

OCULOMOTOR NERVE (CRANIAL NERVE III)

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LEARNING OBJECTIVES

- Nuclei of Oculomotor Nerve
- Course of Oculomotor Nerve
- Functions of Oculomotor Nerve

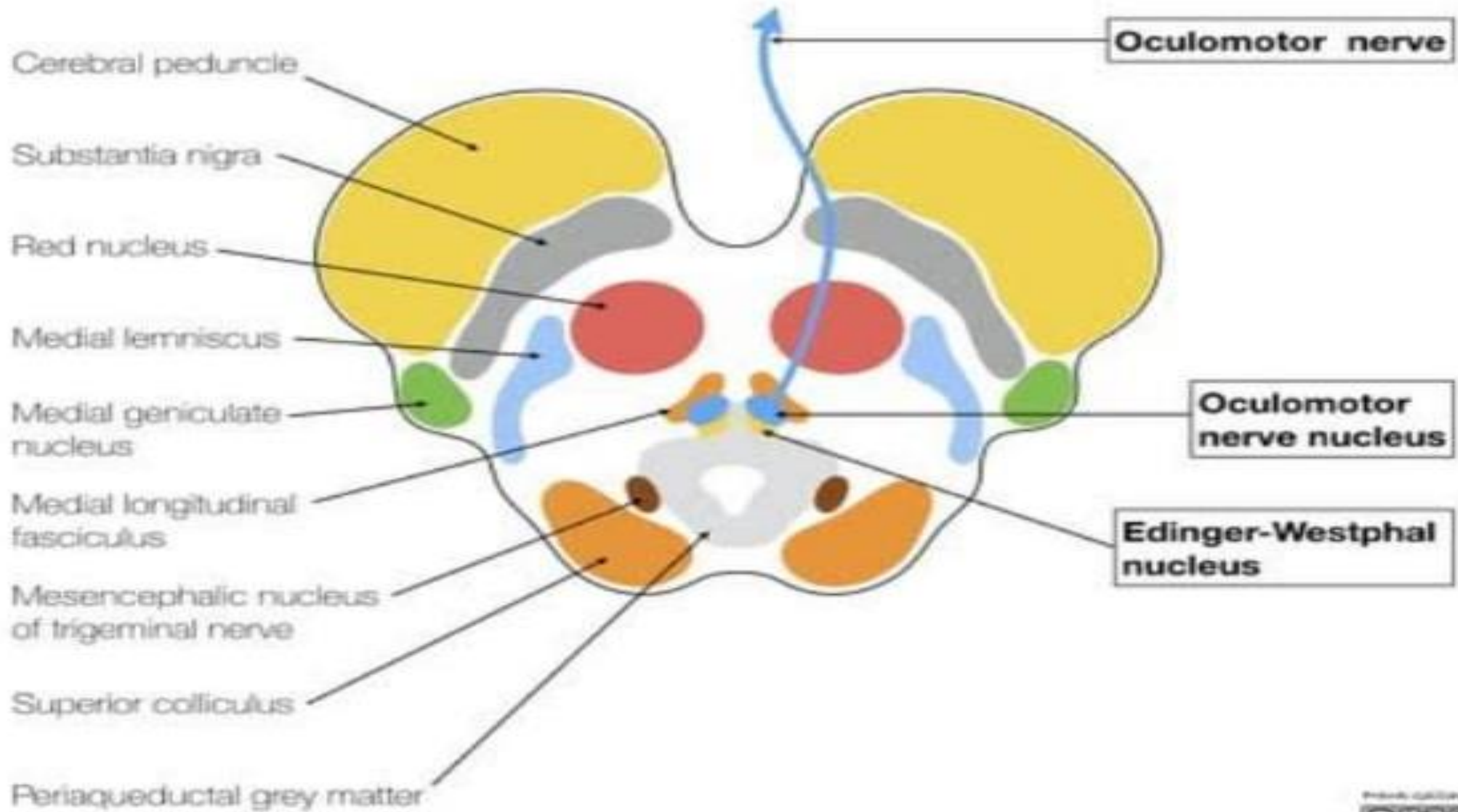
Oculomotor Nerve

- ❖ Oculomotor Nerve is the third cranial nerve.
- ❖ It is entirely motor in function.

Oculomotor Nerve Nuclei

It has two motor nuclei:

1. The main motor nucleus.
2. The accessory parasympathetic nucleus



Oculomotor Nerve

Motor nucleus
of Oculomotor

Edinger-
Westphal
Nucleus

Midbrain

Superior orbital fissure

Cavernous sinus

Ciliary ganglion

1

2

3

4

5

A

B

Extraocular muscles

1. Levator palpebrae superioris
2. Superior rectus
3. Medial rectus
4. Inferior rectus
5. Inferior oblique

Intraocular muscles

(parasympathetic supply)

- A. Ciliary muscle
- B. Sphincter pupillae

Main Oculomotor Nucleus

❖ Location

Anterior part of grey matter surrounding cerebral aqueduct of midbrain at the level of superior colliculus.

❖ Course of nerve fibers

The nerve fibers pass anteriorly through the red nucleus and emerge on the anterior surface of the midbrain interpeduncular fossa.

❖ Supply

All the extrinsic muscles of the eyes except superior oblique and lateral rectus.

❖ Mnemonic

$[LR_6SO_4]_3$

Accessory Parasympathetic Nucleus

It is also called the Edinger–Westphal nucleus.

❖ Location

Posterior to the main oculomotor nucleus.

❖ Course of nerve fibers

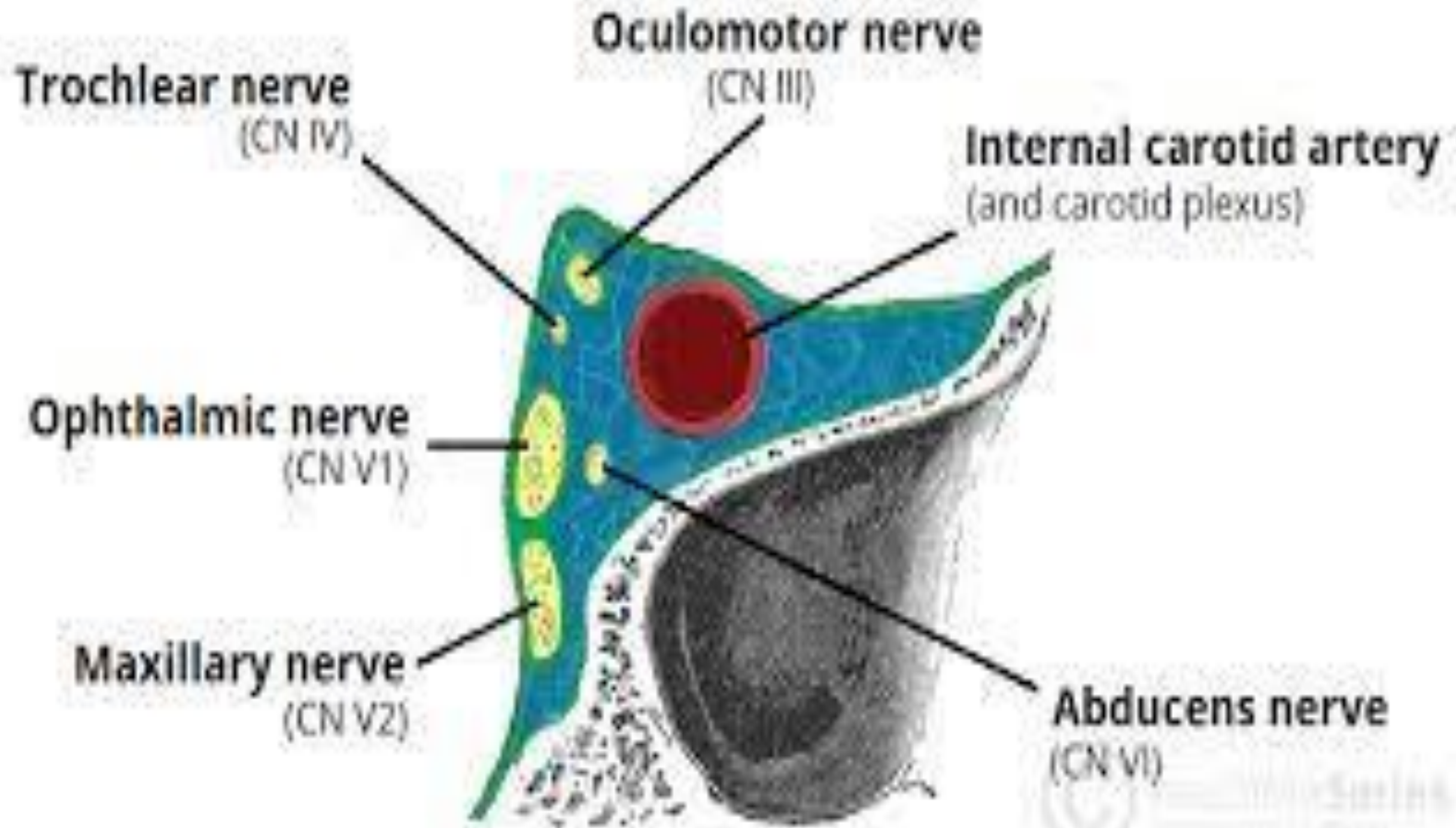
The preganglionic nerve fibers accompany the oculomotor fibers to the orbit. Here, they synapse in the ciliary ganglion and postganglionic fibers pass through short ciliary nerves.

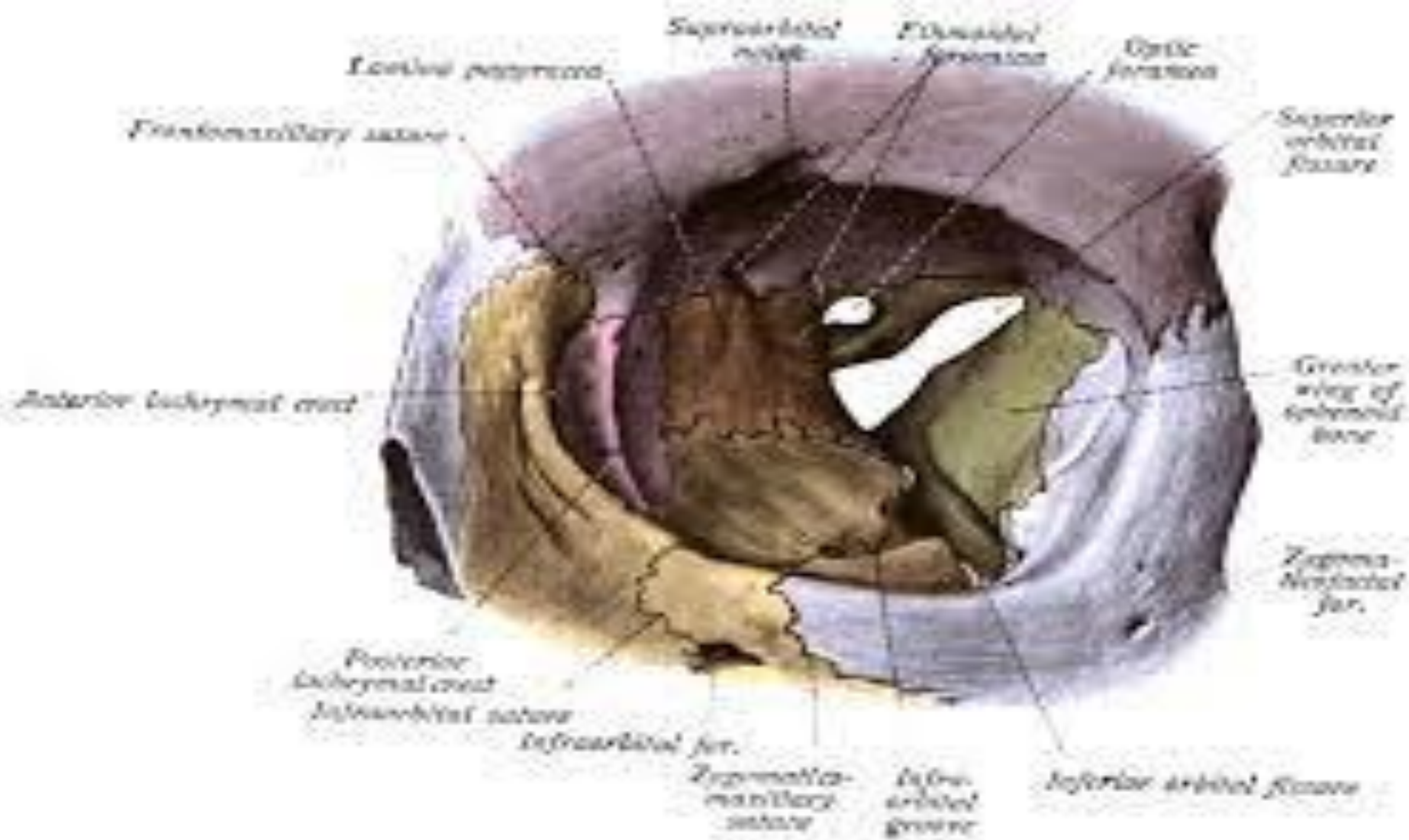
❖ Supply

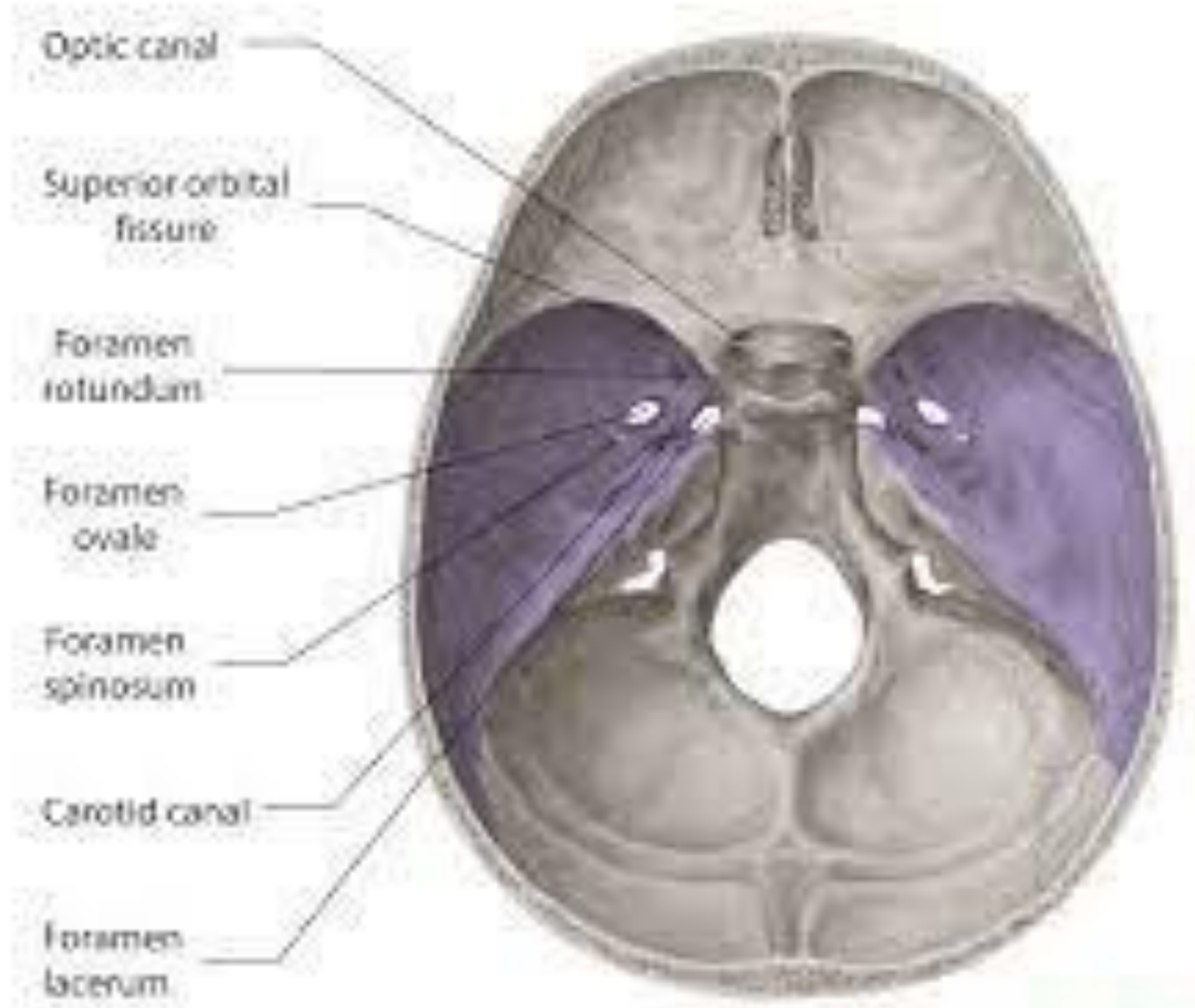
- I. Consenter iris
- II. Ciliary muscles

Course of Oculomotor Nerve

- Oculomotor Nerve emerges on anterior surface of midbrain.
- It continues into middle cranial fossa in the lateral wall of cavernous sinus.
- It enters the orbit through lower part of superior orbital fissure, it divides into two parts.
 1. Superior Ramus
 2. Inferior Ramus







Optic canal

Superior orbital
fissure

Foramen
rotundum

Foramen
ovale

Foramen
spinosum

Carotid canal

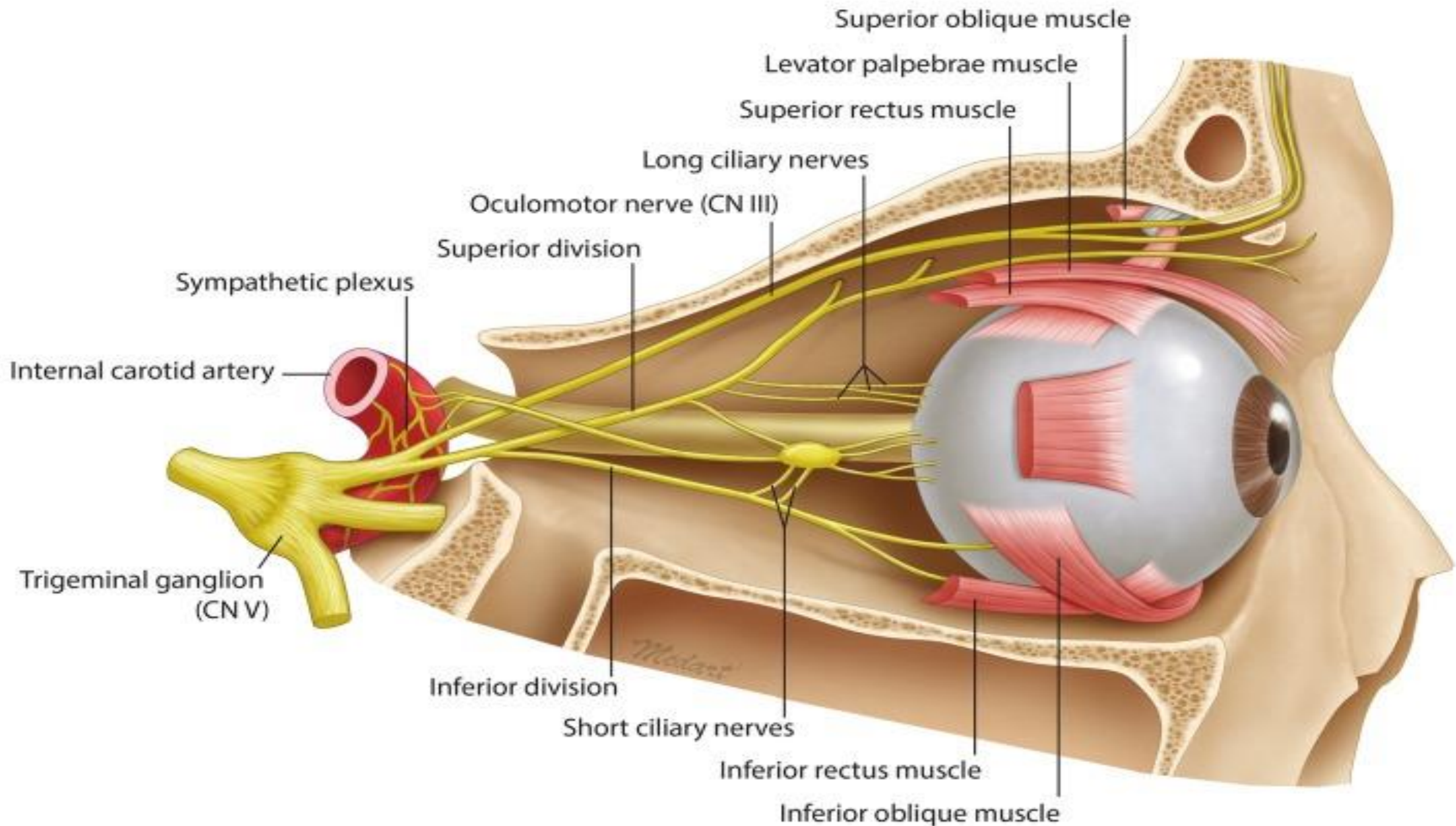
Foramen
lacerum

Superior Ramus Supply

- Superior rectus muscle
- Levator palpebrae superioris muscle

Inferior Ramus Supply

- Inferior rectus muscle
- Medial rectus muscle
- Inferior oblique muscle
- Nerve to inferior oblique gives off a branch that passes to ciliary ganglion and carries parasympathetic fibers to:
 - Sphincter pupillae
 - Ciliary muscles



Functions

1. Turning the eye upward, downward and medially.
2. Constricting the pupil.
3. Accommodating the eye.

Clinical Correlates

□ Complete lesion of oculomotor nerve

Exterior
strabismus

Diplopia

Ptosis

Dilateal
Pupil

Clinical Correlates

□ Incomplete lesion of oculomotor nerve

External ophthalmoplegia

Paralysis of extraocular muscles

Spared innervation of sphincter pupillae and ciliary muscles

Internal ophthalmoplegia

Spare innervation of extraocular muscles

Loss of autonomic innervation

Normal eye

Abnormal eye

Looking straight ahead



Ptosis

Inactivation of the levator palpebrae

Mydriasis

Decreased tone of the constrictor pupillae muscle

"Down and Out"

Unopposed left superior oblique and lateral rectus muscles

*Allah has made eyes the
mirror of the heart so if
the slave lowers his gaze,
his heart lowers its desires,
and if he lets his gaze
loose, his heart lets its
desires loose.*

Thank you!

Goodbye!

