



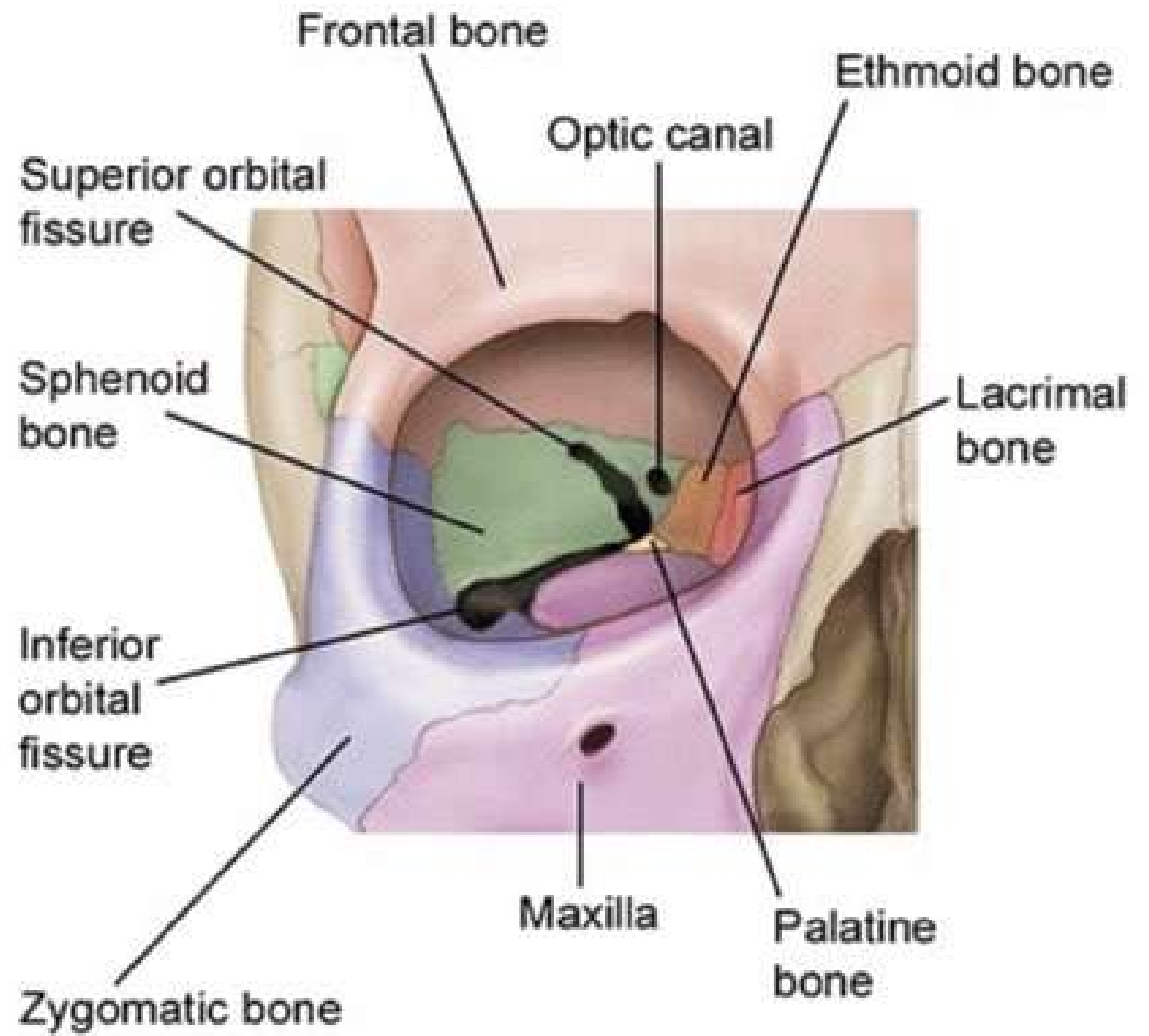
Head & Neck Anatomy

The Orbital Region

م.د. أحمد تركي هاني
MBChB. MSc. PhD.

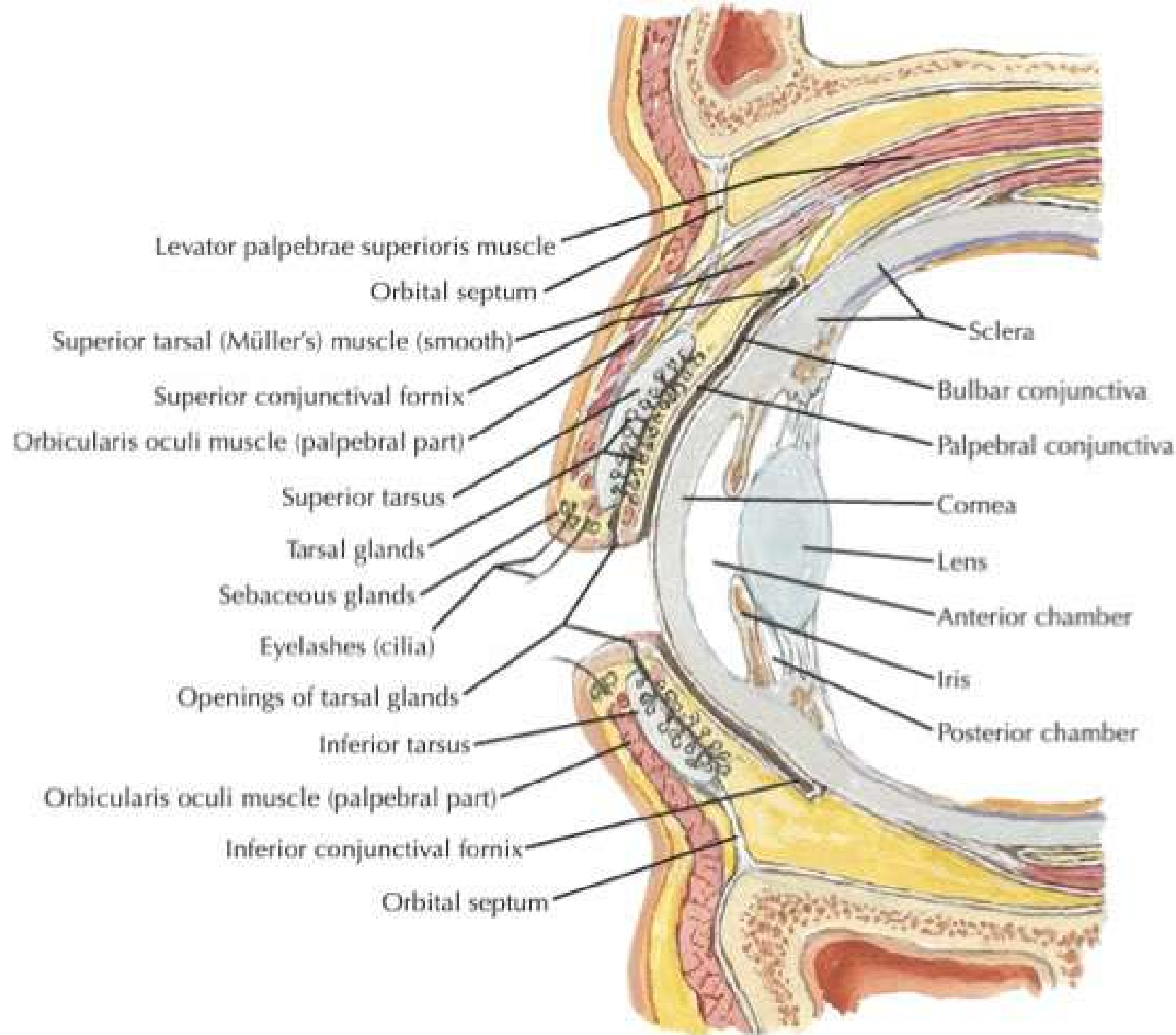
The Orbital Region

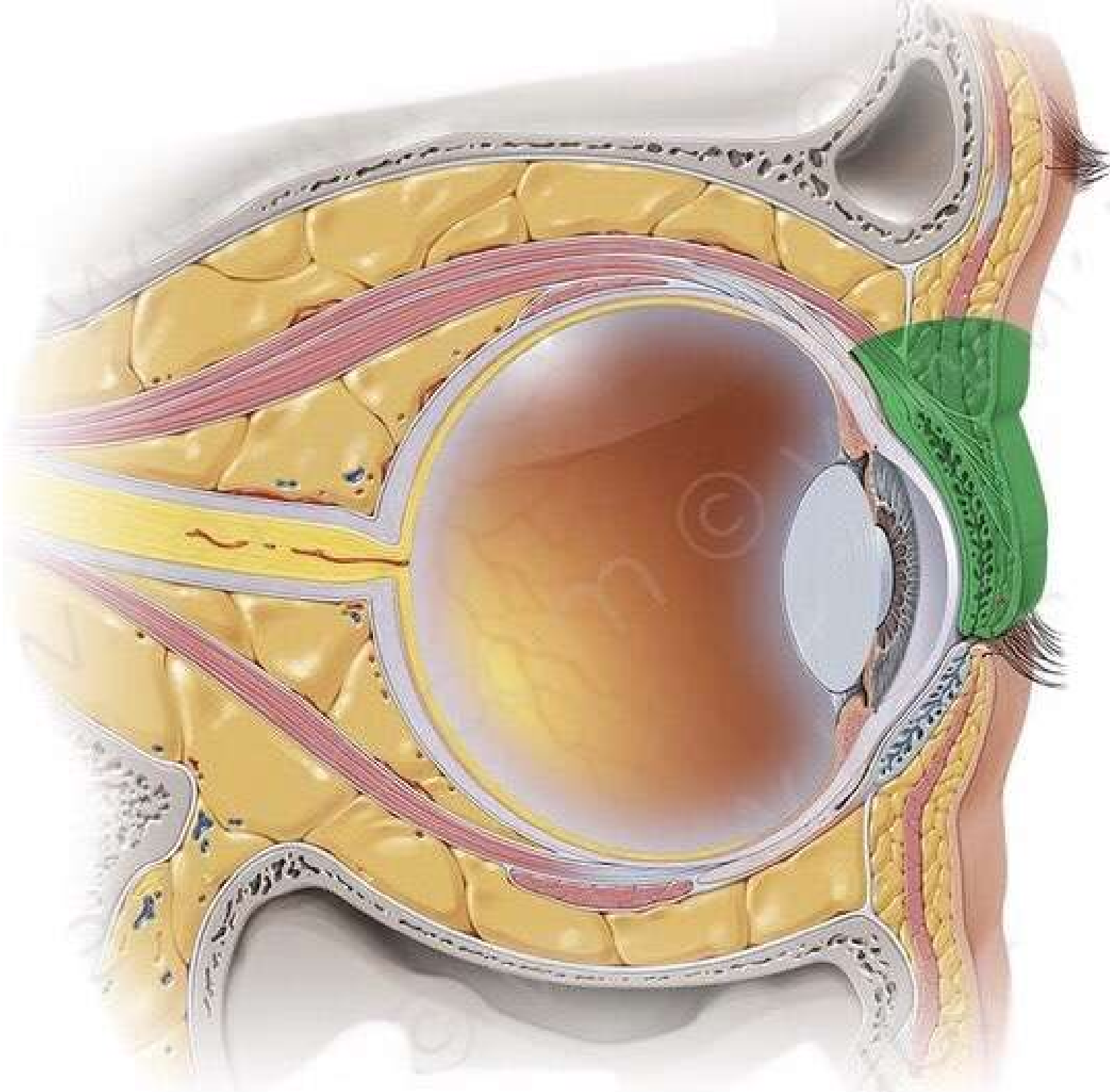
- The **orbit** is a pyramidal bony cavity that houses the **eyeball, extraocular muscles, nerves, blood vessels, and fat.**
- Formed by **7 bones**: frontal, zygomatic, maxillary, ethmoid, lacrimal, sphenoid, and palatine.
- Protects the eye and provides structural support.

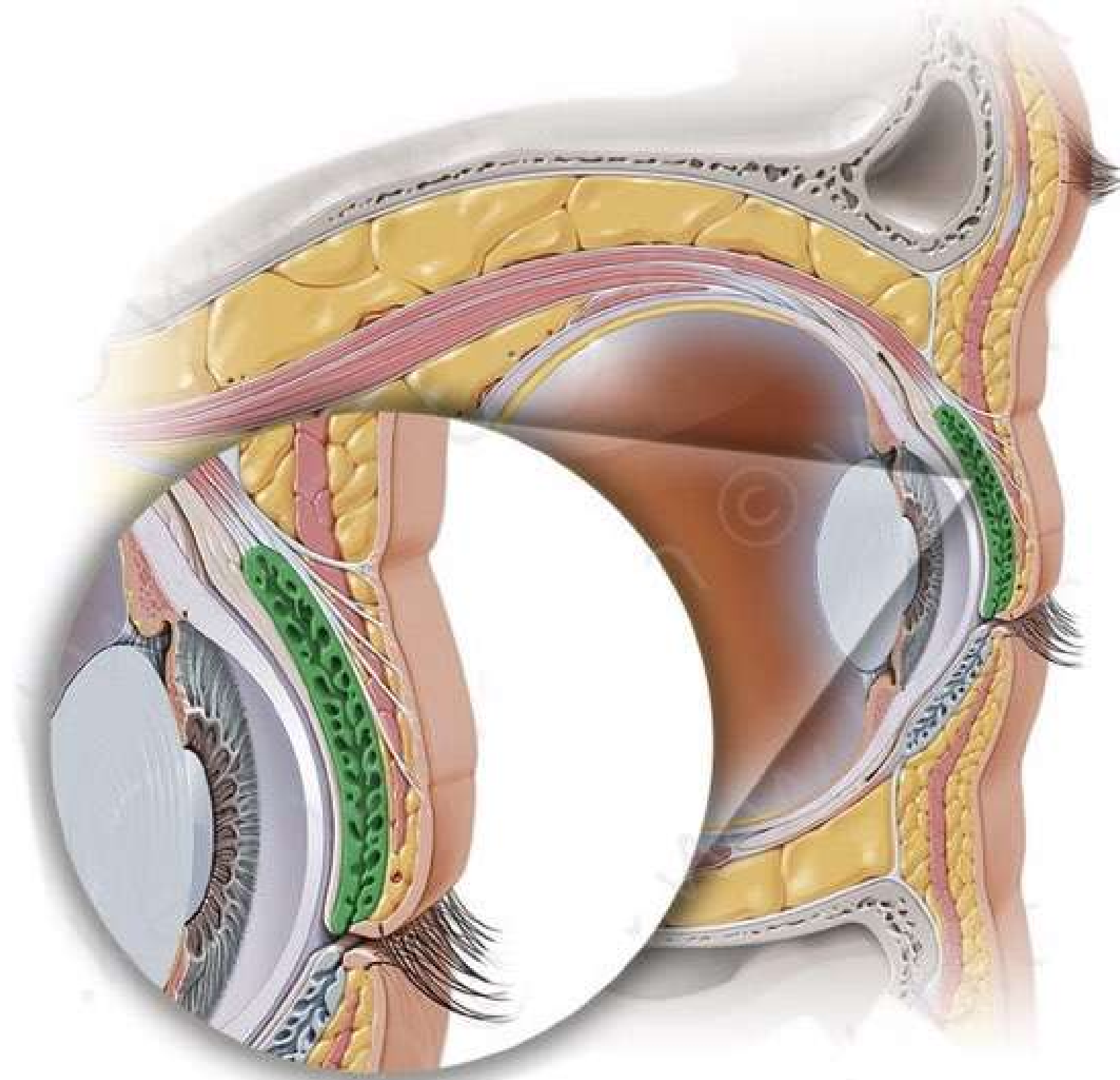


Eyelids

- Thin, movable folds covering the front of the eyeball.
- Composed of:
 - Skin,
 - Subcutaneous tissue,
 - Orbicularis oculi muscle,
 - Tarsal plates,
 - Conjunctiva.
- **Tarsal glands** (Meibomian glands) secrete oily substance to prevent tear overflow.

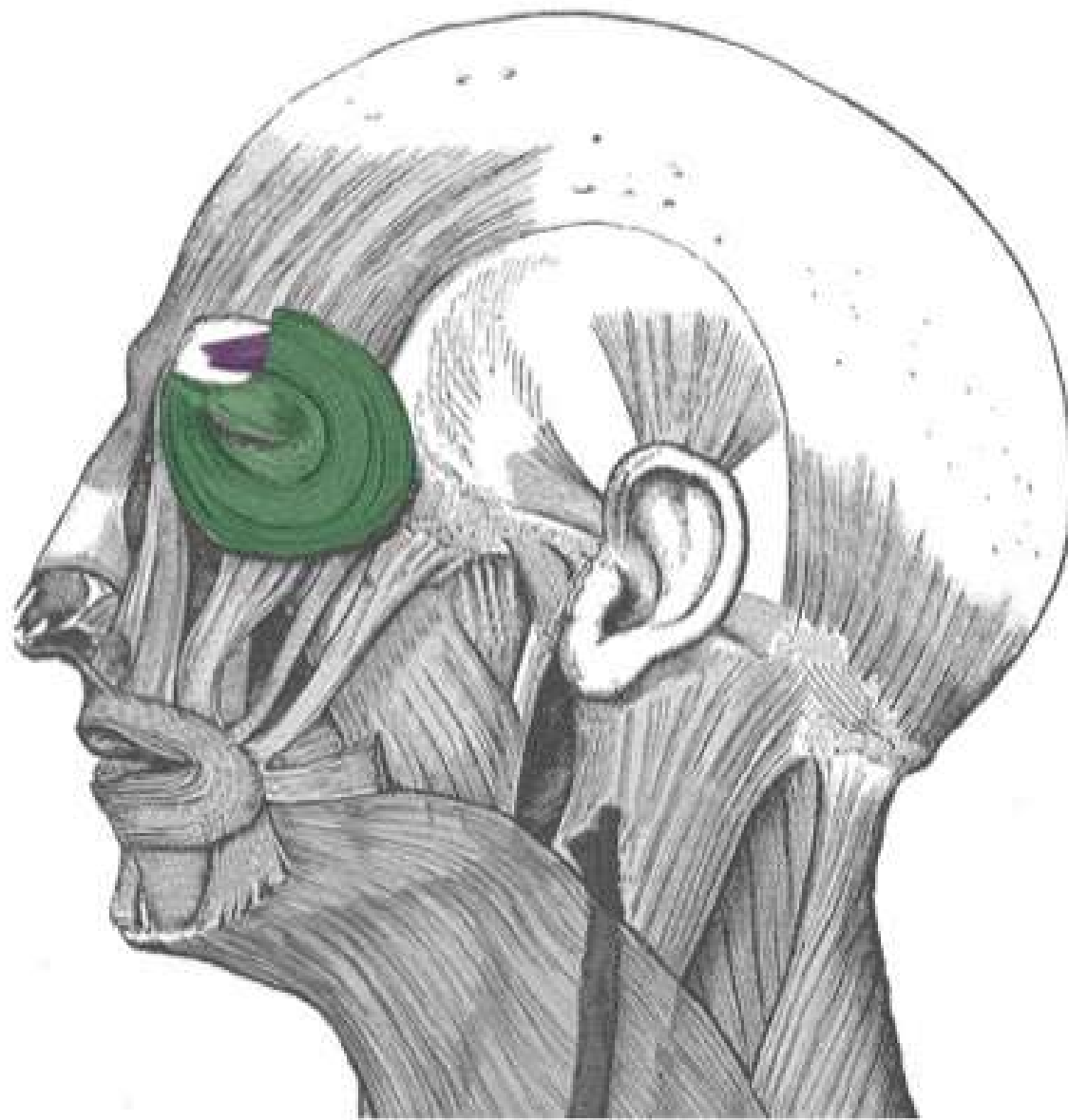




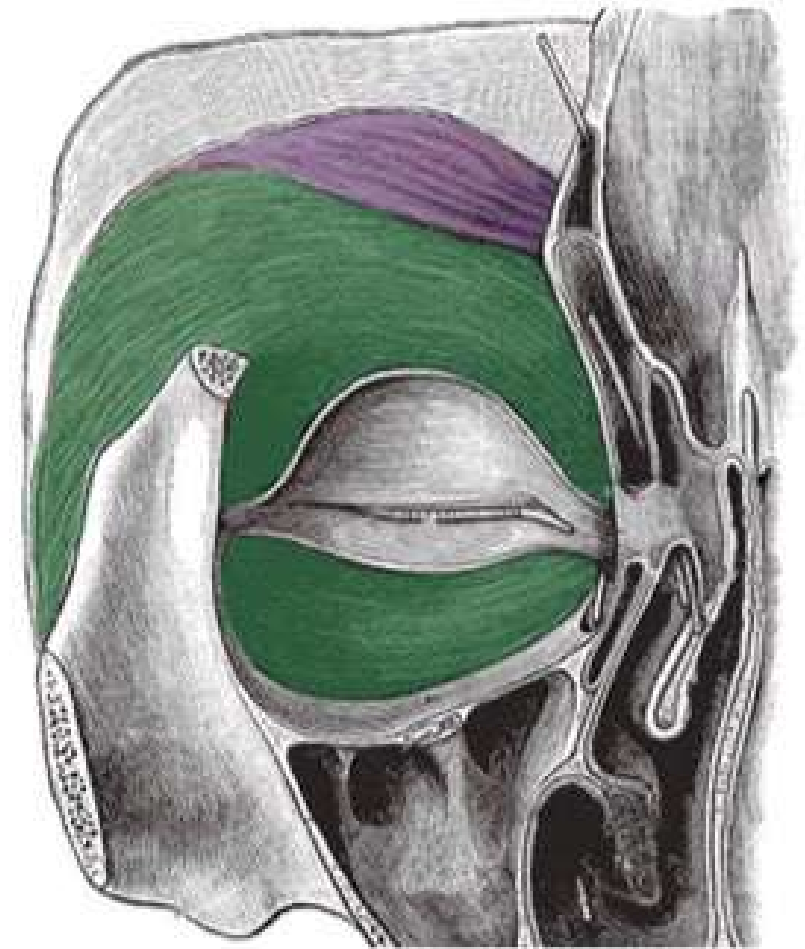


Movements of the Eyelids

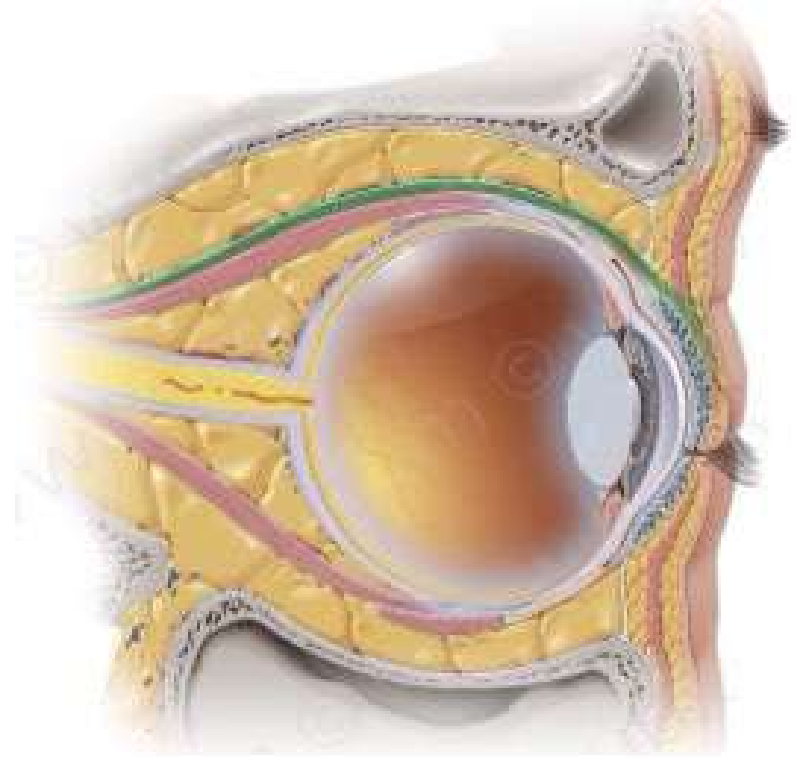
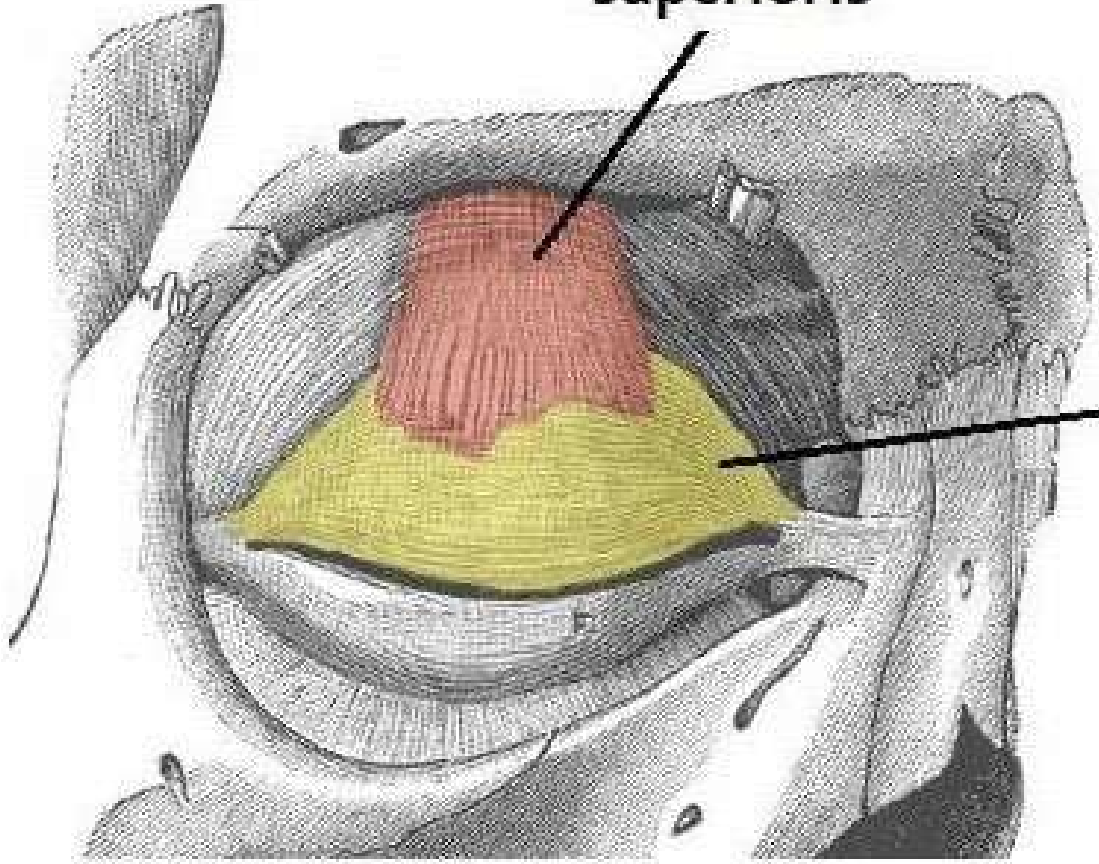
- **Opening**: Done primarily by **levator palpebrae superioris** and **Müller's muscle** (superior tarsal muscle).
- **Closing**: Controlled by **orbicularis oculi muscle** (CN VII).
- Reflex and voluntary control. **Blinking** protects and lubricates the eye.

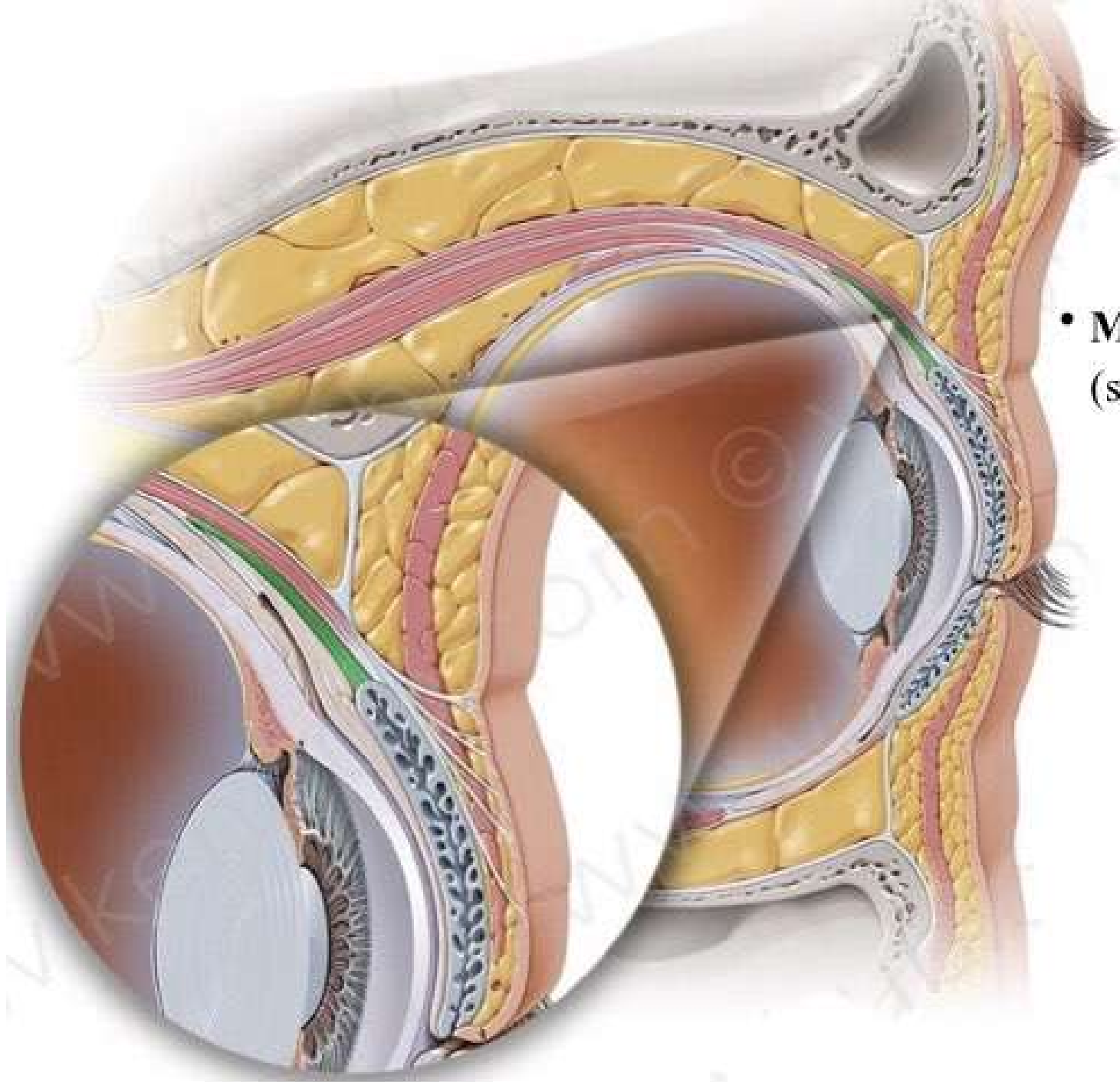


- Orbicularis oculi
- Corrugator supercilli



**Levator palpebrae
superioris**



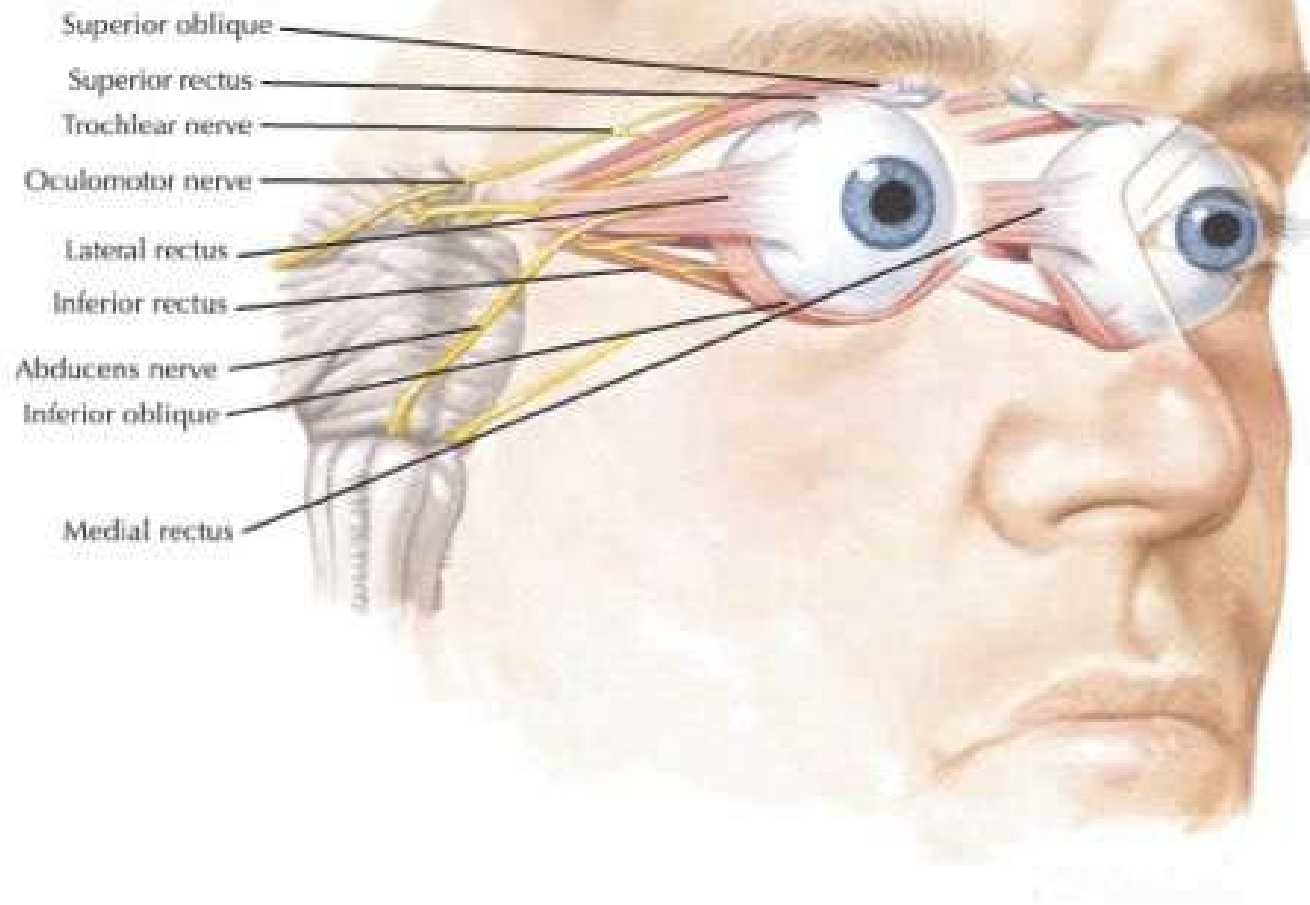


- **Müller's muscle**
(superior tarsal muscle).

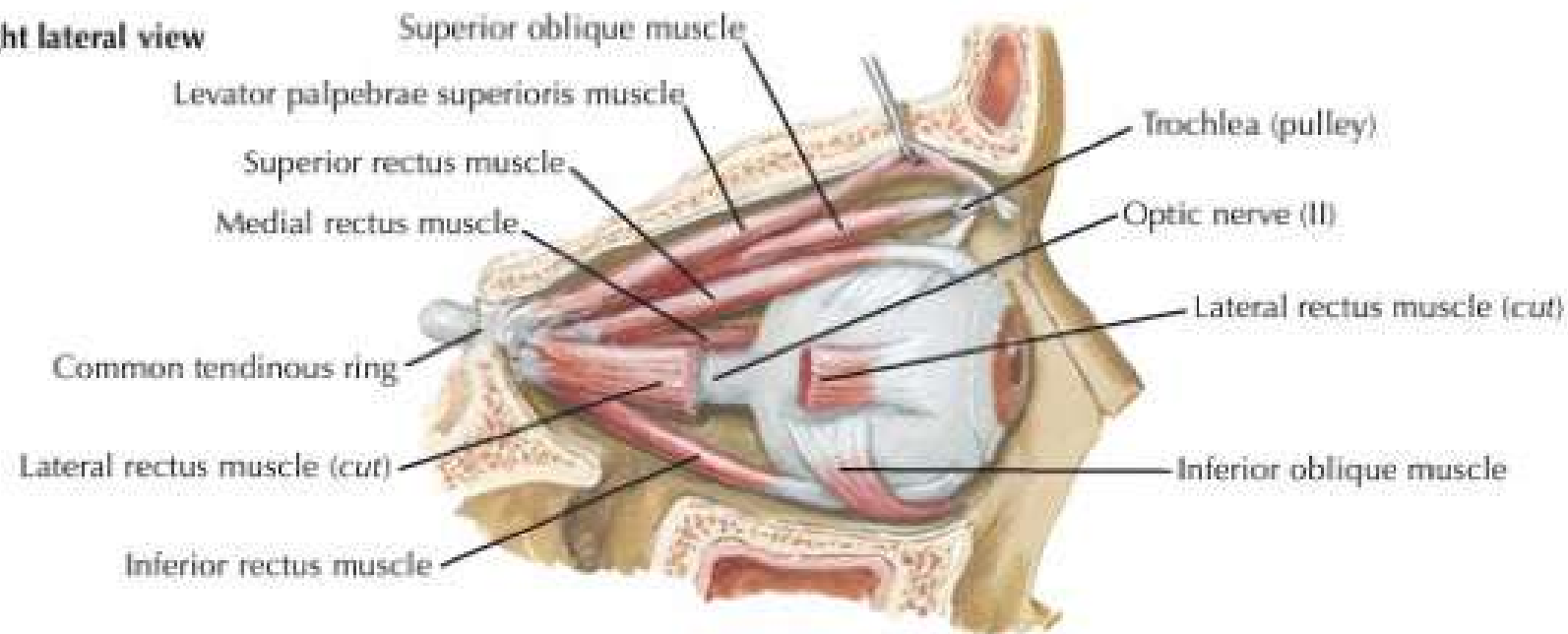
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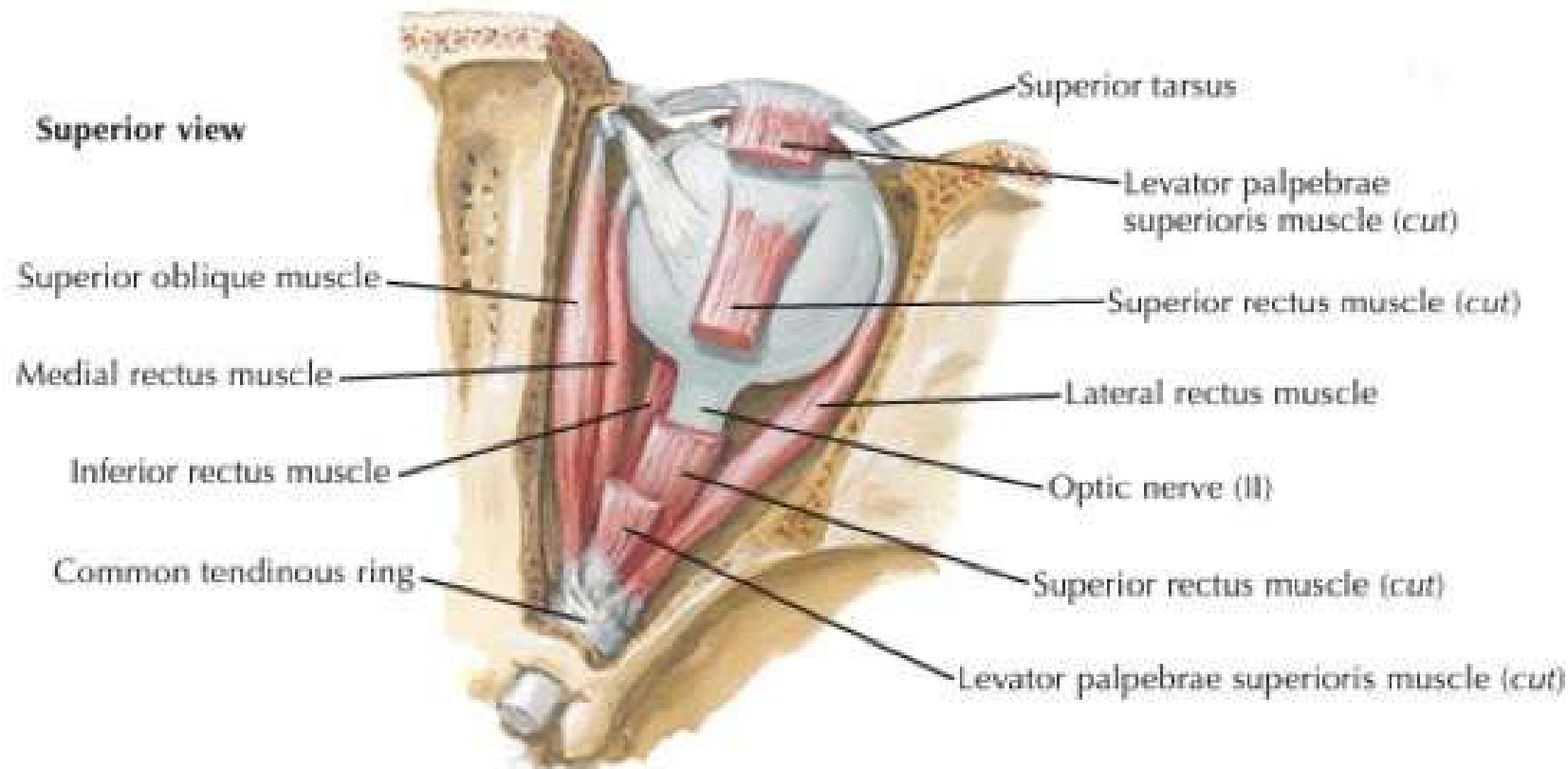
Extraocular Muscles



Right lateral view



Superior view



**Innervation and action of extrinsic eye muscles:
anterior view**

**Oculomotor
nerve (III)**

Levator palpebrae
superioris muscle
Superior rectus muscle
Medial rectus muscle
Inferior rectus muscle
Inferior oblique muscle

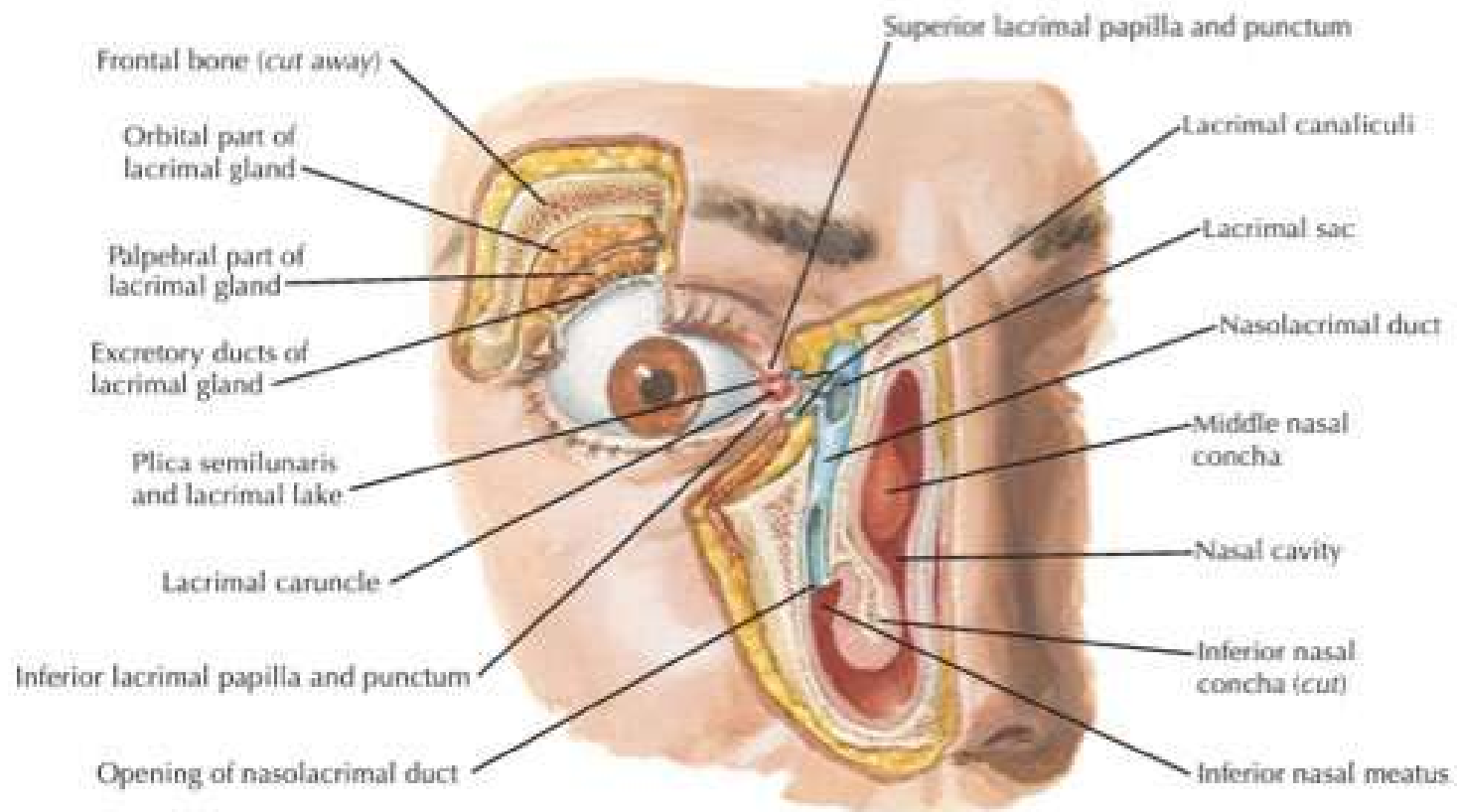
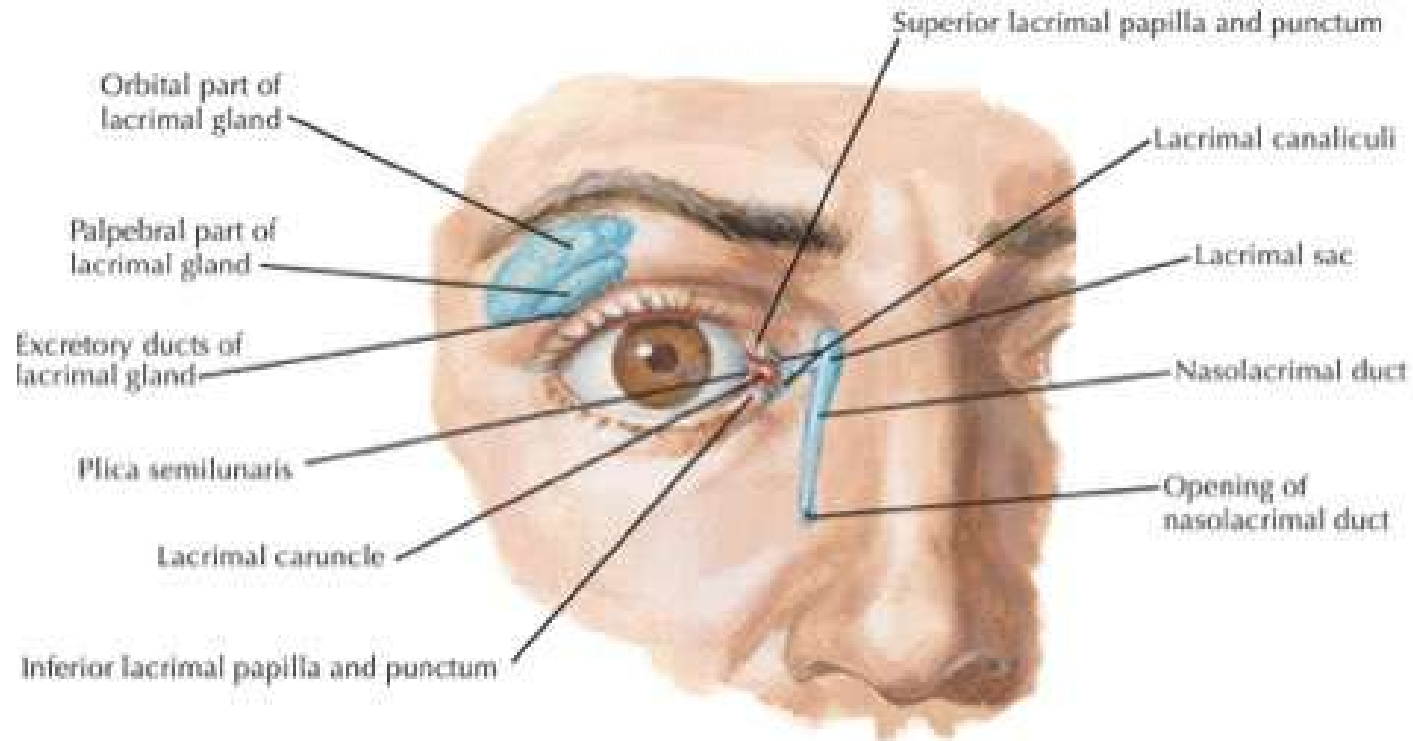
Superior oblique muscle } **Trochlear
nerve (IV)**

Lateral rectus muscle } **Abducens
nerve (VI)**

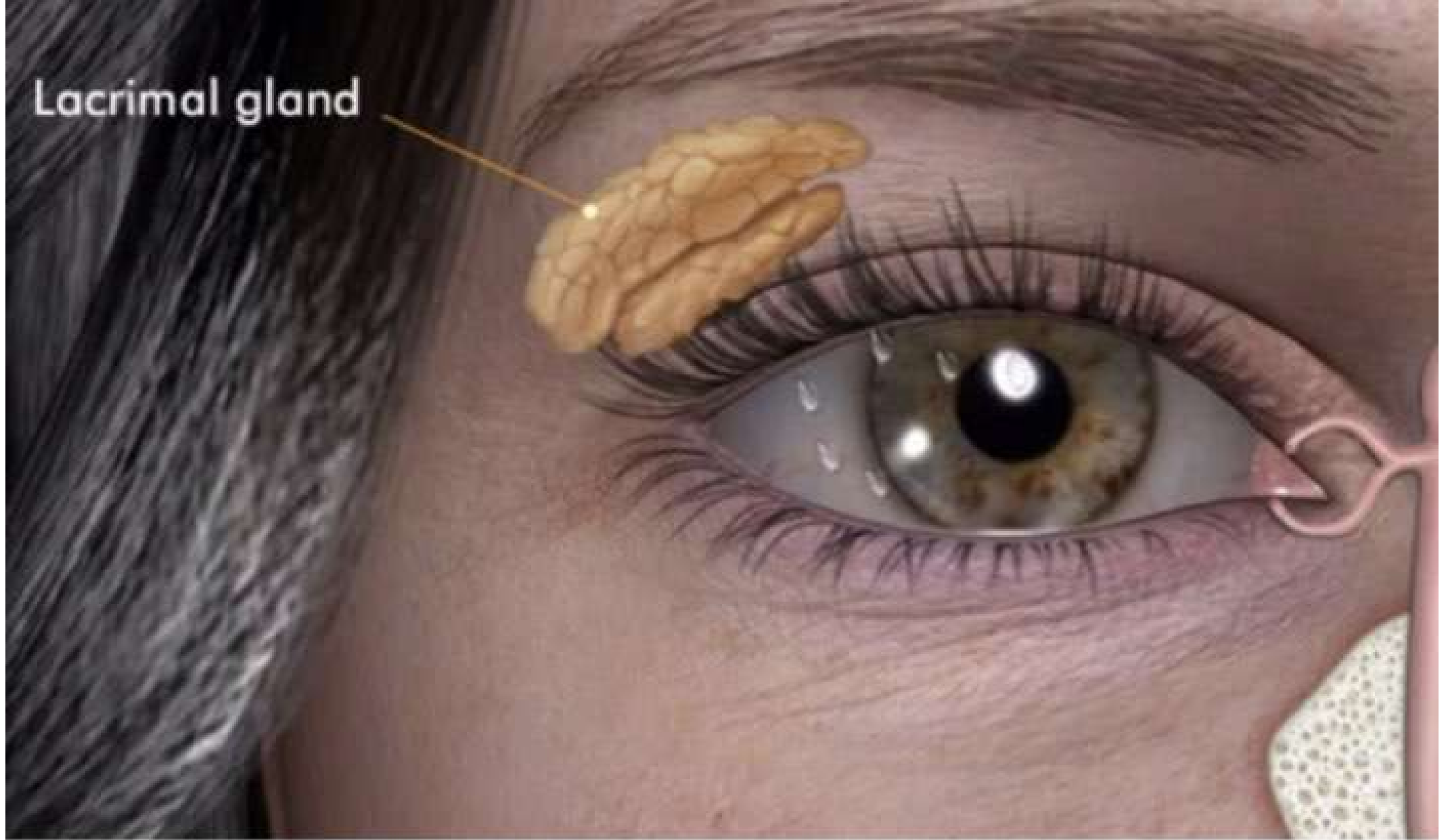
Note: Arrows indicate direction of eye movement produced by each muscle

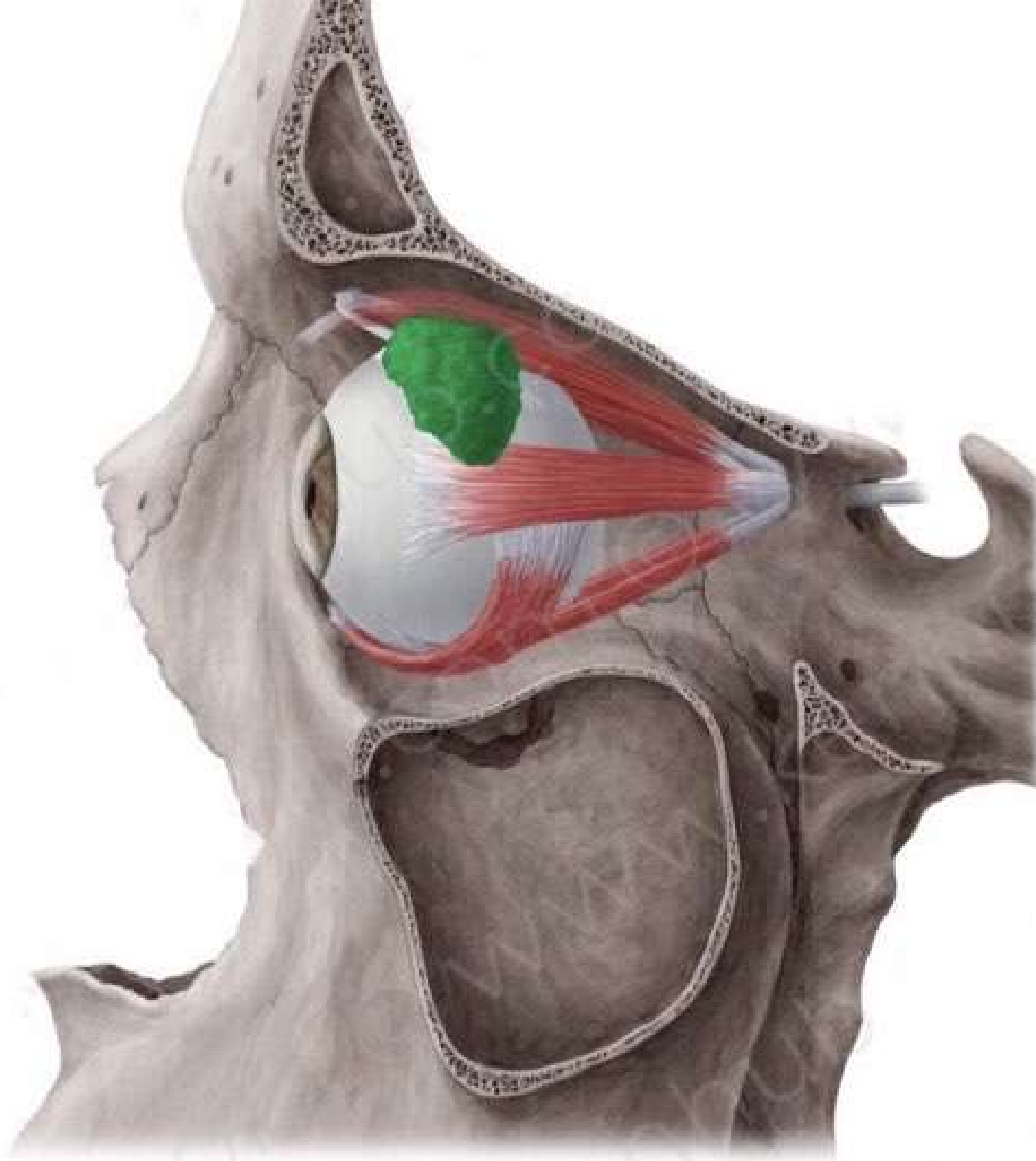
Lacrimal Apparatus

- Produces and drains tears:
 - **Lacrimal gland** (superolateral orbit) – secretes tears.
 - Tears spread across eye surface → collected at medial canthus.
 - Drain via **lacrimal puncta** → **canaliculi** → **sac** → **nasolacrimal duct** → inferior nasal meatus.
- Innervation: **Parasympathetic** fibers from **CN VII** via greater petrosal nerve.

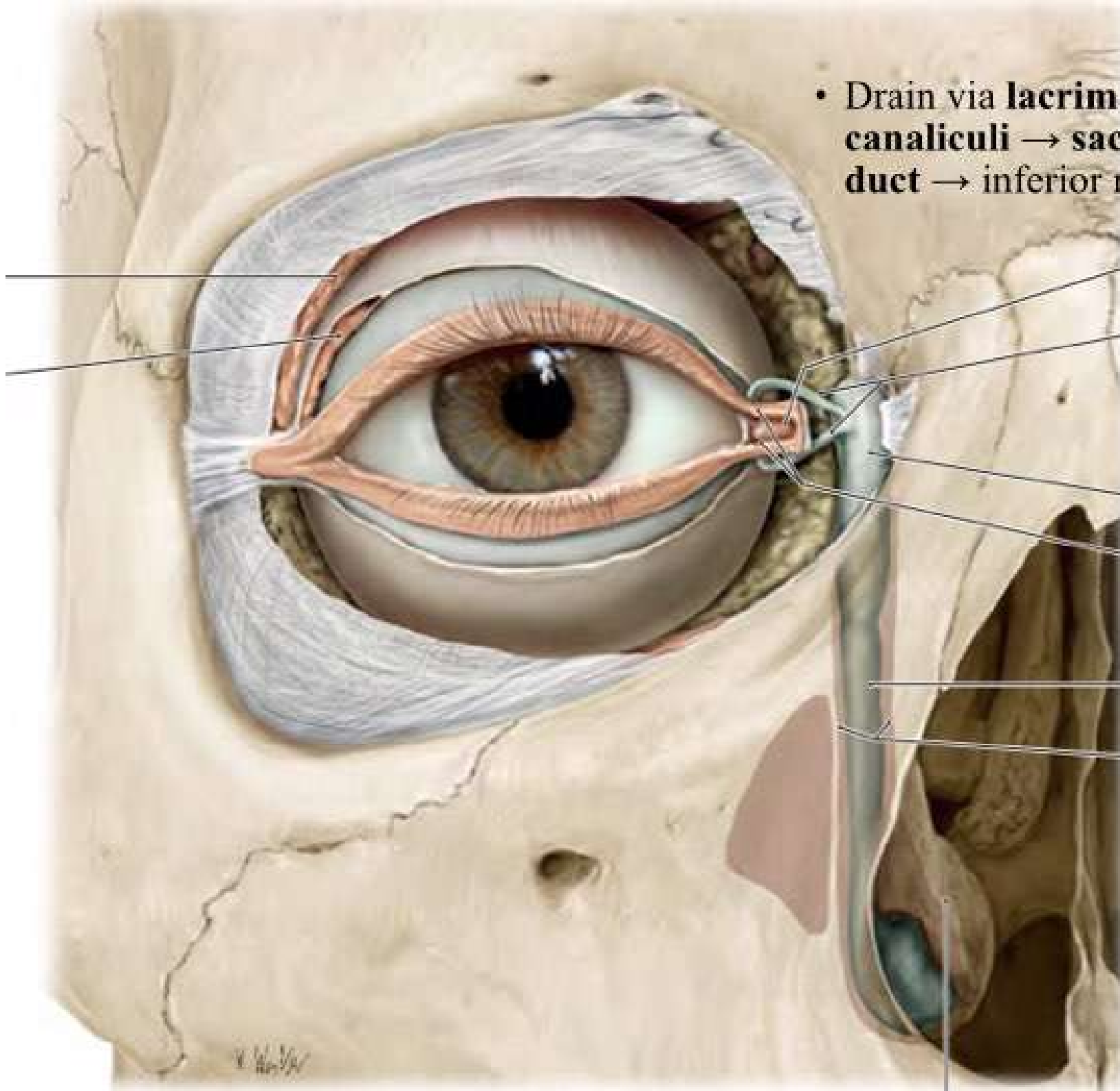


Lacrimal gland





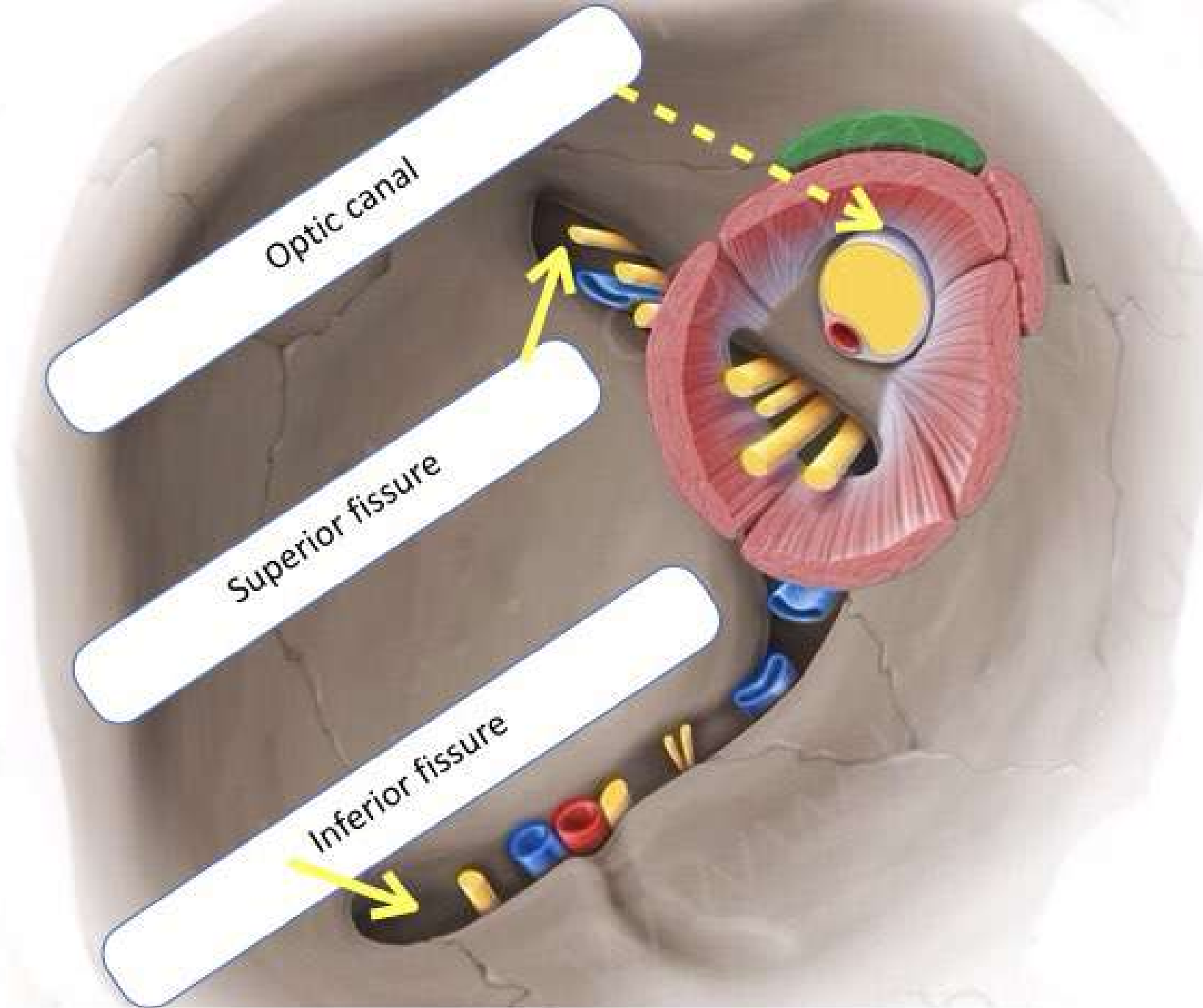
- Drain via **lacrimal puncta** → **canaliculi** → **sac** → **nasolacrimal duct** → inferior nasal meatus.



Openings into the Orbital Cavity

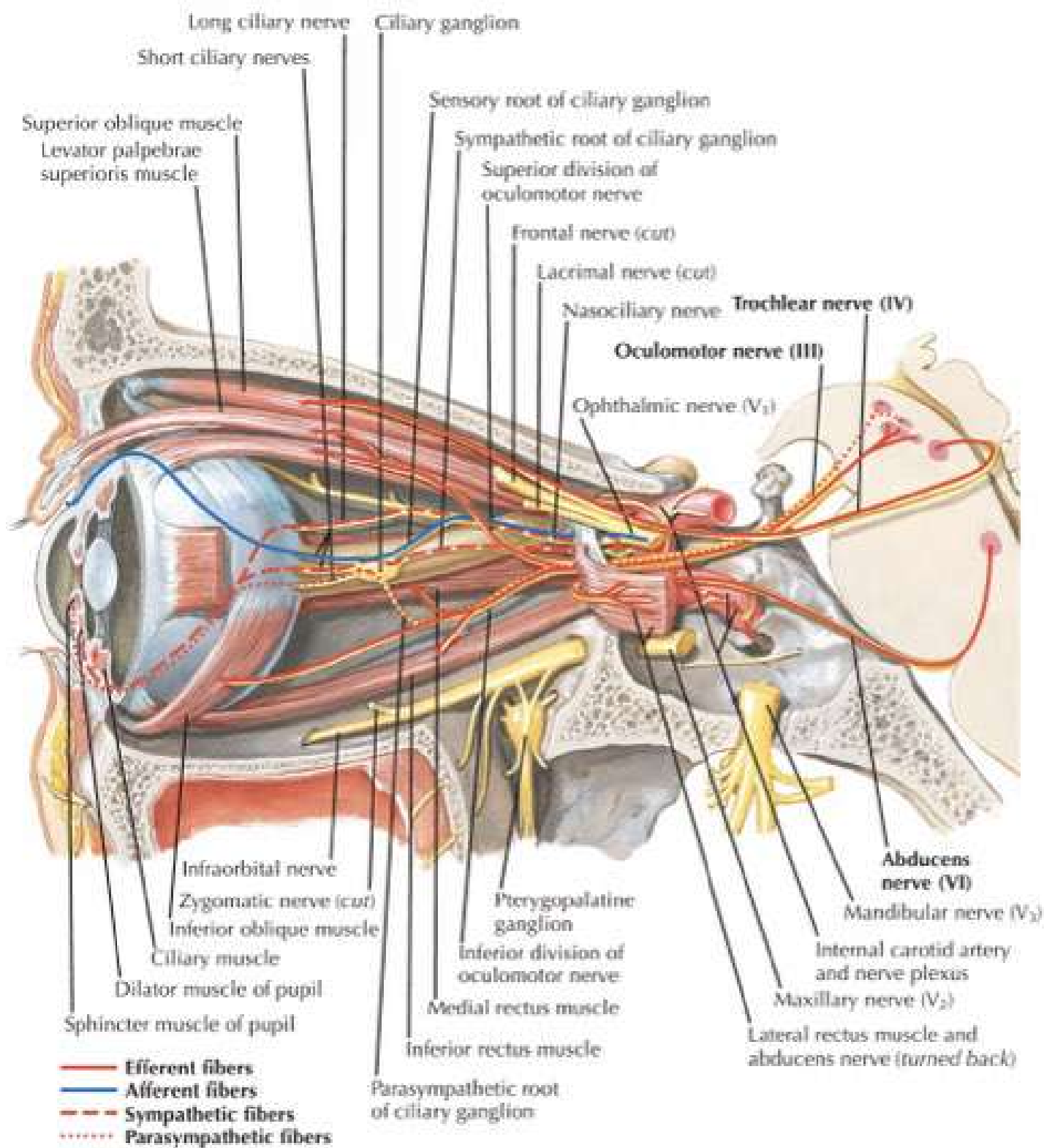
Key openings and their contents:

- **Optic canal** – CN II and ophthalmic artery.
- **Superior orbital fissure** – CN III, IV, V1, VI, and superior ophthalmic vein.
- **Inferior orbital fissure** – infraorbital nerve and vessels.
- **Nasolacrimal canal** – drains tears to nasal cavity.



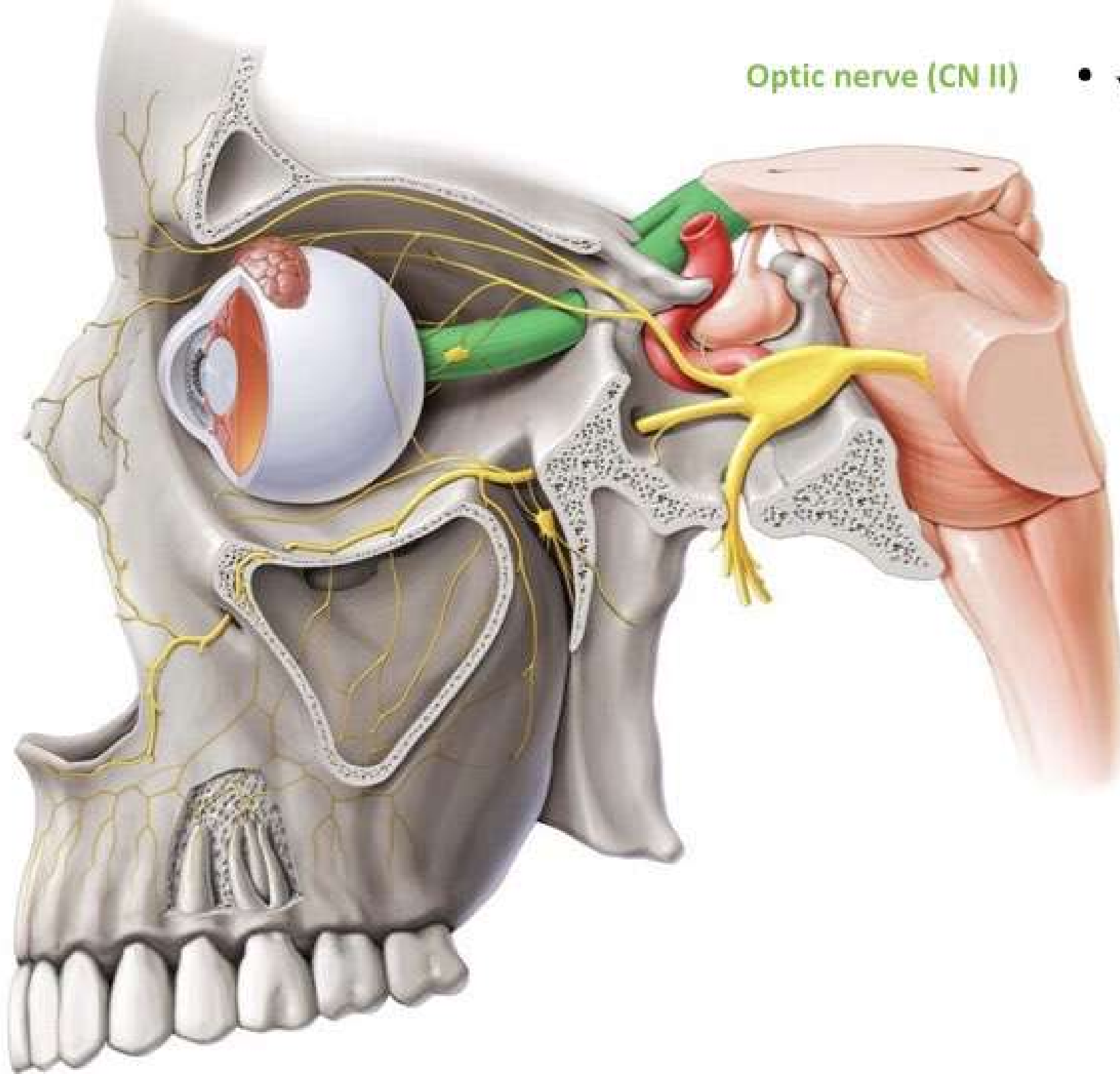
Nerves of the Orbit

- **Optic nerve (CN II)** – vision.
- **Oculomotor nerve (CN III)** – motor to most extraocular muscles.
- **Trochlear nerve (CN IV)** – superior oblique muscle.
- **Abducent nerve (CN VI)** – lateral rectus muscle.
- **Ophthalmic division of trigeminal (CN V1)** – sensory (via frontal, lacrimal, nasociliary nerves).
- **Ciliary ganglion** – parasympathetic relay to intraocular muscles.



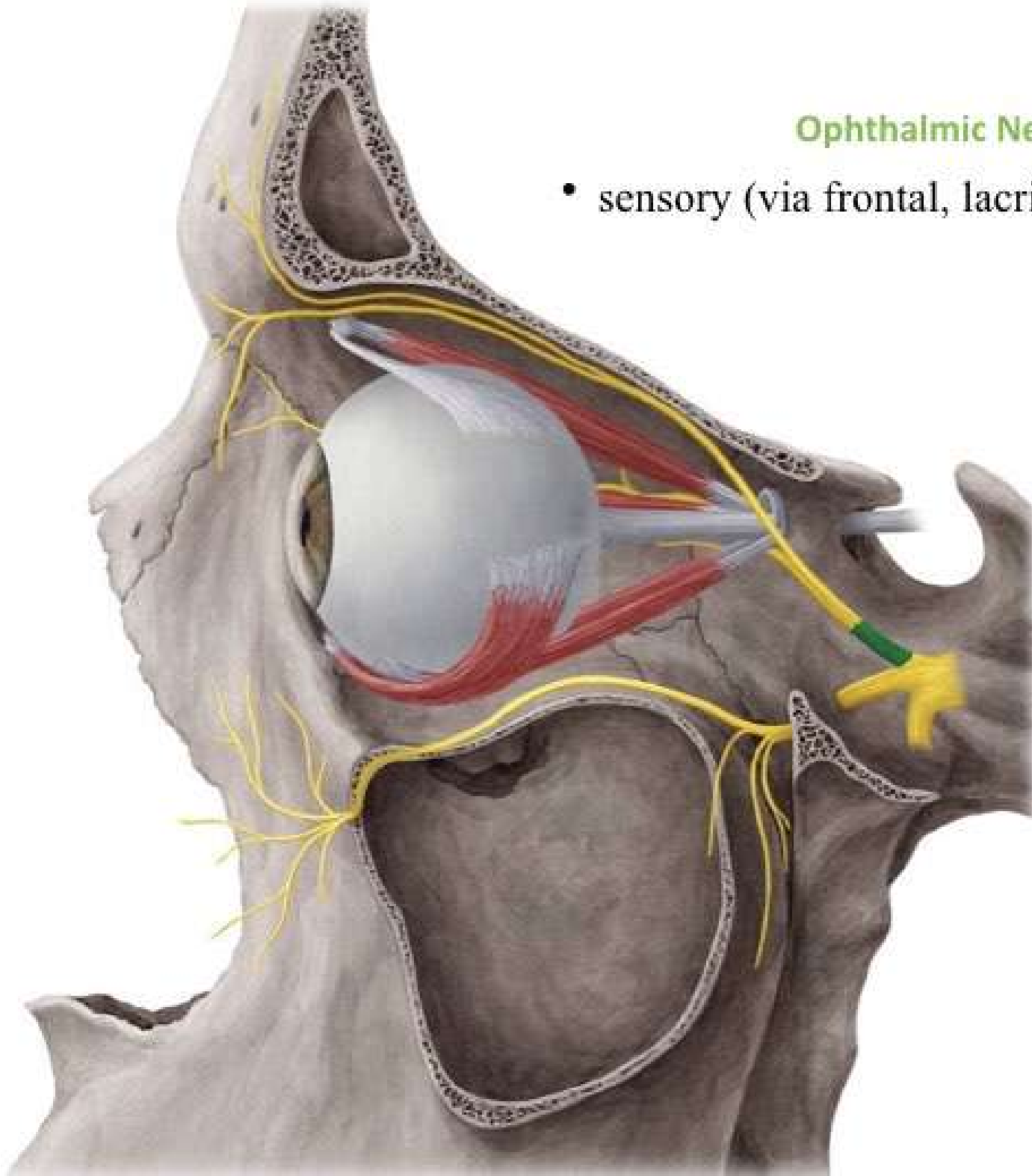
Optic nerve (CN II)

• vision



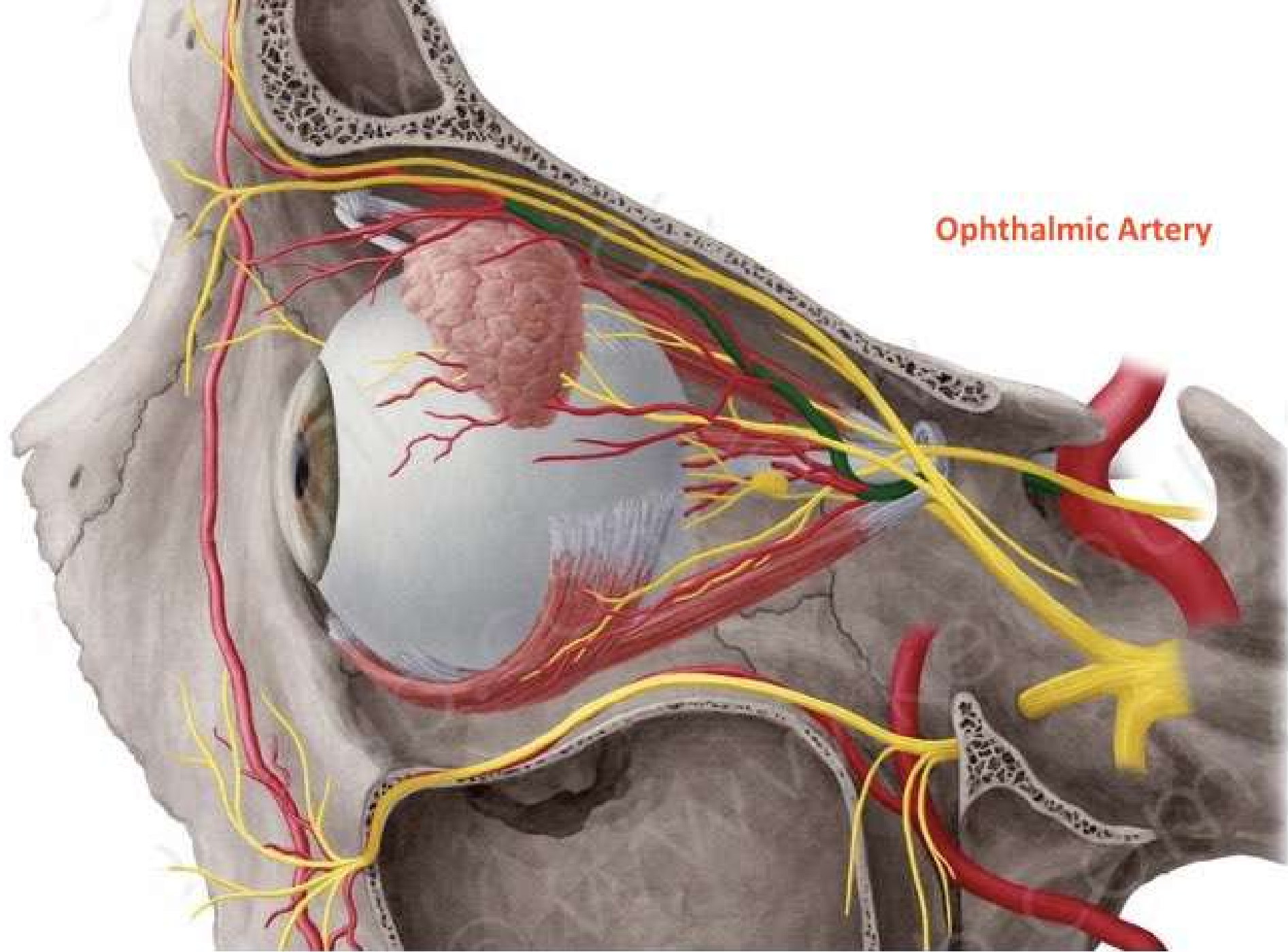
Ophthalmic Nerve (CN V1)

- sensory (via frontal, lacrimal, nasociliary nerves)



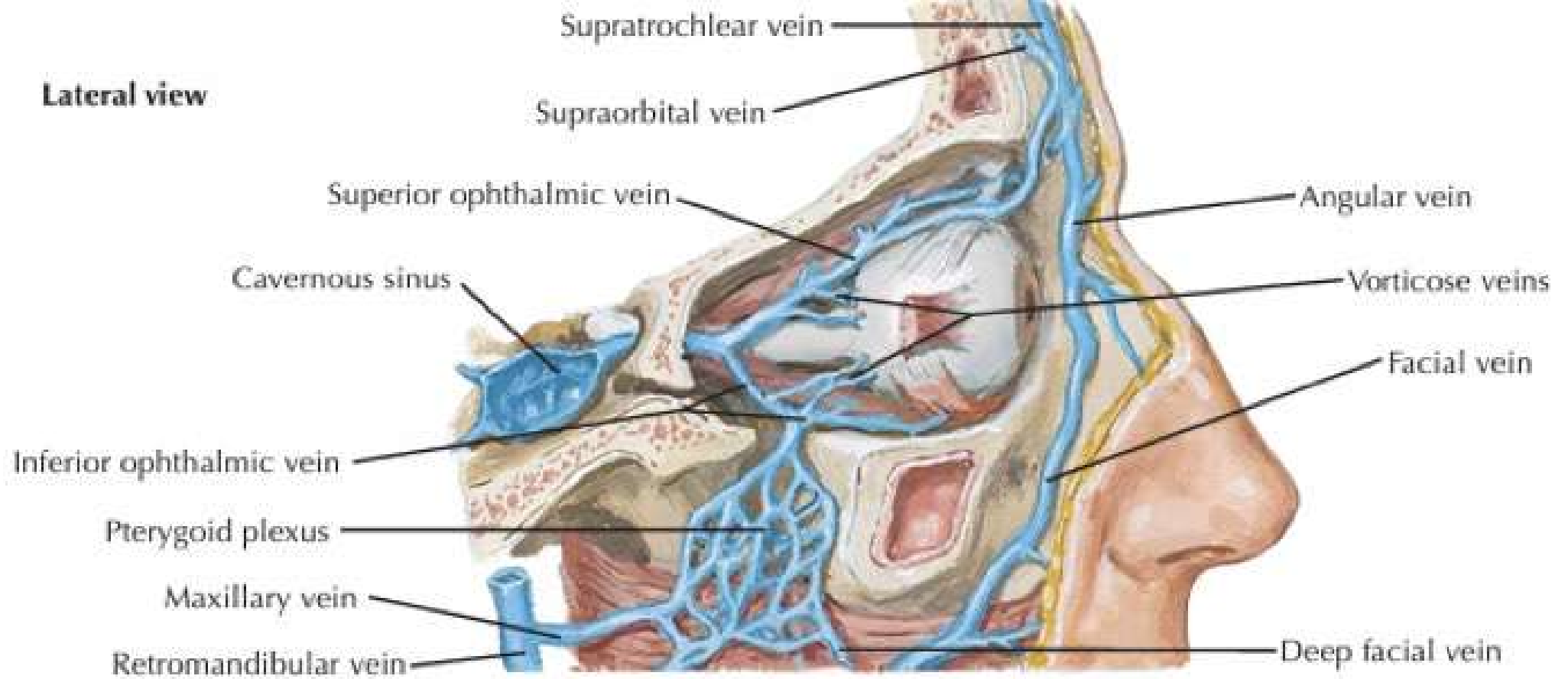
Blood and Lymph Vessels of the Orbit

- **Arterial supply:** Primarily via **ophthalmic artery** (branch of internal carotid).
- **Venous drainage:**
 - Superior and inferior **ophthalmic veins** → cavernous sinus.
 - Can provide route for **infection spread** to brain.
- **Lymphatic drainage:**
 - Eyelids and conjunctiva → **preauricular** and **submandibular** lymph nodes.

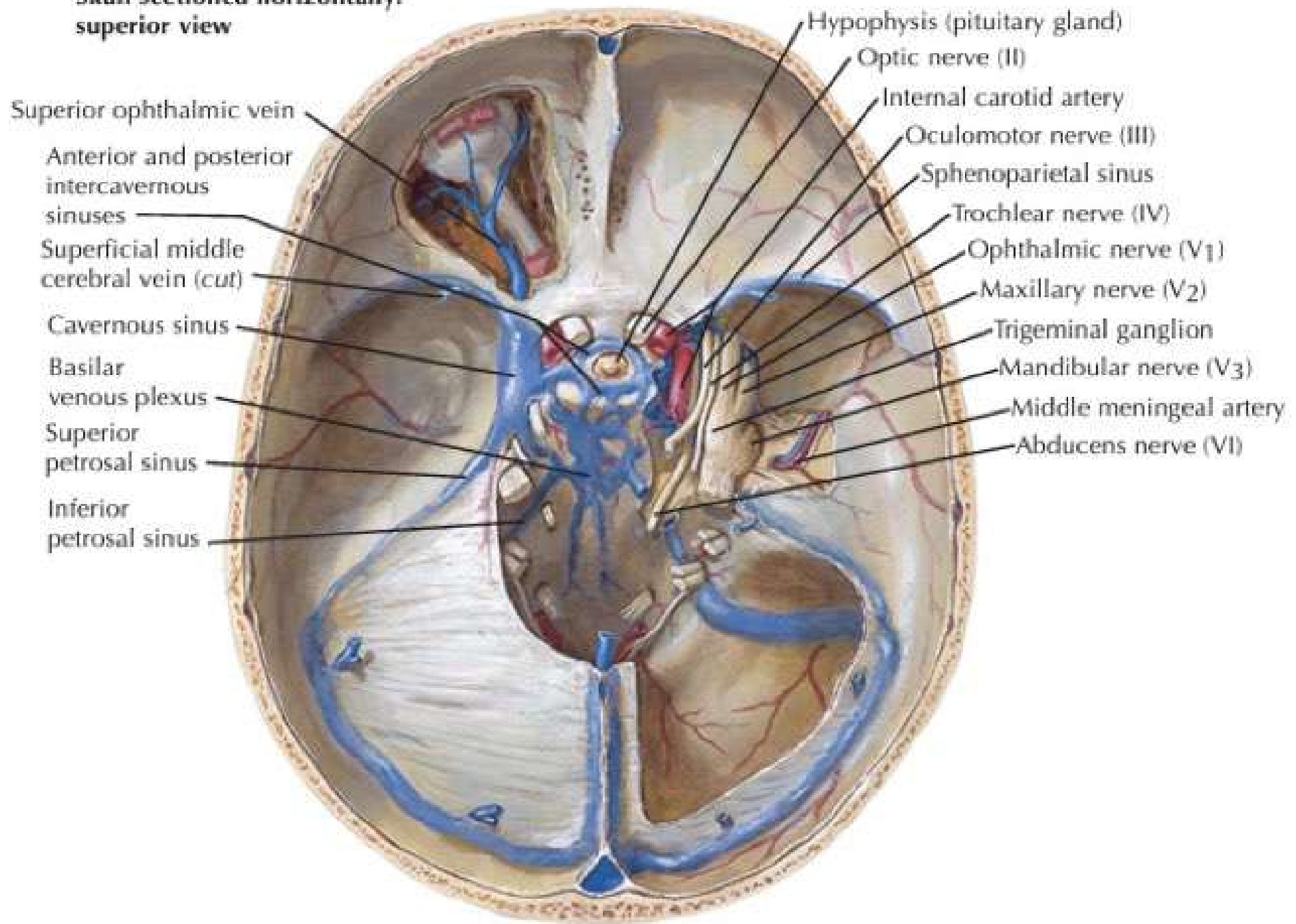


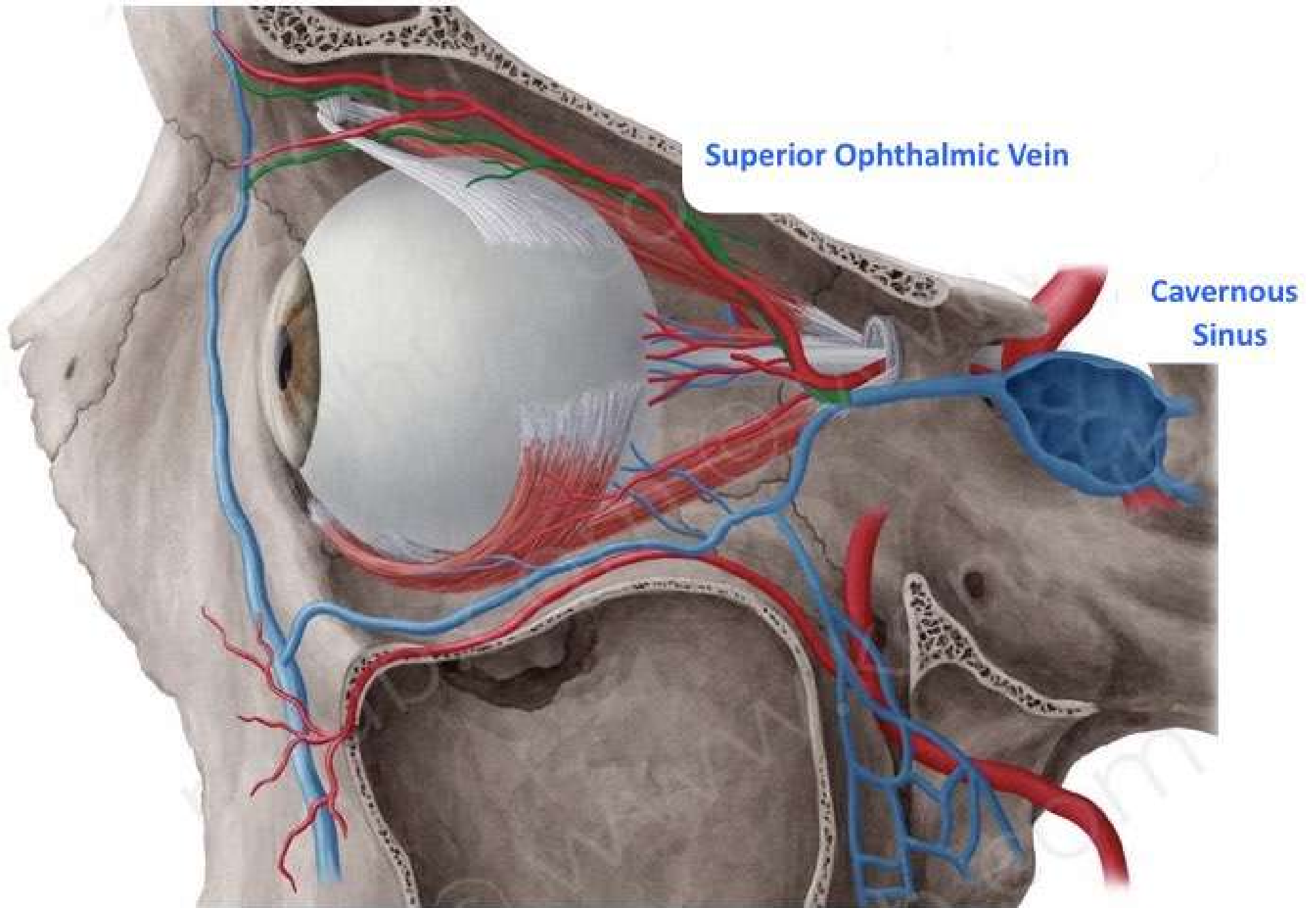
Ophthalmic Artery

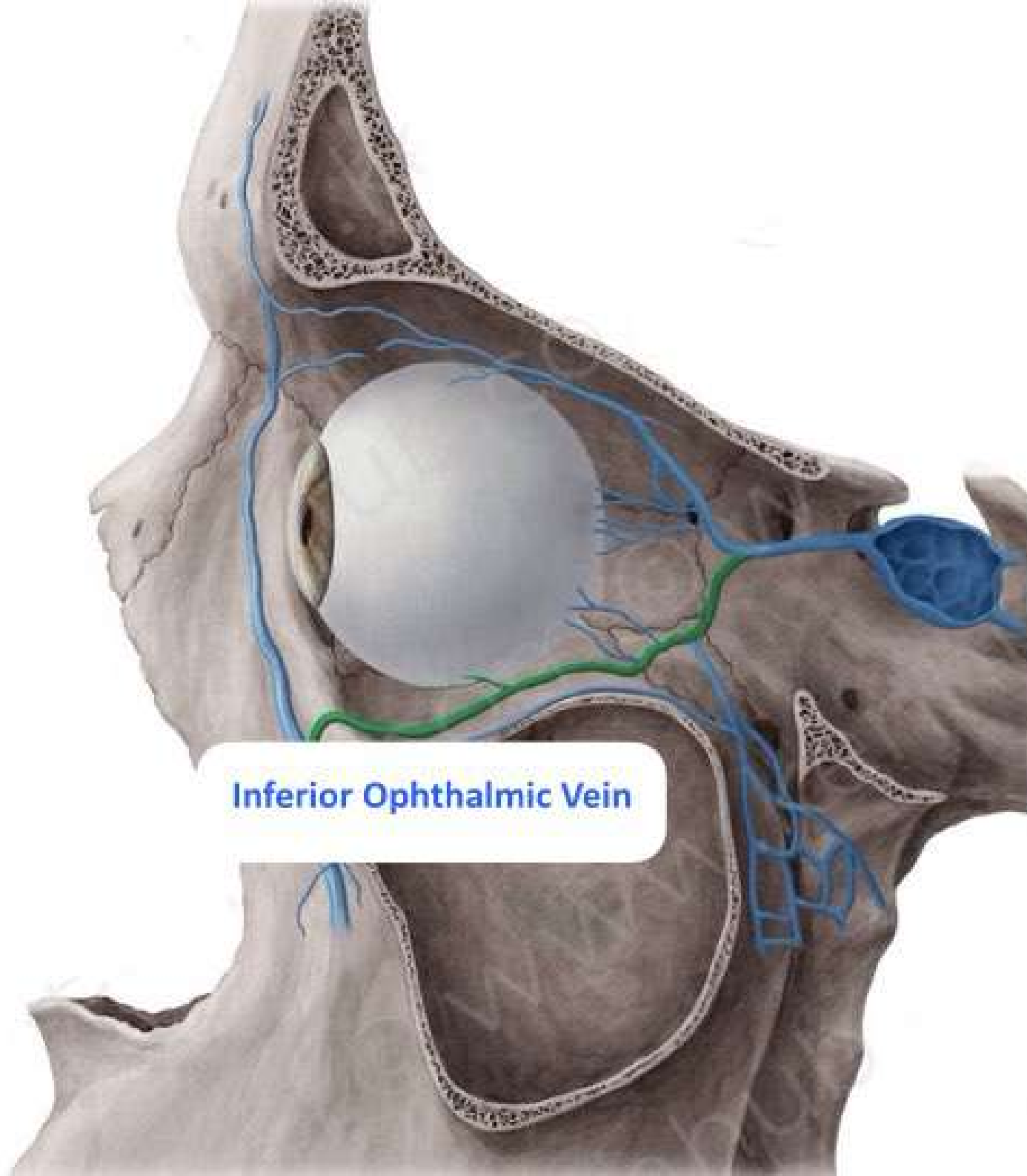
Lateral view



**Skull sectioned horizontally:
superior view**







Cavernous Sinus

Inferior Ophthalmic Vein

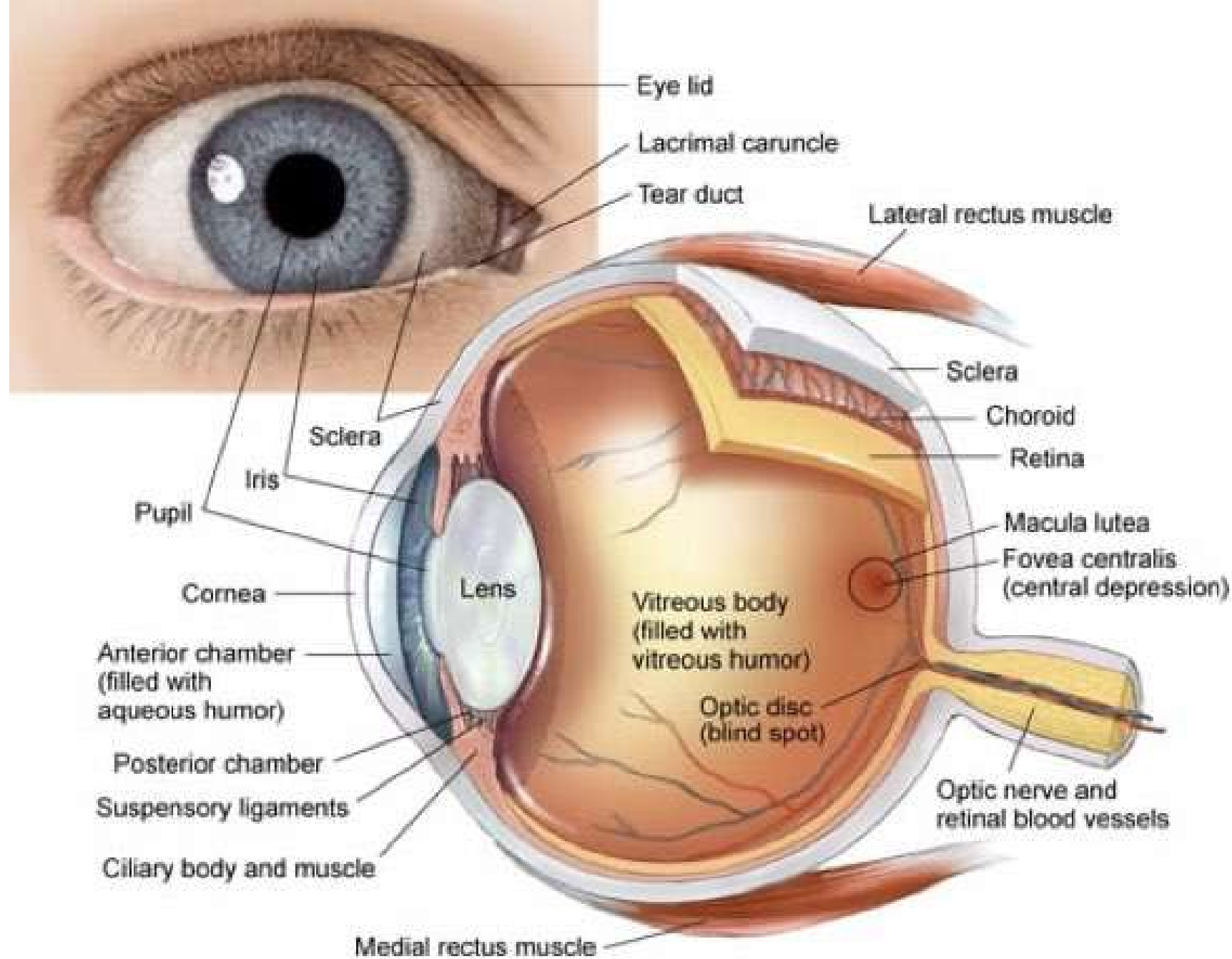
Structure of the Eye

Three main layers:

1. **Fibrous layer**: Sclera (posterior), Cornea (anterior).
2. **Vascular layer (Uvea)**: Choroid, Ciliary body, Iris.
3. **Retina**: Contains photoreceptors; ends at **ora serrata**.

Internal components:

Aqueous humor (anterior segment), **Lens**, **Vitreous humor** (posterior segment).



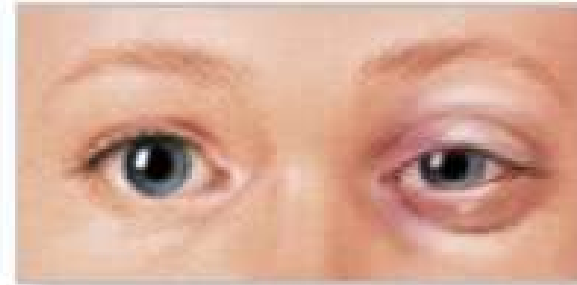
Right Eye (viewed from above)

Clinical Notes

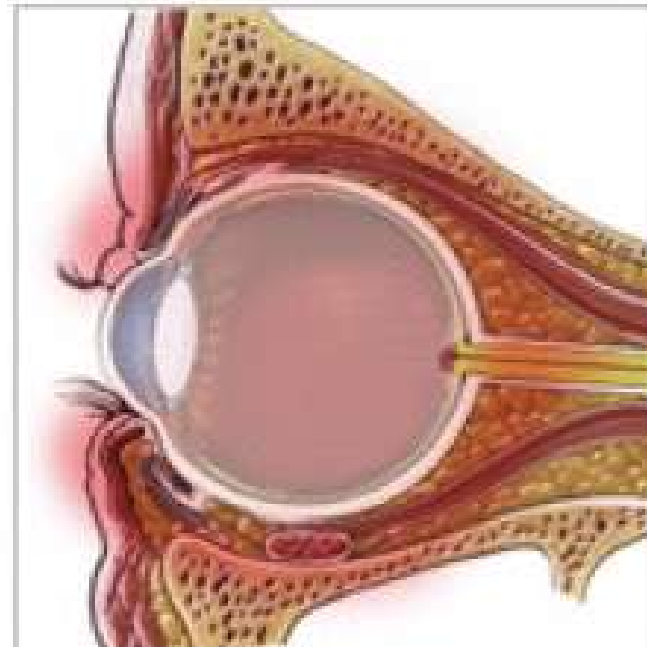
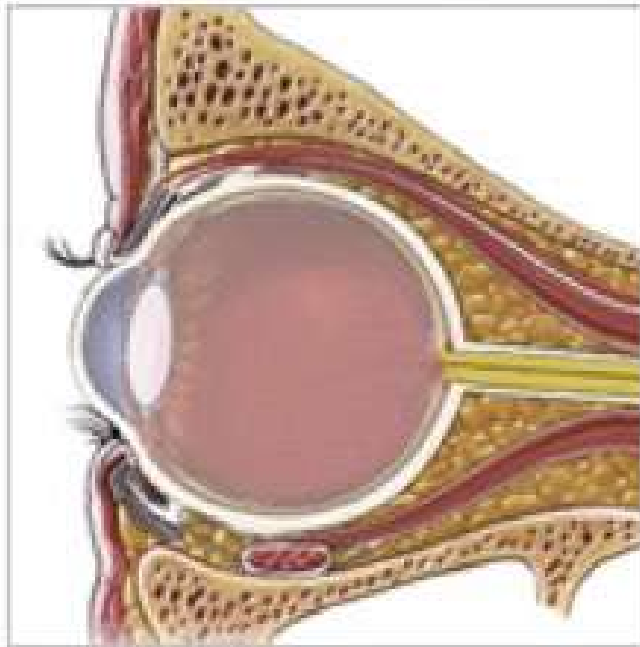
- **Orbital cellulitis**: Infection behind the orbital septum; requires urgent treatment.
- **Ptosis**: Drooping eyelid; could be due to CN III palsy or Horner's syndrome.
- **Blowout fracture**: Fracture of orbital floor; can entrap inferior rectus.
- **Glaucoma**: Increased intraocular pressure, damaging optic nerve.
- **Papilledema**: Swelling of optic disc due to increased intracranial pressure.
- **Conjunctivitis**: Inflammation of conjunctiva (bacterial, viral, allergic).



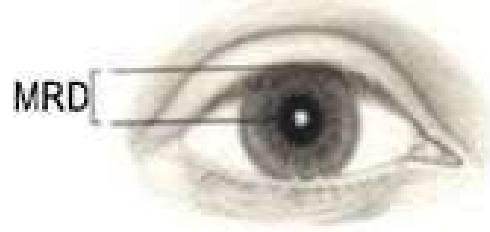
Normal eye



Periorbital cellulitis



- Infection behind the orbital septum; requires urgent treatment.



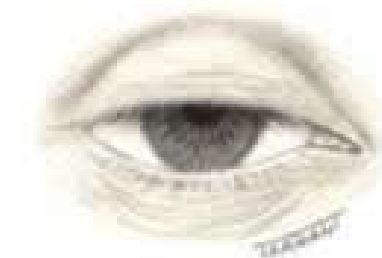
- Distance between upper lid margin and light reflex (MRD)



- Mild Ptosis (2 mm of droop)

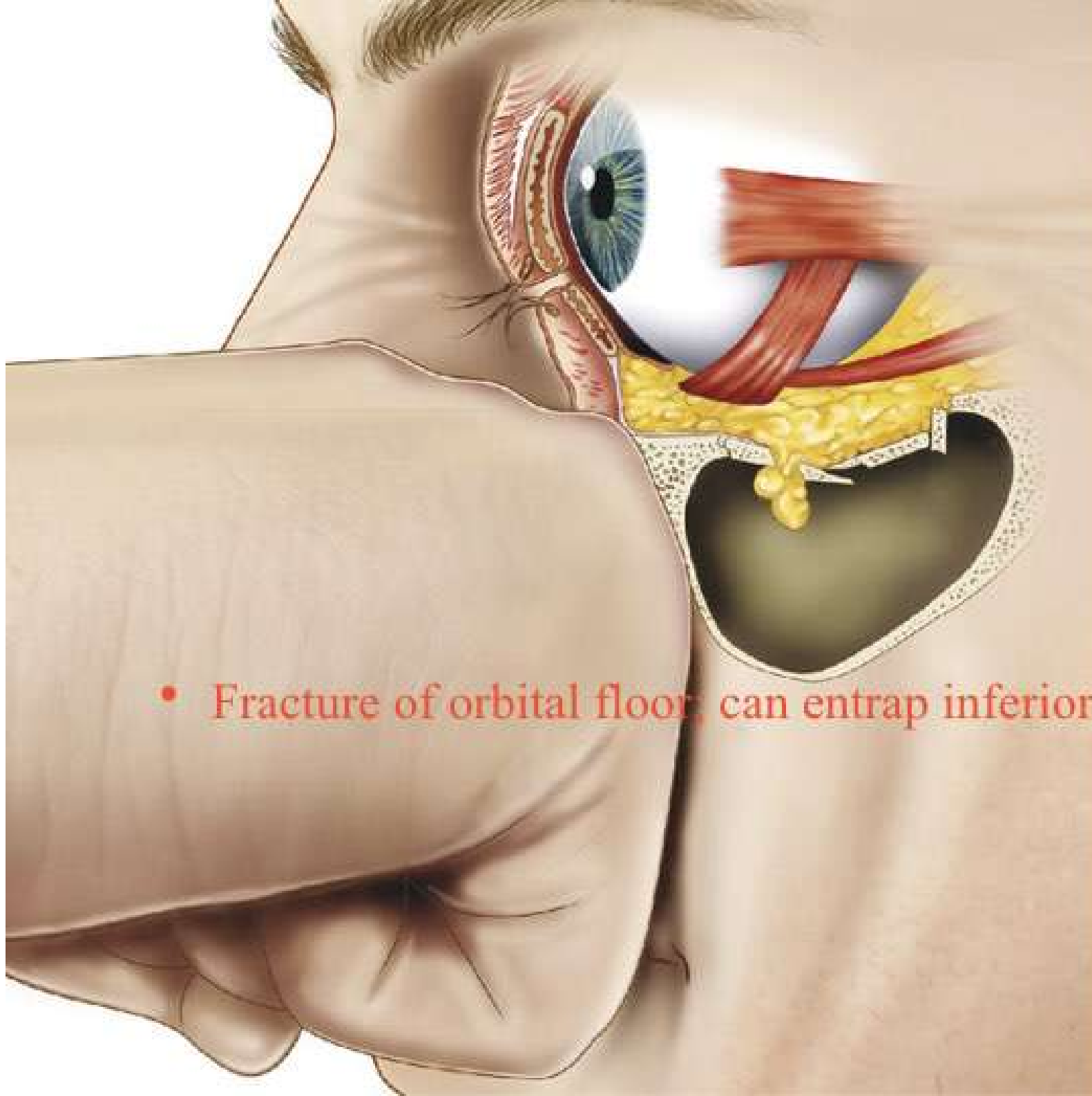


- Moderate Ptosis (3 mm droop)



- Severe Ptosis (4 mm or more droop)

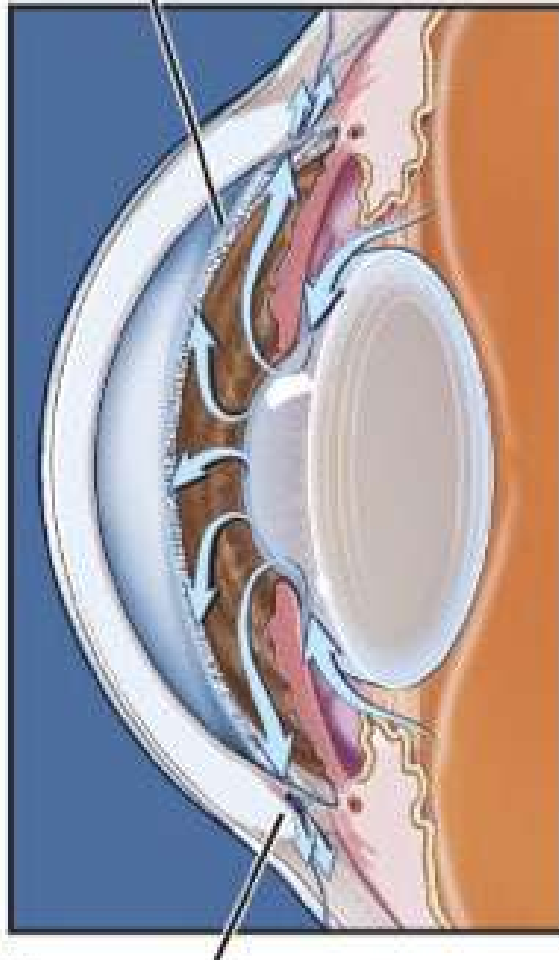
- Drooping eyelid; could be due to CN III palsy or Horner's syndrome.



- Fracture of orbital floor, can entrap inferior rectus.

Healthy Eye

Drainage canal of eye



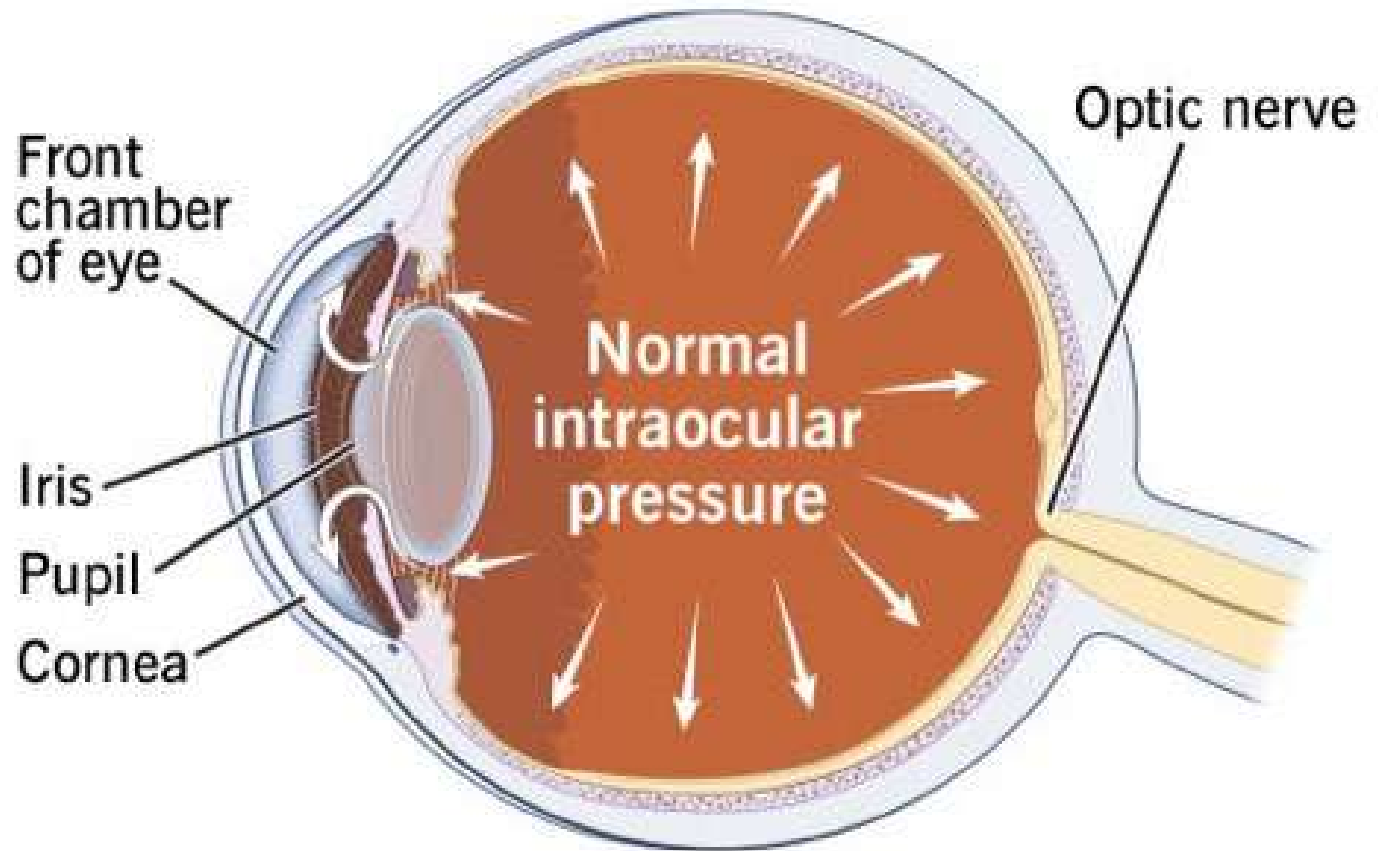
Aqueous humor
leaving through canal

Front
chamber
of eye

Iris

Pupil

Cornea



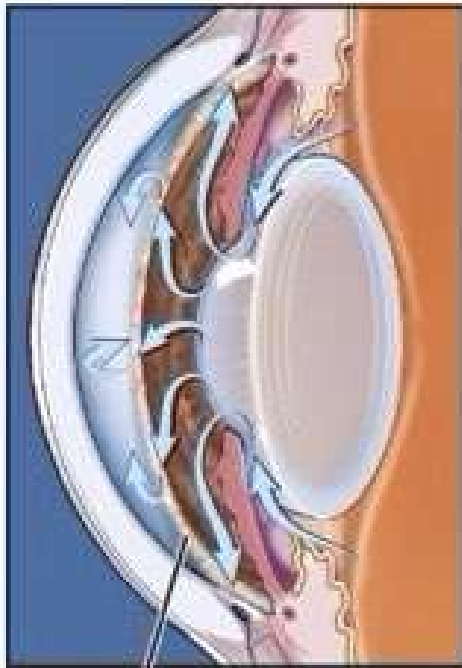
Optic nerve

Normal
intraocular
pressure

Glaucoma

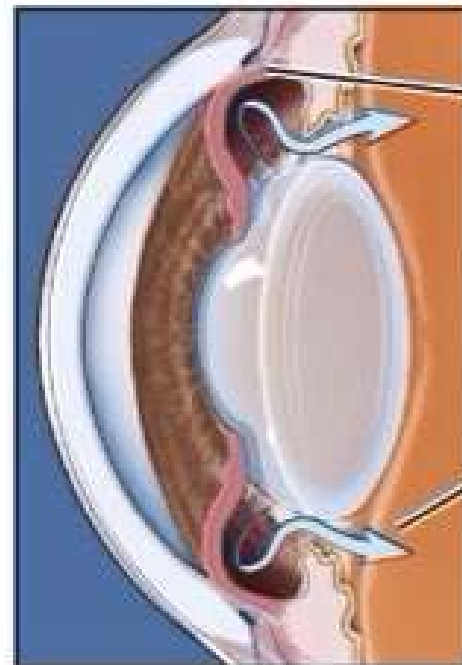
- Increased intraocular pressure, damaging optic nerve.

Open-angle glaucoma



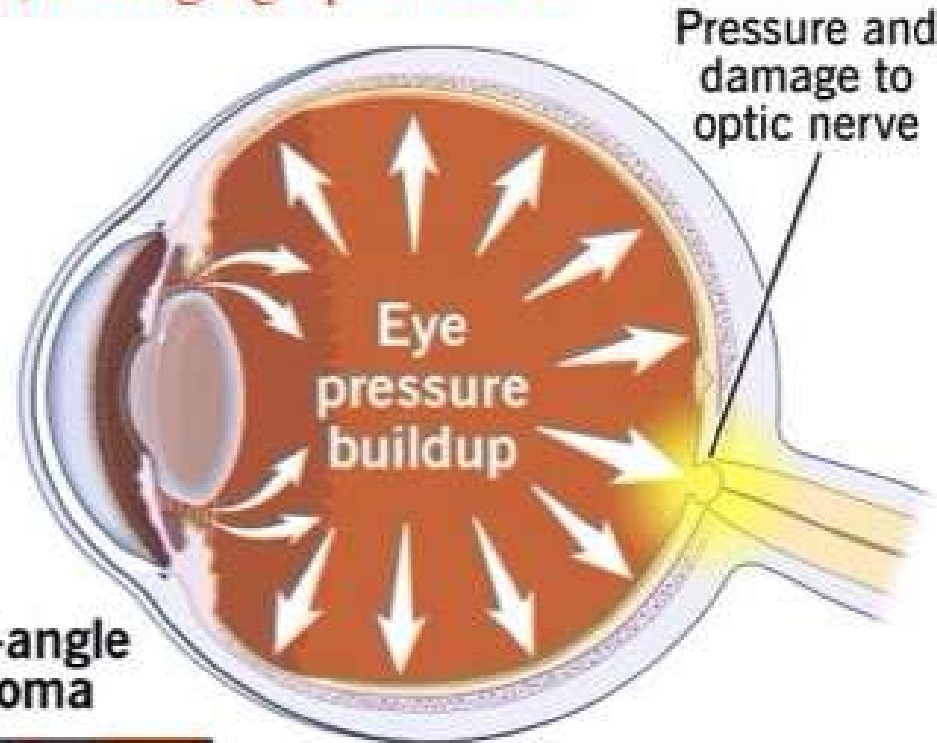
Drainage canals are clogged, fluid pressure builds up

Closed-angle glaucoma



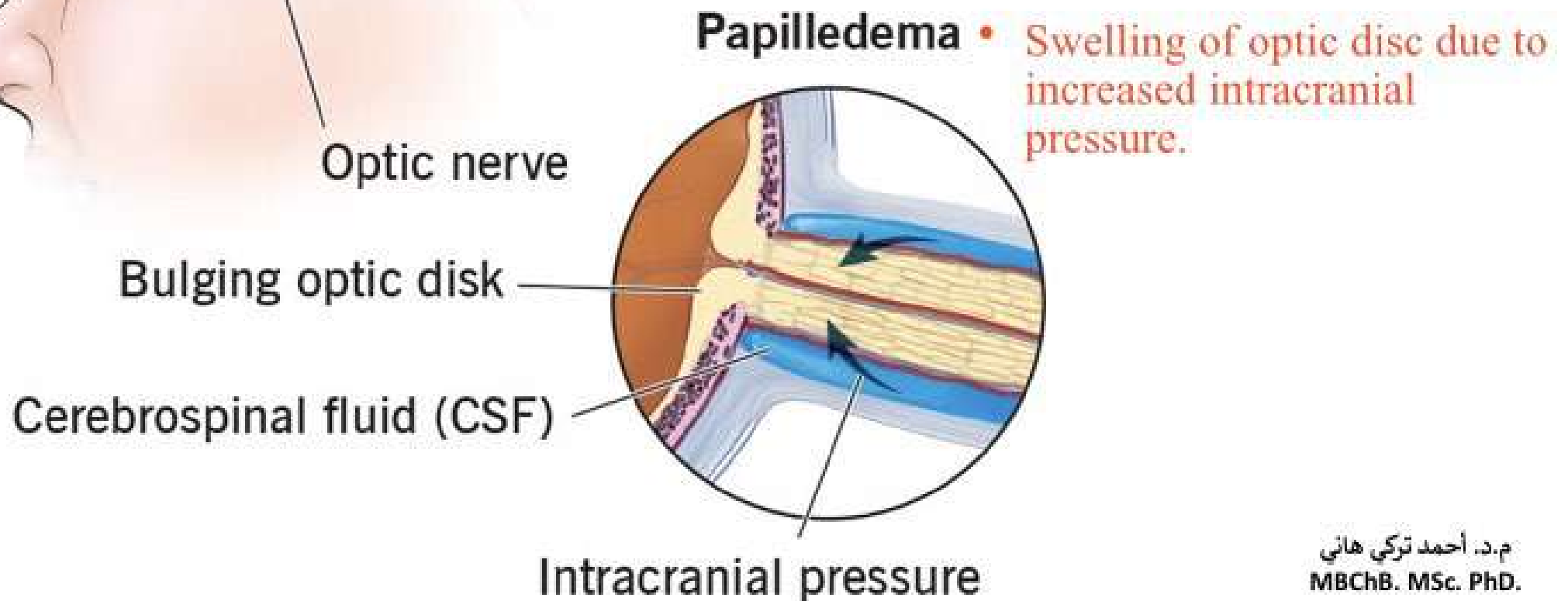
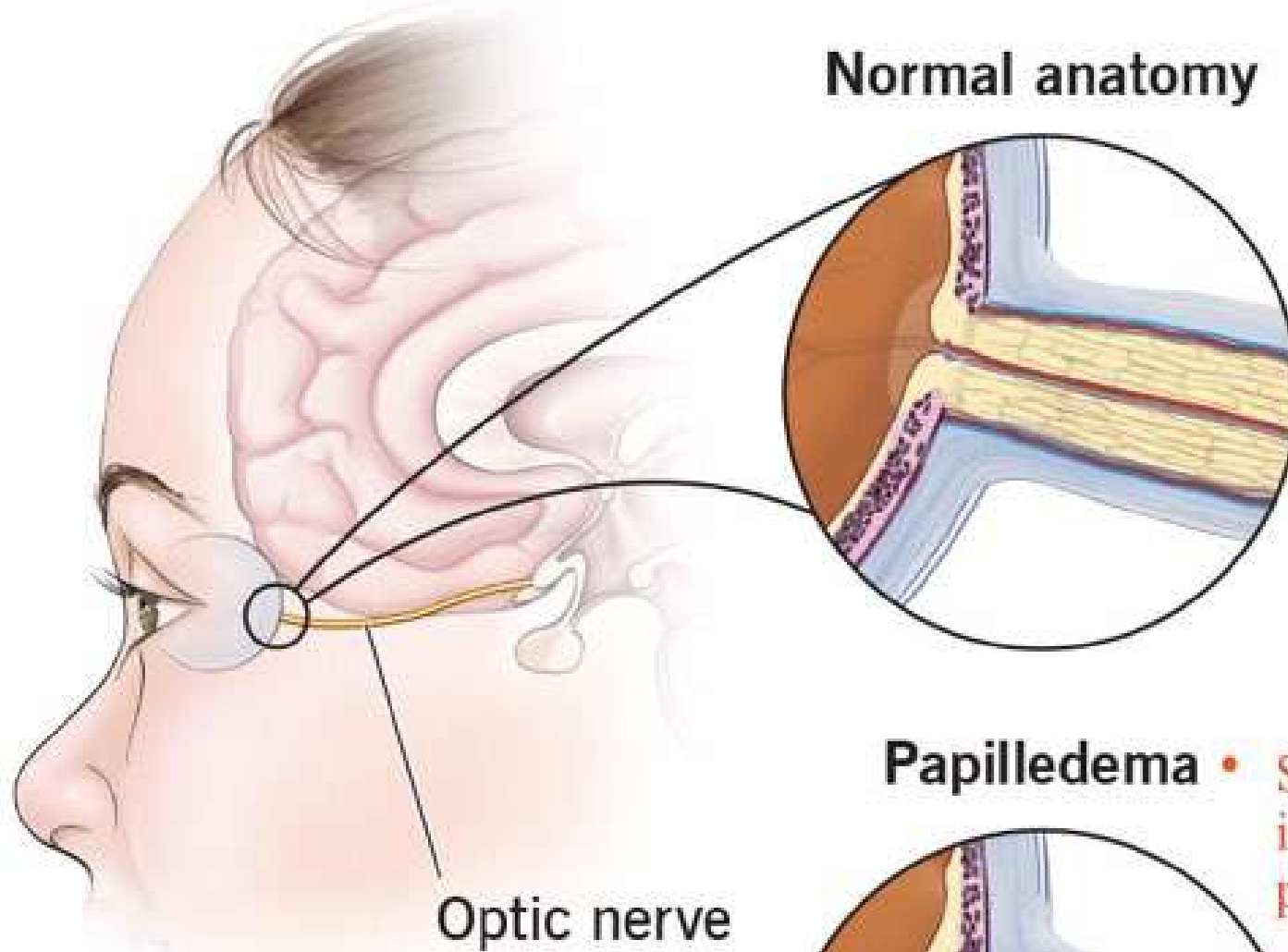
Angle between the iris and cornea is too narrow

Fluid pressure builds up



Pressure and damage to optic nerve

Eye pressure buildup

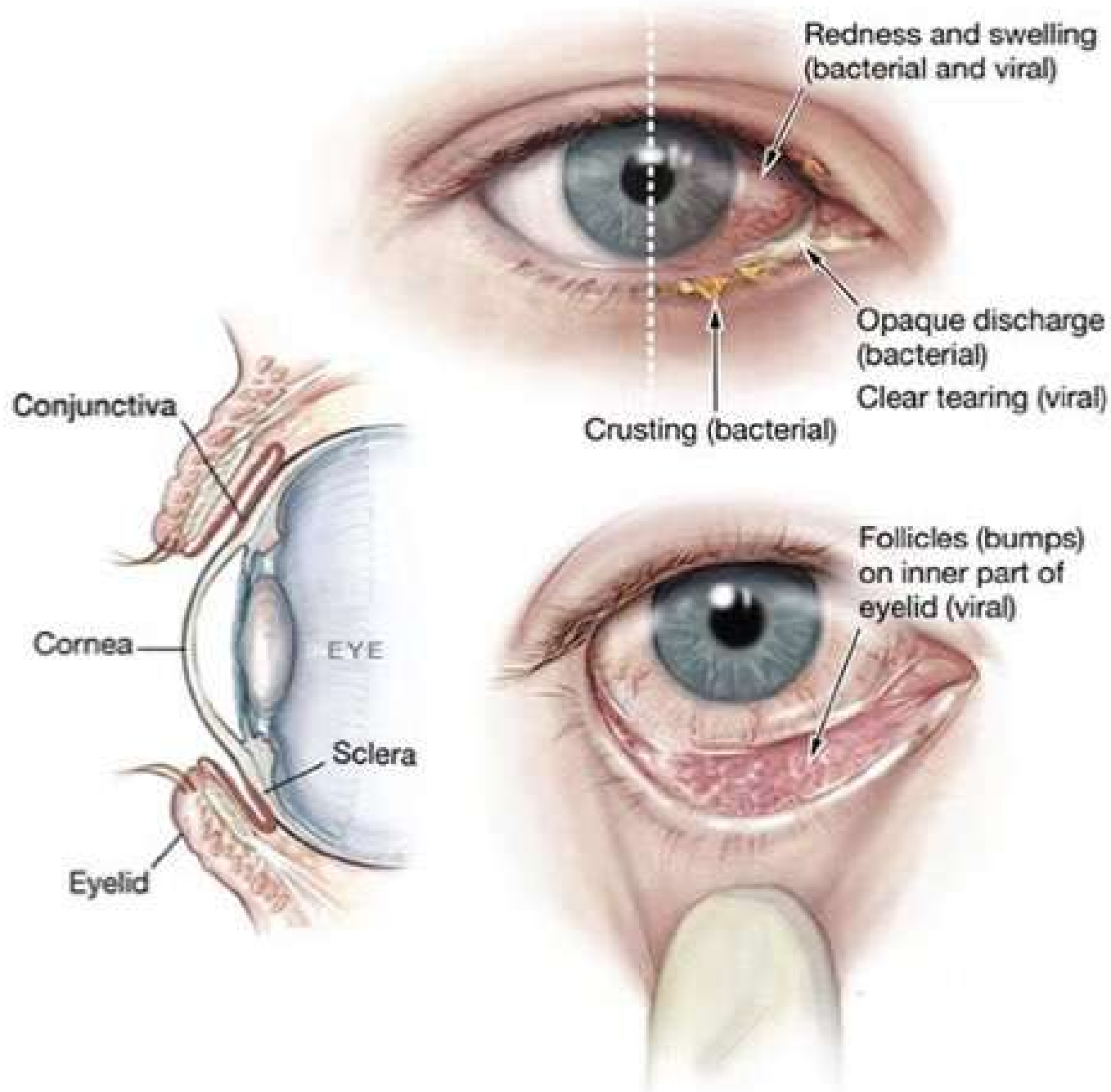


Conjunctivitis

- Inflammation of conjunctiva (bacterial, viral, allergic).

Normal

Typical features of conjunctivitis



Conclusion

The orbital region is a complex and highly integrated anatomical area that protects and supports the eye and vision-related structures.

Understanding its anatomy is crucial for diagnosing and managing various ocular and neurological conditions.