



**Blood supply
of Head and Neck**

Common Carotid Artery

Originates from **bicarotid trunk** at the level of the first rib, being ventral to the **trachea** and terminates dorsal to the **larynx**,

The right one related to the trachea while the left one related to the oesophagus

Related dorsally to the **vagosympathetic** trunk and ventrally to the **recurrent laryngeal** nerve.

Branches of common carotid artery:

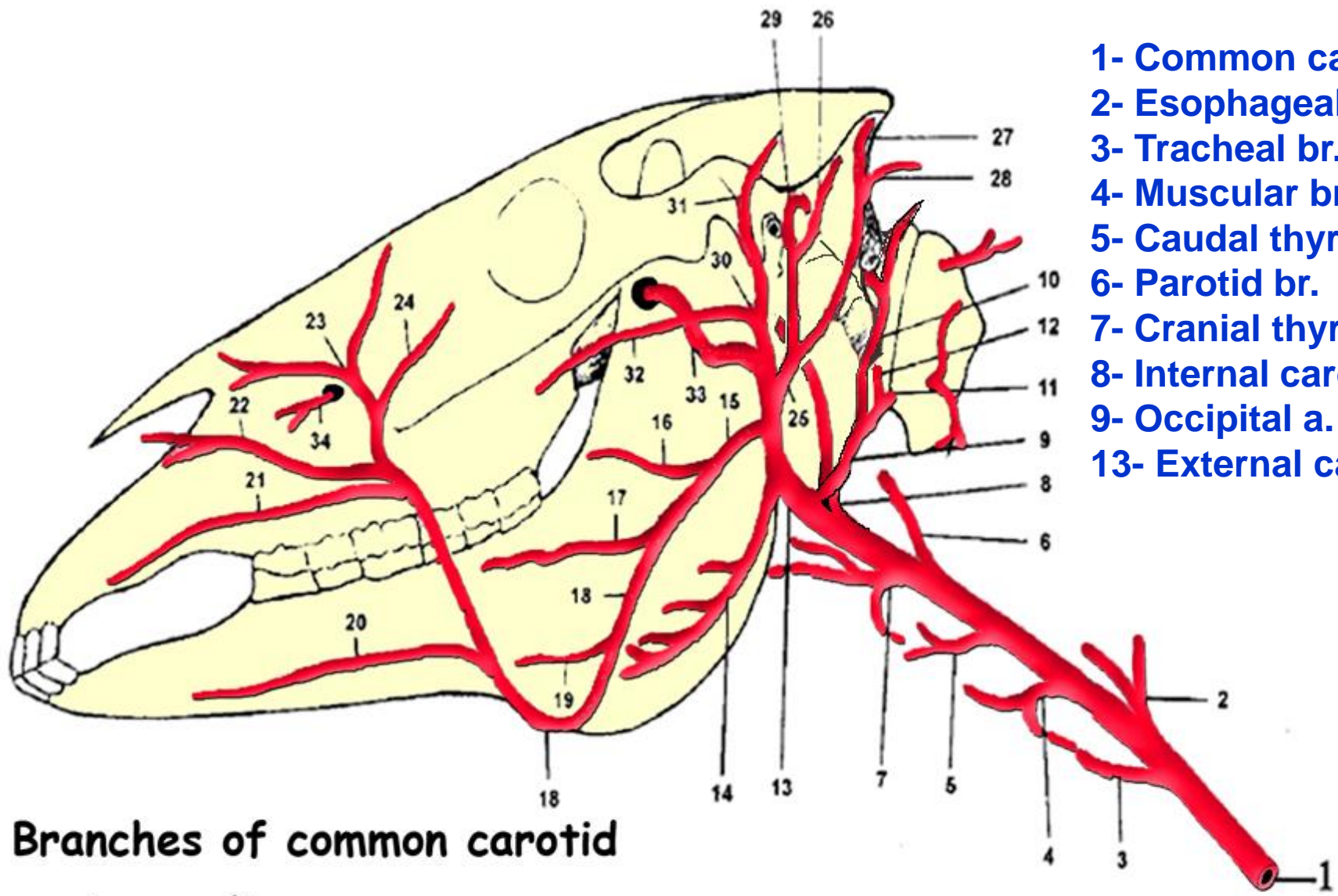
- 1- Collateral branches
- 2- Terminal branches

1- COLLATERAL BRANCHES:

- 1- **Tracheo-esophageal artery** ➡ to the trachea and the esophagus.
- 2- **Muscular branches** ➡ to the ventral muscles of the neck.
- 3- **Caudal thyroid artery** ➡ to the thyroid gland.
- 4- **Thyrolaryngeal artery** which gives:
 - a- **The cranial thyroid** ➡ to the thyroid gland.
 - b- **Caudal laryngeal artery** ➡ to the larynx.
 - c- **Pharyngeal branch** ➡ to the constrictors muscles of the pharynx.
- 5- **Ascending pharyngeal artery** ➡ to the caudal part of the pharynx, esophagus and trachea.

6- parotid artery (inconstant) ➡ to the parotid salivary gland.

7- cranial laryngeal artery ➡ to the larynx (sometimes originates from the cranial thyroid artery).



- 1- Common carotid a.
- 2- Esophageal br.
- 3- Tracheal br.
- 4- Muscular br.
- 5- Caudal thyroid br.
- 6- Parotid br.
- 7- Cranial thyroid br.
- 8- Internal carotid a
- 9- Occipital a.
- 13- External carotid a.

Branches of common carotid artery, diagram

2- TERMINAL BRANCHES:

1- Internal carotid artery.

2- Occipital artery.

3- External carotid artery.

1- INTERNAL CAROTID ARTERY:

It is the smallest of the three terminal branches; it gives no branches before entering the cranium; it enters the cranial cavity through the foramen caroticum of the foramen lacerum.

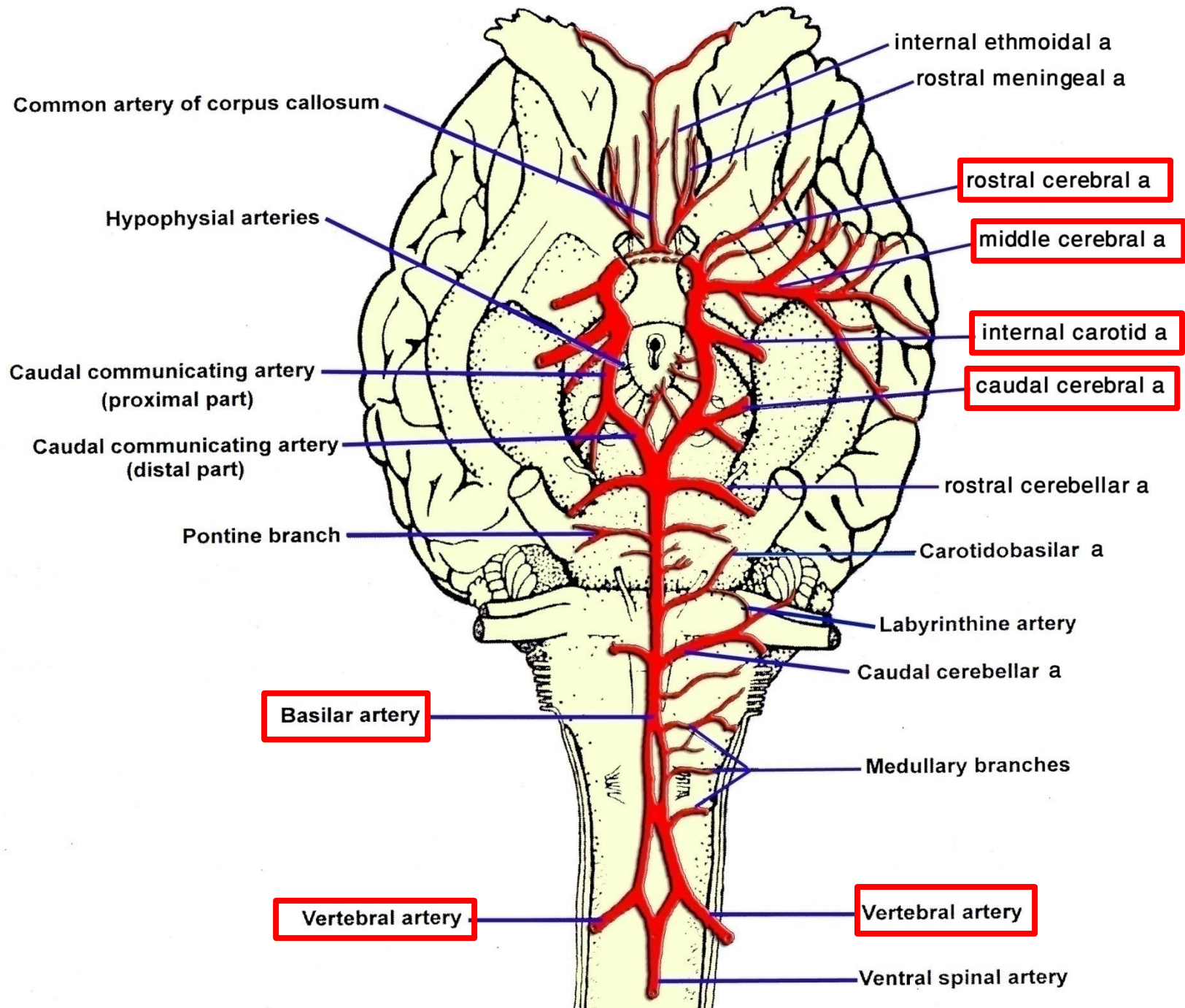
As it enters the cranium, it passes within the cavernous sinus, in which it gives some branches and then leaves it.

It is divided into:

1- Rostral branch: unites with its fellow to complete the rostral half of the circle from which the rostral and middle cerebral arteries are given.

2- Caudal branch: anastomoses with a branch of the basilar artery to complete the caudal half of the circle from which the caudal cerebral and rostral cerebellar arteries are given.

Note that: The caudal cerebellar artery detached from the basilar artery.



Carotid body

Spherical nodular structure, at the angle of division of the common carotid artery. It contains chemoreceptor cells sensitive to the CO_2 and low O_2 . The impulses carried out by branch of the glossopharyngeal nerve to the respiratory center in the medulla oblongata.

Intercarotid body

In the young, it is cartilaginous, while in the adult it becomes ossified. It supports the carotid body against the blood pressure.

Carotid sinus

Concerned with the beginning of the occipital artery and can't be seen. It represents baroreceptors sensitive to the change in the blood pressure.

2- THE OCCIPITAL ARTERY:

It is the second largest branch of the terminal branches of the common carotid artery,

It takes a slight flexuous course to the atlantic fossa and its main branches are:

1- small twigs.

2- Condylloid artery.

3- Occipital branch.

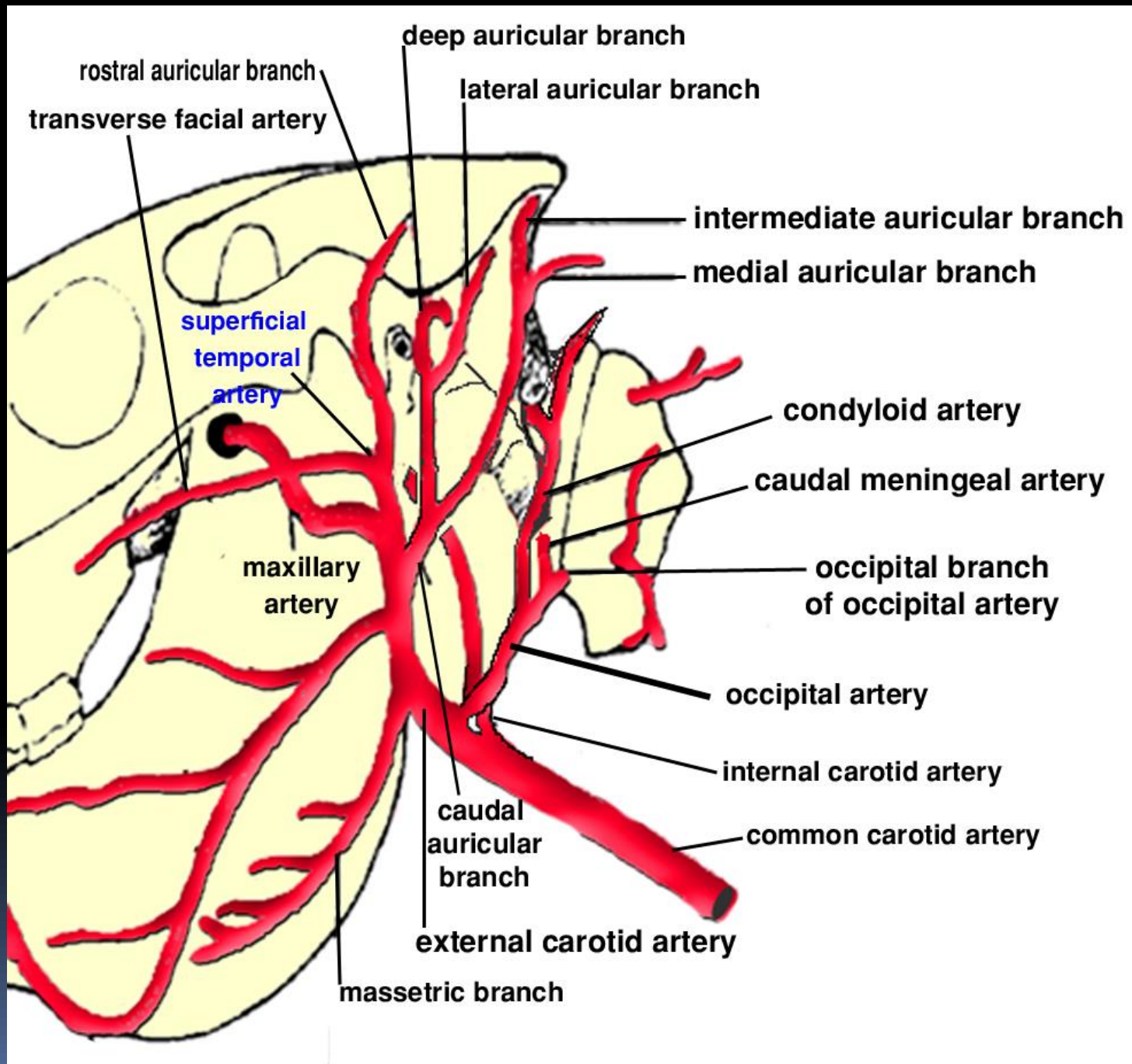
4- Caudal meningeal branch.

1- small twigs: to mandibular salivary gland, M. longus capitis, rectus capitis ventralis, rectus capitis lateralis, gutteral pouch and adjacent lymph nodes.

2- Condylloid artery: gives muscular and meningeal branches; the latter enters the cranium through the jugular and hypoglossal foramen and supplies the dura mater of the brain.

3- Occipital br: to the muscles of the poll and anastomoses with the vertebral artery in atlantic fossa.

4- Caudal meningeal br: passes through the mastoid foramen into the temporal canal to reach the cranial cavity where it is distributed to the dura mater.



3- EXTERNAL CAROTID ARTERY:

It is the direct continuation of the common carotid artery, passes medial to the parotid and mandibular salivary glands crossing the cranial laryngeal nerve, pharyngeal branch of the vagus nerve and glossopharyngeal nerve.

It is crossed laterally by the hypoglossal nerve.

On reaching 5cm ventral to the occipito-mandibular articulation, it terminates as maxillary artery.

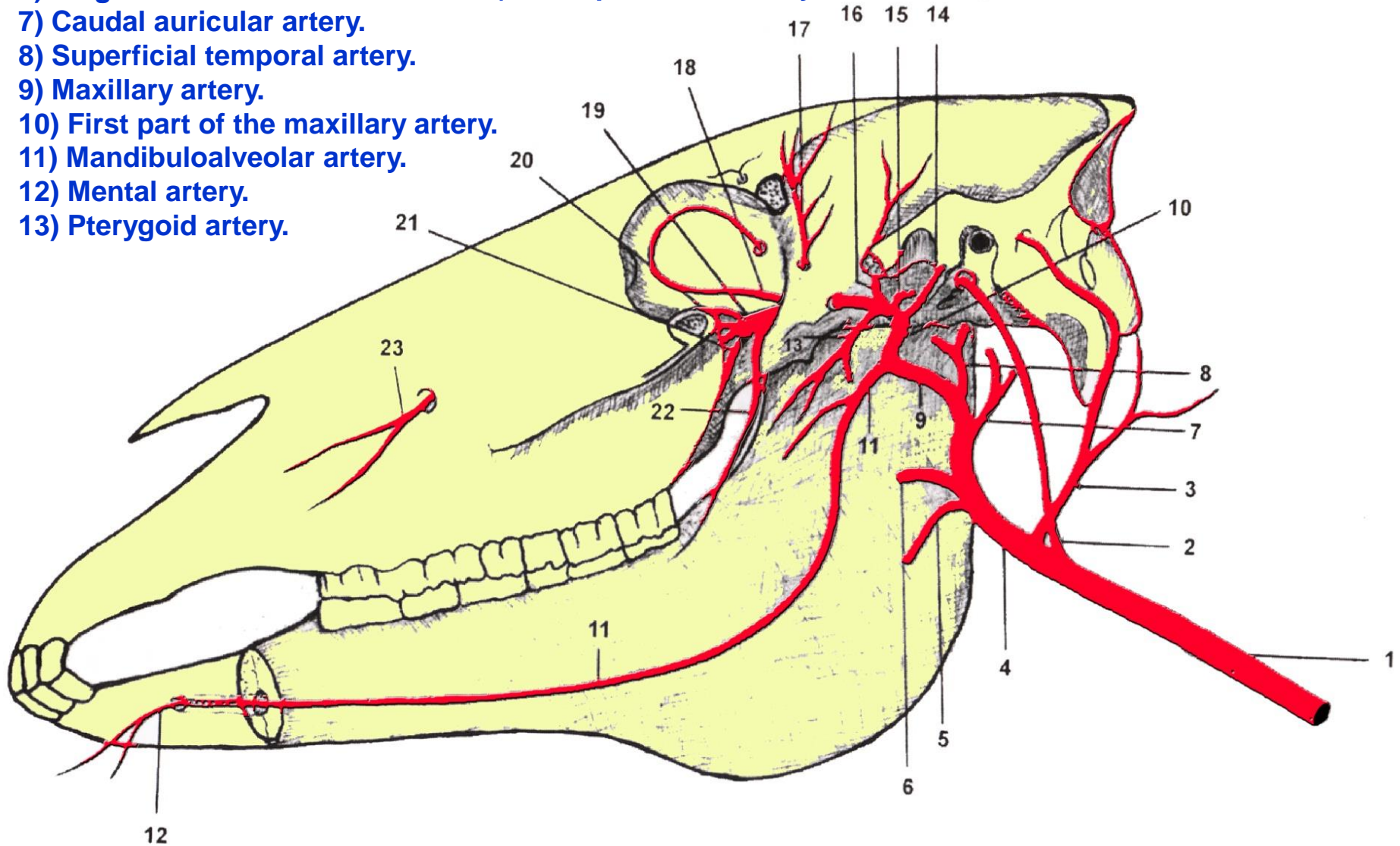
Branches of the external carotid artery:

- 1- Masseteric artery.
- 2- Linguofacial artery.
- 3- Caudal auricular artery.
- 4- Superficial temporal artery.
- 5- Maxillary artery.

- 1) Common carotid artery.
- 2) Internal carotid artery.
- 3) Occipital artery.
- 4) External carotid artery.
- 5) Masseteric artery.
- 6) Linguofacial trunk.
- 7) Caudal auricular artery.
- 8) Superficial temporal artery.
- 9) Maxillary artery.
- 10) First part of the maxillary artery.
- 11) Mandibuloalveolar artery.
- 12) Mental artery.
- 13) Pterygoid artery.

- 14) Rostral tympanic a.
- 15) Middle meningeal a.
- 16) Caudal deep temporal a.
- 17) Rostral deep temporal a.
- 18) External ophthalmic a.
- 19) Third part of maxillary a

- 20) Infraorbital a.
- 21) Descending palatine a.
- 22) Buccal a.
- 23) A branch of infraorbital a.



Collateral branches:

Small twigs to the parotid and mandibular salivary glands, guttural pouch and retropharyngeal ln

1- Masseteric artery: supplies the masseter m., parotid salivary gland and occipito-mandibular part of the digastric m.

2- Linguofacial artery:

It crosses the deep face of the stylohyoid m., after giving the lingual artery at the caudal border of the stylohyoid bone, it continues as the facial artery.

The latter proceeds medial to the pterygoidus medialis, then turns around the ramus of the mandible to become accompanied by the facial vein and parotid duct till it terminates into dorsal nasal and angular artery of the eye.

(The facial artery is cranially, the vein in the middle while the parotid duct is caudally i.e AVD),

The facial artery in the face region is covered by cutaneous fasciae and Zygomaticus m. and terminates at the levator labii maxillaris m.

Branches of the Linguofacial trunk:

a- Ascending palatine artery: supplies the soft palate, pharynx and tonsils.

b- Lingual artery: passes under the hyoglossus m in accompany with the hypoglossal nerve to supply the tongue.

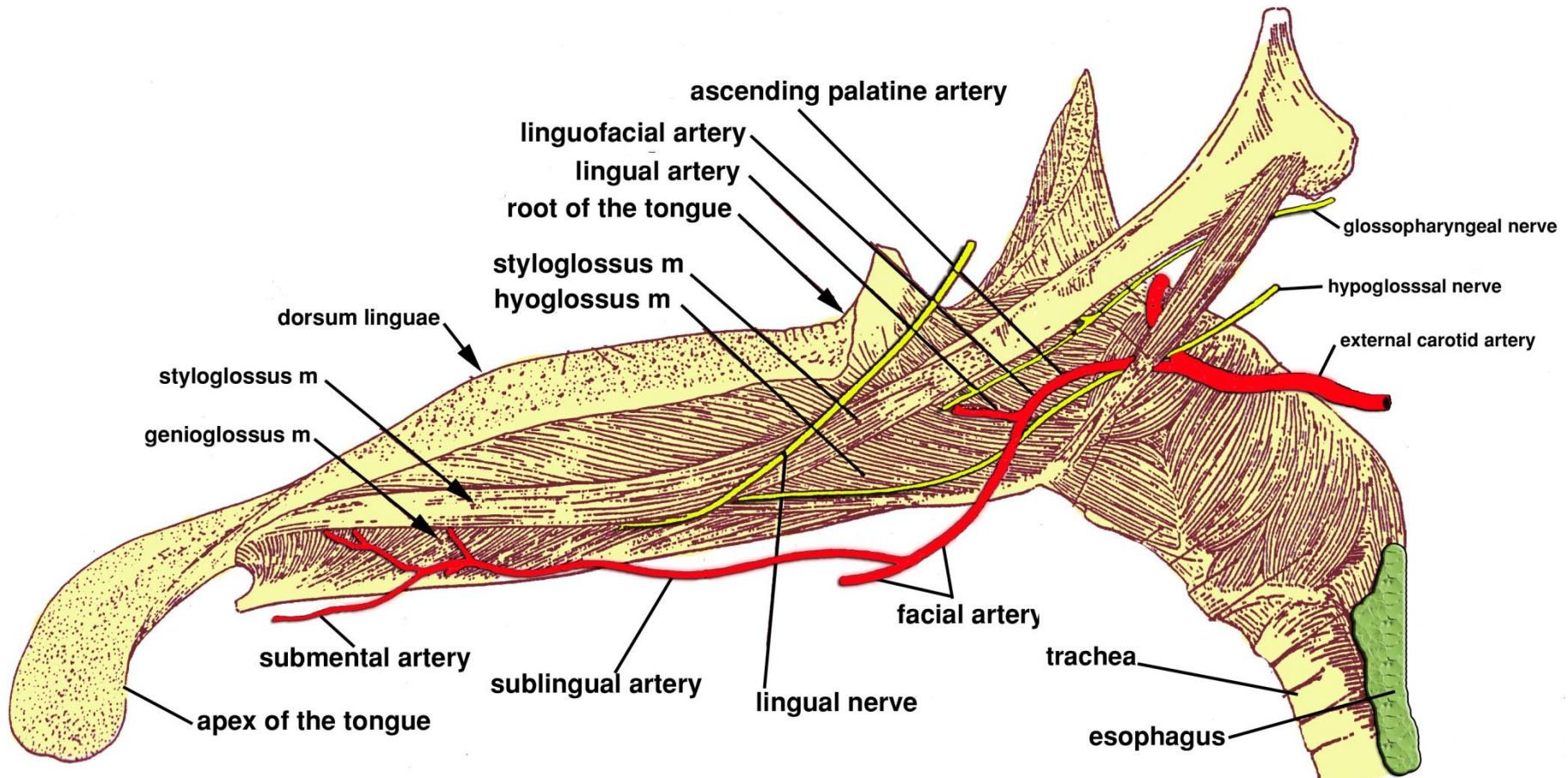
Then the trunk extends as the facial artery.

c- Facial artery: gives

- 1- Sublingual artery.
- 2- Mandibular labial artery.
- 3- Maxillary labial artery.
- 4- Lateral nasal branch.
- 5- Dorsal nasal artery.
- 6- Angularis oculi (Angular artery of the eye).

1.c- Sublingual branch:

arises from the facial artery at the anterior extremity of the mandibular salivary gland to supply the sublingual salivary gland, muscles and skin in the mandibular space,
it gives the sub mental branch to supply the mylohyoid m.



2.c- Mandibular labial artery:

passes under depressor labii mandibularis muscle to supply the lower lip, mucous membrane of cheeks and ventral buccal salivary glands.

3.c- Maxillary labial artery:

arises at the anterior end of the facial crest passing under the levator nasolabialis and caninus ms to supply the maxillary lip and anastomoses with palatolabial artery of the caudal palatine artery.

4.c- Lateral nasal branch:

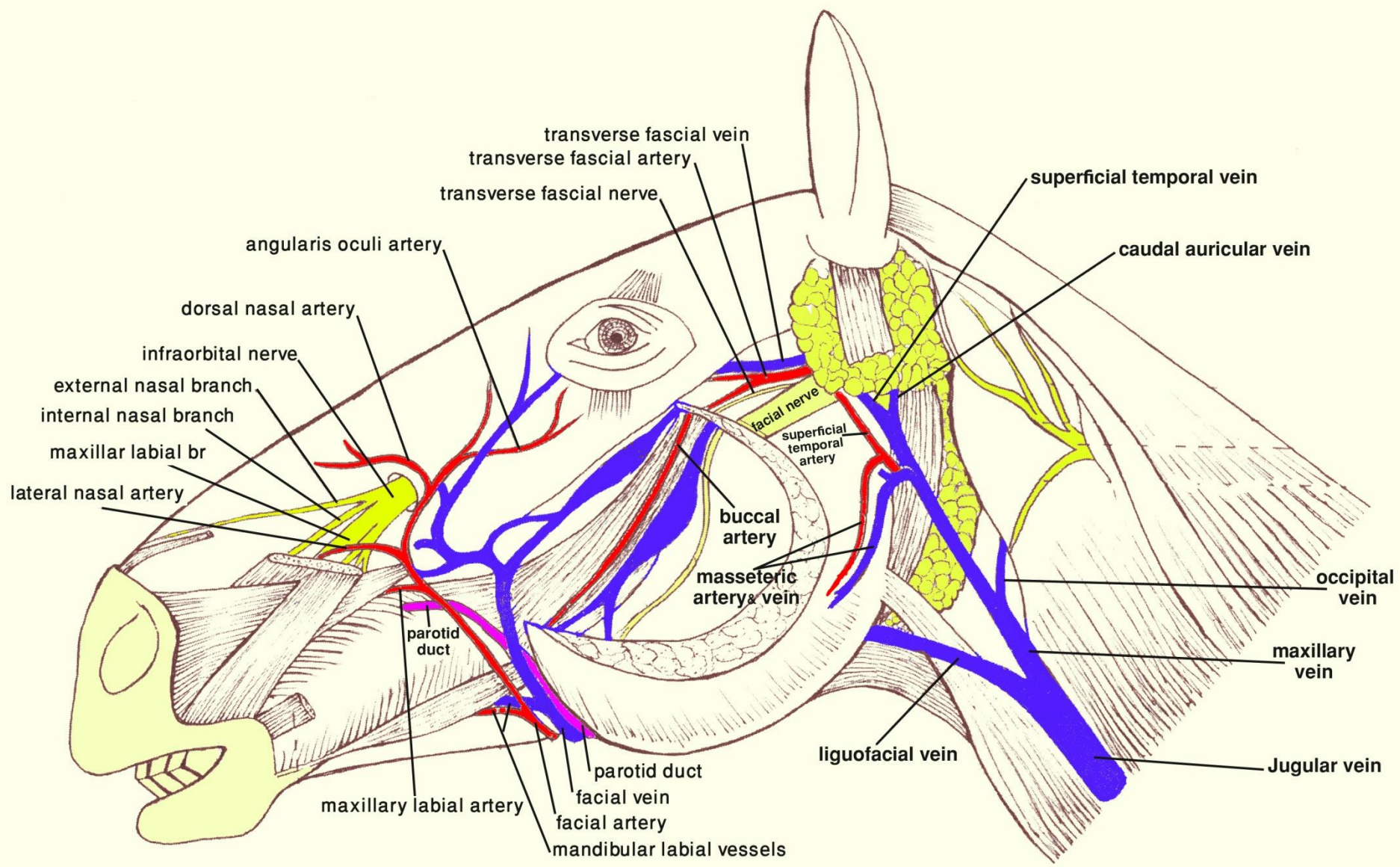
passes under the levator nasolabialis m to supply the lateral wall of the nasal cavity and anastomoses with the Infraorbital artery.

5.c- Dorsal nasal artery:

passes on the levator labii maxillaries m to supply the dorsal aspect of the nasal cavity.

6.c- Angularis oculi (Angular artery of the eye):

passes toward the medial canthus (*angle*) of the eye and anastomoses with the malar branch of the Infraorbital artery.



3- Caudal auricular artery:

Arises from the external carotid artery just dorsal to the masseteric branch and deep to the parotid salivary gland, to supply the skin and muscles of the external ear, **it gives off:**

a- Medial auricular branch, to the convexity of the external ear

b- Intermediate auricular branch, to the convexity of the external ear

c- Lateral auricular branch, to the convexity of the external ear

d- Deep auricular, to the concavity of the external ear

Stylomastoid artery (caudal tympanic): passes through stylomastoid foramen with the facial nerve to supply the middle ear.

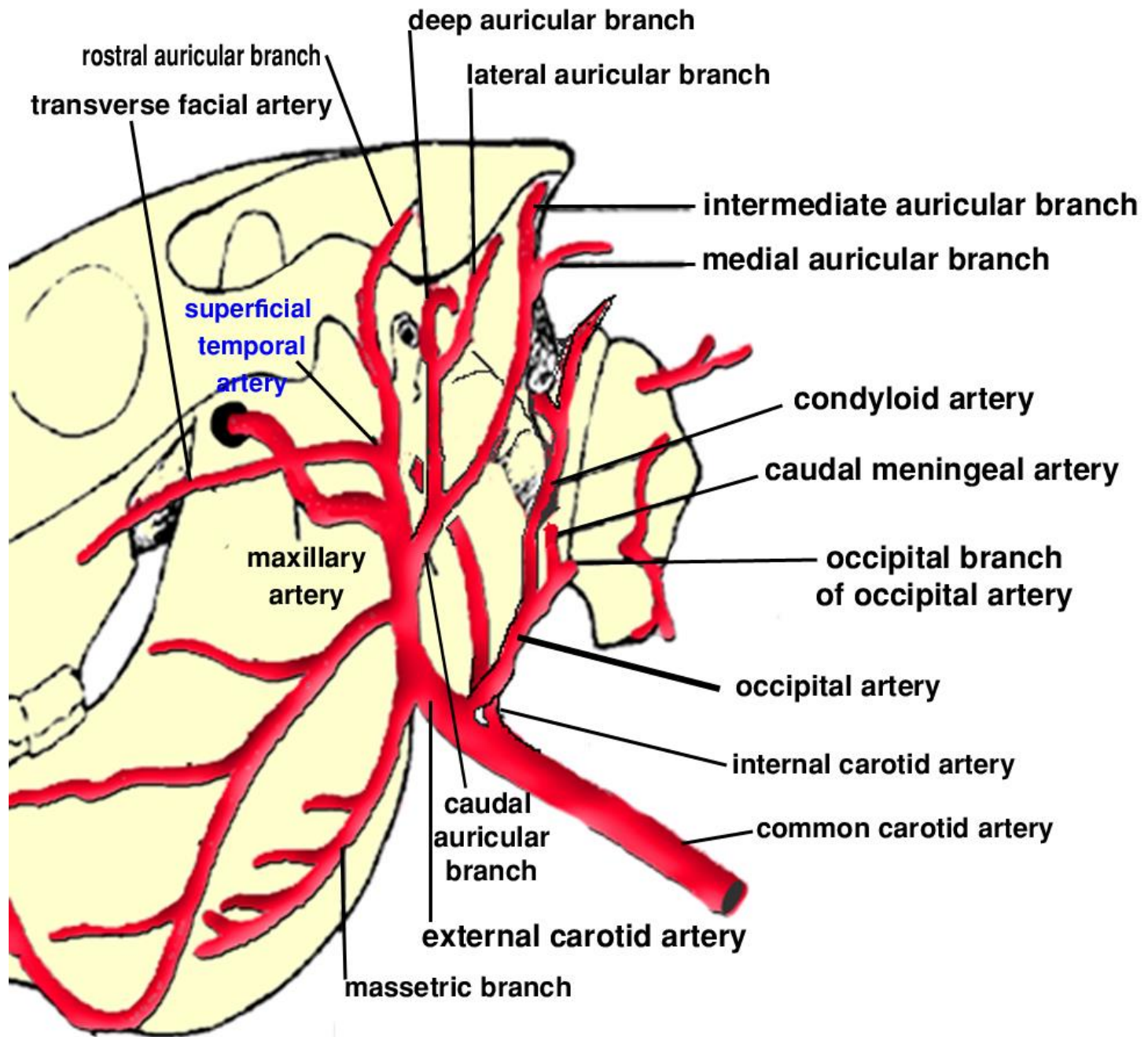
4- Superficial temporal artery:

Branch of the external carotid artery arises under the parotid salivary gland and gives off:

a- Rostral auricular branch: to temporalis m, rostral auricular m and the covering skin and it anastomoses with the supraorbital artery.

b- Transverse facial artery:

It emerges from beneath the parotid salivary gland and passes on the masseter m accompanied with the transverse facial nerve and vein, and the artery supplies this muscle and skin covering the region.



5- THE MAXILLARY ARTERY:

The direct continuation of external carotid artery begins ventral to the tempromandibular joint and ends in the pterygopalatine fossa entering the alar canal.

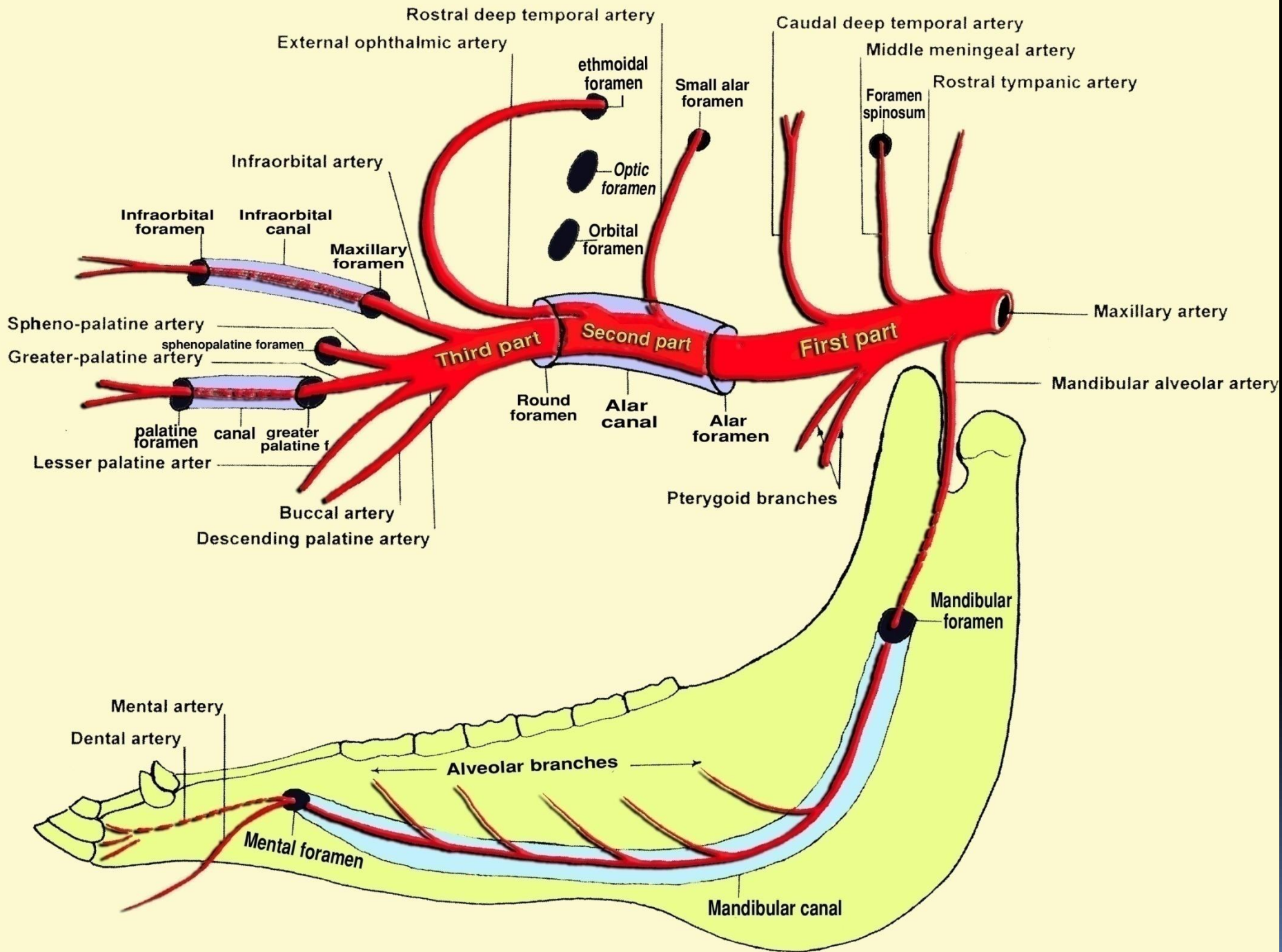
It has 3 parts:

A- The first part of the maxillary artery (Pre alar part)
(Before it enters the alar canal)

It passes between the pterygoidus lateralis and tensor velli palatini muscles cranially to enter the alar canal,

It gives:

- 1- Tympanic artery**
- 2- Pterygoid artery:**
- 3- Mandibuloalveolar artery:**
 - a- Mental artery**
 - b- Dental branches)**
- 4- Middle meningeal artery.**
- 5- Caudal deep temporal artery.**



1- Tympanic artery:

enters the auditory tube to supply the middle ear.

2- Pterygoid artery:

from 2-3 branches supply the pterygoidus, tensor velli palatini and levator velli palatini ms.

3- Mandibuloalveolar artery:

enters the mandibular foramen (accompanied with the mandibuloalveolar nerve and vein) and gets out from the mental foramen giving two branches:

A- Mental artery: supplies the lower lip.

b- Dental branches: supply the incisor teeth and gum.

4- Middle meningeal artery:

passes through the foramen spinosum of the foramen lacerum to enter the cranium and supply the dura matter and anastomoses with the caudal meningeal artery.

5- Caudal deep temporal artery:

arises from the maxillary artery before its entrance in the alar canal passing in the temporal fossa to supply the temporalis m.

B- The second part of maxillary artery (Alar part)

(Inside the canal or alar part):

The part of the maxillary artery inside the alar canal.

It gives:

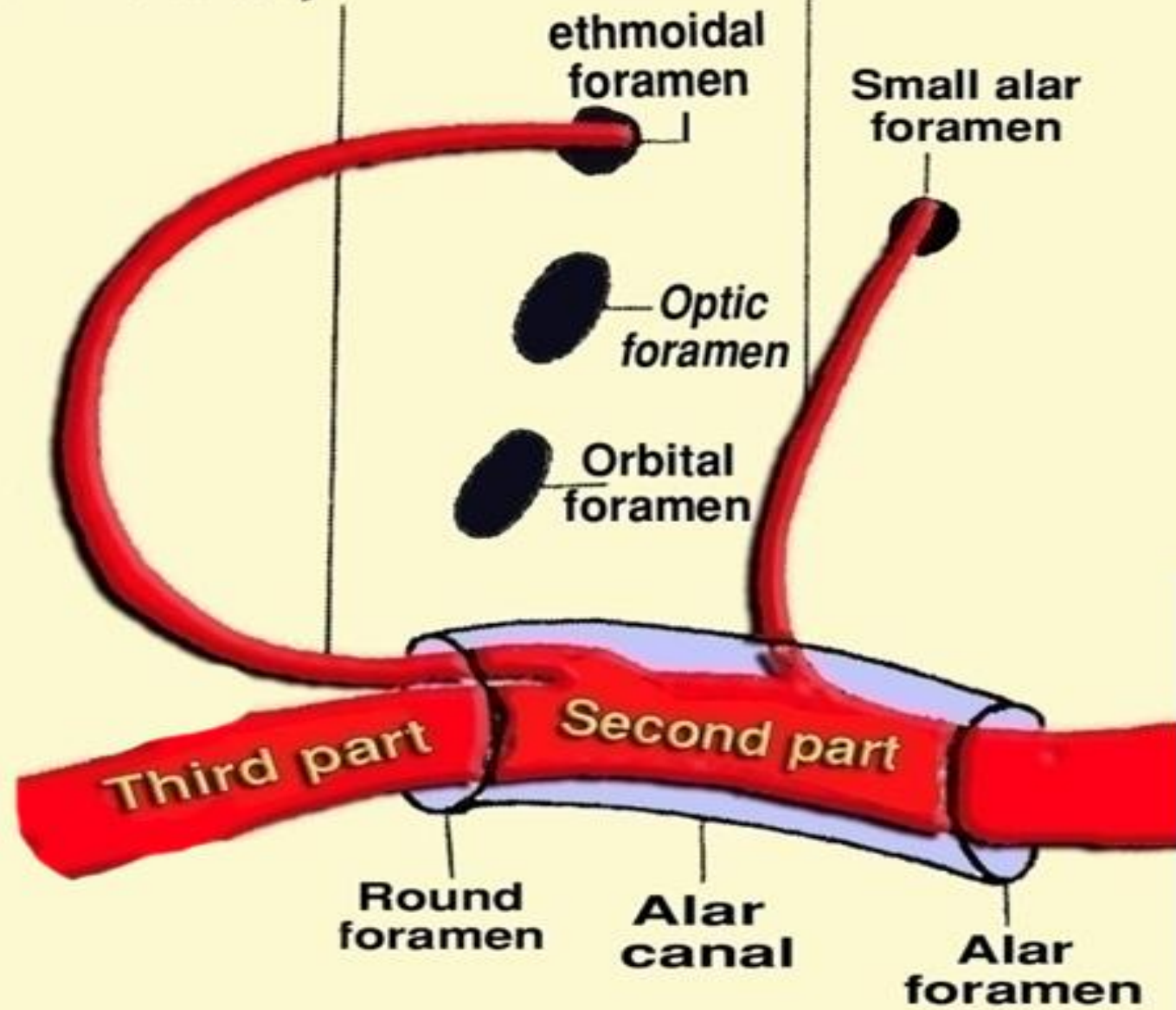
- 1- Rostral deep temporal artery.**
- 2- External ophthalmic artery.**

1- Rostral deep temporal artery: passes out from the alar canal through small alar foramen to supply the temporalis muscle.

2- External ophthalmic artery: passes from the round foramen of the alar canal with the maxillary artery and continued as external ethmoidal artery.

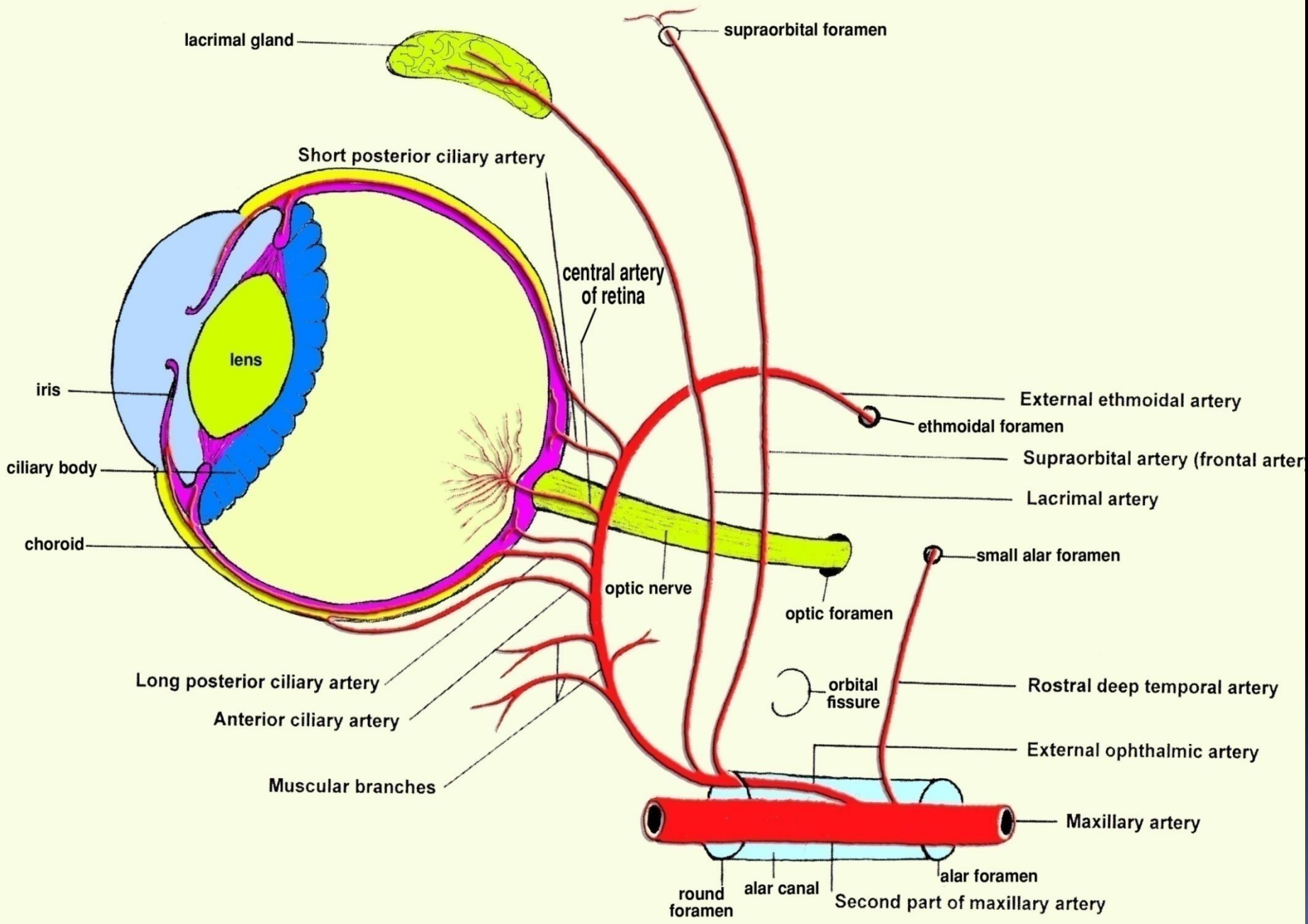
Rostral deep temporal artery

External ophthalmic artery



External ophthalmic artery

- a- Supraorbital branch.**
- b- Muscular branches.**
- c- Central retinal artery.**
- d- Caudal ciliary branch.**
- e- Cranial ciliary branch.**
- f- Lacrimal branch.**
- g- External ethmoidal branch.**



lacrimal gland

supraorbital foramen

Short posterior ciliary artery

central artery of retina

lens

iris

External ethmoidal artery

ethmoidal foramen

ciliary body

Supraorbital artery (frontal artery)

Lacrimal artery

choroid

optic nerve

optic foramen

small alar foramen

Long posterior ciliary artery

Anterior ciliary artery

orbital fissure

Rostral deep temporal artery

Muscular branches

External ophthalmic artery

round foramen
alar canal
alar foramen

Maxillary artery

Second part of maxillary artery

a- Supraorbital branch: passes on the medial wall of the orbit and enters the supraorbital foramen in accompany with the supraorbital nerve to supply the orbicularis oculi m and skin of the supraorbital region.

b- Muscular branches: supply muscles of the eye, the conjunctiva and the 3rd eyelid.

c- Central retinal artery: pierces the optic nerve, a short distance caudal to the sclera it breaks into fine 30-40 branches to supply the retina.

d- Caudal ciliary branch: supplies the choroid and the ciliary body.

e- Cranial ciliary branch: supplies the iris and the ciliary body.

f- Lacrimal branch: supplies the lacrimal gland.

g- External ethmoidal branch:

The direct continuation of external ophthalmic artery; enters the cranium through ethmoidal foramen.

It gives off 2 branches: **1- Cranial meningeal branch. 2- Nasal branch.**

1- Cranial meningeal branch: supplies the meninges.

2- Nasal branch: enters the nasal cavity through cribriform plate of ethmoidal bone to supply septum nasi and dorsal nasal concha.

**C- The 3rd part of maxillary artery [BID]
(Post alar part):
(After leaving the alar canal)**

It leaves the alar canal accompanied with the maxillary nerve, passing in the pterygopalatine fossa and continued as the greater palatine artery.

It gives off:

- 1- Buccal artery.
- 2- Infraorbital artery.
- 3- Descending palatine artery.
 - a- Sphenopalatine artery.
 - a1- Caudal nasal branch.
 - a2- Lateral nasal branch.
 - b- Greater palatine artery:
 - c- Lesser palatine artery.

1- Buccal artery: passes cranially in the cheek to supply the dorsal buccal salivary glands, masseter and pterygoid ms.

2- Infraorbital artery: gives the malar branch which supply the lower eyelid and anastomoses with the angular artery of the eye.

It enters the infraorbital canal accompanied with the infraorbital nerve to supply the gum and the teeth.

3- Descending palatine artery: It gives off:

A- Sphenopalatine artery: enters the nasal cavity through the sphenopalatine foramen giving two branches:

1- Caudal nasal branch: supplies mm of the nasal septum.

2- Lateral nasal branch: supplies the nasal conchae, frontal and maxillary sinuses.

B- Greater palatine artery: the direct continuation of the maxillary artery, enters the palatine canal accompanied with the greater palatine nerve and gets out from the canal directed cranially till reach around the incisive foramen where it anastomoses with the opposite artery to form the palatolabial artery which enters the incisive canal to supply the maxillary lip, along its course it supplies the hard and soft palates.

C- Lesser palatine artery: passes in the palatine groove with the lesser palatine nerve and palatine vein to supply the soft palate.

