Peripheral Nervous System

THE EYELIDS , EXTRAOCULAR MUSCLES & 3^{rd}, 4^{th},6^{th} CRANAIL NERVES

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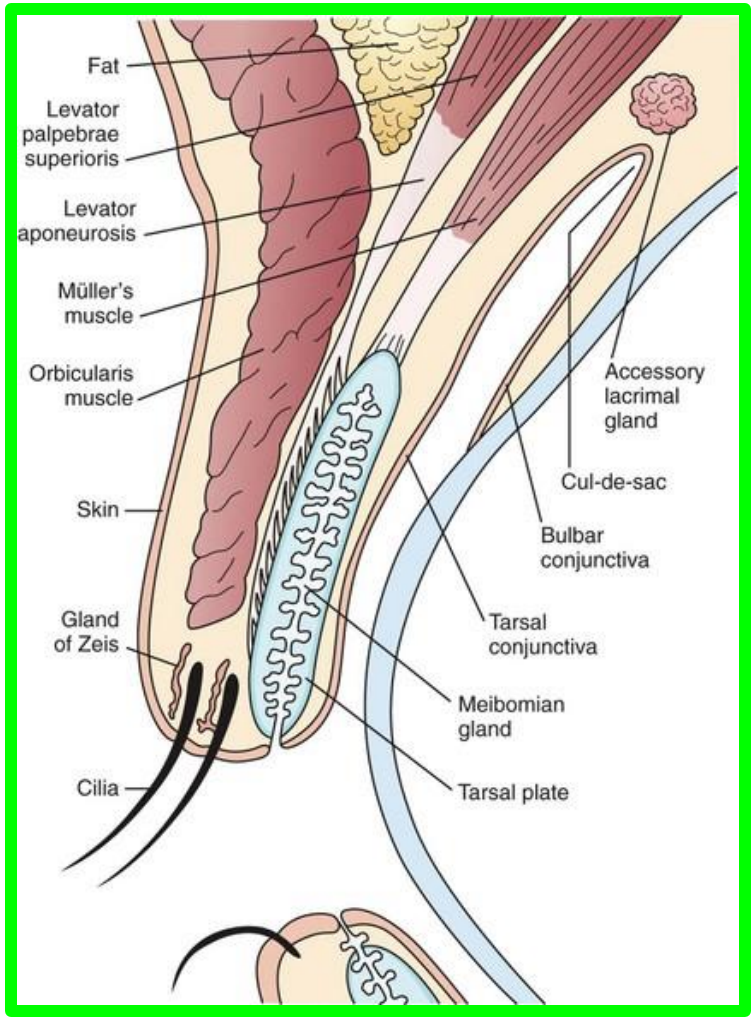
Thursday 29 February 2024

Eyelids

✓*The superficial surface of the eyelids is covered by skin, and the deep surface is covered by a mucous membrane called the conjunctiva.*

✓*The eyelashes are short, curved hairs on the free edges of the eyelids*

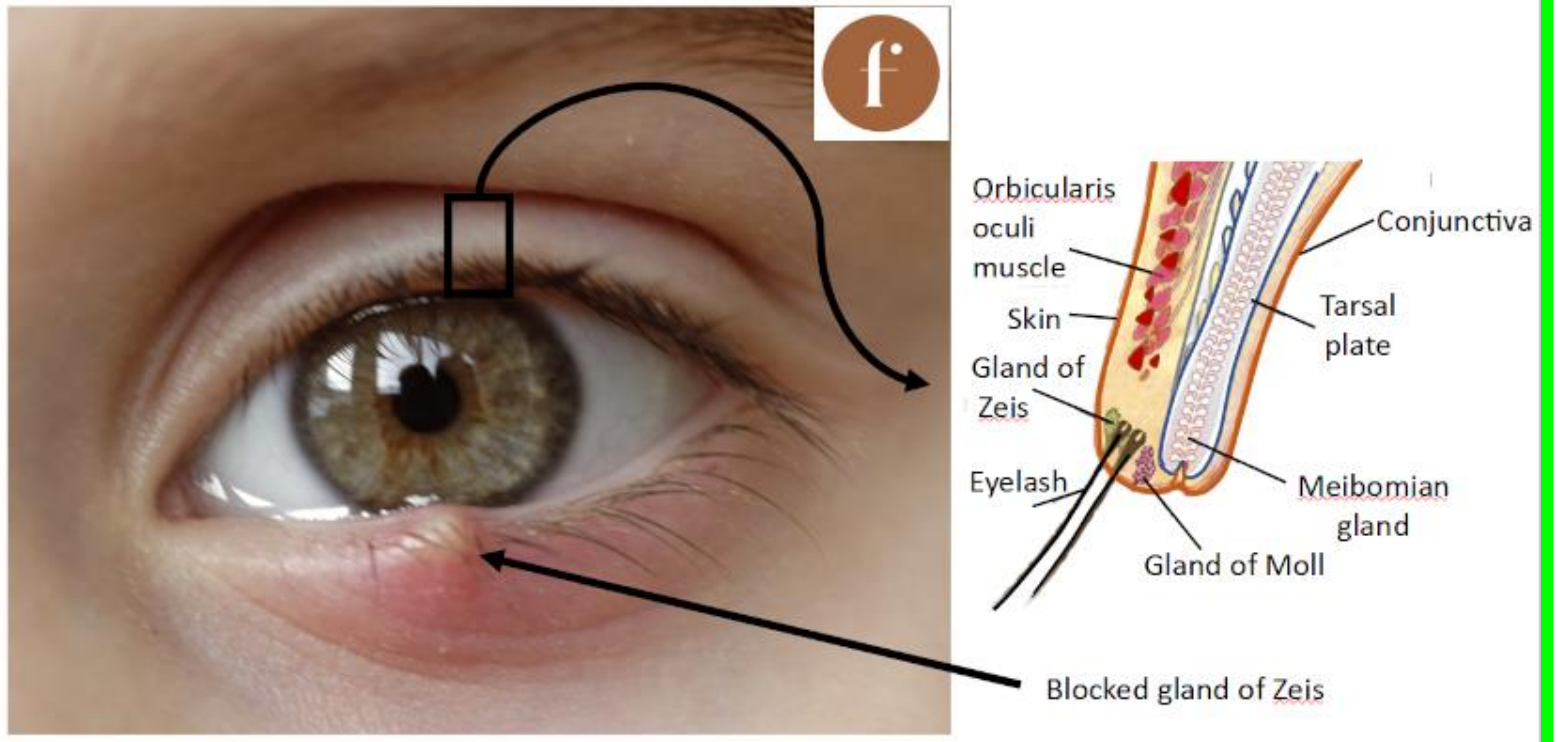
✓*They are arranged in double or triple rows at the mucocutaneous junction.*

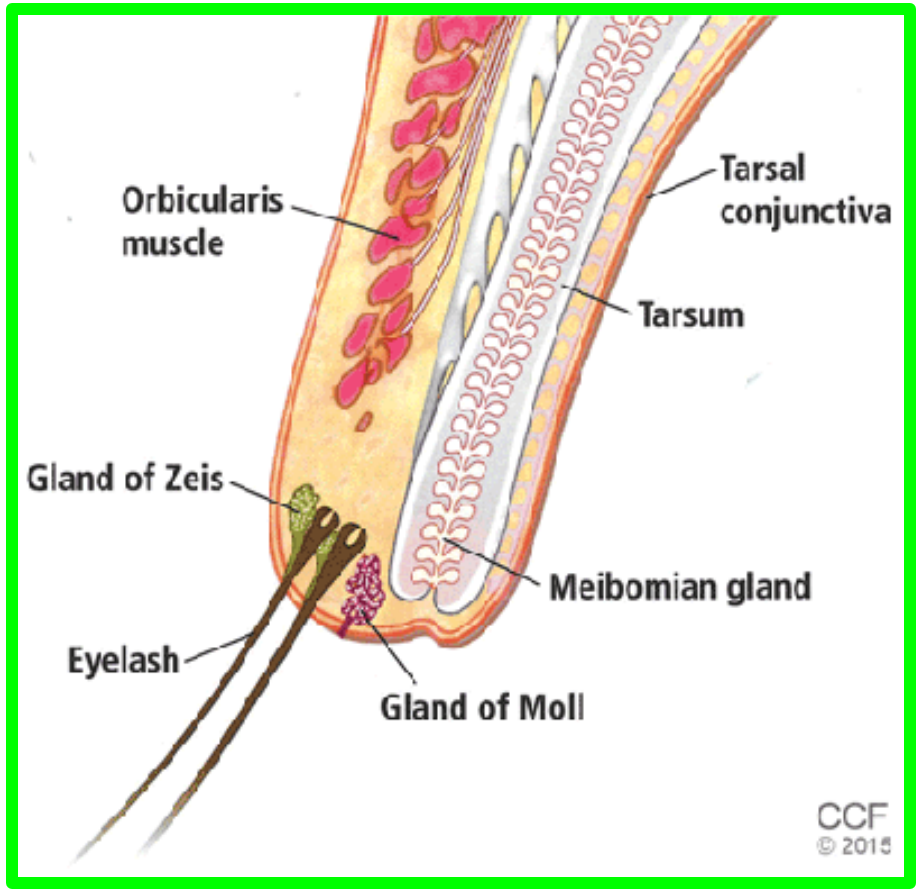


Eyelids

✓The sebaceous glands *(glands of Zeis)* open directly *into the eyelash follicles*.

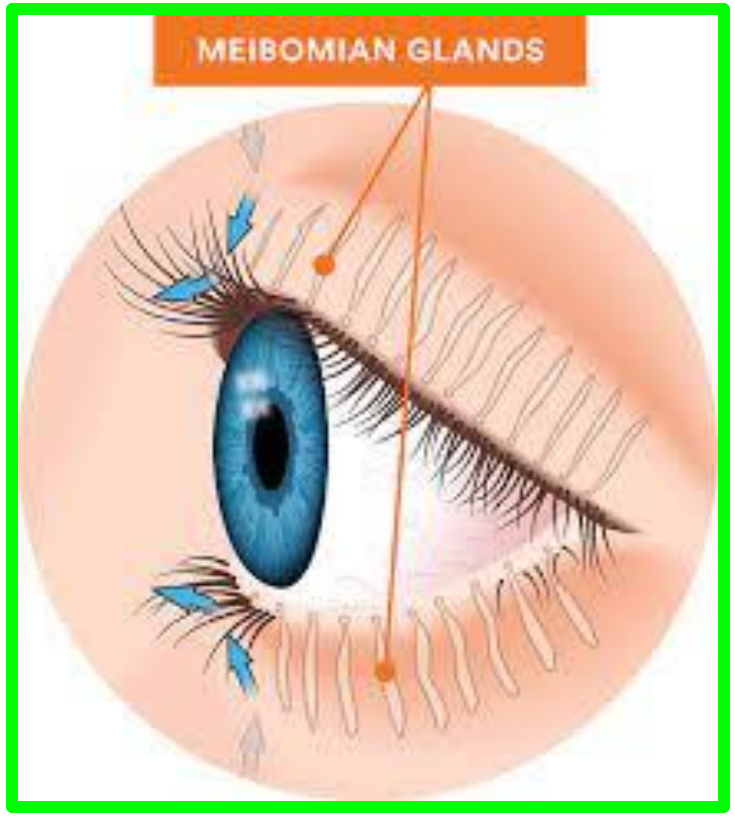
✓The ciliary glands *(glands of Moll)* are modified sweat glands that open separately *between adjacent lashes.*

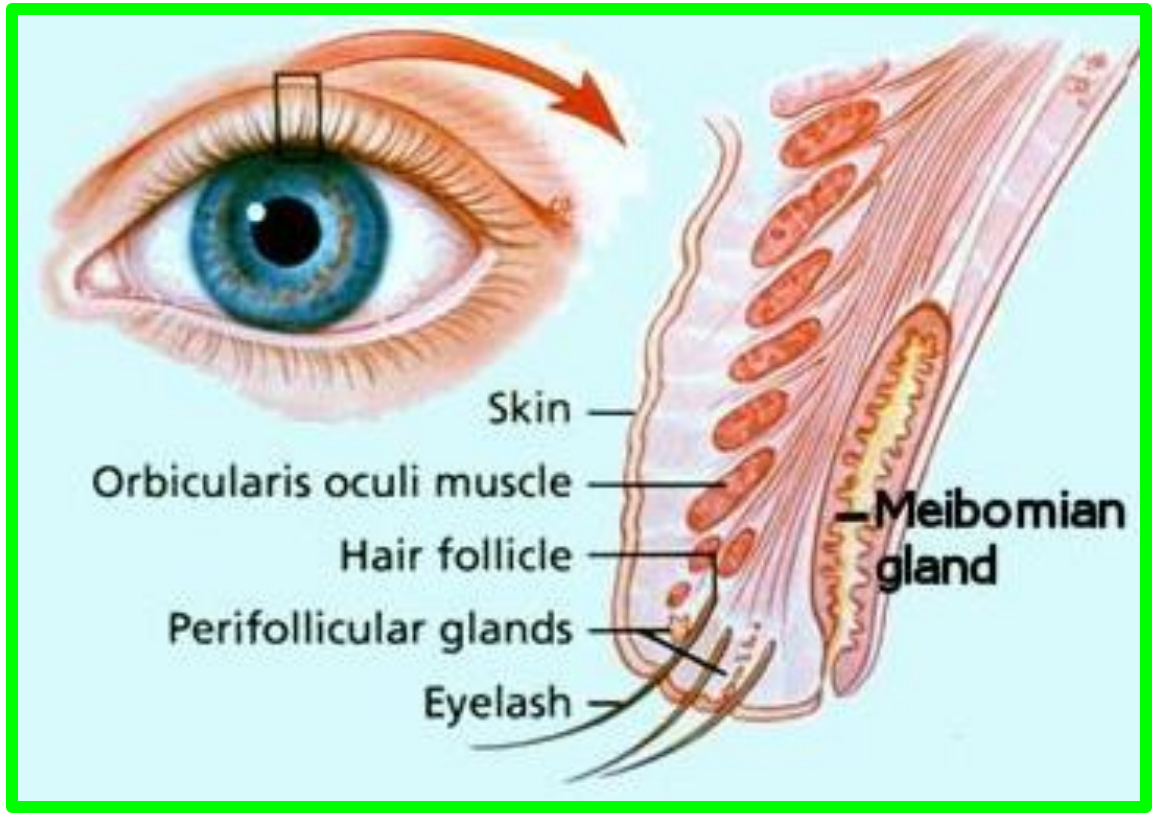




Eyelids

✓*The tarsal glands are long, modified sebaceous glands that pour their oily secretion onto the margin of the lid; their openings lie behind the eyelashes*

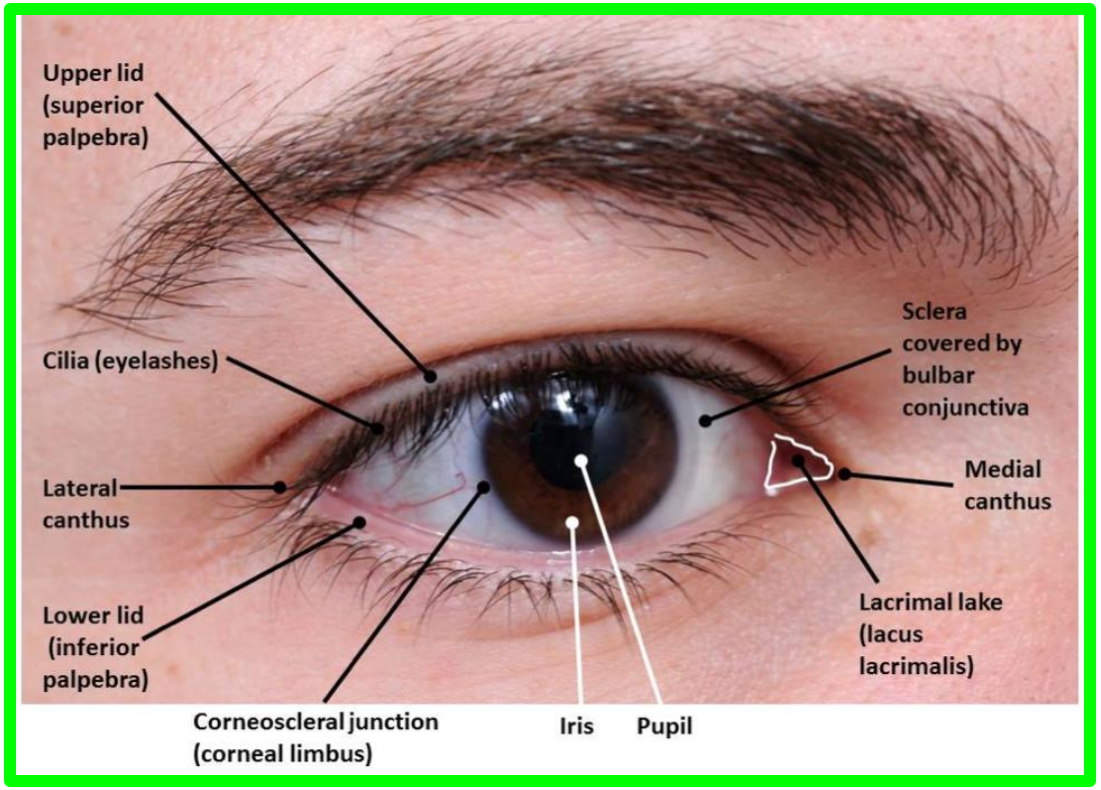


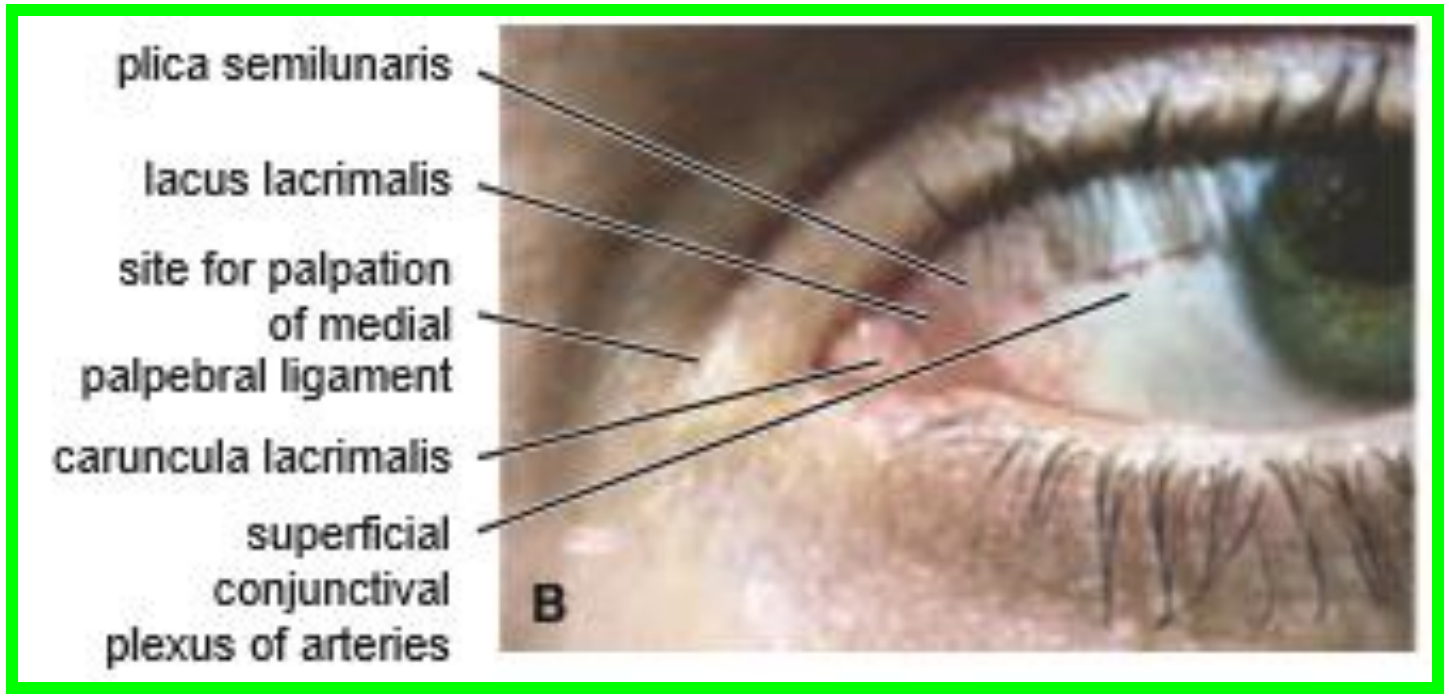


Eyelids

✓*The more rounded medial angle is separated from the eyeball by a small space, the lacus lacrimalis, in the center of which is a small, reddish yellow elevation, the caruncula lacrimalis*

✓*A reddish semilunar fold, called the plica semilunaris, lies on the lateral side of the caruncle.*





Eyelids

✓Near the medial angle of the eye a small elevation, the papilla lacrimalis, is present.

✓On the summit of the papilla is a small hole, the punctum lacrimale, which leads into the canaliculus lacrimalis

✓The papilla lacrimalis projects into the lacus,

✓the punctum and canaliculus carry tears down into the nose

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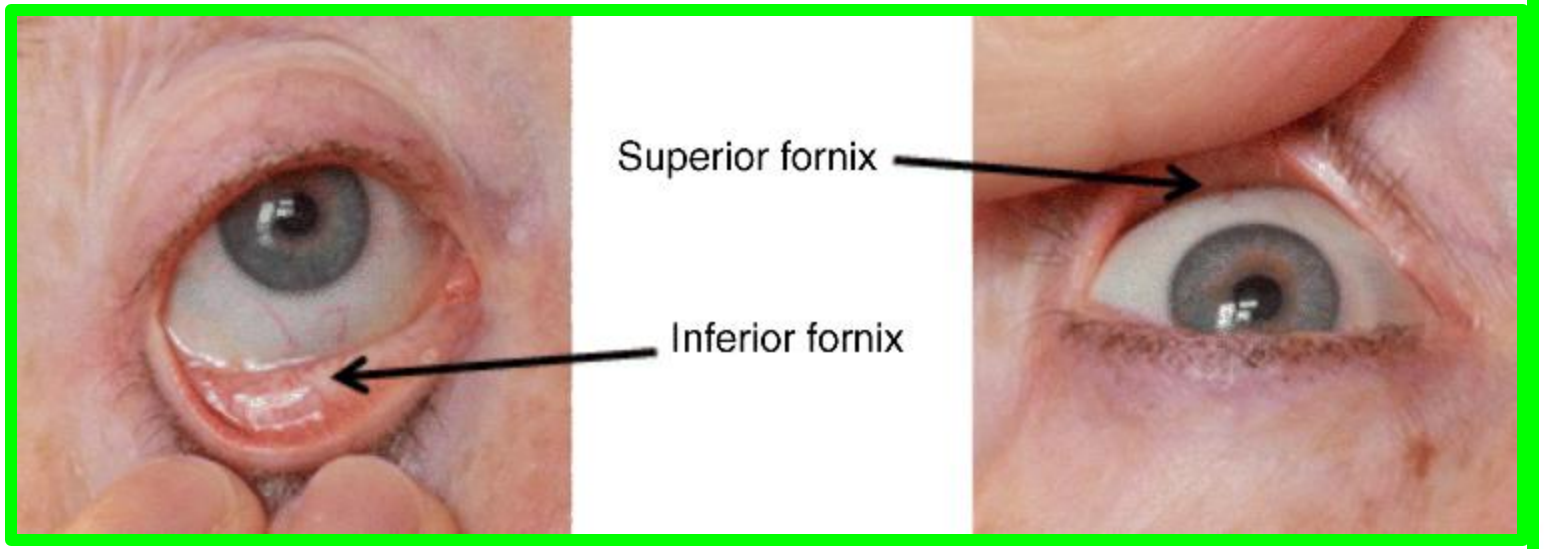
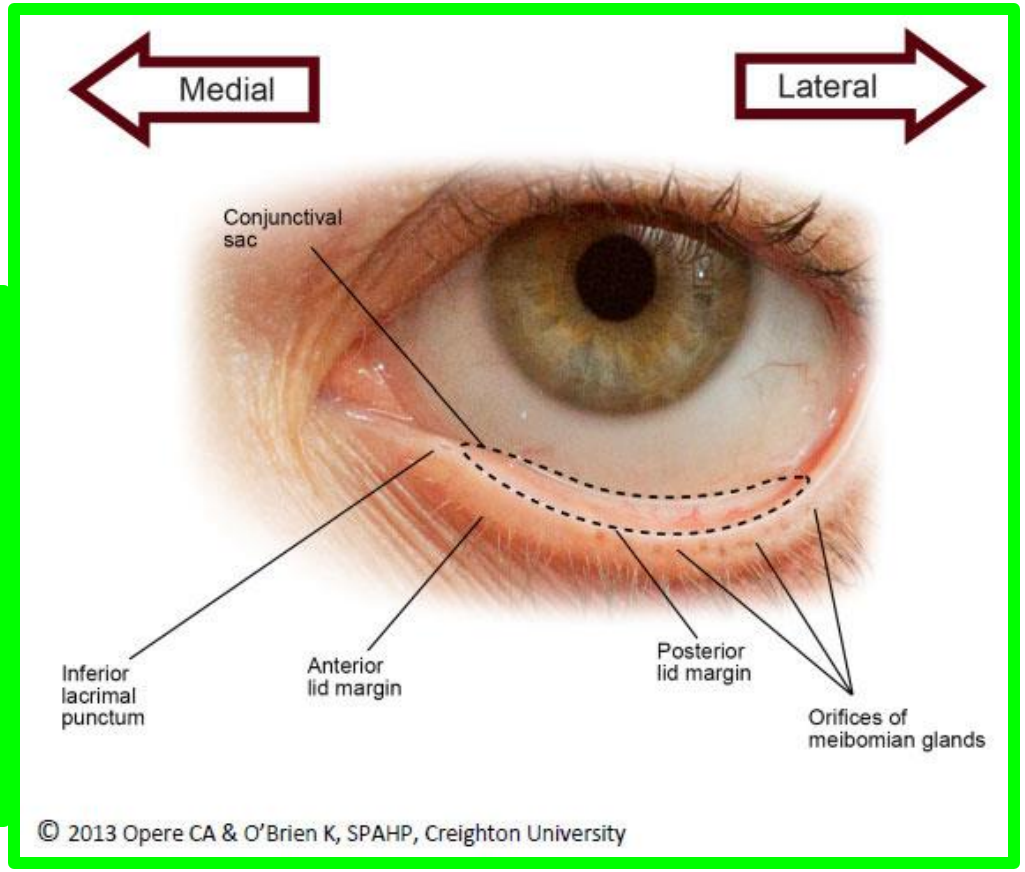
Eyelids

The conjunctiva

✓ *is a thin mucous membrane that lines the eyelids and is reflected at the superior and inferior fornices onto the anterior surface of the eyeball*

✓ *Its epithelium is continuous with that of the cornea.*

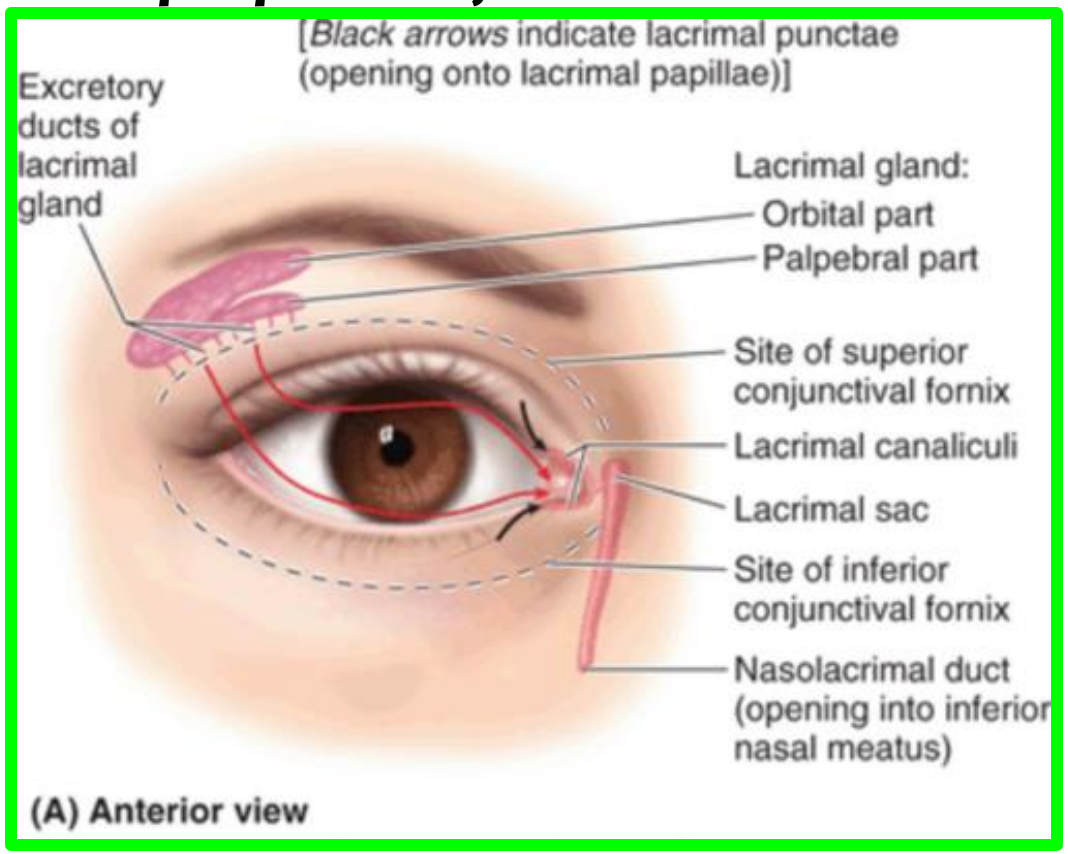


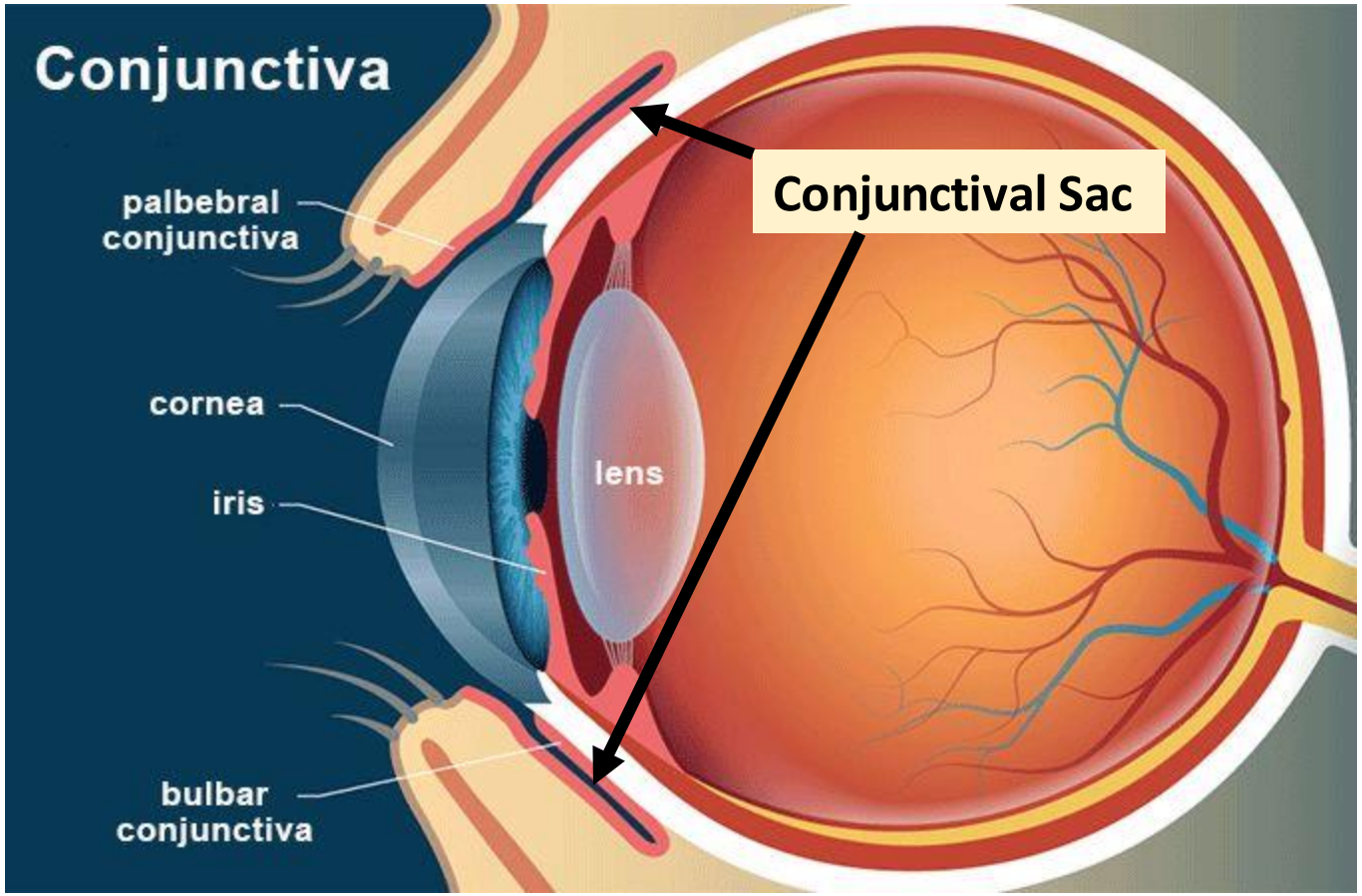


Eyelids

✓*The upper lateral part of the superior fornix is pierced by the ducts of the lacrimal gland*

The conjunctiva thus forms a potential space, the conjunctival sac, which is open at the palpebral fissure.

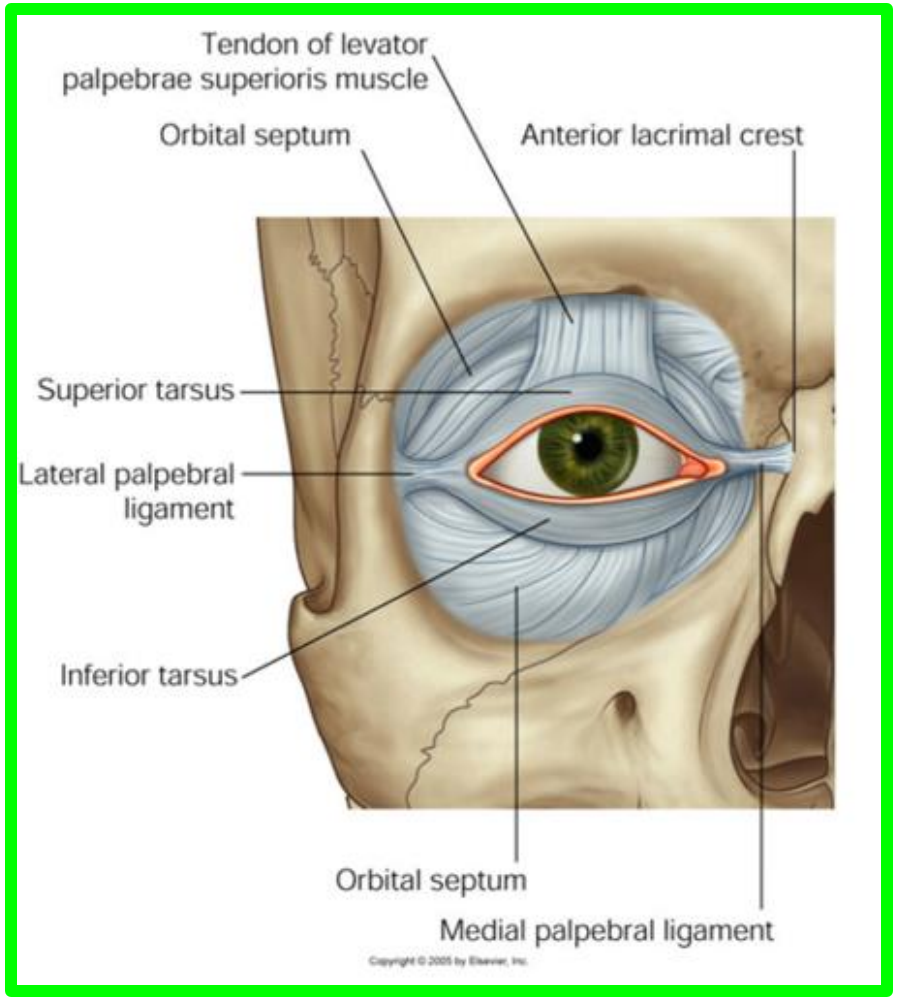




Eyelids

- ✓The framework of the eyelids is formed by a fibrous sheet, the orbital septum
- ✓This is attached to the periosteum at the orbital margins.
- ✓The orbital septum is thickened at the margins of the lids to form the superior and inferior tarsal plates.

- ✓The tarsal glands are embedded in the posterior surface of the tarsal plates.



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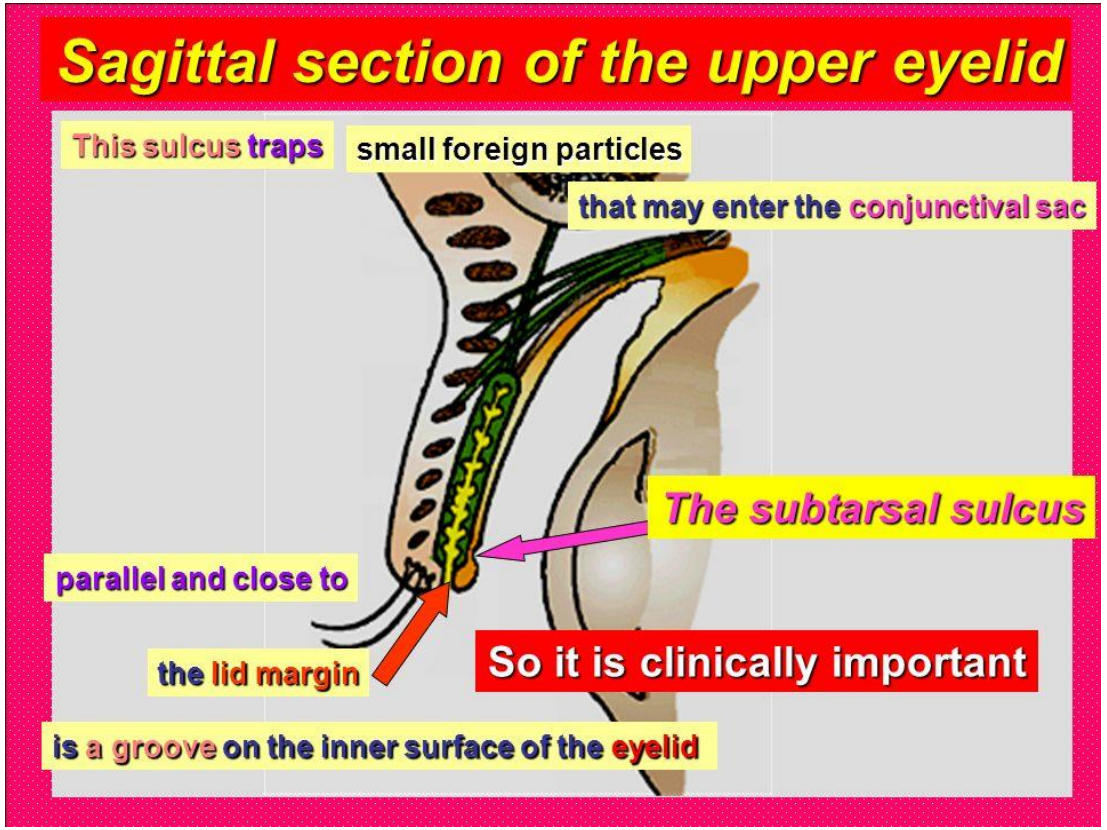
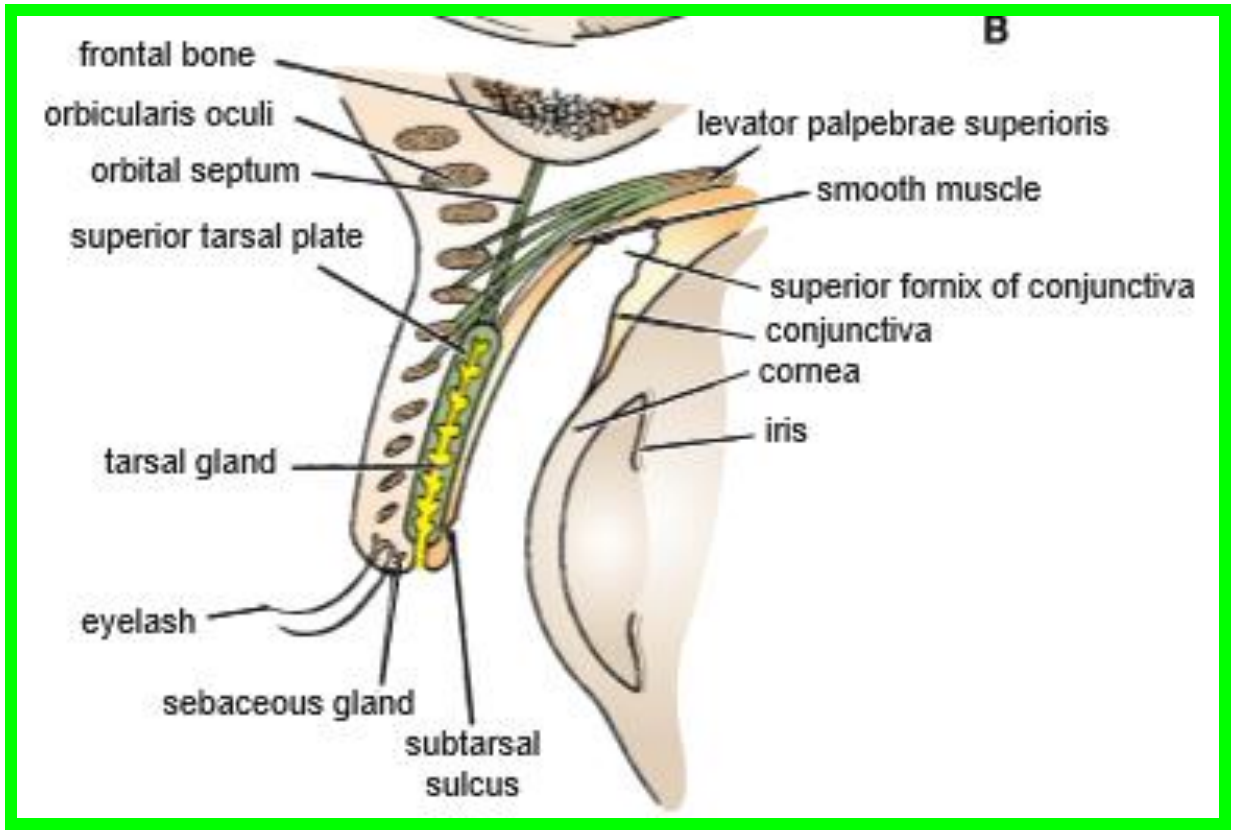
Eyelids

✓*Beneath the eyelid is a groove, the subtarsal sulcus, which runs close to and parallel with the margin of the lid.*

✓*The sulcus tends to trap small foreign particles introduced into the conjunctival sac and is thus clinically important.*

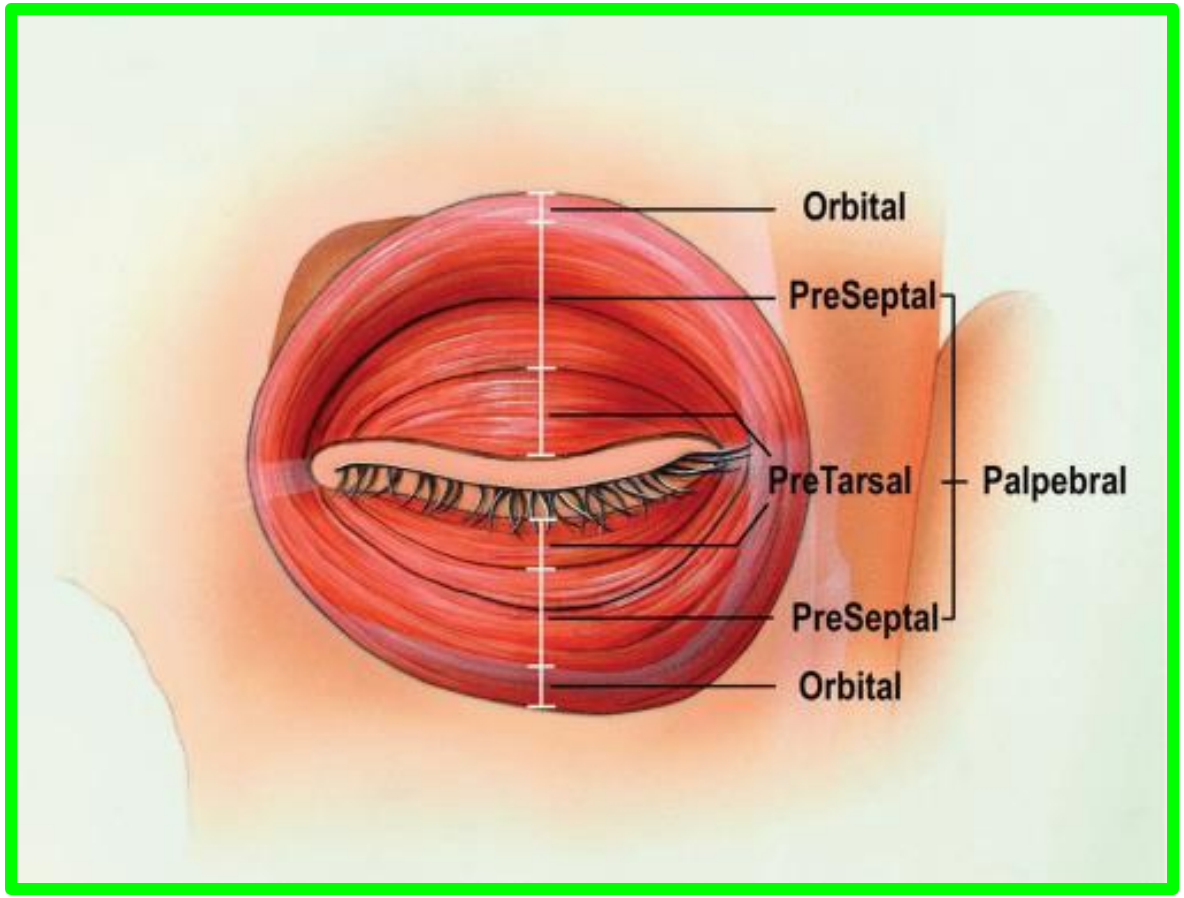


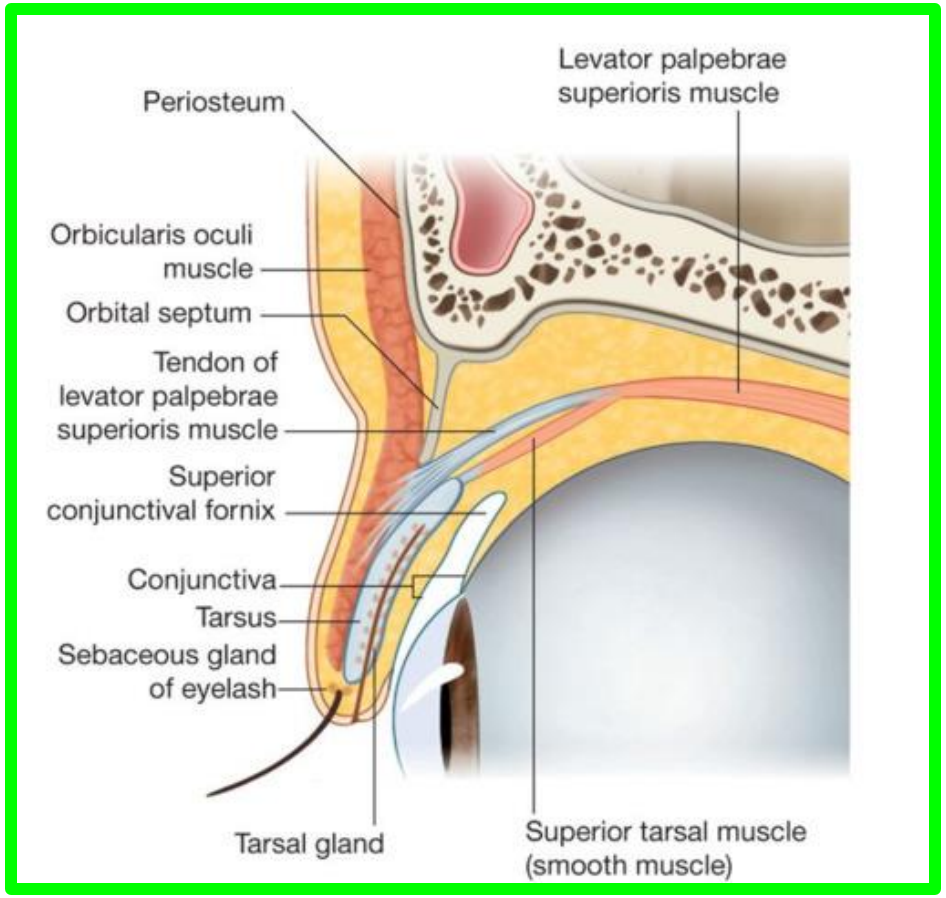


Eyelids

✓*The superficial surface of the tarsal plates and the orbital septum are covered by the palpebral fibers of the orbicularis oculi muscle*

✓ *The aponeurosis of insertion of the levator palpebrae superioris muscle pierces the orbital septum to reach the anterior surface of the superior tarsal plate and the skin*





EXTRAOCULAR MUSCLES OF ORBIT

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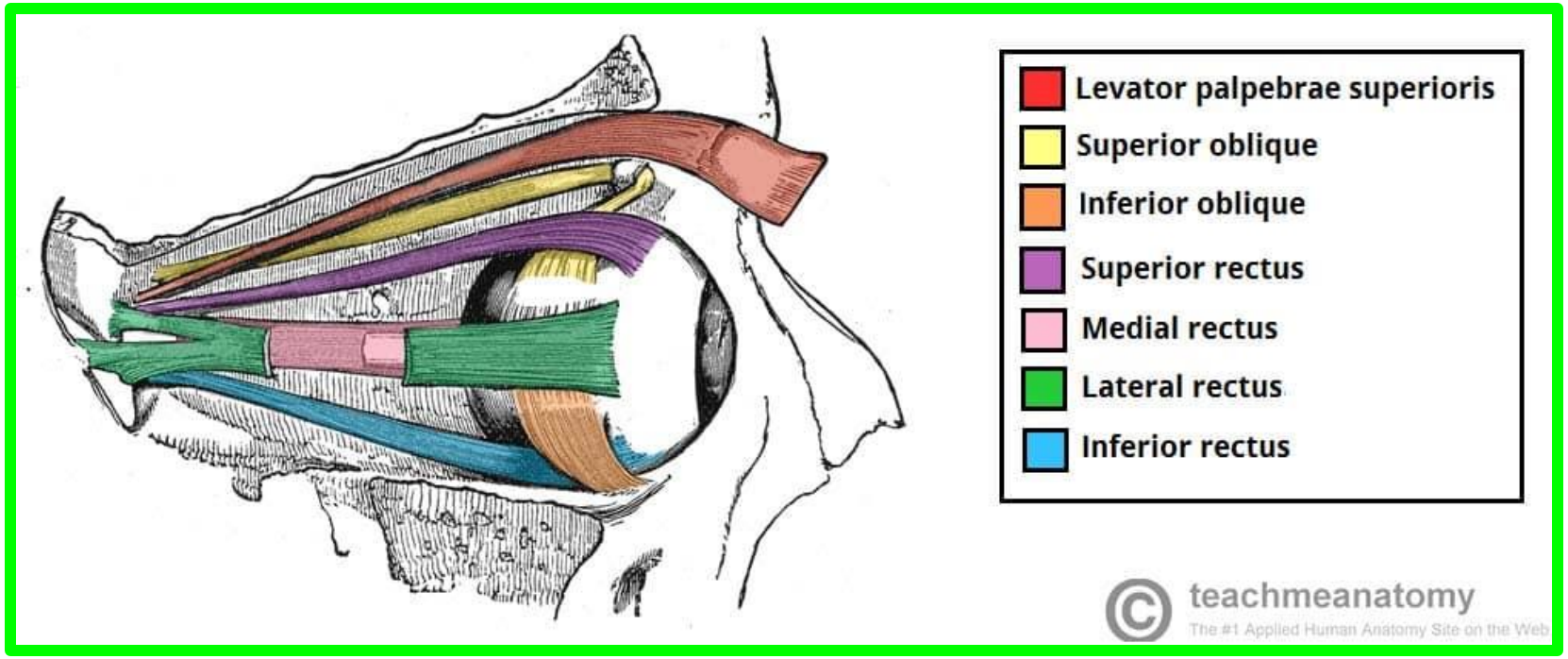
Muscle: Superior rectus

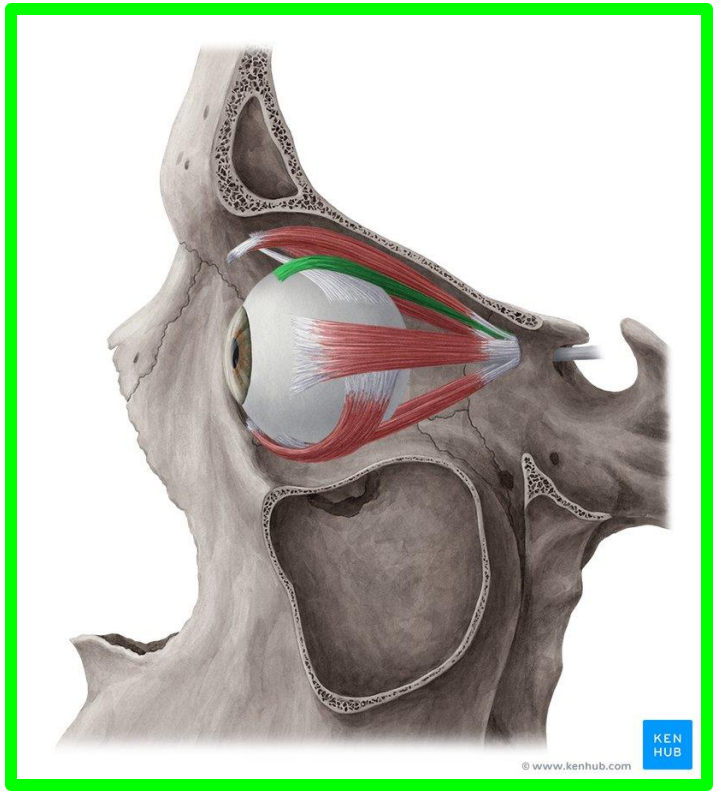
Origin: common tendinous ring

Insertion: Superior surface of eyeball just posterior to corneoscleral junction

N. Supply: Oculomotor nerve

Action: Raises cornea upward and medially





EXTRAOCULAR MUSCLES OF ORBIT

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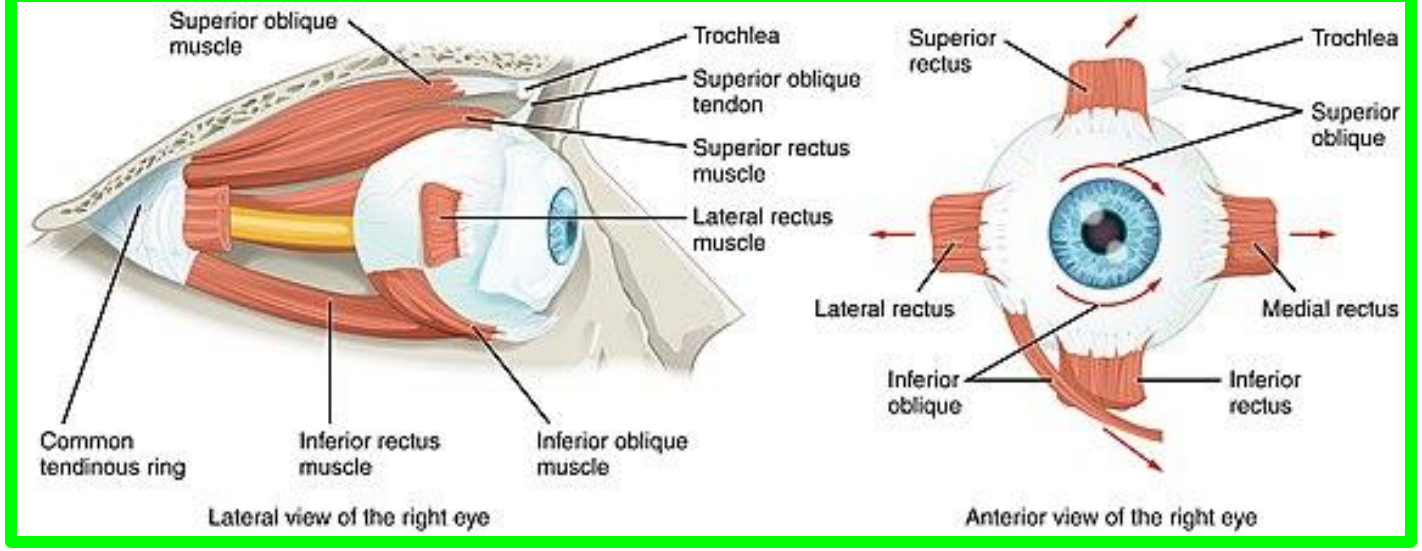
Muscle: Inferior rectus

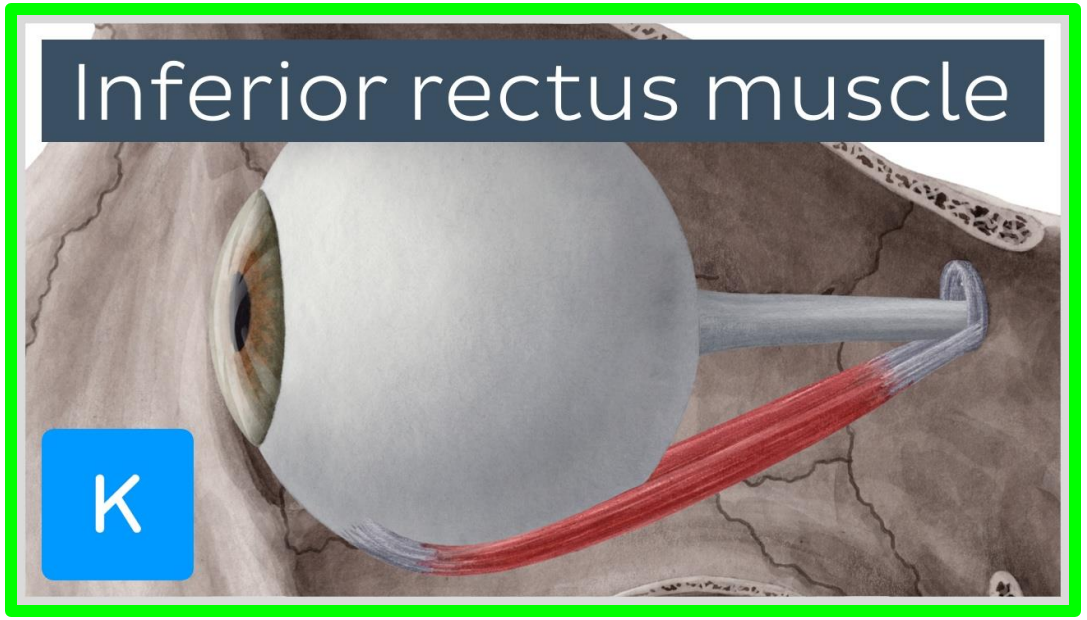
Origin: common tendinous ring

Insertion: Inferior surface of eyeball just posterior to corneoscleral junction

N Supply: Oculomotor nerve (3rd cranial nerve)

Action: Depresses cornea downward and medially





EXTRAOCULAR MUSCLES OF ORBIT

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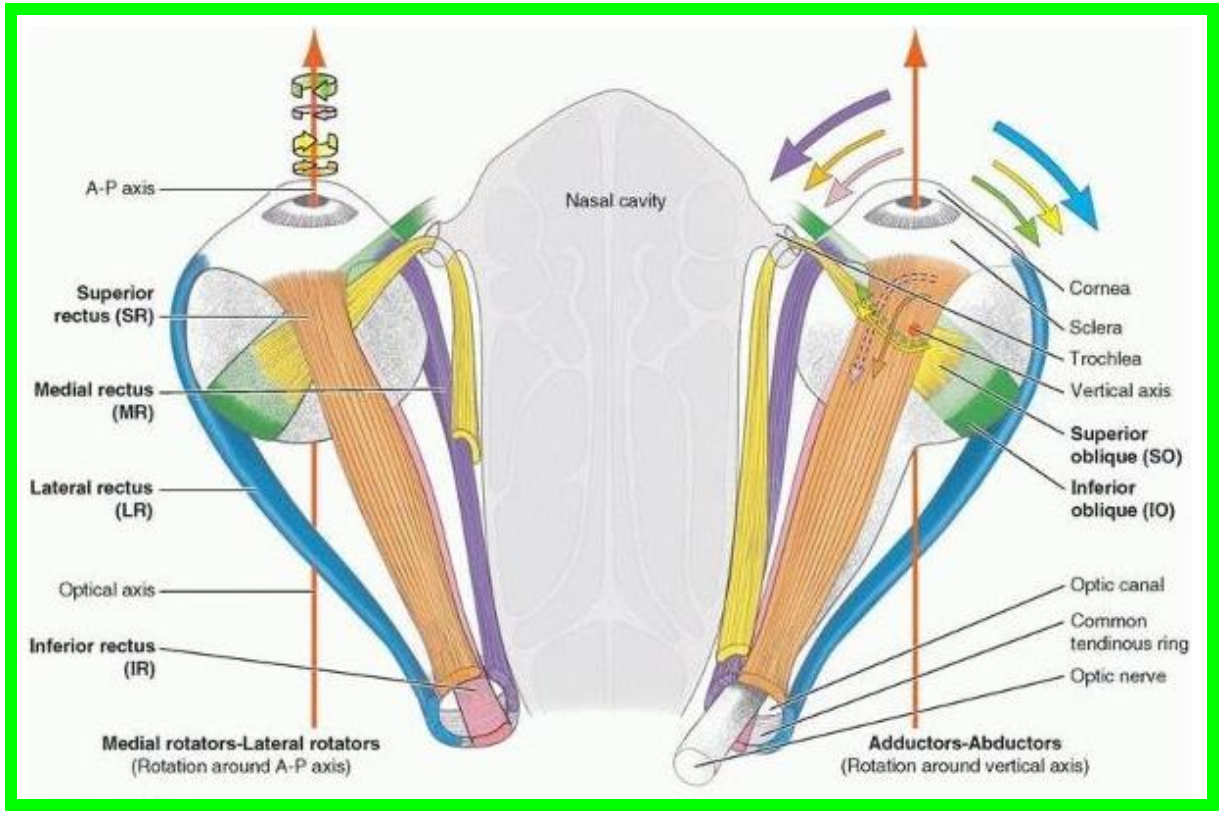
Muscle: Medial rectus

Origin: Common tendinous ring

Insertion: Medial surface of eyeball just posterior to corneoscleral junction

N. Supply: Oculomotor nerve (3rd cranial nerve)

Action: Rotates eyeball so that cornea looks medially



EXTRAOCULAR MUSCLES OF ORBIT

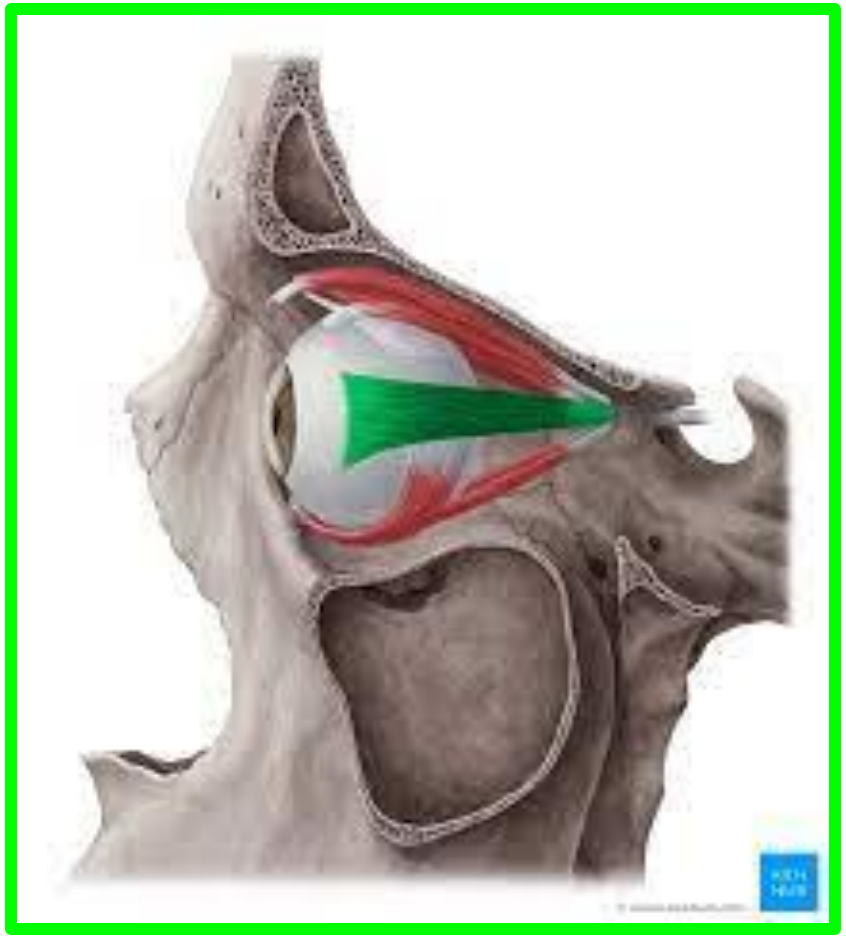
Muscle: Lateral rectus

Origin: Common tendinous ring

Insertion: Lateral surface of eyeball just posterior to corneoscleral junction

N. Supply: Abducent nerve (6th cranial nerve)

Action: Rotates eyeball so that cornea looks laterally



EXTRAOCULAR MUSCLES OF ORBIT

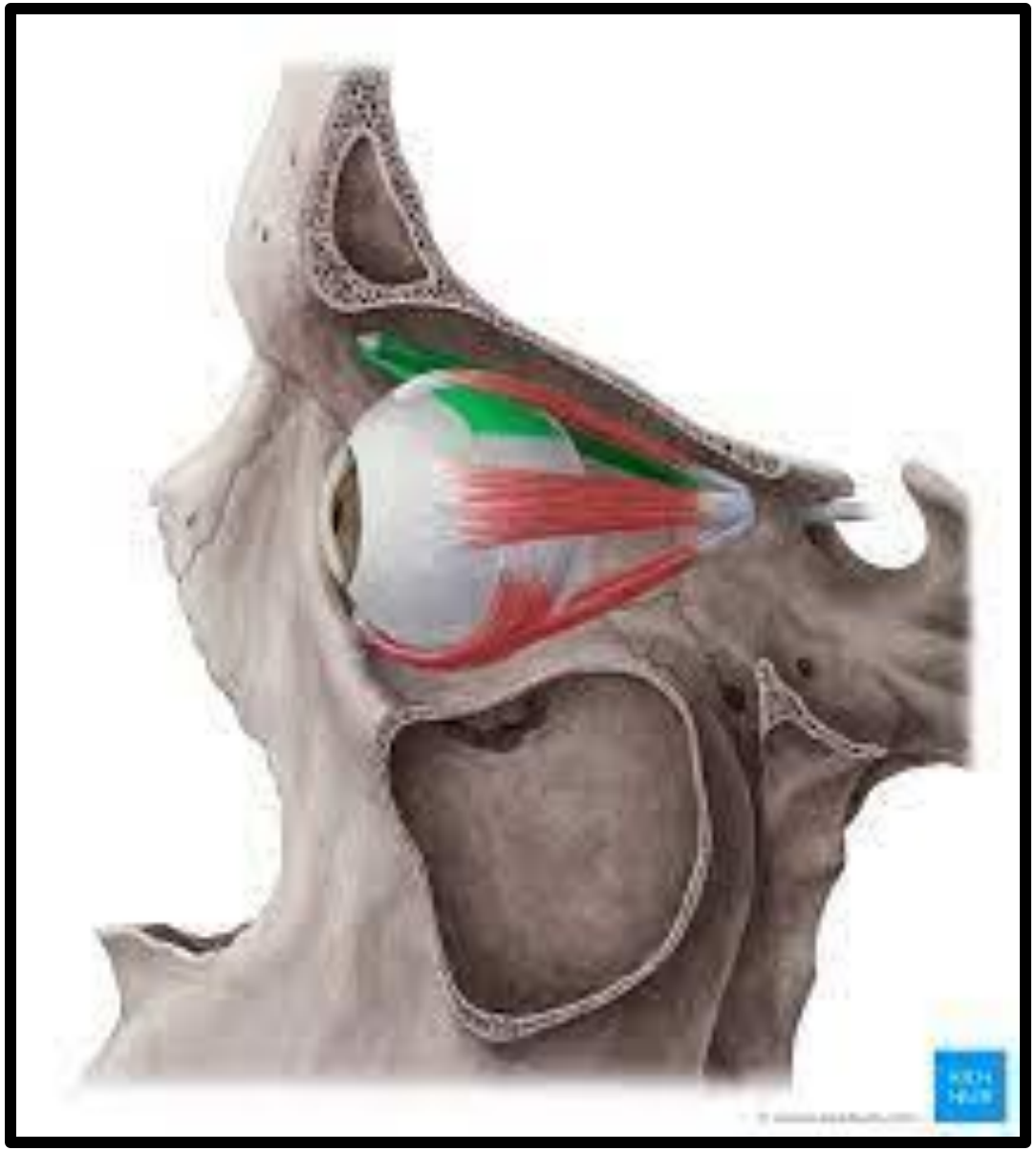
Muscle: *Superior oblique*

Origin: *Posterior wall of orbital cavity*

Insertion: *Passes through pulley and is attached to superior surface of eyeball beneath superior rectus*

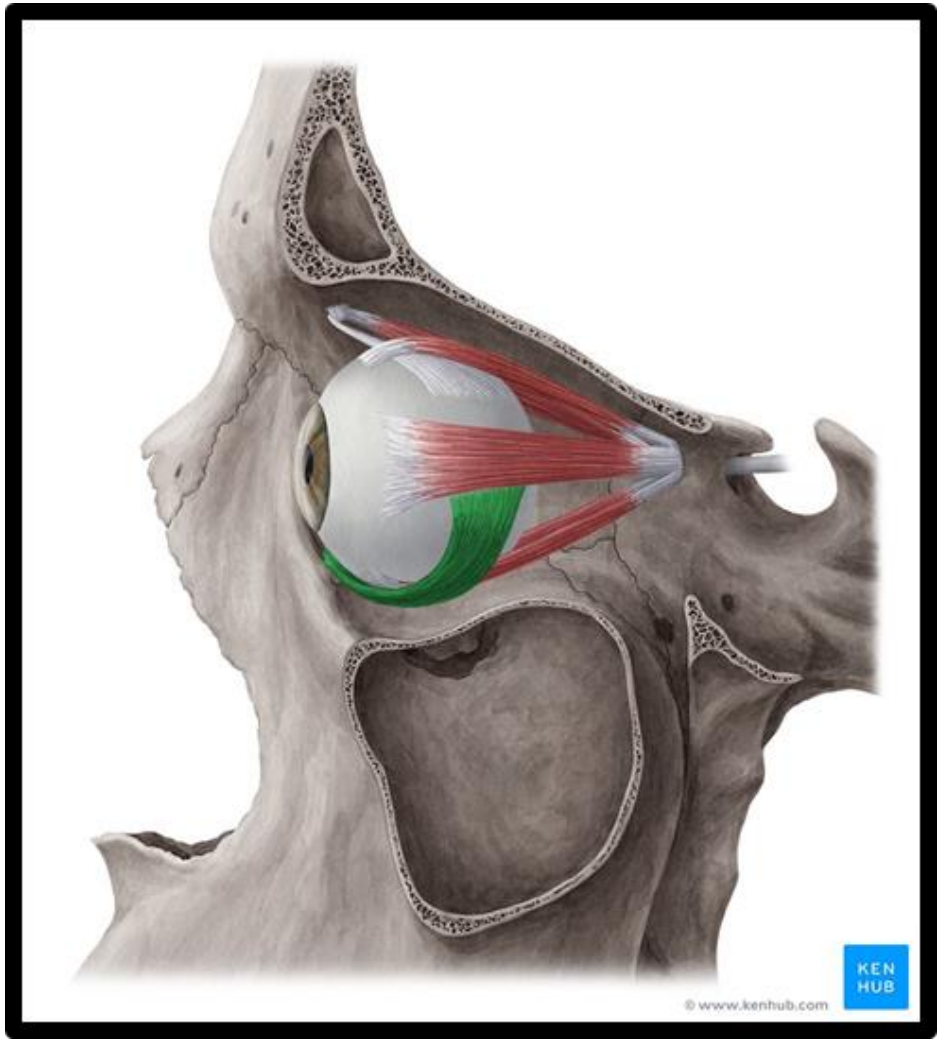
N. Supply: *Trochlear nerve (4th cranial nerve)*

Action: *Rotates eyeball so that cornea looks downward and laterally*



EXTRAOCULAR MUSCLES OF ORBIT

Muscle: Inferior oblique
Origin: Floor of orbital cavity
Insertion: Lateral surface of eyeball deep to lateral rectus
N. Supply: Oculomotor nerve (3rd cranial nerve)
Action: Rotates eyeball so that cornea looks upward and laterally



EXTRAOCULAR MUSCLES OF ORBIT

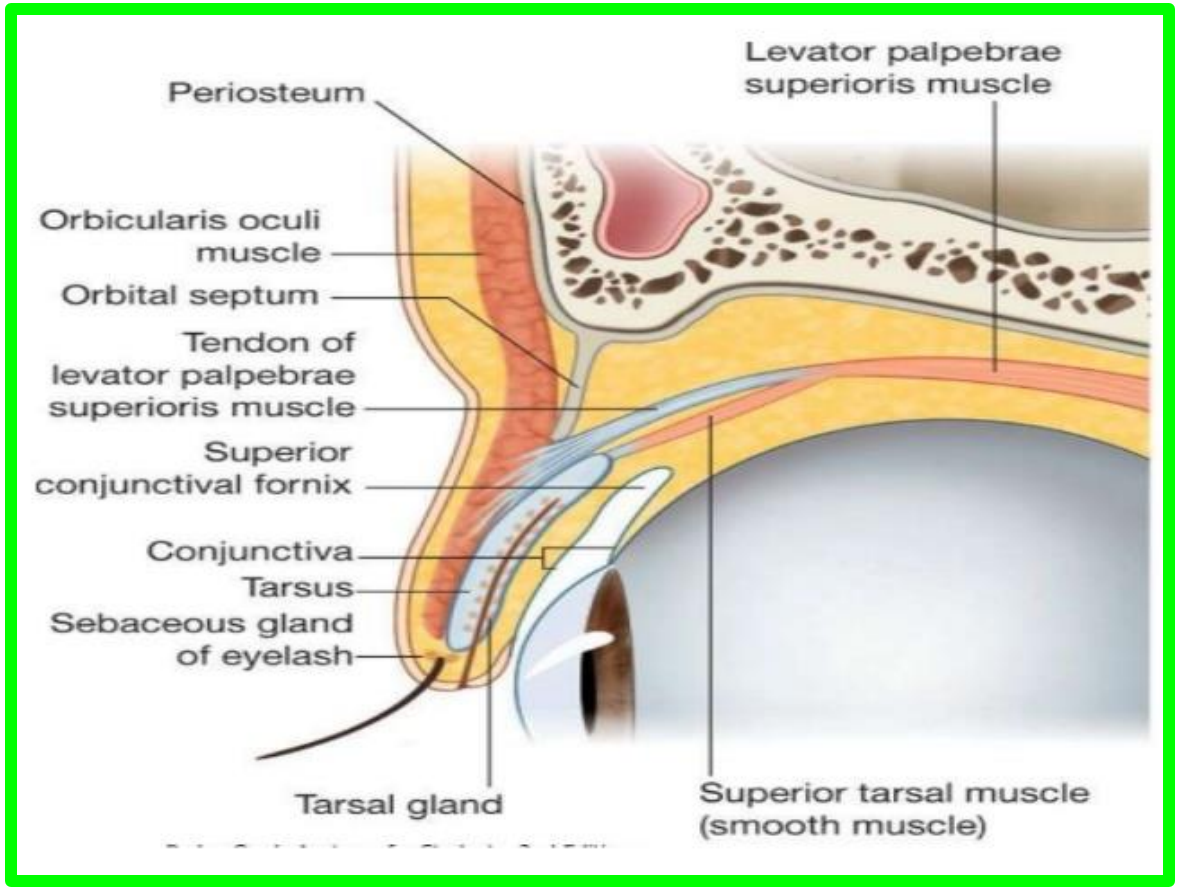
Muscle: *Levator palpebrae superioris*

Origin: *Back of orbital cavity*

Insertion: *Anterior surface and upper margin of superior tarsal plate*

N. Supply: *Striated muscle oculomotor nerve, smooth muscle sympathetic*

Action: *Raises upper lid*



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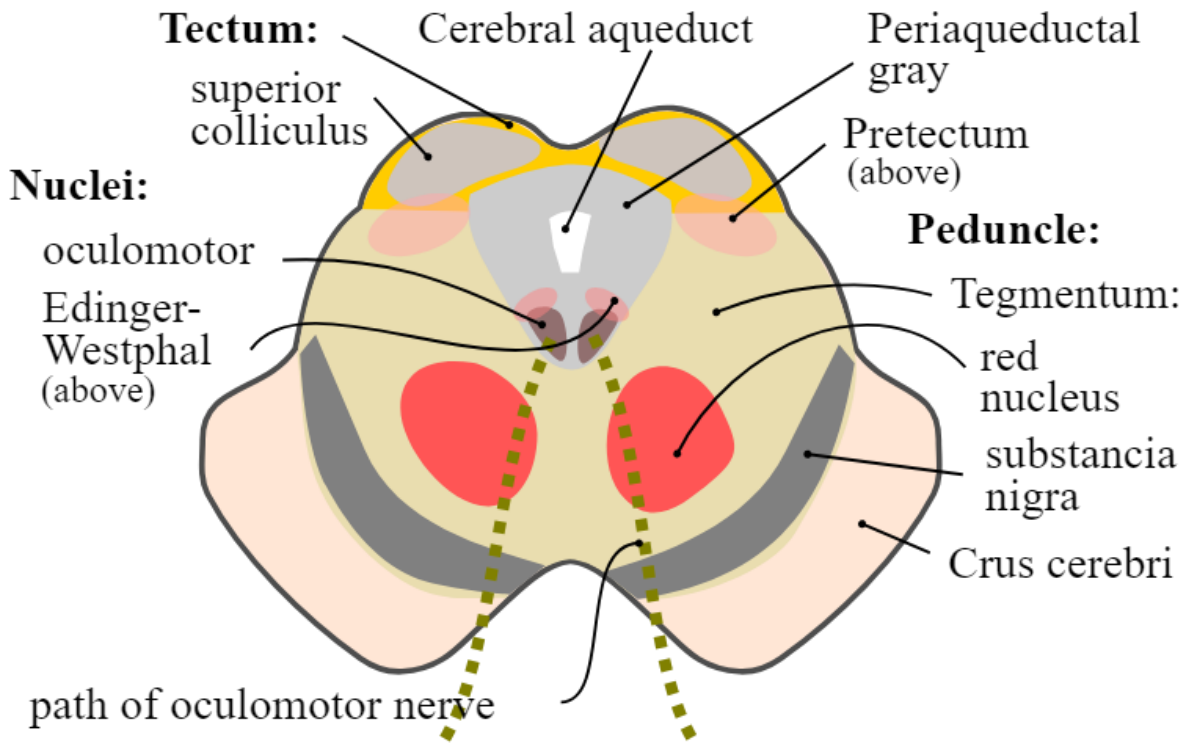
OCULOMOTOR NERVE / (3rd) Cranial Nerve

- **Nucleus:** It lies in the midbrain and formed of;
  - A. **Motor nucleus:** It supplies all the extra ocular muscles except lateral rectus and superior oblique
  - B. **Edinger-westphal nucleus:** (Parasympathetic) to the constrictor pupillae muscle and ciliary muscle.



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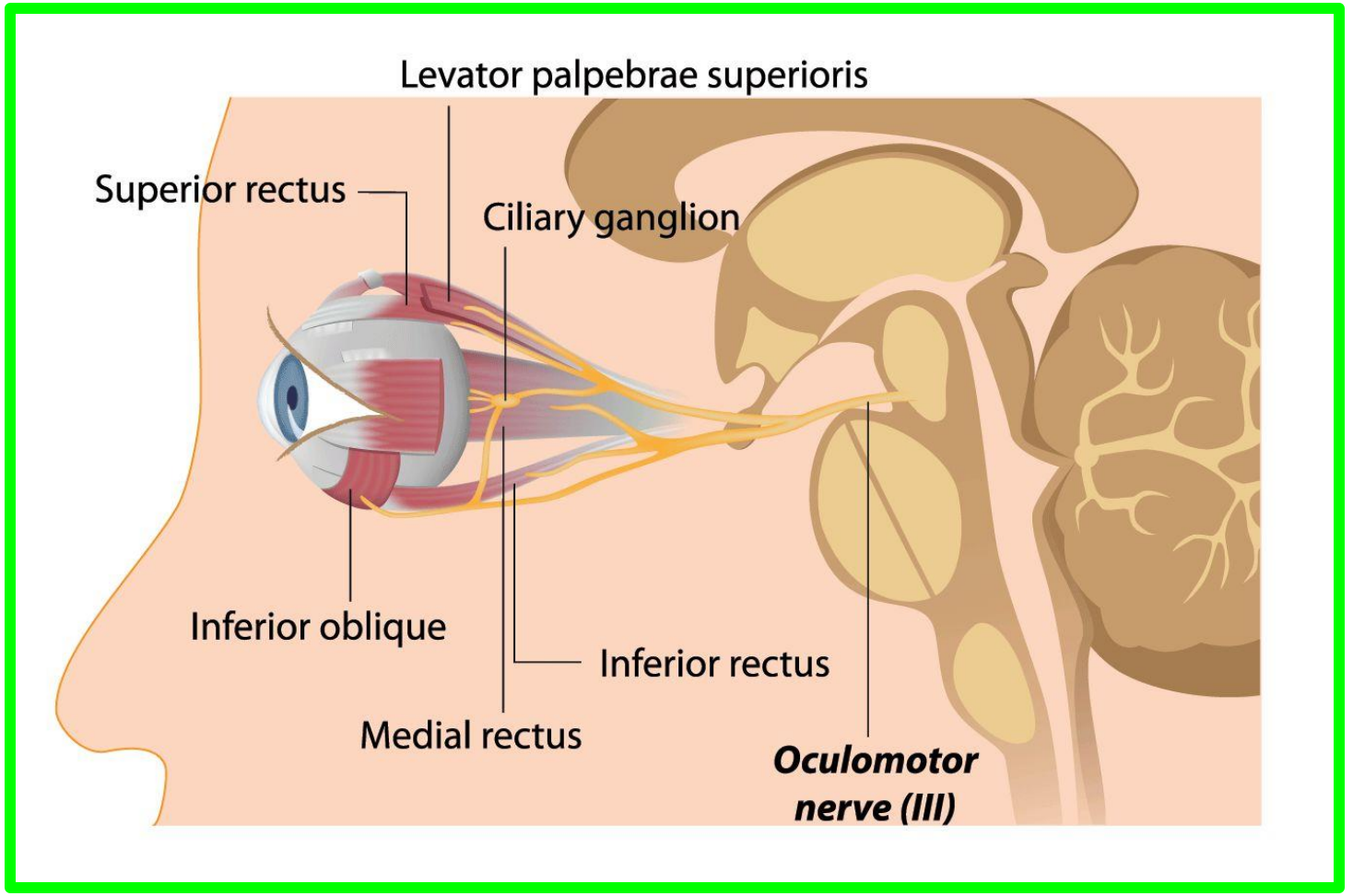
OCULOMOTOR NERVE / (3rd) Cranial Nerve

- **Exit from the brain stem:** arises from the medial aspect of the cerebral peduncle in the inter-peduncular fossa.



OCULOMOTOR NERVE / (3rd) Cranial Nerve

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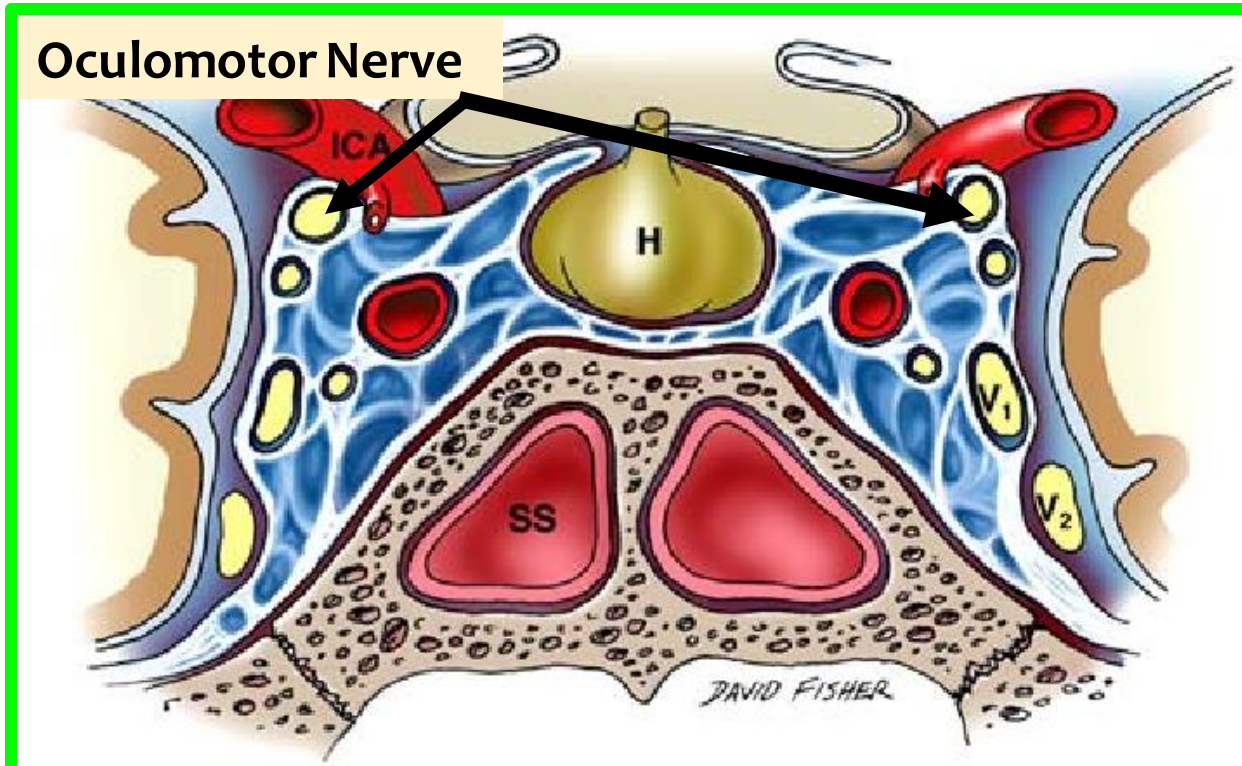
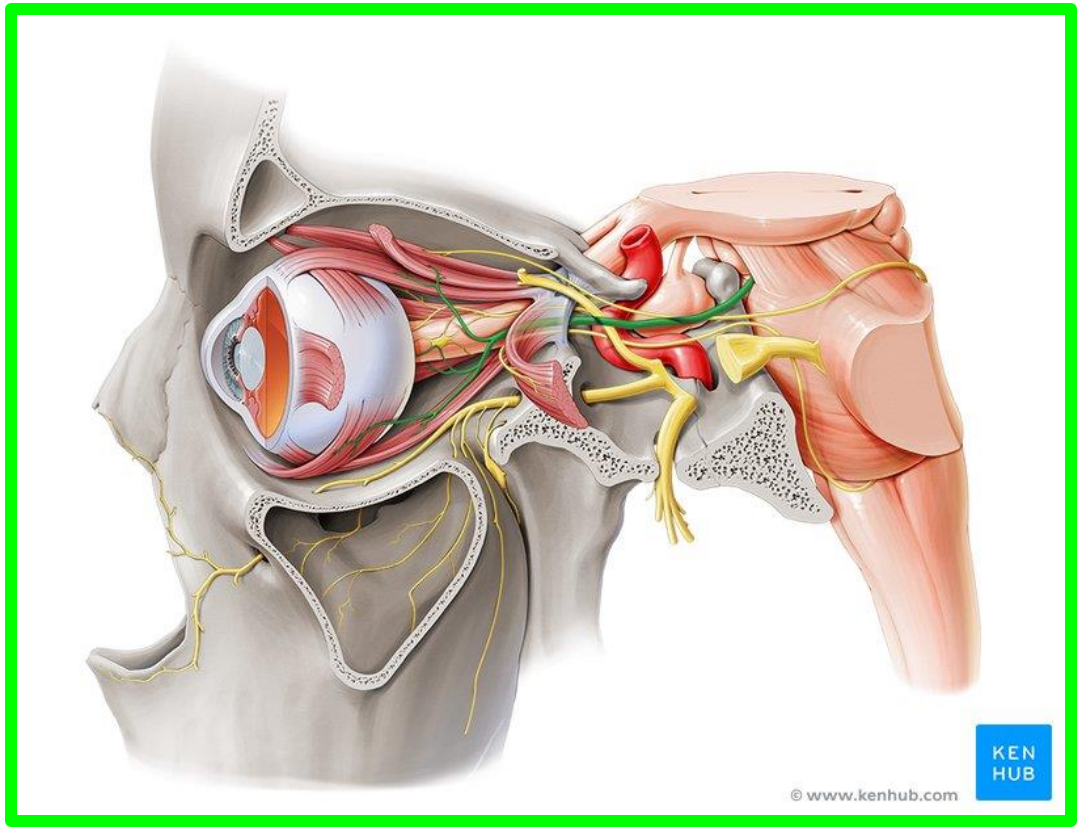
❖ Course :

1- It pierces the dura mater in front of the point of crossing of the free border with the attached border of the tentorium cerebelli.

2- It passes forwards in the lateral wall of cavernous sinus above the trochlear nerve.

3- Then it enters the orbit through the superior orbital fissure inside the tendinous ring where it divides into superior and inferior divisions:





OCULOMOTOR NERVE / (3rd) Cranial Nerve

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❖Branches:

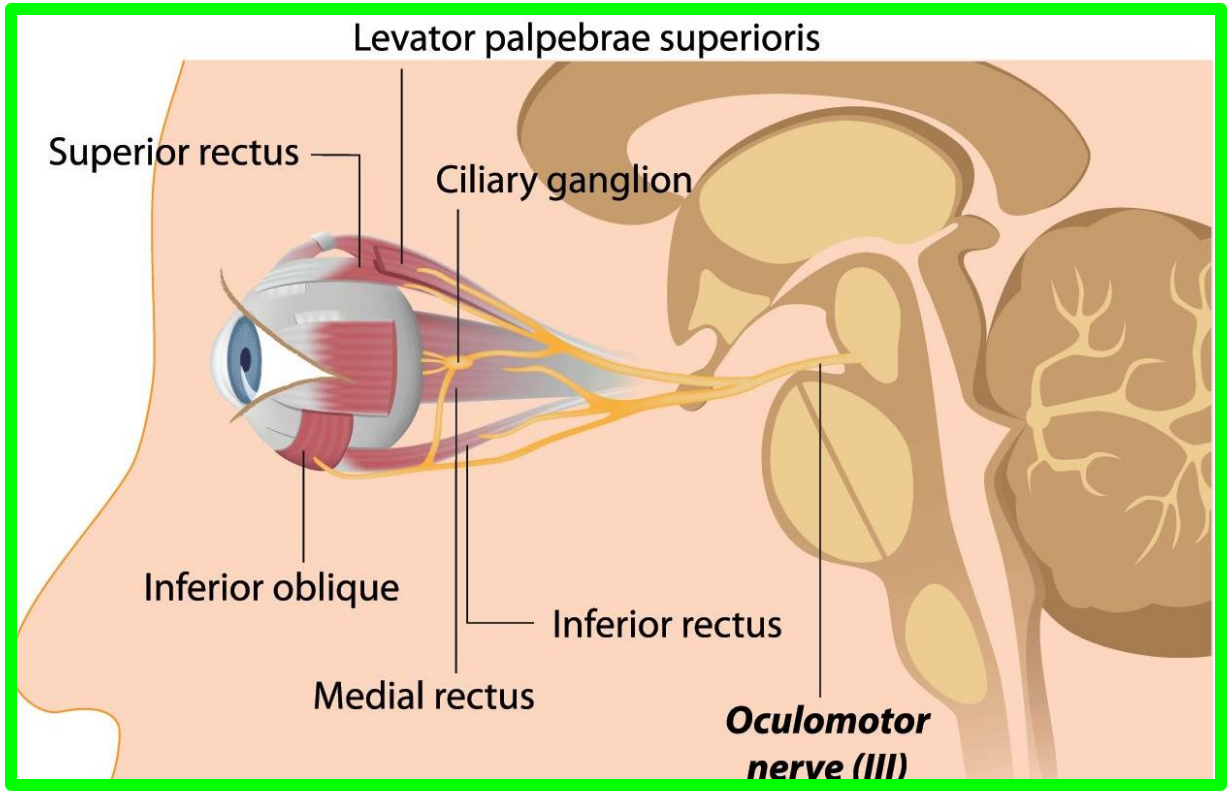
(a) The superior division supplies:

(1) Superior rectus (2) Levator palpebrae superioris.

(b) The inferior division supplies:

(1) inferior oblique (2) Inferior rectus (3) Medial rectus.

(c) The nerve to inferior oblique gives a parasympathetic root to the ciliary ganglion to supply the constrictor pupillae muscle and ciliary muscle.

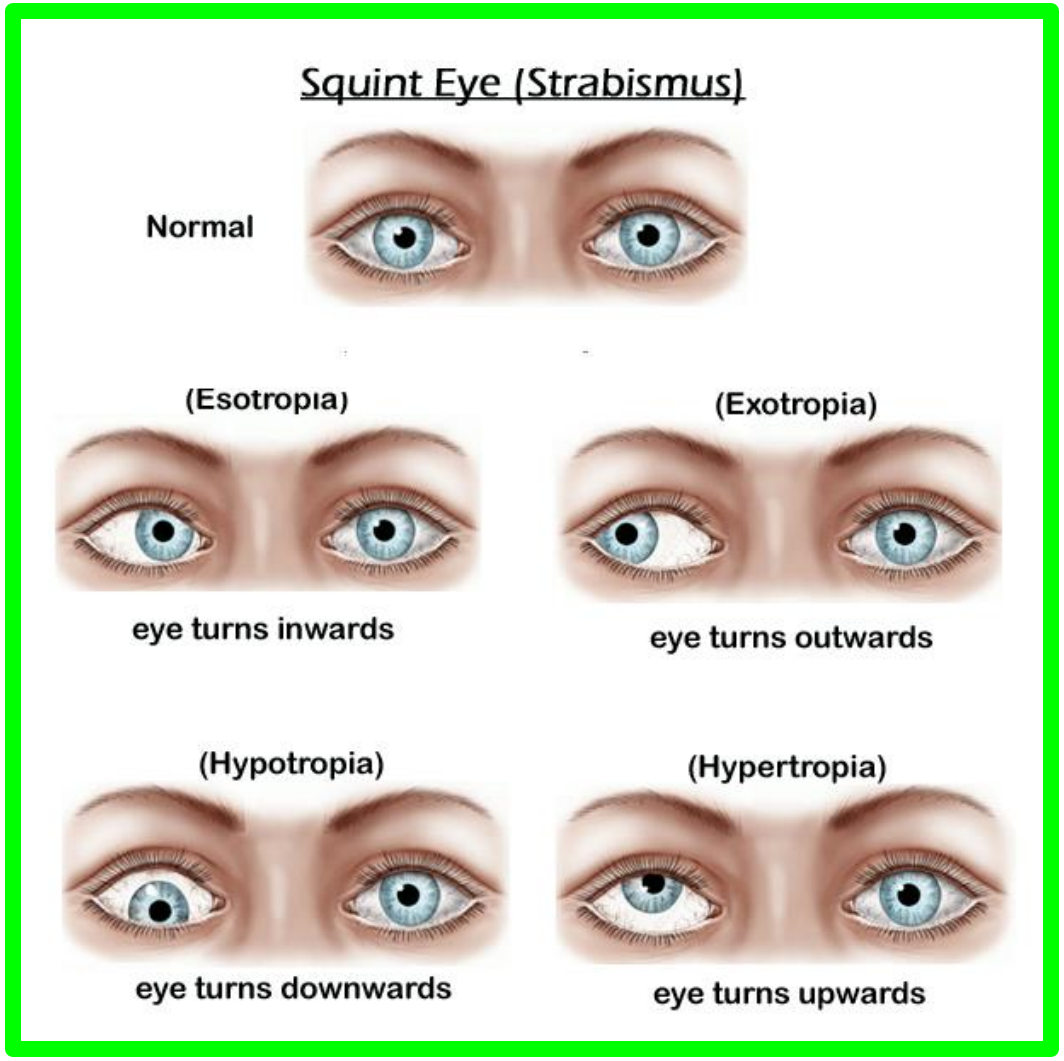


OCULOMOTOR NERVE / (3rd) Cranial Nerve

❖ **Applied anatomy: injury of the nerve**

1- Paralysis of the levator palpebrae superioris leading to ptosis.

2- Squint.



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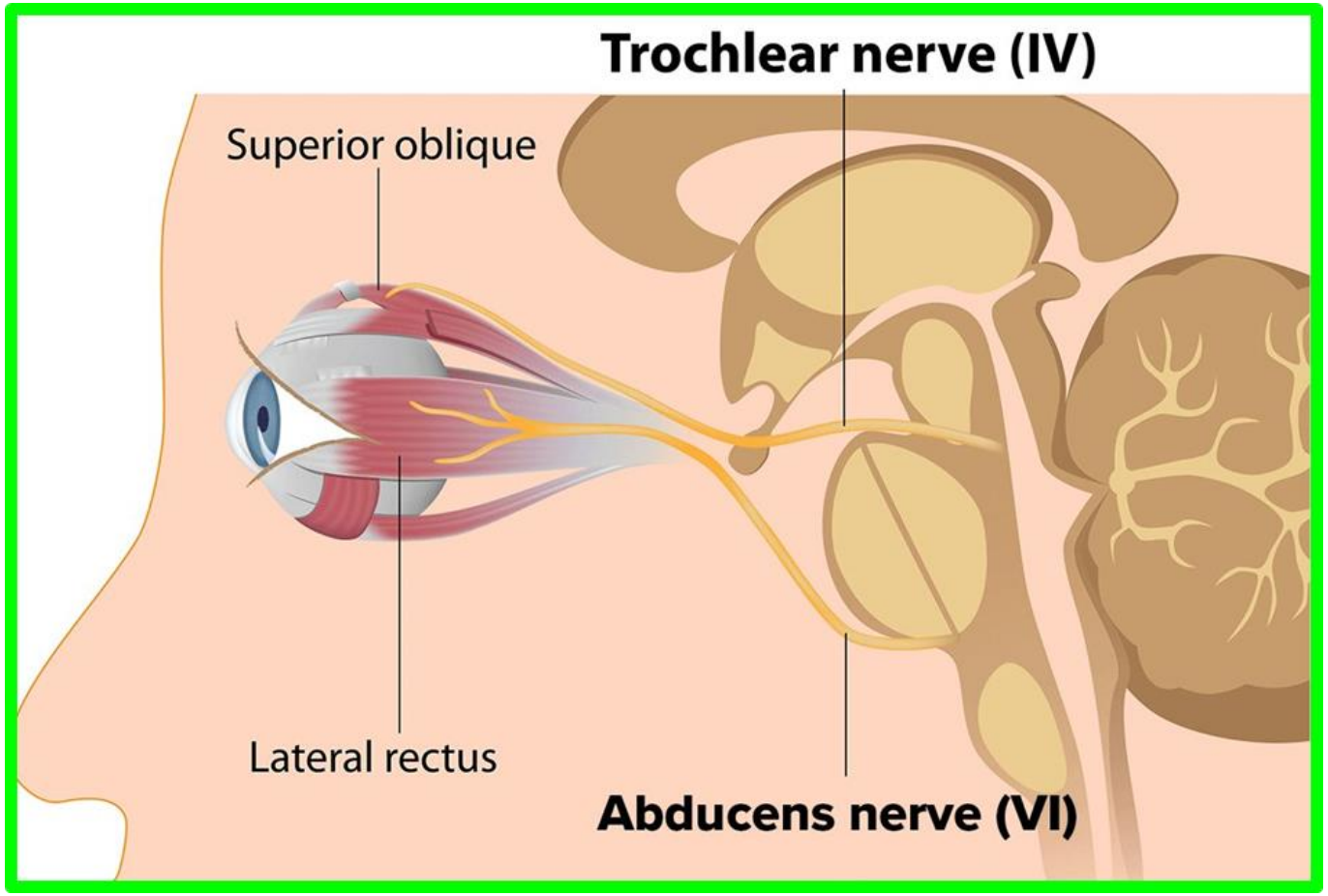
TROCHLEAR NERVE / (4th) Cranial Nerve

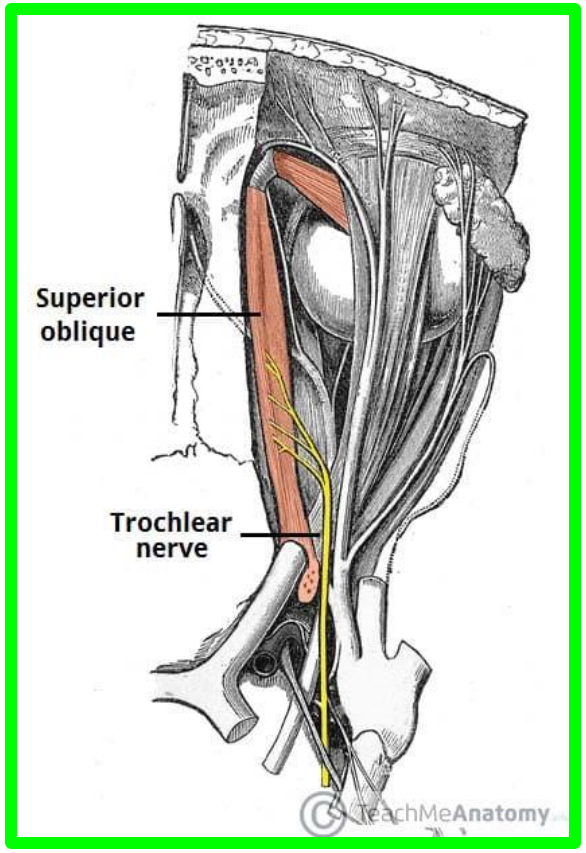
- **Nucleus:** Motor nucleus in the midbrain.
- **Exit:** arises from the posterior aspect of midbrain.

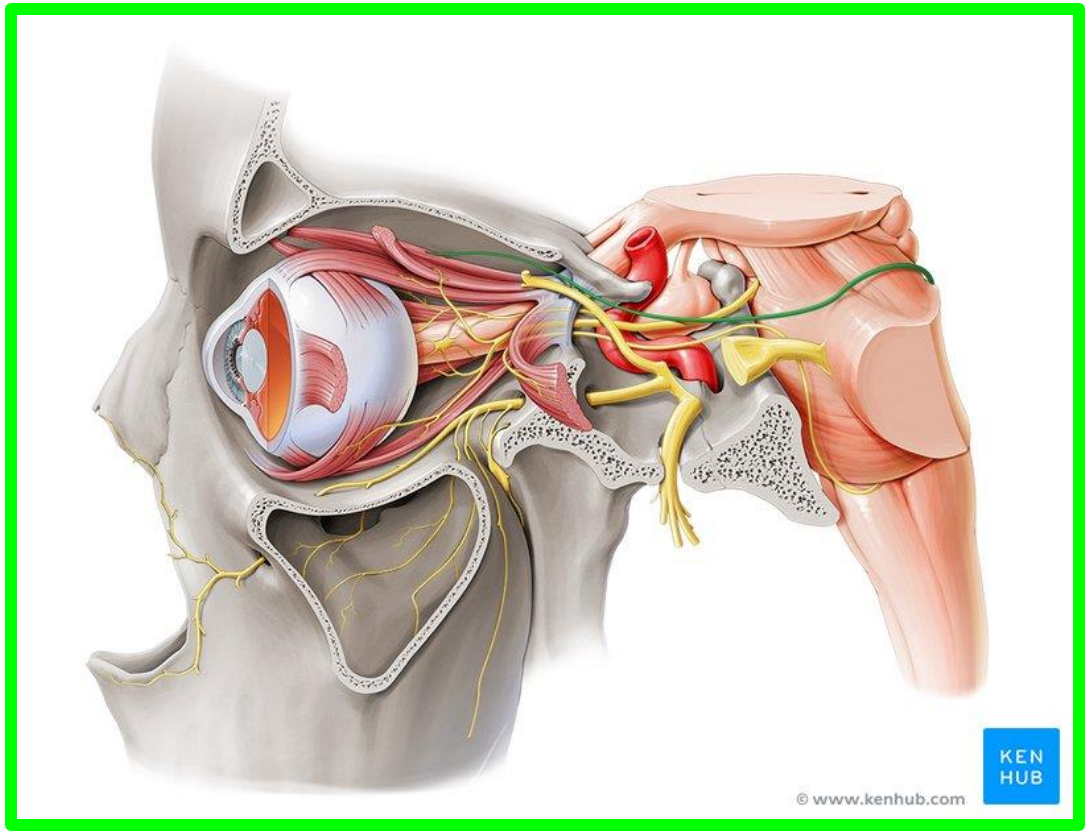


TROCHLEAR NERVE / (4th) Cranial Nerve

❖ Course:

(1)It turns forwards around the midbrain.
(2)It pierces the dura mater at the point of decussation of the tentorium cerebelli.
(3)It passes forwards in the lateral wall of cavernous sinus.
(4)Finally it enters the orbit through the superior orbital fissure outside the tendinous ring.





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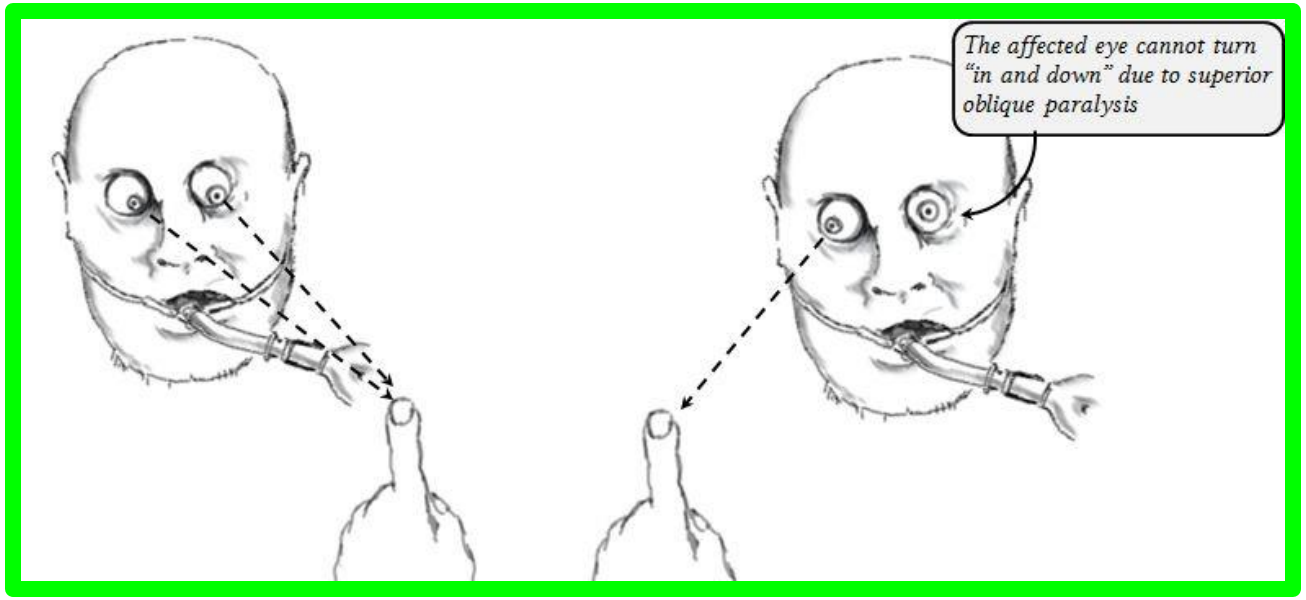
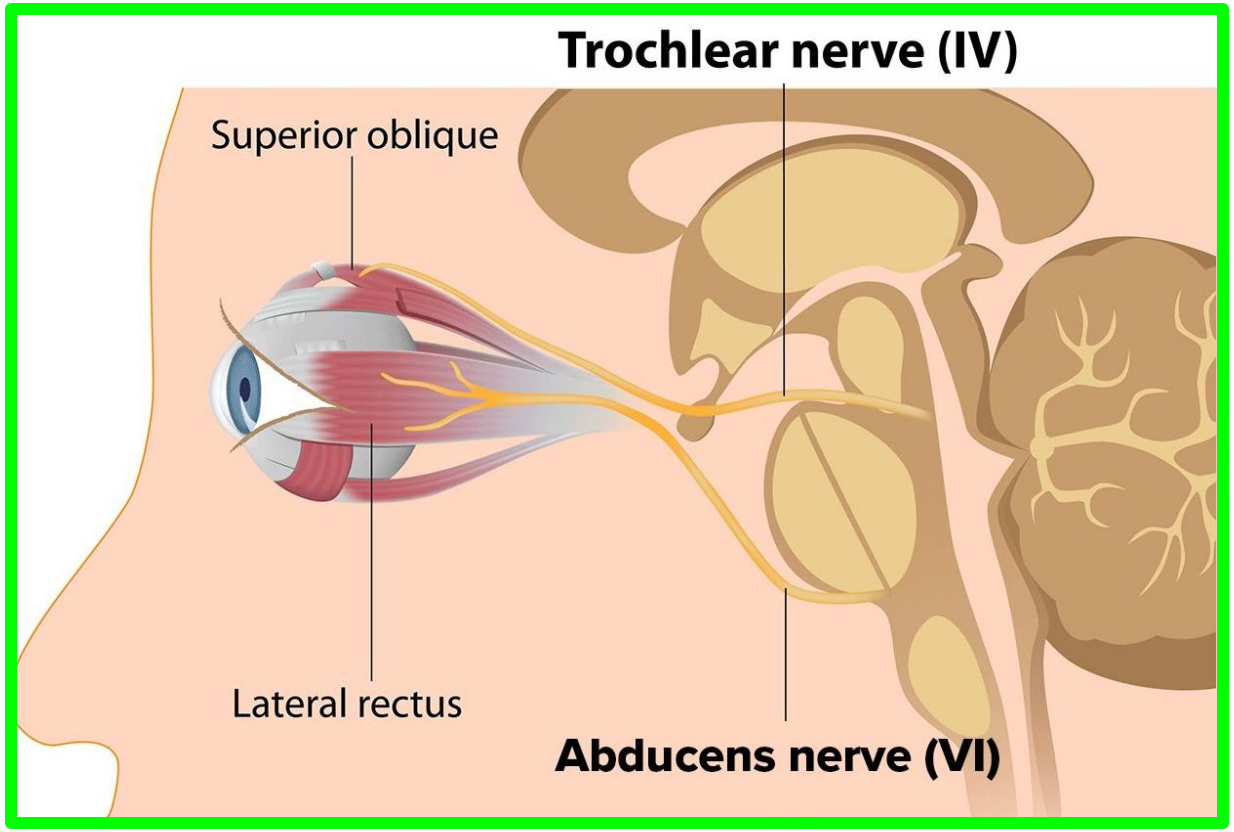
TROCHLEAR NERVE / (4th) Cranial Nerve

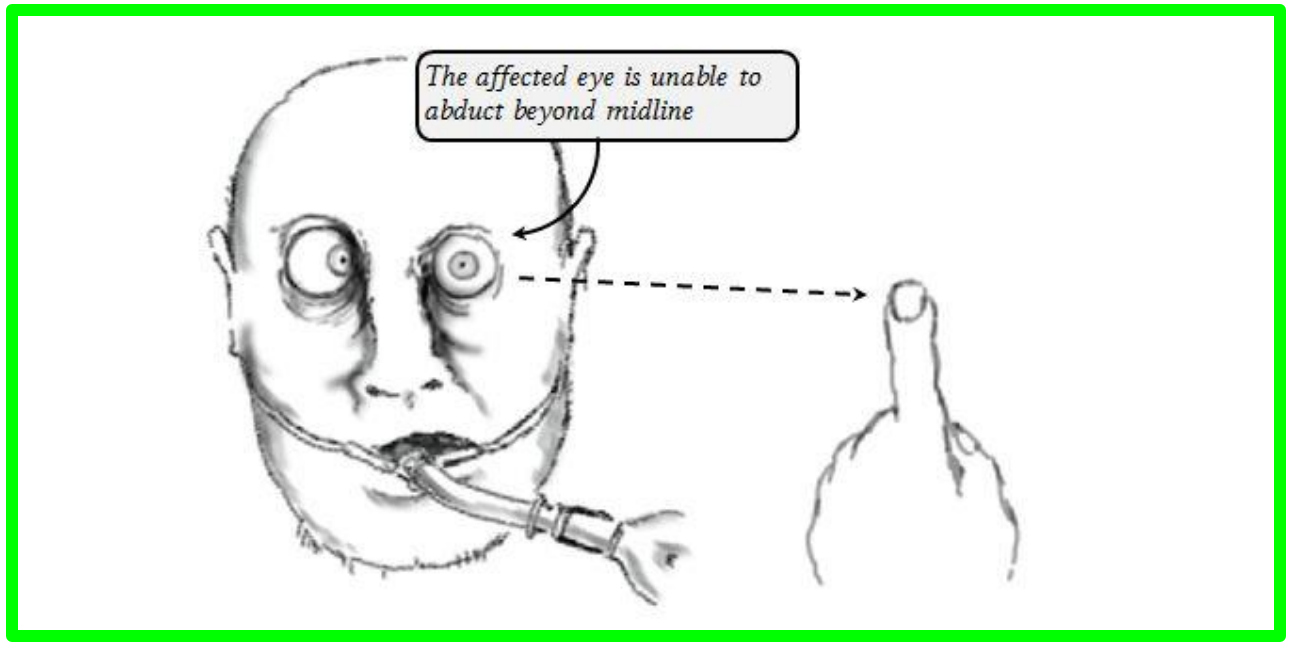
- **Branches:** it supplies **the superior oblique muscle**.
- **Applied anatomy;** injury of the trochlear nerve the cornea cannot be directed downwards and laterally.

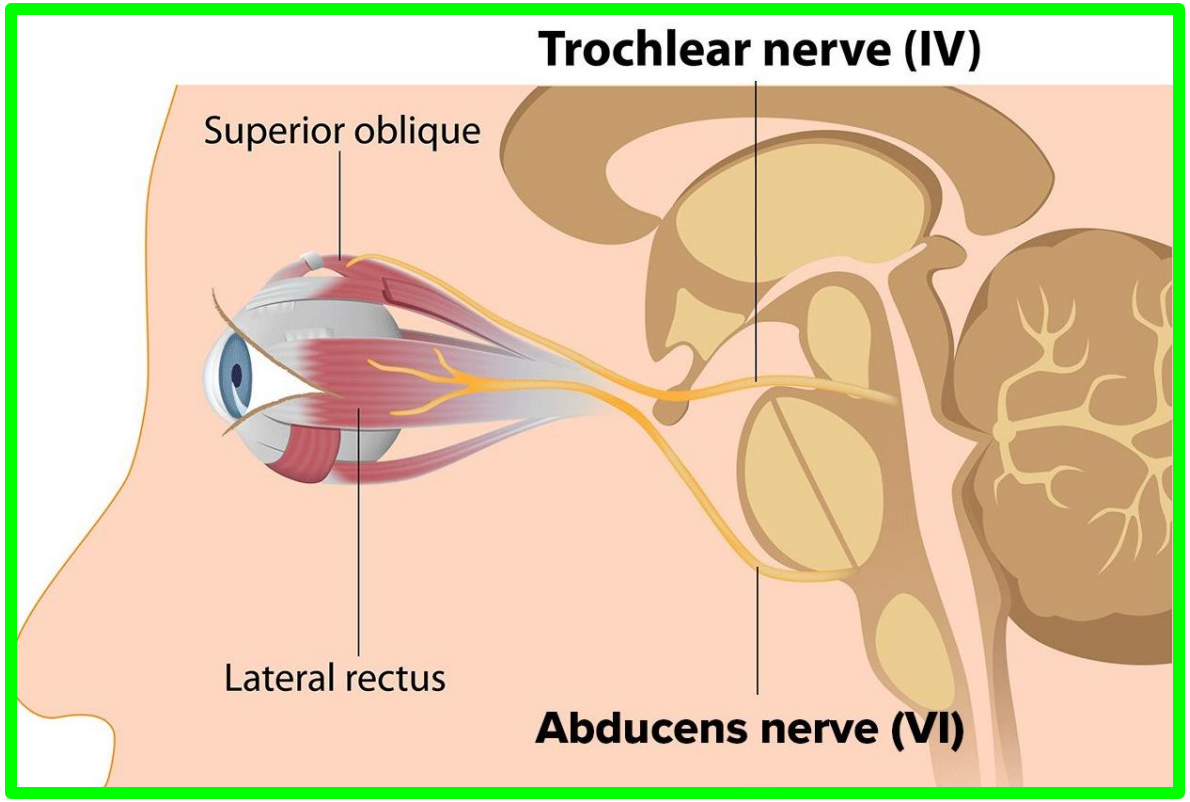




ABDUCENT NERVE (6th) / Cranial Nerve

- **Nucleus:** motor nucleus in the pons.
- **Exit:** from the groove between lower border of the pons and upper border of the pyramid.
- **Applied anatomy:** Abducent nerve Lesion: leads to medial deviation of the cornea.





ABDUCENT NERVE (6th) / Cranial Nerve

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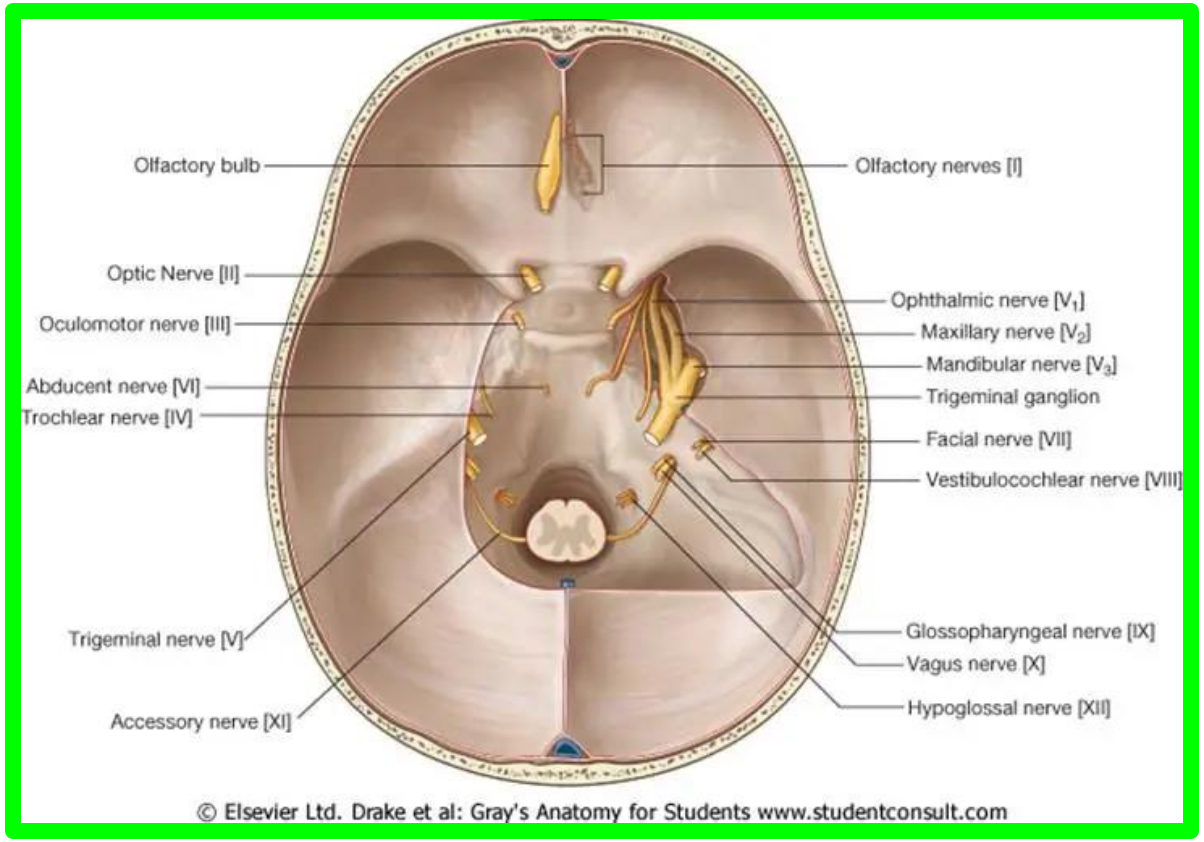
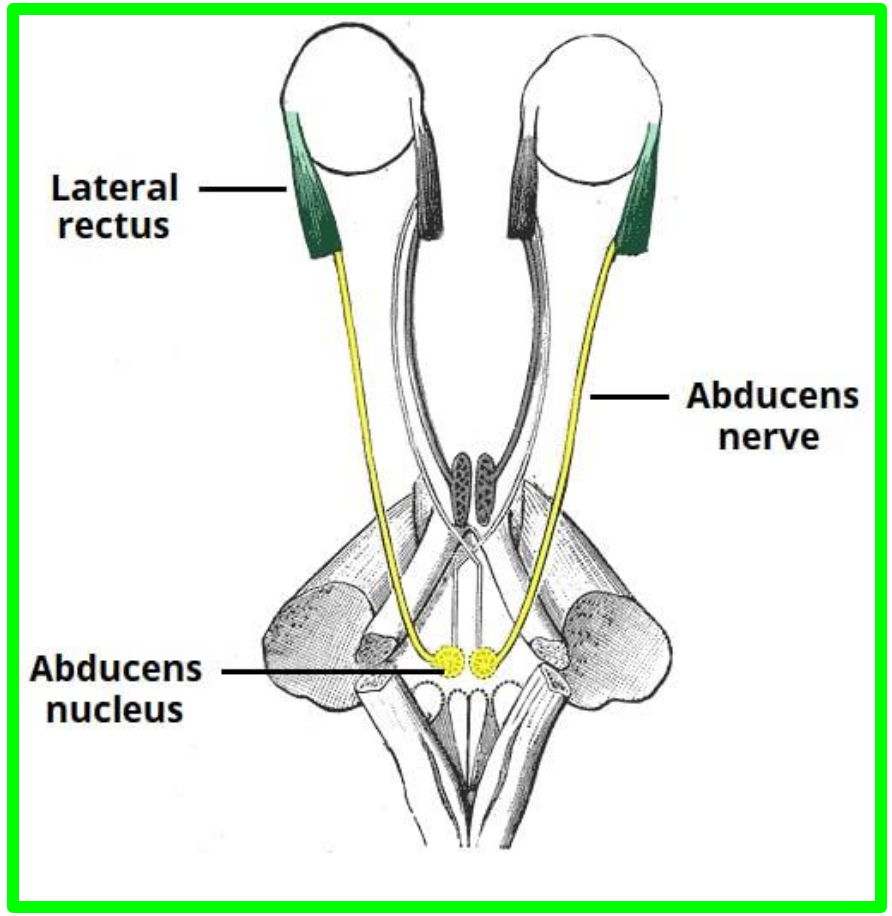
❖ course and relations :

(1) It pierces the dura at the apex of the petrous part of the temporal bone.
(2) It enters the cavernous sinus infero–lateral to the internal carotid artery.
(3) Then it enters the orbit through the superior orbital fissure inside the tendinous ring.
(4) It supplies the lateral rectus muscle.





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