



UNIVERZITET U BEOGRADU
FAKULTET VETERINARSKE MEDICINE

PRIBOR ZA VARENJE

Apparatus digestorius

Prof. dr Ivana Nešić

Canalis alimentarius et digestorius

usna duplja – *Cavum oris*

ždrelo – *Pharynx*

jednjak – *Oesophagus*

želudac – *Ventriculus (gaster)*

crevo – *Intestinum (entera)*:

tanko crevo – *Intestinum tenue*

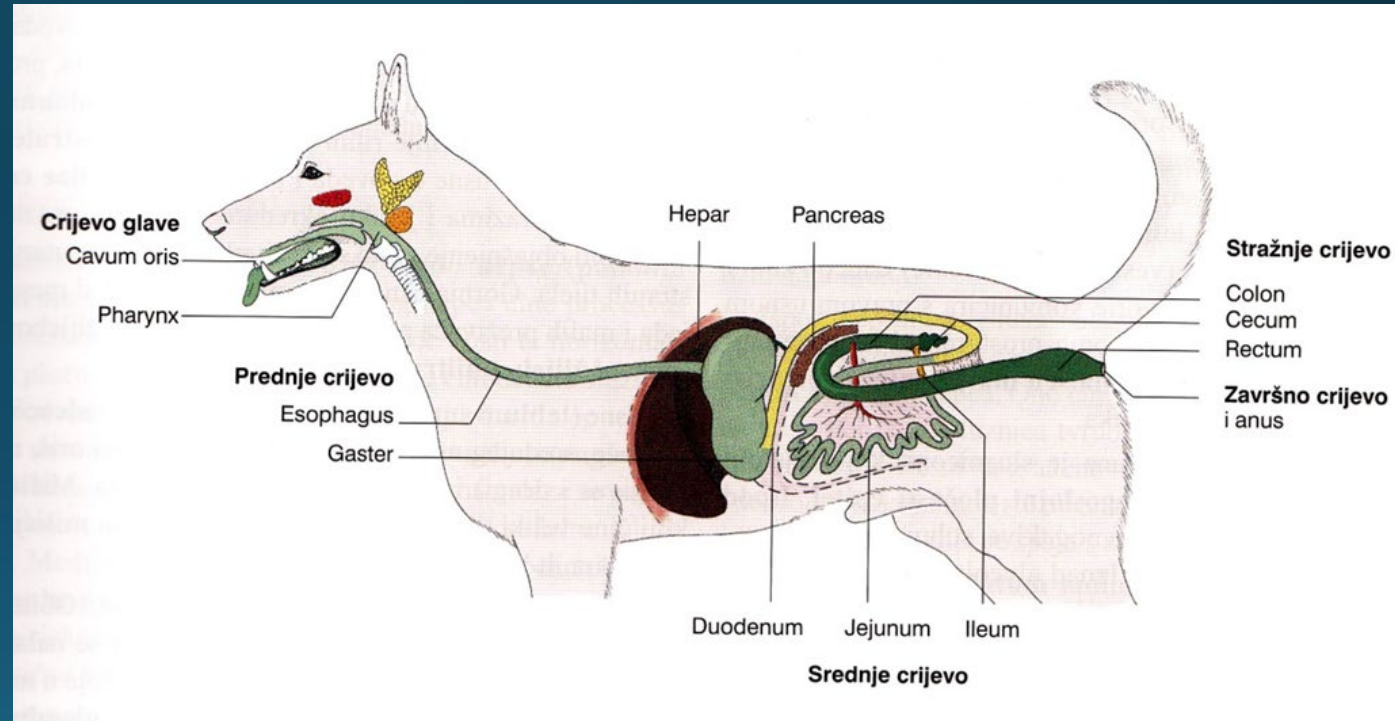
debelo crevo – *Intestinum crassum*

Pridodate žlezde:

pljuvačne žlezde *Glandulae salivariae*

jetra – *Hepar*

gušterača – *Pancreas*



USNA DUPLJA *Cavum oris*

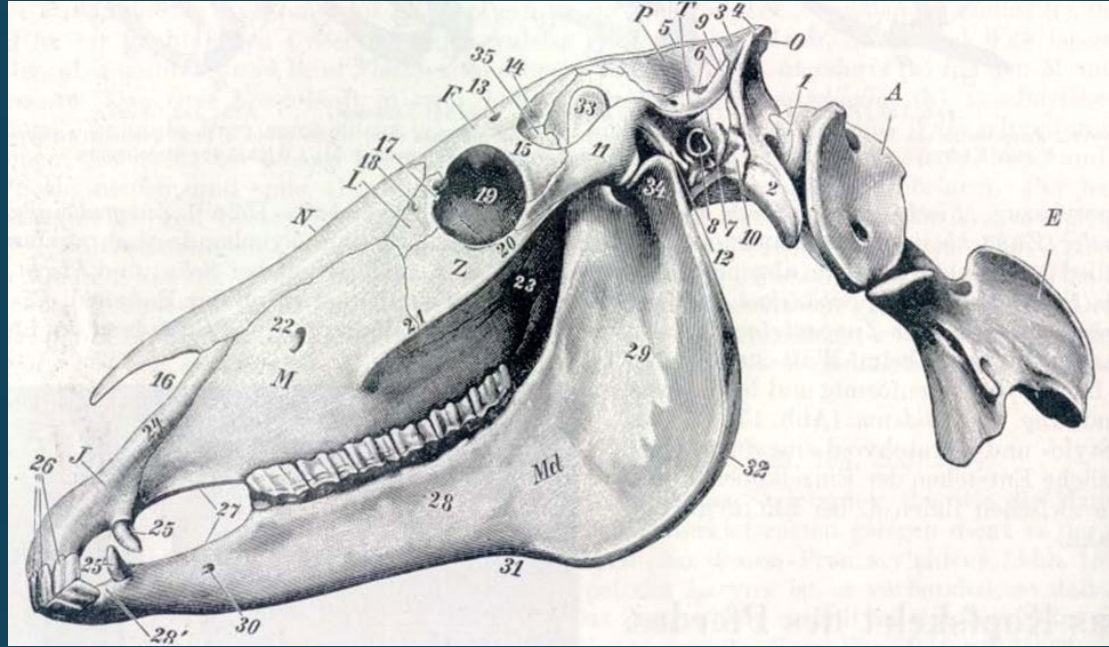
Počinje usnim otvorom (*Rima oris*) i pruža se do usno-ždrelnog tesnaca (*Isthmus faucium*)

Građu i sastavne delove usne duplje čine:

1. Koštana osnova usne duplje
2. Usne
3. Obrazi
4. Tvrdo nepce
5. Meko nepce
6. Jezik
7. Desni i zubi



KOŠTANA OSNOVA USNE DUPLJE

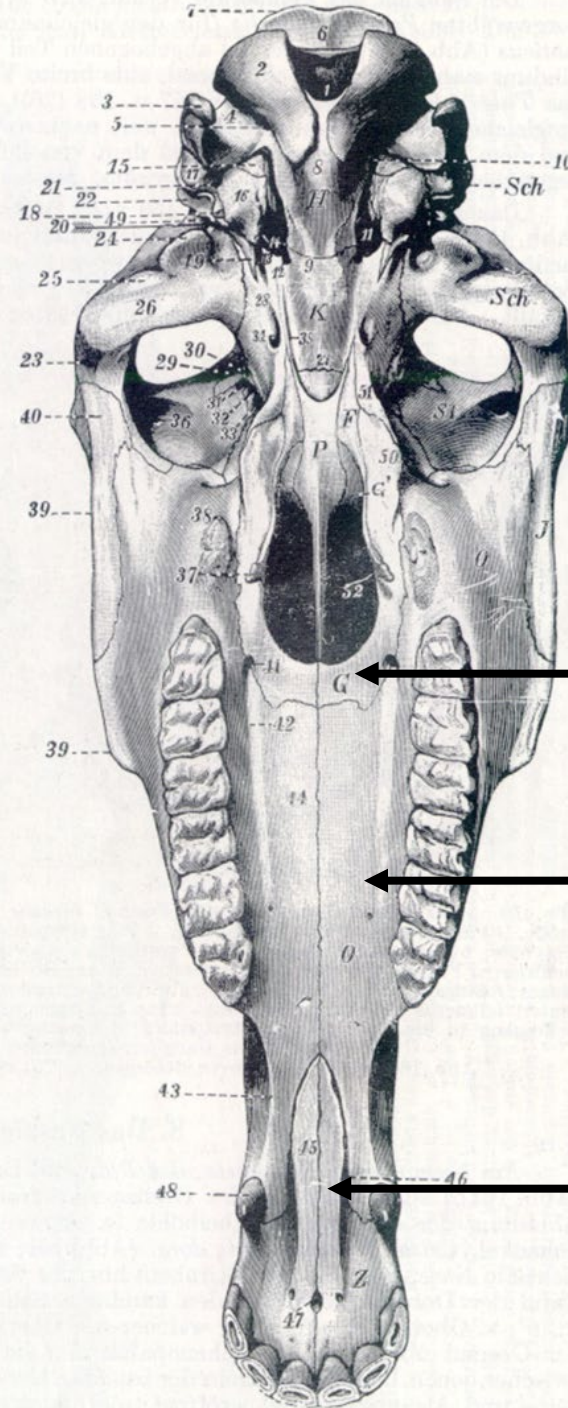


Oralno – alveolarni izdanci sekutičnih i donjoviličnih kostiju sa sekutićima

Bočno - alveolarni izdanci gornjoviličnih i donjoviličnih kostiju sa kutnjacima

Dorzalno – nepčani izdanci sekutičnih i gornjoviličnih kostiju i horizontalni delovi nepčanih kostiju

KOŠTANA OSNOVA USNE DUPLJE (dorzalno)



Os palatinum (Lamina horizontalis)

Maxilla (Processus palatinus)

Os incisivum (Processus palatinus)

ZIDOVE USNE DUPLJE GRADE:

Oralno- gornja i donja usna

Bočno - obrazi

Dorzalno- tvrdo nepce

Ventralno- usno dno sa jezikom

Aboralno- meko nepce koje sa korenom jezika formira usno-ždrelni tesnac (isthmus faucium)



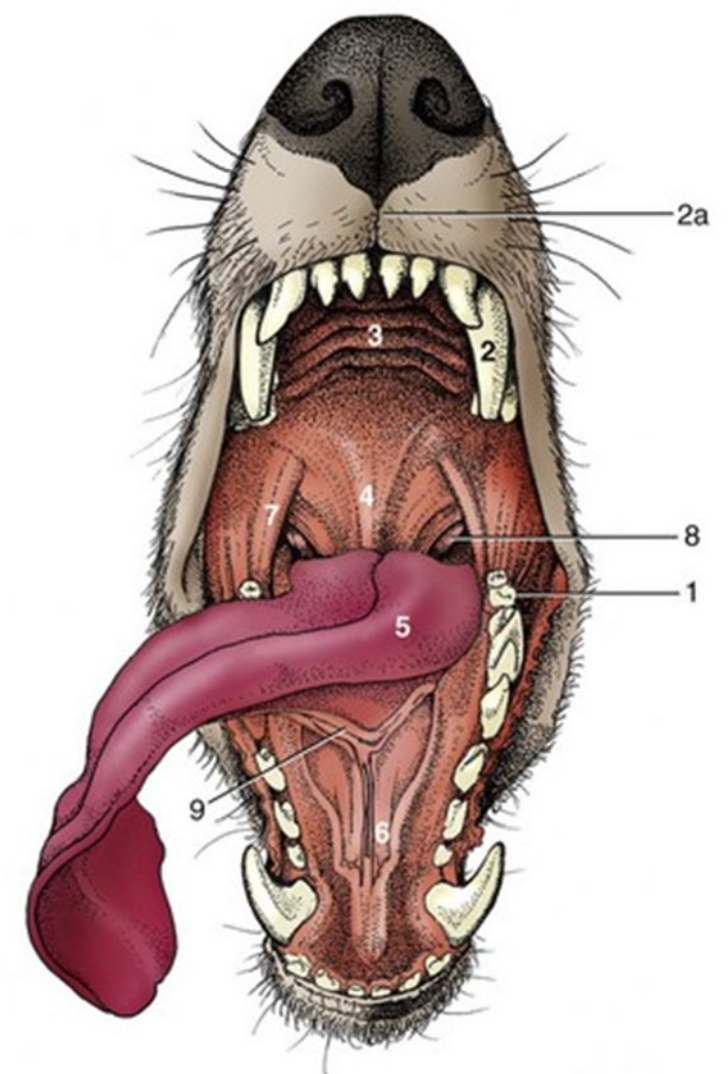
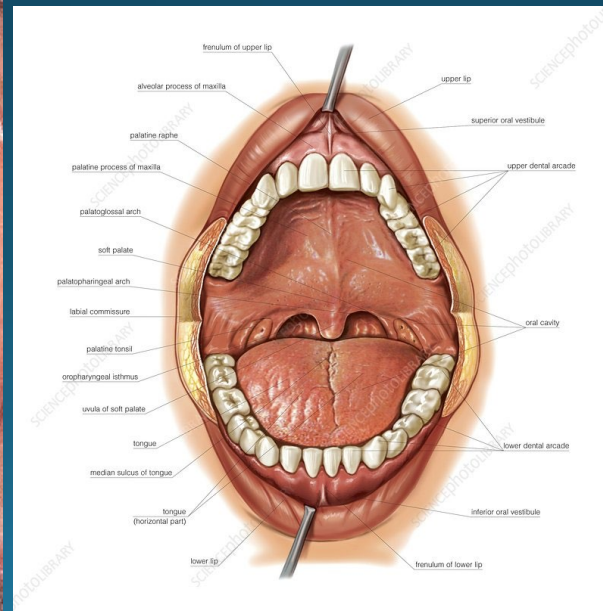
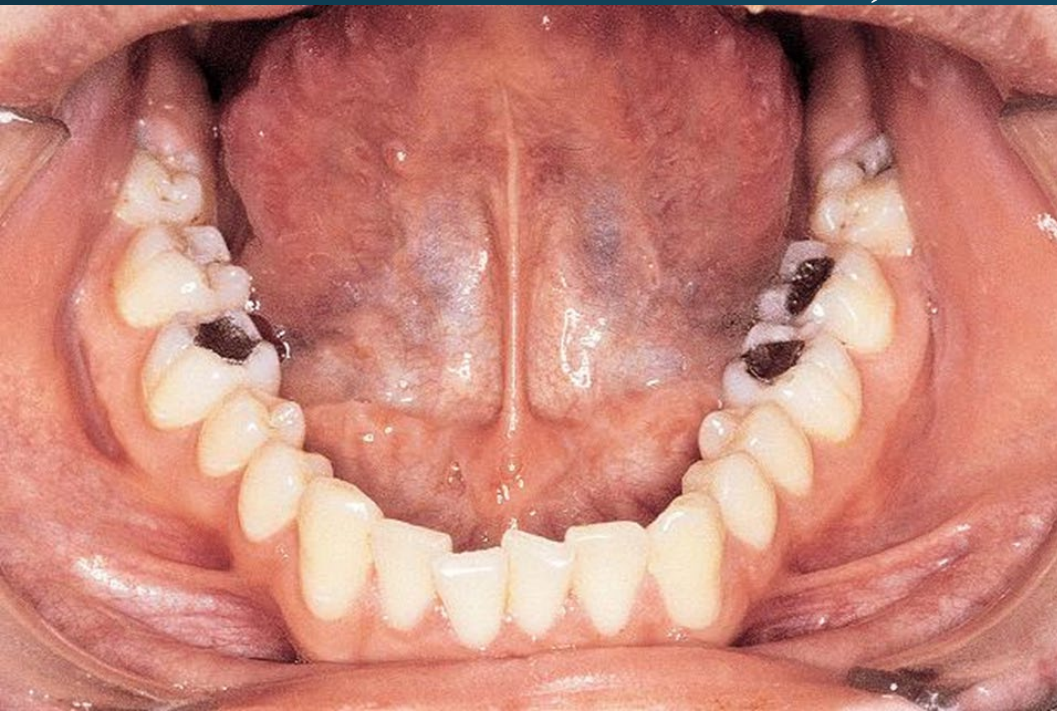
- Usna duplja je podeljena:

1/ Predvorje usne duplje - Vestibulum oris

- a) Vestibulum labiale
- b) Vestibulum buccale

2/ Prava usna duplja – Cavum oris proprium

- a) Cavum sublinguale apicale
- b) Cavum sublinguale laterale



USNE – *Labia oris*



Labium superius (gornja usna)

Labium inferius (donja usna)

Rima oris (usni otvor)

Commissura labiorum (usna spojnica)

Građa zida usana:

1) Koža – Integumentum commune

Pilli tectorii (pokrovne dlake)

Pilli tactiles (taktilne dlake)

Planum nasolabiale (bo)

Planum nasale (car, ov)

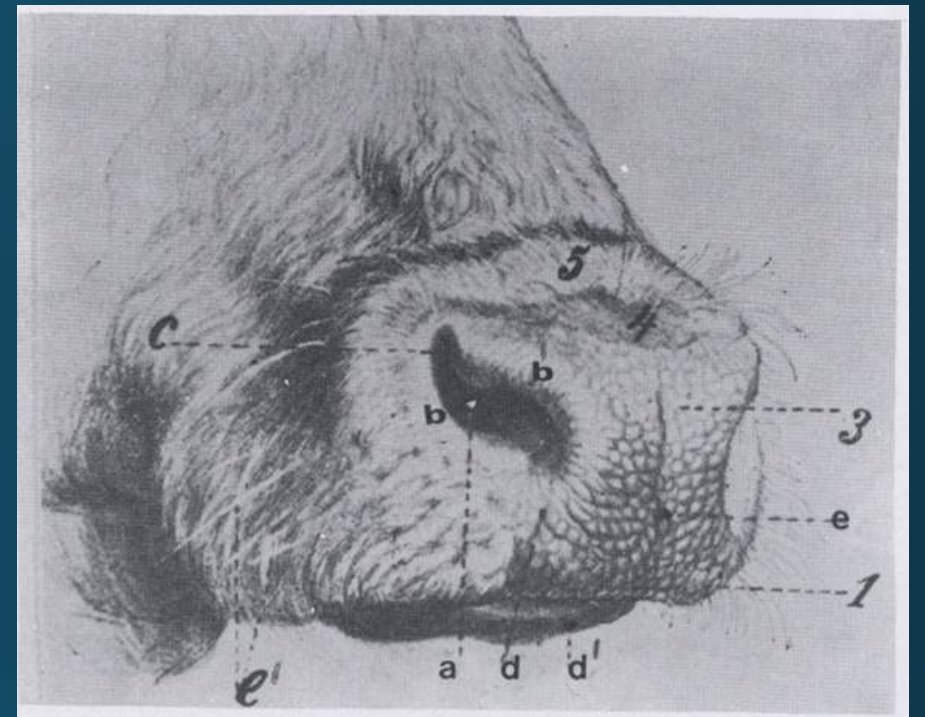
Planum rostrale (su)

2) Mišićni sloj (ru, su: **Gll. labiales**)

3) Podsluzokoža (eq, car: **Gll. labiales**)

4) Sluzokoža

Gingiva (zubno “meso”, desni)



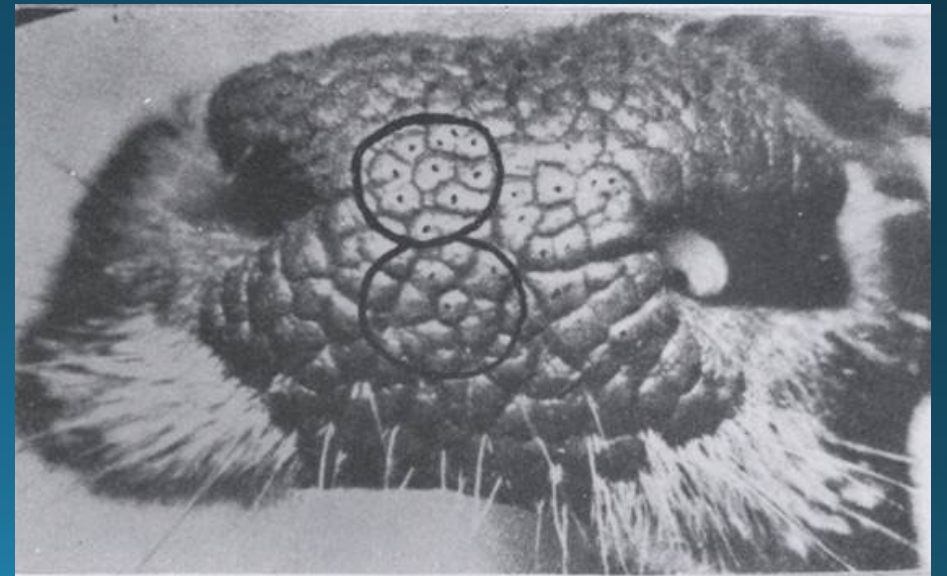
**Bo: Planum nasolabiale - nosno-usno
ogledalo:**

Areae - ograničena polja

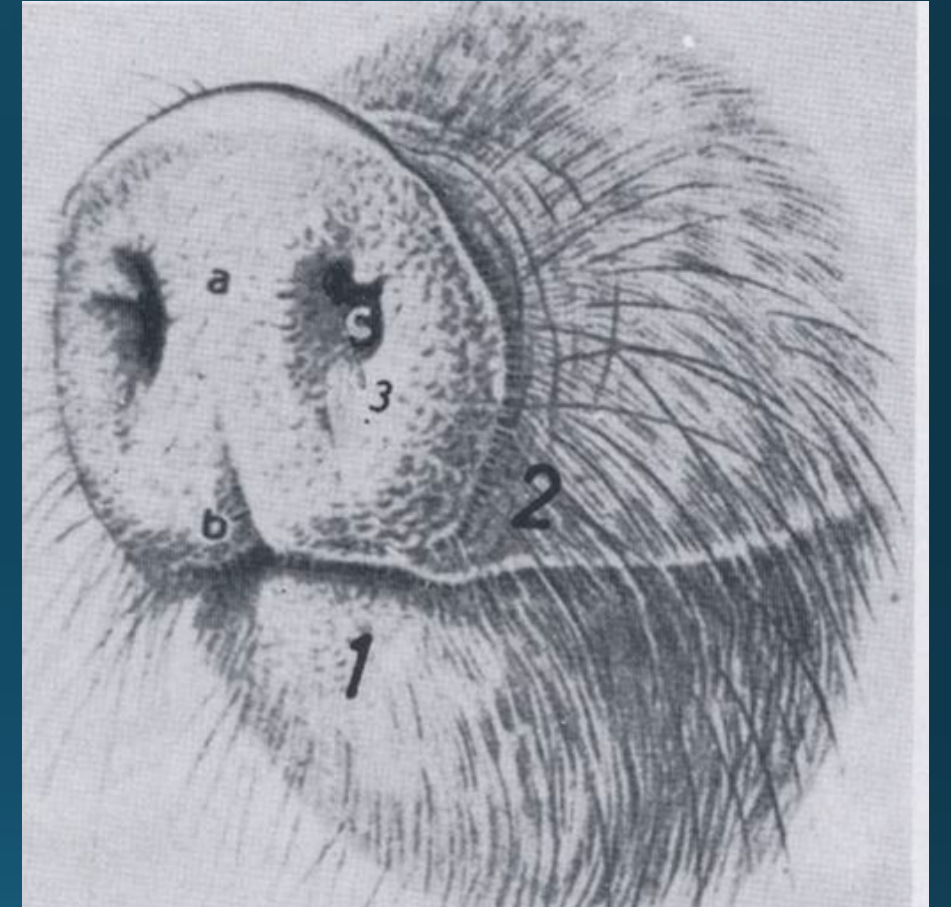
Sulci – plitki, vijugavi žlebovi

Foveola– otvor u obliku okrugle jamice

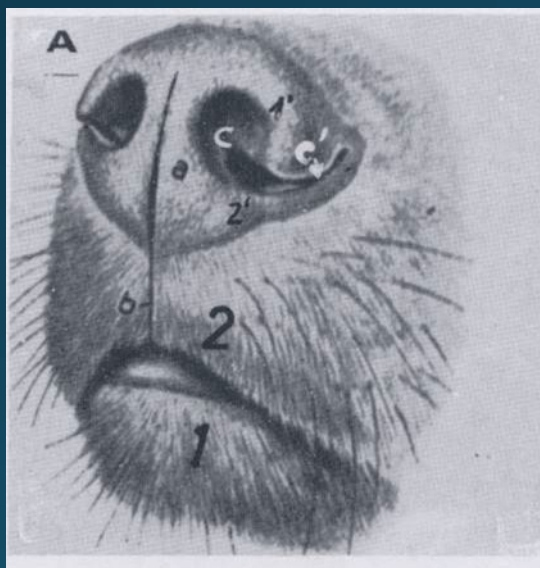
Gll. nasolabiales







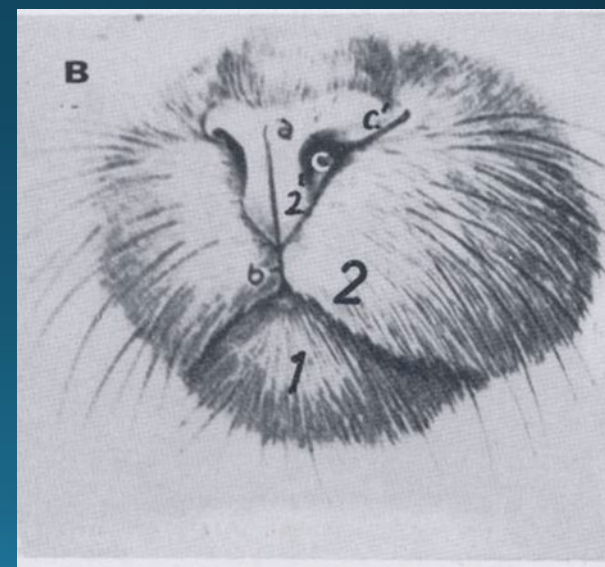
Su: Planum rostrale – rilo/ rilno ogledalo



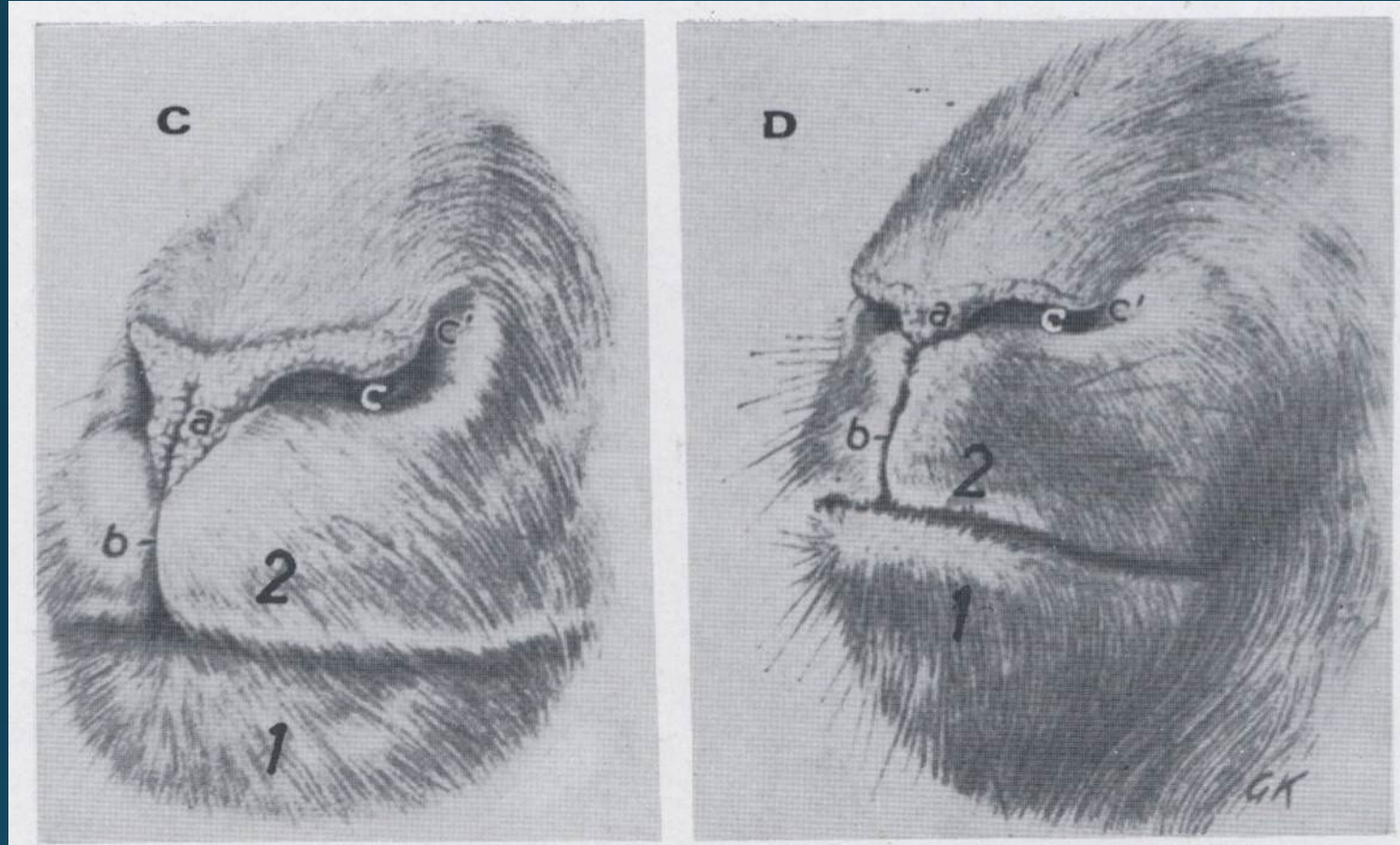
pas

Car: Planum nasale – nosno ogledalo

Philtrum (žleb gornje usne)



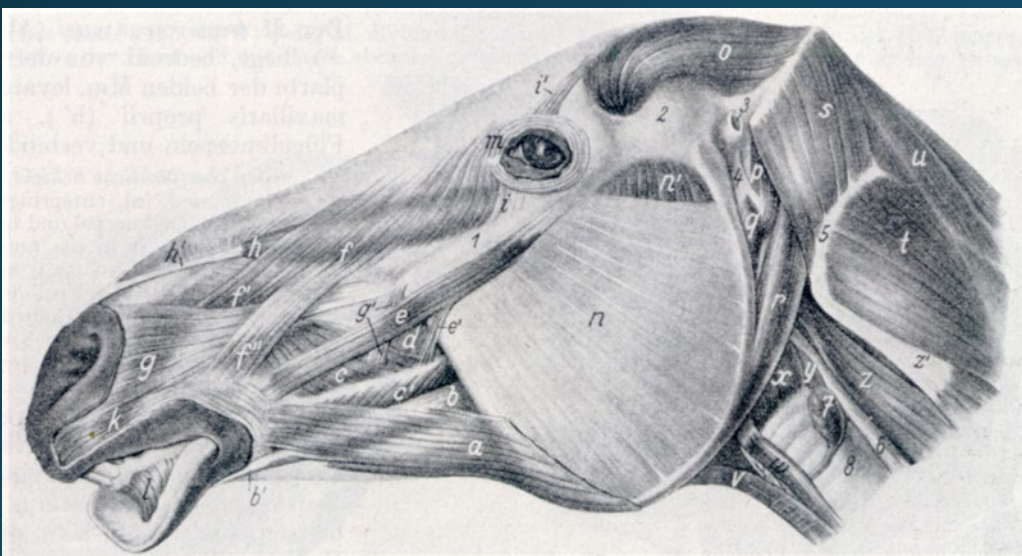
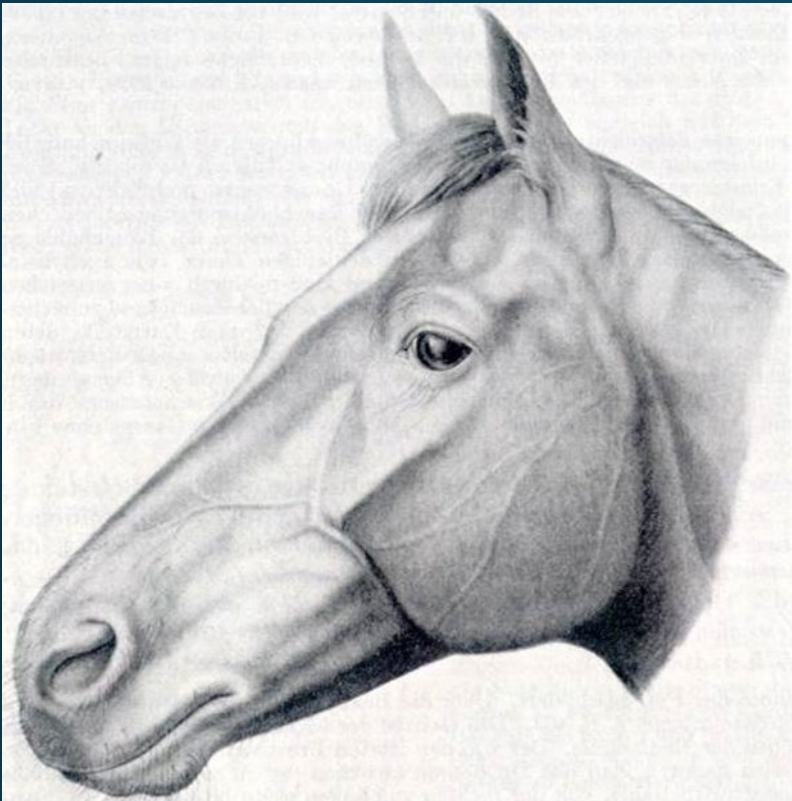
mačka



ovca

koza

Ov, cap: Planum nasale – nosno ogledalo
Philtrum (žleb gornje usne)



OBRAZI – BUCCAE

-postrani zid usne duplje

-od uglova usana do kranijalnog ruba M. masseter

Građa zida obraza:

1) Koža – Integumentum commune

2) Mišićni sloj

M. buccinator

M. zygomaticus

M. levator nasolabiales

M. caninus

M. depressor labii inferioris

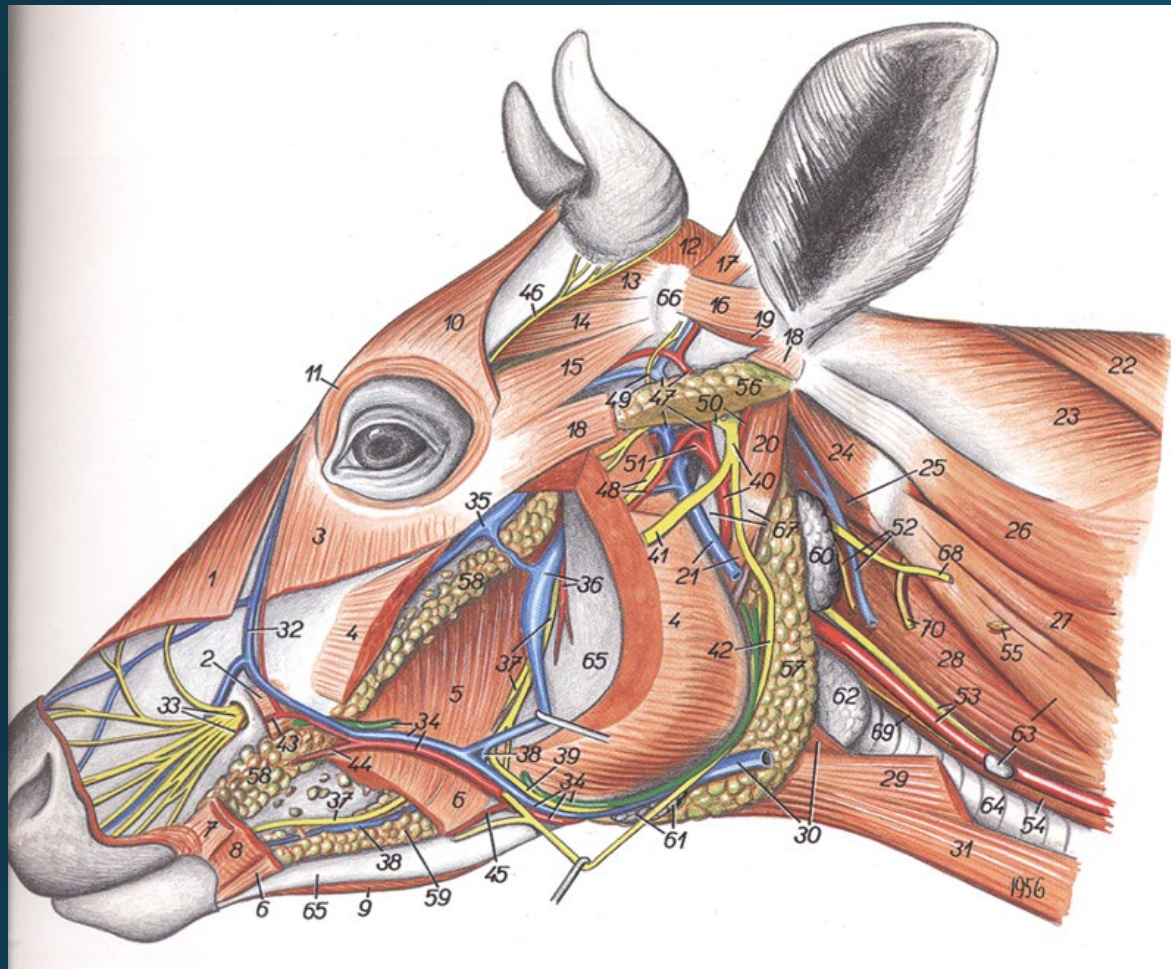
Gll. buccales dorsales

Gll. buccales ventrales

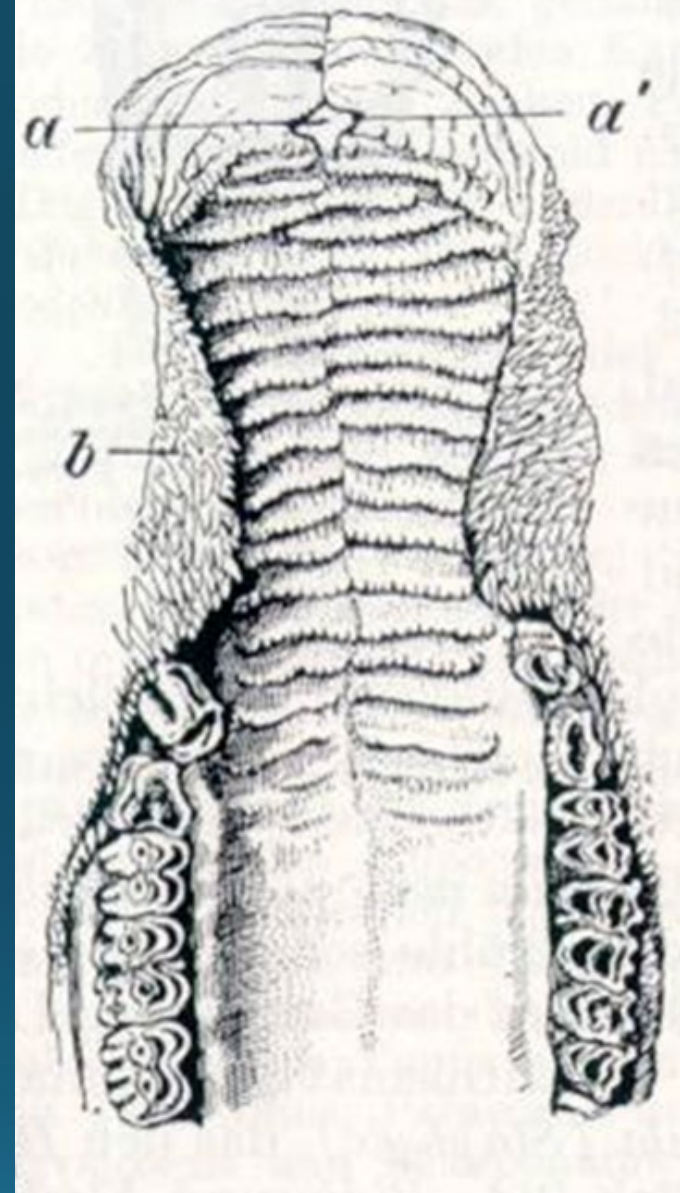
Gll. buccales intermediae (Ru)

3) Sluzokoža – Tunica mucosa

(Papilla parotidea)



Gll. buccales- obrazne pljuvačne žlezde
u mišićnom sloju (ru, su) ili podsluzokoži
(eq, car) obraza



Kupaste, orožale bradavice (Papillae
conicae) na sluzokoži obraza kod preživara

TVRDO NEPCE – Palatum durum

- predstavlja krov usne duplje
- odvaja usnu od nosne duplje

Raphe palati – uzdužni žleb

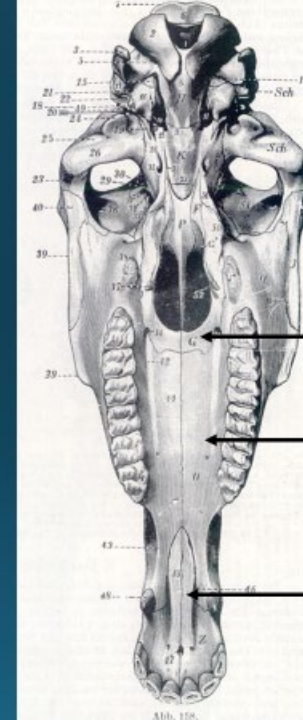
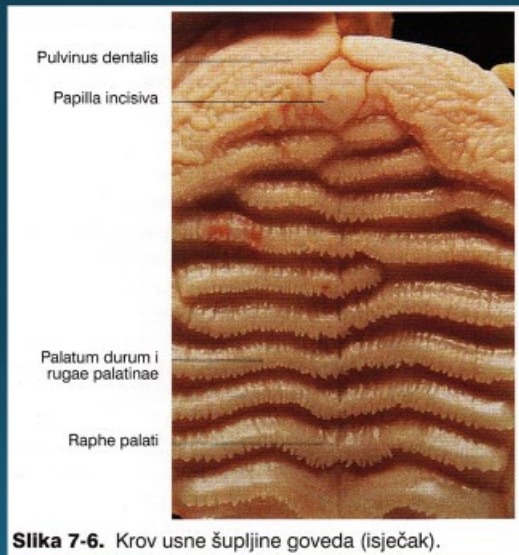
Rugae palatinae – nabori ili grebenovi

Papilla incisiva

Ductus nasopalatinus sinister et dexter

Pulvinus dentalis

Gll. palatinae

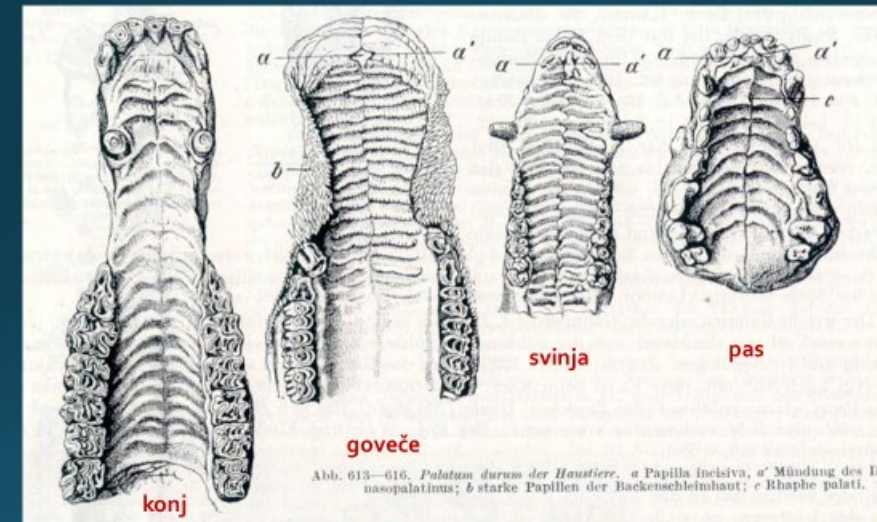


KOŠTANA OSNOVA TVRDOG NEPCA

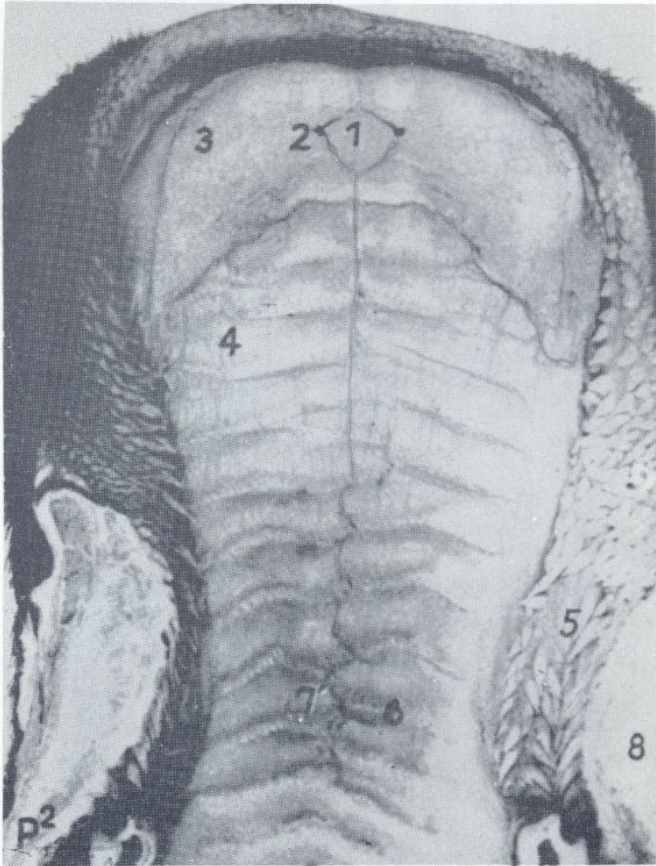
Os palatinum (Lamina horizontalis)

Maxilla (Processus palatinus)

Os incisivum (Processus palatinus)

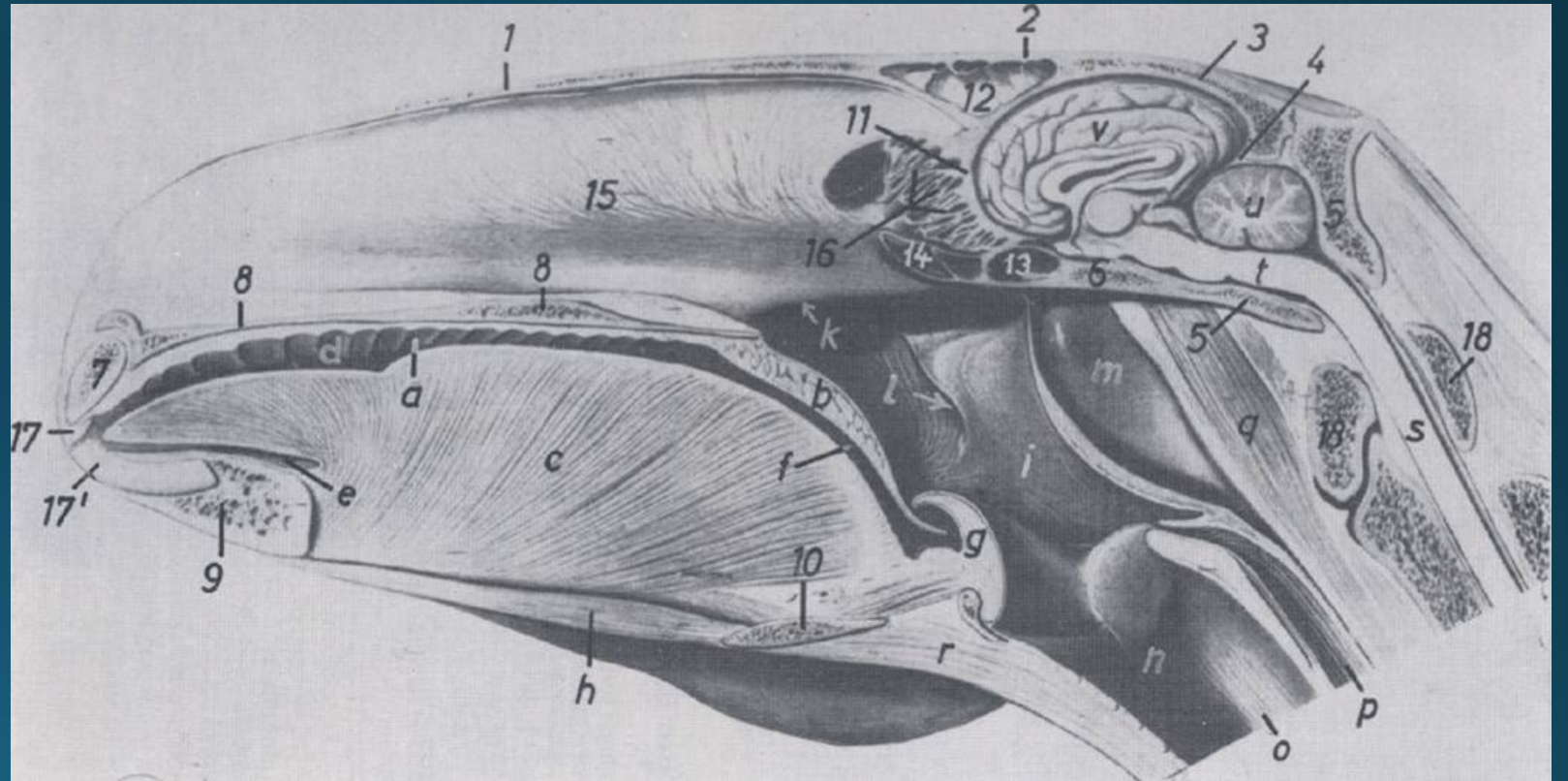


Tvrdo nepce – pregrada između usne i nosne duplje



Sl. 127 — Tvrdo nepce u govečeta (palatum durum bovis).

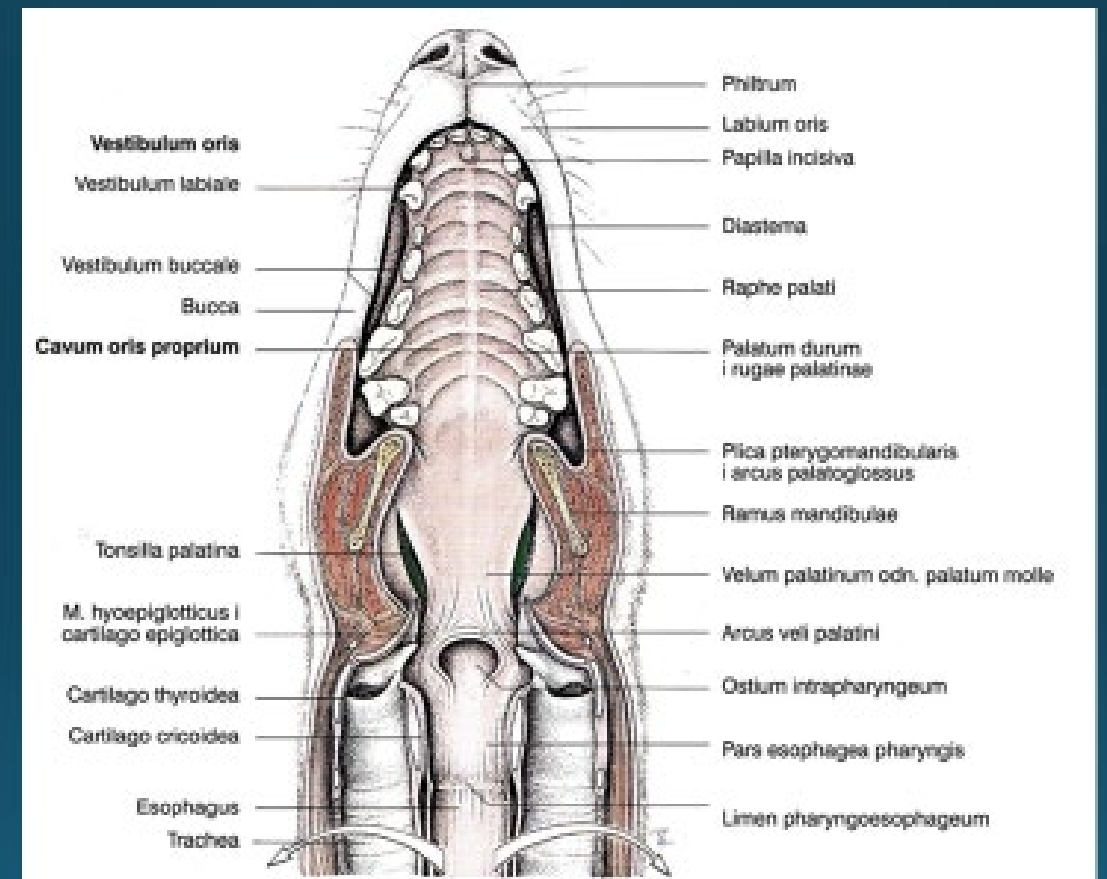
1 — papilla incisiva; 2 — ostium ductus nasopalatini; 3 — zubna ploča (pulvinus dentalis); 4 — palatum durum; 5 — papillae conicae; 6 — rugae palati; 7 — raphae palati; 8 — obrazina (bucca). (Sl. 124, 125, 127 Prema autoru)





**Venozni plexus tvrdog nepca:
Plexus venosi V. palatina major**

4-5 slojeva vena



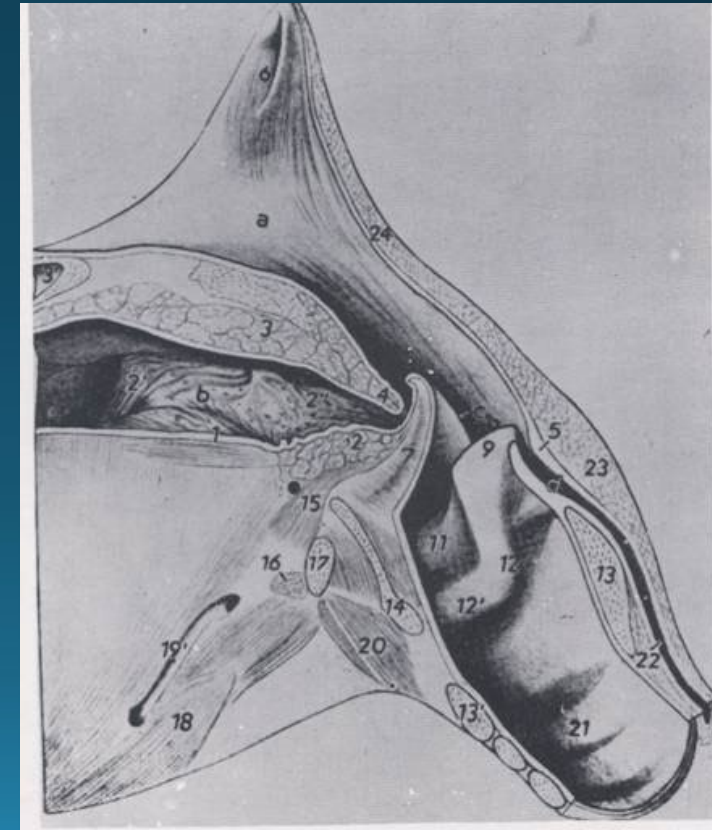
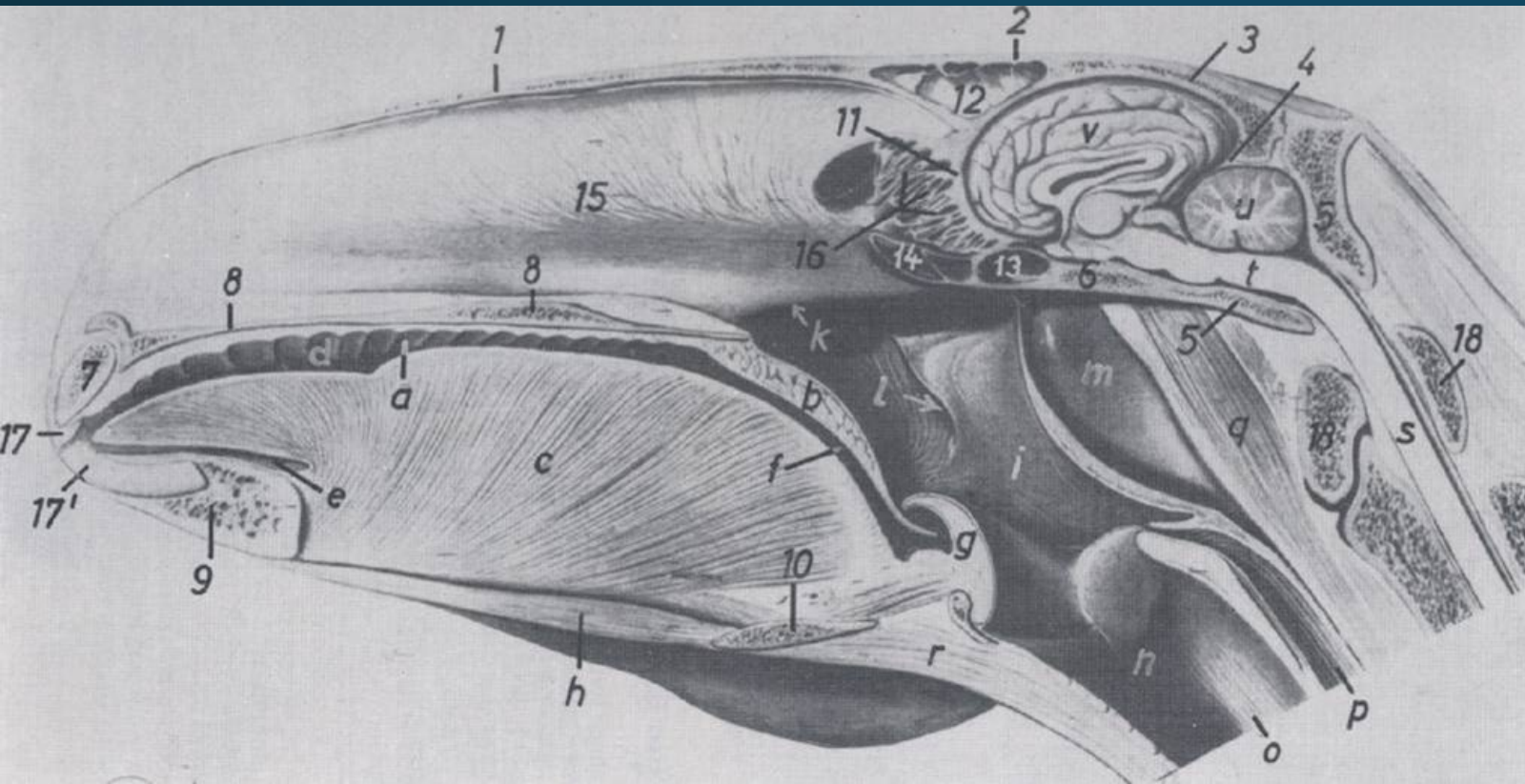
anatski prikaz usne i ždrijelne šupljine psa s otvorenom šupljinom grkljana, Dyce, Sack i Wensing

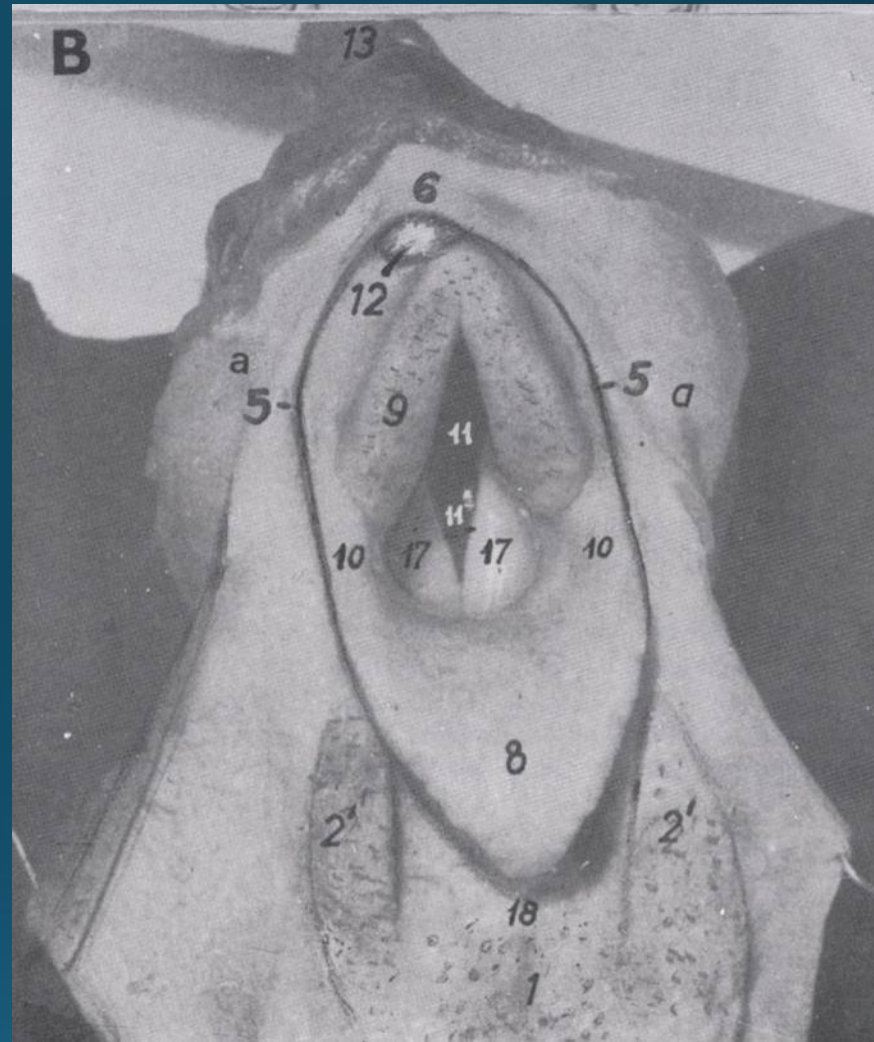
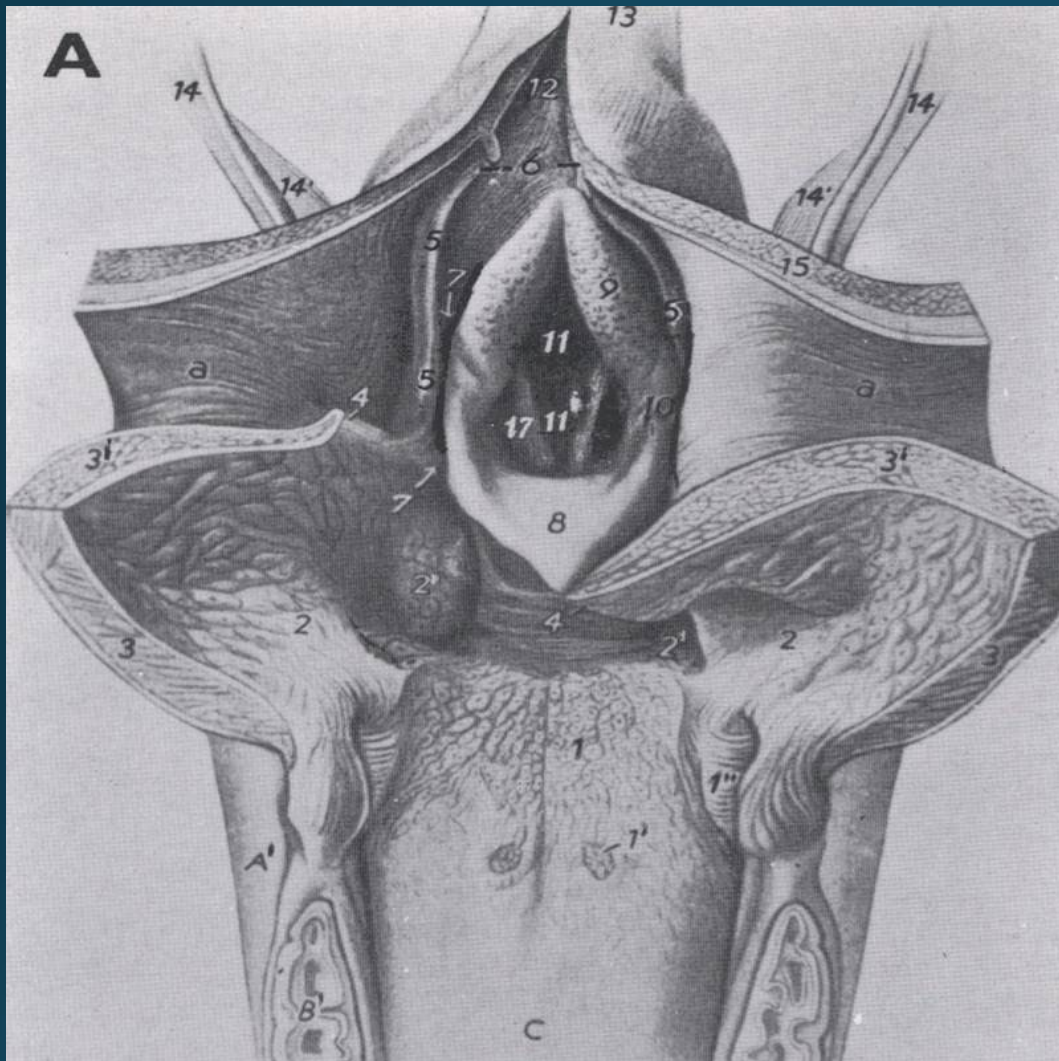
MEKO NEPCE – Palatum molle, Velum palatinum

- predstavlja pregradu između usne i ždrelne duplje
- pričvršćeno je za lamina horizontalis nepčane kosti
- duplikatura sluzokože u kojoj su mišići i sloj žlezda

Grada mekog nepca:

1. Tunica mucosa
2. Gll. velli palatini
3. Tunica muscularis
 - M. palatinus
 - M. levator velli palatini
 - M. tensor velli palatini
4. Tunica mucosa



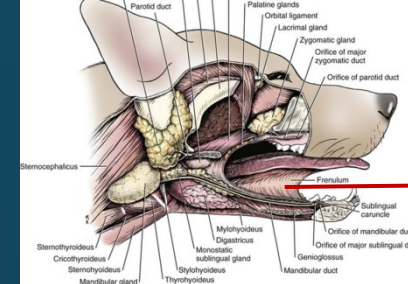


Lukovi (arkusi):

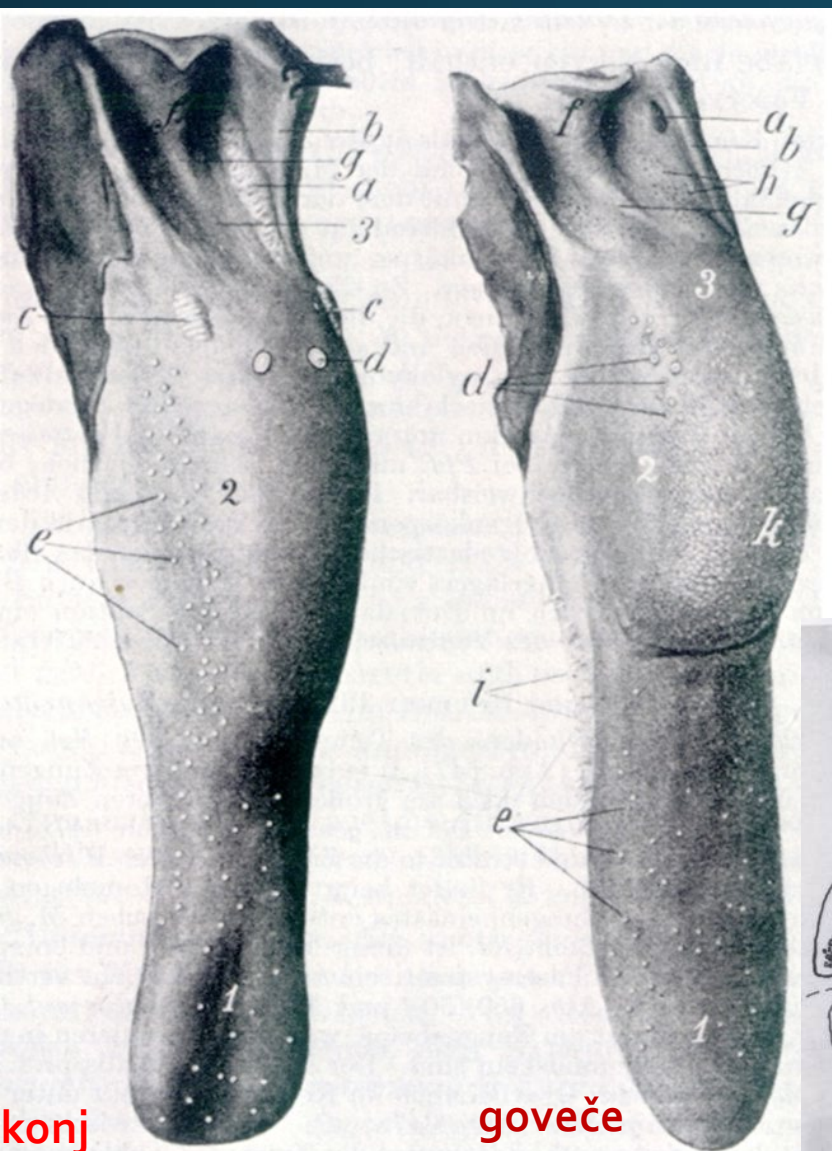
- Arcus palatinus: nepčani luk (4)
- Arcus palatopharyngeus (Plica palatopharyngica): nepčano - ždrelni luk(5,6)
- Arcus palatoglossus: nepčano - jezični luk (2)

JEZIK- Lingua, Glossa

- Apex linguae
- Corpus linguae
- Radix linguae
- Dorsum linguae
- Facies ventralis
- Margo linguae
- Torus linguae (Ru)
- Tunica mucosa linguae*
- Frenulum linguae
- Papillae linguales:**
 - Papillae filiformes
 - Papillae conicae
 - Papillae vallatae
 - Papillae fungiformes
 - Papillae foliatae

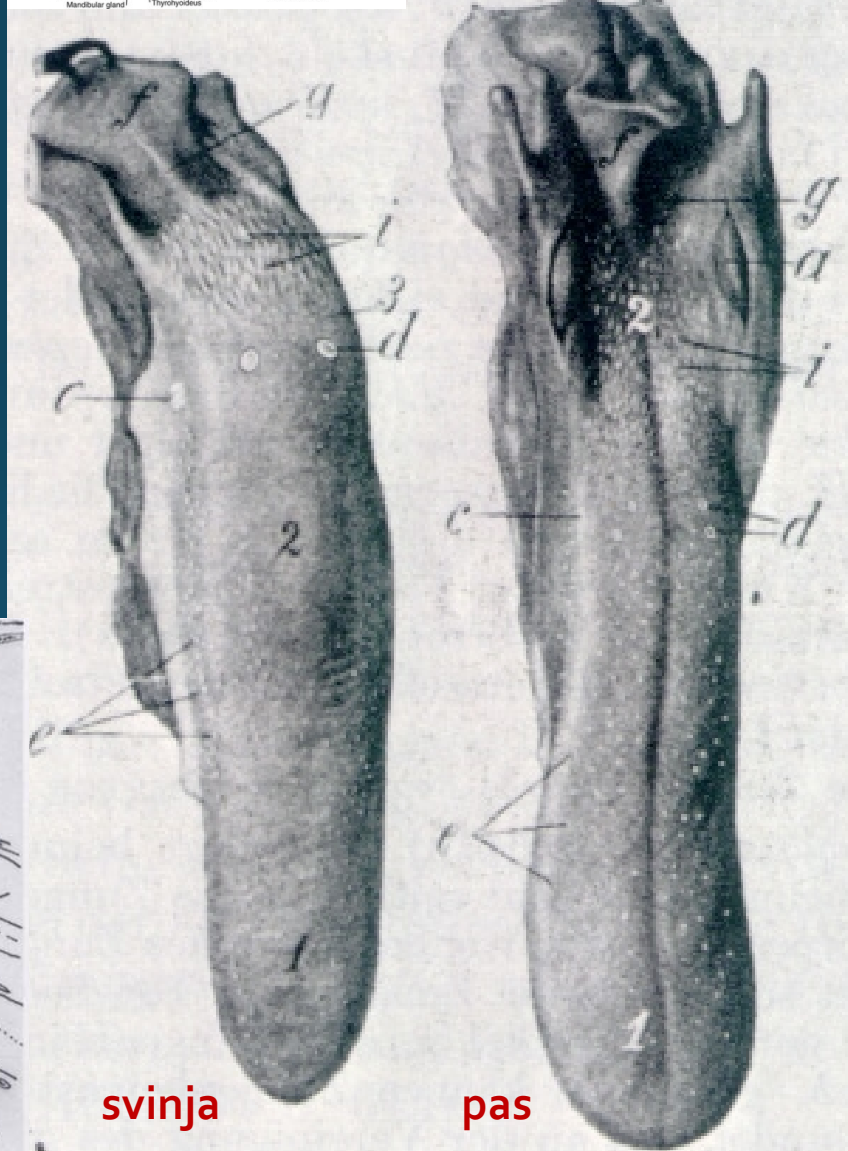
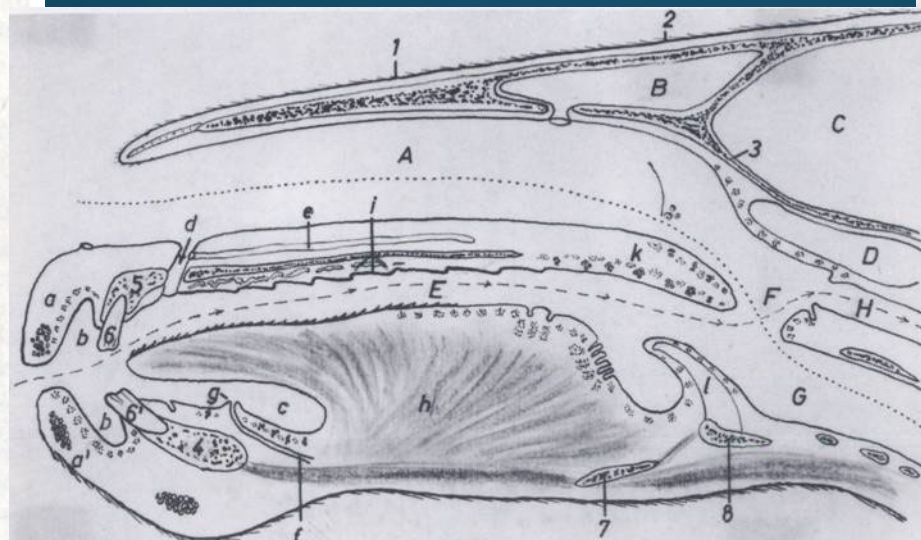


Frenulum linguae



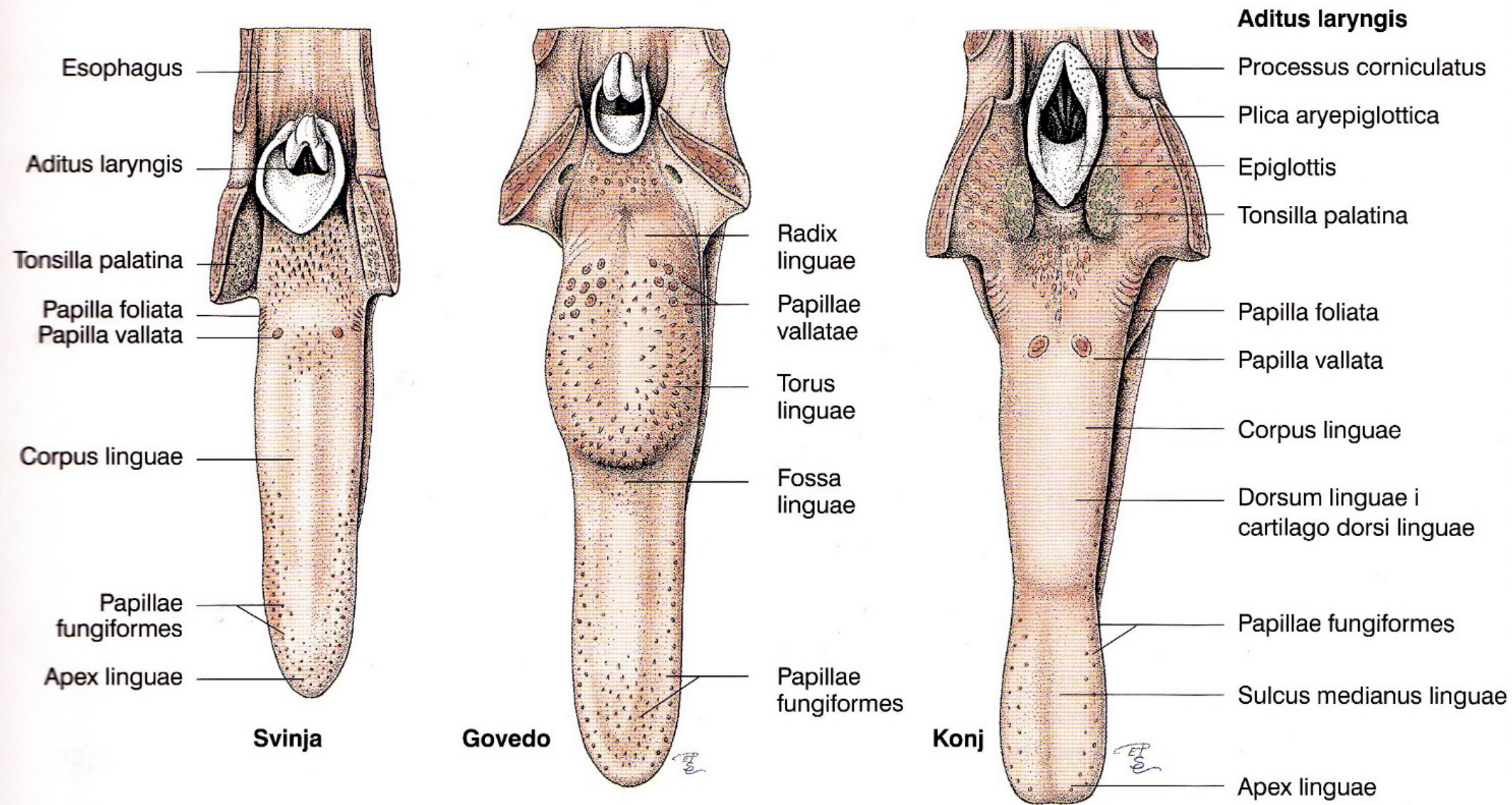
konj

goveče

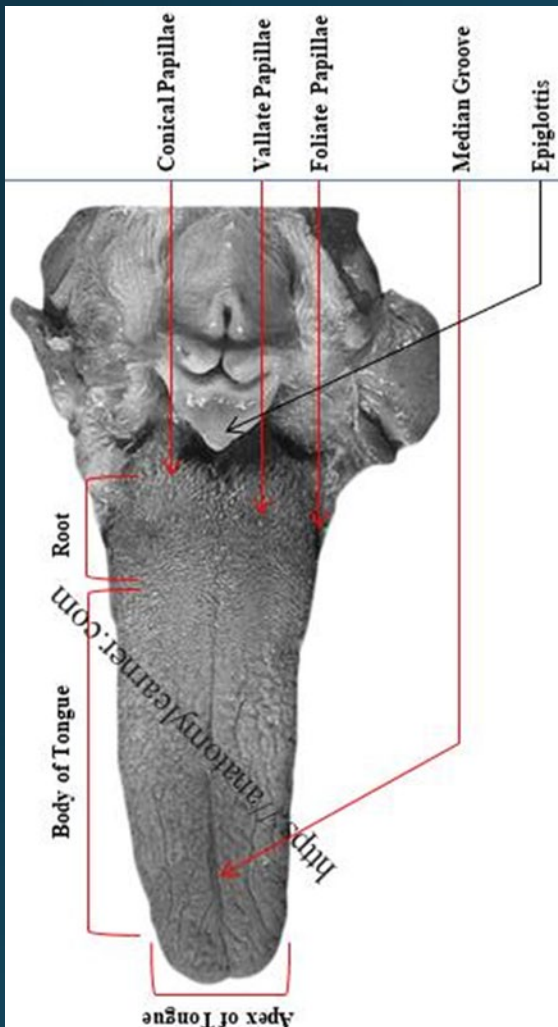


svinja

pas



Slika 7-7. Shematski prikaz jezika (dorzalna strana), ždrijela i jednjaka (dorzalno otvoreni) svinje, goveda i konja.



Jezik psa

Esophagus (odijeljen i
otvoren)

Processus
corniculatus

Epiglottis

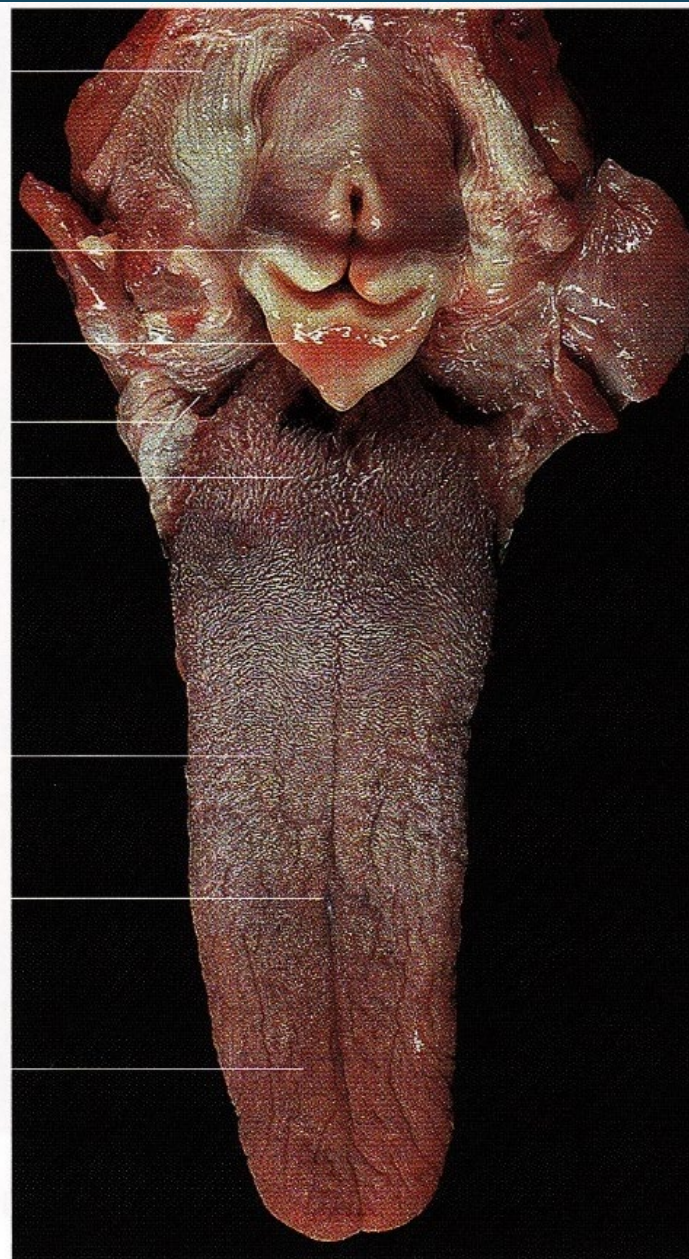
Tonsilla palatina

Radix linguae

Corpus linguae

Sulcus medianus
linguae

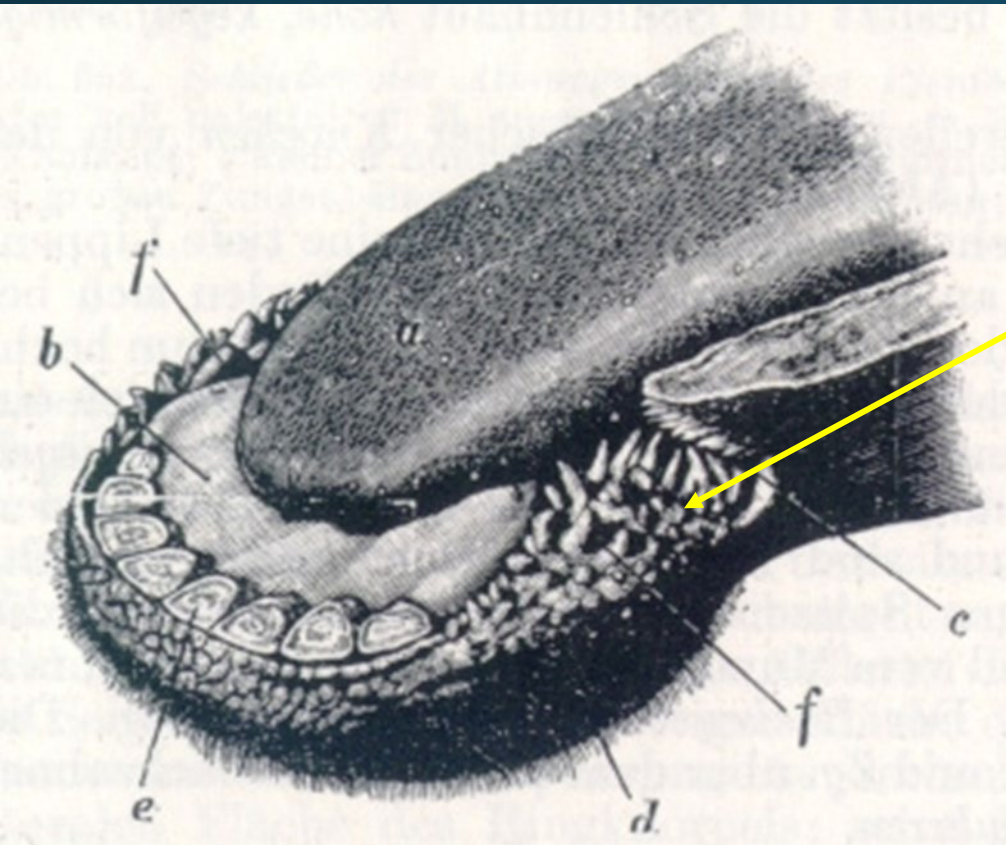
Apex linguae



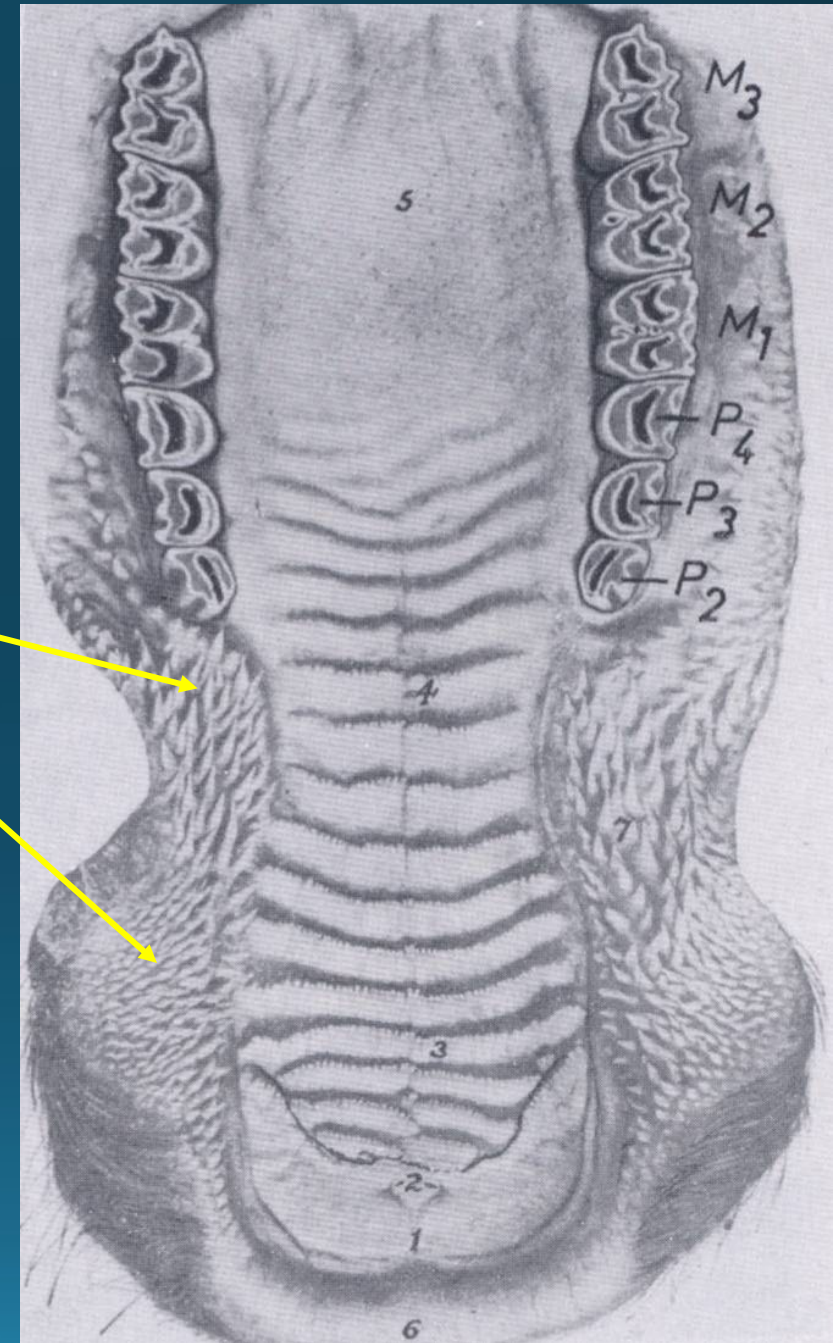
Slika 7-4. Jezik i ždrijelo psa (dorzalna strana).



Jezik mačke



Papillae conicae (Ru)



GLANDULAE SALIVALES – pljuvačne žlezde

Saliva- pljuvačka, Salivatio- lučenje pljuvačke

Glandulae salivariae (salivales) minores:

- pojedinačne, sitne, rasute u zidovima usne duplje: Gll.labiales, Gll.buccales, Gll.palatinae, Gll.linguales

Glandulae salivariae (salivales) majores:

- tri velike žlezde

1/ Glandula parotis – zaušna žlezda

Ductus parotideus
Papilla parotidea

2/ Glandula mandibularis – podvilična žlezda

Ductus mandibularis
Caruncula sublingualis

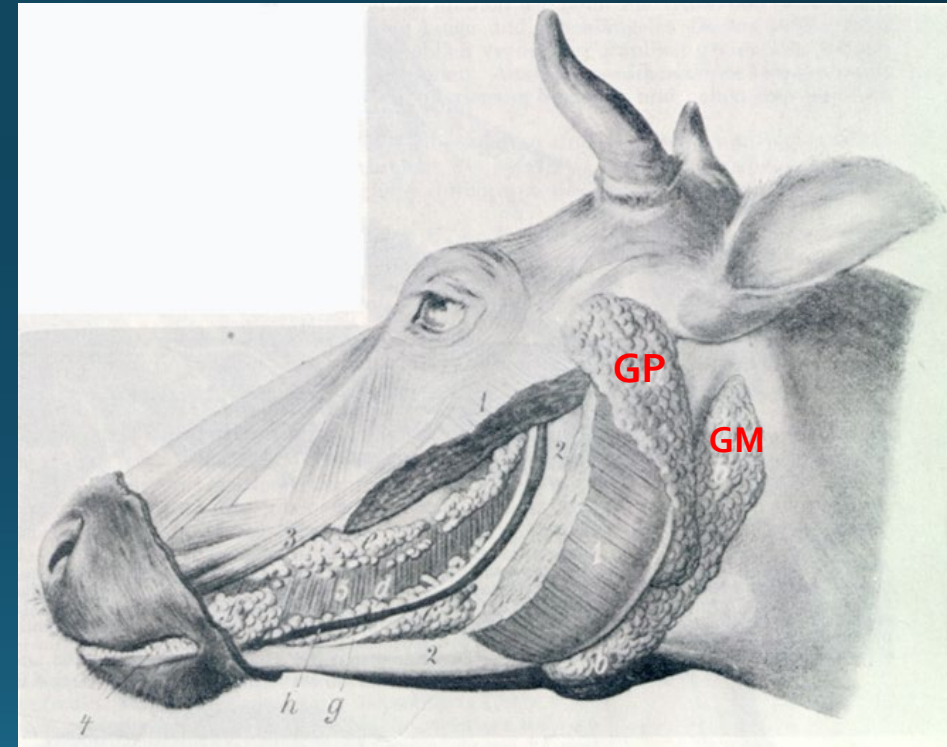
3/ Glandulae sublinguales – podjezične žlezde

a) Gl. sublingualis monostomatica

Ductus sublingualis major
Caruncula sublingualis

b) Gl. sublingualis polystomatica

Ductus sublinguales minores
Crista sublingualis

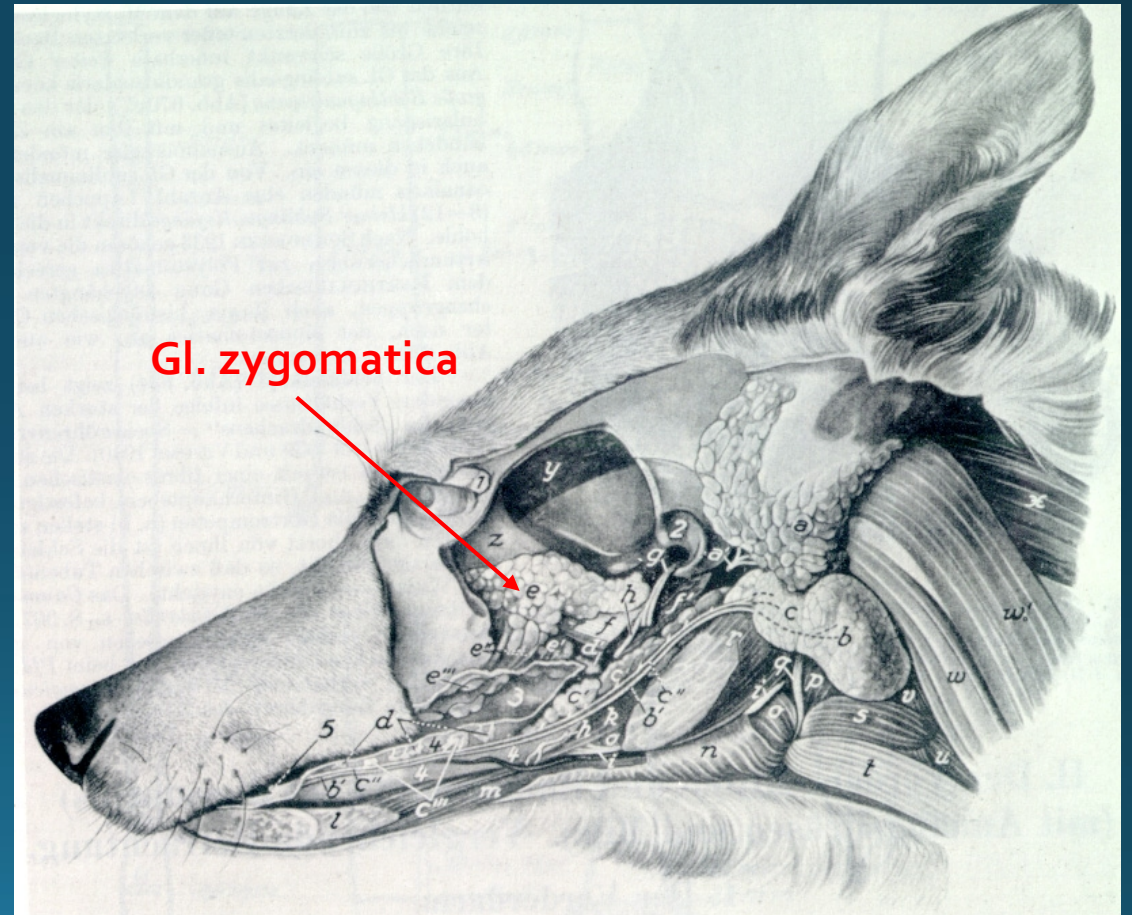


Obrazne žlezde (Gll. buccales) kod svih domaćih životinja postoje kao dorzalne i ventralne (Gll. buccales dorsales, Gll. buccales ventrales), dok kod govečeta postoje i srednje obrazne žlezde (Gll. buccales intermediae).

Kod psa dorzalne obrazne žlezde nose naziv **Gl. zygomatica**.

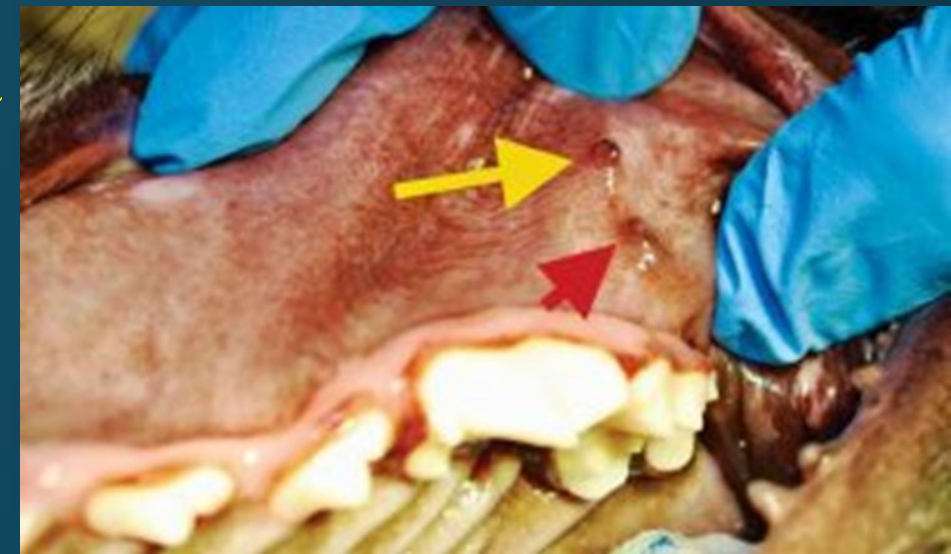


Gll. buccales dorsales, intermediae et ventrales



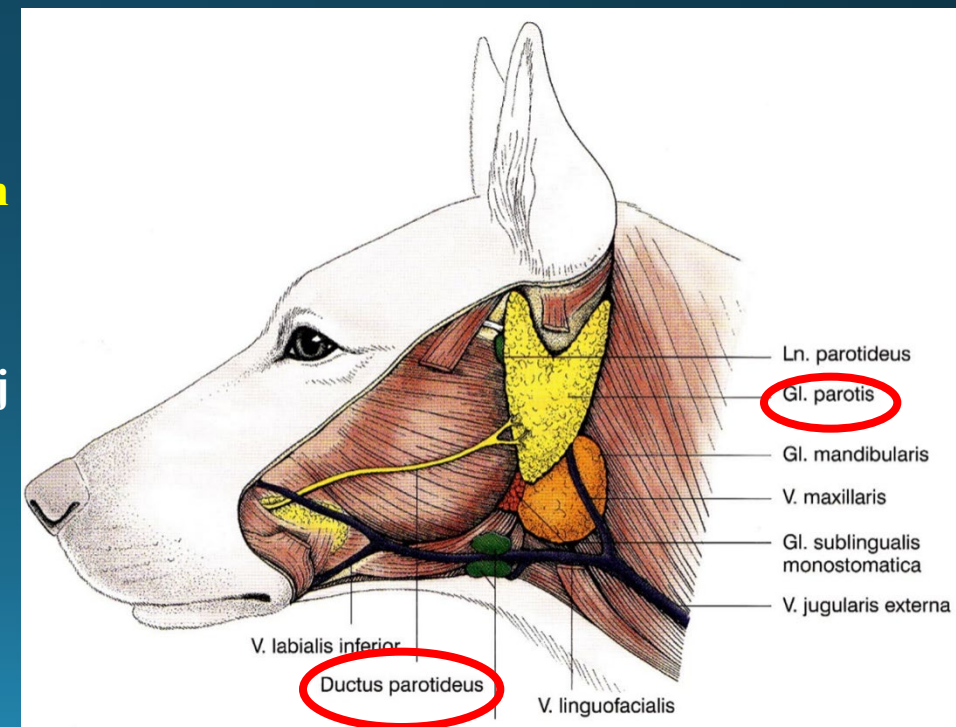
Glandula parotis – zaušna pljuvačna žlezda

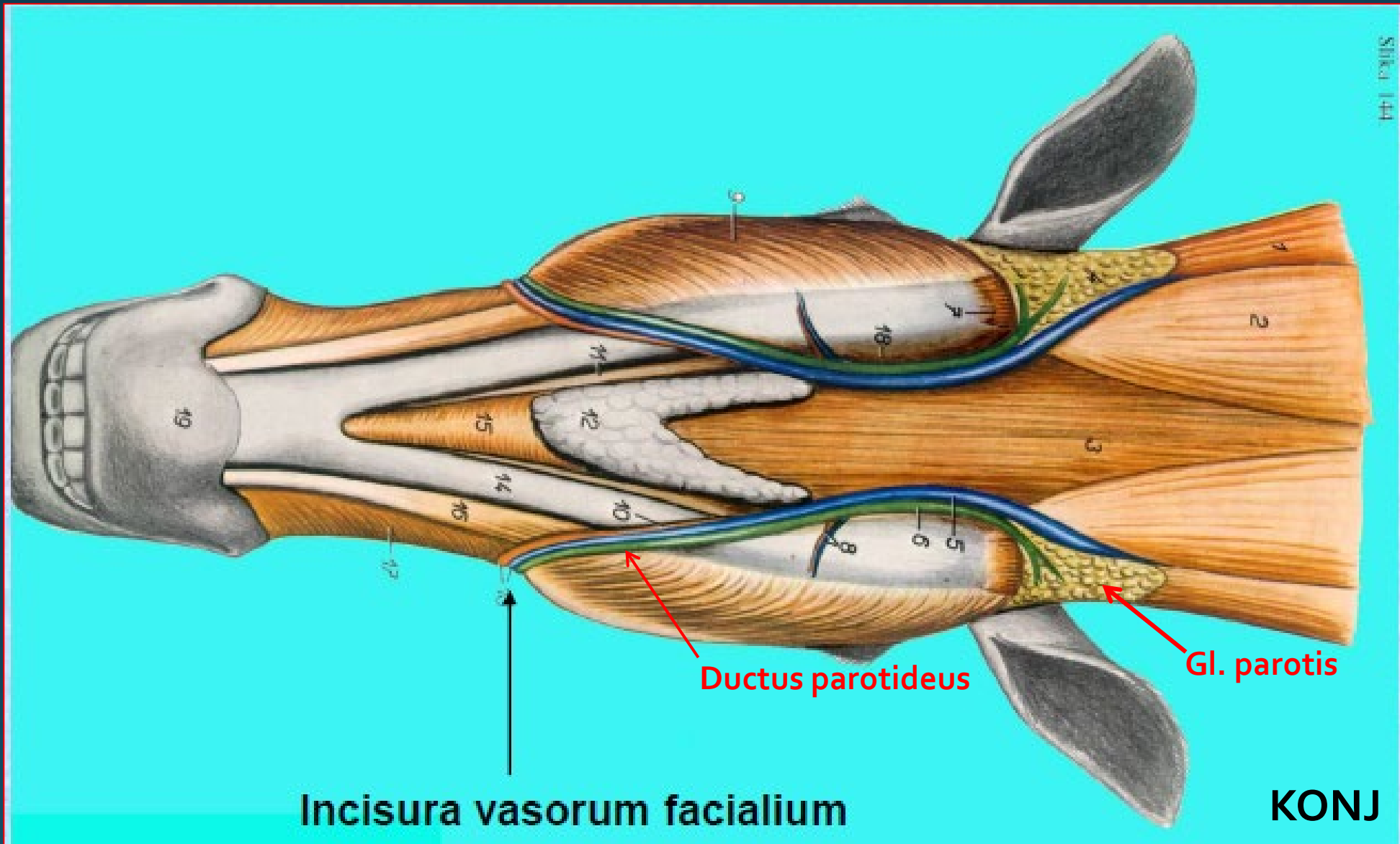
- parna žlezda režnjevite građe.
- leži između Ramus mandibulae i atlasa, dorzalno dopire do baze ušne školjke, a ventralno do grkljana. Kranijalnim krajem naleže na M. masseter.
- izvodni kanal (**Ductus parotideus**) se kod konja, govečeta i svinje pruža se kroz međuvilični prostor (Spatium mandibulae) uz medijalni rub donje vilice a zatim prelazi preko Incisura vasorum facialium na obraz koji probija i uliva se u **Vestibulum buccale**.
- kod ovce i psa prelazi preko lateralne strane m.masseter-a i uliva se u **Vestibulum buccale**.
- Ductus parotideus se uliva u Vestibulum buccale na **Papilla parotidea**, salivalnoj bradavici sluzokože obraza, u visini trećeg premolara do prvog molara gornje vilice u zavisnosti od vrste domaćih životinja.



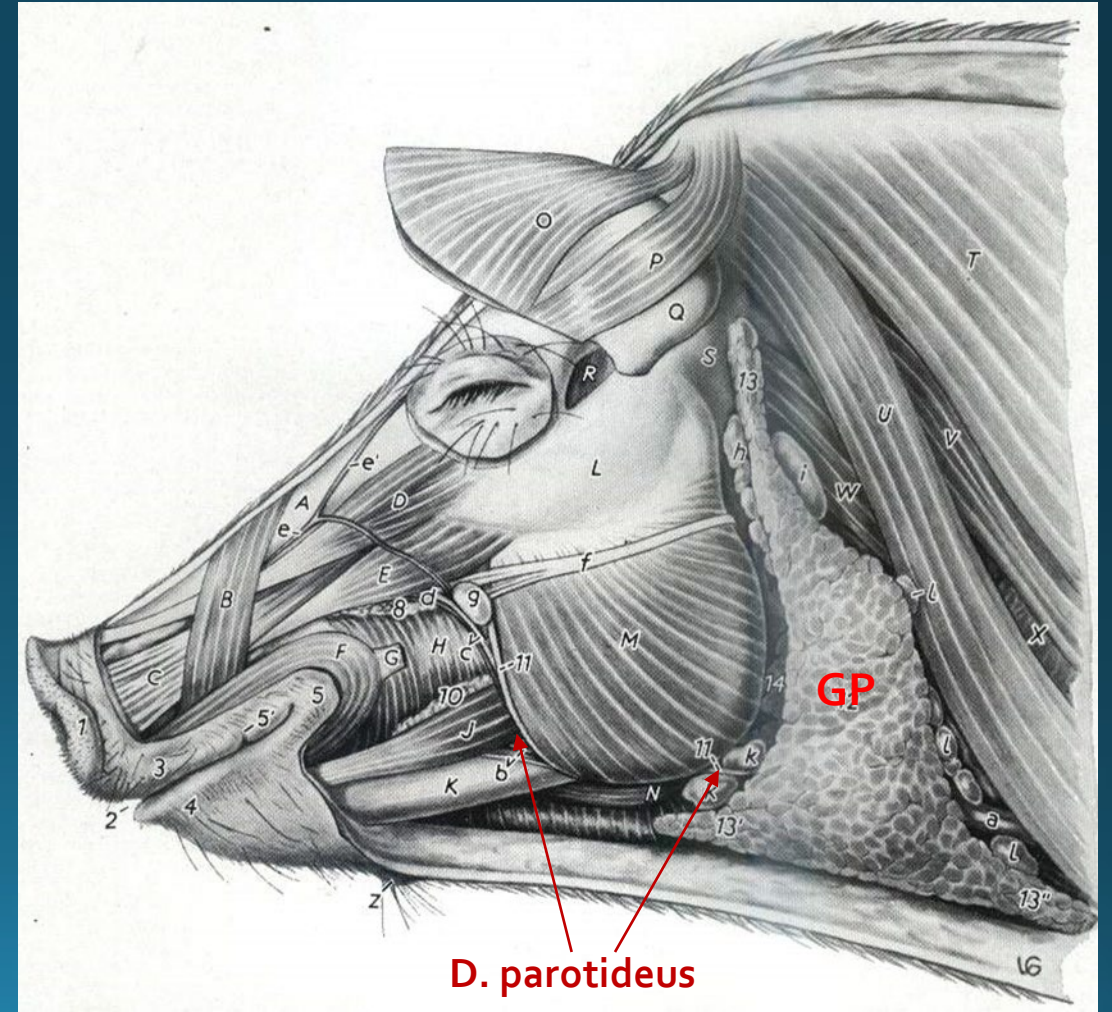
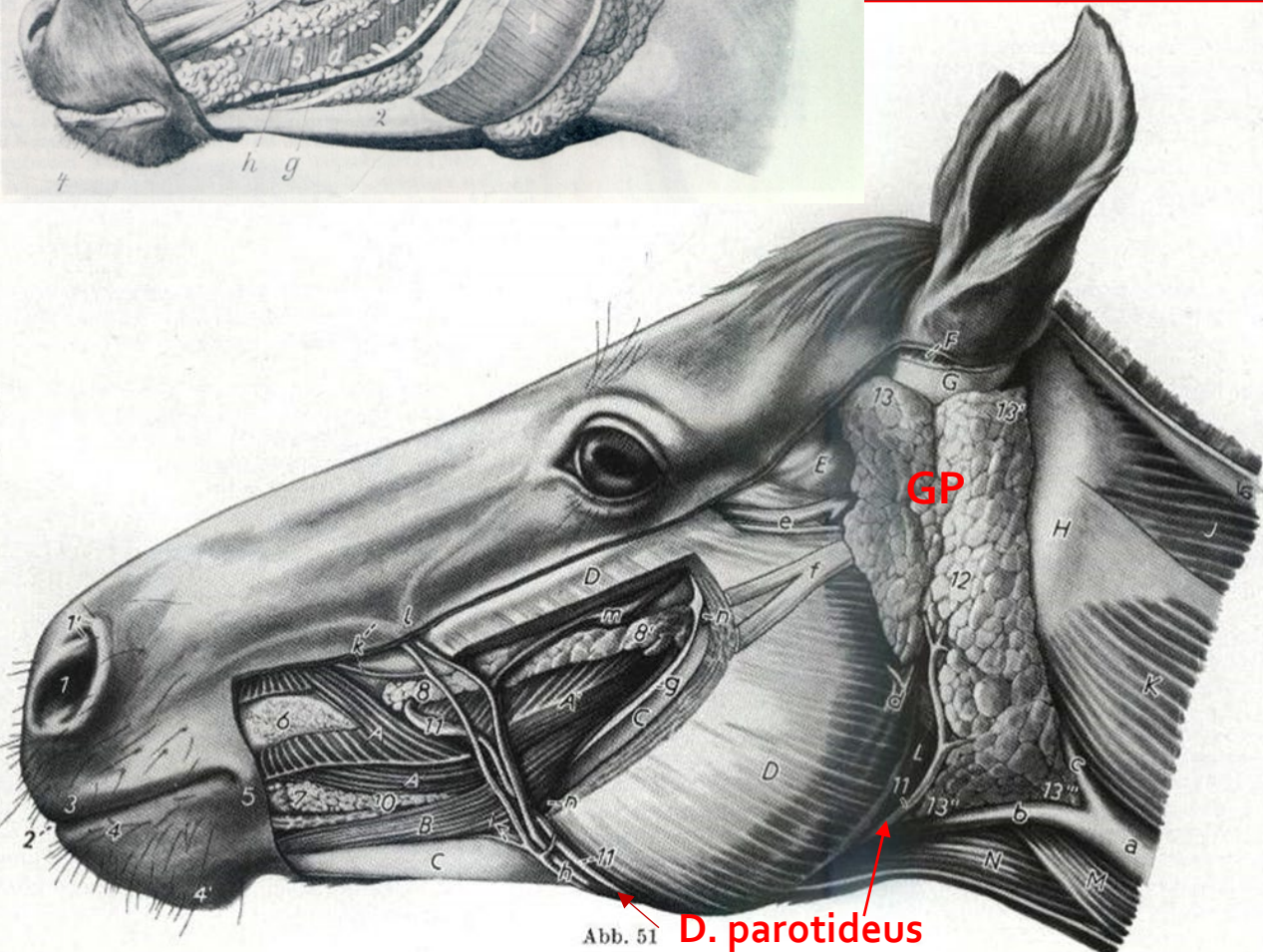
→ Izvodni kanal Gl. parotis

→ Izvodni kanal Gl. zygomatica



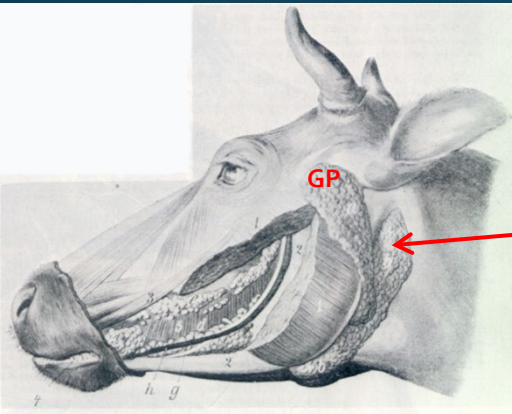
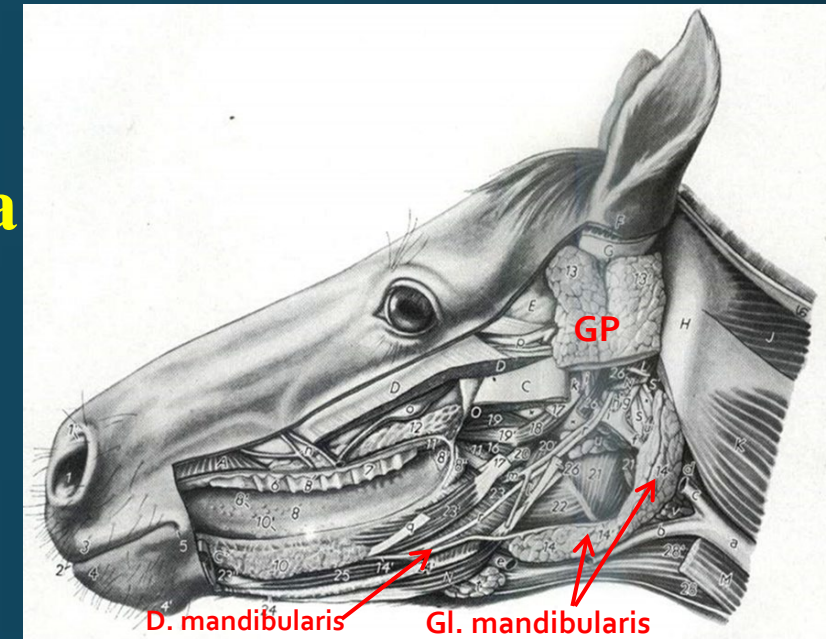


Glandula parotis (GP) Ductus parotideus



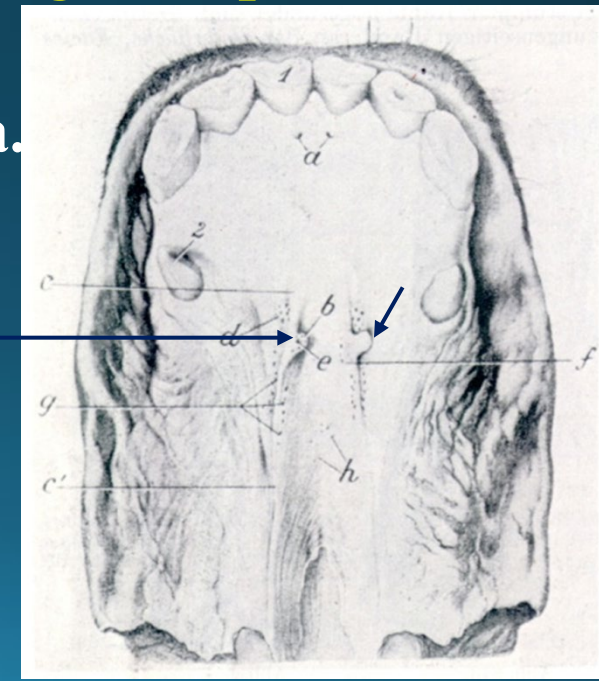
Glandula mandibularis – podvilična pljuvačna žleza

- parna žleza, režnjevite građe
- nalazi se između baze jezične kosti i atlasa
- Leži dublje, tj. medijalno od Gl. parotis
- izvodni kanal (**Ductus mandibularis**) izliva se u predelu **Cavum sublinguale apicale**, na podjezičnoj bradavici (**Caruncula sublingualis**)
- kod svinje i psa je okruglog oblika a kod konja i govečeta je dugačka.
- najveća je kod govečeta u koga je veća i od zaušne žlezde.



Gl. mandibularis

Caruncula sublingualis



- Gl. mandibularis kod svinje i psa je okruglog oblika
- Leži u predelu ugla koji zatvaraju V. maxillaris i V. linguofacialis

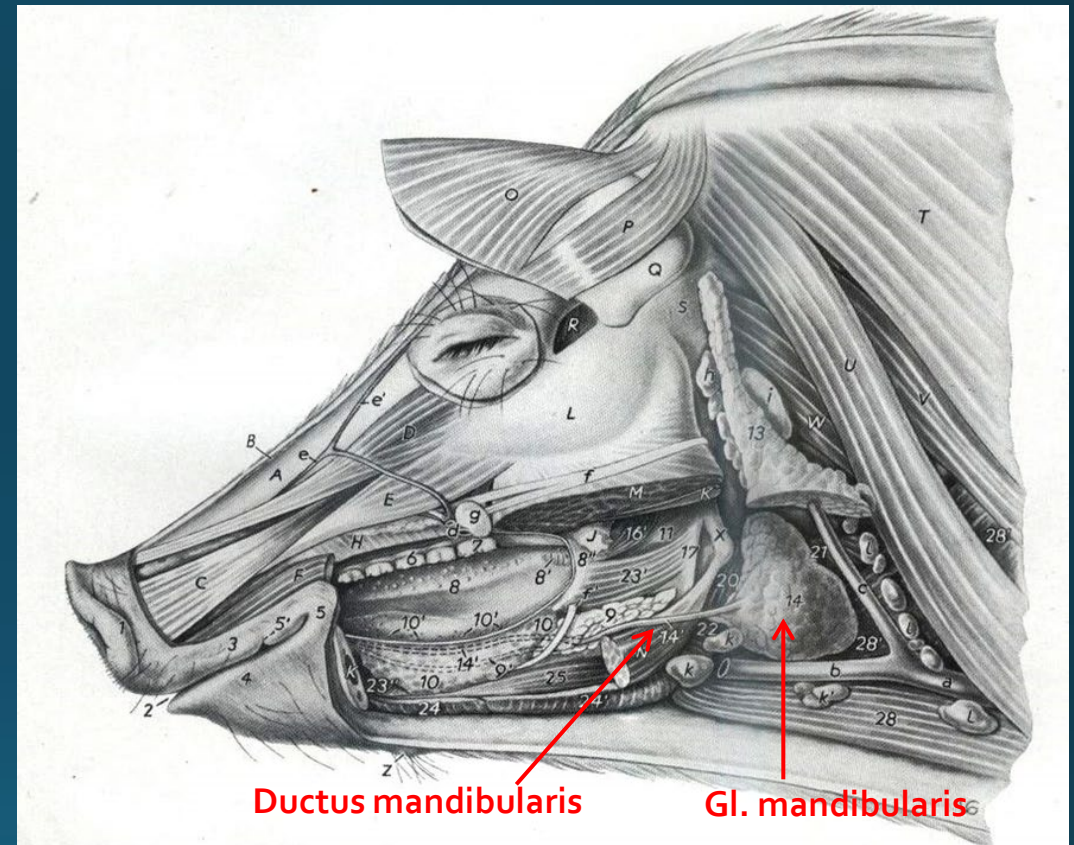
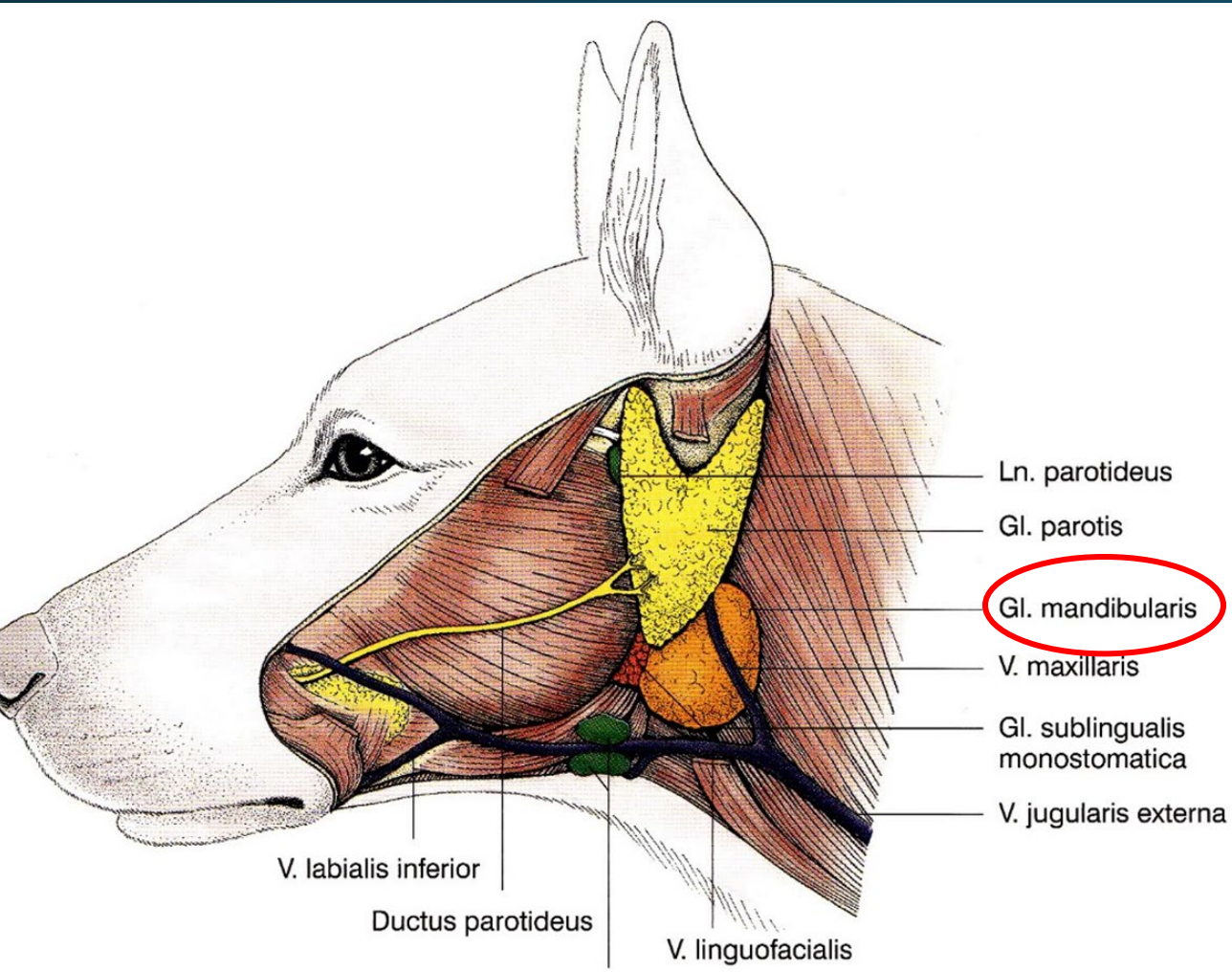


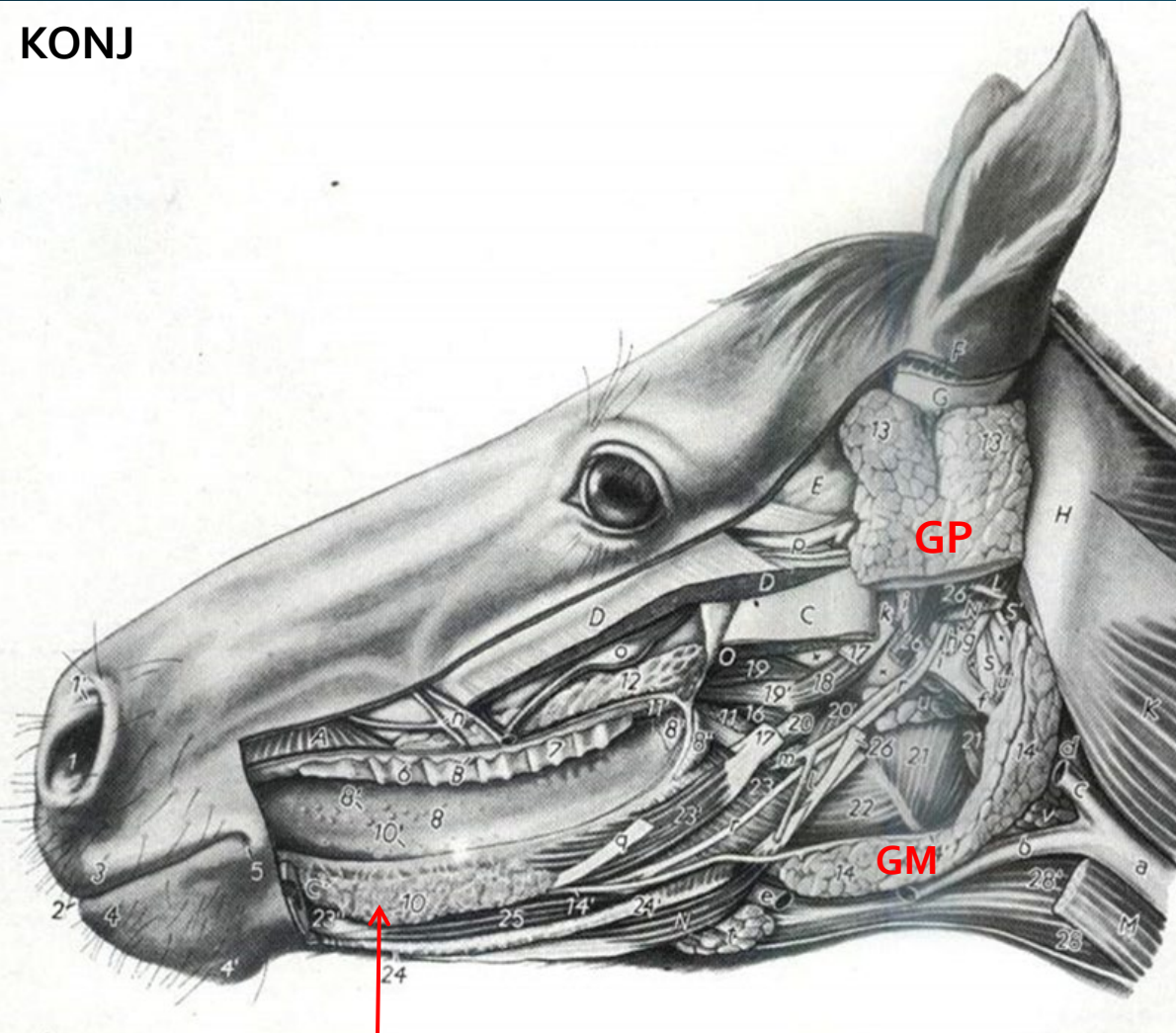
Abb. 53. Tiefe Kopfdrüsen, Zungen- und Schlundkopfmuskeln des Schweines.

A Os nasale; B M. levator nasolabialis, abgeschnitten; C M. caninus; D M. levator labii maxillaris proprius; E M. depressor rostri; F M. orbicularis oris, zum Teil abgeschnitten; H M. bucinatorius; J Proc. pterygoideus des Palatinum und Sphenoid; K, K Os mandibulare, seine Pars molaris entfernt; L Arcus zygomaticus; M M. masseter; N M. biventer mandibulae; O M. cervicoauricularis supf.; P M. cervicoauricularis prof. major; Q Ohrmuschel; R M. temporalis; S Articul. mandibularis; T M. cleidococcipitalis; U M. cleidomastoideus; V M. omotransversarius; W M. sternomastoideus; X Proc. jugularis; Z Mentalorgan; 1 Rostrum; 2 Rima oris; 3 Labium maxillare; 4 Labium mandibulare; 5 Commissura labiorum; 5' Kerbe für den Dens caninus; 6 Dens praemolaris 4 und 7 Dens molaris 2 des Oberkiefers (M 3 noch nicht durchgebrochen); 8 Corpus linguae mit Papillae fungiformes; 8' Papilla foliata; 8'' Plica pterygomandibularis; 9 Gland. sublingualis monostomatica, 9' ihr Ausführungsgang, Duct. sublingualis major; 10, 10' Gland. sublingualis polystomatica, 10', 10' Mündungen ihrer Ausführungsgänge, Ductus sublinguales minores; 11 Gland. veli palatini; 13 Ohrende der Gland. parotis; 14 Gland. mandibularis, 14', 14' ihr Ausführungsgang, Duct. mandibularis; 16' M. tensor veli palatini; 17 Stylohyoid; 20 Constrictores pharyngis medii; 21 Constrictores pharyngis aborales; 22 M. hyothyreoideus; 23' u. 23'' Zungenmuskeln: 23' M. styloglossus, 23'' M. genioglossus; 24-28' Zungenbeinmuskeln: 24 oraler und 24' aboraler Teil des M. mylohyoideus, 25 M. geniohyoideus, 26 M. sternohyoideus, 28', 28'' M. omohyoideus; a V. jugularis; b V. maxillaris ext.; c V. maxillaris int.; d A. u. V. facialis an ihrer Aufteilung in A. u. V. labialis maxillaris, V. reflexa u. e V. dorsalis nasi; e' V. angularis oculi; f R. buccalis dors. n. facialis; f' N. lingualis; g Fettkörper; h Lnn. parotidici; i Lnn. retropharyngici laterales; k, k Lnn. mandibulares; k' Lnn. mandibulares accessorii; l, l Lnn. cervicales supf. ventrr.

Glandulae sublinguales – podjezične pljuvačne žlezde

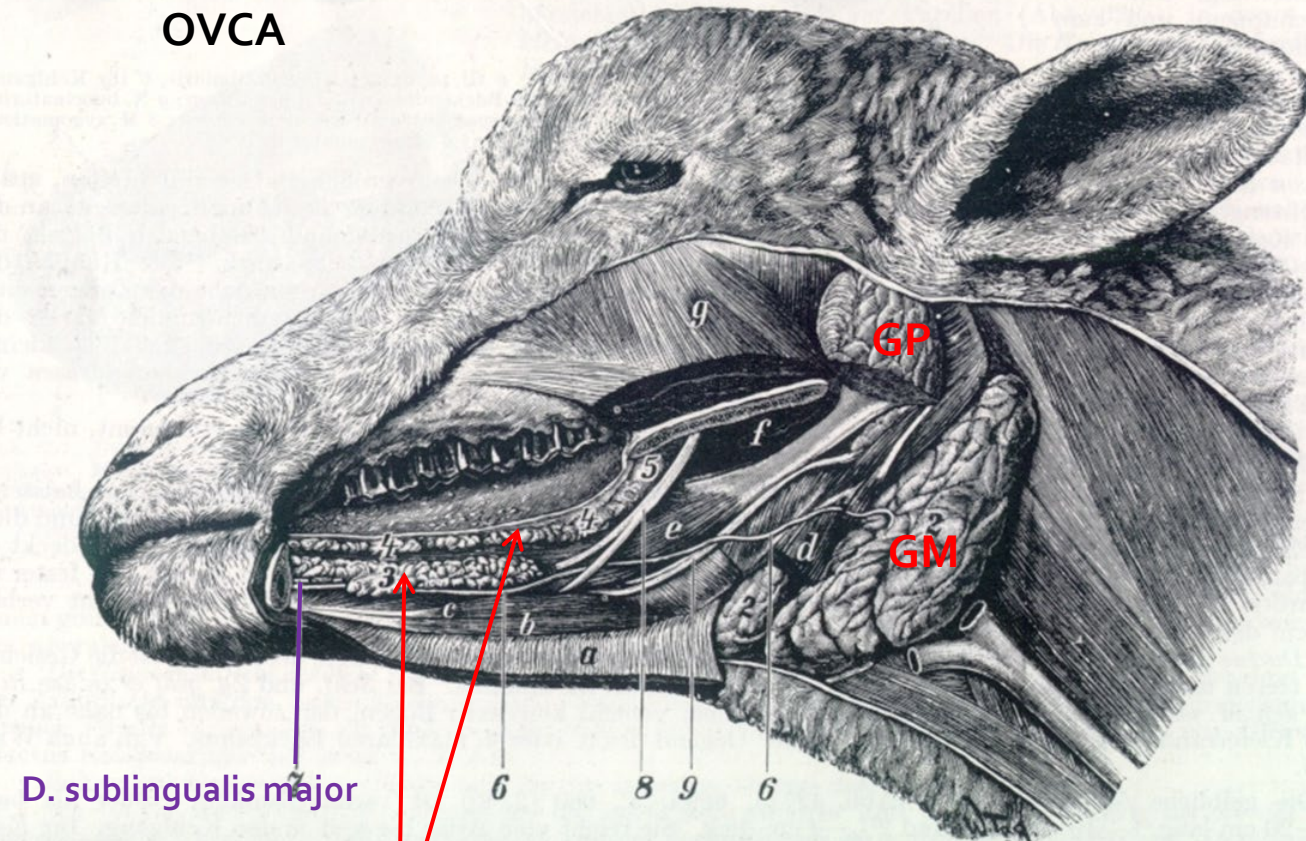
- postoje dve podjezične pljuvačne žlezde, **Glandula sublingualis monostomatica s. major** i **Glandula sublingualis polystomatica s. minor**, osim kod konja kod koga postoji samo **Glandula sublingualis polystomatica**.
- leže oralno od Gl. mandibularis, ispod sluzokože lateralnog podjezičnog prostora dna usne duplje (**Cavum sublinguale laterale**).
- iz Glandula sublingualis monostomatica izlazi izvodni kanal (**Ductus sublingualis major**) koji se uliva u usnu duplju na **Caruncula sublingualis**.
- iz Glandula sublingualis polystomatica izlazi veći broj izvodnih kanala (**Ductus sublinguales minores**) koji se ulivaju u **Cavum sublinguale laterale** na **Crista sublingualis**, izbočenje sluzokože lateralnog podjezičnog prostora dna usne duplje iznad podjezičnih žlezda u vidu grebena sa većim brojem otvora koji su ušća izvodnih kanalića ove žlezde.

KONJ



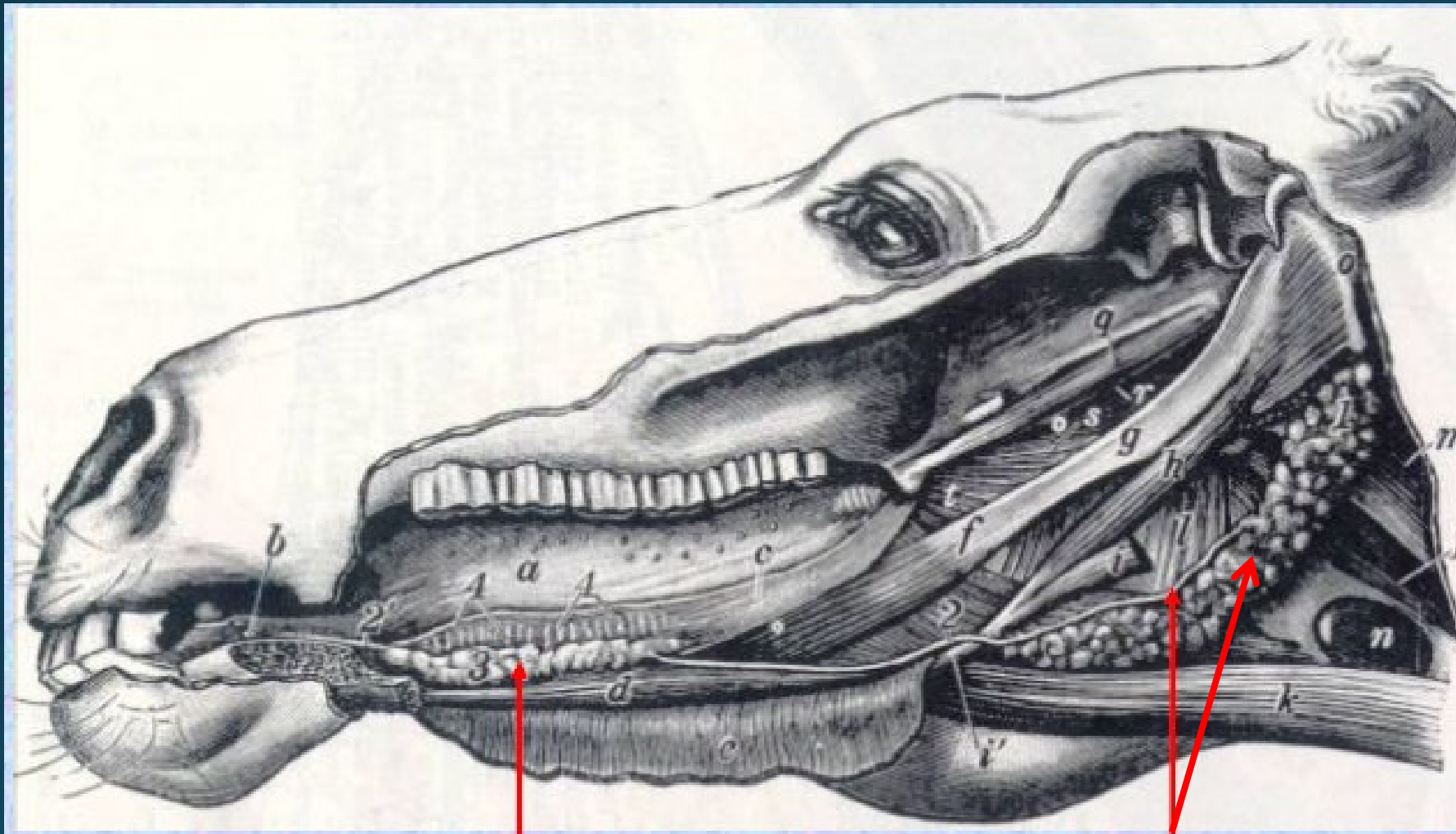
Gl. sublingualis polystomatica

OVCA



D. sublingualis major

Gl. sublingualis monostomatica (br. 3)
Gl. sublingualis polystomatica (br. 4)



Gl. sublingualis polystomatica (br. 3)
sa Ductus sublinguales minores (br. 4)

Gl. mandibularis sa Ductus mandibularis

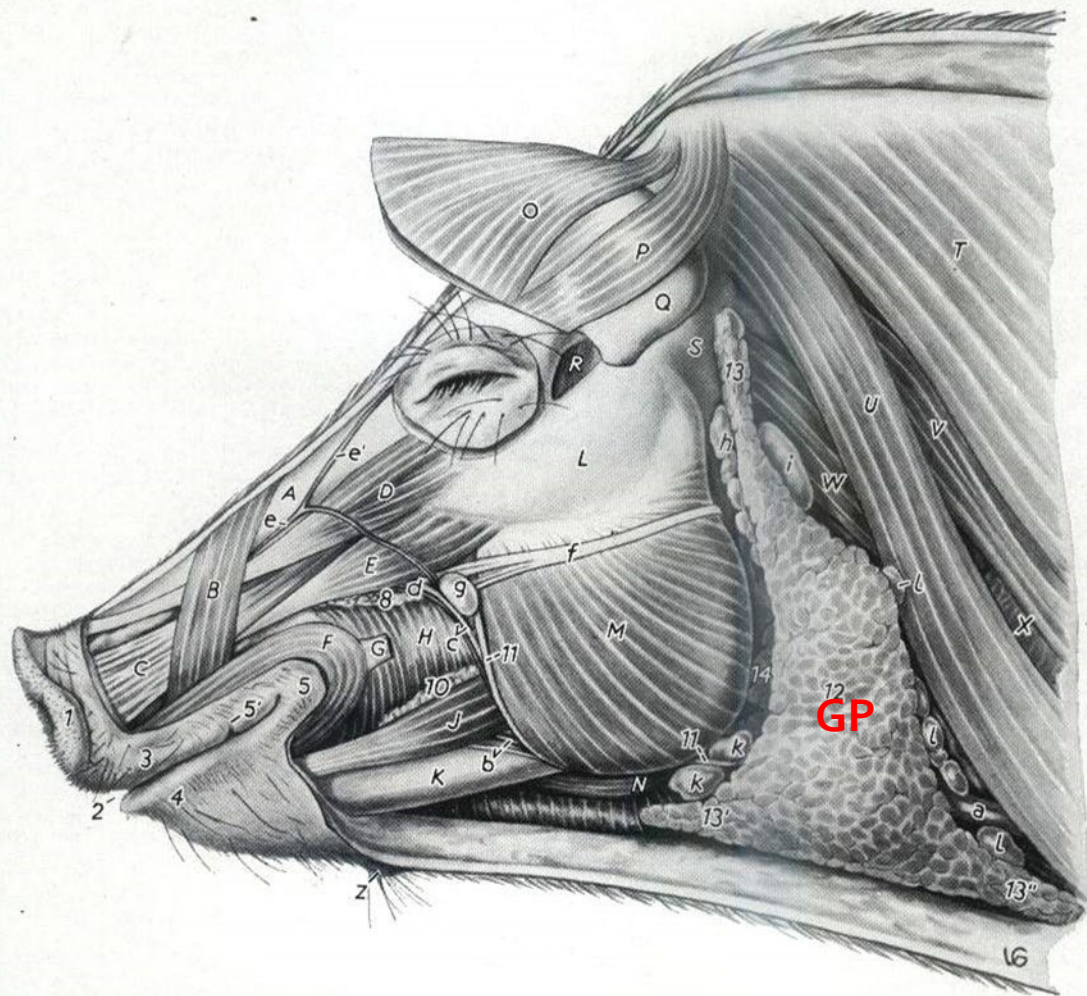
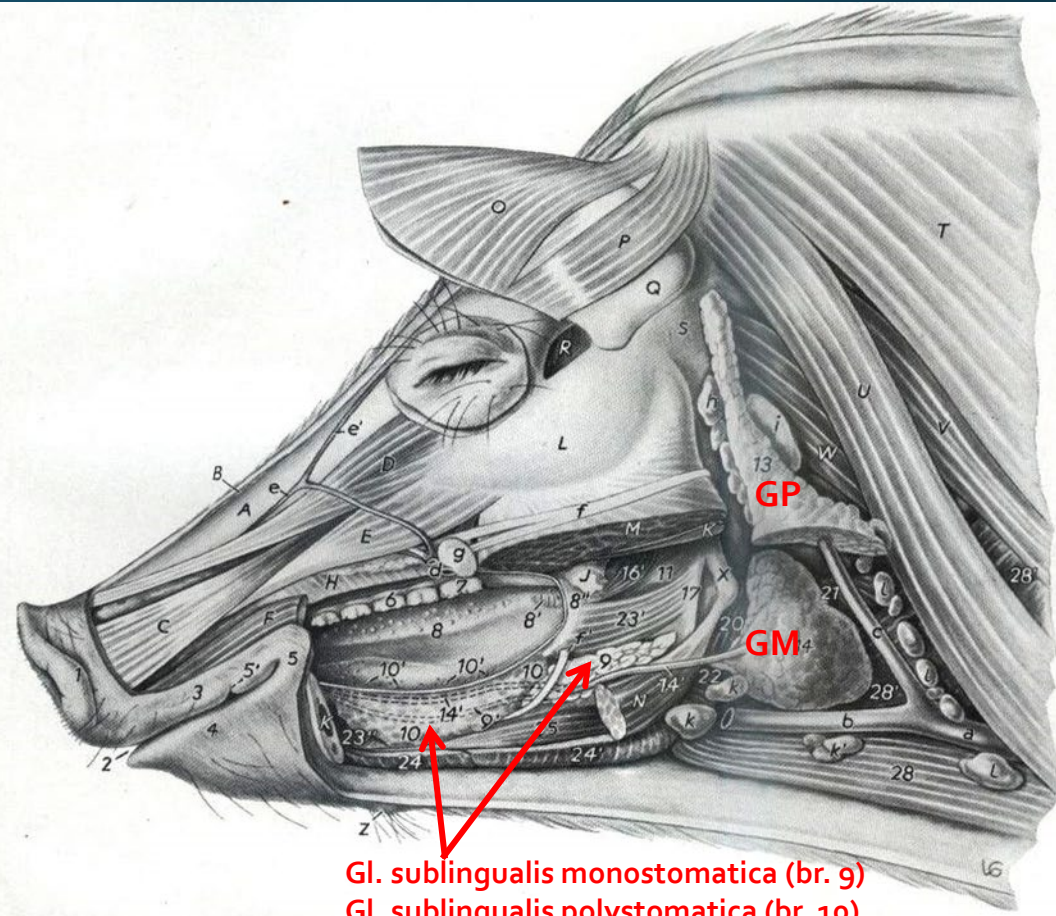


Abb. 48. Oberflächliche Kopfdrüsen des Schweines.

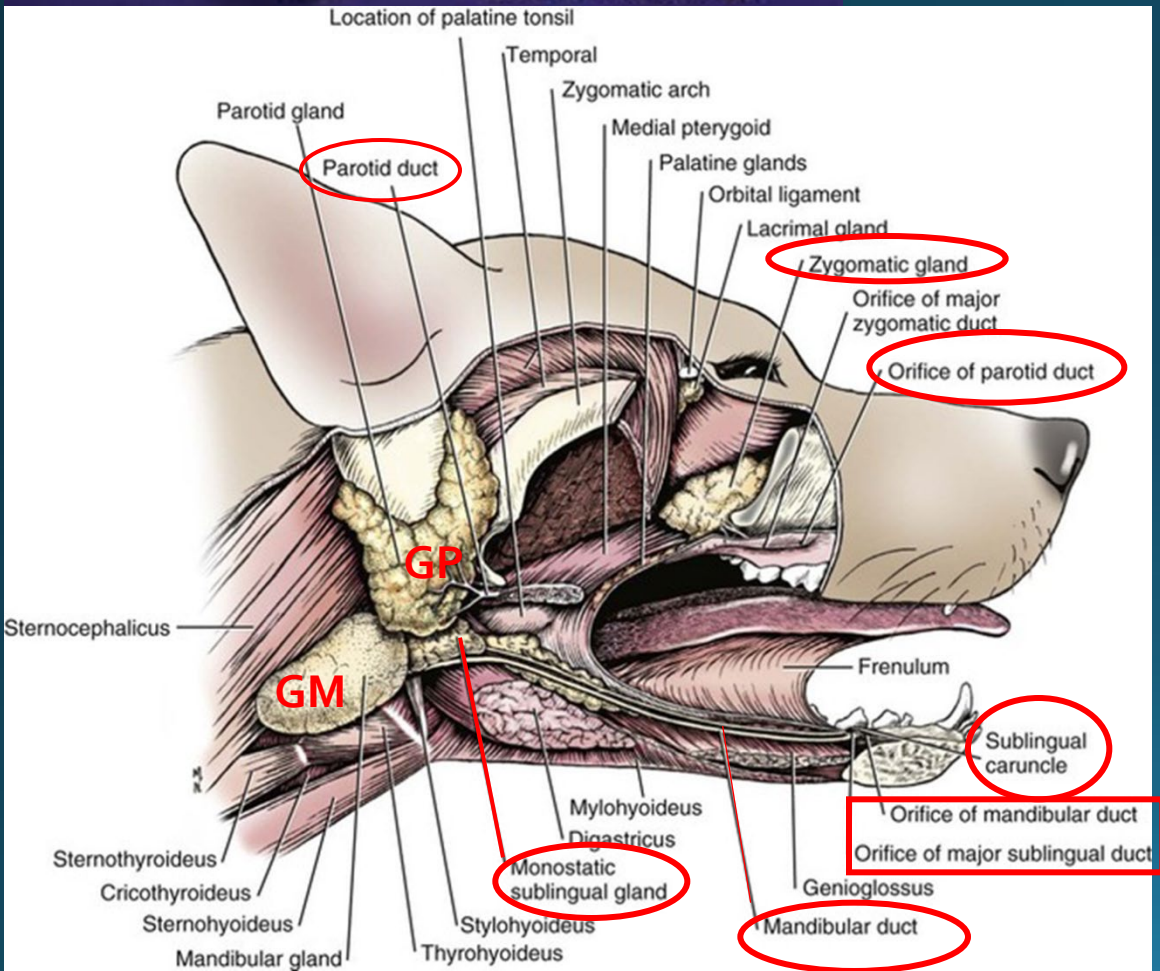
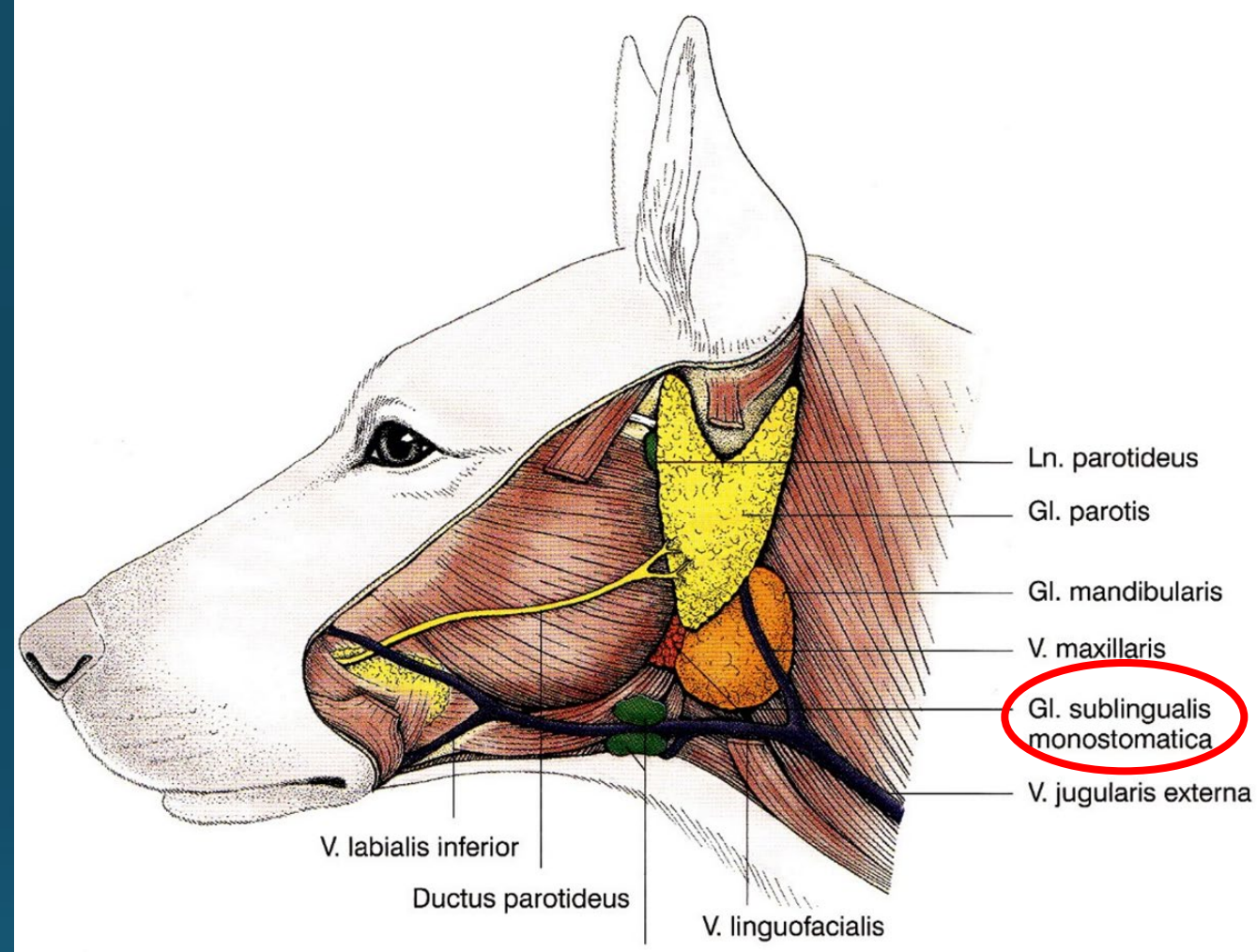
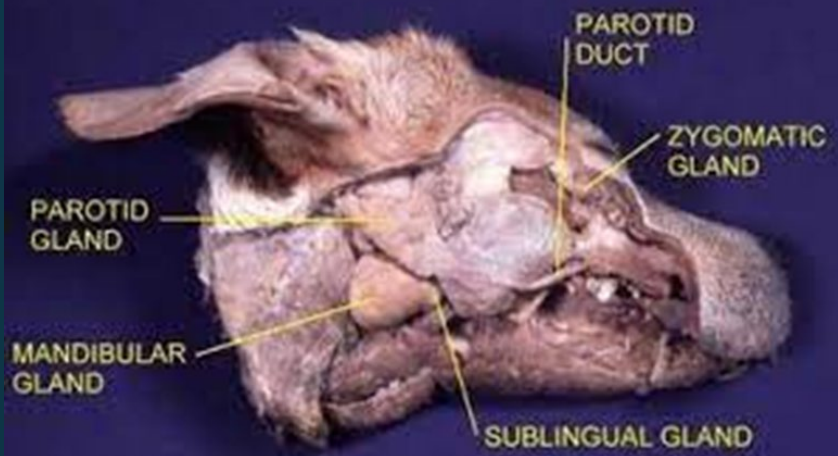
A Os nasale; B M. levator nasolabialis; C M. caninus; D M. levator labii maxillaris proprius; E M. depressor rostri; F M. orbicularis oris; G M. zygomaticus; H M. bucinatorius; J M. depressor labii mandibularis; K linke Mandibula; L Arcus zygomaticus; M M. masseter; N M. biventer mandibulae; O M. cervicoauricularis supf.; P M. cervicoauricularis prof. major; Q Ohrmuschel; R M. temporalis; S Articul. mandibularis; T M. cleidooccipitalis; U M. cleidomastoideus; V M. omotransversarius; W M. sternomastoideus; X M. omohyoideus; Z Mentalorgan; 1 Rostrum; 2 Rima oris; 3 Labium maxillare; 4 Labium mandibulare; 5 Commissura labiorum; 5' Kerbe für den Dens caninus; 6 maxillare und 10 mandibulare Backendrüsen; 11, 11 Duct. parotidicus; 12 Gland. parotis, ihr Körper, 13 ihr Ohrende, 13' ihr Kehlgangszipfel, 13'' ihr Halszipfel; 14 Gland. mandibularis; a V. jugularis; b A. u. V. labialis mand.; c A. u. V. facialis; d A. u. V. labialis max.; e V. dorsalis nasi; e' V. angularis oculi; f R. buccalis dors. n. facialis; g Fettkörper; h Lnn. parotidici; i Lnn. retropharyngici lat.; k, k Lnn. mandibulares; l, l, l Lnn. cervicales supff. ventrr.

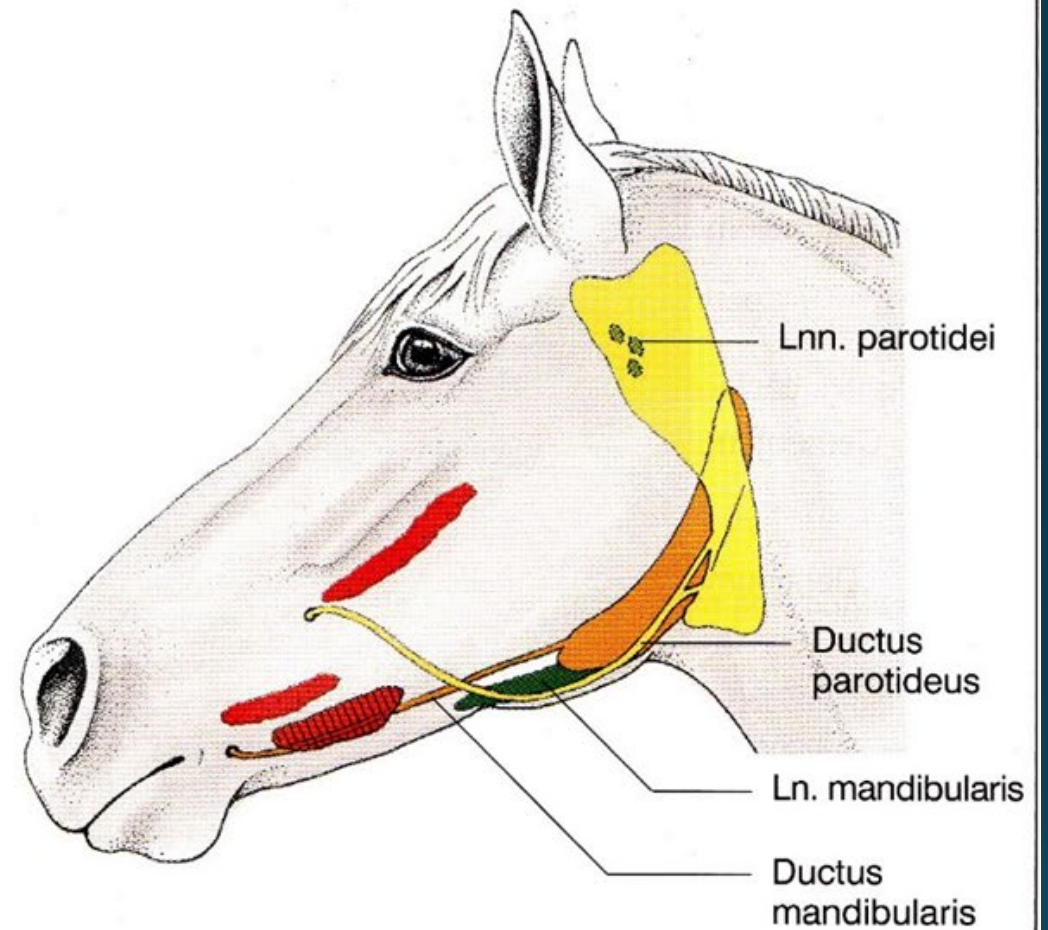
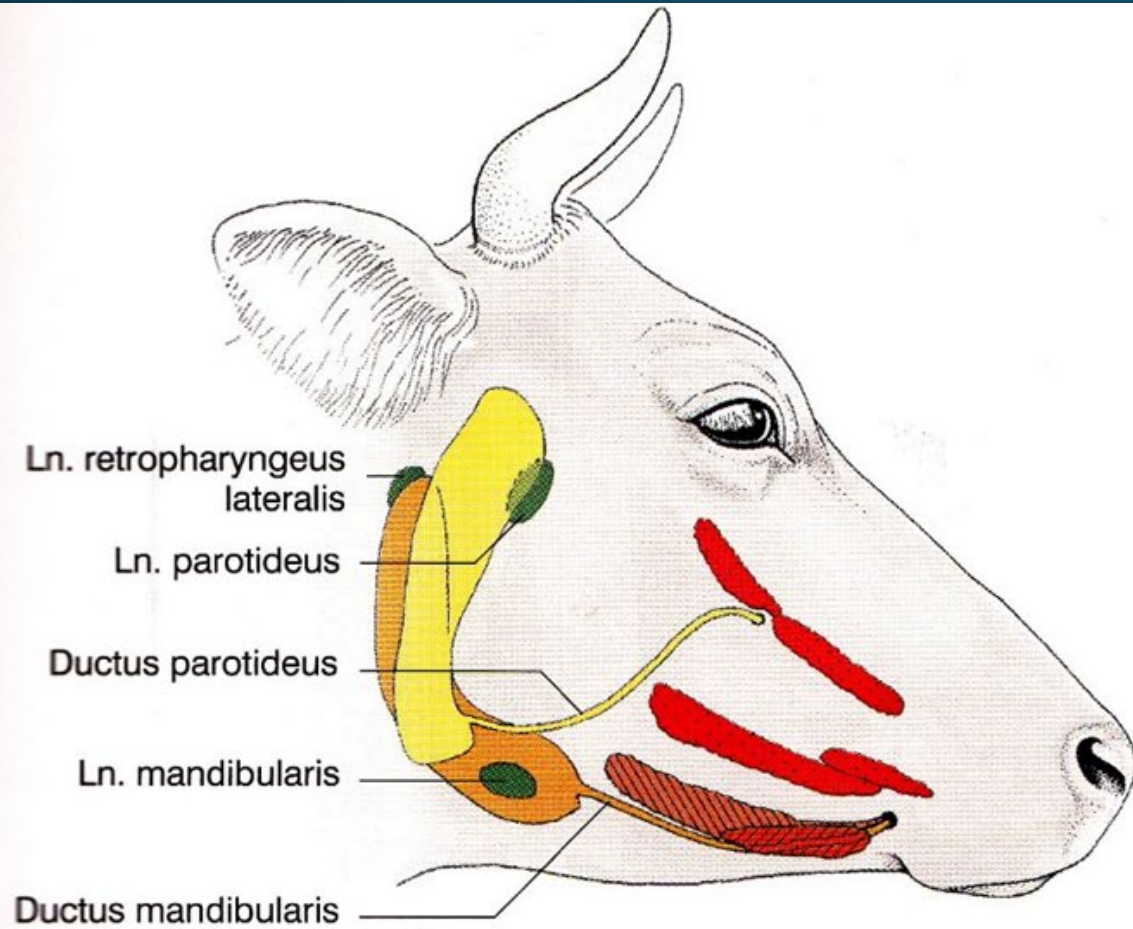


Gl. sublingualis monostomatica (br. 9)
Gl. sublingualis polystomatica (br. 10)

Abb. 53. Tiefe Kopfdrüsen, Zungen- und Schlundkopfmuskeln des Schweines.

A Os nasale; B M. levator nasolabialis, abgeschnitten; C M. caninus; D M. levator labii maxillaris proprius; E M. depressor rostri; F M. orbicularis oris, zum Teil abgeschnitten; H M. bucinatorius; J Proc. pterygoideus des Palatinum und Sphenoid; K, K Os mandibulare, seine Pars molaris entfernt; L Arcus zygomaticus; M M. masseter; N M. biventer mandibulae; O M. cervicoauricularis supf.; P M. cervicoauricularis prof. major; Q Ohrmuschel; R M. temporalis; S Articul. mandibularis; T M. cleidooccipitalis; U M. cleidomastoideus; V M. omotransversarius; W M. sternomastoideus; X Proc. jugularis; Z Mentalorgan; 1 Rostrum; 2 Rima oris; 3 Labium maxillare; 4 Labium mandibulare; 5 Commissura labiorum; 5' Kerbe für den Dens caninus; 6 Dens praemolaris 4 und 7 Dens molaris 2 des Oberkiefers (M 3 noch nicht durchgebrochen); 8 Corpus linguae mit Papillae fungiformes; 8' Papilla foliata; 8'' Plica pterygomandibularis; 9 Gland. sublingualis monostomatica, 9' ihr Ausführungsgang, Duct. sublingualis major; 10, 10 Gland. sublingualis polystomatica, 10', 10' Mündungen ihrer Ausführungsgänge, Ductus sublinguales minores; 11 Gland. velli palatini; 13 Ohrende der Gland. parotis; 14 Gland. mandibularis, 14', 14' ihr Ausführungsgang, Duct. mandibularis; 16' M. tensor veli palatini; 17 Stylohyoid; 20 Constrictores pharyngis medii; 21 Constrictores pharyngis aborales; 22 M. hyothyreoideus; 23' u. 23'' Zungenmuskeln; 23' M. styloglossus, 23'' M. genioglossus; 24-28' Zungenbeinmuskeln; 24 oraler und 24' aboraler Teil des M. mylohyoideus, 25 M. geniohyoideus, 28 M. sternohyoideus, 28', 28' M. omohyoideus; a V. jugularis; b V. maxillaris ext.; c V. maxillaris int.; d A. u. V. facialis an ihrer Aufteilung in A. u. V. labialis maxillaris, V. reflexa u. e V. dorsalis nasi; e' V. angularis oculi; f R. buccalis dors. n. facialis; f' N. lingualis; g Fettkörper; h Lnn. parotidici; i Lnn. retropharyngici laterales; k, k Lnn. mandibulares; k' Lnn. mandibulares accessorii; l, l, l Lnn. cervicales supff. ventrr.





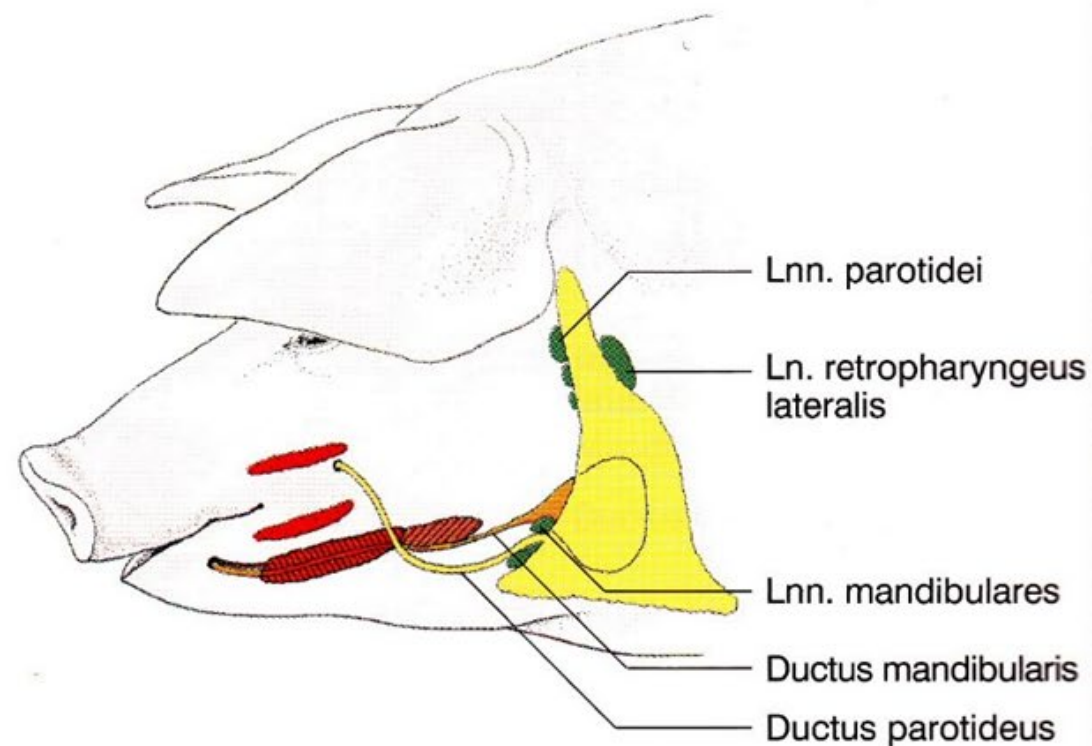
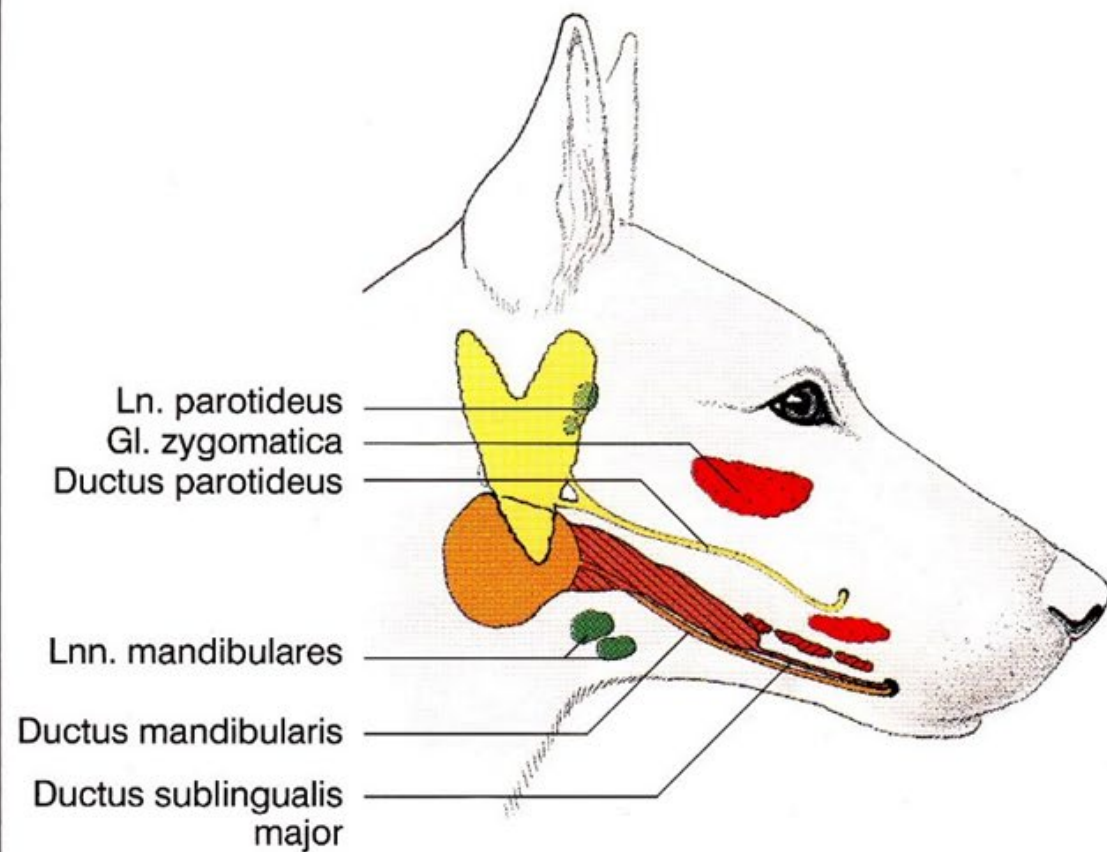
Gl. parotis

Gl. sublingualis monostomatica

Gll. buccales dorsales i ventrales

Gl. mandibularis

Gl. sublingualis polystomatica



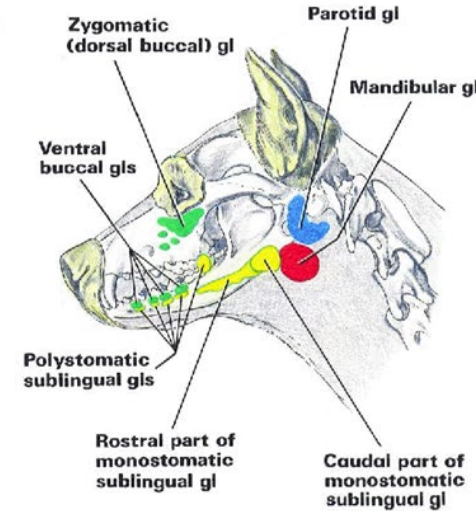
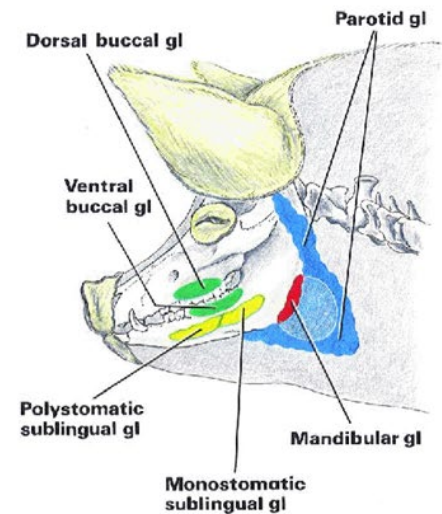
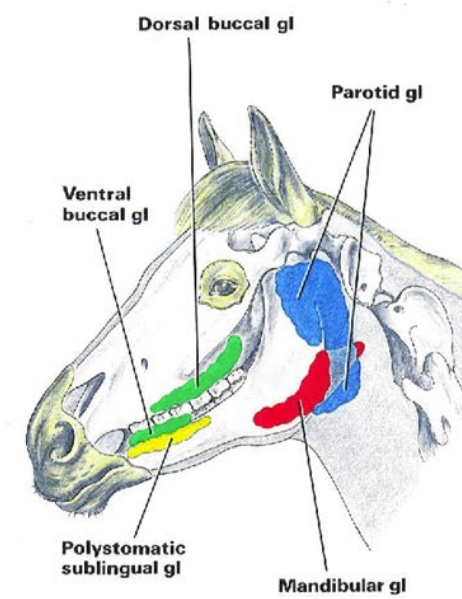
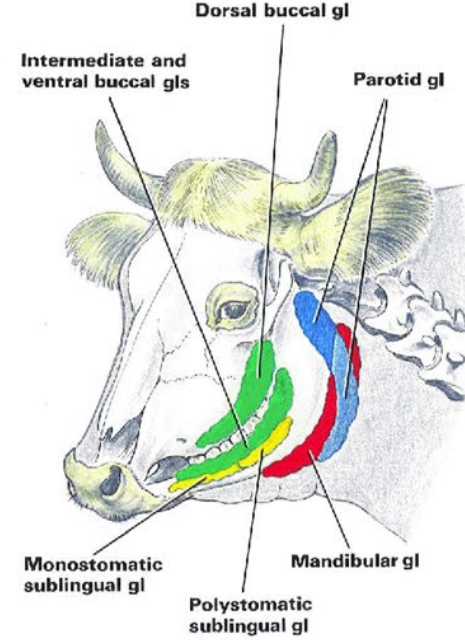
Gl. parotis

Gl. sublingualis monostomatica

Gl. buccales dorsales i ventrales

Gl. mandibularis

Gl. sublingualis polystomatica



SCHEMATIC DIAGRAM OF THE SALIVARY GLANDS OF FOUR DOMESTIC MAMMALS



UNIVERZITET U BEOGRADU
FAKULTET VETERINARSKE MEDICINE

HVALA NA PAŽNJI