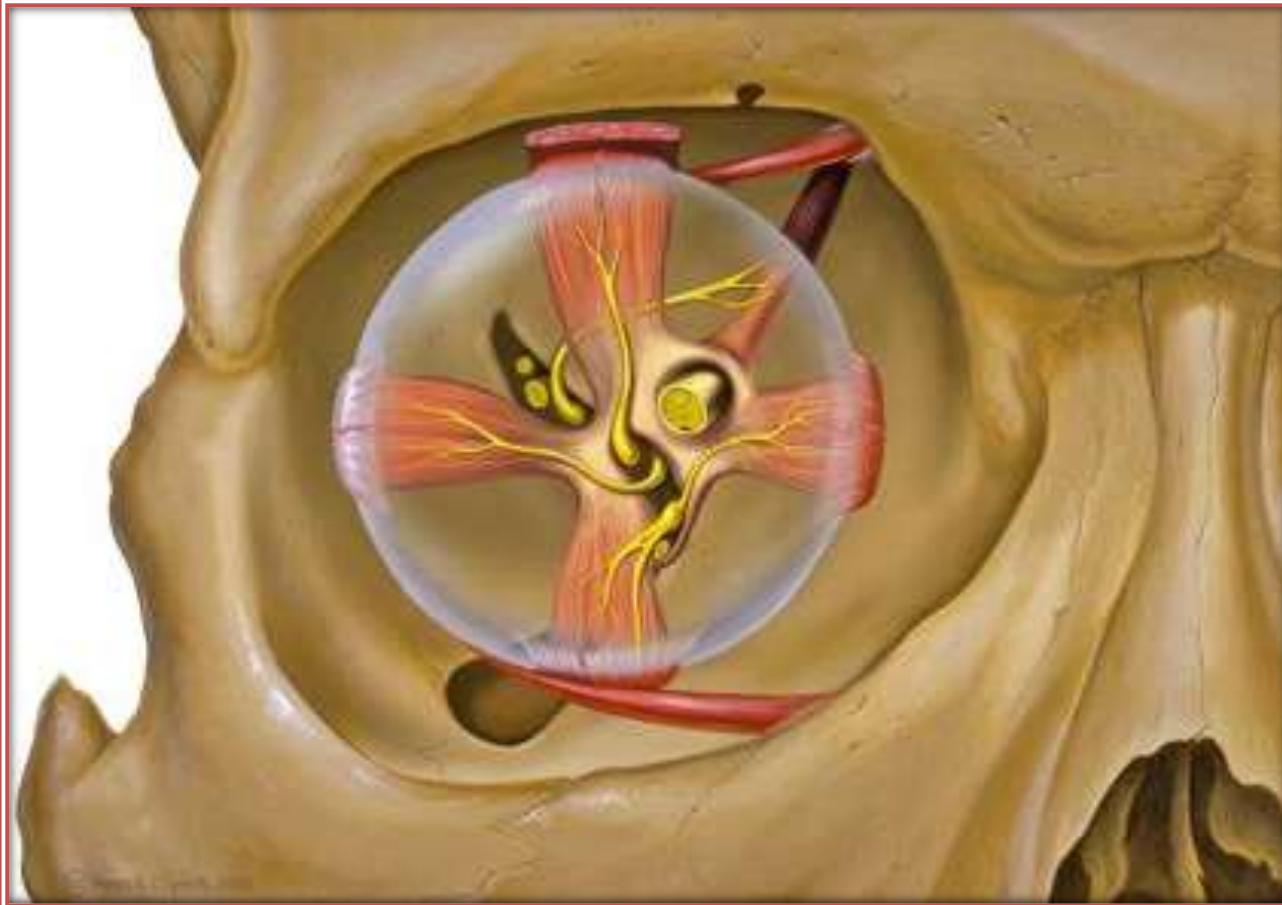


ORBIT-II



Presented by:-
Dr. Sushma Tomar
Associate Professor
Department of Anatomy

Lesson Plan

❖ Extraocular Muscles.

- Origin
- Insertion
- Actions

❖ Movements of Eyeball.

❖ Oculomotor Nerve & its Applied Aspects.

❖ Ciliary Ganglion.

Extraocular Muscles

- ❖ 7 voluntary muscles.
- ❖ 2 groups:
 - Muscle moving the upper eyelid [1 muscle].
 - Muscles moving the eyeball [6 muscles].

Muscle moving the upper eyelid-

- Levator palpebrae superioris.

Muscles moving the eyeball-

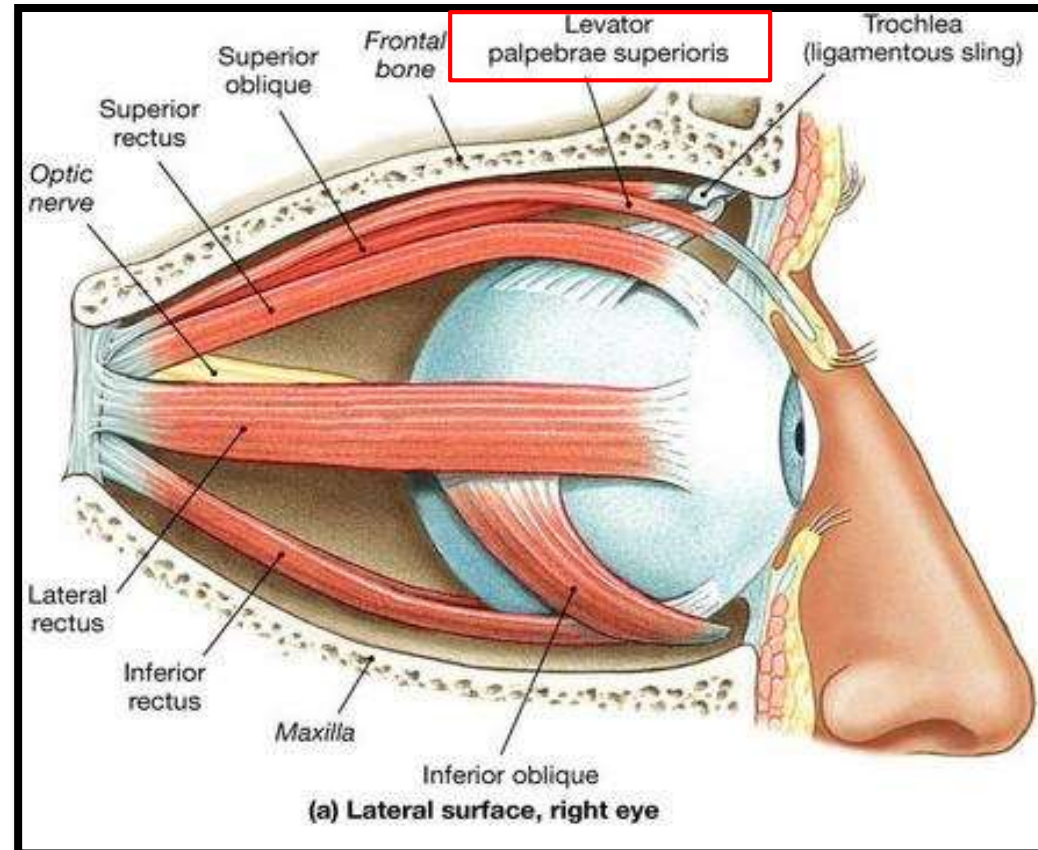
- 4 recti muscles.
- 2 oblique muscles.

Recti muscles-

- Superior rectus.
- Inferior rectus.
- Medial rectus.
- Lateral rectus.

Oblique muscles-

- Superior oblique.
- Inferior oblique.



Recti Muscles- Origin

- All recti muscles arise from corresponding margin of tendinous ring of Zinn.

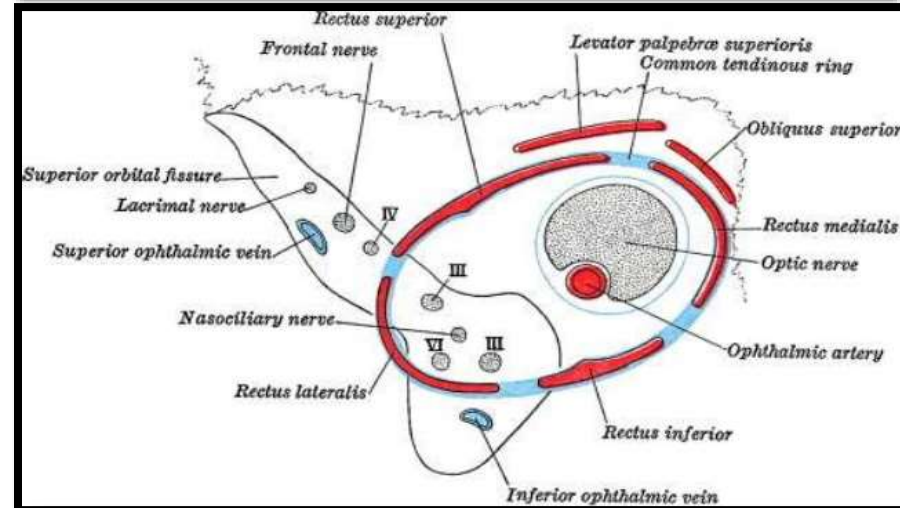
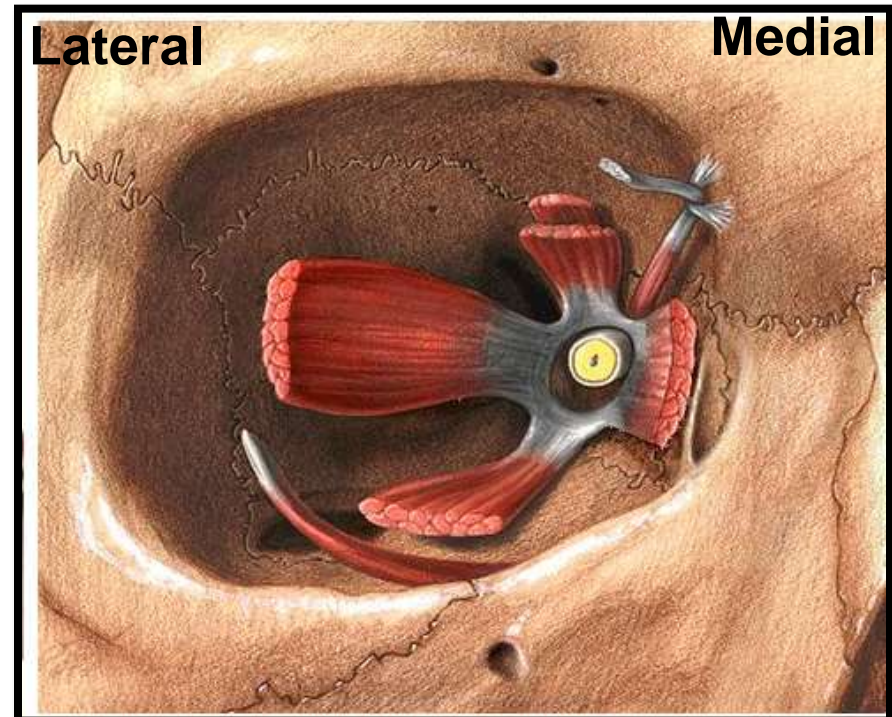
Tendinous Ring of Zinn-

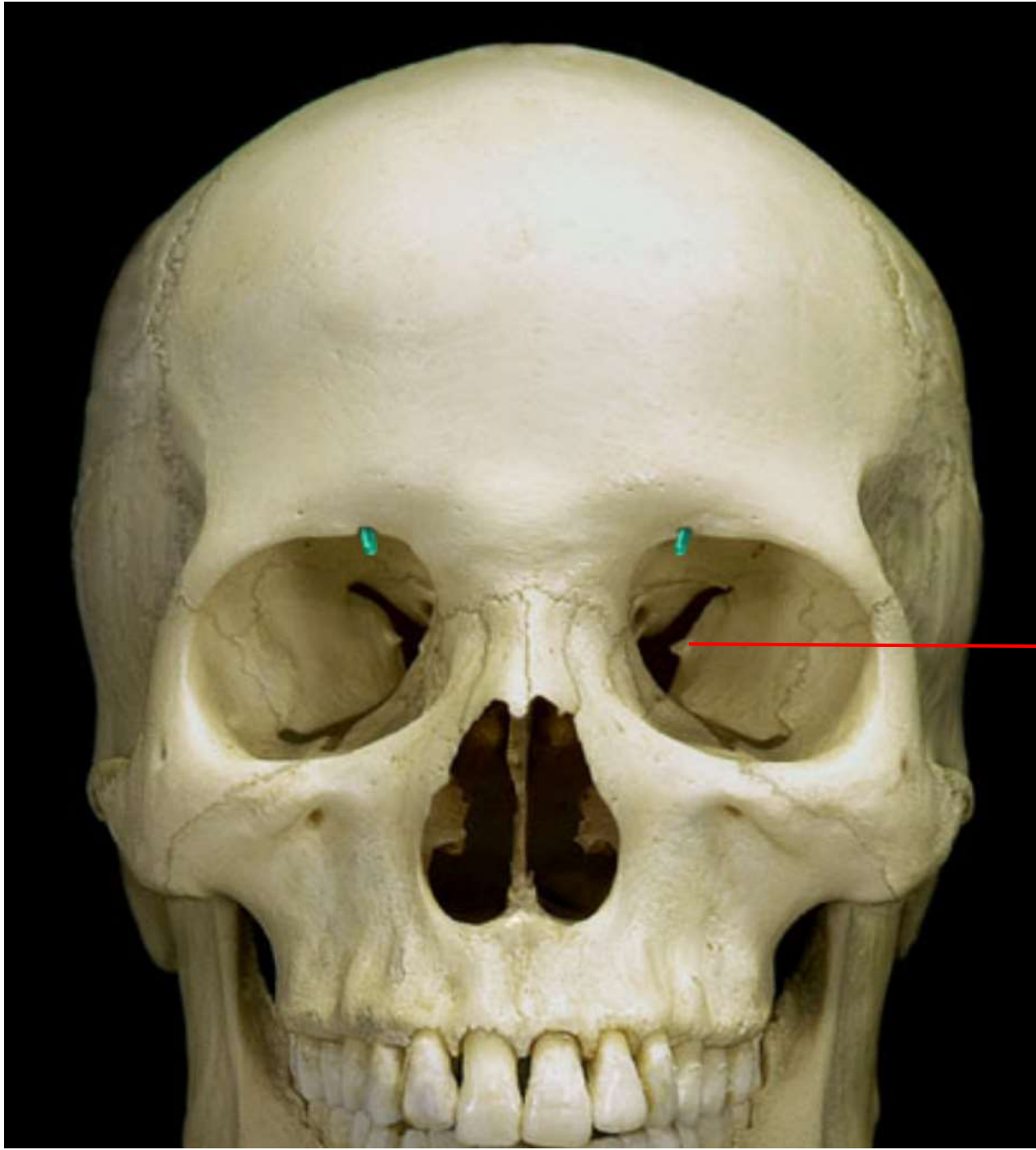
- It encloses the optic canal and middle part of superior orbital fissure.

Attachments-

Medially- Apex of orbit.

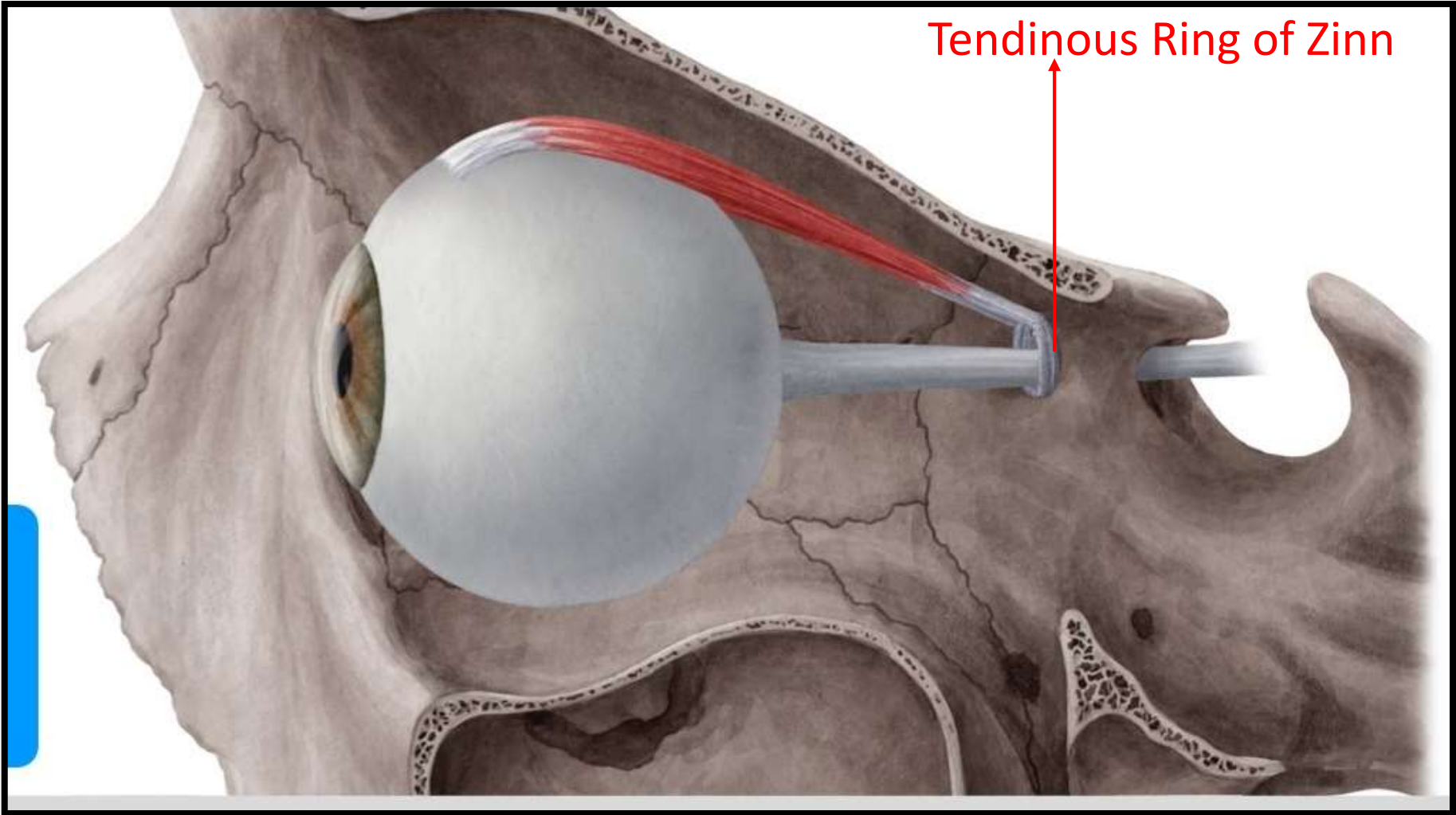
Laterally- Tubercle of Zinn.





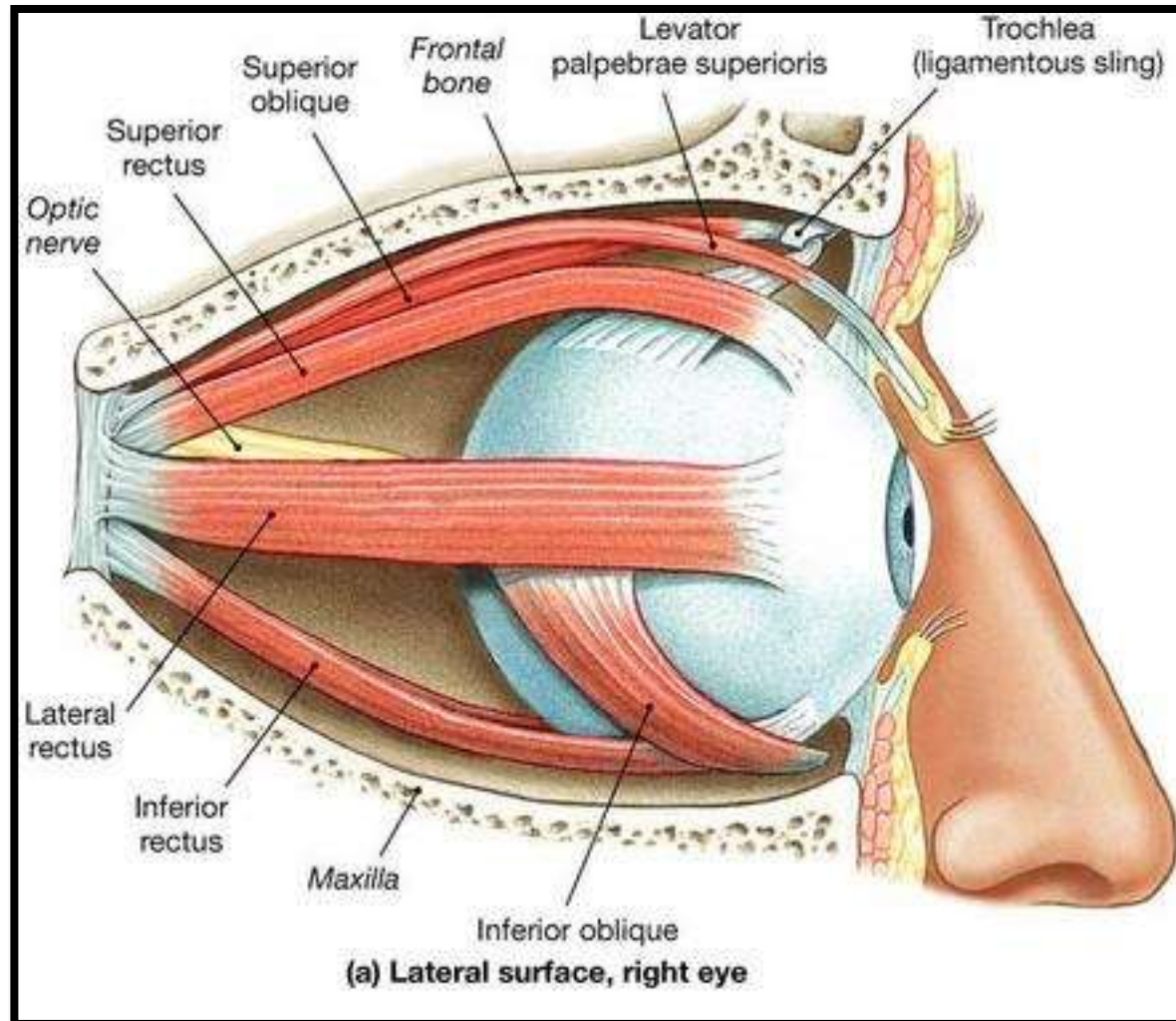
Tubercle
of Zinn

Tendinous Ring of Zinn



Recti Muscles- Insertion

- All recti muscles are inserted into sclera, posterior to the limbus and **in front of equator** of eyeball.



RECTI MUSCLES - Insertion

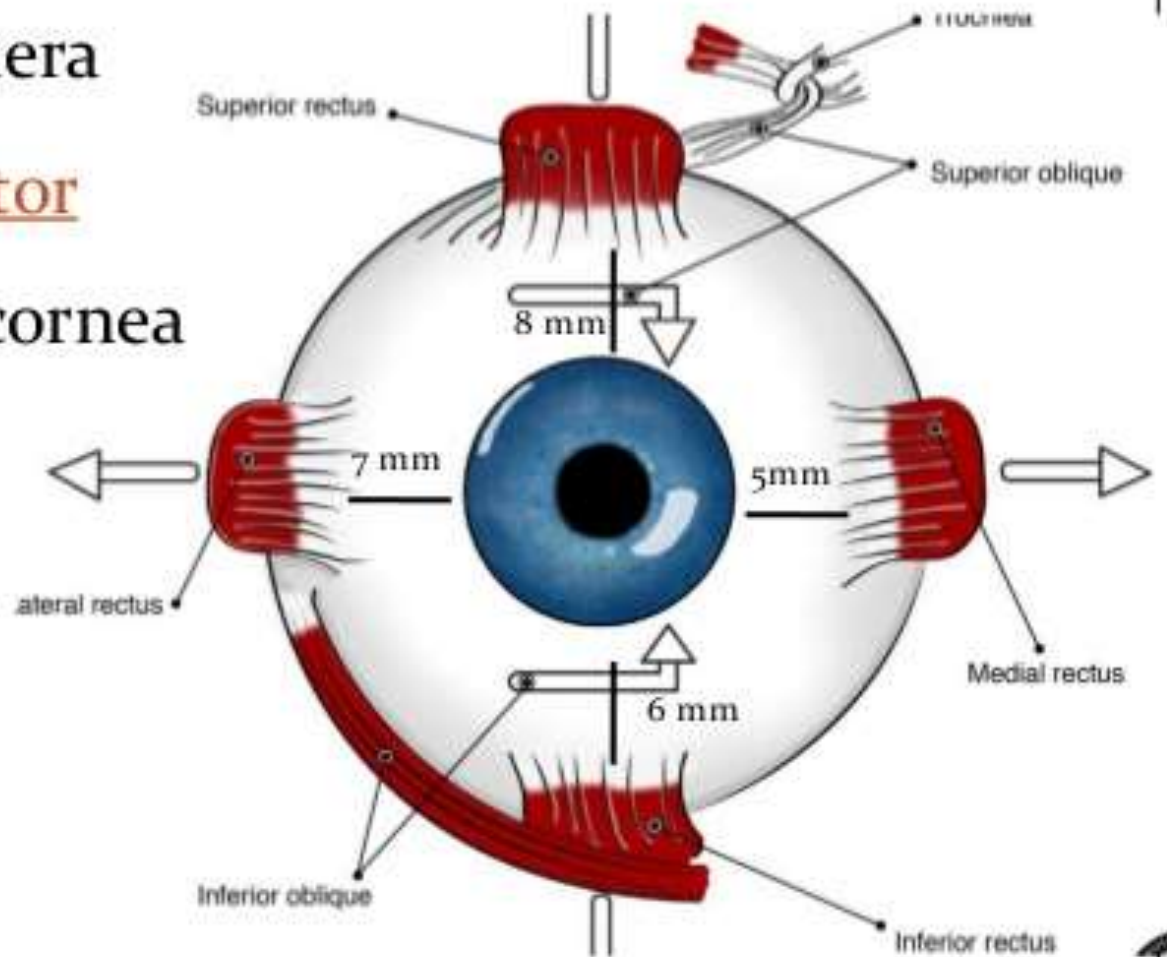
- Inserted into sclera
- In front of equator
- Distance from cornea

MR = 5.5mm

IR = 6.5mm

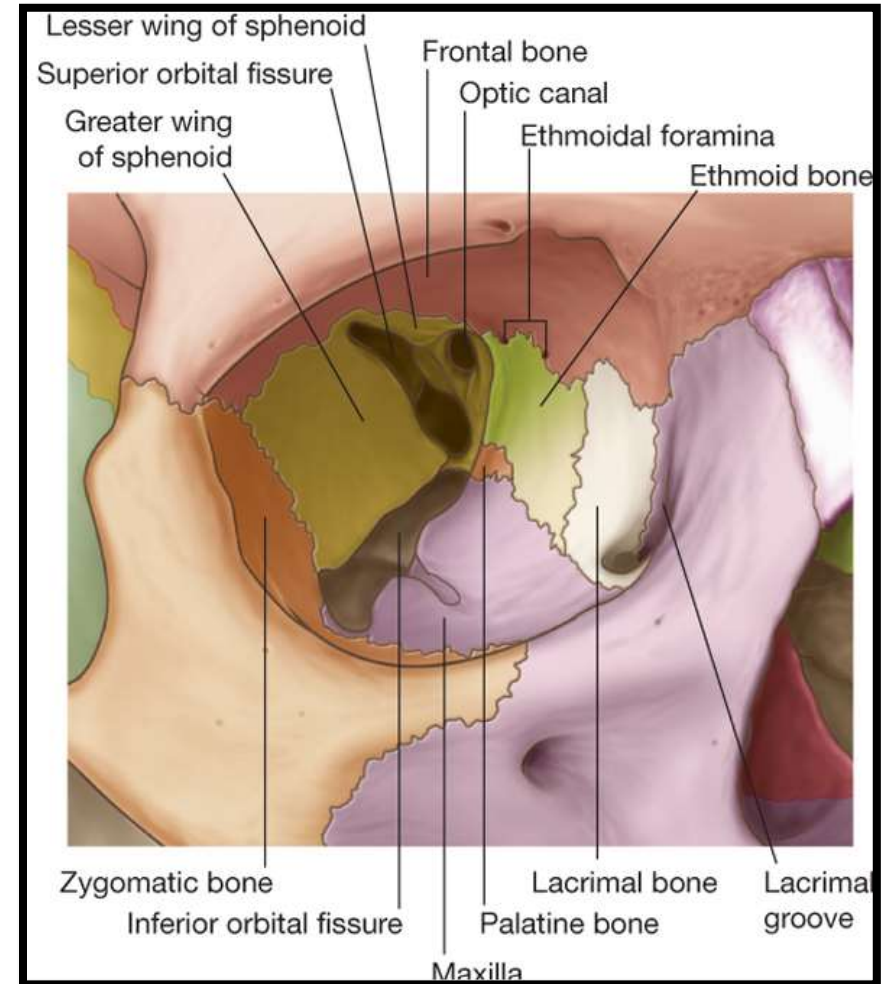
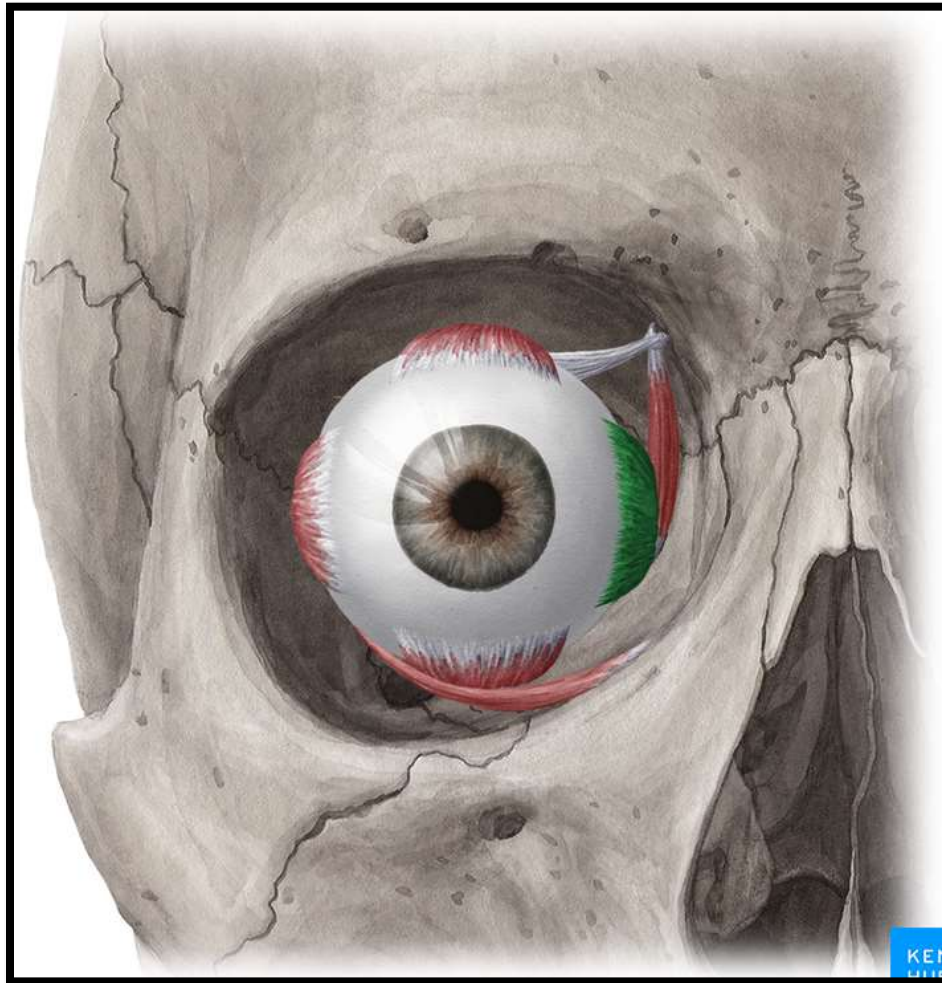
LR = 6.9mm

SR = 7.7mm



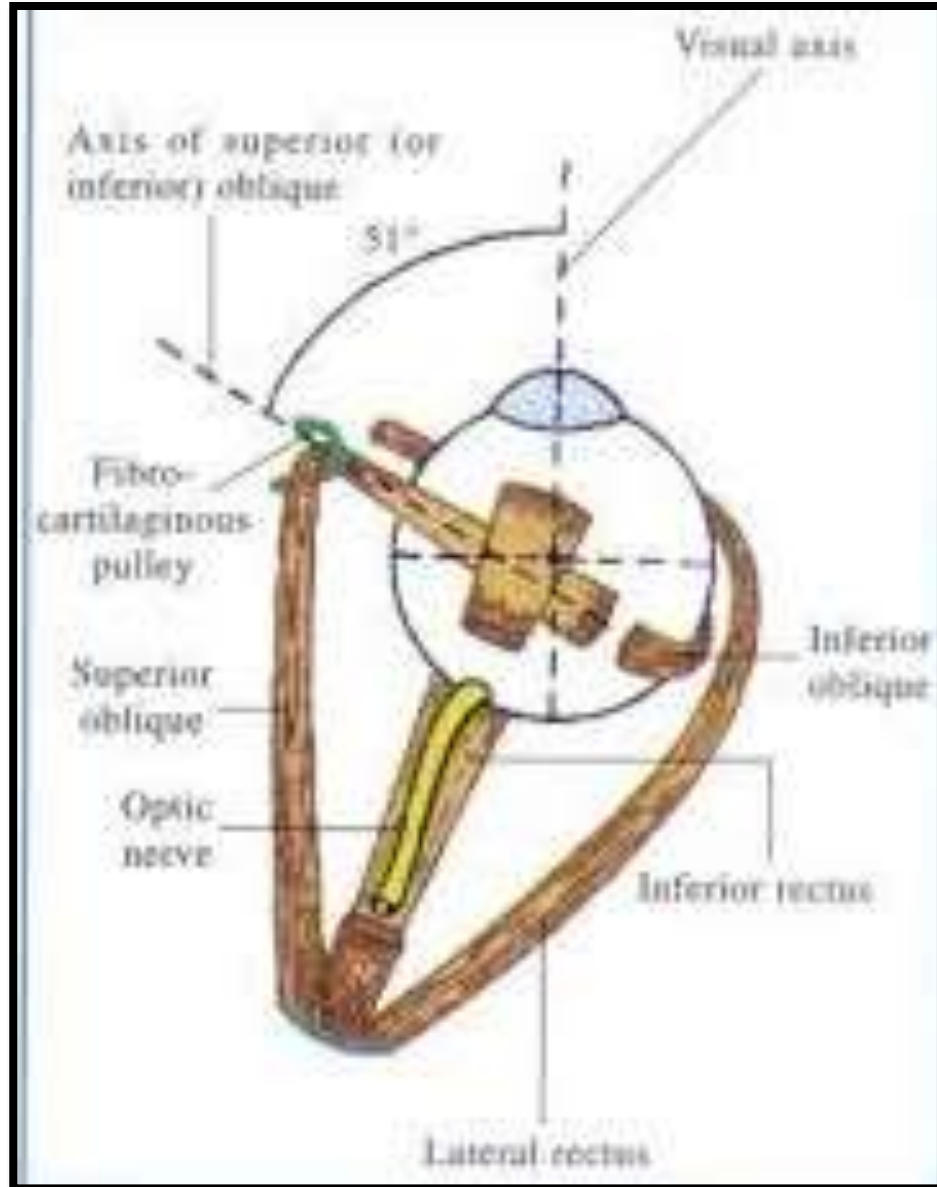
Superior Oblique Muscle- Origin

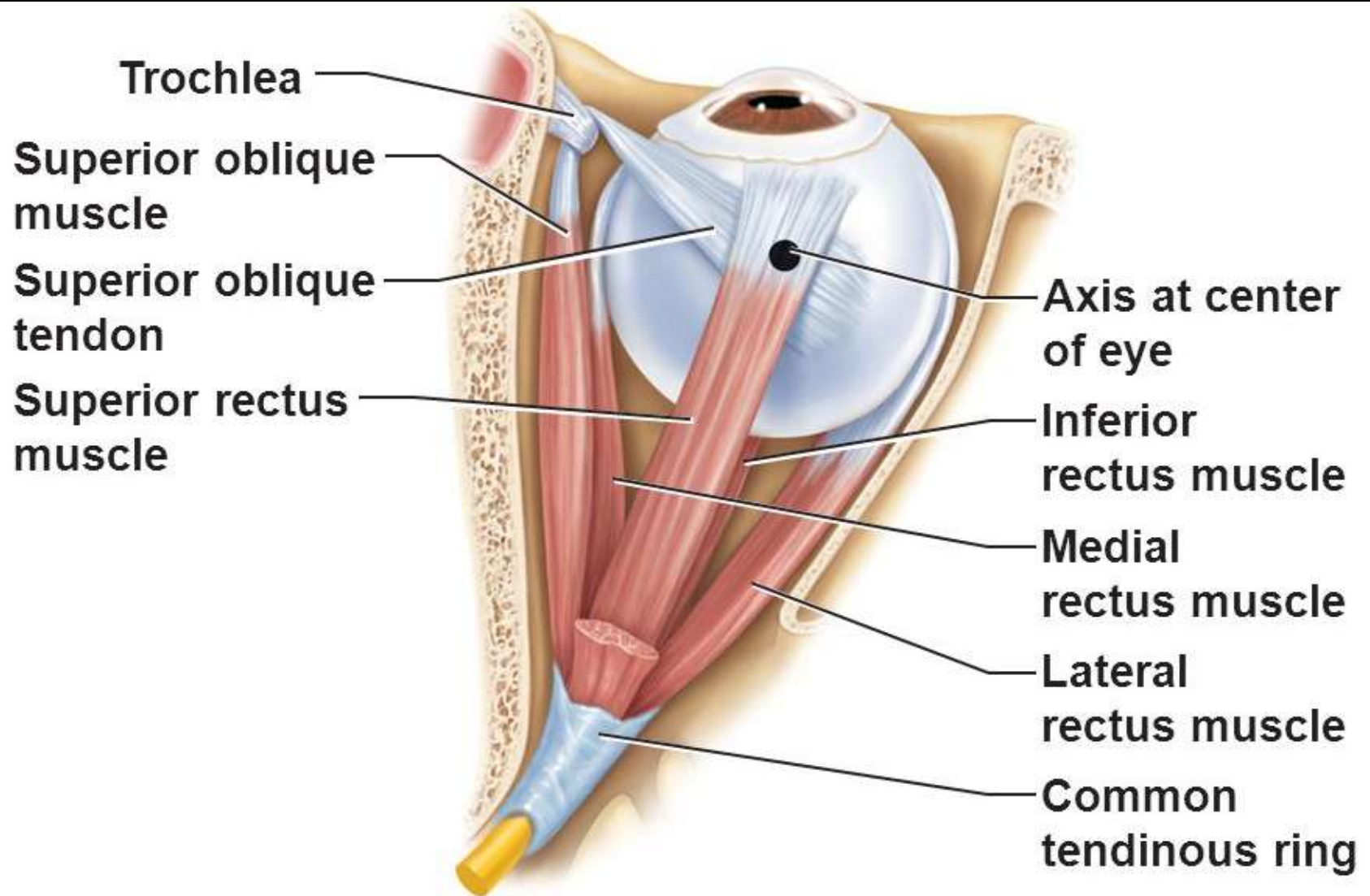
- Body of sphenoid (superomedial to optic canal).



Superior Oblique Muscle- Insertion

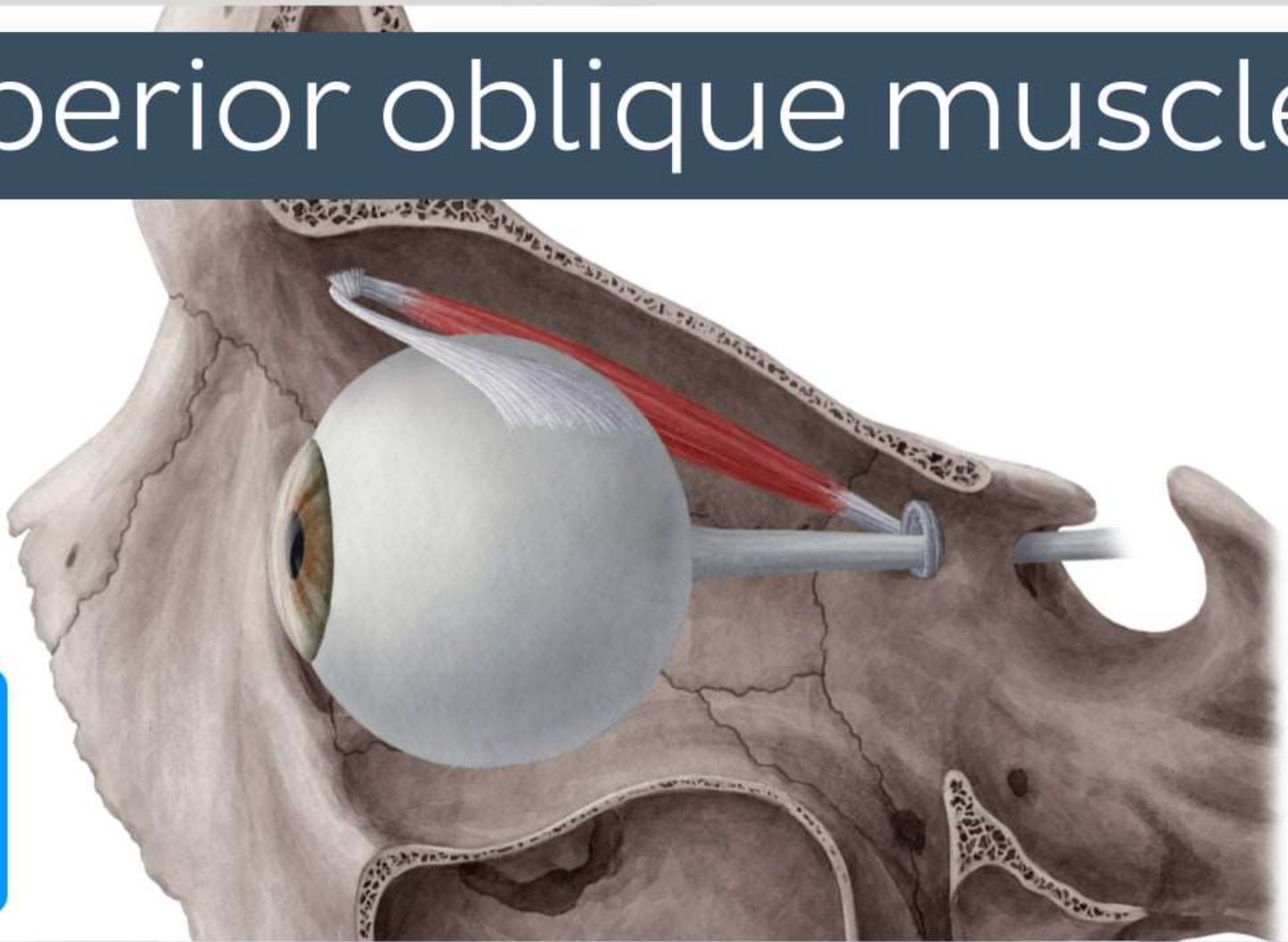
- Into the sclera, behind the equator in posterosuperior lateral quadrant of eyeball.
- Tendon passes through a fibrocartilaginous pulley.
- Pulley is attached to the trochlear notch in the anteromedial part of roof of orbit.



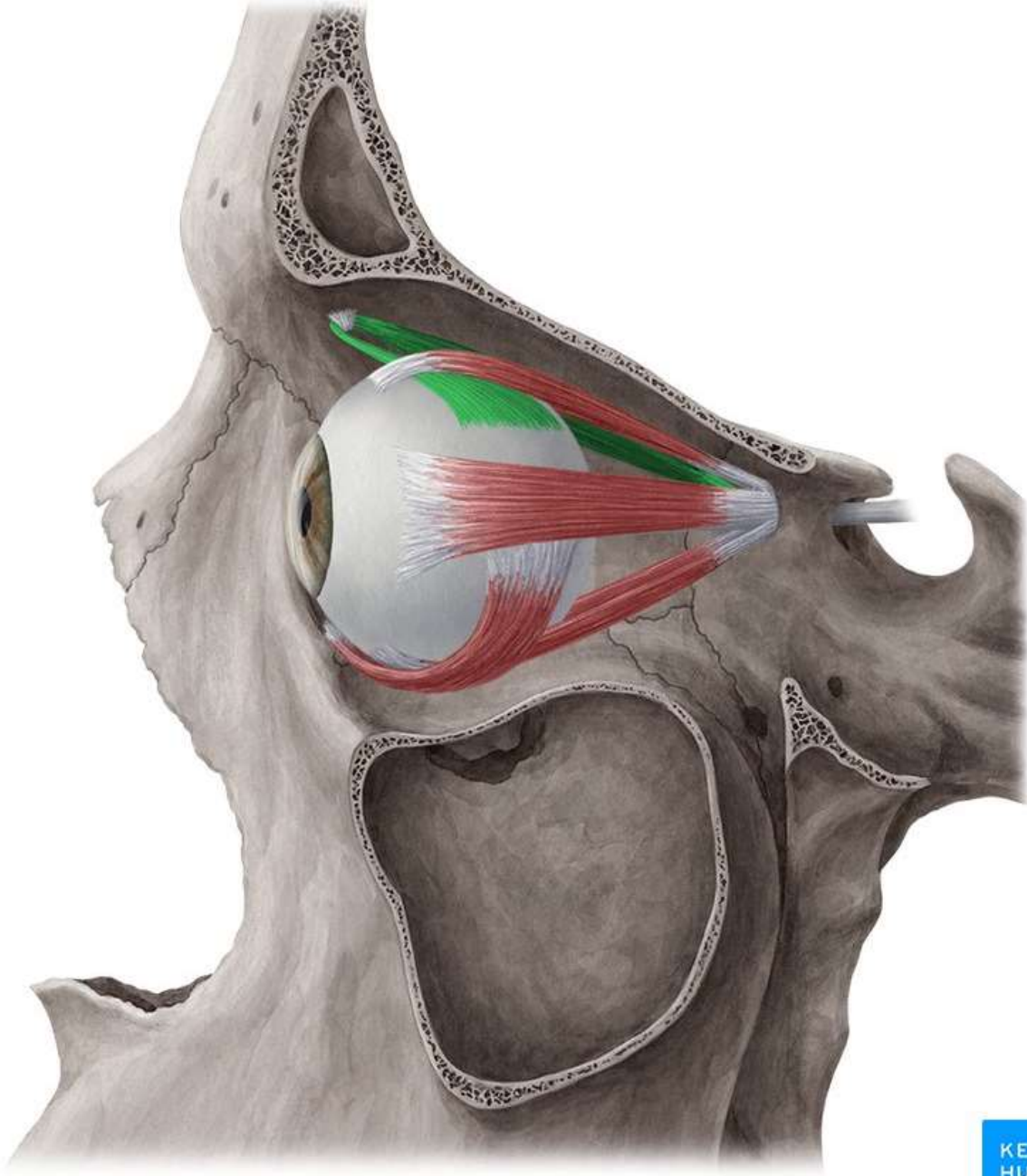


(b) Superior view of the right eye

Superior oblique muscle

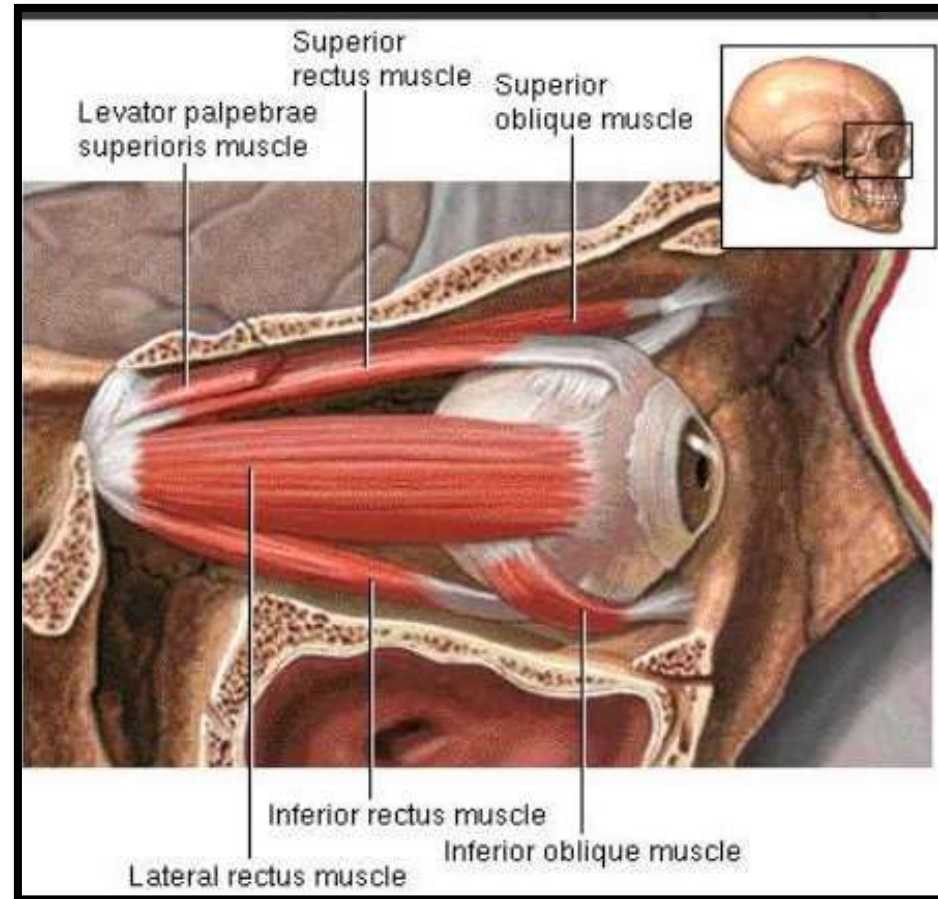
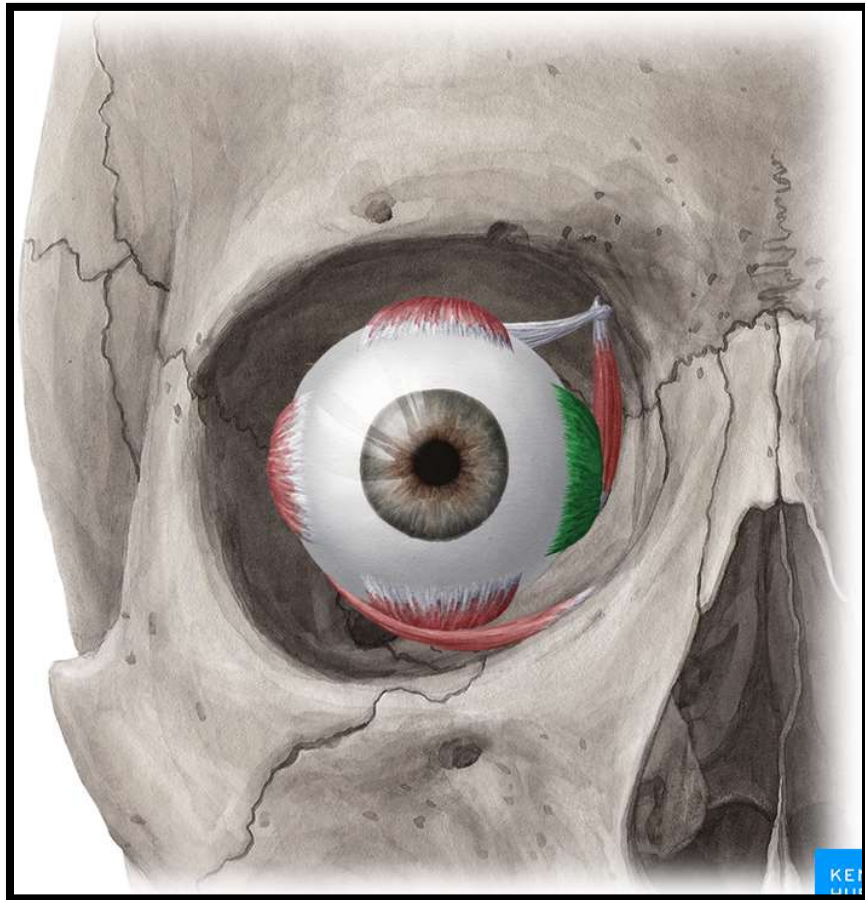


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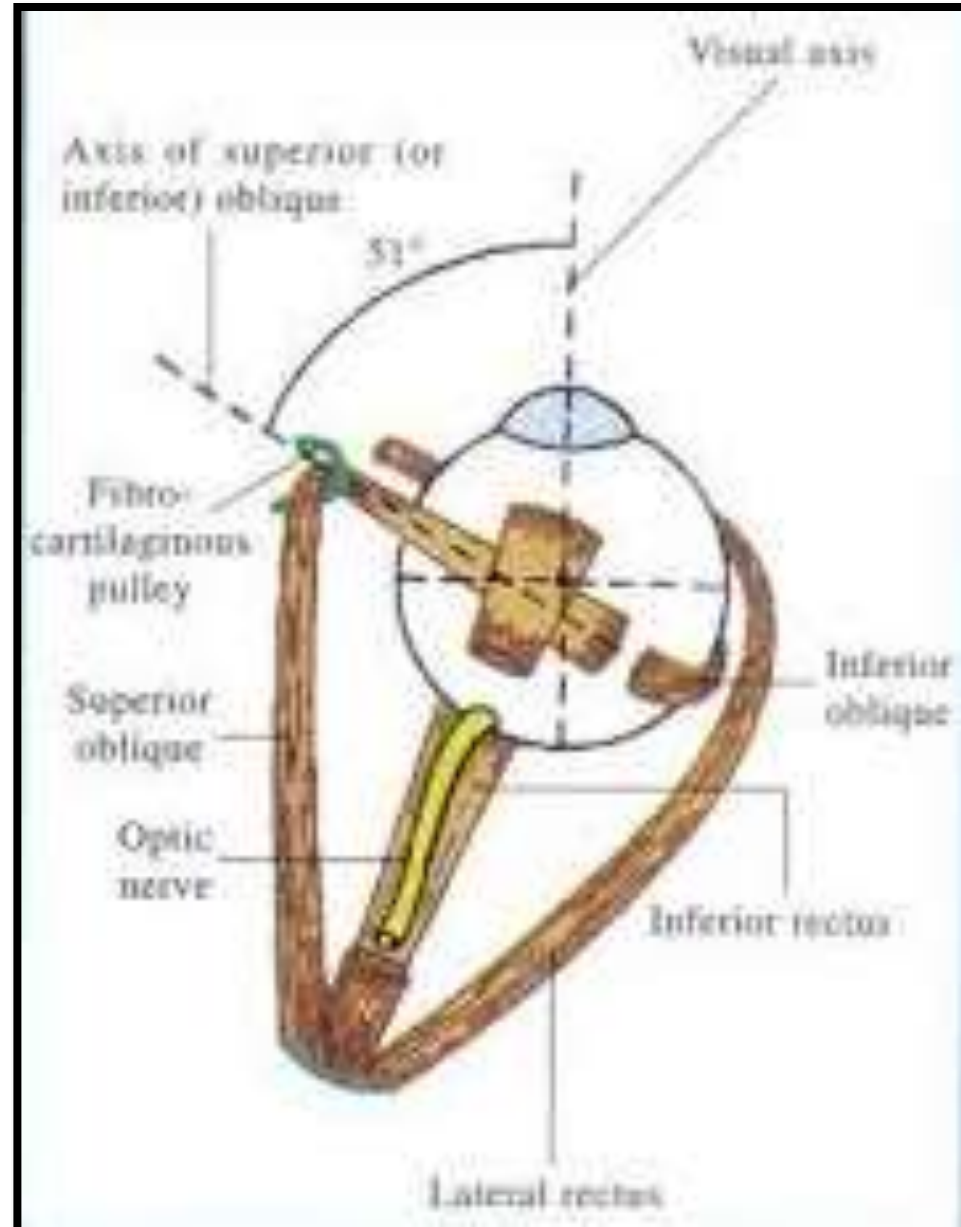
Inferior Oblique Muscle- Origin

- From anteromedial angle of floor of orbit.



Inferior Oblique Muscle- Insertion

- Into the sclera, behind the equator in posterosuperior lateral quadrant of eyeball, below and posterior to the insertion of superior oblique.



Movements of Eyeball & their Axes

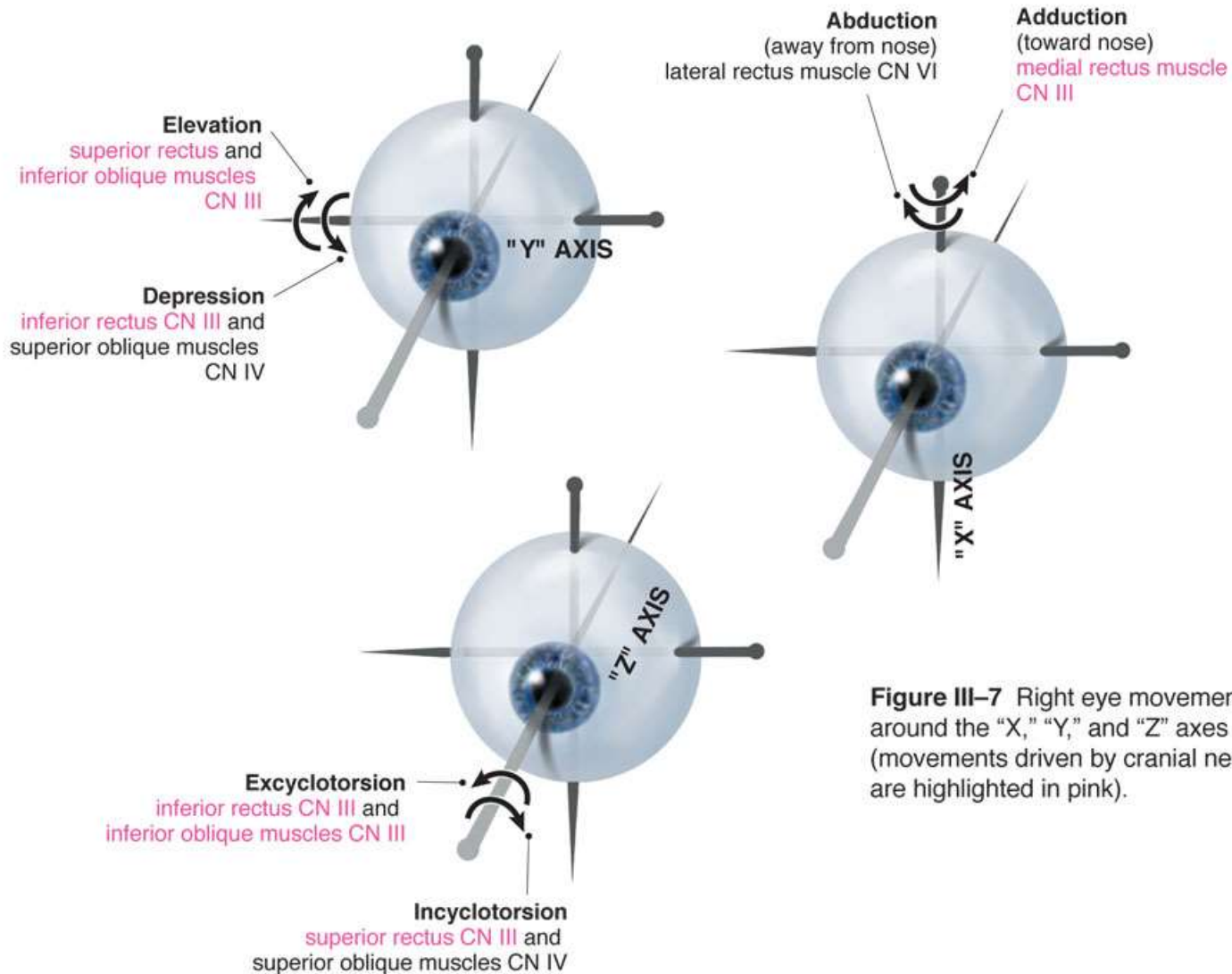
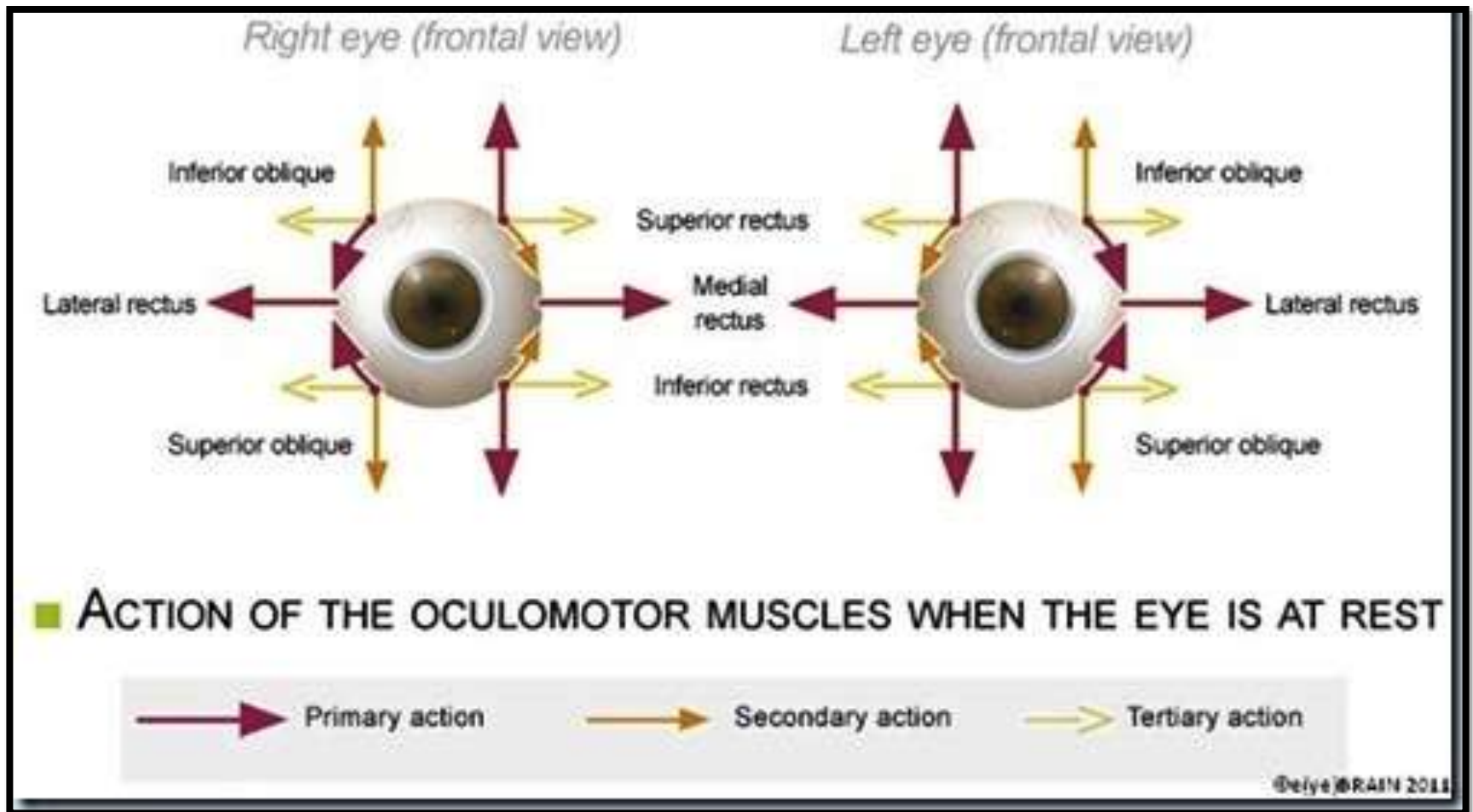


Figure III-7 Right eye movements around the "X," "Y," and "Z" axes (movements driven by cranial nerve III are highlighted in pink).

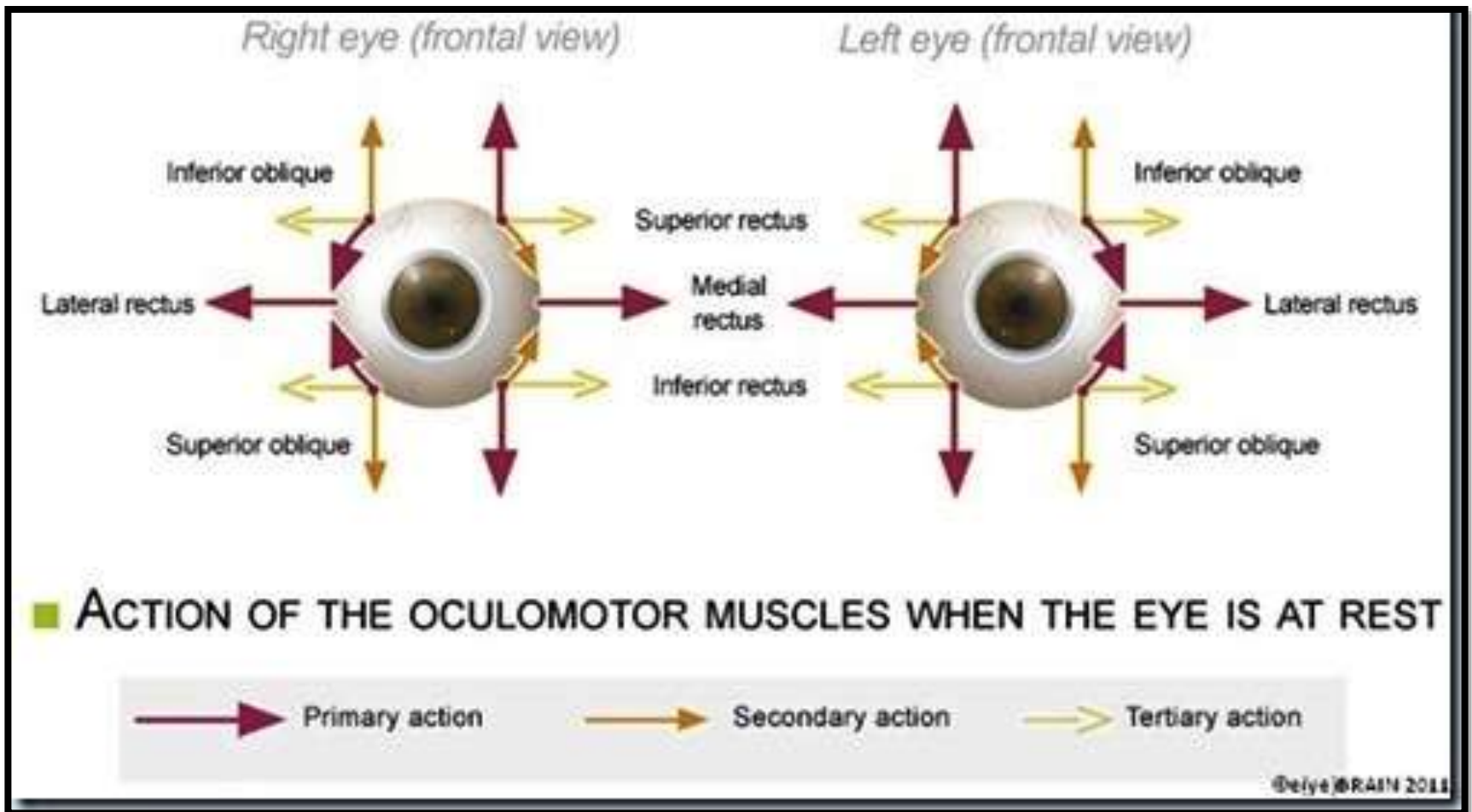
Actions of Superior Rectus

- **Primary action**- Elevation.
- **Secondary action**- Intorsion (*superiors are intortors*)
- **Tertiary action**- Adduction (*recti are adductors*)



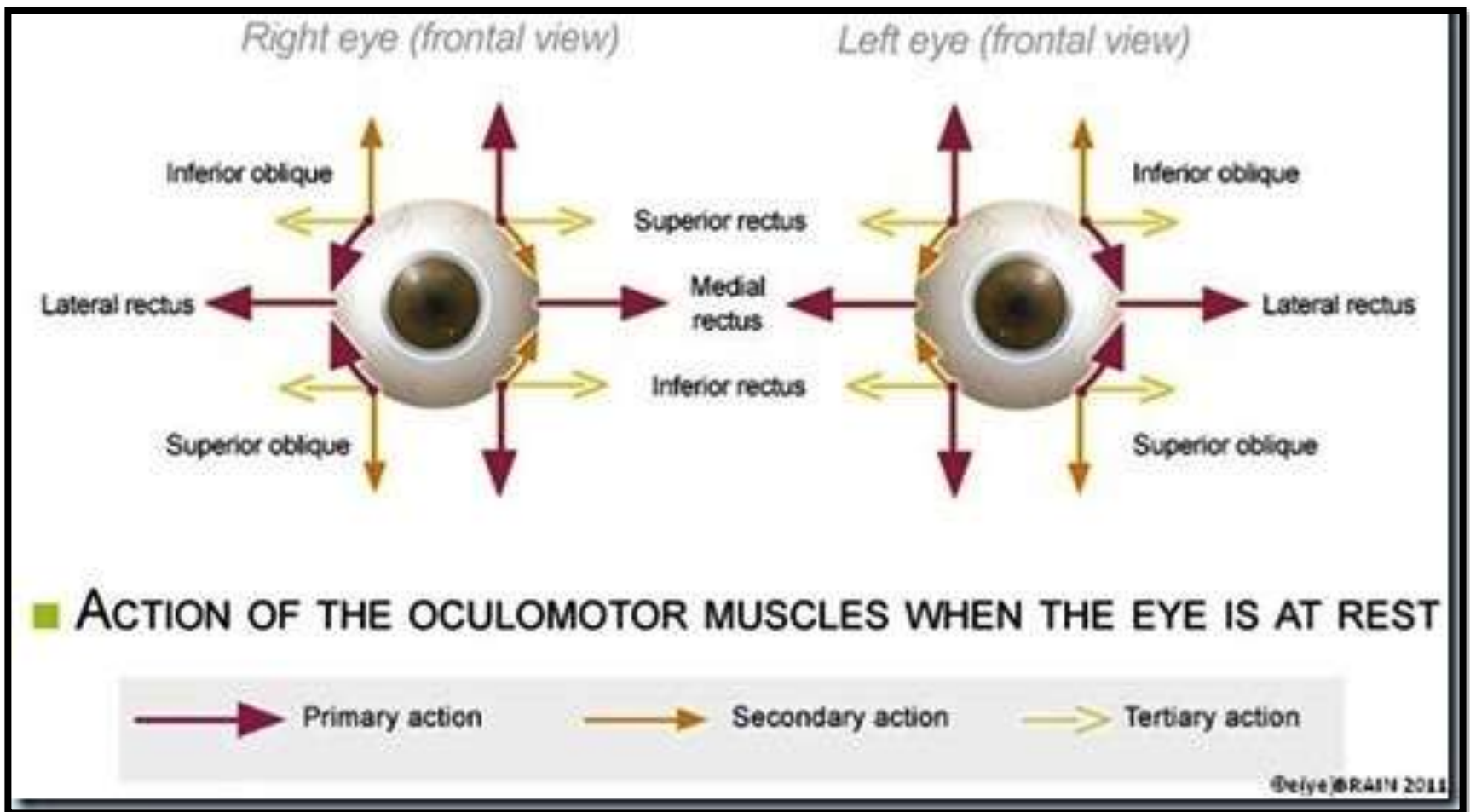
Actions of Inferior Rectus

- **Primary action**- Depression.
- **Secondary action**- Extorsion (*inferiors are extortors*)
- **Tertiary action**- Adduction.



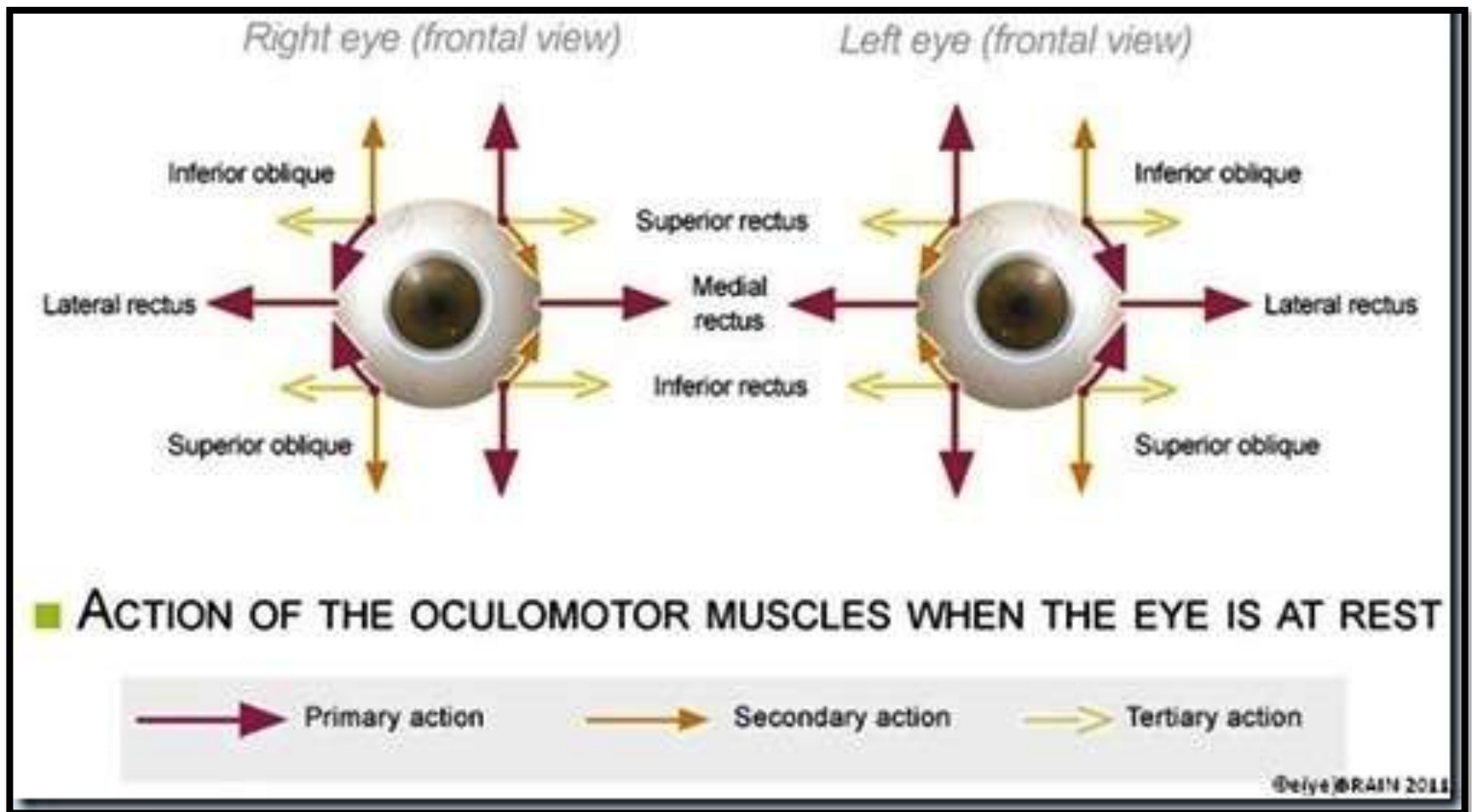
Actions of Inferior Oblique

- **Primary action**- Extorsion (*inferiors are extortors*)
- **Secondary action**- Elevation.
- **Tertiary action**- Abduction (*obliqi are abductors*)



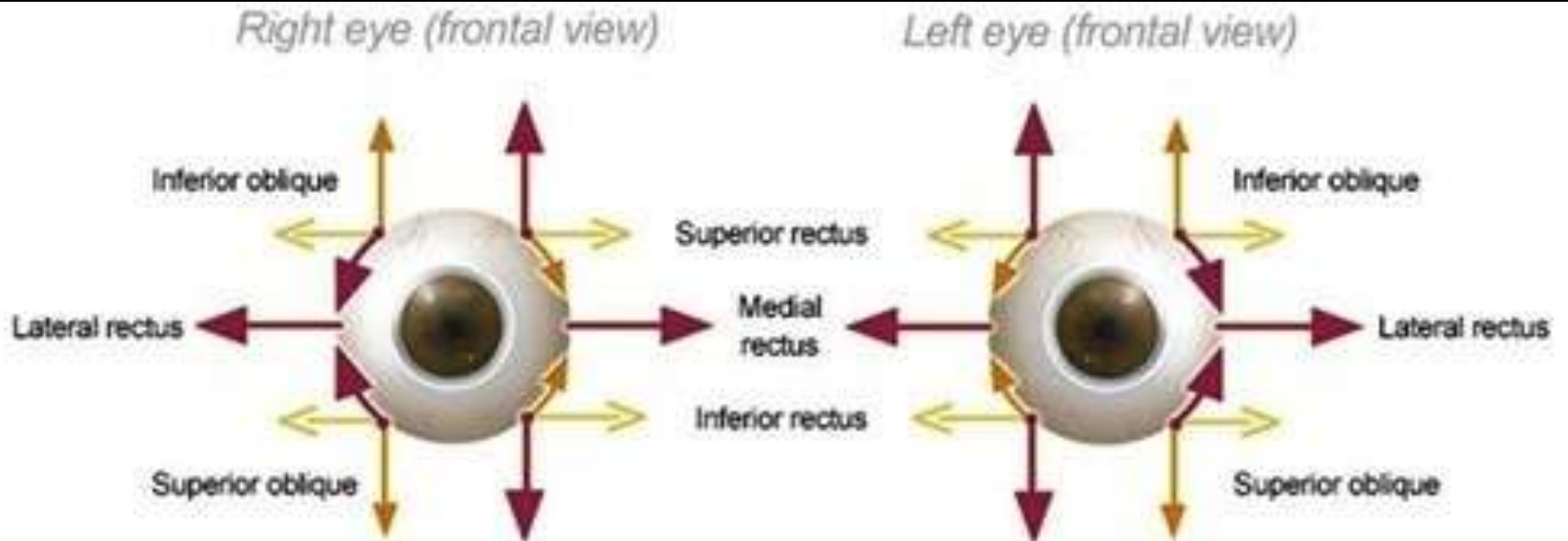
Actions of Superior Oblique

- **Primary action**- Intorsion (*superiors are intortors*).
- **Secondary action**- Depression.
- **Tertiary action**- Abduction (*obliqi are abductors*).



Actions of Medial Rectus

- Adduction.

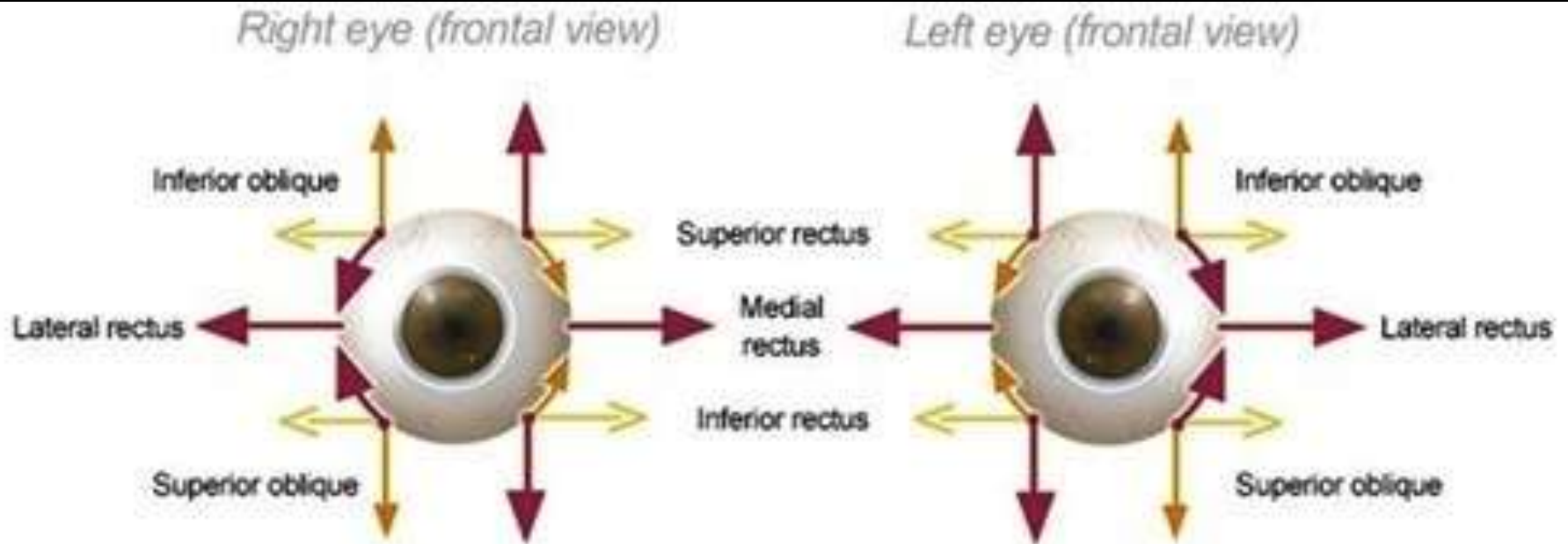


ACTION OF THE OCULOMOTOR MUSCLES WHEN THE EYE IS AT REST

→ Primary action → Secondary action → Tertiary action

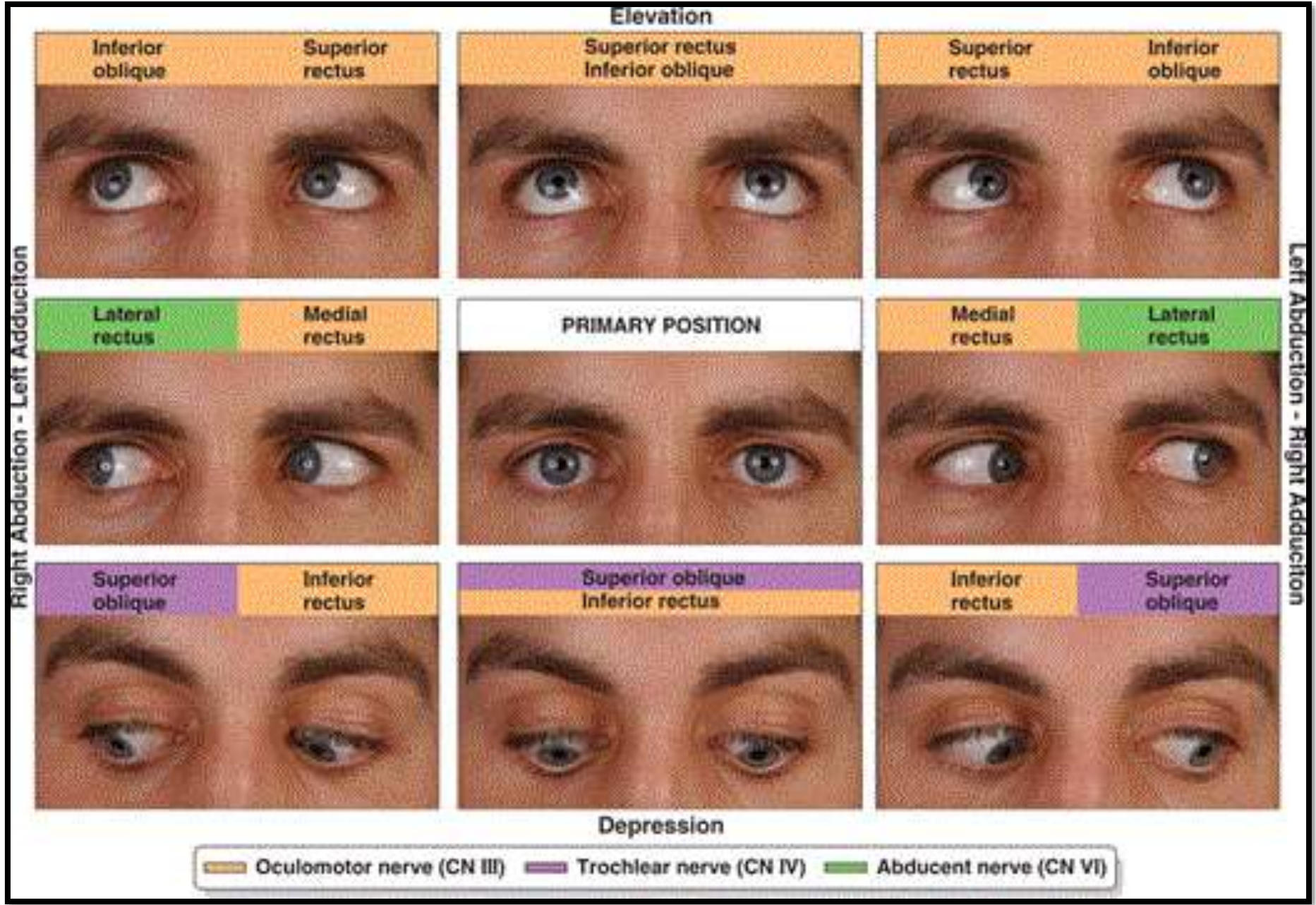
Actions of Lateral Rectus

- Abduction.



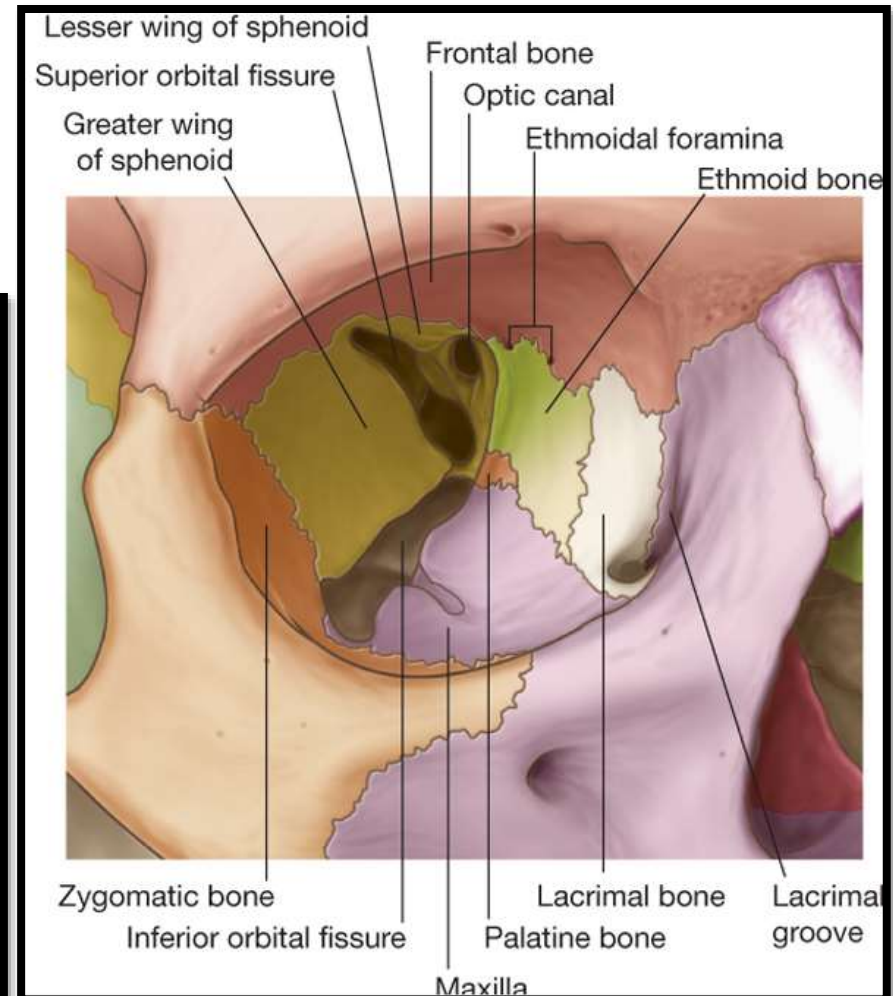
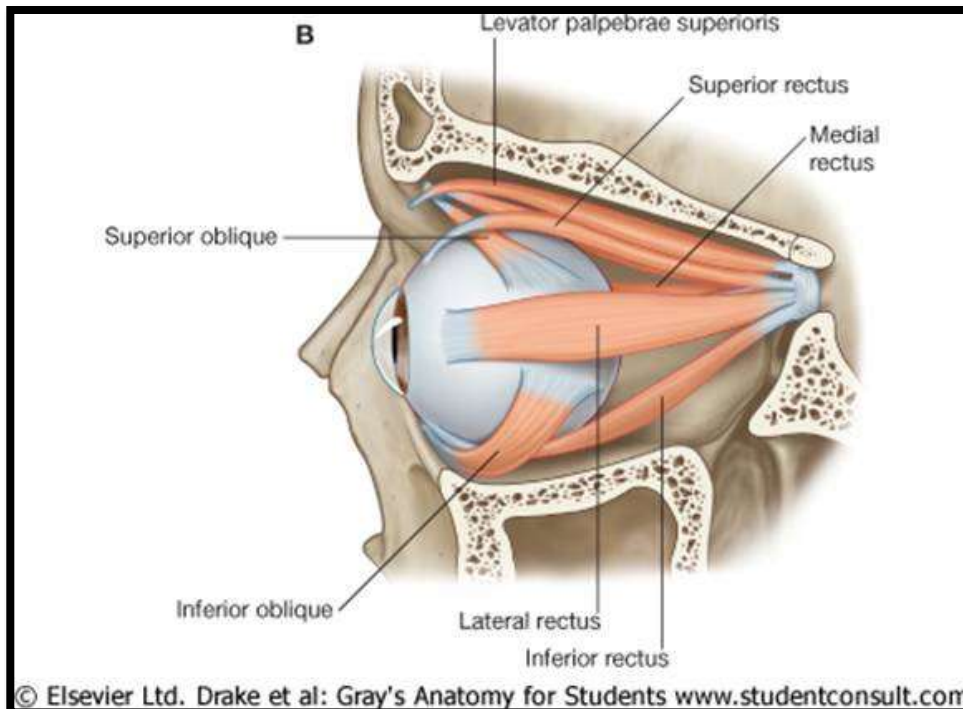
■ ACTION OF THE OCULOMOTOR MUSCLES WHEN THE EYE IS AT REST

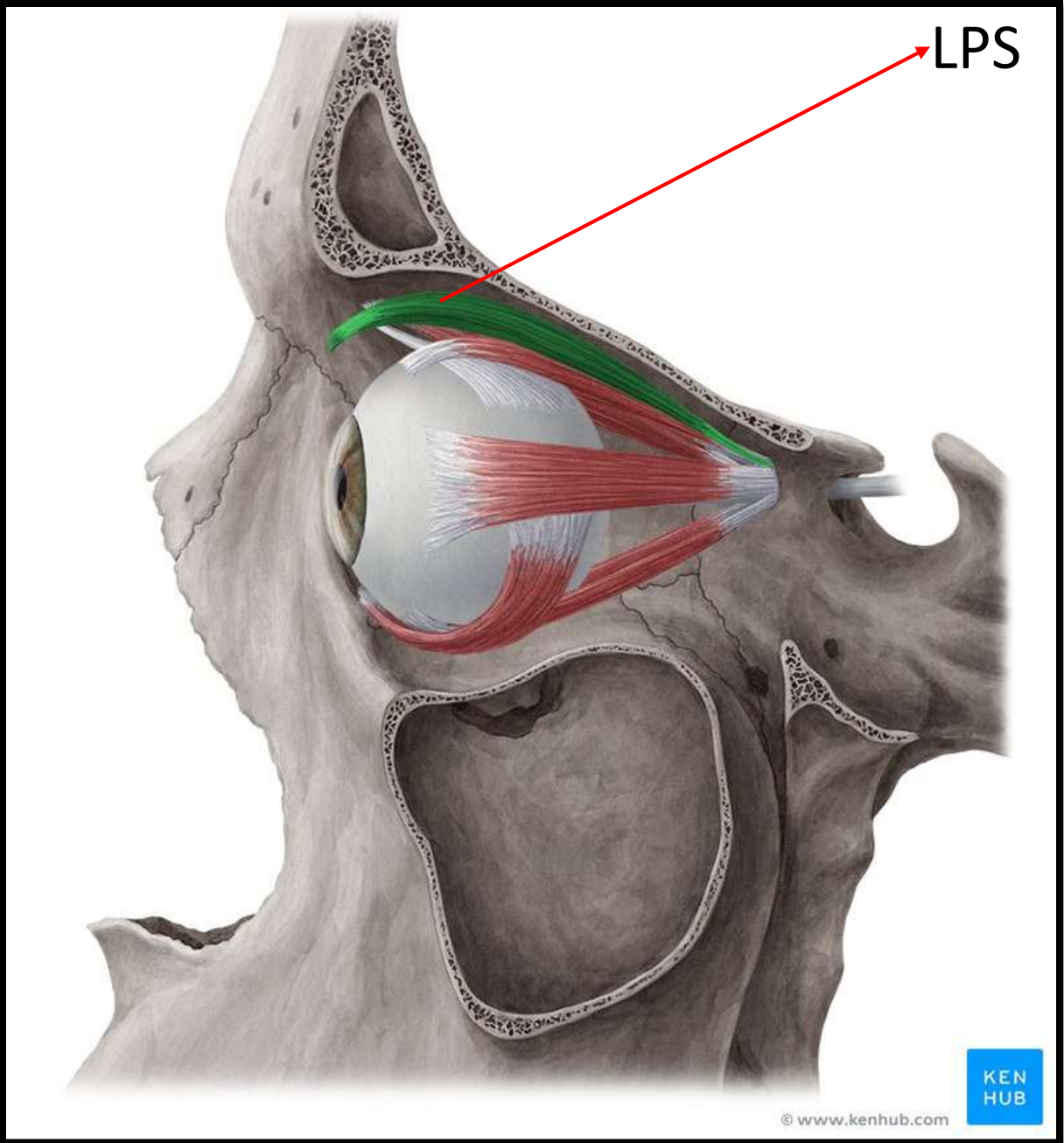
→ Primary action → Secondary action → Tertiary action



Levator Palpebrae Superioris (LPS) - Origin

- From undersurface of **lesser wing of sphenoid** at the apex of the orbit.





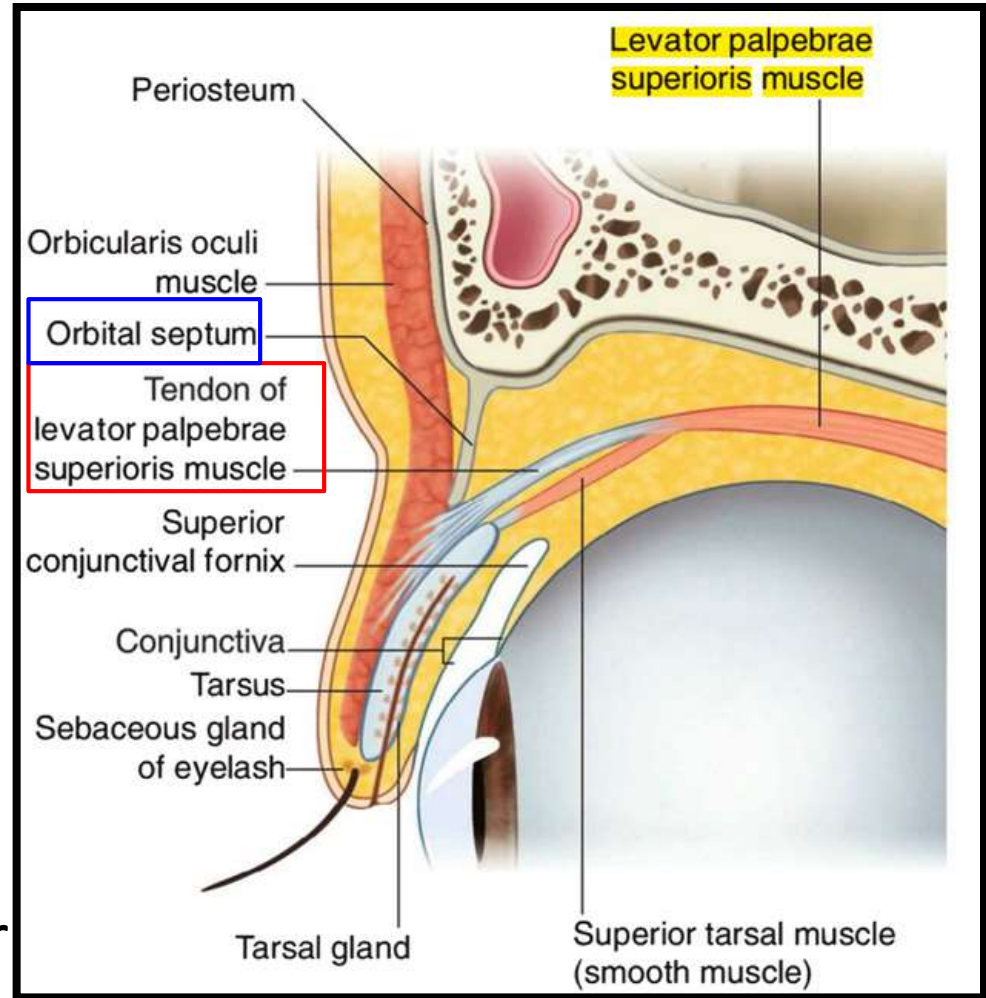
LPS

Levator Palpebrae Superioris (LPS) - Insertion

❖ Muscle divides into 3 lamellae:

Upper lamella-

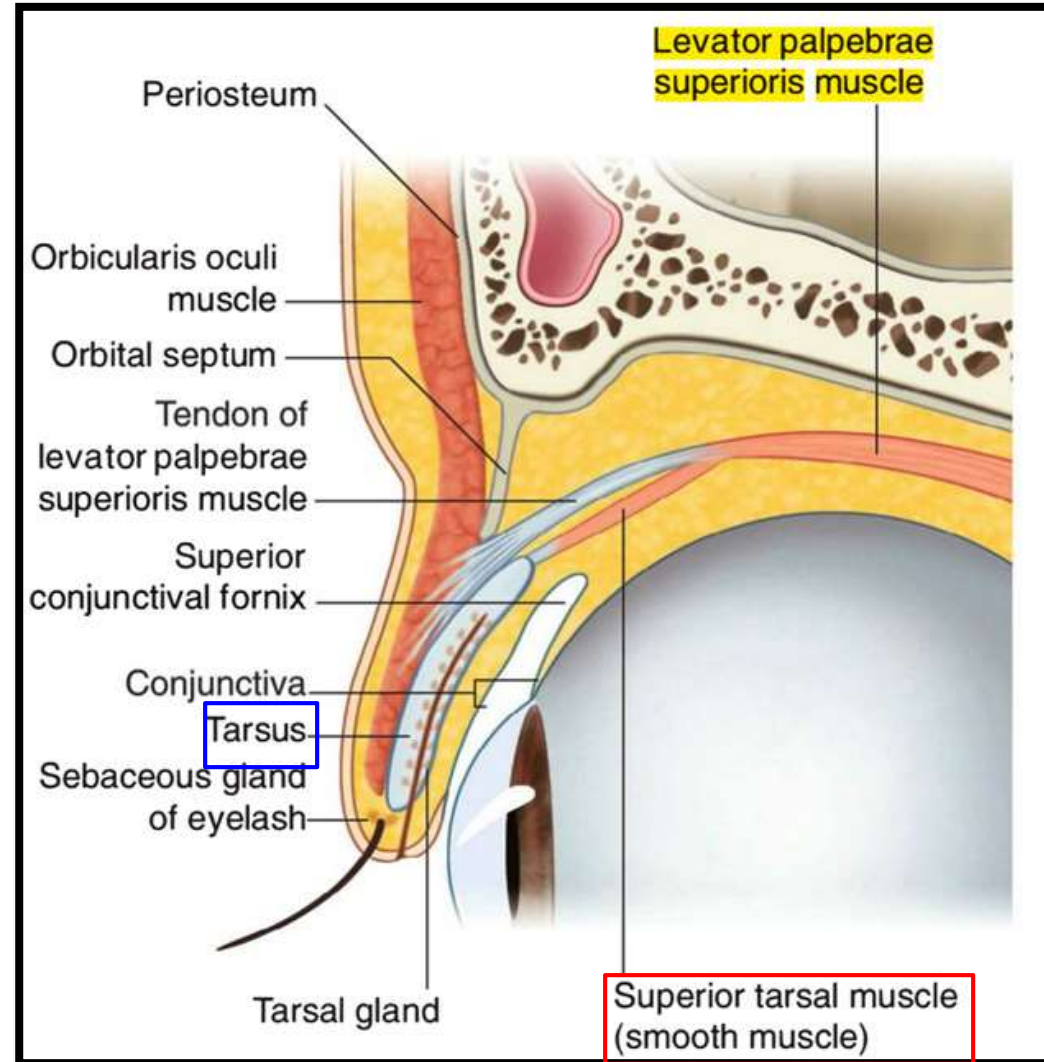
- Consists of skeletal muscle fibers.
- Penetrates the orbital septum.
- Passes through the fibers of orbicularis oculi.
- Inserts into the skin of upper eyelid.



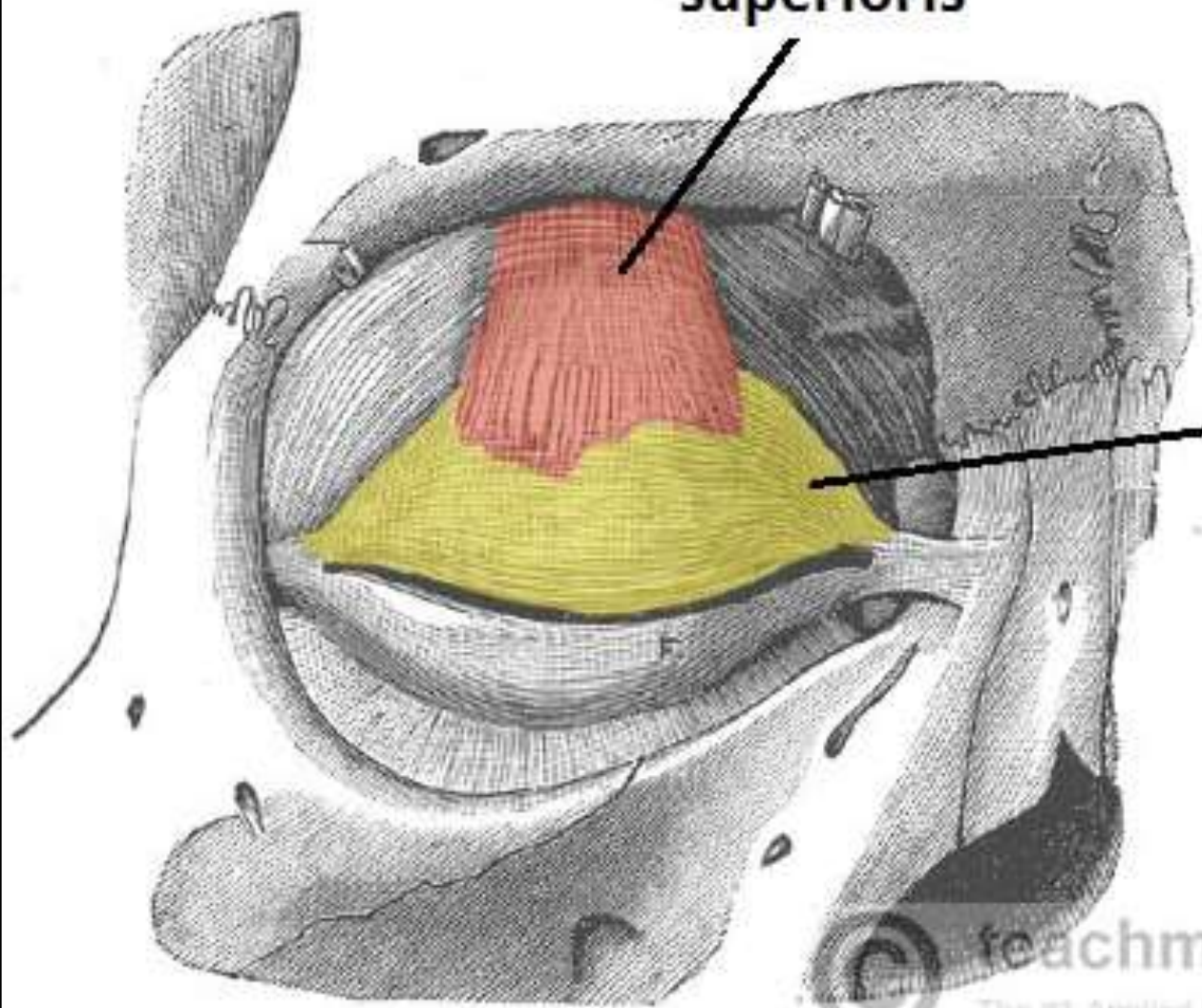
Levator Palpebrae Superioris (LPS) – Insertion contd...

Intermediate lamella-

- Consists of smooth muscle fibers (**Superior tarsal muscle**).
- Inserts on to upper border of superior tarsal plate.



Levator palpebrae superioris



Superior tarsal plate



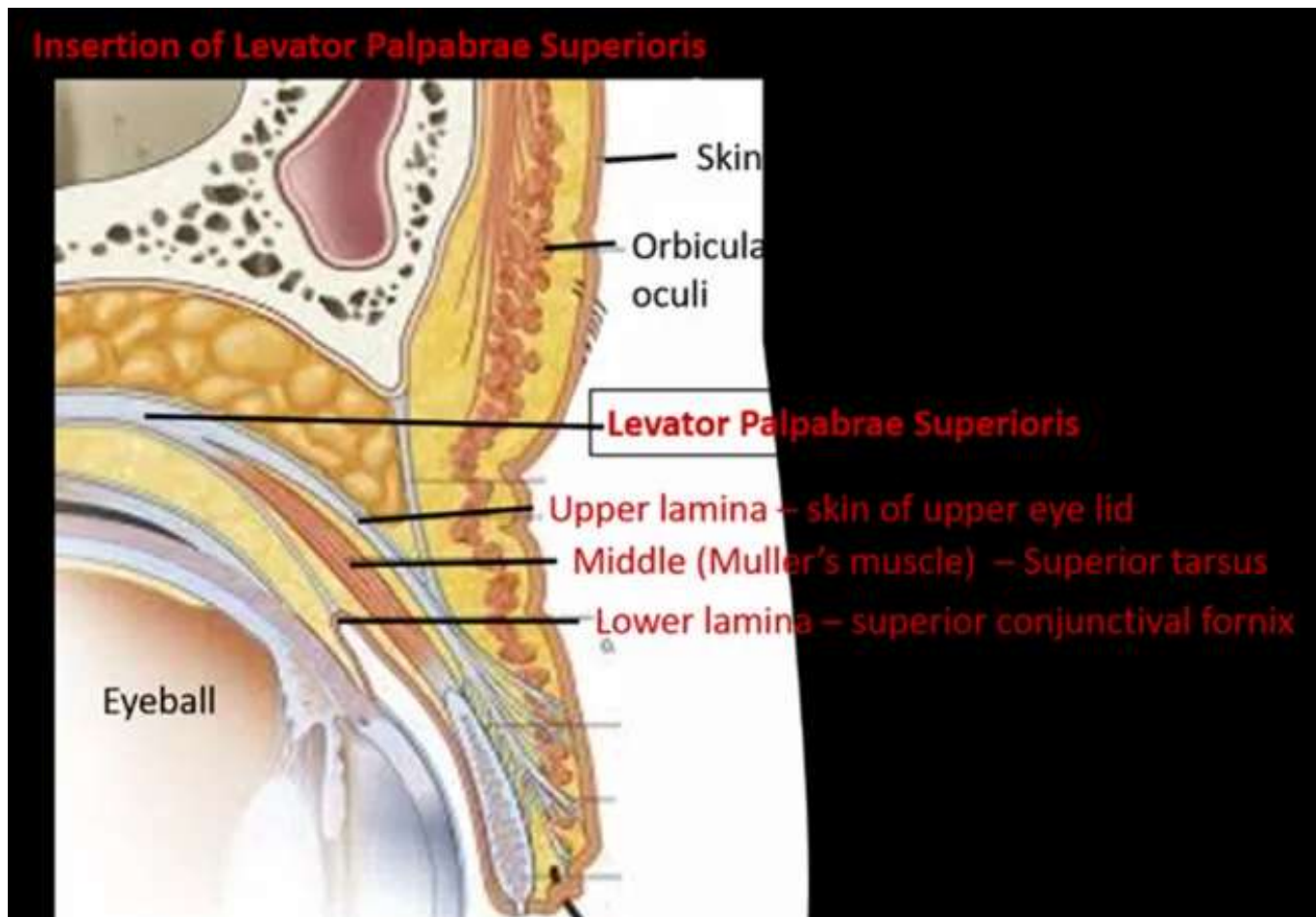
feachmeanatomy

The #1 Applied Human Anatomy Site on the Web.

Levator Palpebrae Superioris (LPS) – Insertion contd...

Lower lamella-

- Inserts on to superior fornix of conjunctiva.

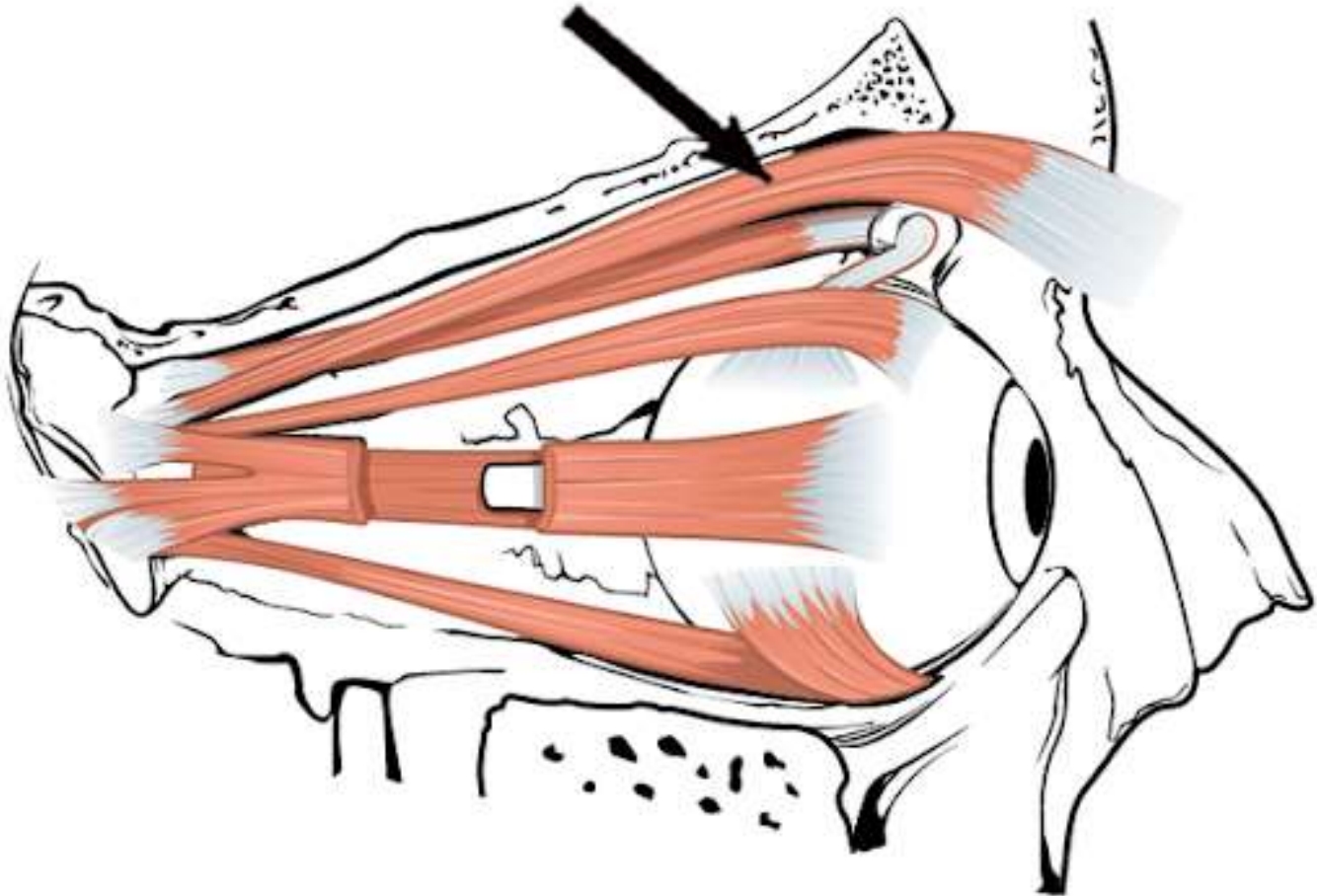


Levator Palpebrae Superioris (LPS) – Action

- Elevation of upper eyelid.



Expression created by the
levator palpebrae
superioris



Oculomotor Nerve

- Two divisions of oculomotor nerve enter the orbit through superior orbital fissure, within the common tendinous ring.

Superior division-

- Runs forwards above the optic nerve.

Supplies:

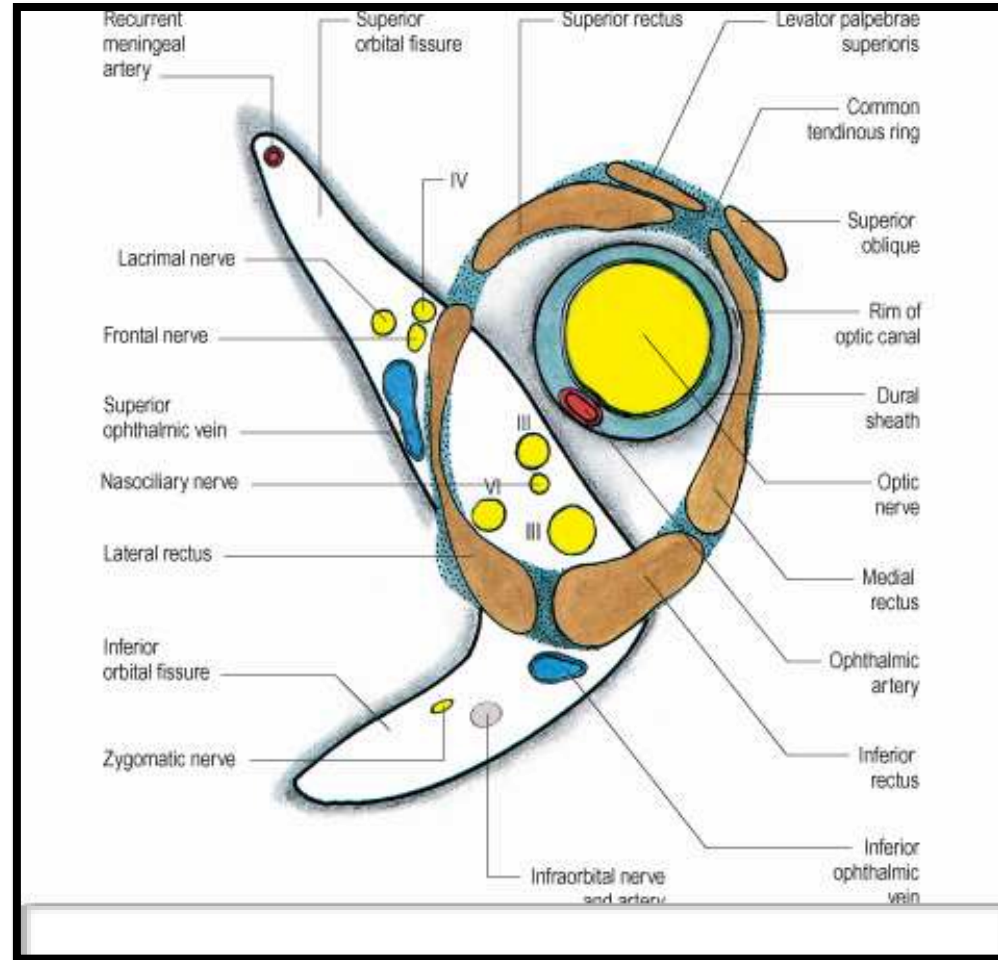
- Superior rectus.
- Levator palpebrae superioris.

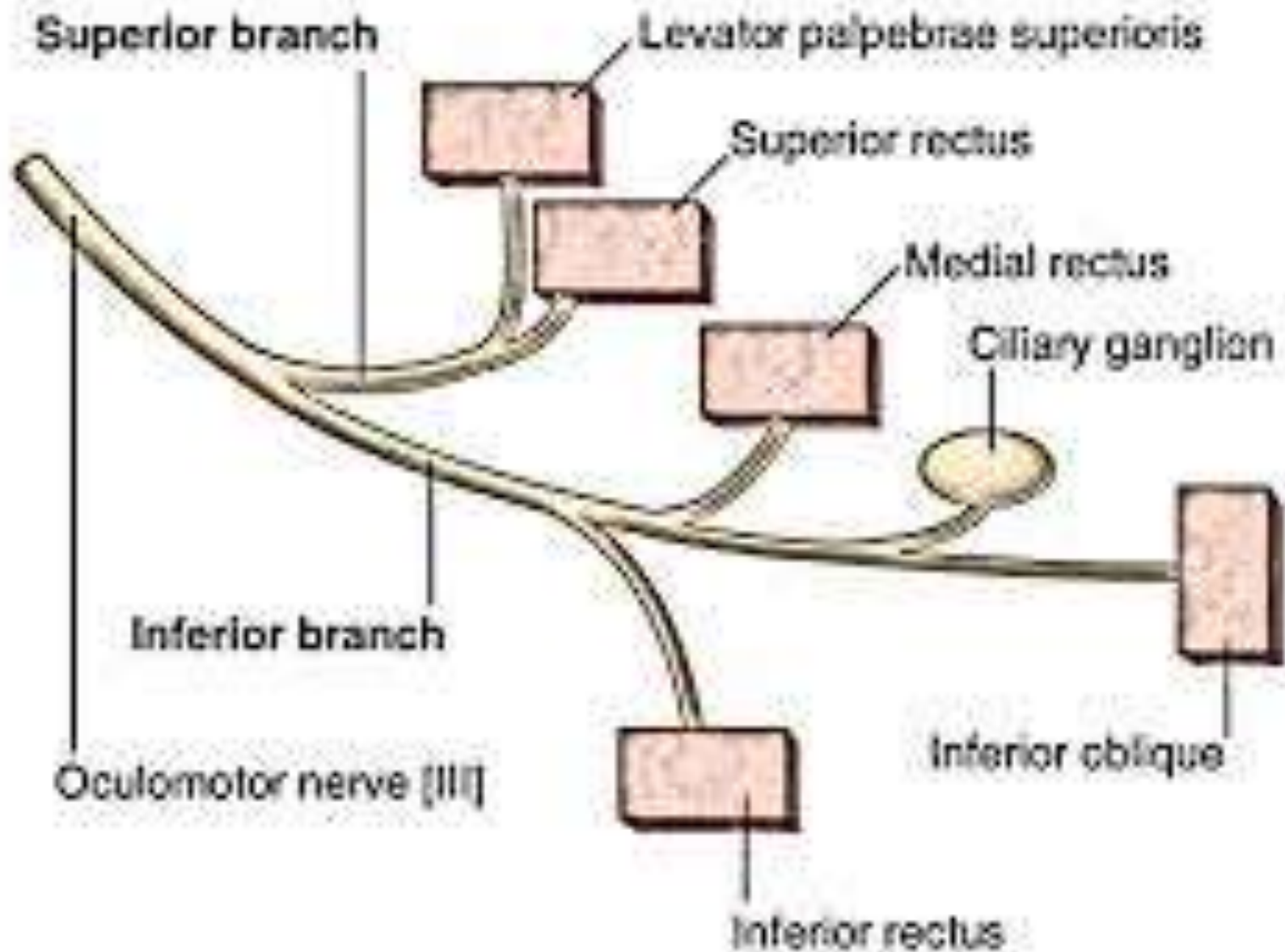
Inferior division-

- Passes below the optic nerve.

Supplies:

- Medial rectus.
- Inferior rectus.
- Inferior oblique.





Applied Anatomy

Complete division of Oculomotor Nerve-

Ptosis (drooping of the eyelid)



Normal eye alignment



Lateral squint



Ciliary Ganglion

- It is a peripheral parasympathetic ganaglion.

Location-

- Near the apex of the orbit, between the optic nerve and lateral rectus muscle.

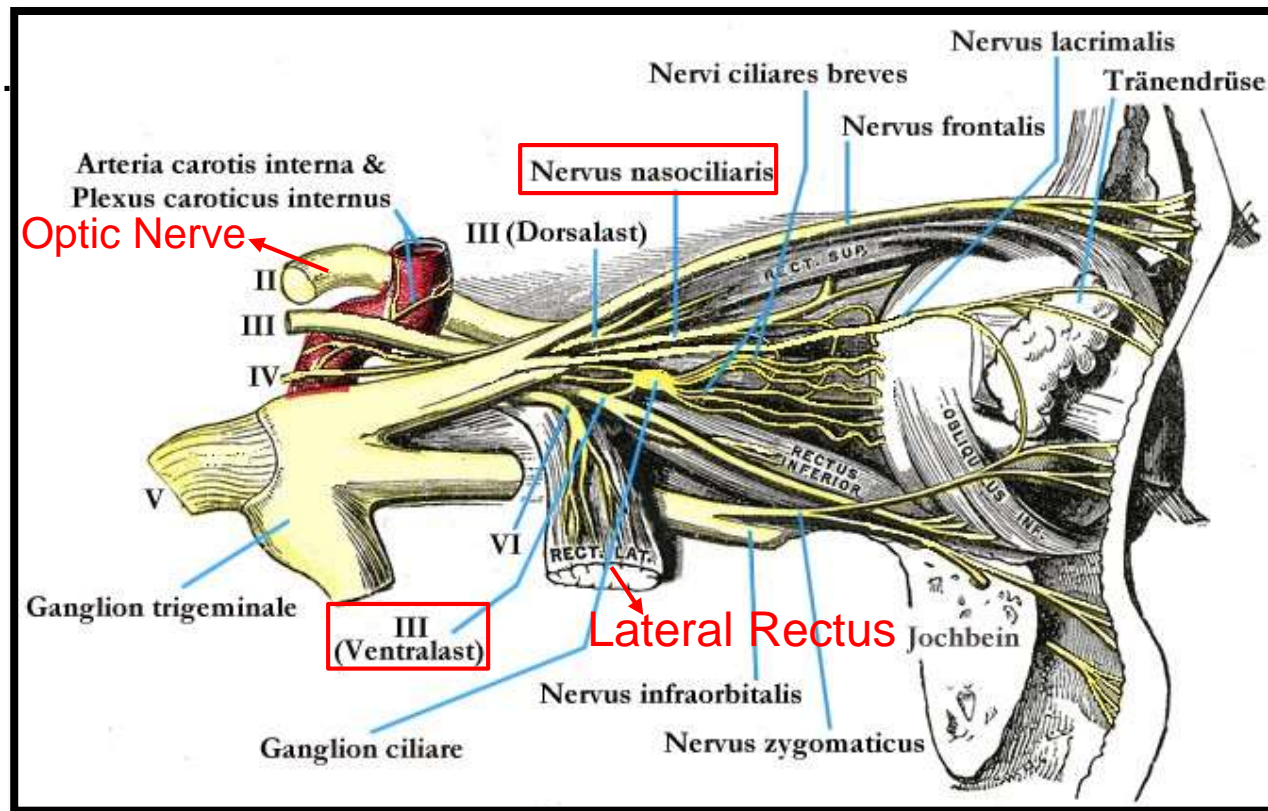
Connections-

Topographically-

- To the Nasociliary nerve.

Functionally-

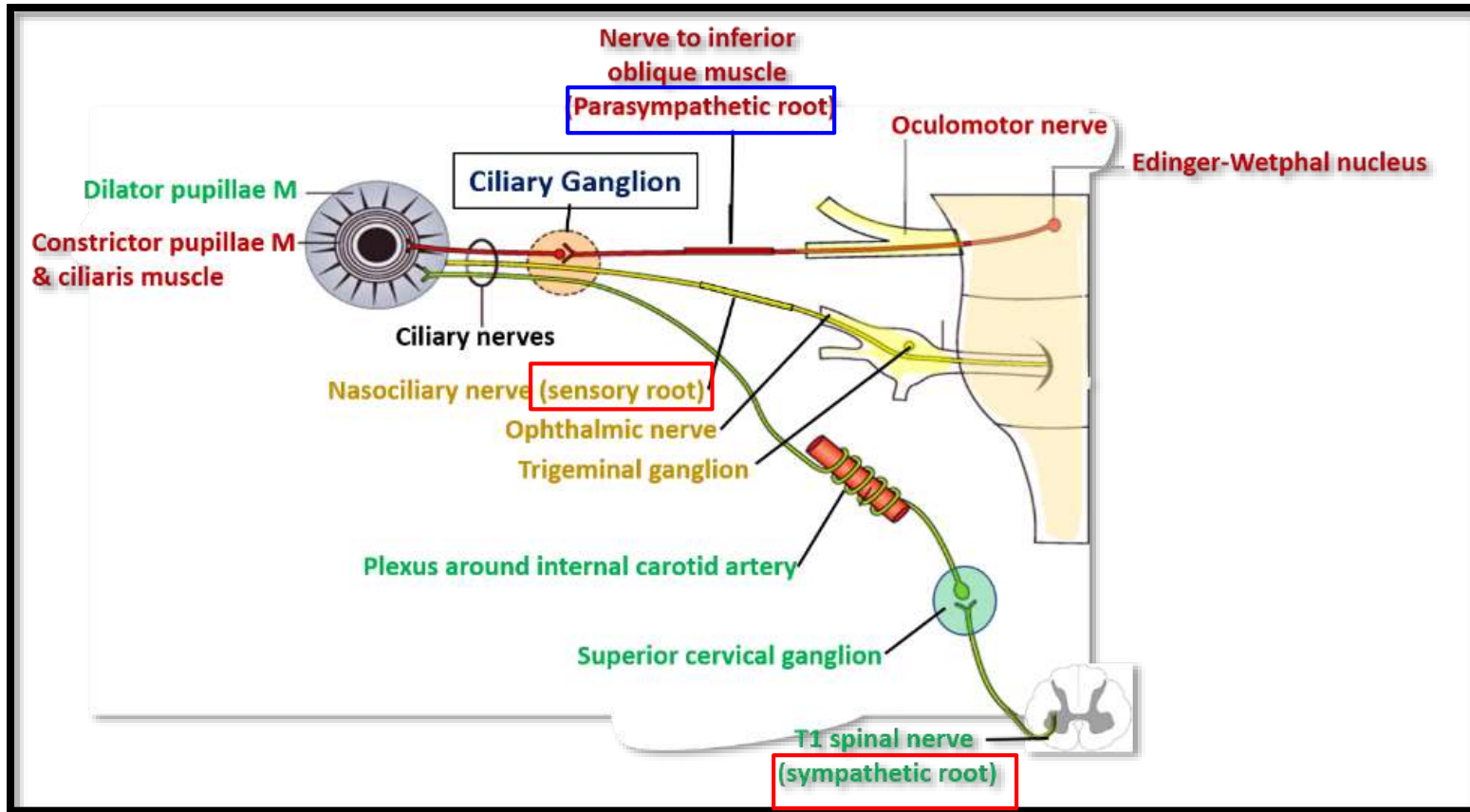
- To the Oculomotor nerve.



Roots of Ciliary Ganglion

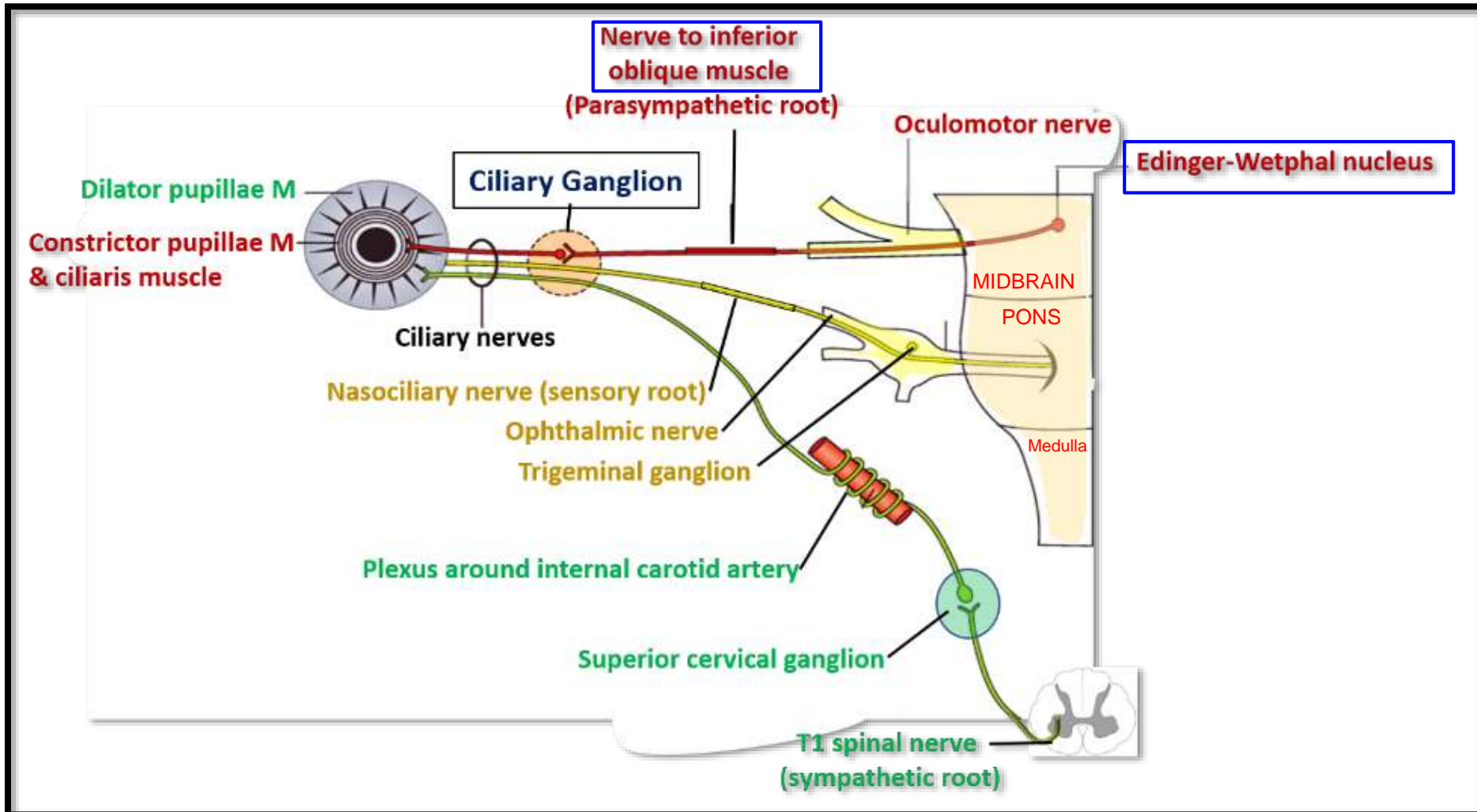
❖ 3 roots:

- Motor (parasympathetic)
- Sensory
- Sympathetic.



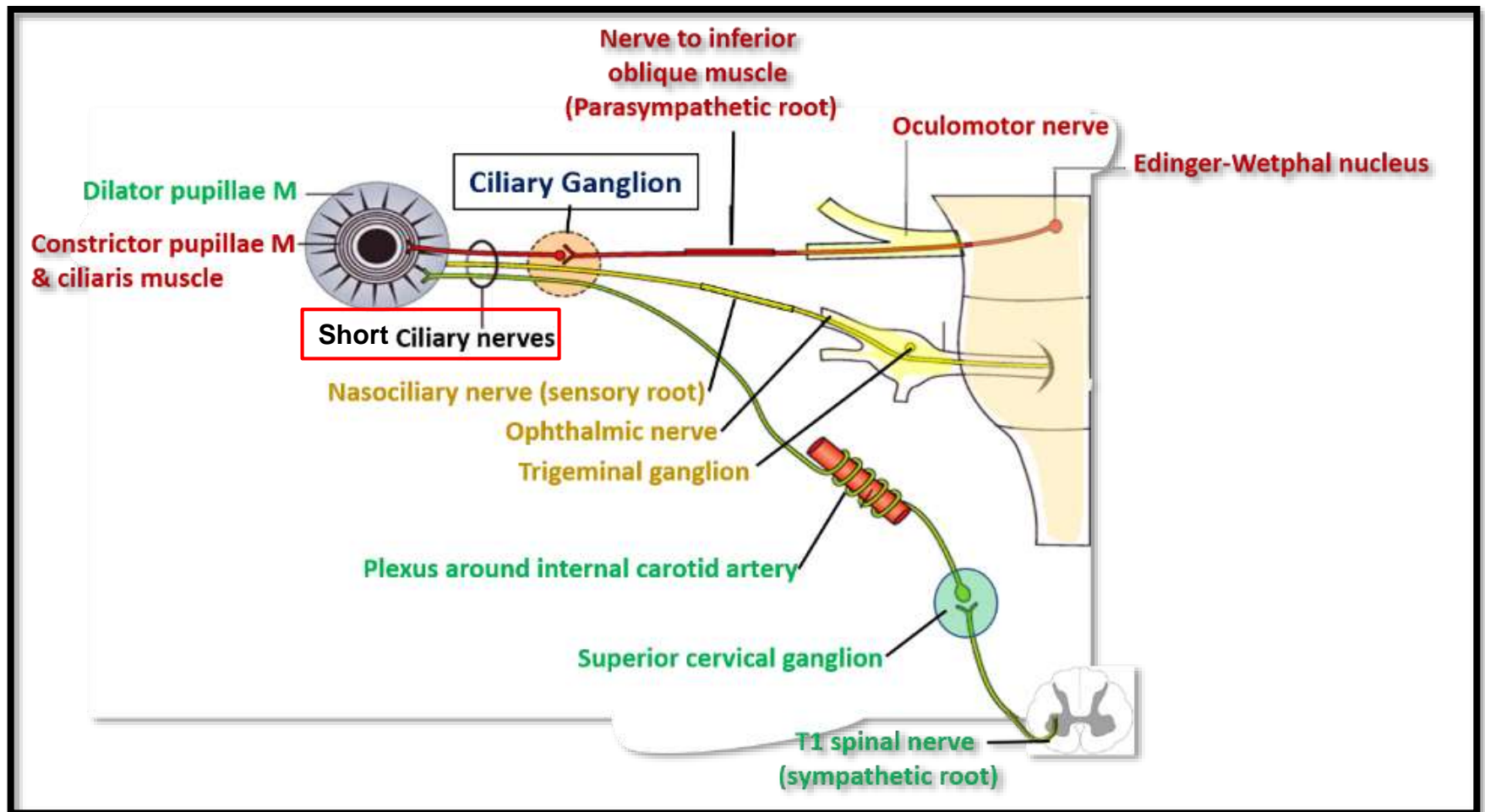
Motor (parasympathetic) Root

- ❖ Derived from Nerve to Inferior Oblique.
- ❖ Contain preganglionic parasympathetic fibers from Edinger-Westphal nucleus.
- ❖ These fibers relay in ciliary ganglion.



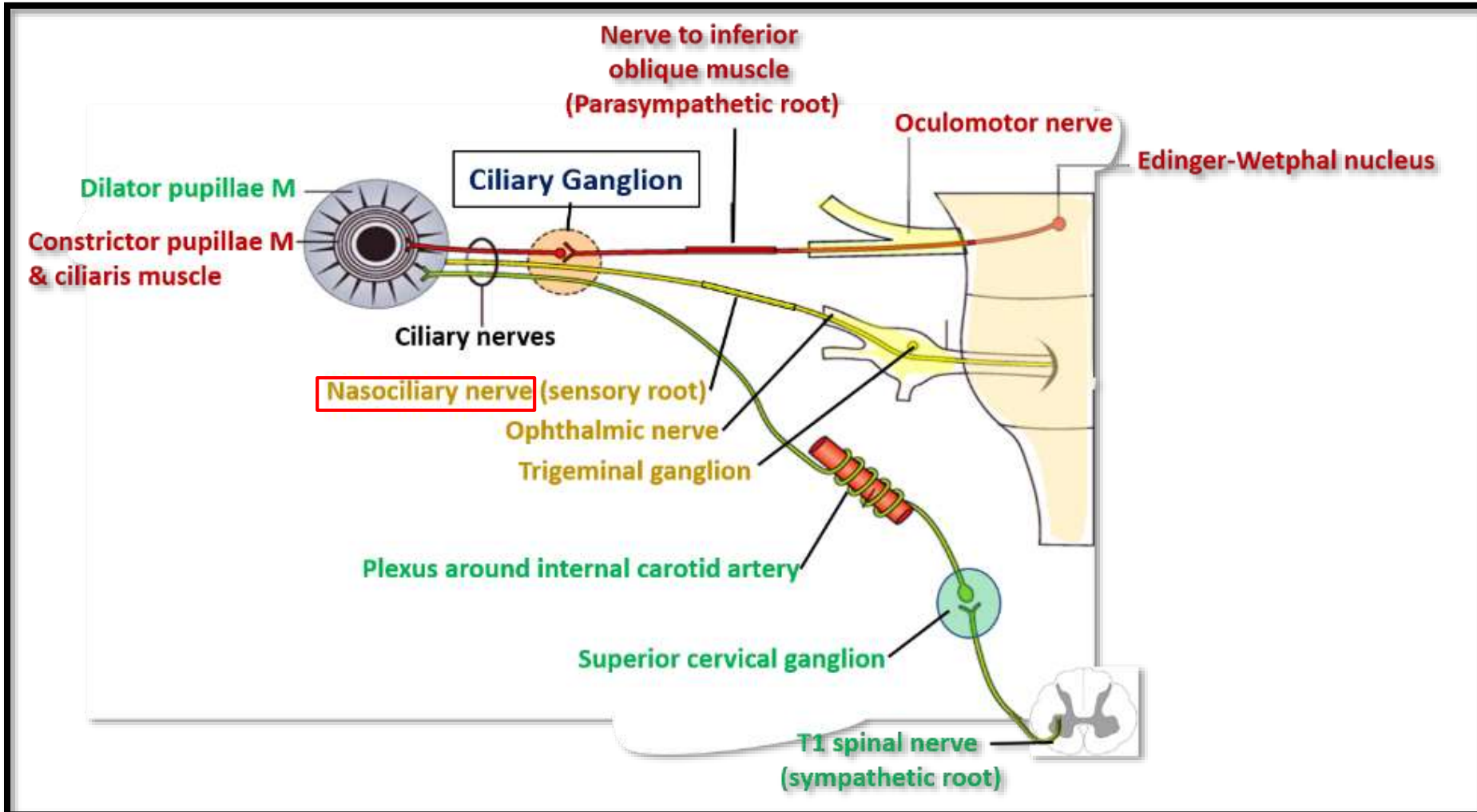
Motor (parasympathetic) Root contd...

- ❖ Postganglionic parasympathetic fibers pass through **short ciliary nerves**.
- ❖ Postganglionic parasympathetic fibers supply:
 - **Sphincter pupillae** muscle.
 - **Ciliaris** muscle.



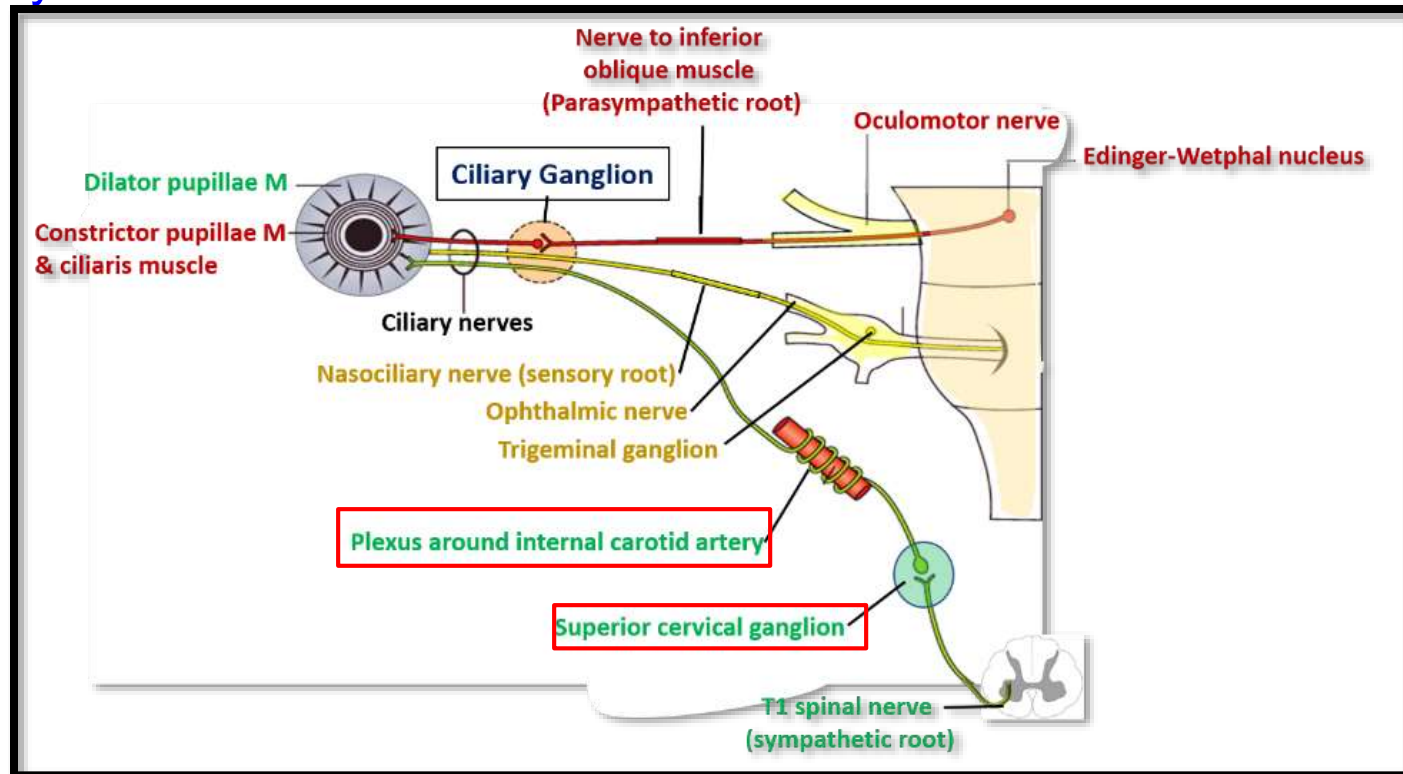
Sensory Root

- Derived from Nasociliary nerve.
- Contain fibers for pain, touch and temperature from eyeball.
- These fibers pass through the ciliary ganglion without relay.



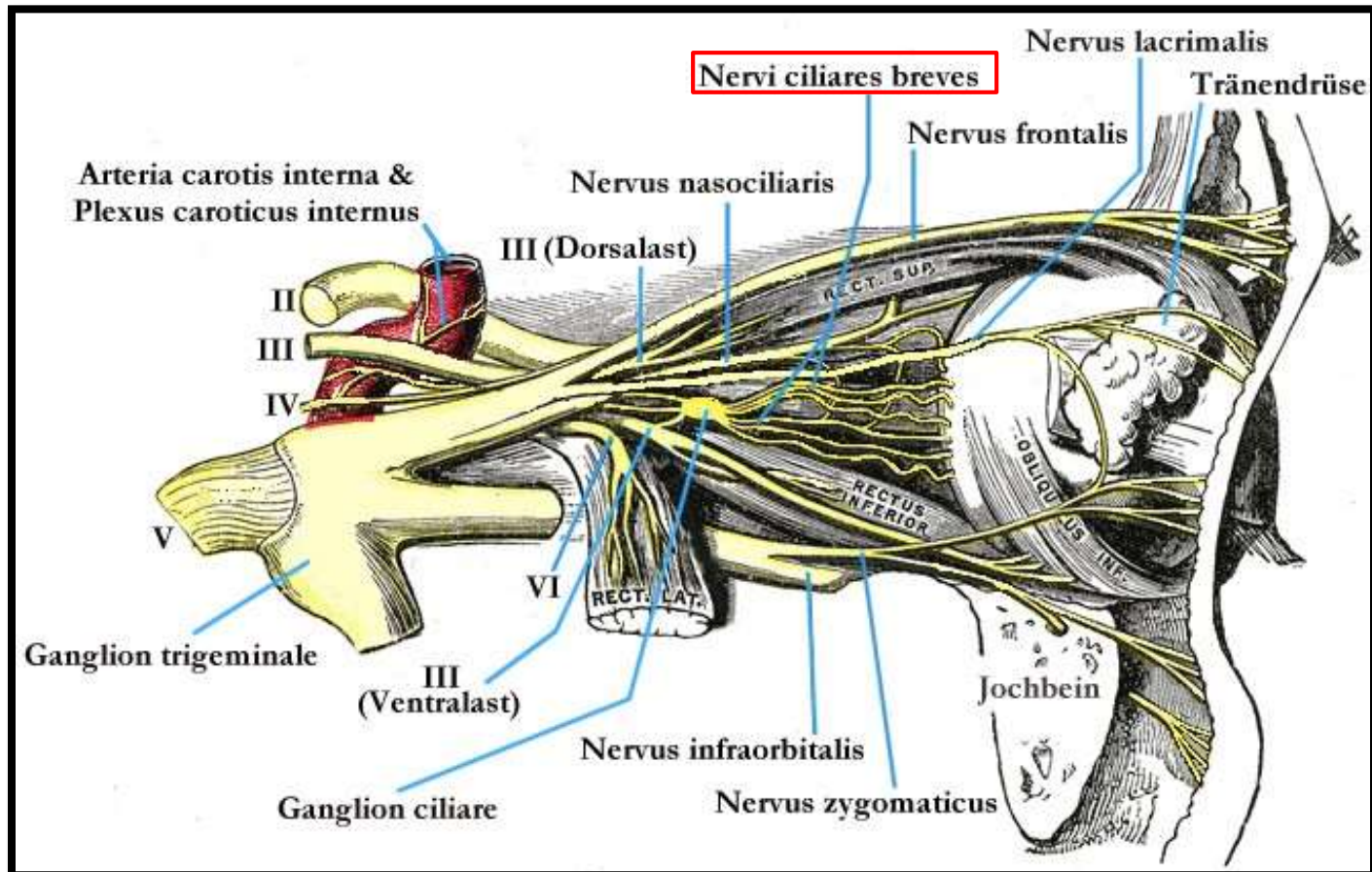
Sympathetic Root

- ❖ Derived from sympathetic plexus around Internal Carotid Artery.
- ❖ Contain postganglionic sympathetic fibers from superior cervical sympathetic ganglion.
- ❖ These fibers pass through the ciliary ganglion without relay.
- ❖ These fibers pass through the short ciliary nerves to supply:
 - Dilator pupillae muscle.
 - Blood vessels of eyeball.



Branches of Ciliary Ganglion

- 8-10 short ciliary nerves.
- These nerves contain fibers from all the three roots.
- Run forwards above and below the optic nerve.
- Pierce the sclera around the attachment of optic nerve.
- Now pass forwards in suprachoroid lamina.





Thank You