – r. colli n. facialis, 11 – a. et v. facialis, 12 – rr. buccales n. facialis, 13 – ductus parotideus, 14 – rr. temporales n. facialis, 15 – n. auriculotemporalis

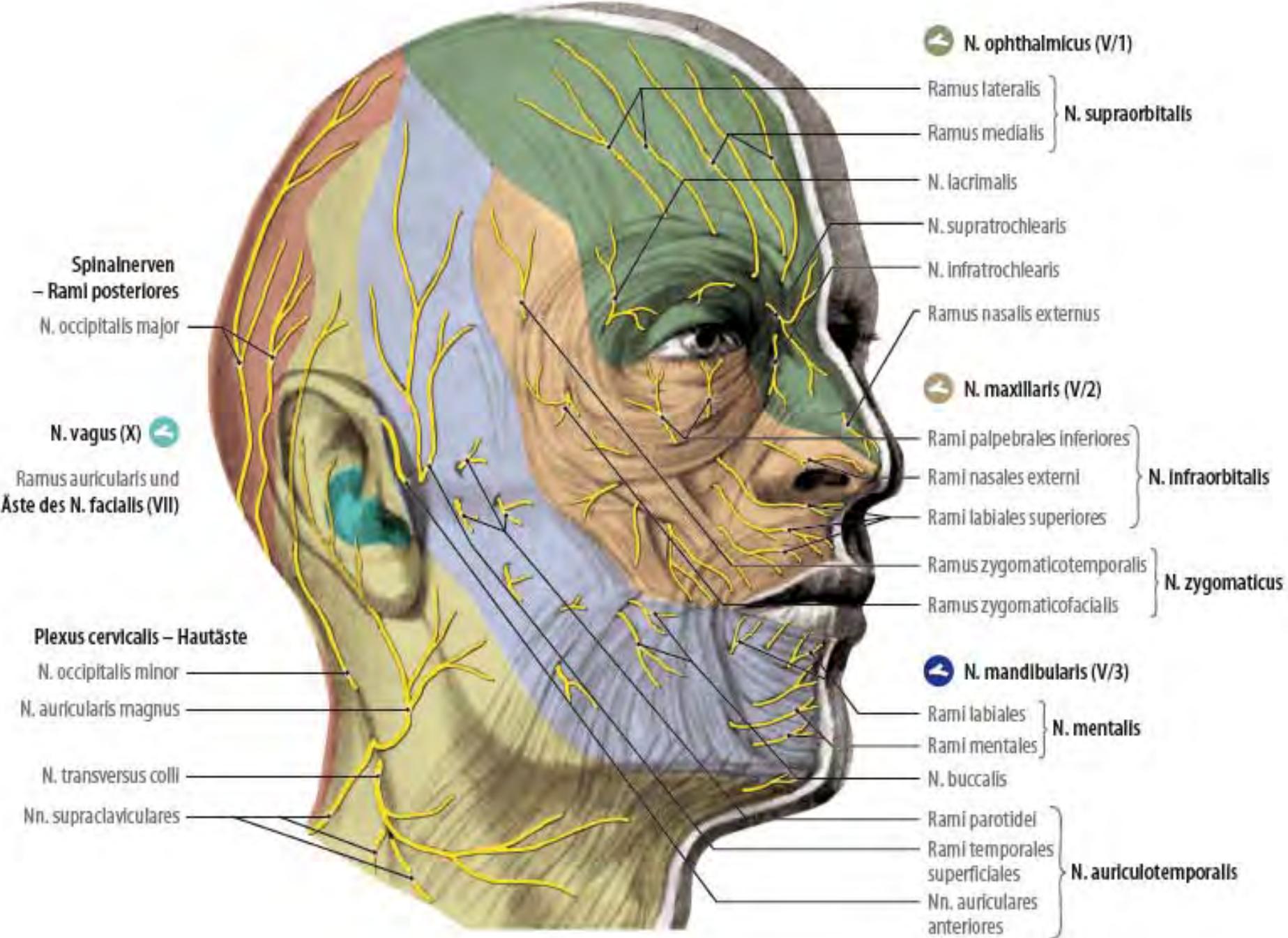


For neck and face;

- a. palatina ascendens
(for soft palate and tonsil)
- rr. glandulares
(for sublingual tonsil)
- a. submentalis
(for mylohyoid m. and anterior belly of digastric m.)
- aa. labiales sup. et inf. (in circle around oral cavity)
- alaris nasi
- angularis

Topographic regions

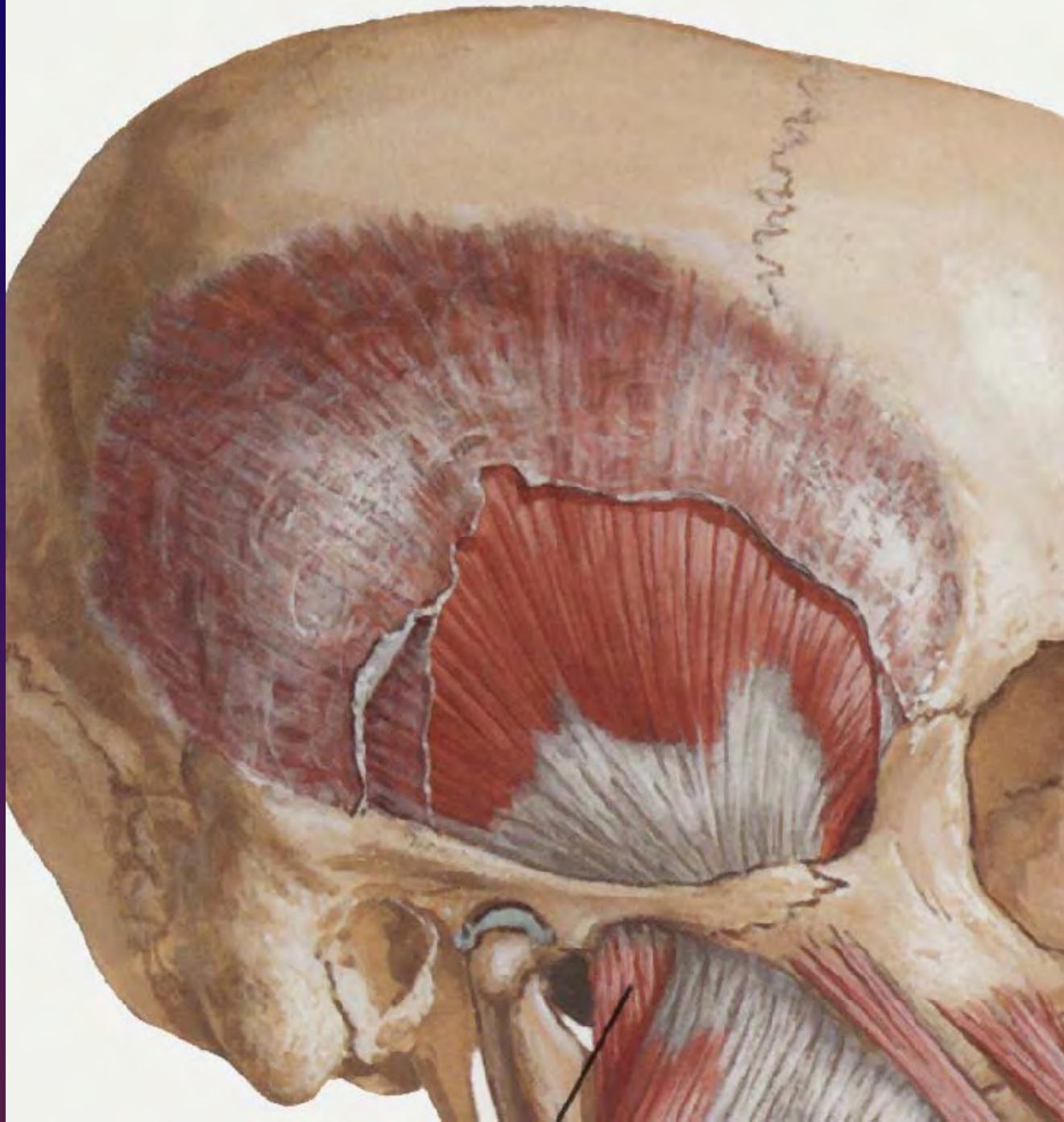


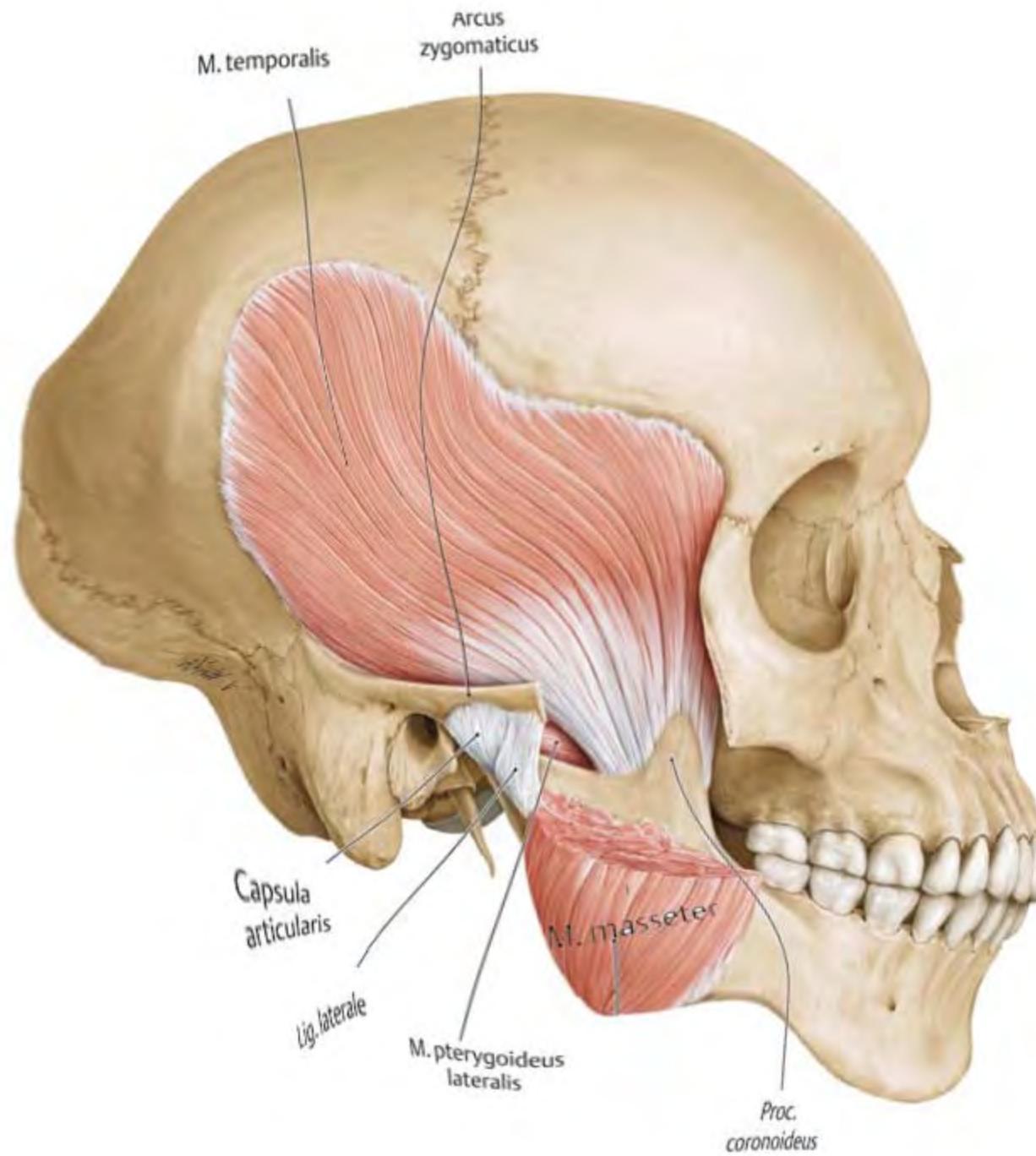


Temporal space (fossa)

lies between **skin** and the superficial temporal fascia (*superficial part of the space*)

lies between **superficial temporal fascia** and
(*squamous part of the temporal bone*)





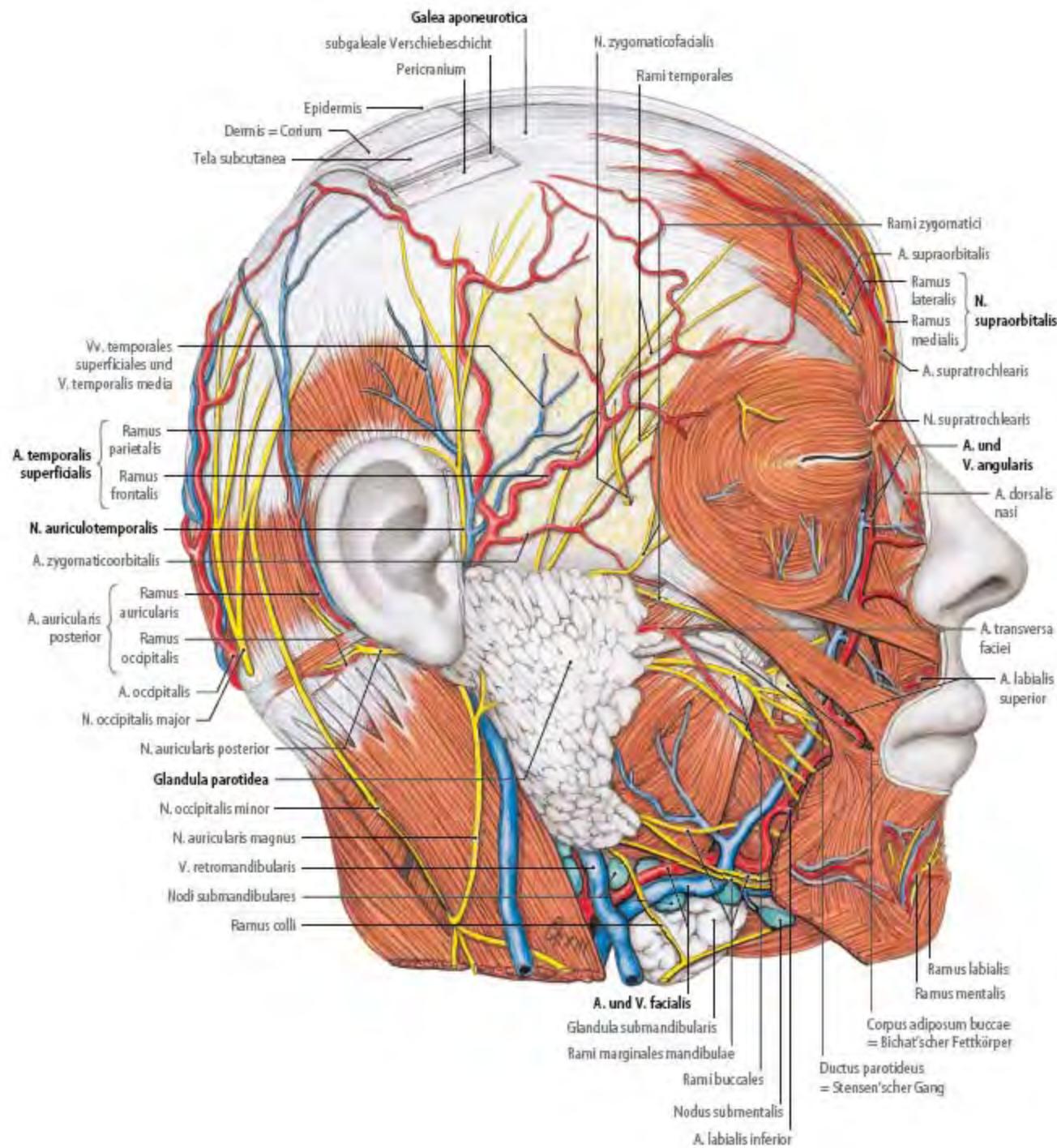
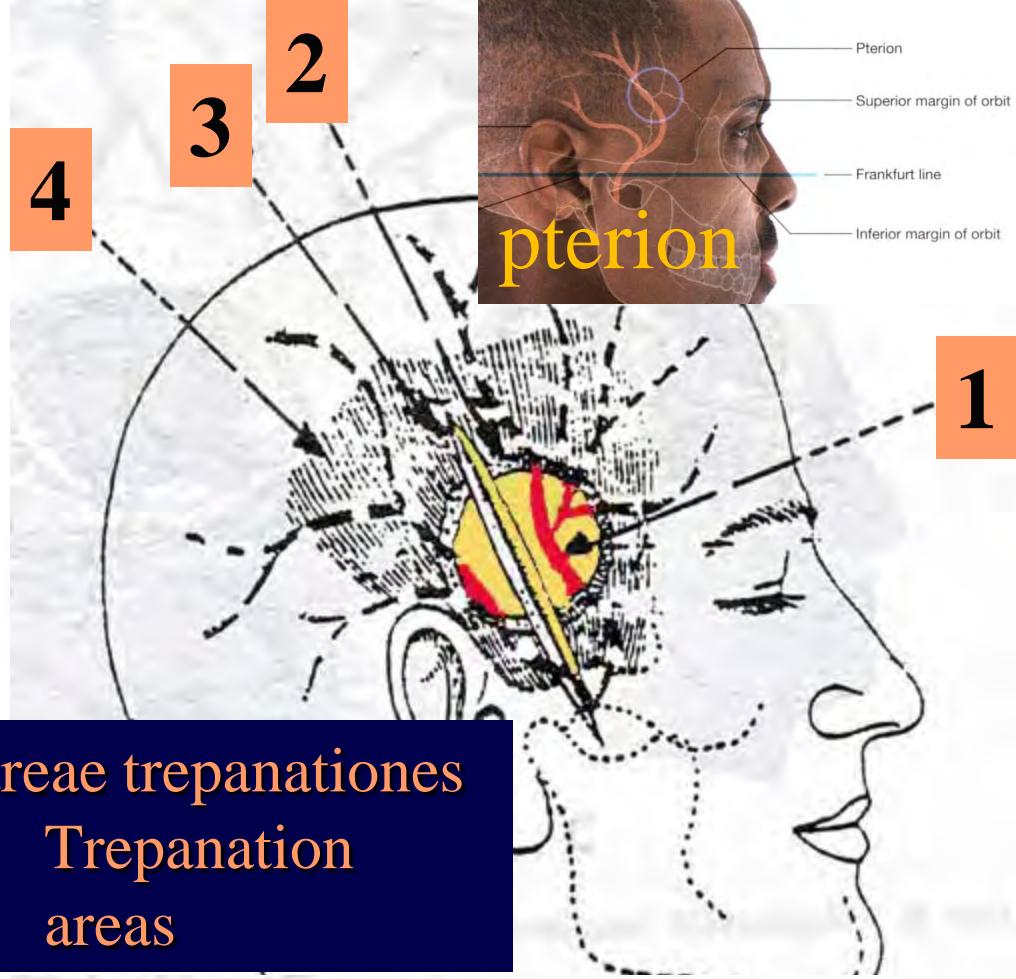
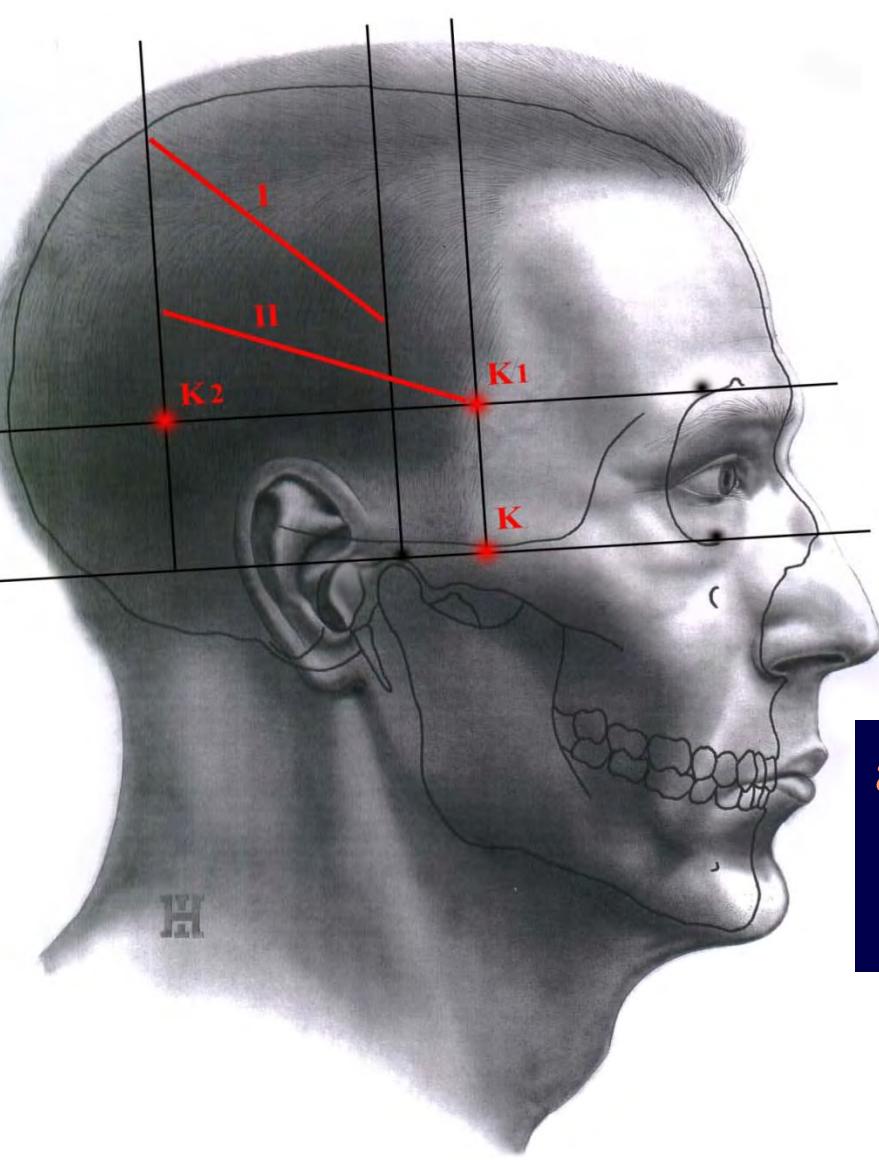




Figure 1. Bulging in the right temporal region with signs of fluctuation and pinna shift downwards. Facial edema and hyperemia.

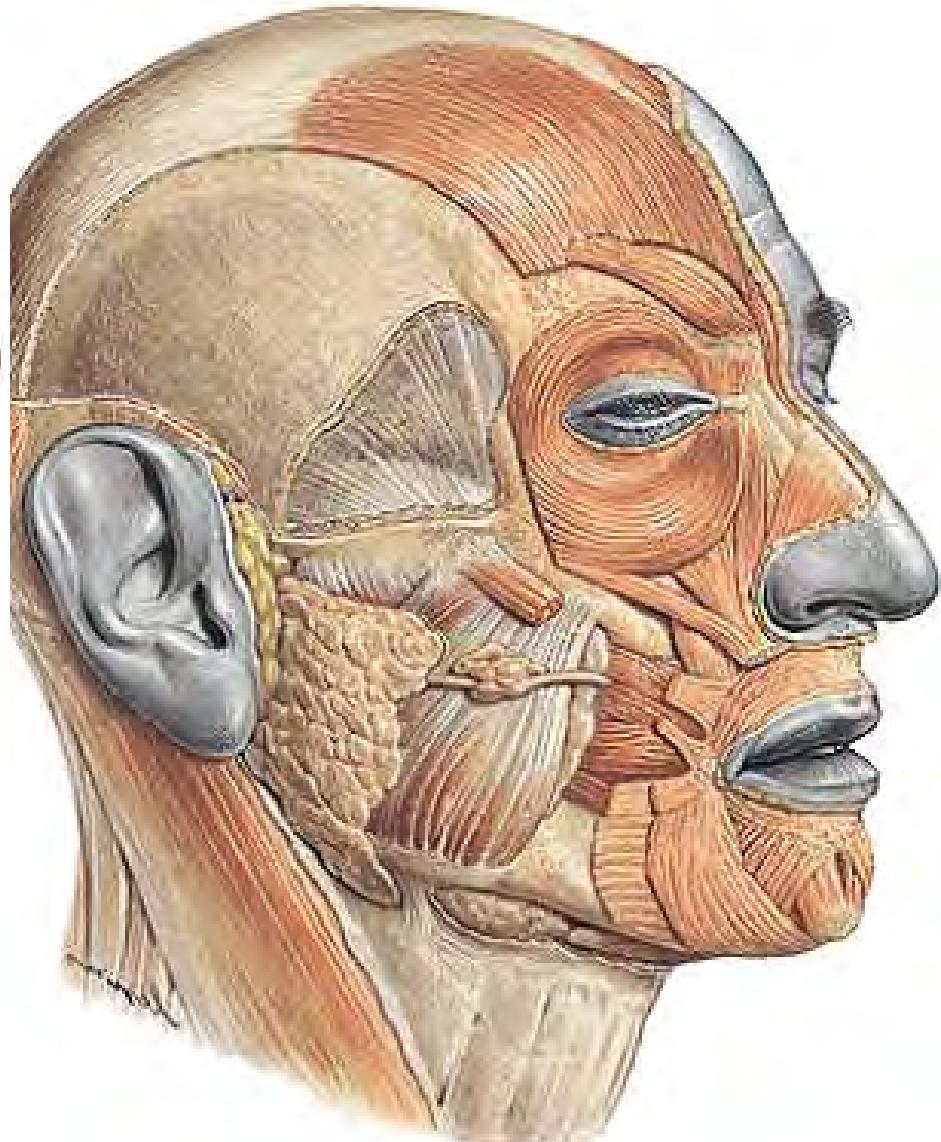


- 1 – projekce arteria meningea media
- 2 – kruhem označené místo trepanace
- 3 – svislý řez měkkými tkáněmi na střed arcus zygomaticus
- 4 – musculus temporalis

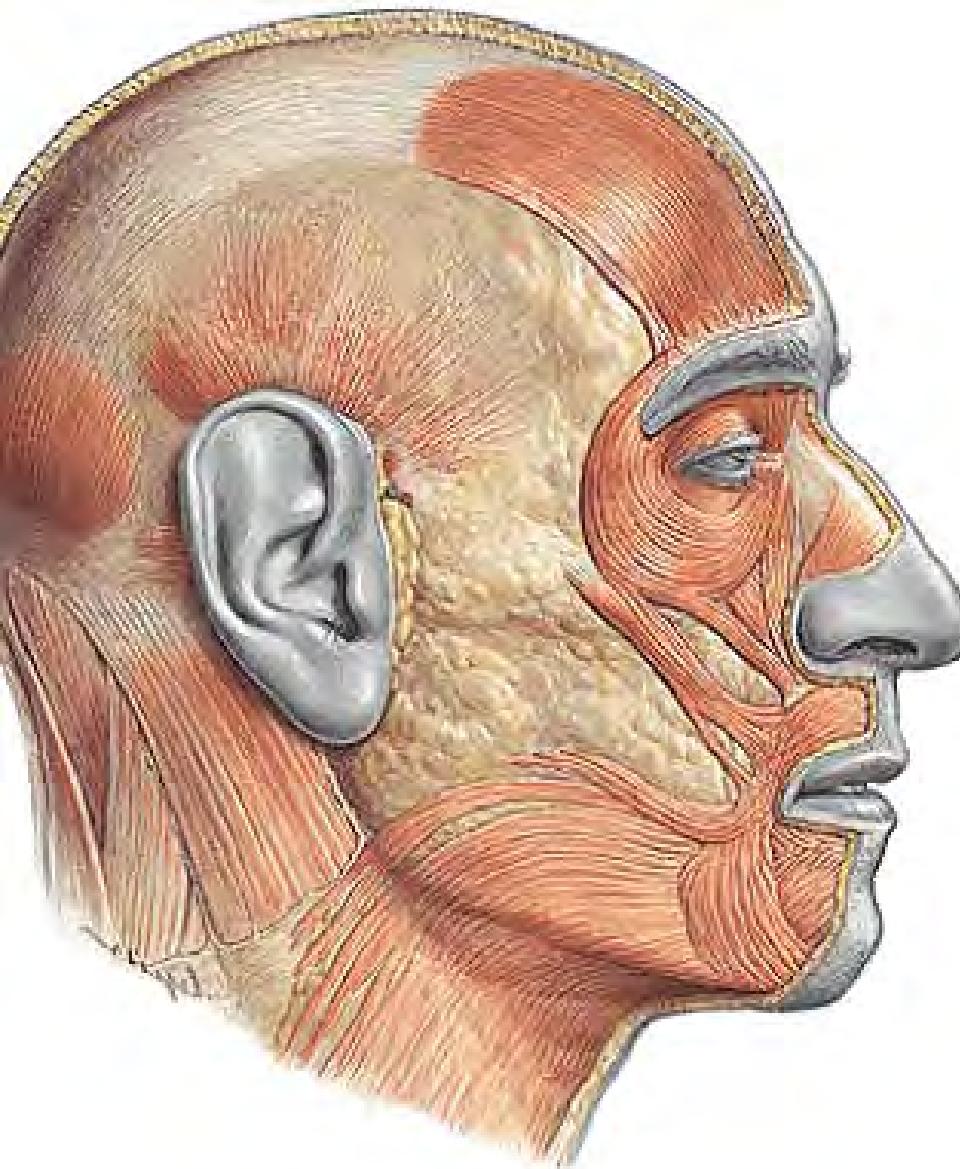
Rudolph Ulrich Kroenlein
(1847-1910) Swiss surgeon

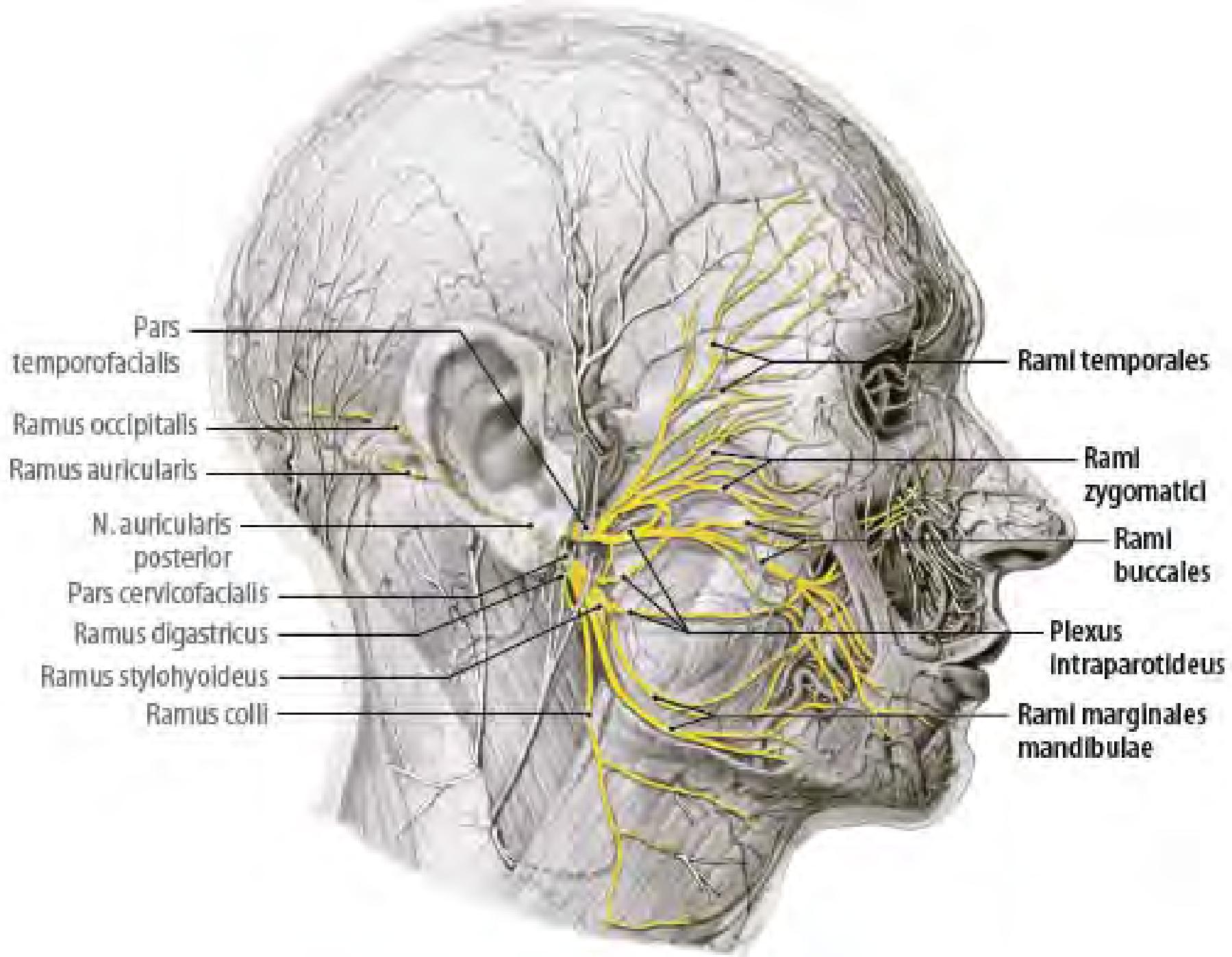
I – sulcus centralis
II – fissura lateralis cerebri

Buccal region



Parotideomasseteric region





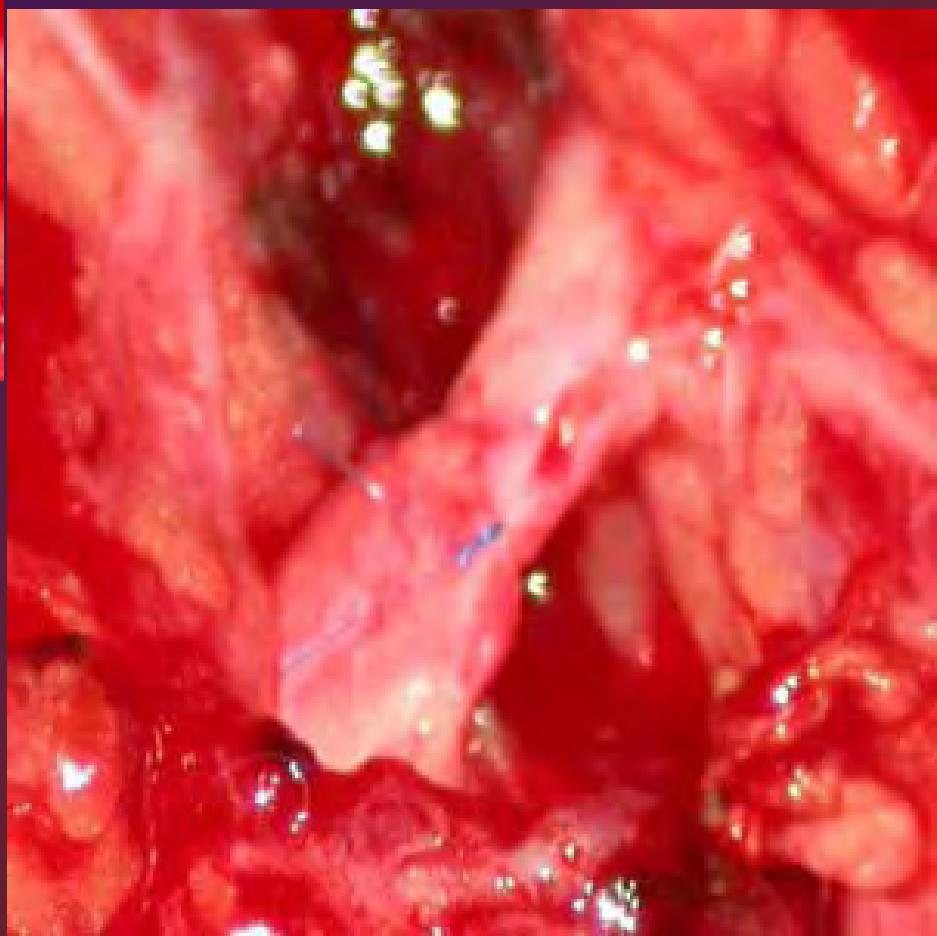


Laceration – CN VII. Is severed

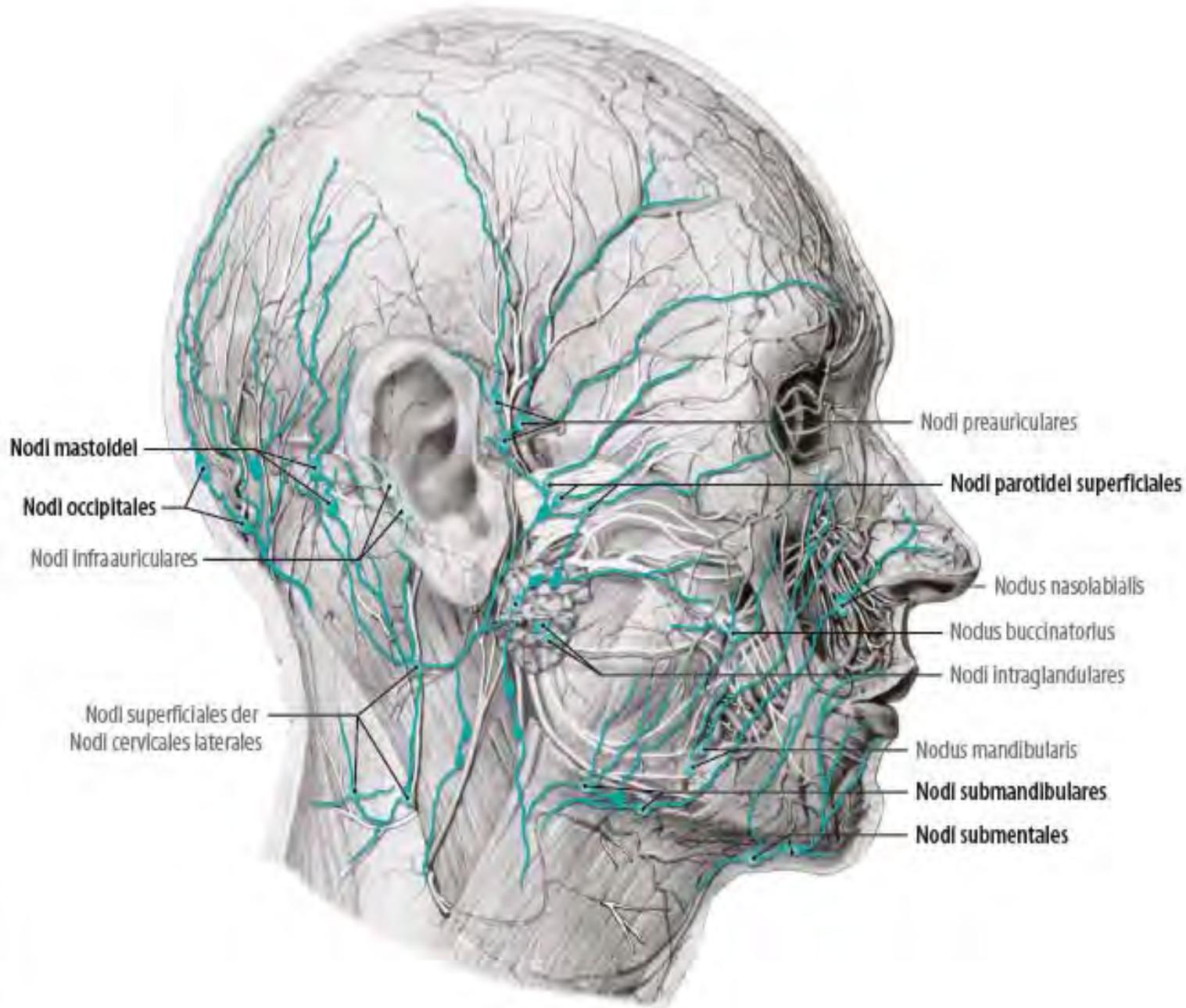


N. facialis je přerušen
CN VII is severed

Nervové pahýly sešity k sobě
Nerve stumps are connected



Nervové pahýly jsou označené
hvězdičkou
Stumps of nerve are labelled



Nodi lymphoidei capitis:
Nodi occipitales
Nodi mastoidei
Nodi parotidei superficiales
Nodi parotidei profundi
– Nodi preauriculares
– Nodi infraauriculares
– Nodi intraglandulares
Nodi faciales
– Nodus buccinatorius
– Nodus nasolabialis
– [Nodus malaris]
– Nodus mandibularis
Nodi submentales
Nodi submandibulares
[Nodi linguae]
(Nodi lymphoidei colli)
Abb. 3.16)
[] nicht sichtbar

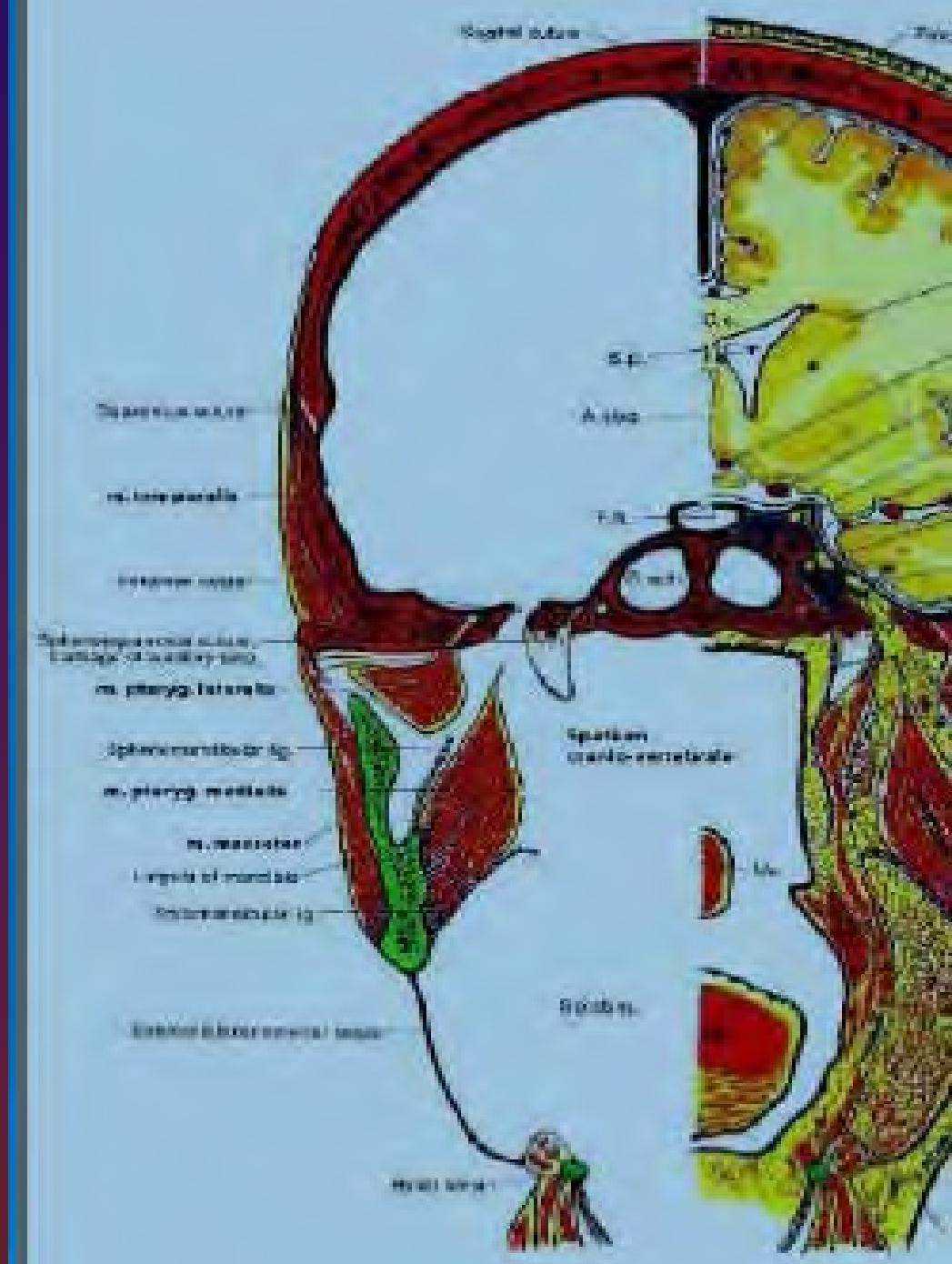
Infratemporal space (fossa)

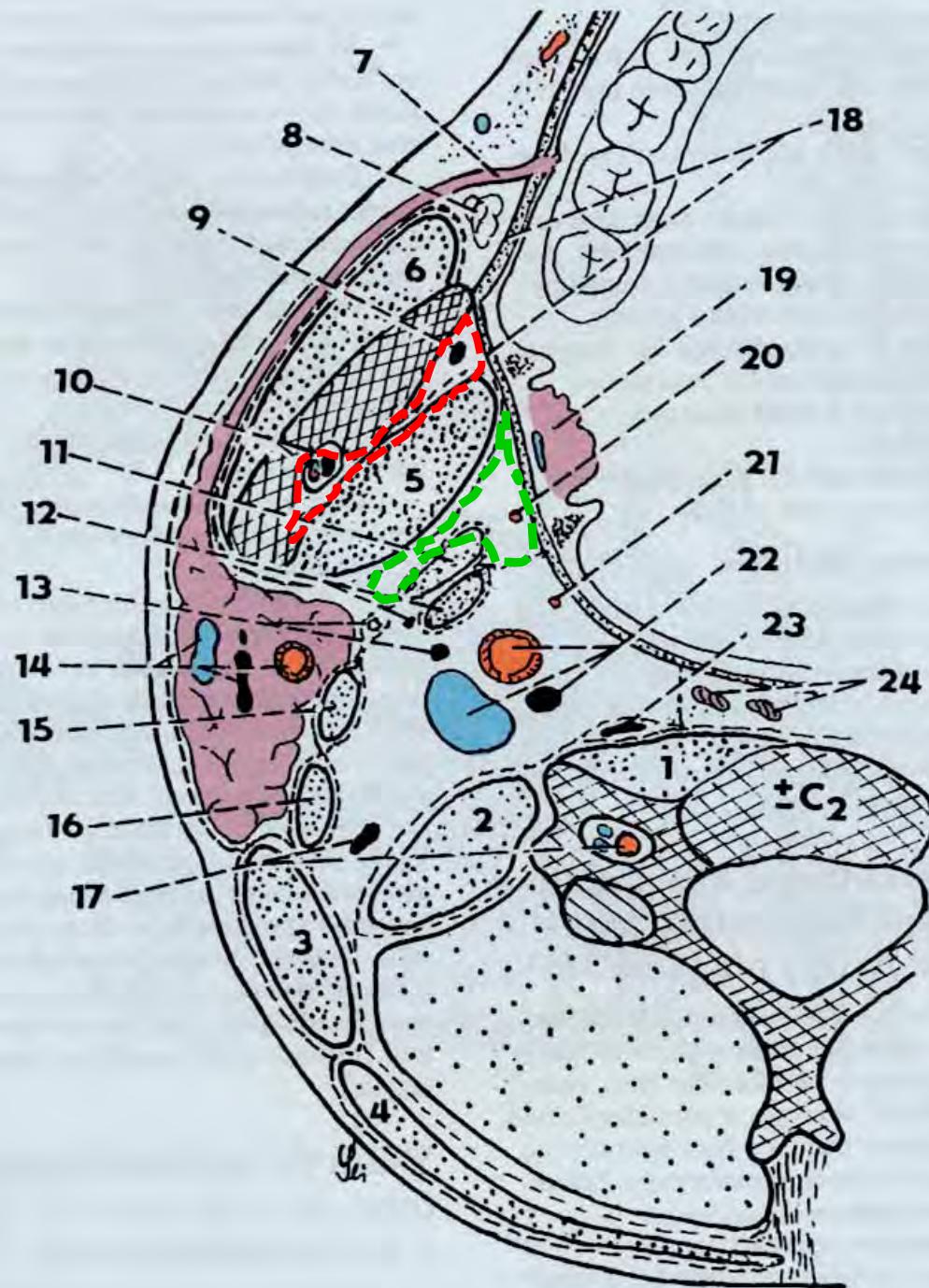
lateral pterygoid plate – base
of the skull – tuber of the
maxilla

upper part of the pterygomandibular space

Fossa Infratemporalis

Infratemporal fossa





Fossa infratemporalis

Infratemporal fossa

Spatium pterygomandibulare

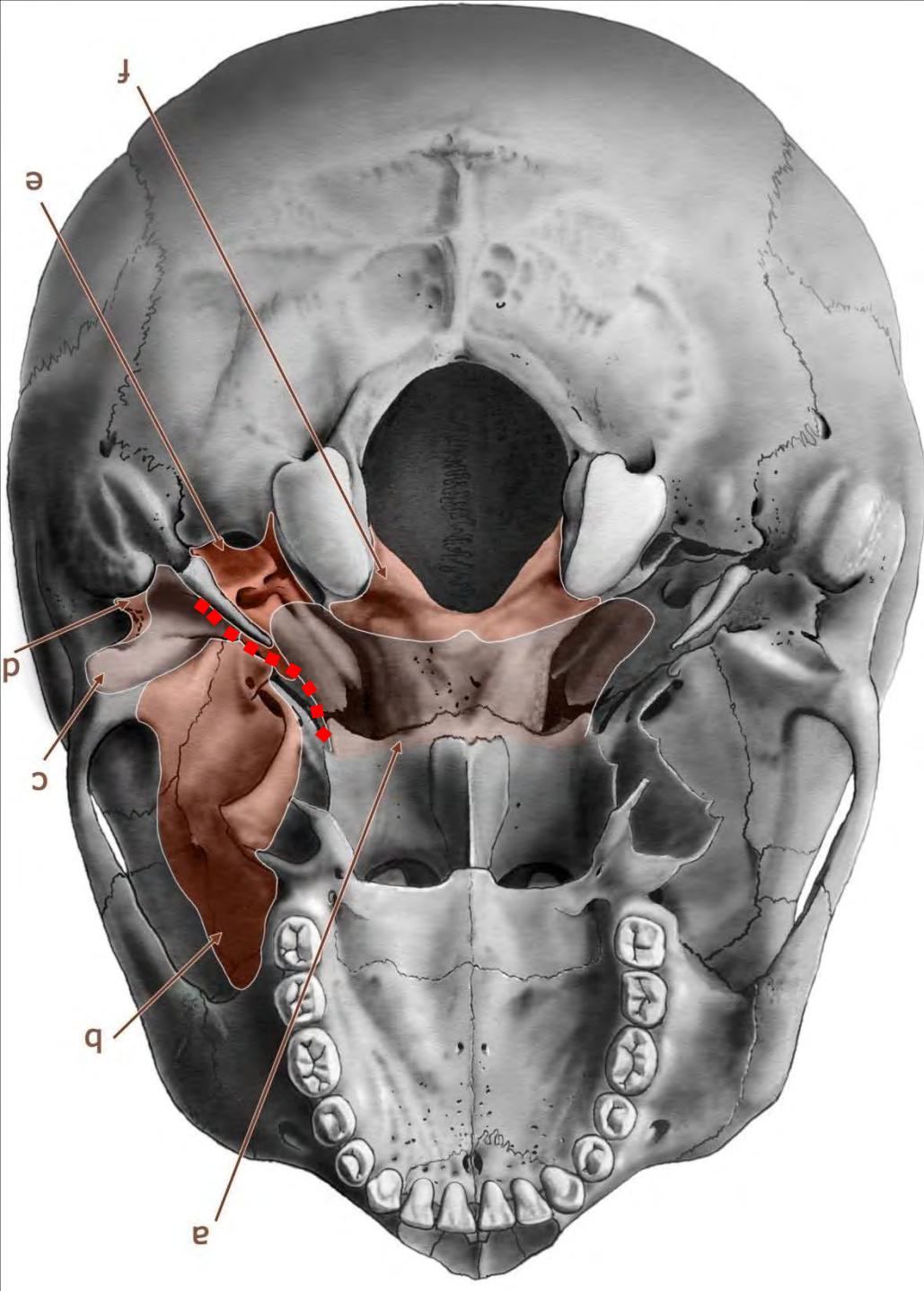
mm. pterygoidei

Fossa infratemporalis ossea

Fossa pterygopalatina

0 Spatium parapharyngum et regio faciei, sectio transversalis (schéma)

- 1 – m. longus colli et m. longus capitis
- 2 – mm. scaleni
- 3 – m. sternocleidomastoideus
- 4 – m. trapezius
- 5 – m. pterygoideus med.
- 6 – m. masseter
- 7 – ductus parotideus
- 8 – corpus adiposum buccae
- 9 – n. lingualis
- 10 – n. et a. alveolaris inf.
- 11 – m. styloglossus
- 12 – m. stylopharyngeus et n. glossopharyngeus
- 13 – n. hypoglossus et lig. stylohyoideum
- 14 – a. carotis ext., n. facialis (plexus parotideus) et v. retromandibularis
- 15 – m. stylohyoideus
- 16 – m. digastricus
- 17 – n. accessorius et a. vertebralis
- 18 – m. buccinator et m. constrictor pharyngis sup. tonsilla palatina et v. tonsillaris
- 19 – a. palatina ascendens
- 20 – a. pharygea ascendens
- 21 – a. carotis int., n. vagus et v. jugularis int.
- 22 – ganglion cervicale superius
- 23 – nodi lymphatici retropharyngei



Stěny infratemporální jámy

Walls of the infratemporal fossa

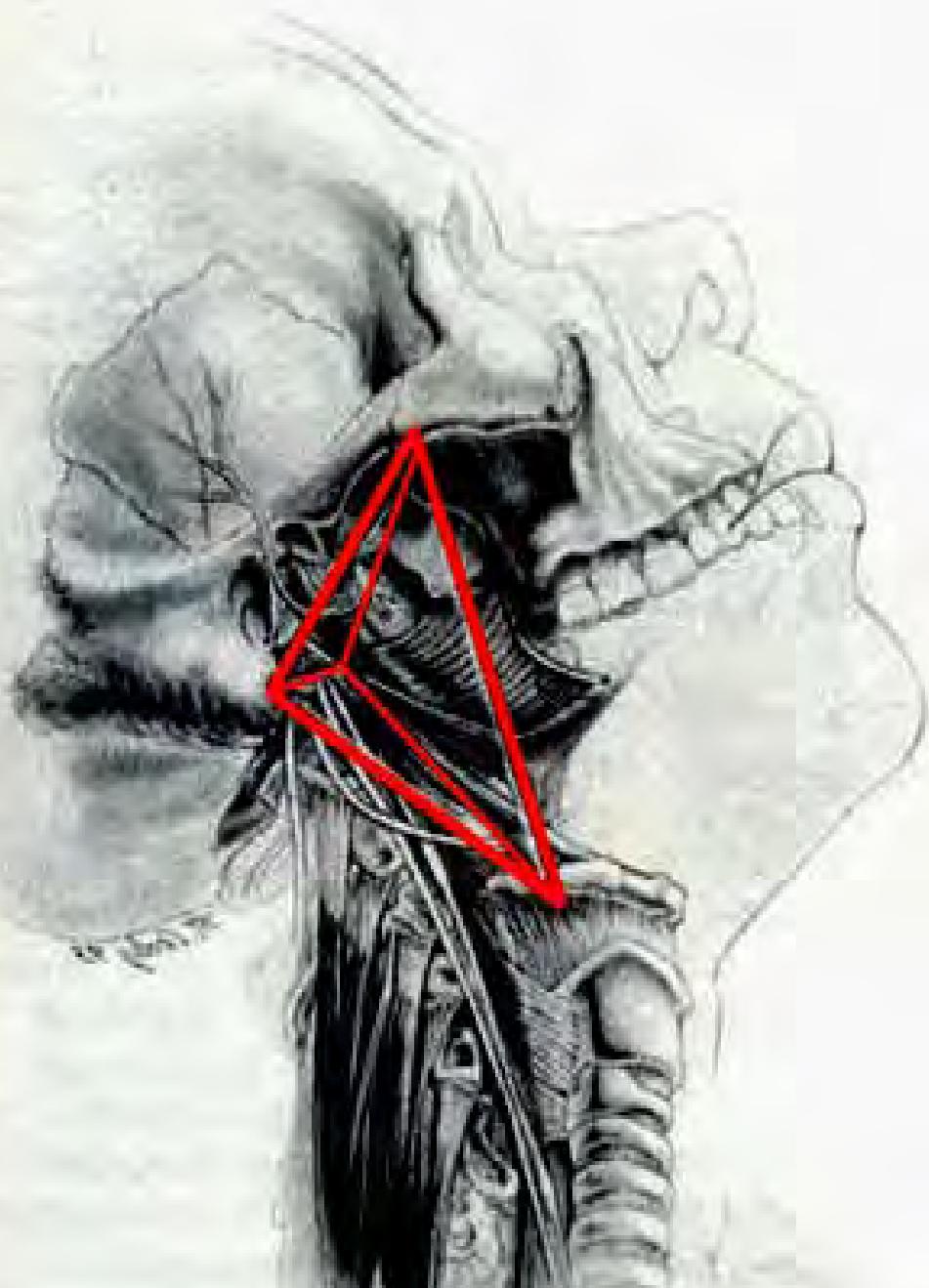
Sup.:
Ala major ossis
sphenoidalis

Med.:
Lamina medialis
processus
pterygoideus +
pharynx

Ventr.:
Tuber maxillae

Lat.:
Ramus mandibulae

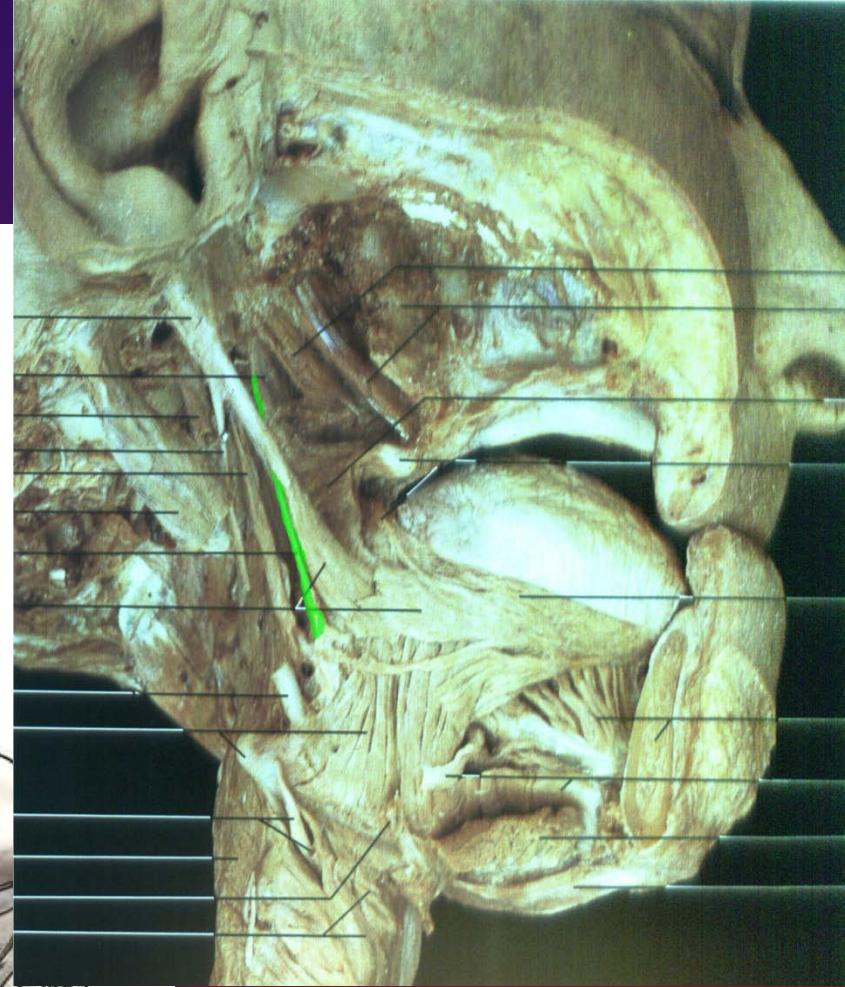
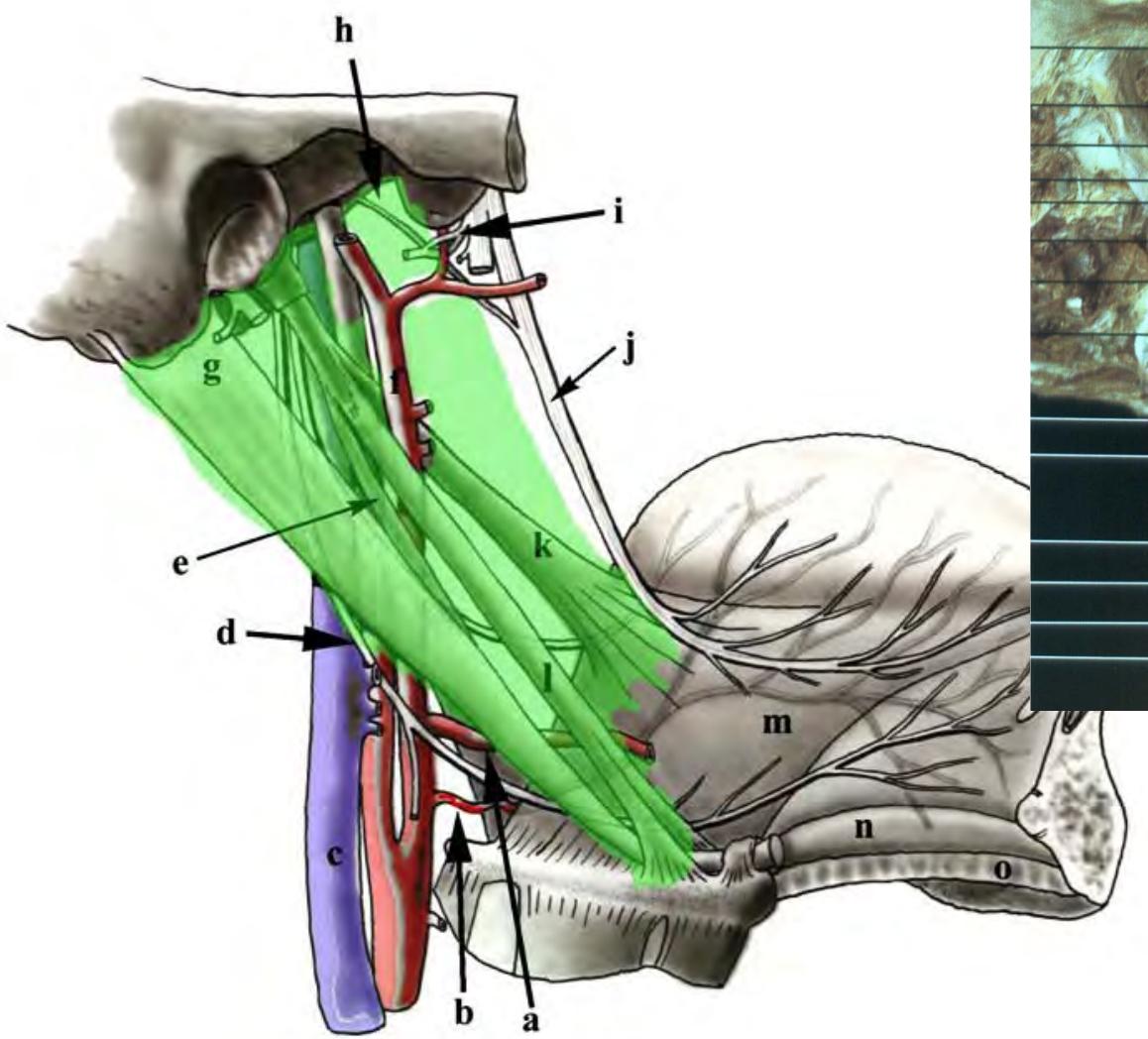
Dors.:
Septum styloideum



Spatium parapharyngeale Parapharyngeal space

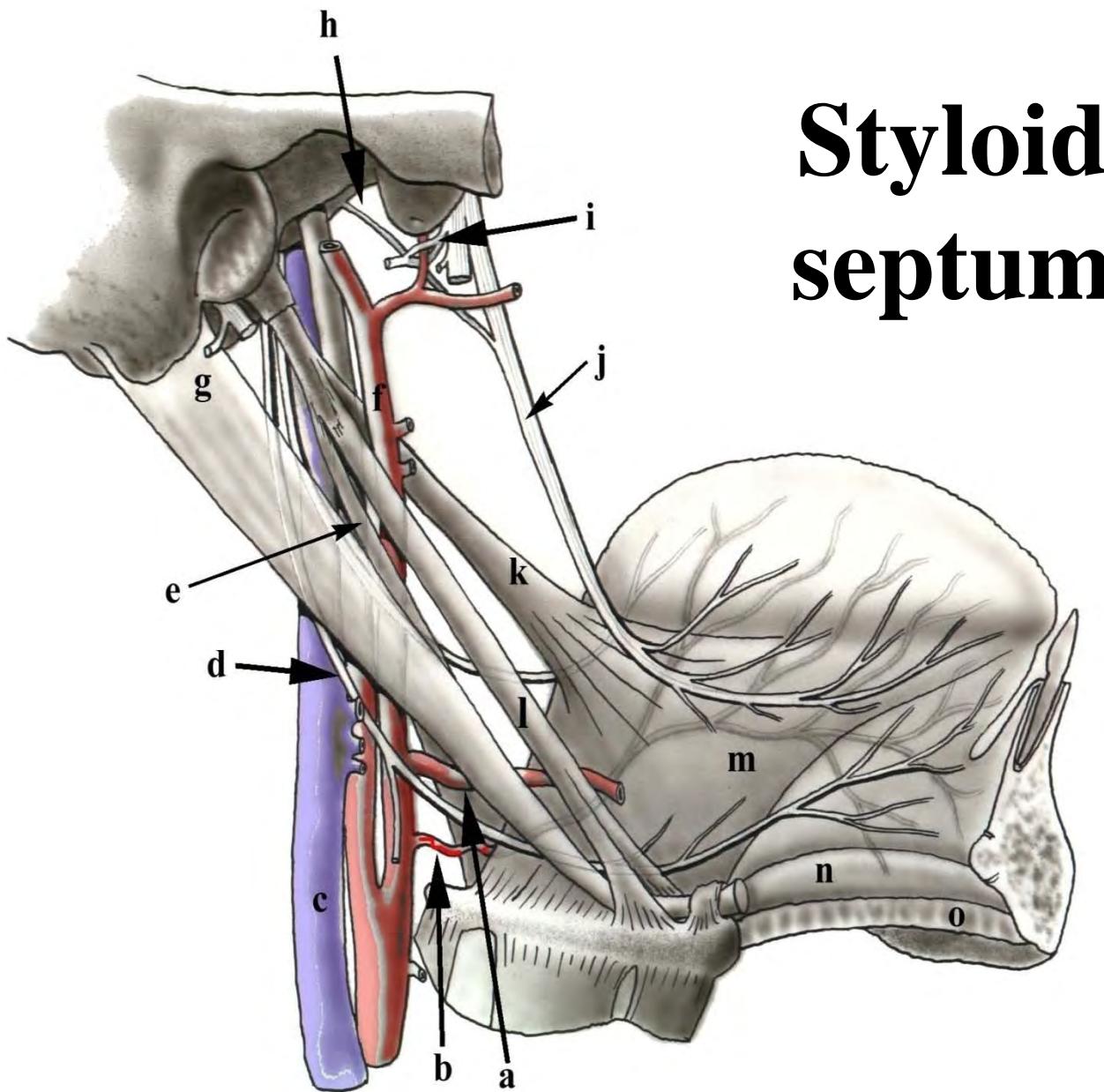
Deep cervical space
Looks like pyramid on top
(level of hyoid bone)

Pre – and retrostyloid
compartments



Styloidní
septum

Styloid
septum



Styloid septum

Internal jugular vein lies dorsally and ventrally from ICA behind m. stylohyoideus and m. styloglossus

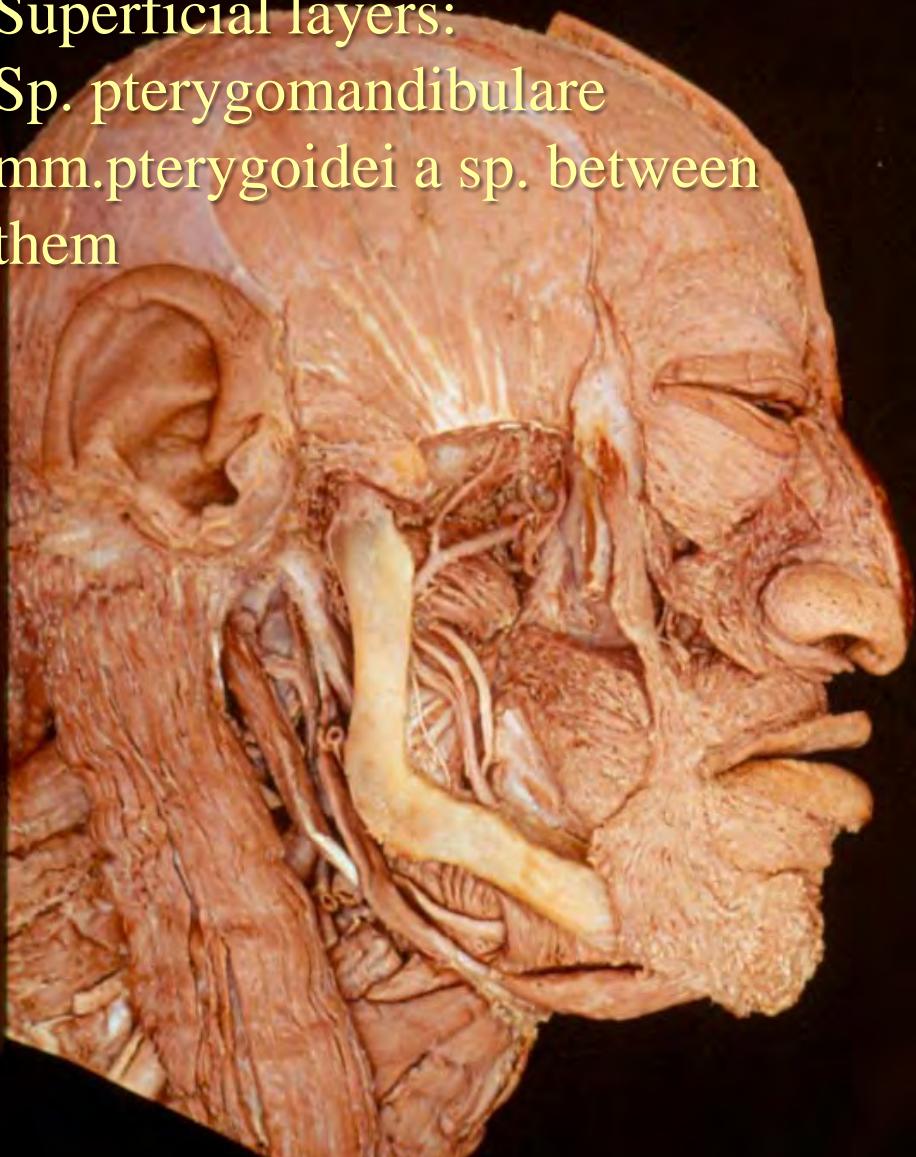
External carotid artery lies ventrally and laterally from IJV and between m. stylohyoideus and m. styloglossus



Superficial layers:

Sp. pterygomandibulare

mm.pterygoidei a sp. between them



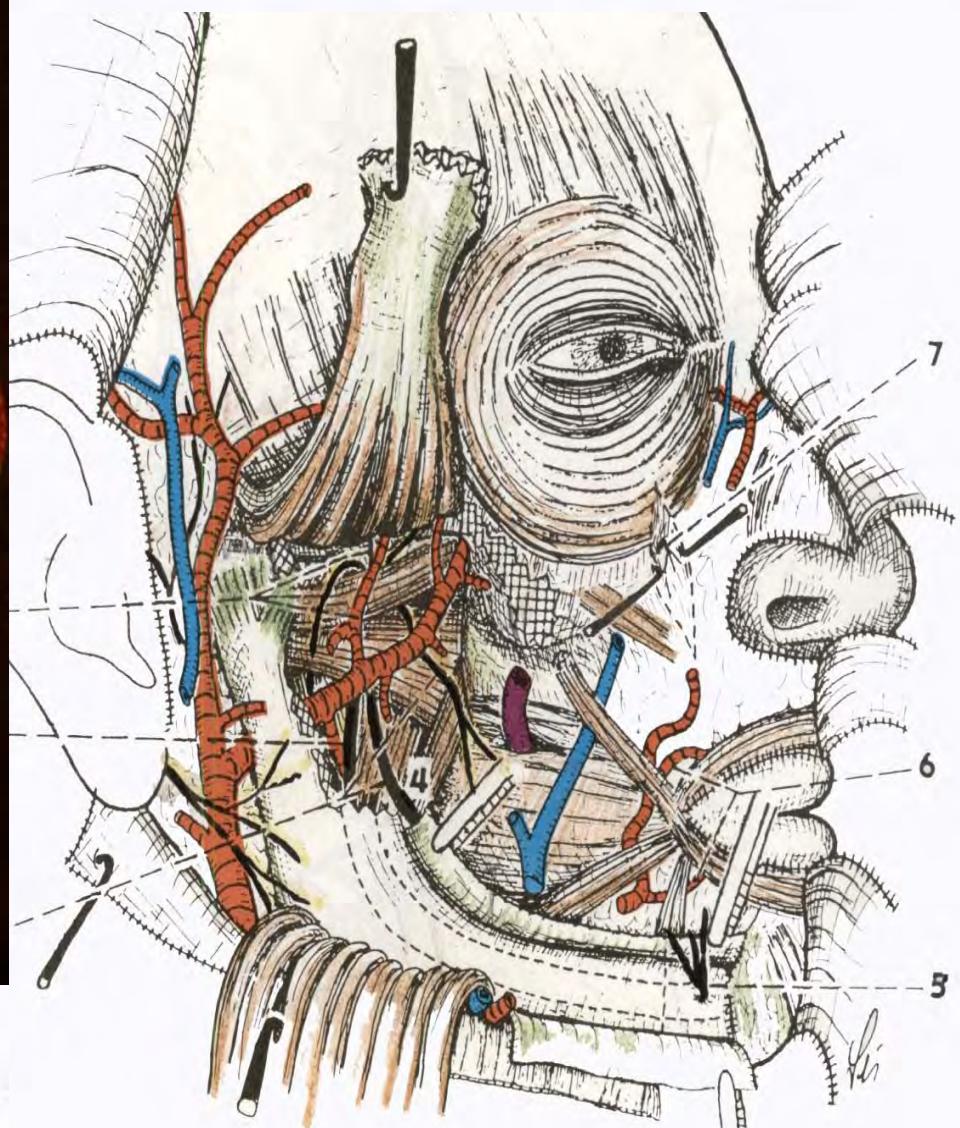
5 - n. mentalis

6 - a. labialis sup. et inf.

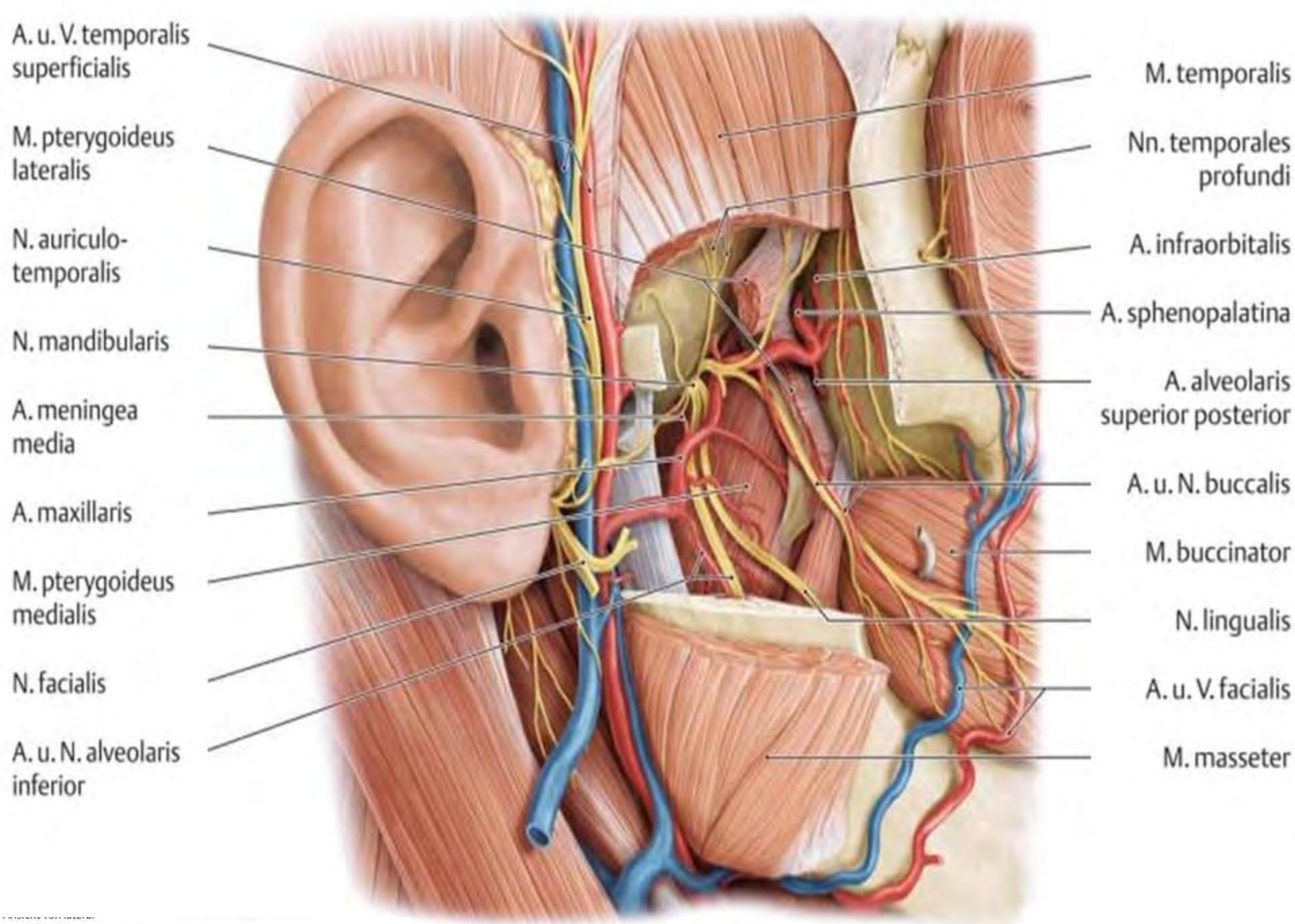
7 - n. infraorbitalis

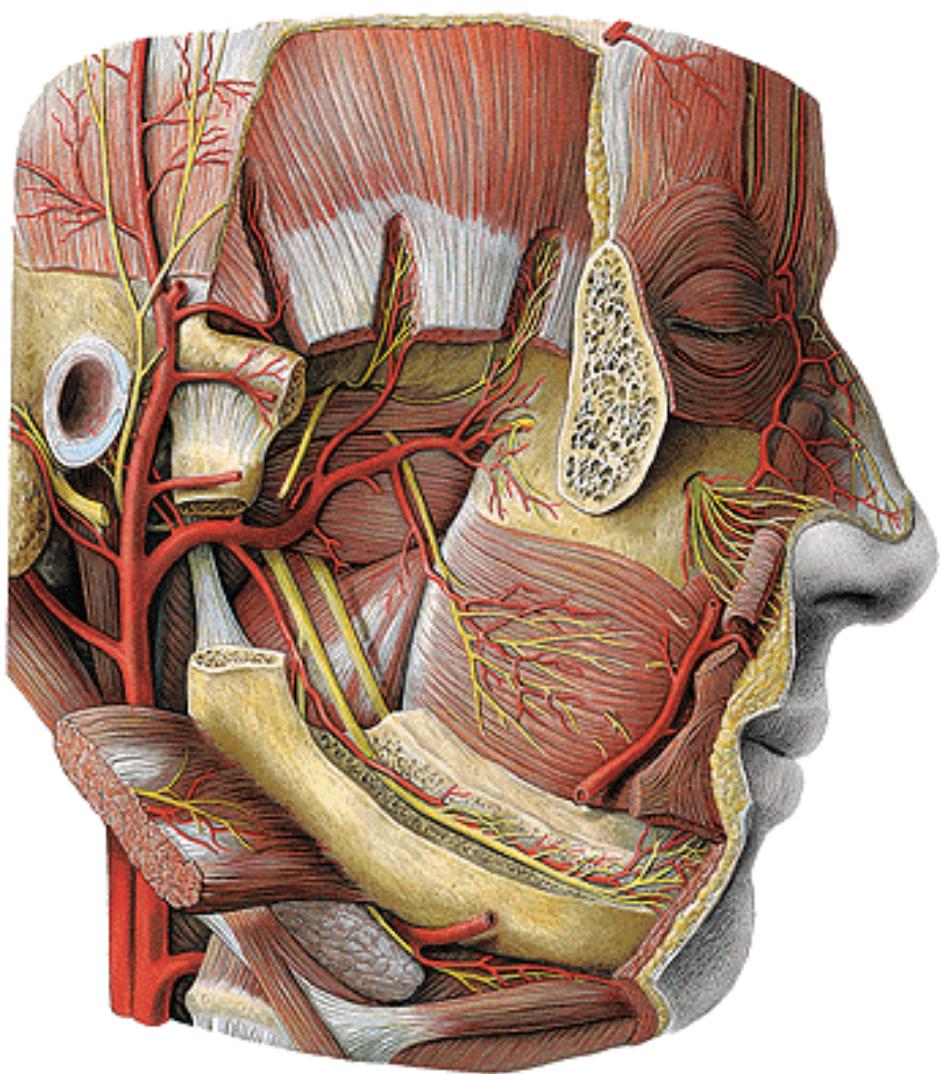
- - - - resection line

- 1 - a. et nn. temporales prof.
- 2 - a. et n. alveolaris inf.
- 3 - n. lingualis et n. buccalis
- 4 - m. pterygoideus med.



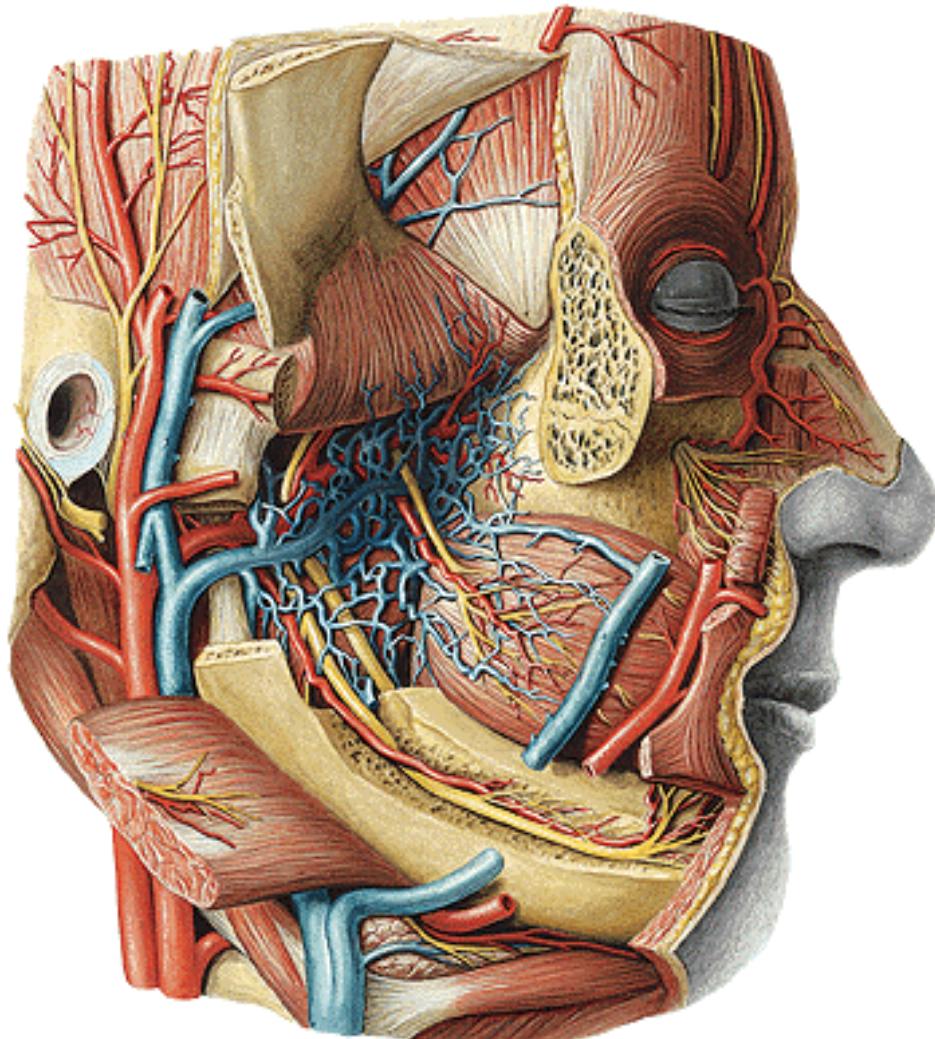
Vrstvy layers

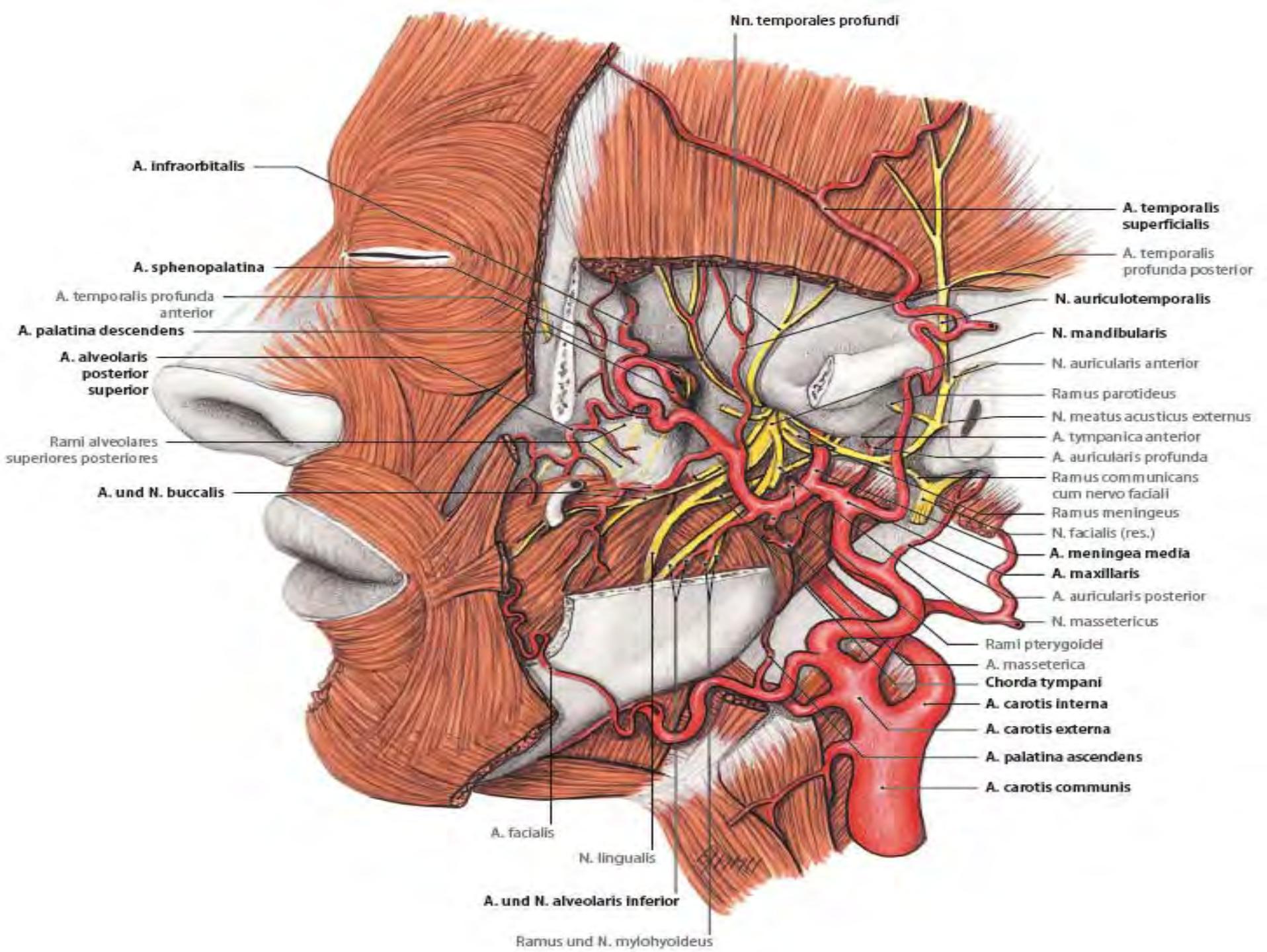




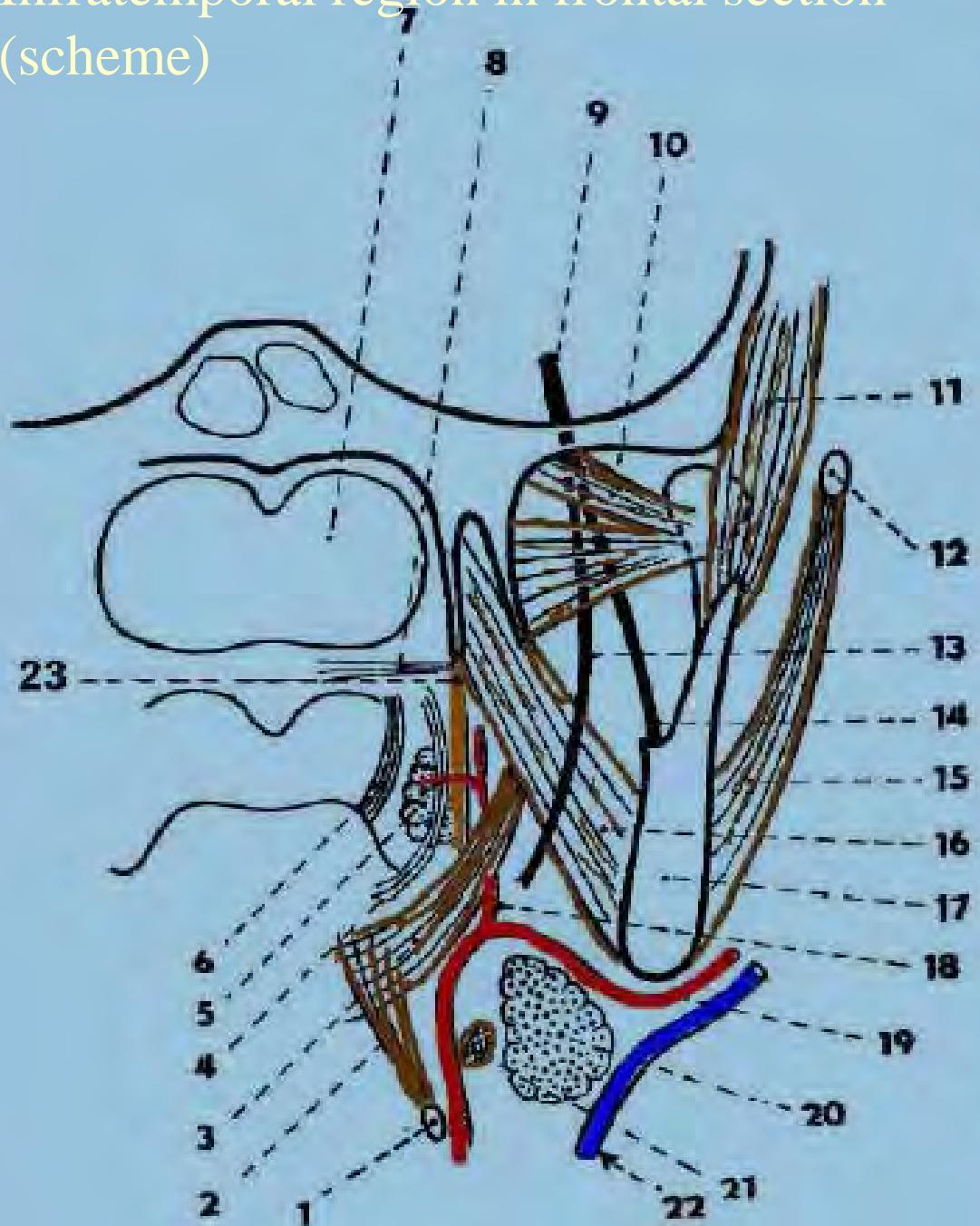
Tepny a žilní pleteně
Arteries and plexiform-like veins

Fossa infratemporalis
„Povrchová vrstva“
Infratemporal fossa
“superficial layer“

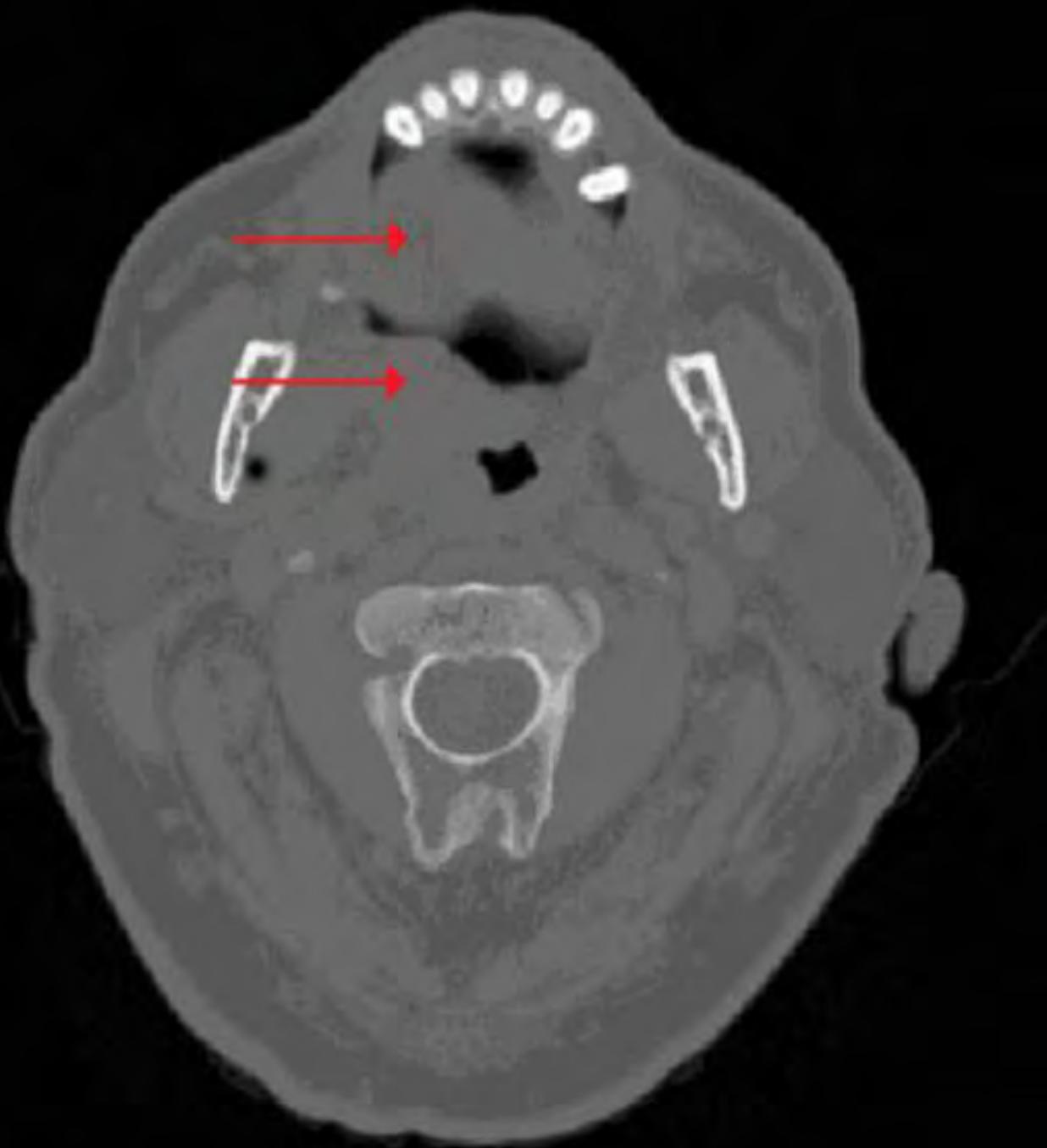




Infratemporal region in frontal section (scheme)

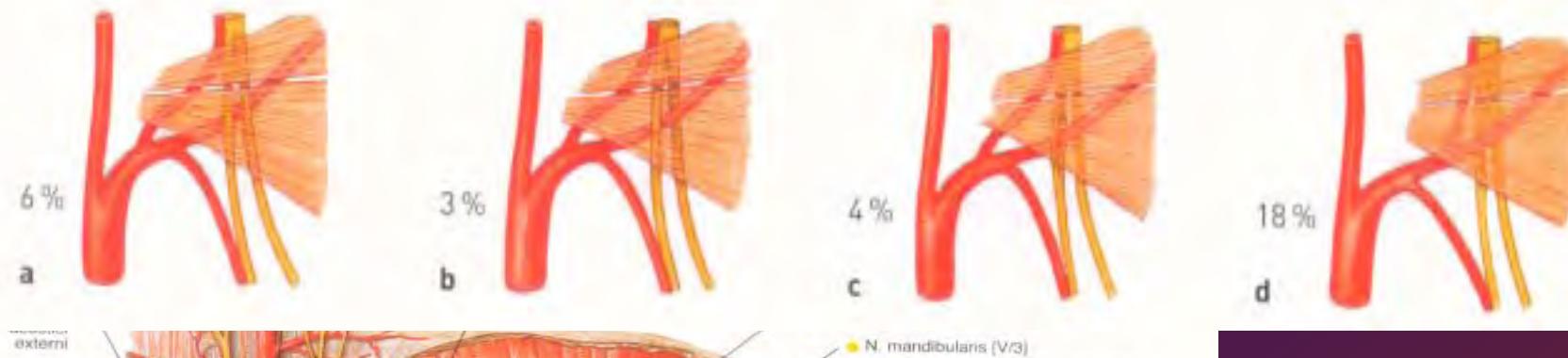


Obr. 45. Regio infratemporalis na schematickém frontálním řezu. Pohled zpředu. Mediálně od m. pterygoideus medialis je regio paratonsillaris, laterálně v dolní části je spatium pterygomandibulare, nahoře regio infratemporalis. 1 — os hyoideum, 2 — m. hyoglossus, 3 — m. styloglossus, 4 — m. palatoglossus, 5 — tonsilla palatina, 6 — m. palatopharyngeus, 7 — nasopharynx, 8 — m. tensor veli palatini, 9 — n. mandibularis (V_3), 10 — m. pterygoideus lateralis, 11 — m. temporalis, 12 — arcus zygomaticus, 13 — n. lingualis, 14 — n. alveolaris inferior, 15 — m. masseter, 16 — m. pterygoideus medialis, 17 — ramus mandibulae, 18 — a. palatina ascendens, 19 — a. facialis, 20 — glandula submandibularis, 21 — m. digastricus, 22 — v. facialis. 23 - m. constr. pharyngis (Podle Heřta.)

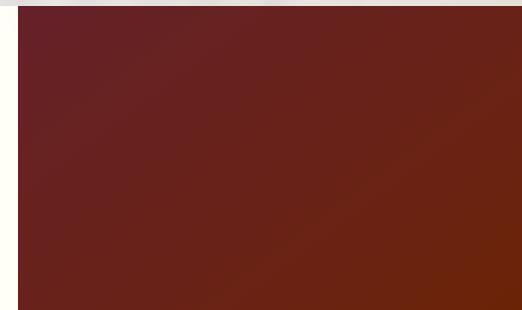
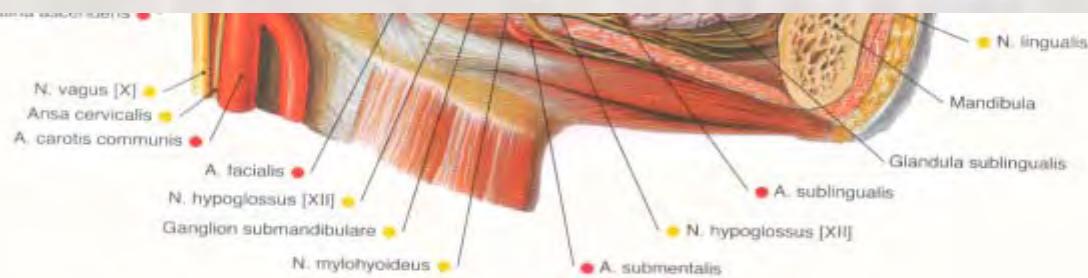


Absces
v
infratemporál
ní jámě

Abscess
inside
infratemporal
fossa



- a** The maxillary artery, A. maxillaris, passes medially to the lateral pterygoid muscle, M. pterygoideus lateralis, the lingual nerve, N. lingualis, and the inferior alveolar nerve, N. alveolaris inferior.
- b** The maxillary artery, A. maxillaris, passes between the lingual nerve, N. lingualis, and the inferior alveolar nerve, N. alveolaris inferior.
- c** The maxillary artery, A. maxillaris, passes through a loop formed by the inferior alveolar nerve, N. alveolaris inferior.
- d** The middle meningeal artery, A. meningea media, branches off distal to the inferior alveolar artery, A. alveolaris inferior.



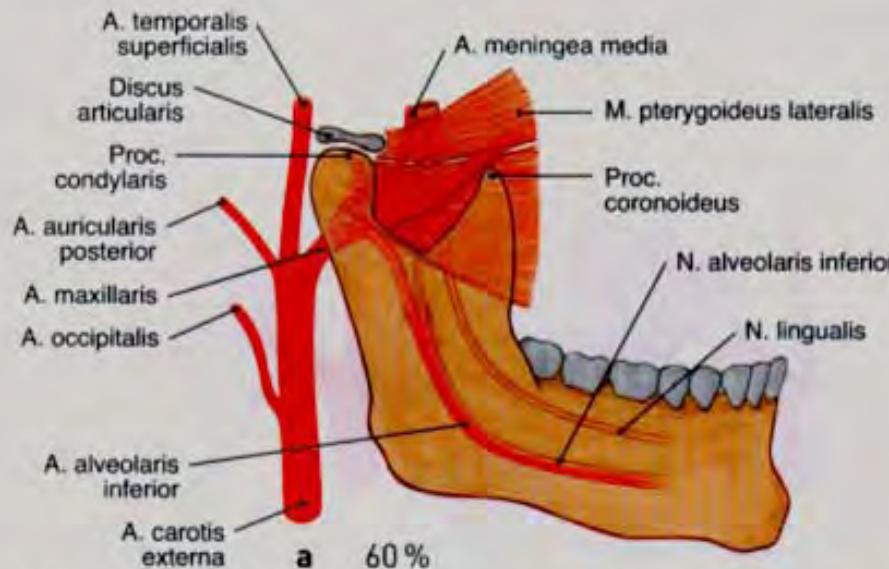
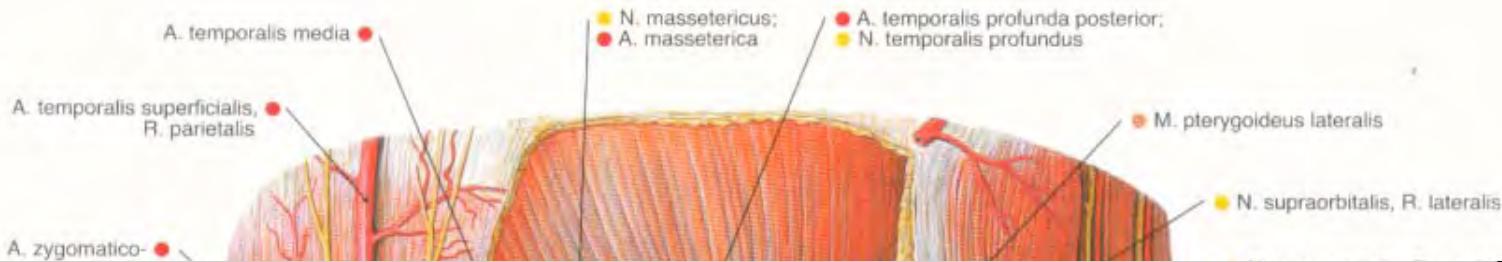
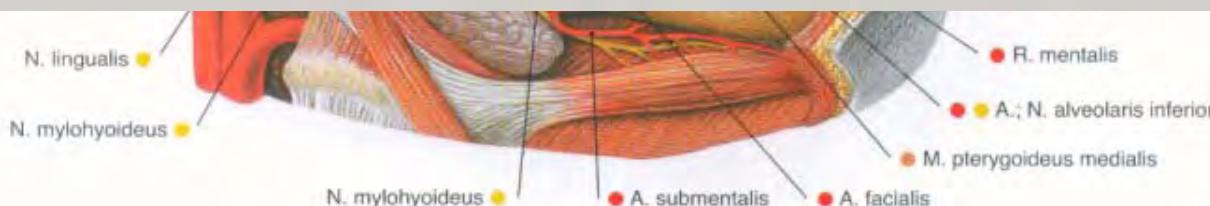


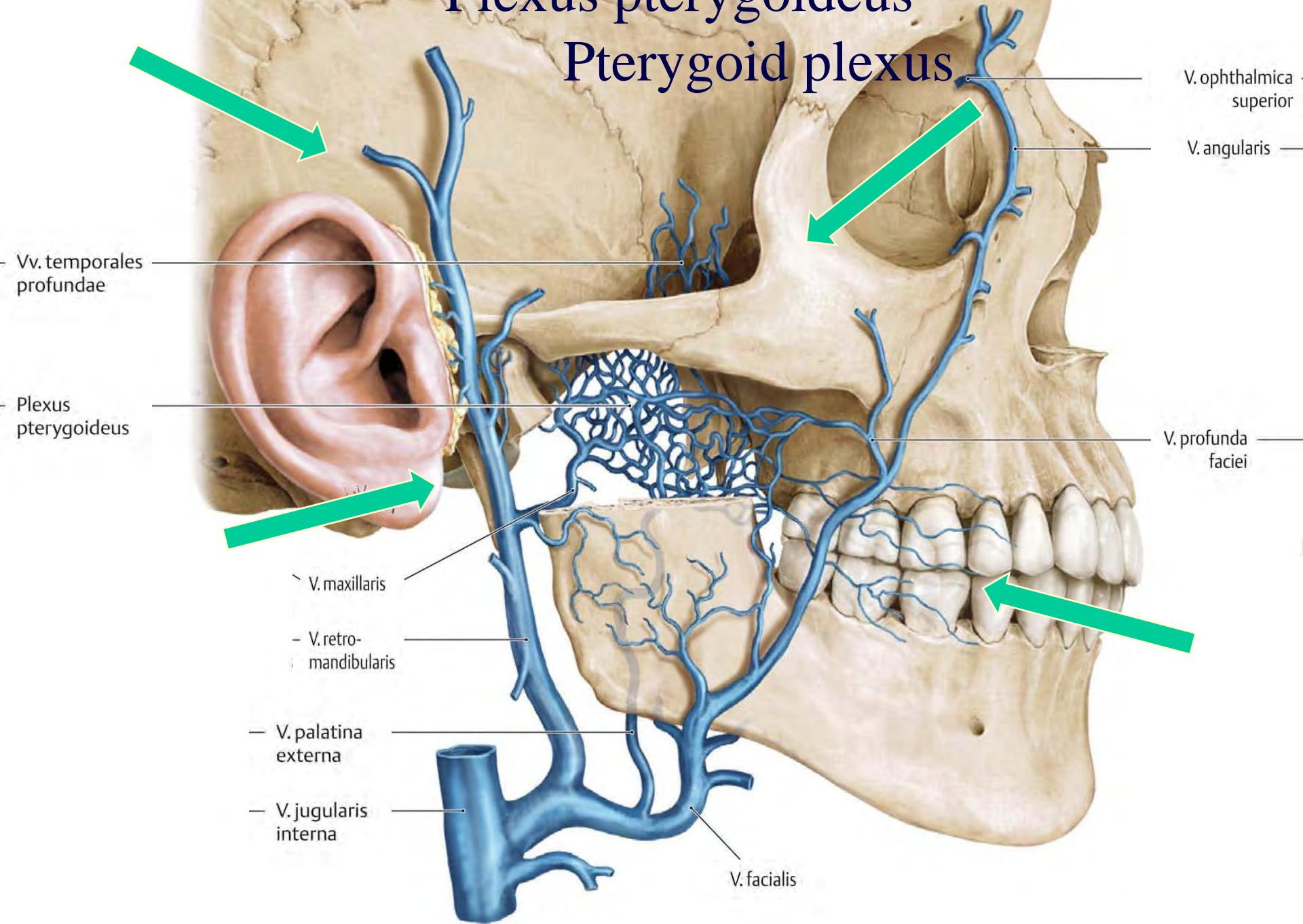
Fig. 135 a–c Variations of the middle meningeal artery, A. meningea media.

- a** The middle meningeal artery, A. meningea media, branches off proximal to the inferior alveolar artery, A. alveolaris inferior.
- b** The middle meningeal artery, A. meningea media, branches off across from the inferior alveolar artery, A. alveolaris inferior.
- c** The middle meningeal artery, A. meningea media, branches off distal to the inferior alveolar artery, A. alveolaris inferior.



Plexus pterygoideus

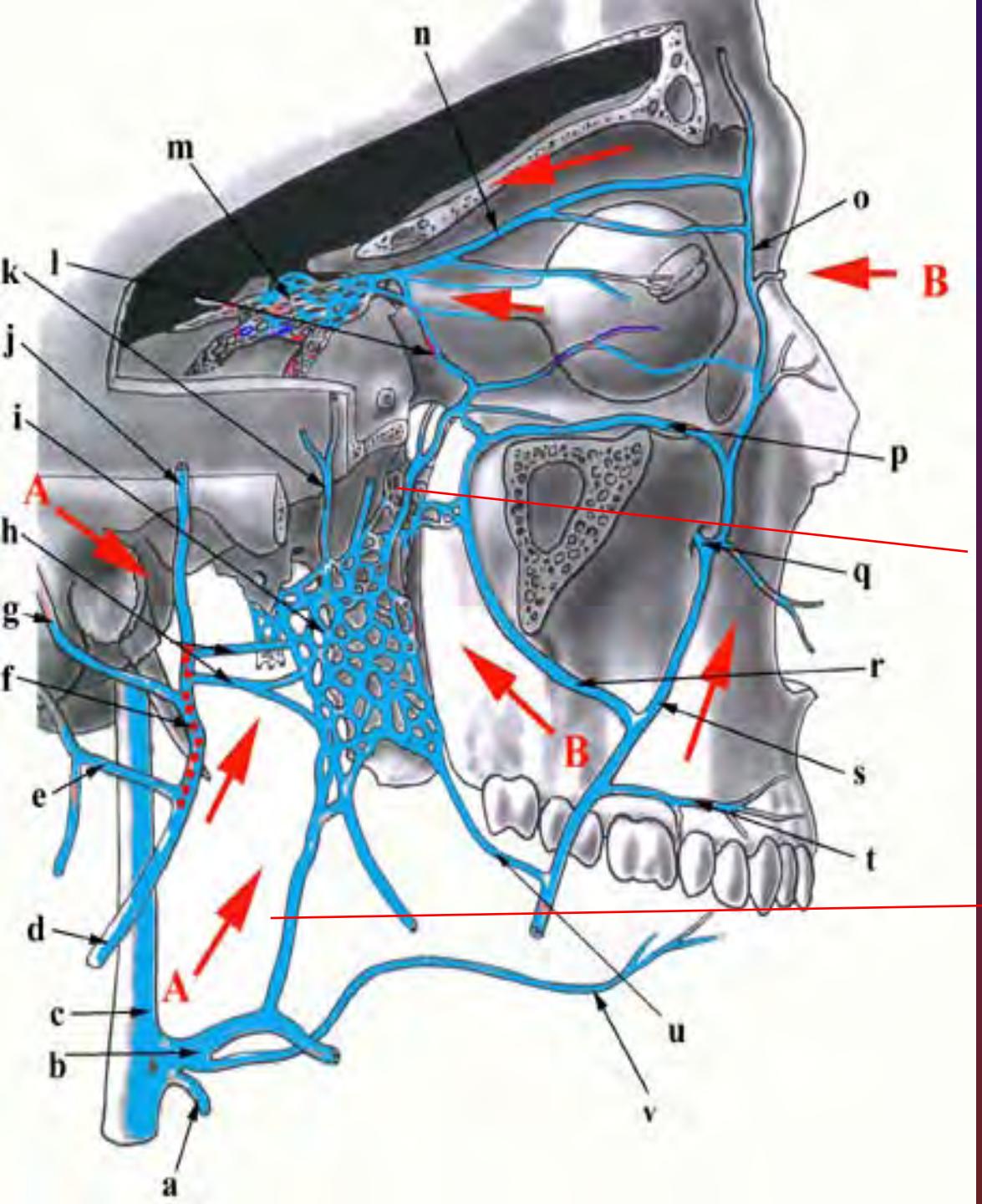
Pterygoid plexus



Pterygoid plexus

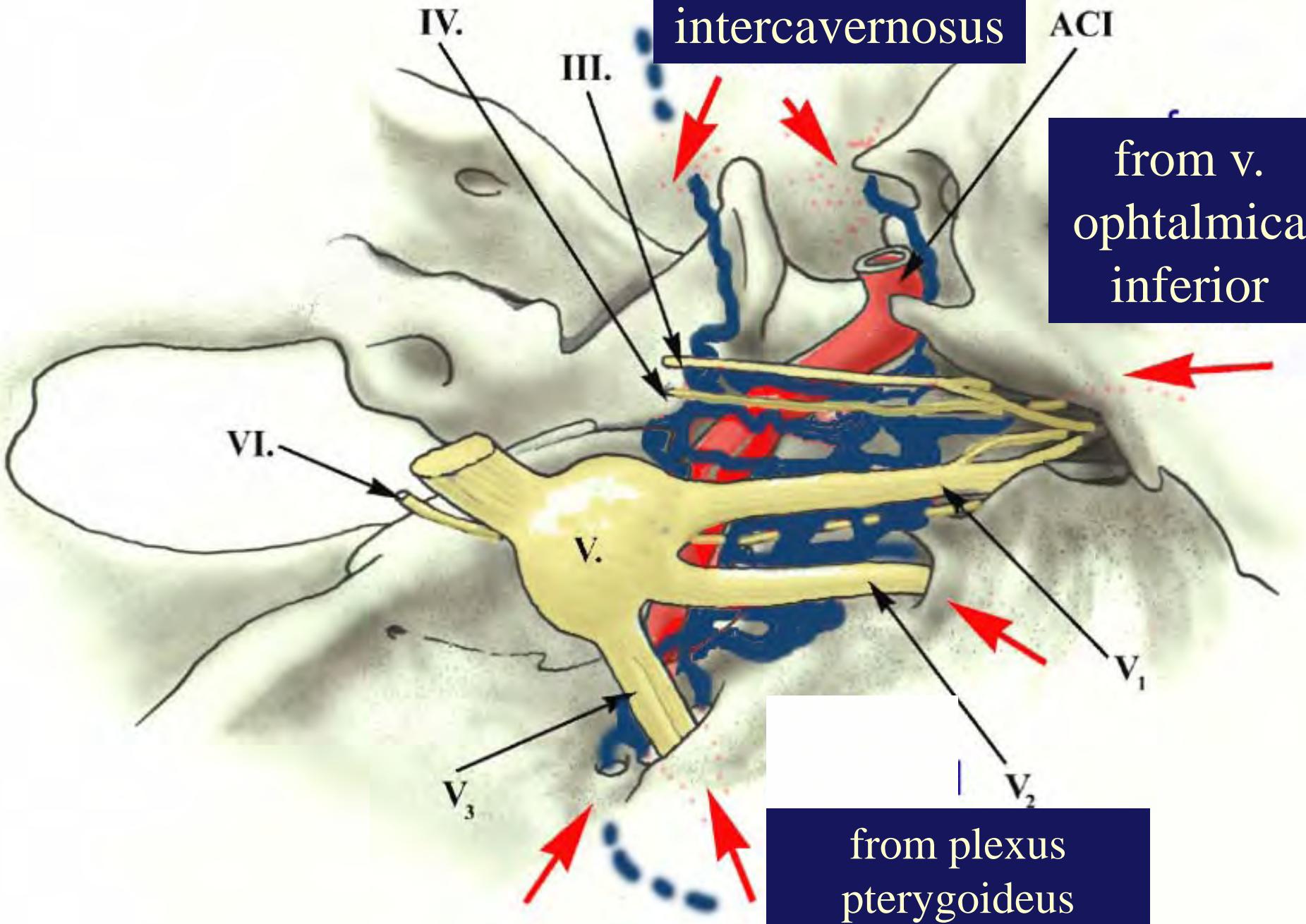
and its tributaries:

- n ophtalmica sup.
- p ophtalmica inf.
- n infraorbitalis
- rete foraminis ovalis
(through foramen ovale – rete
and through foramen
spinosum)
- r profunda faciei
- u buccalis
- alveolaris inferior

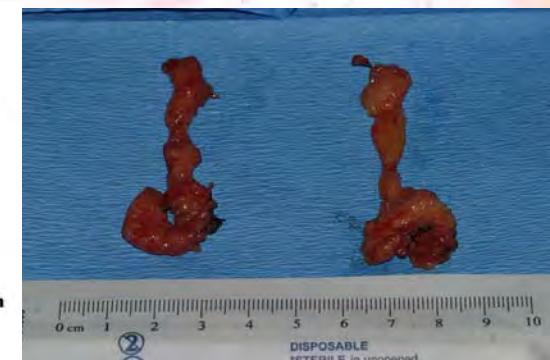
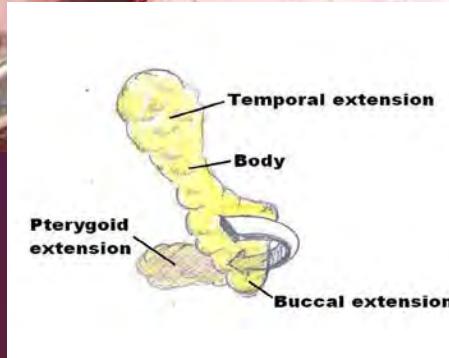
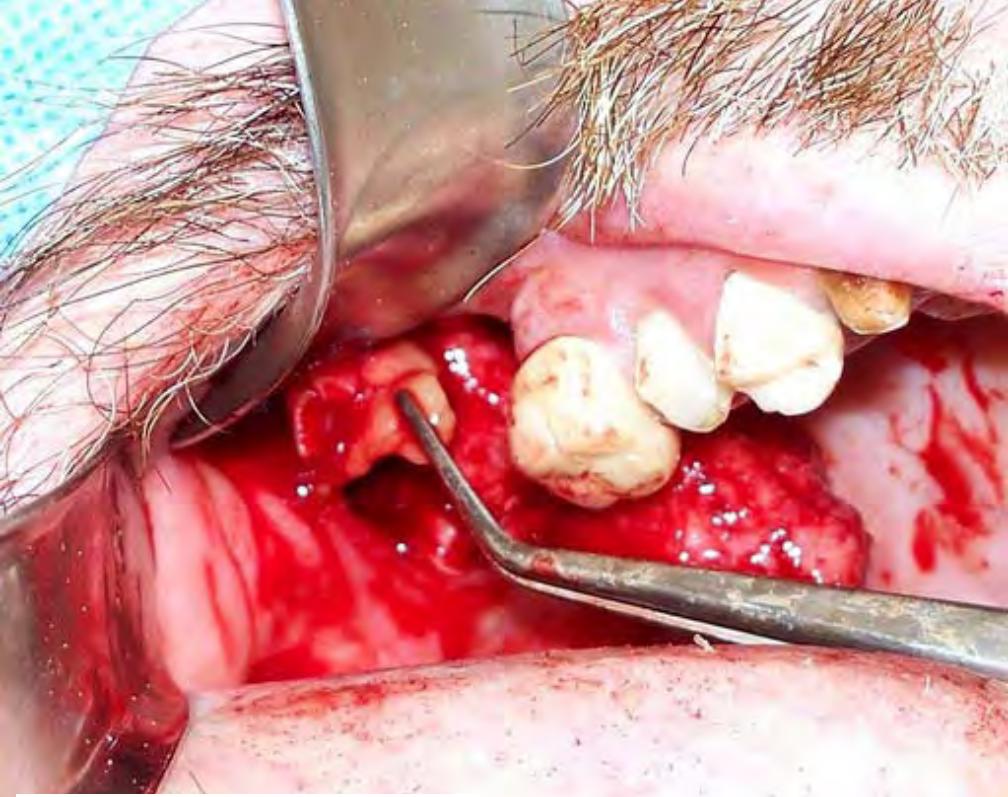
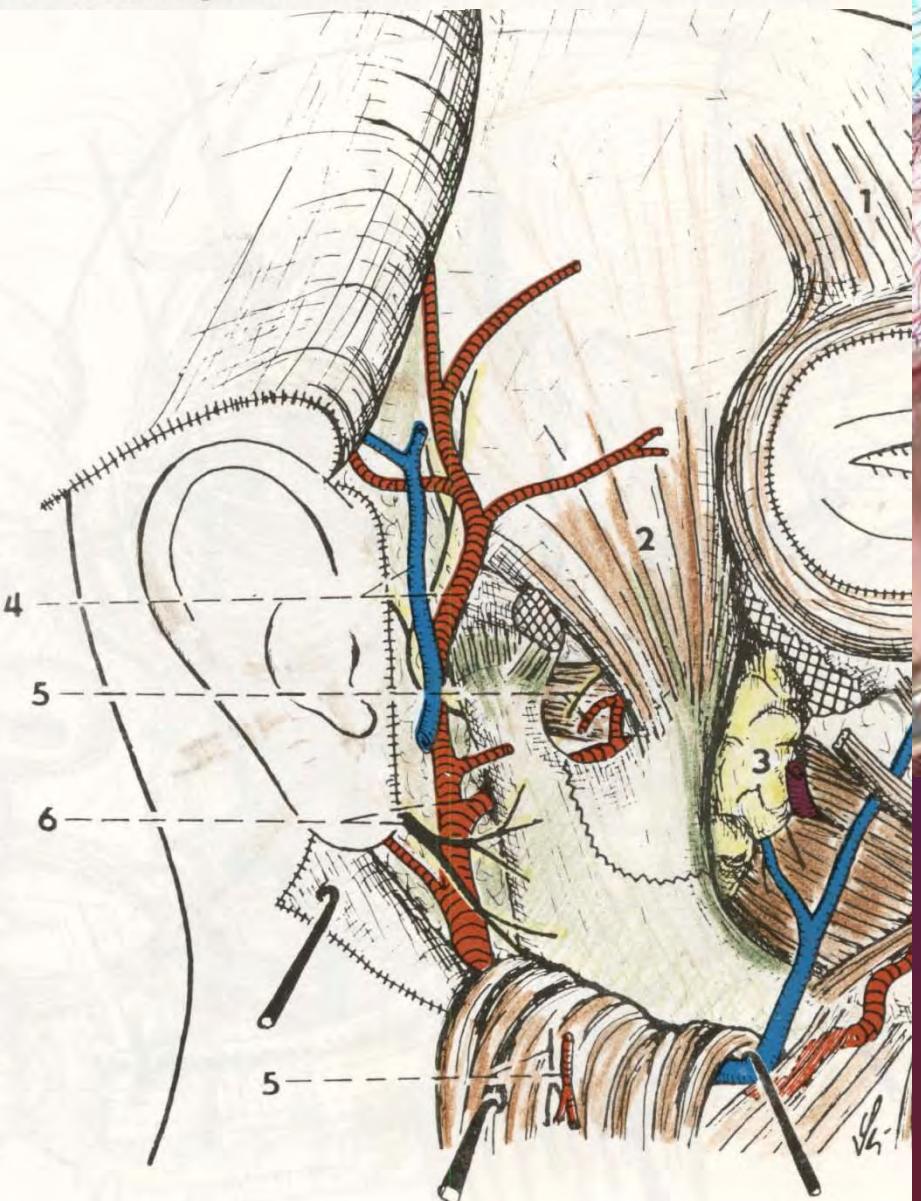


... retromandibularis
h maxillaris

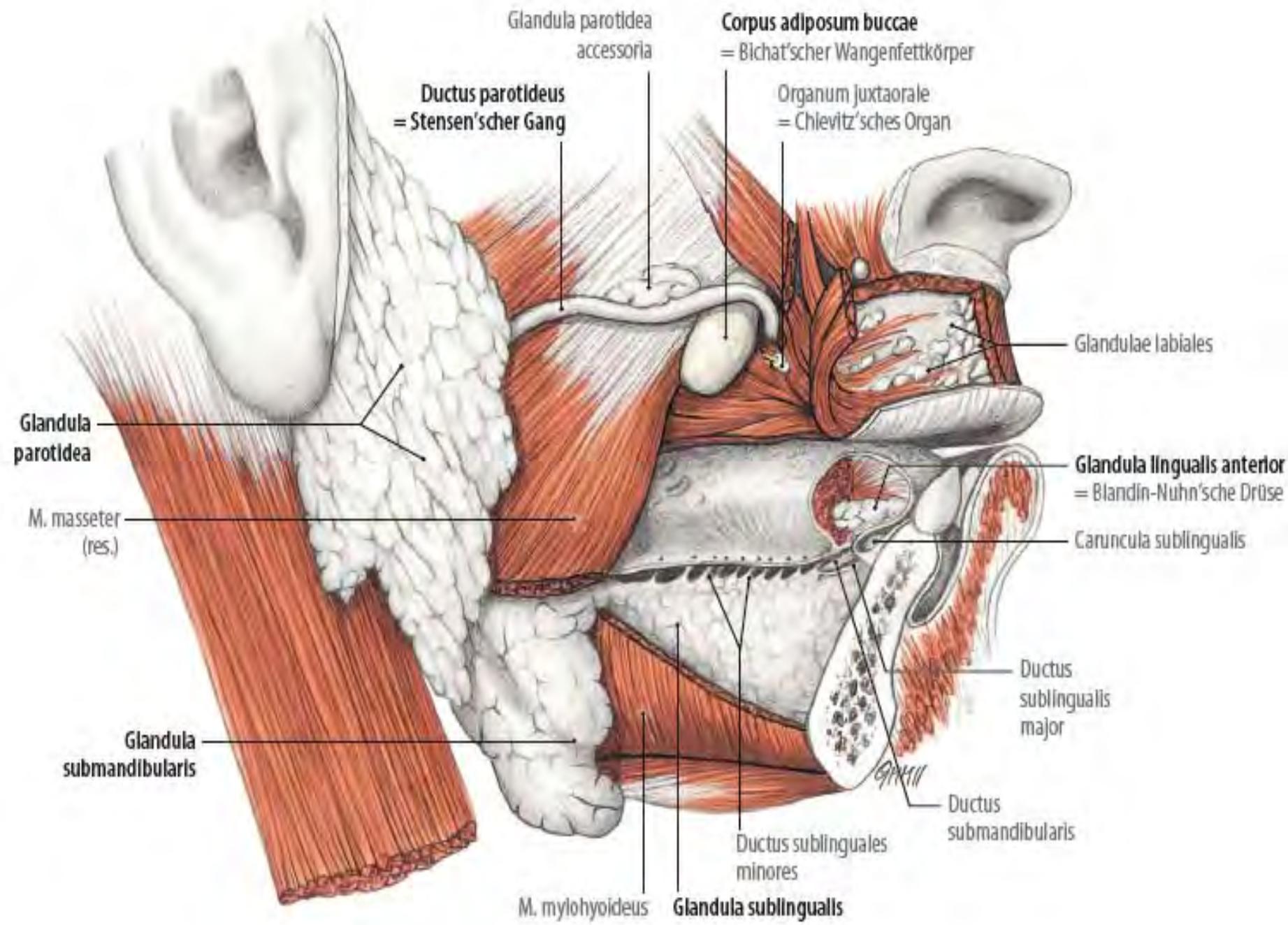
Plexus
intercavernosus



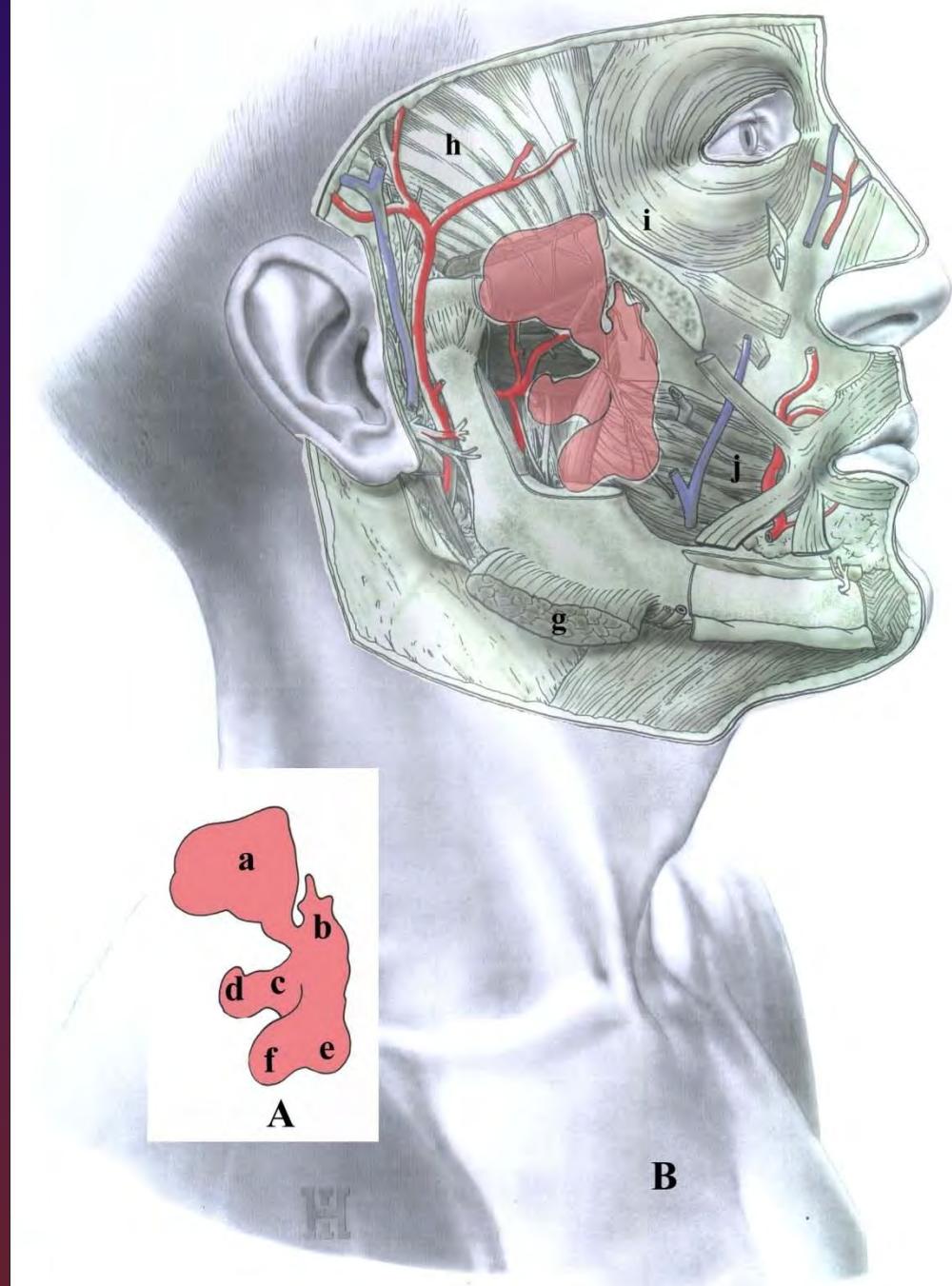
- 1 - m. frontalis
- 2 - m. temporalis
- 3 - corpus adiposum buccae
- 4 - vasa temporalia superfic.
- 5 - a. et n. massetericus
- 6 - a. maxillaris et n. VII.
- ~~~~~ - resection line

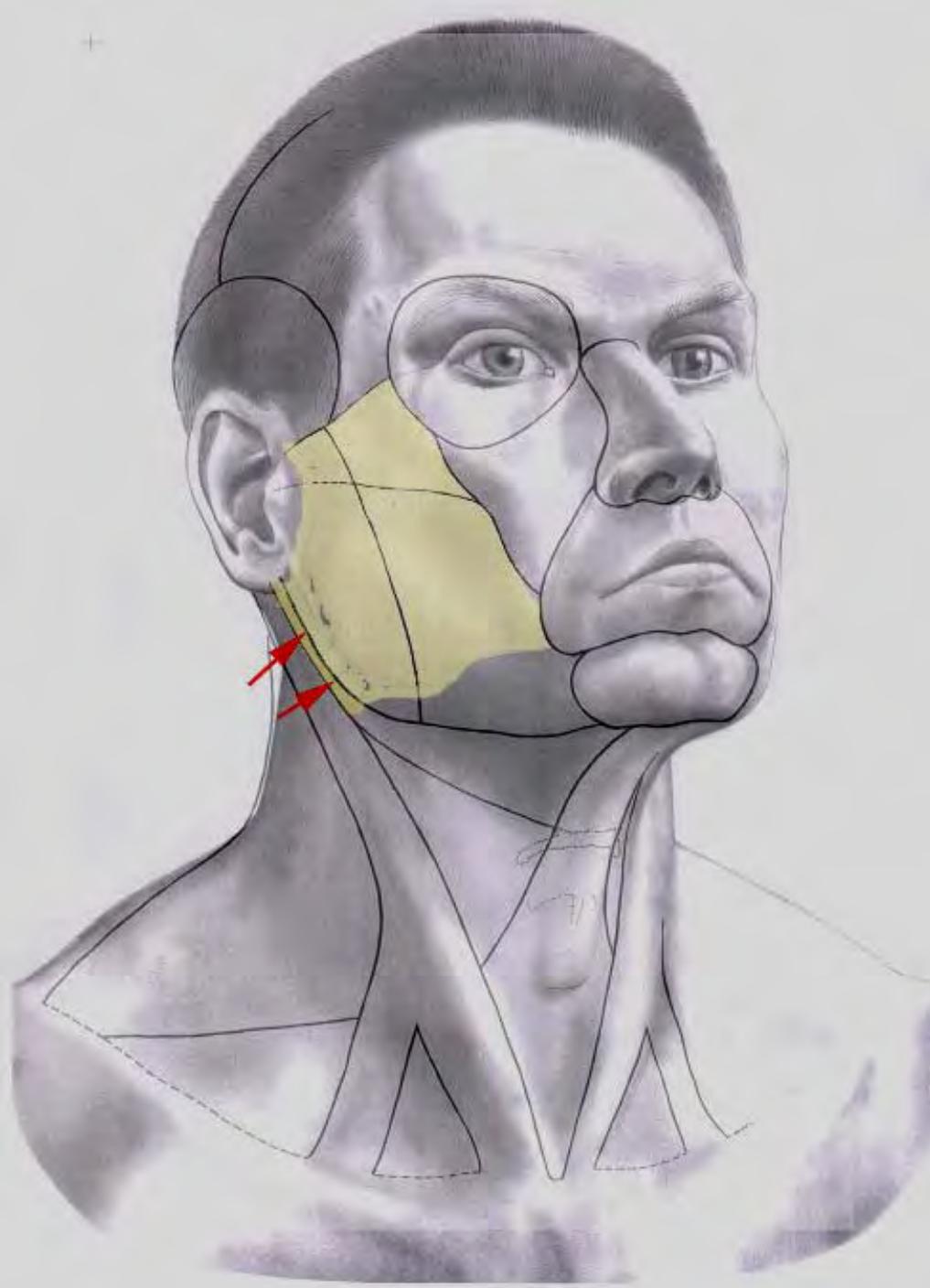


Bichatův polštář kříží ductus parotideus
Bichat's fat pad is crossed by parotid duct

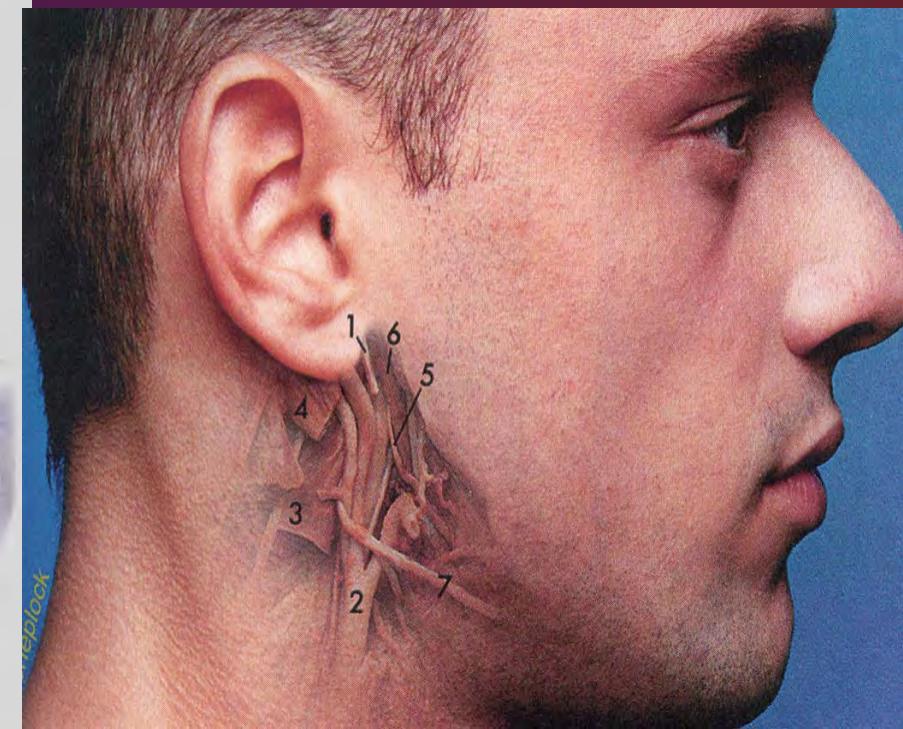


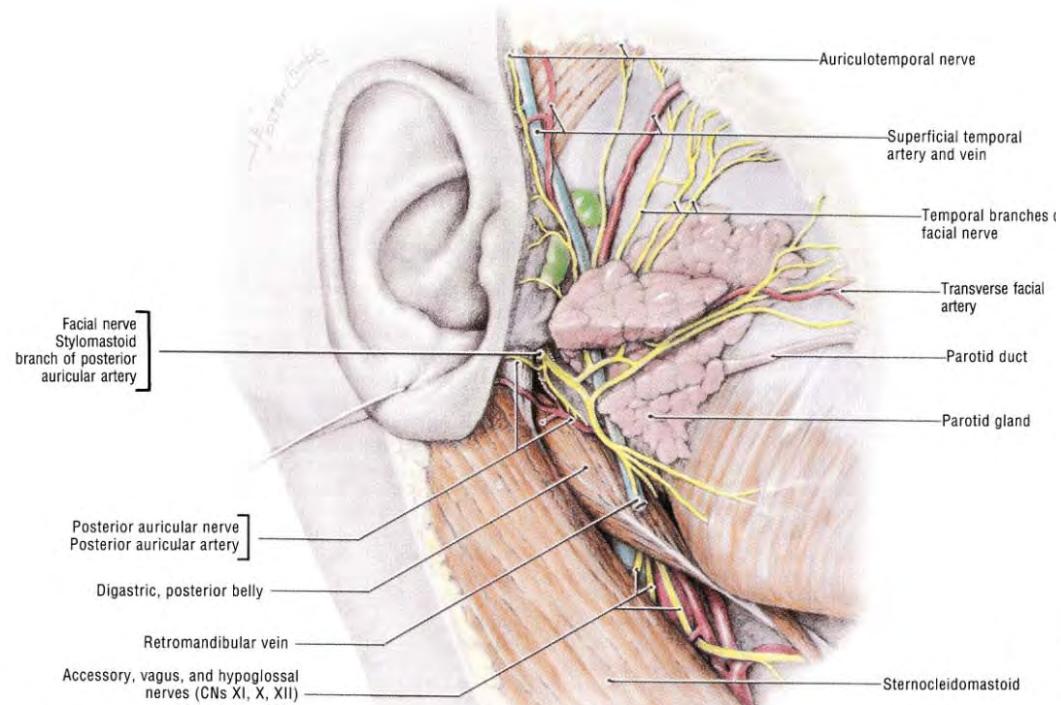
Fat pad Bichat cushion





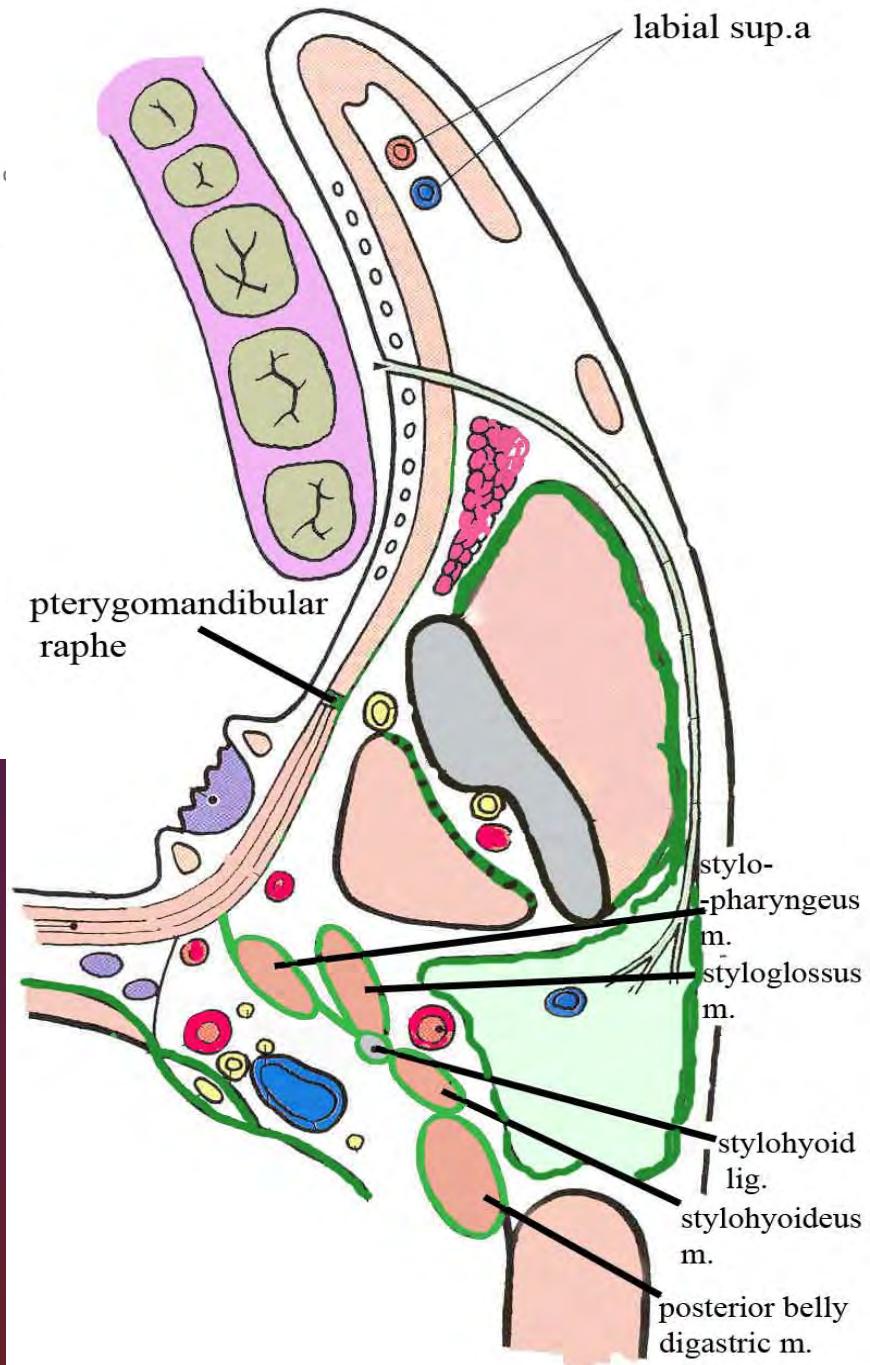
Approach through retrostyloid fossa





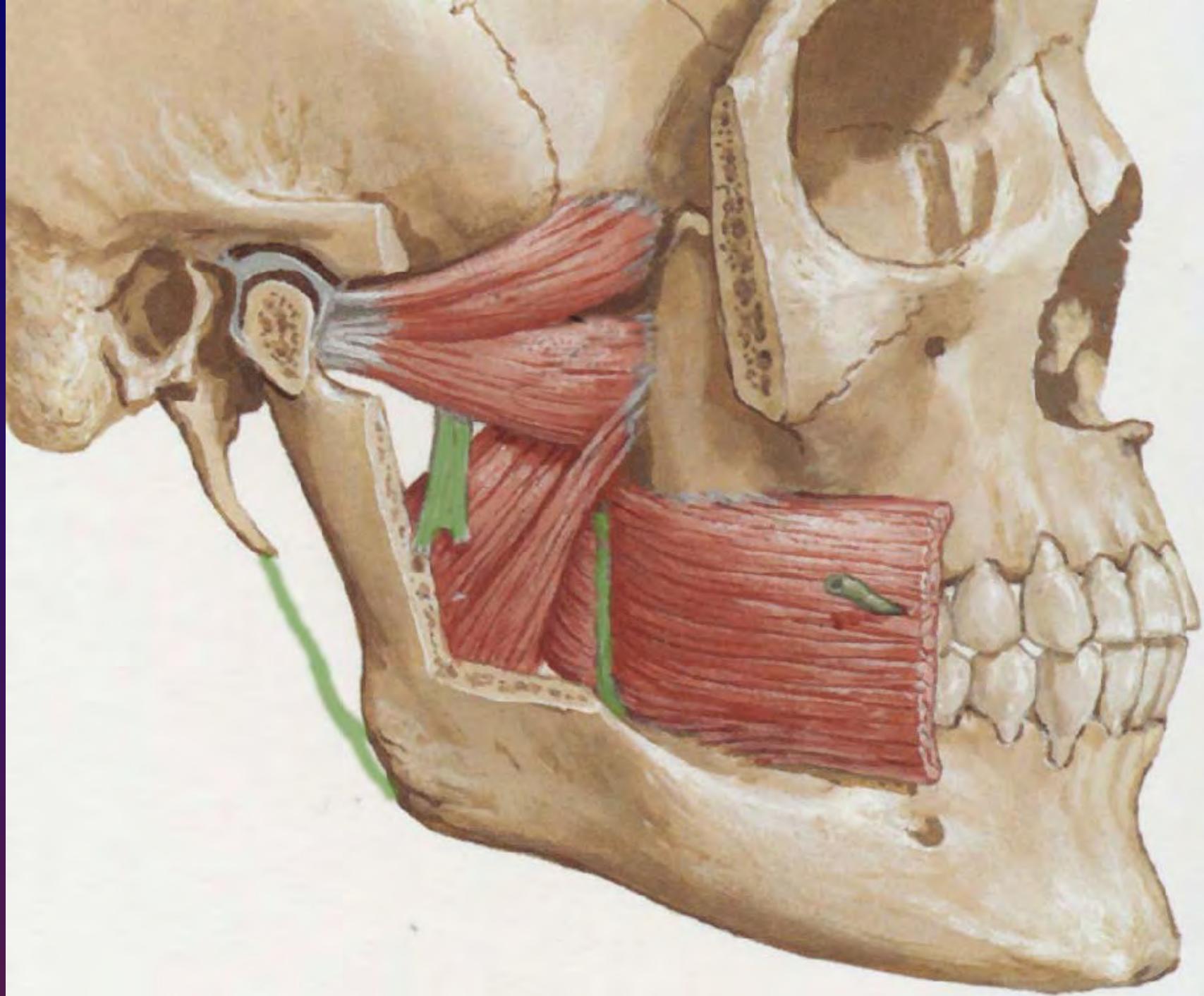
Dissection of the parotid region. Part of the parotid gland has been removed to expose the branches of the facial nerve (CN VII).

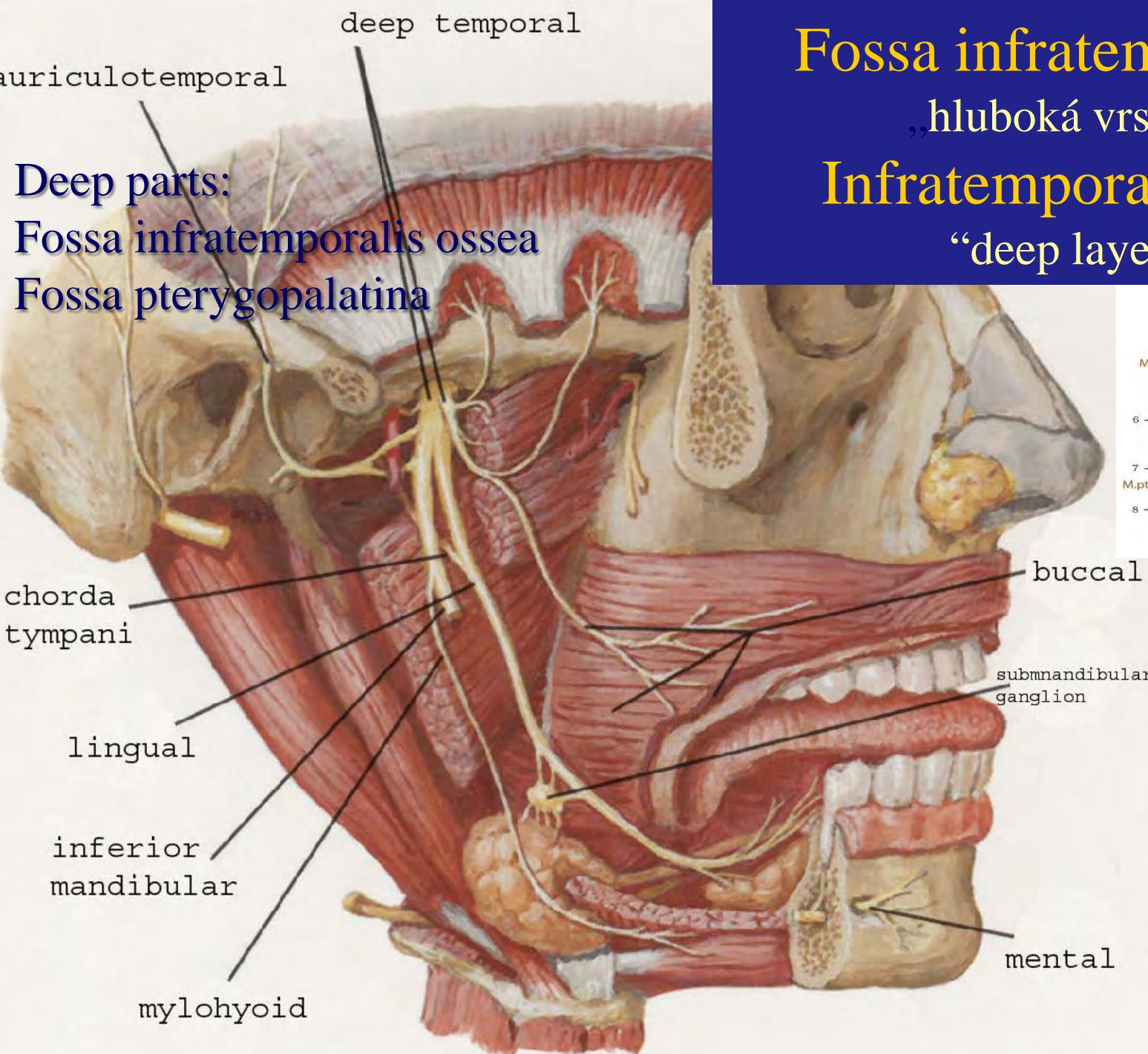
Fossa retromandibularis retromandibular fossa



Pterygomandibular space

lies between medial pterygoid
muscle and ramus of the
mandible



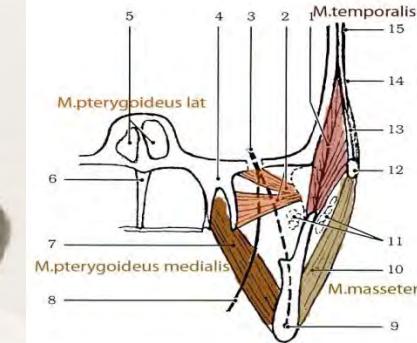


Fossa infratemporalis

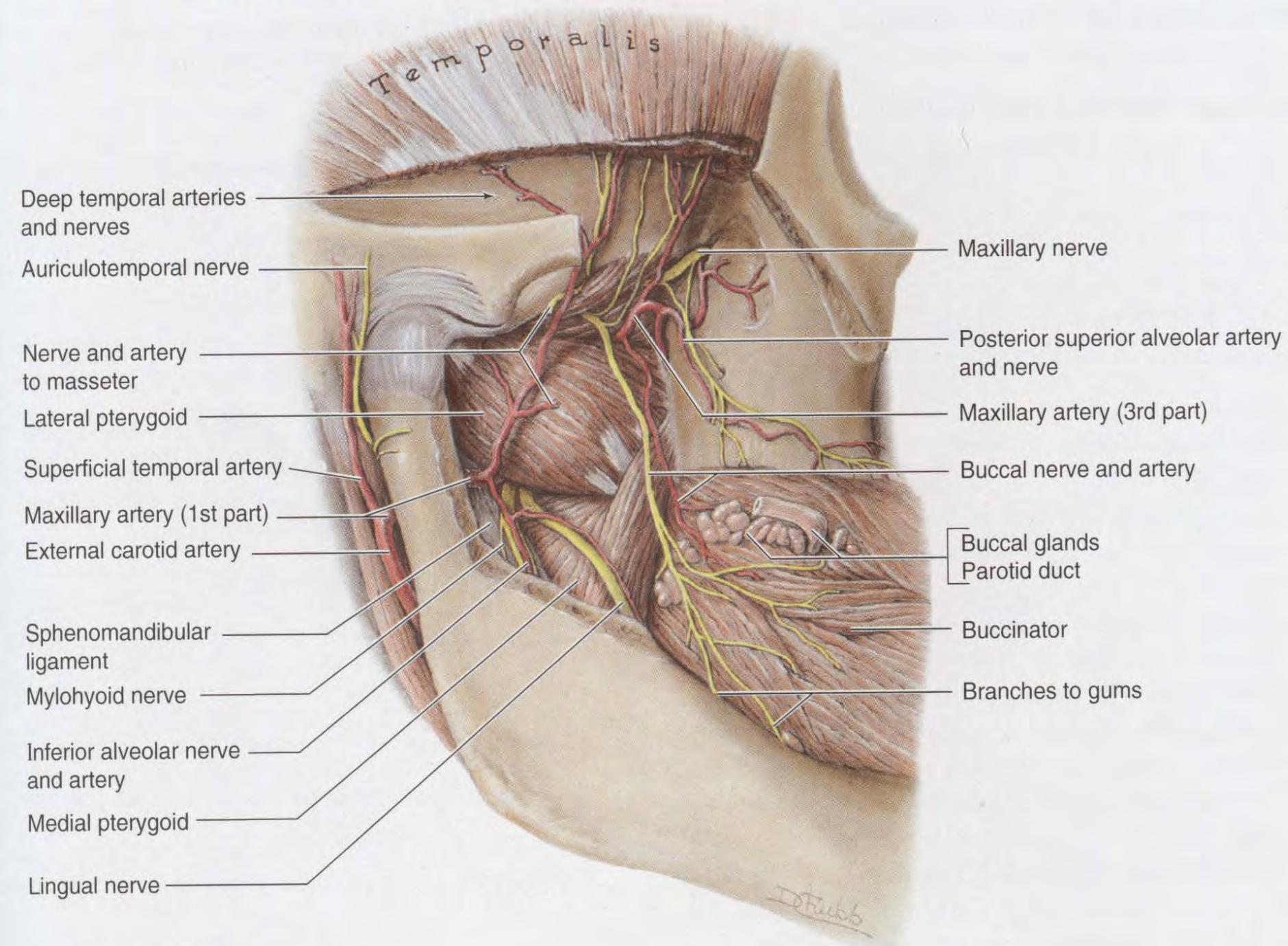
„hluboká vrstva“

Infratemporal fossa

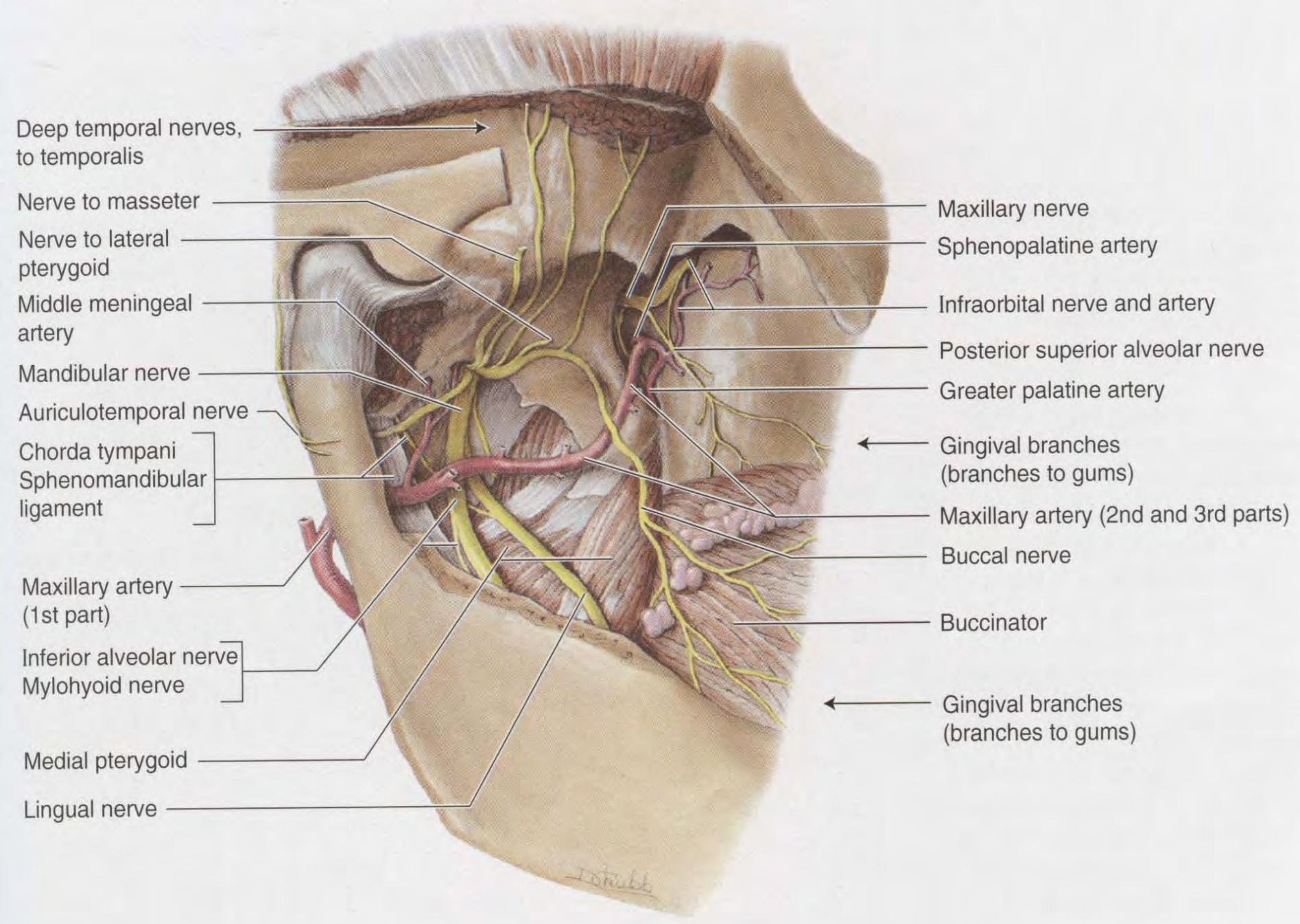
“deep layer“

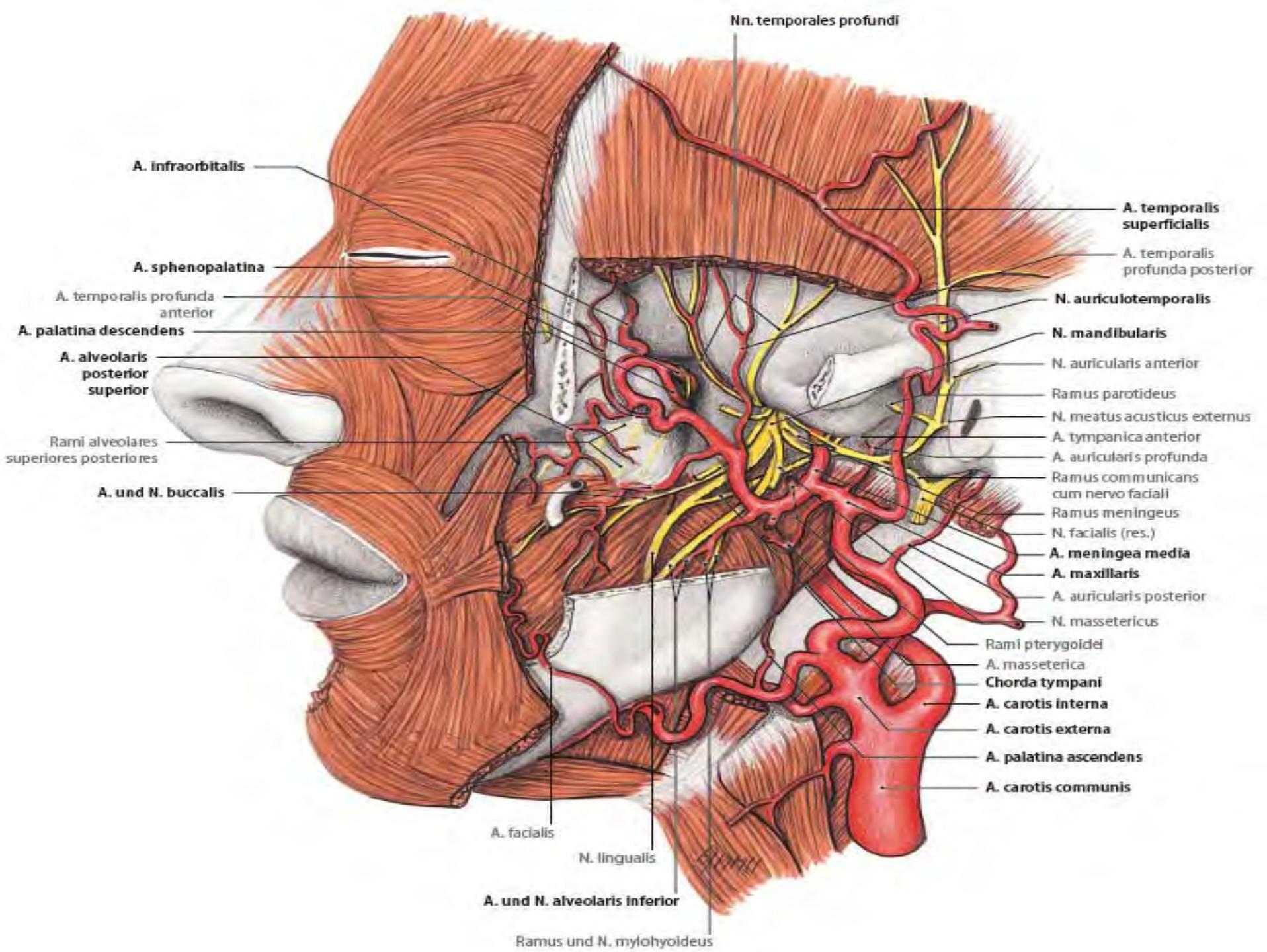


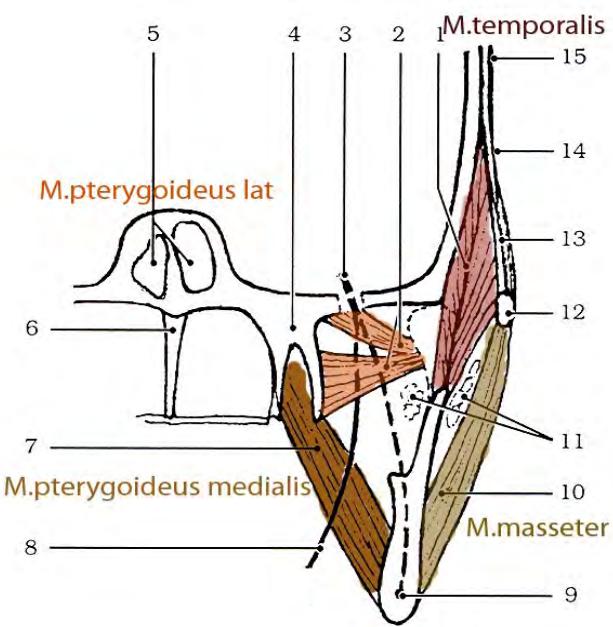
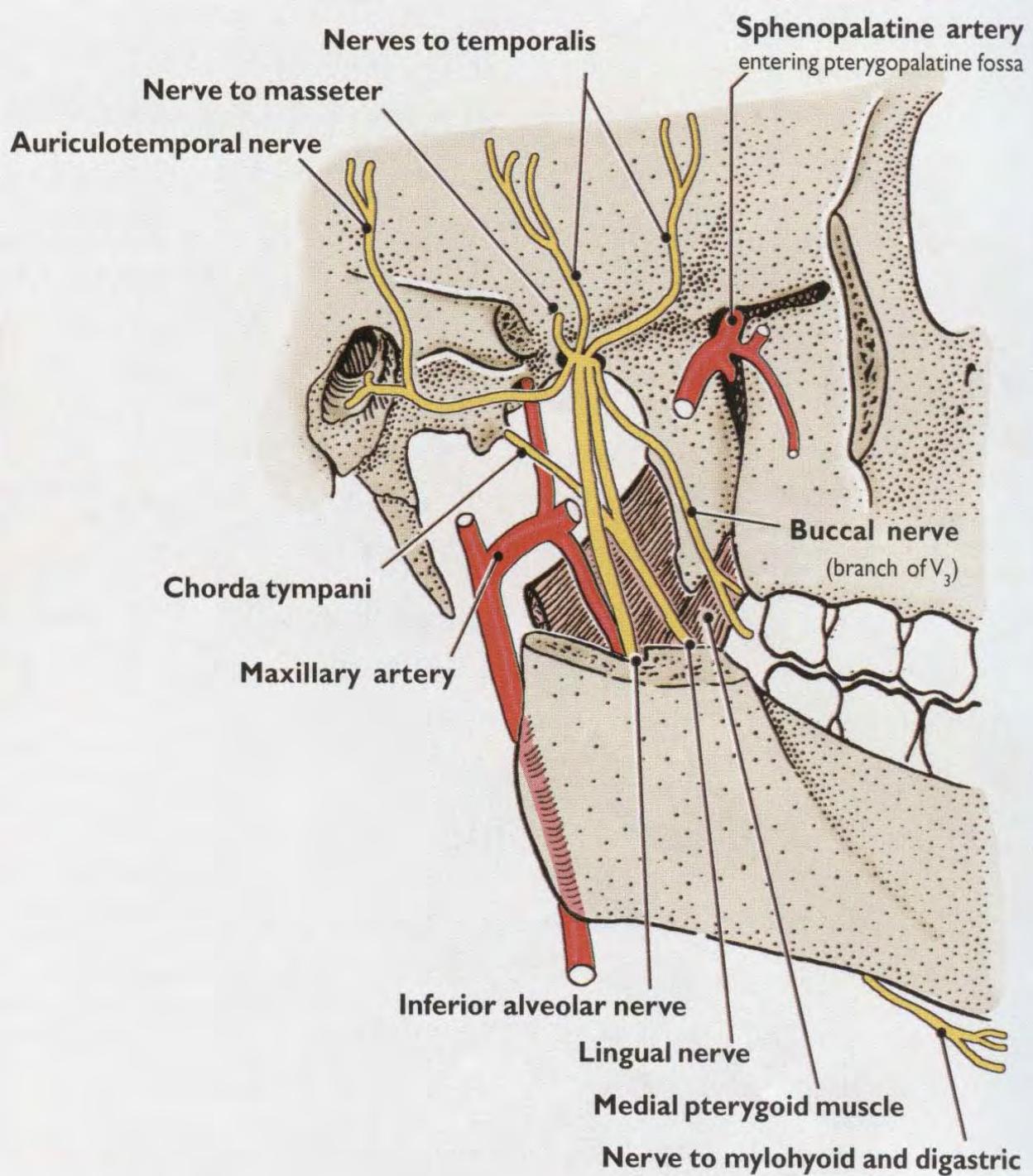
Větve V₃
Mandibular
branches



Lateral view

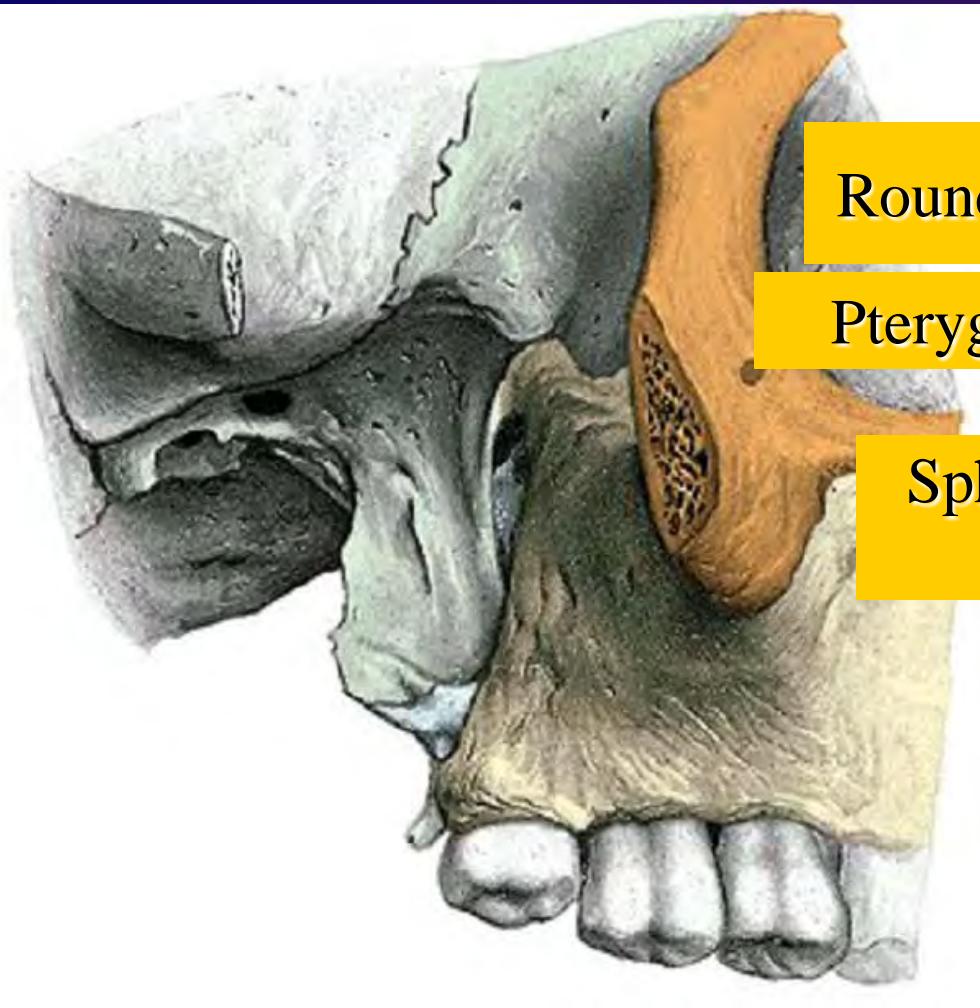




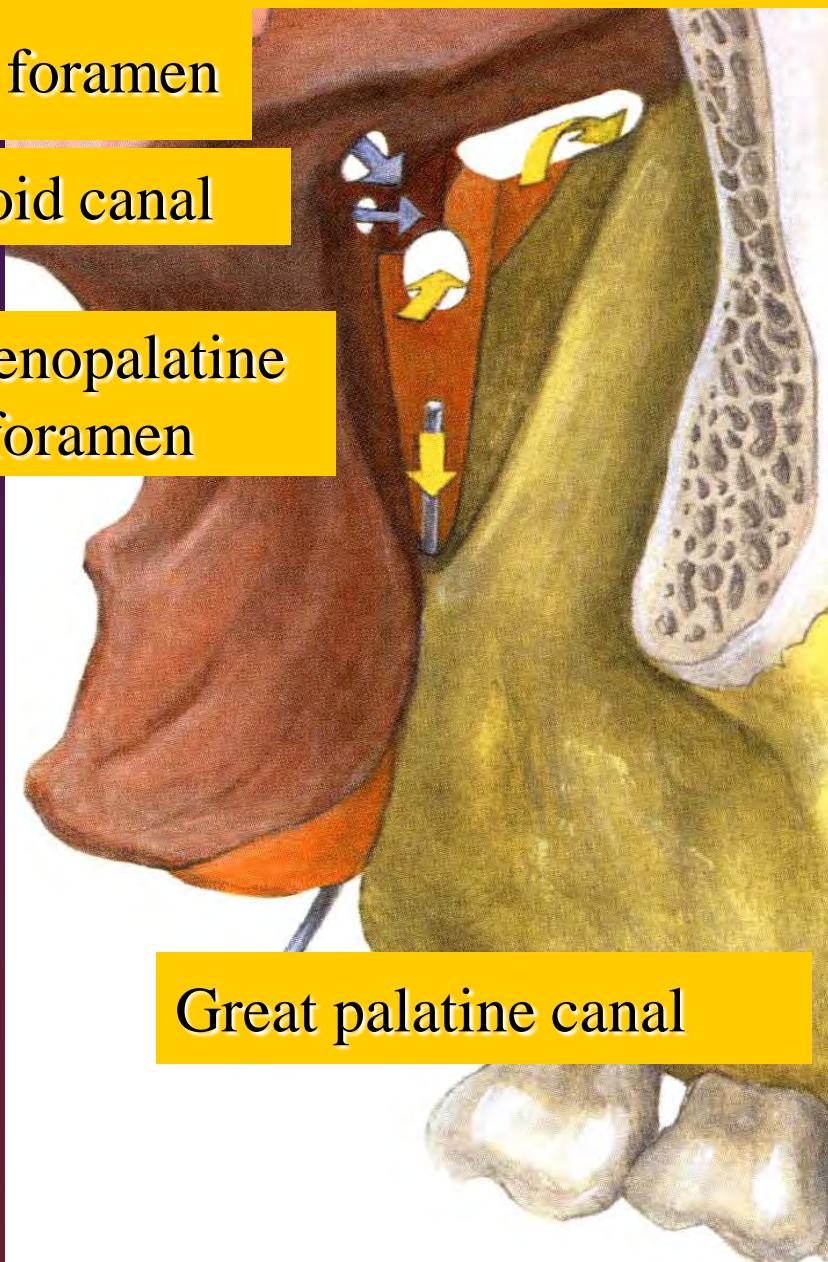


maxillary artery and division
of the trigeminal nerve
 V_3 are surrounded by
the venous pterygoid
plexus

Fossa pterygopalatina
Pterygopalatine fossa
(sphenopalatine)



Inferior orbital fissure

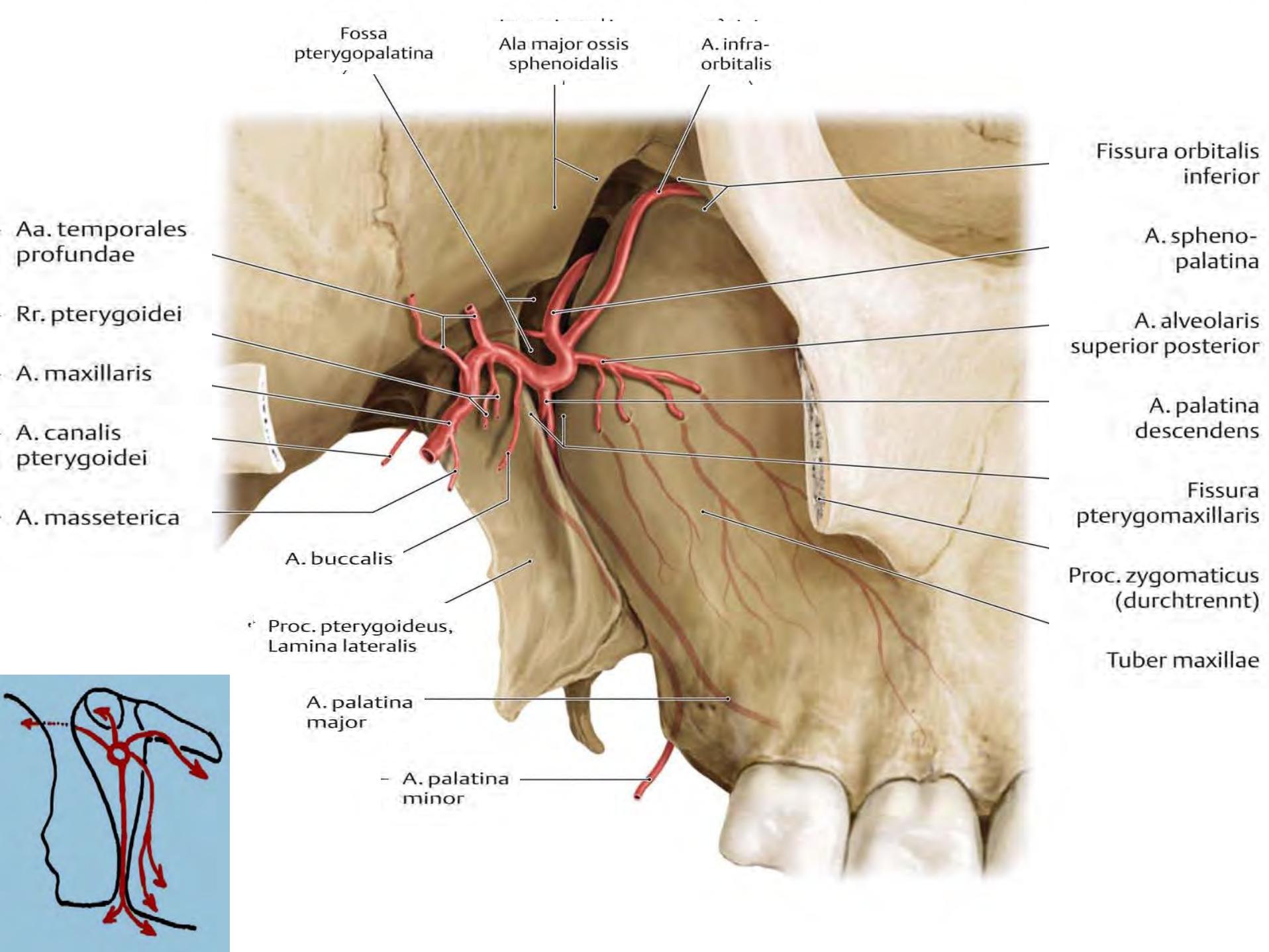


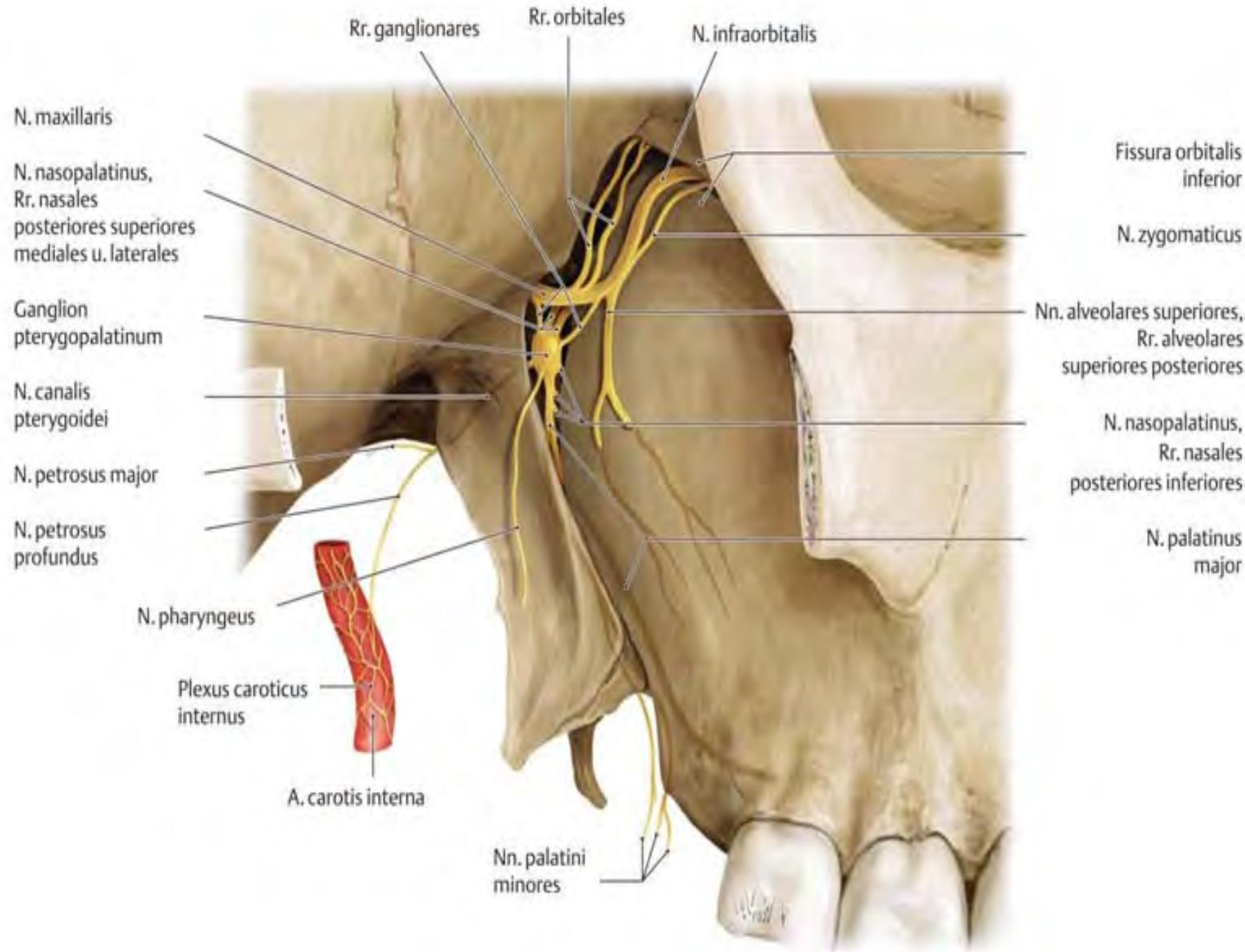
Round foramen

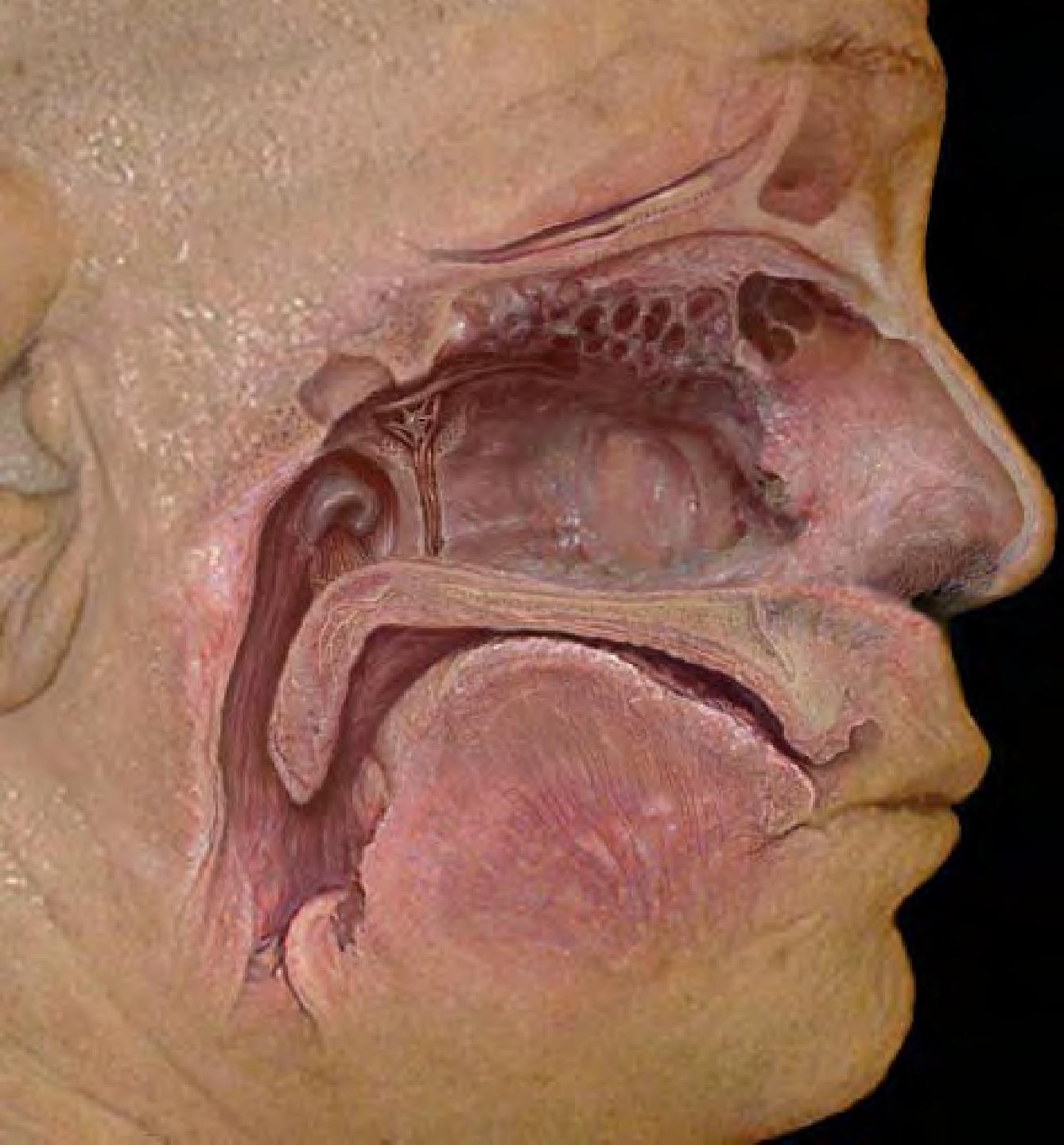
Pterygoid canal

Sphenopalatine
foramen

Great palatine canal







Fossa
pterygopalatina –
preparace z dutiny
nosní

Fossa
pterygopalatina
dissected from the
nasal cavity



Abscess in left peritonsillar space

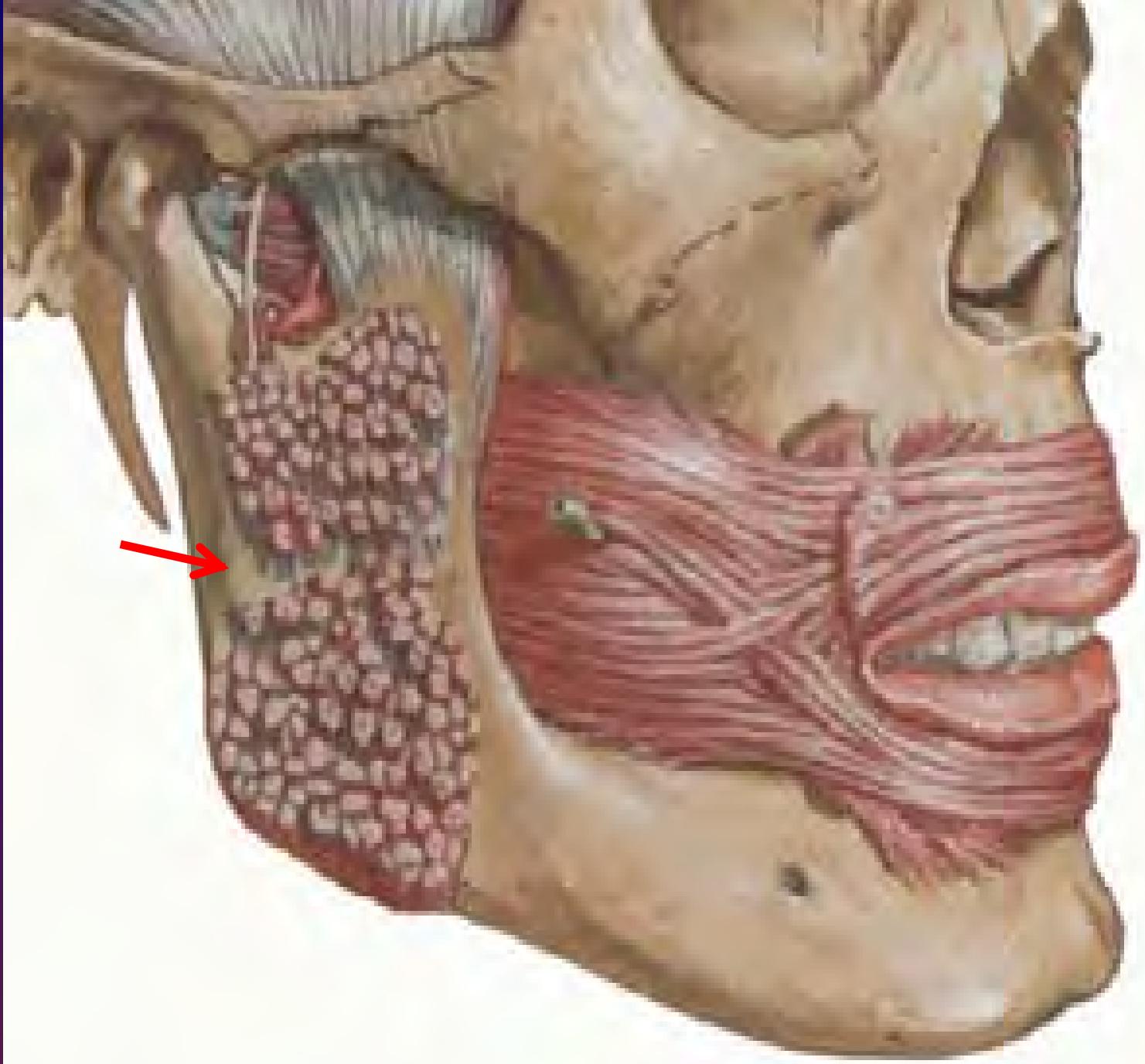
Submasseteric space (massetericomandibular)

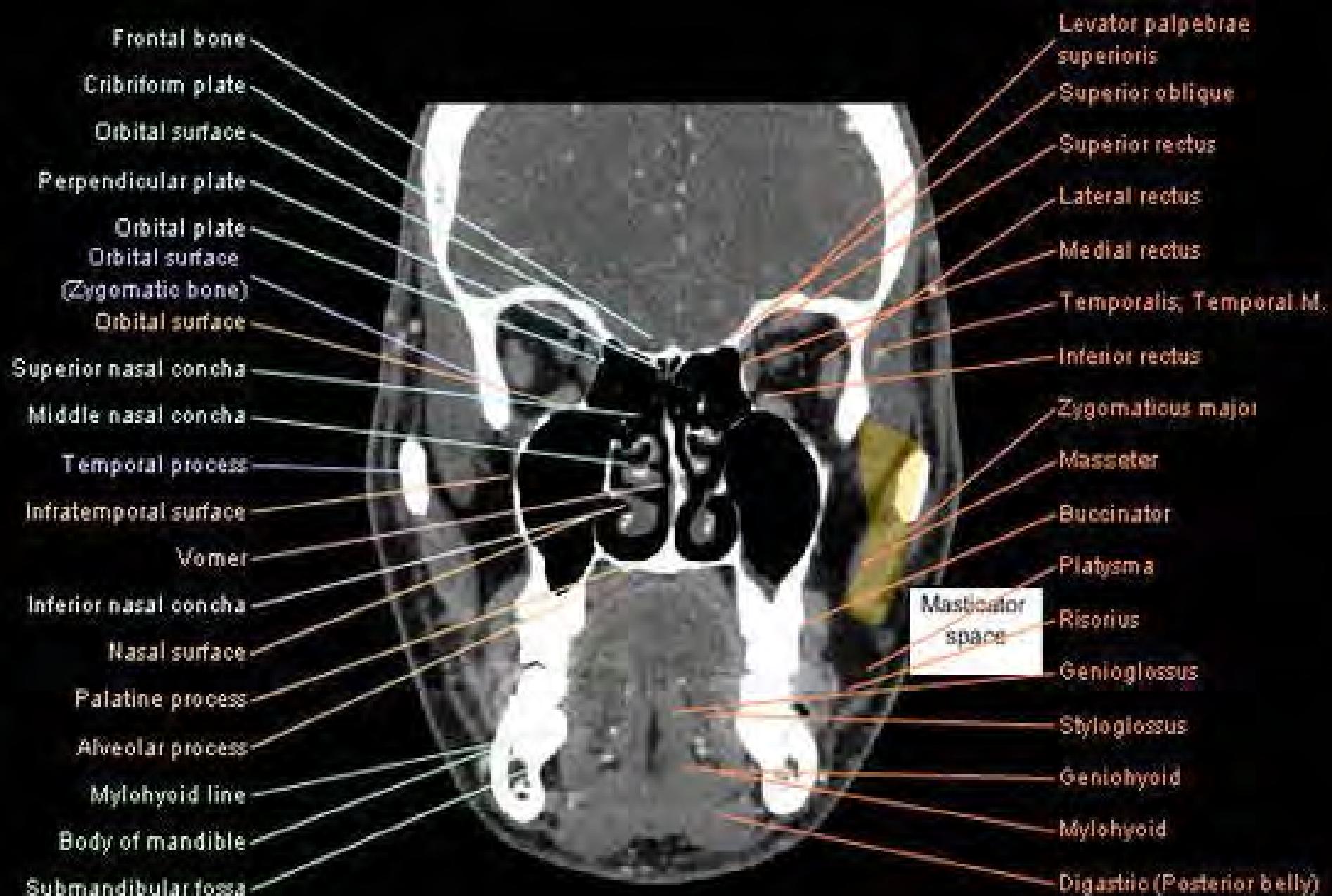
**lies between masseter and
ramus of the mandible**



3.26 The muscles of facial expression. A = Orbicularis oculi; B = levator labii superioris alaeque nasi; C = levator labii superioris; D = zygomaticus minor; E = zygomaticus major; F = levator anguli oris; G = depressor anguli oris; H = depressor labii inferioris; I = orbicularis oris; J = mentalis; K = facial vessels; L = submandibular gland; M = parotid duct; N = parotid gland with facial nerve branches; O = common facial vein formed by union of the facial vein and the anterior branch of the retromandibular vein; P = external jugular vein formed by the anterior branch of the retromandibular and the posterior auricular vein. Courtesy of Professor C. Dean.







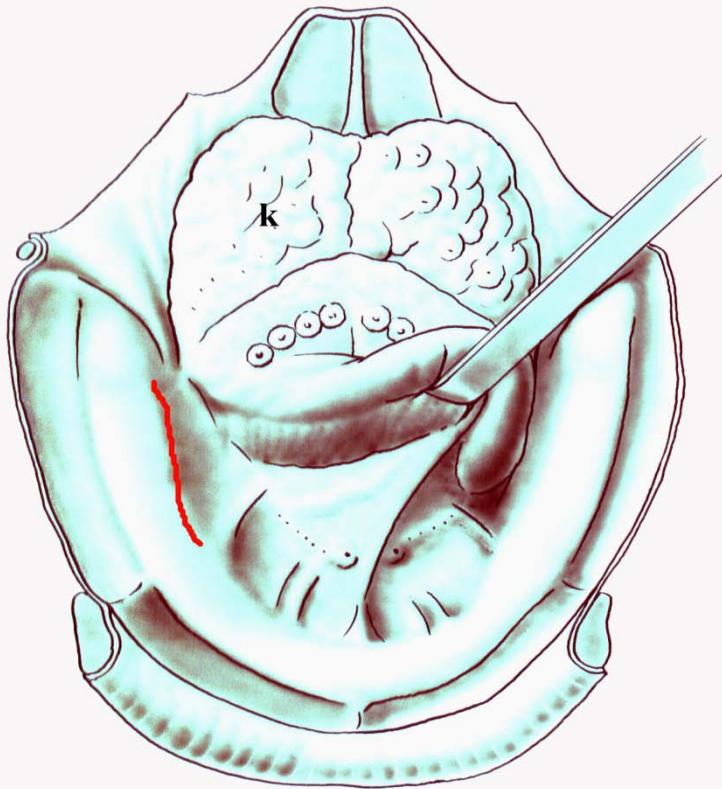
Glandula parotis is
affected
(aktinomycosis



Sublingual space

lies in the floor of the mouth between mylohyoid muscle and the oral mucosa

Pus from this space can be accumulated inside canine fossa between levator labii superioris and zygomaticus muscles (facial expression muscle group)



Soft floor of the oral cavity

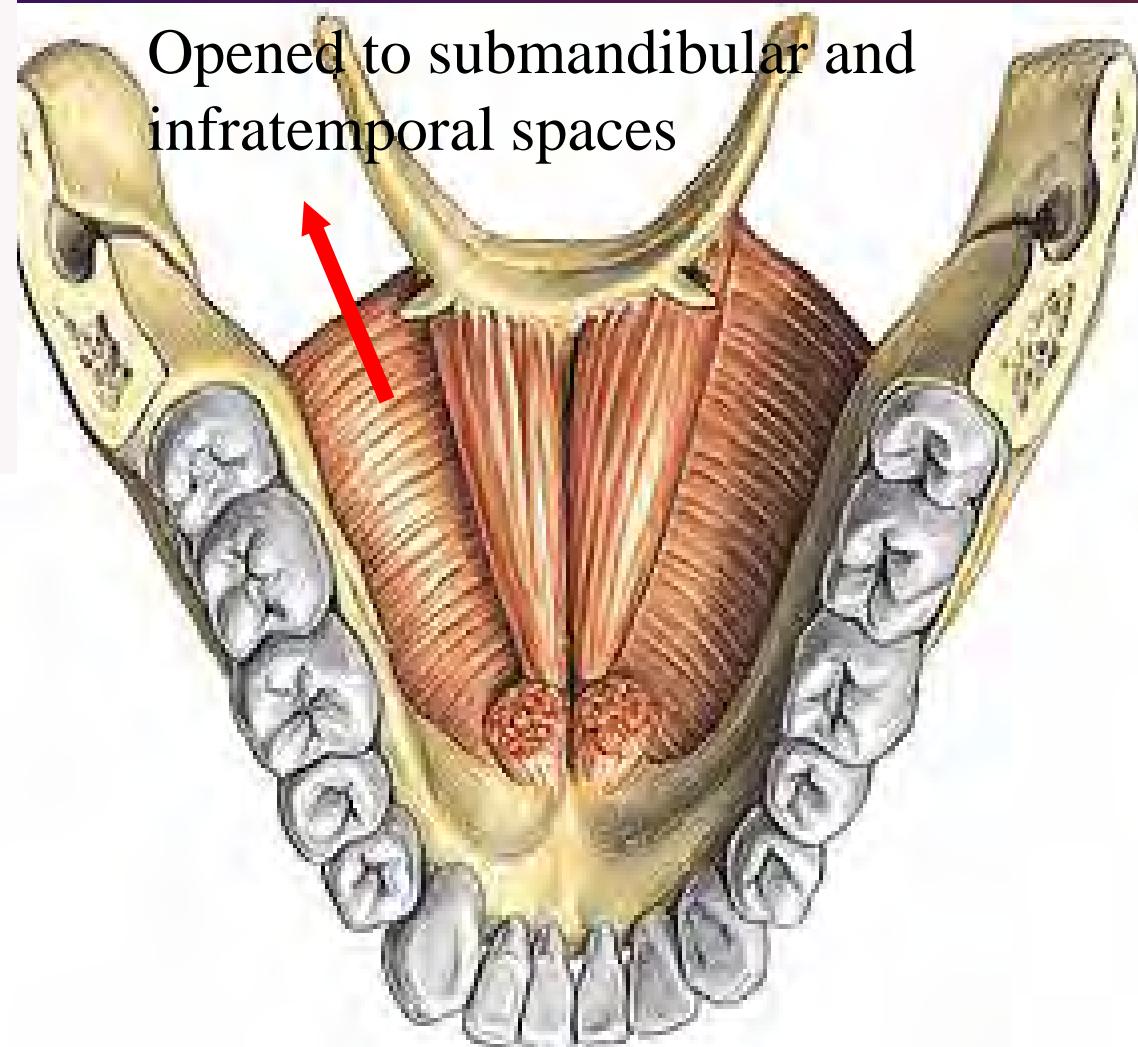
Body of the mandible
(impression of the
sublingual gland)

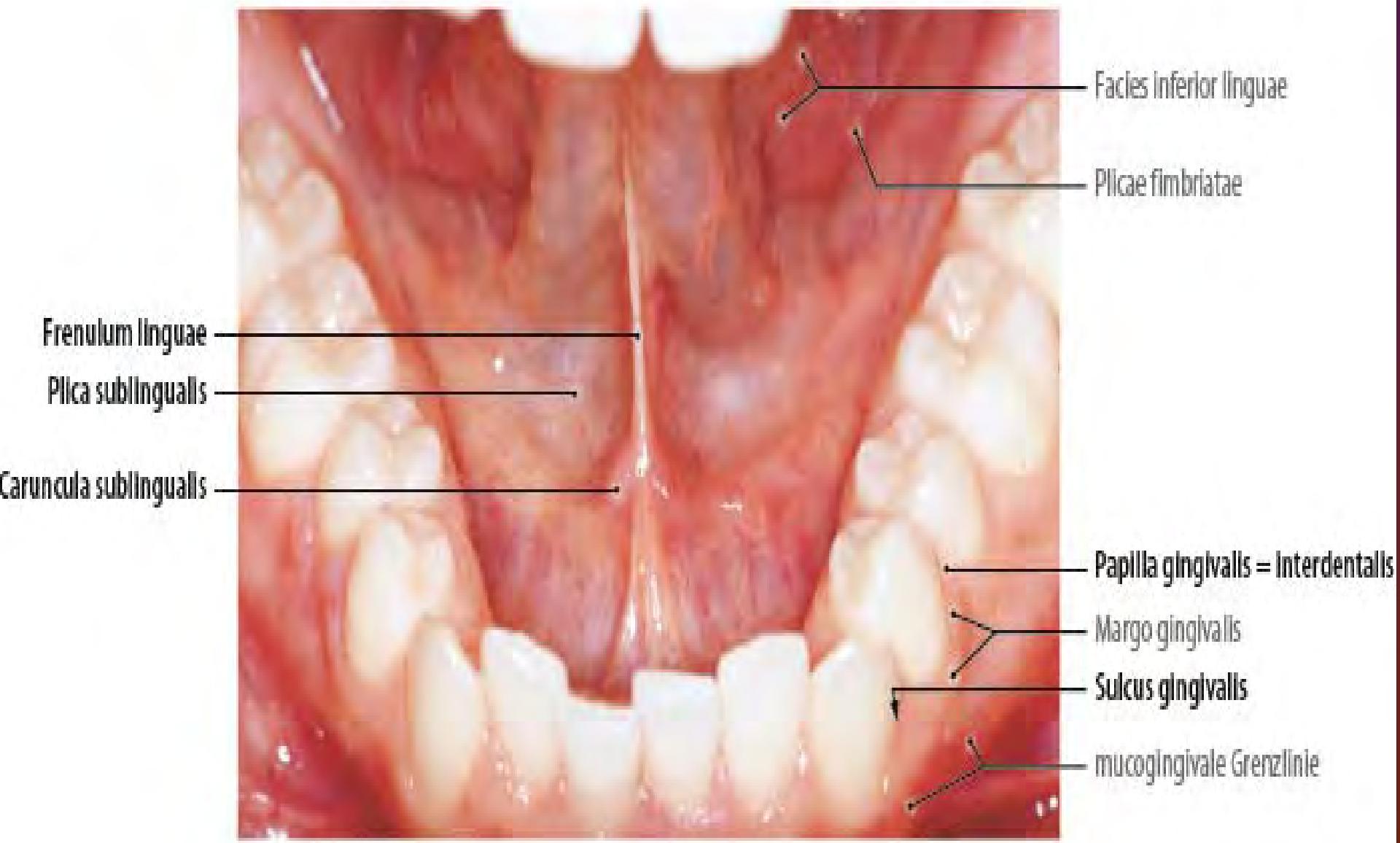
Mylohyoid line (crest)

Mental spines

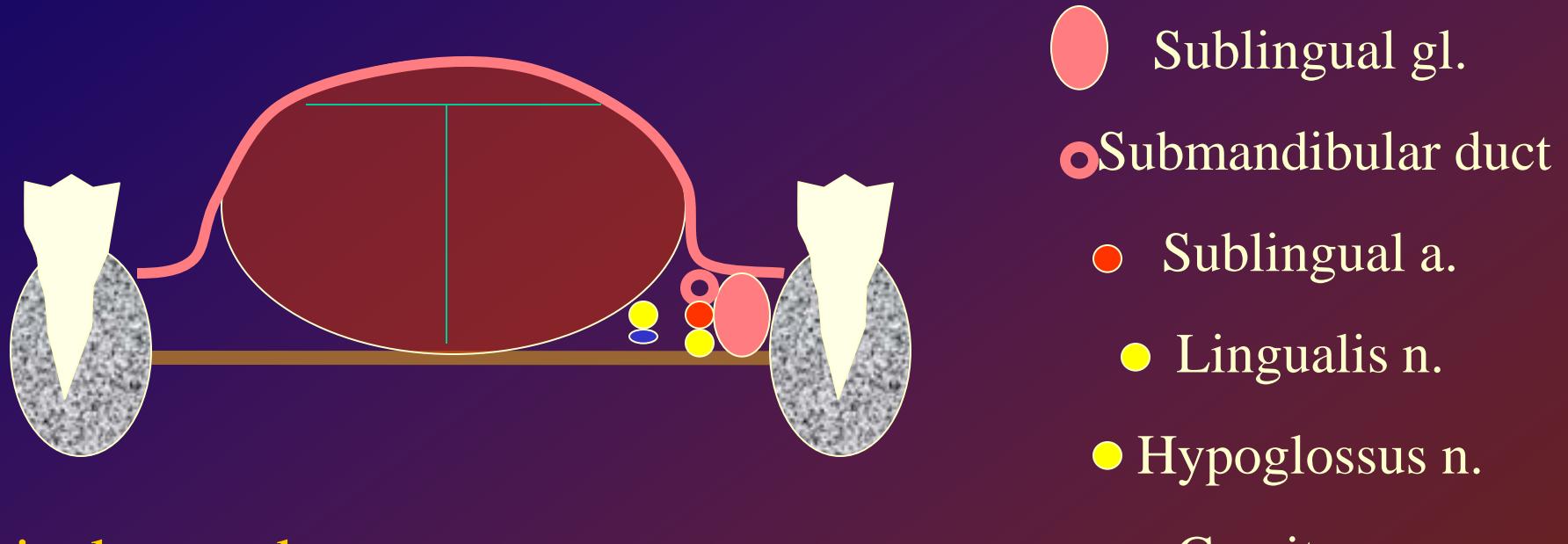
Mylohyoid muscle

Sublingual space boundaries



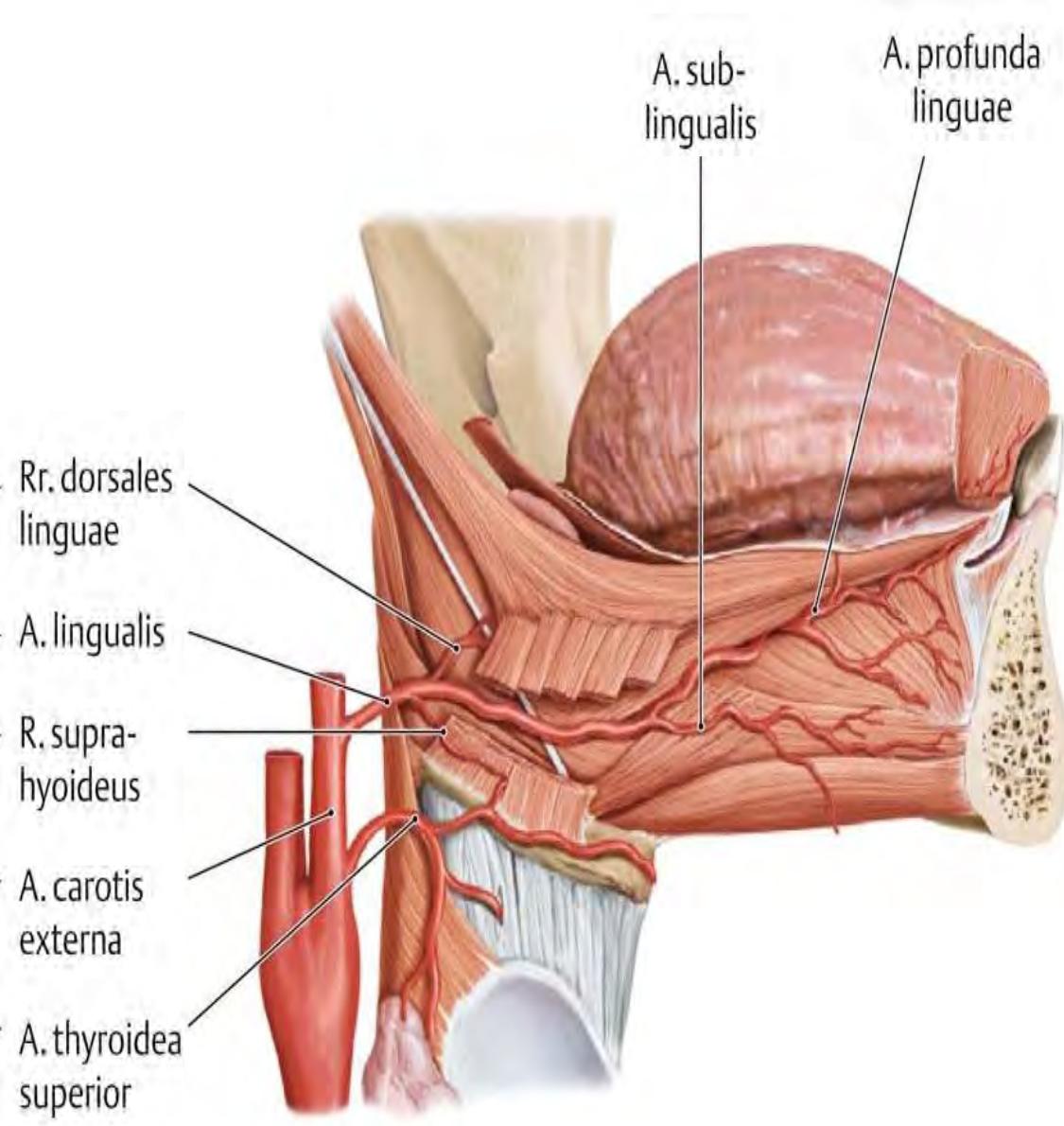


Sublingual space



Clinical remarks:

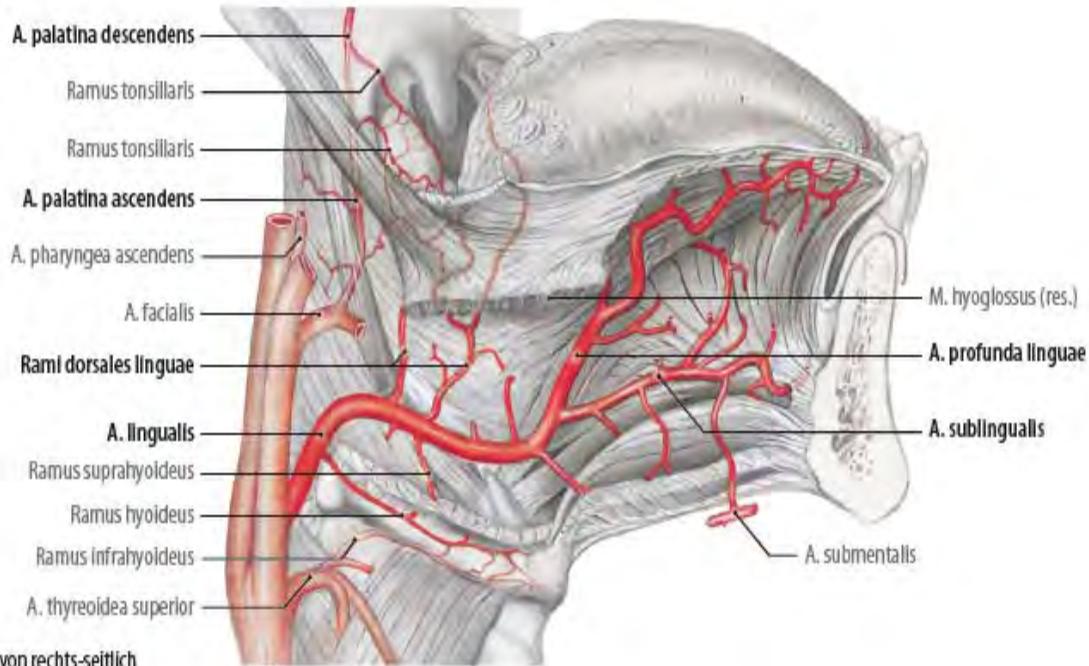
- spread of the teeth infections → submandibular triangle
- frequent space where sialolithiasis can be found (stones inside submandibular duct)
- possibility of the iatrogenic damage of the sublingual a.



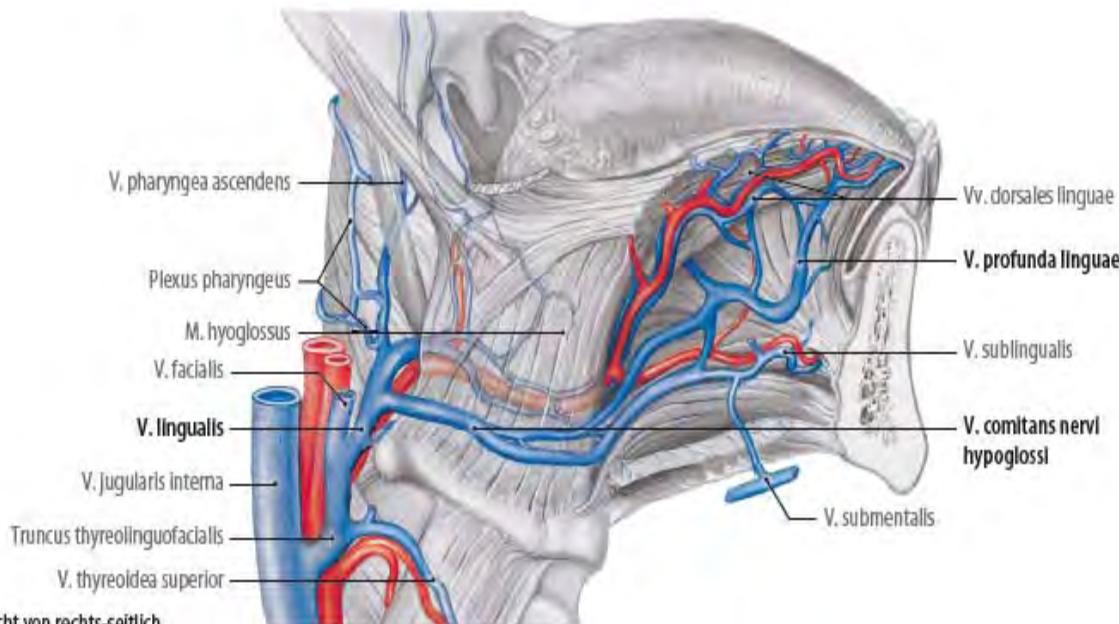
for tongue;

- r. suprathyoideus
- a. sublingualis
(for gl. sublingualis)
- rr. dorsales linguae
(tongue root to epiglottis)
- a. profunda linguae
(strong and for intraglossal muscles – to frenulum linguae)

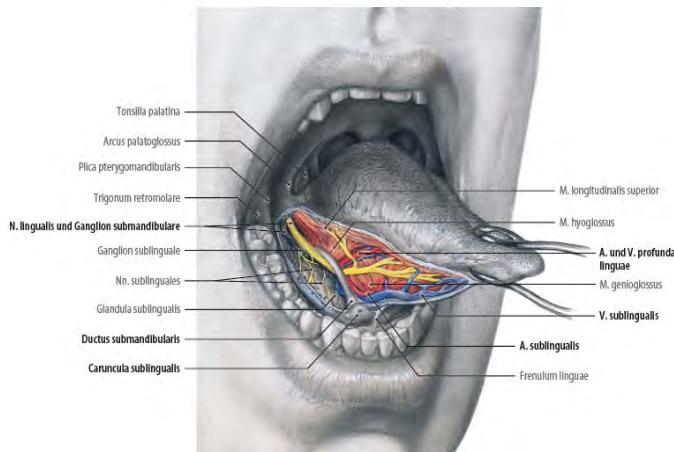
Lingual artery - inside canalis paralingualis

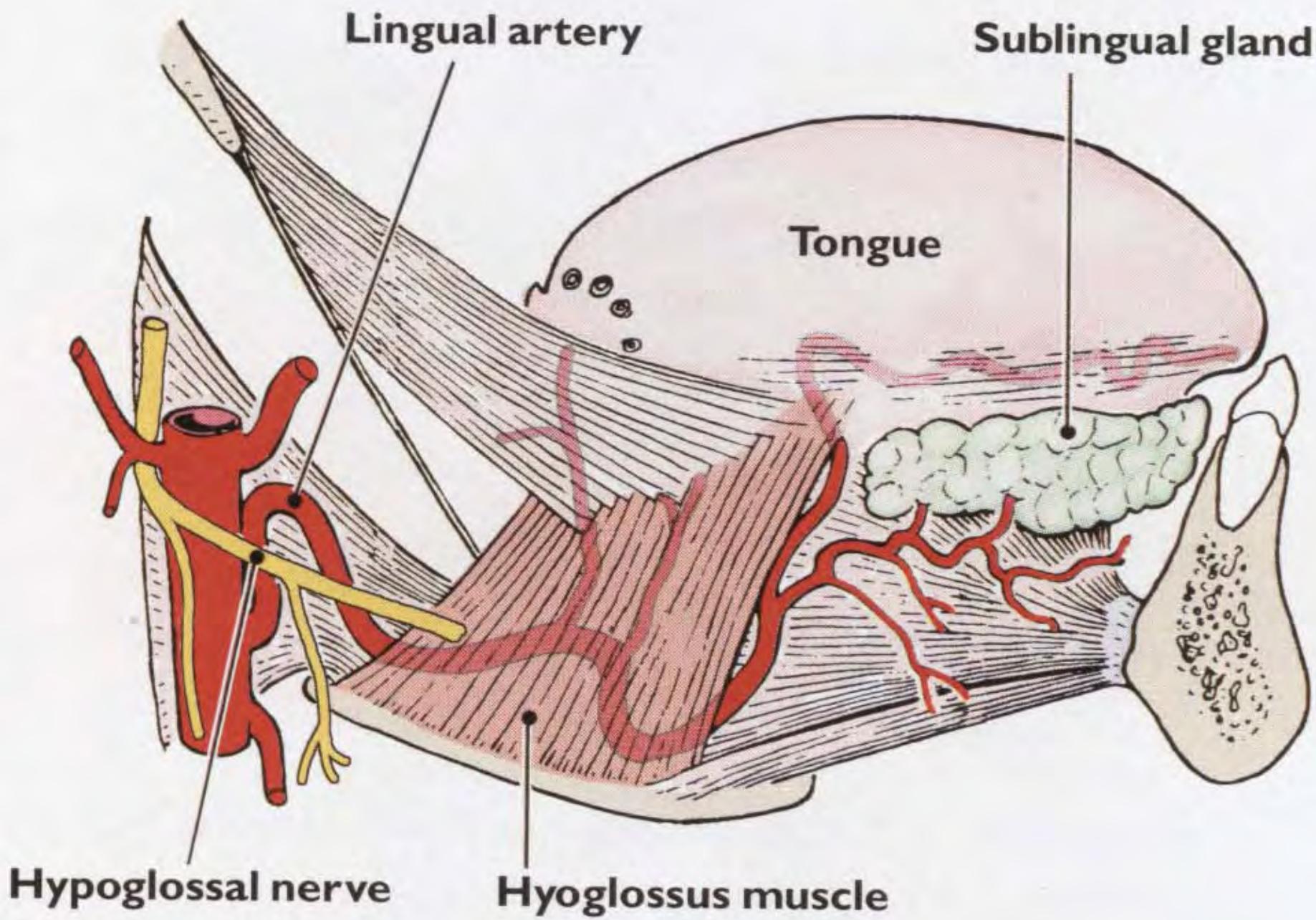


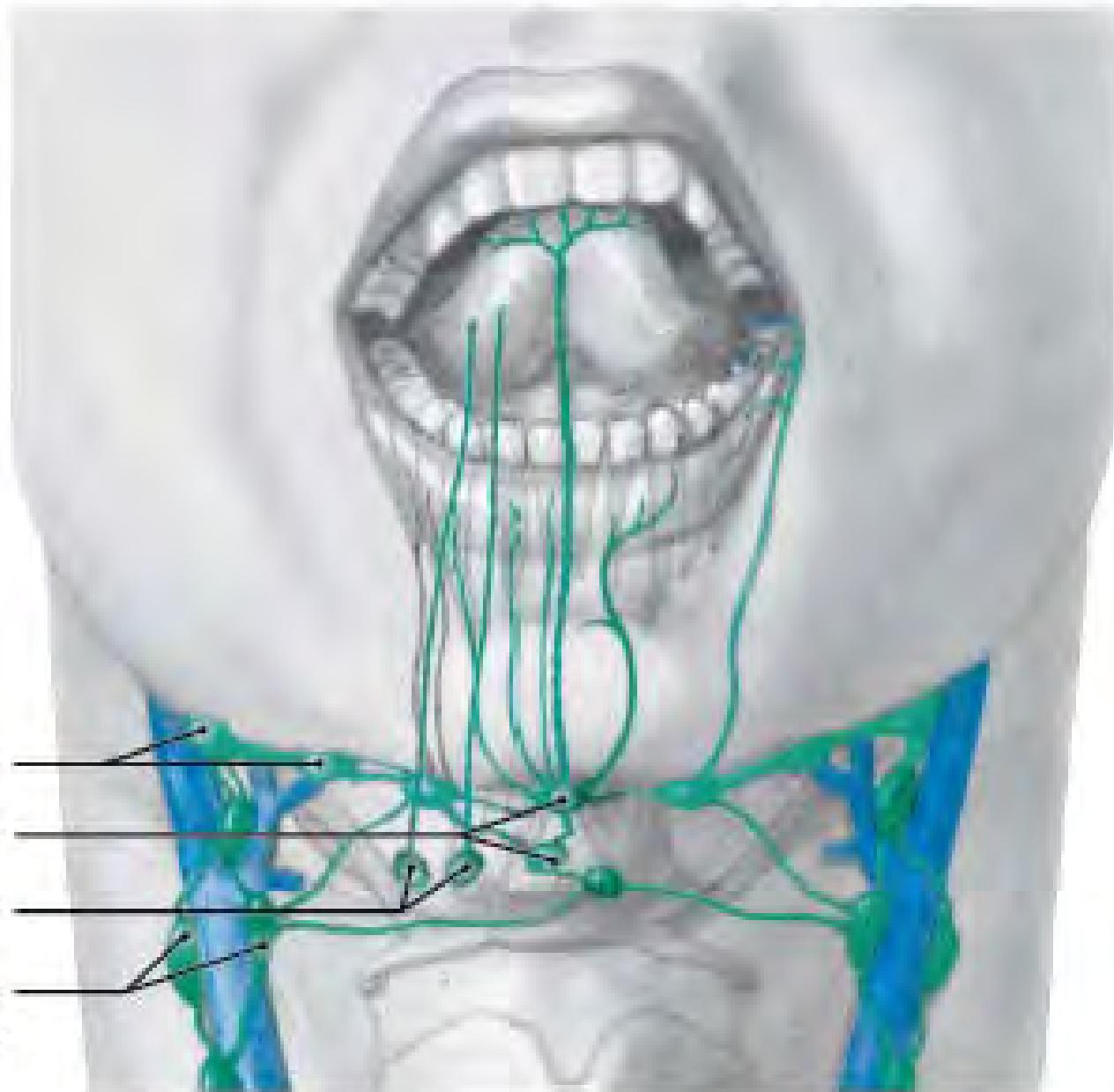
a Ansicht von rechts-seitlich



b Ansicht von rechts-seitlich







Nodi submandibulares

Nodi submentales

Nodi linguales

Nodi jugulares anteriores

= Nodi superficiales



Left sublingual abscess

Tissue spaces around the jaws overview

Lower jaw

Submental
Submandibular
Sublingual

Buccal

Submasseteric (massetericomandibular)

Parotid }

Pterygomandibular } *Prestyloid*

Peritonsilar (paratonsilar) }

Parapharyngeal *Retrostyloid*

Upper jaw

Canine fossa
Infratemporal

Masticatory tissue space:

submasseteric, pterygomandibular, infratemporal, temporal