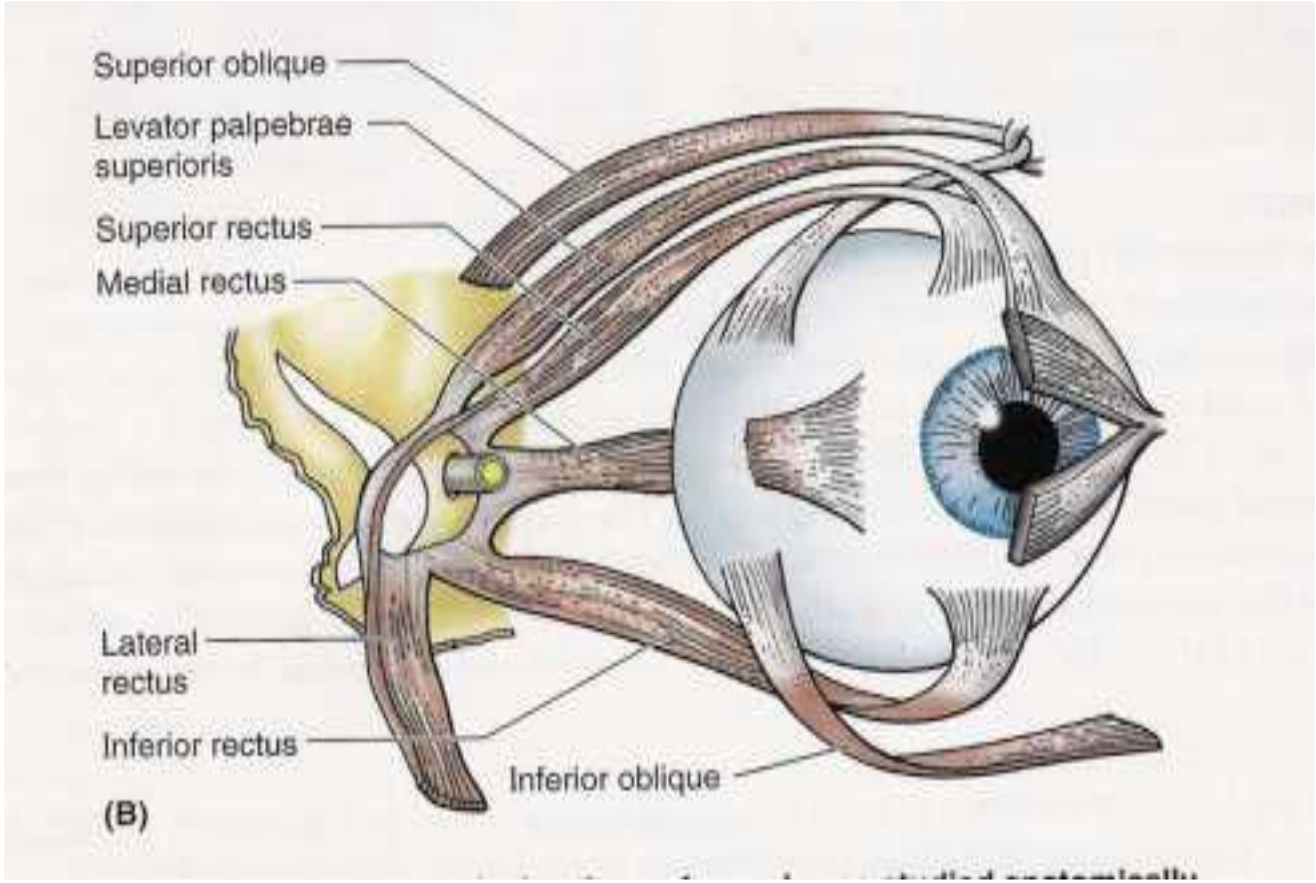
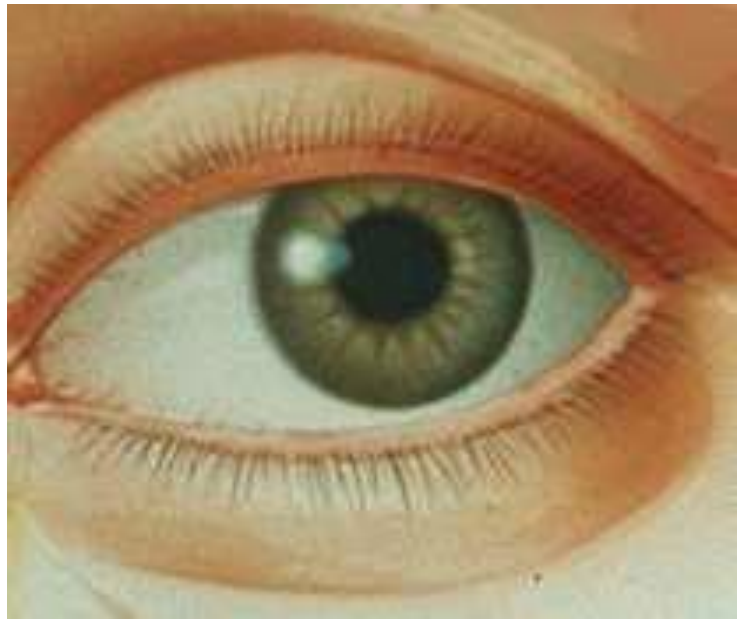
Eye

Dr. Priti Acharya


Superior oblique
Levator palpebrae superioris
Superior rectus
Medial rectus
Lateral rectus
Inferior rectus
Inferior oblique
(B)



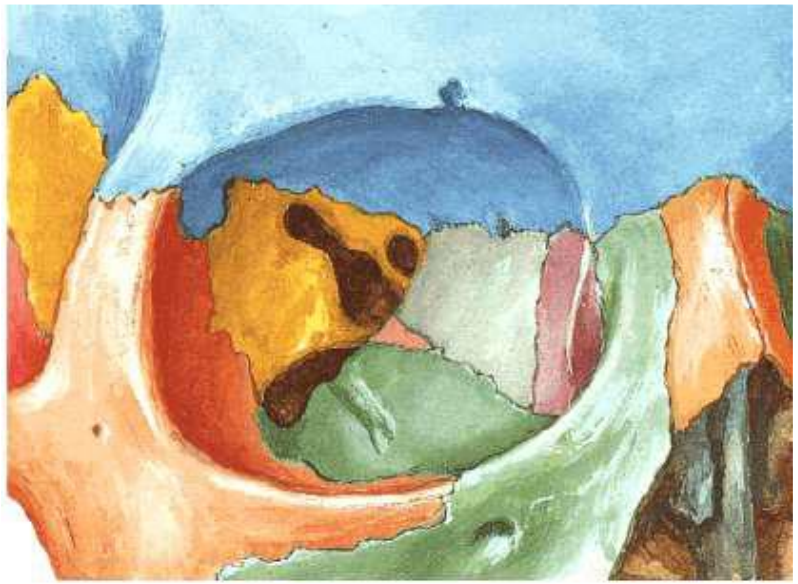
Orbit

- The orbits are Pyramidal shaped bony cavities in the facial skeleton.

Features

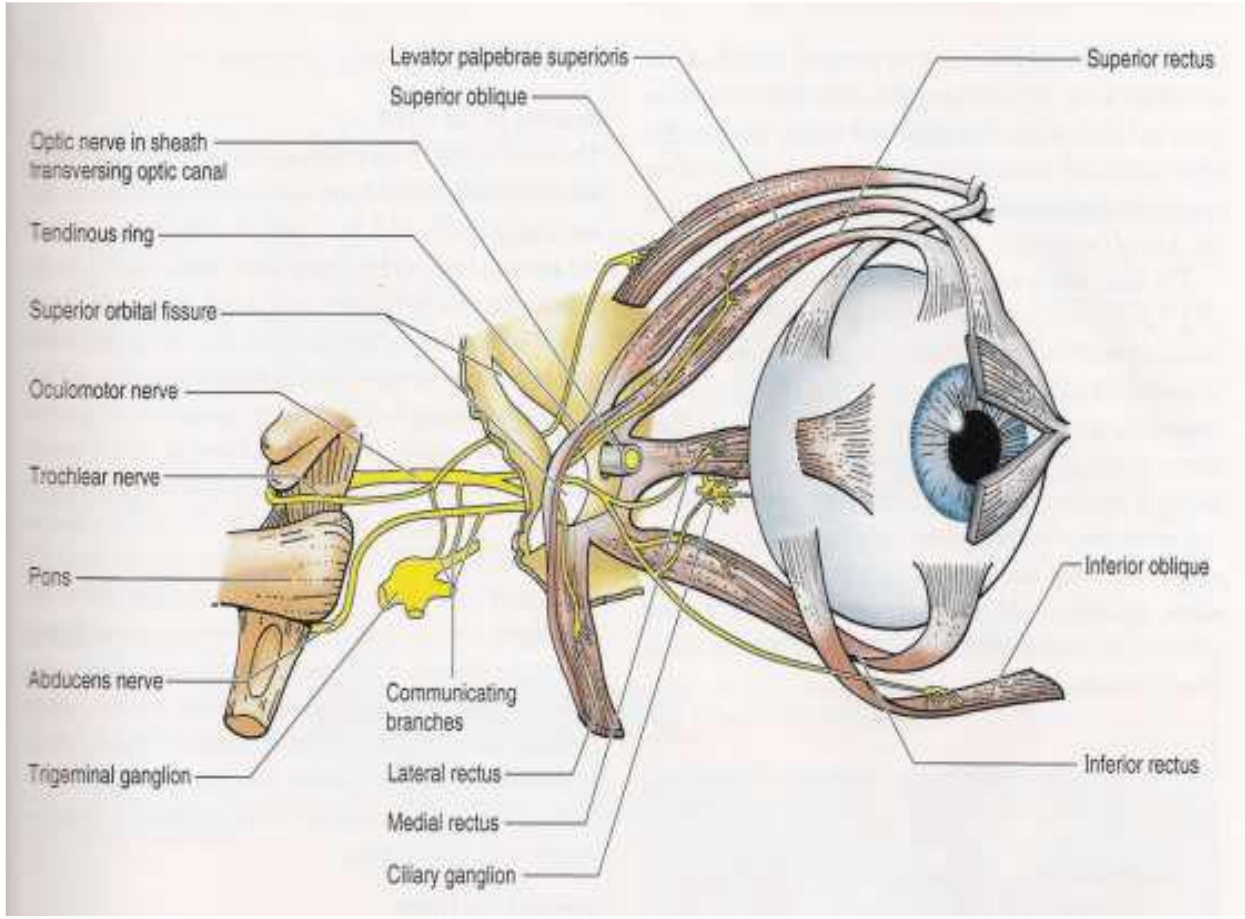
- Apex-is behind, directed towards the optic canal
- Base-orbital margin(F,Z,M)
- Roof–orbital plate of frontal bone, lesser wing of sphenoid bone.
- Floor–orbital surface of maxilla, zygomatic bone.
- Lateral wall (thickest)- zygomatic, greater wing of sphenoid.
- Medial wall (thinnest)-maxilla, lacrimal bone, plate of ethmoid bone.

Orbit



Contents

- Eye ball
- Muscles
- Nerves –2,3,4,6
- Vessels –ophthalmic artery
- Lacrimal gland
- Orbital fat



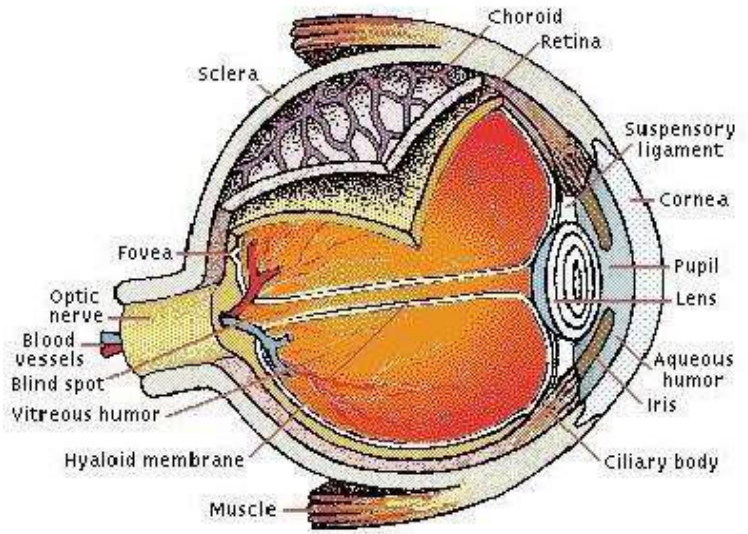
Eye

- The Eye is the organ of vision.
- Located in the orbit.

Composed of :

1.The Eyeball.

2.The Adnexa.



Terminology of Eye

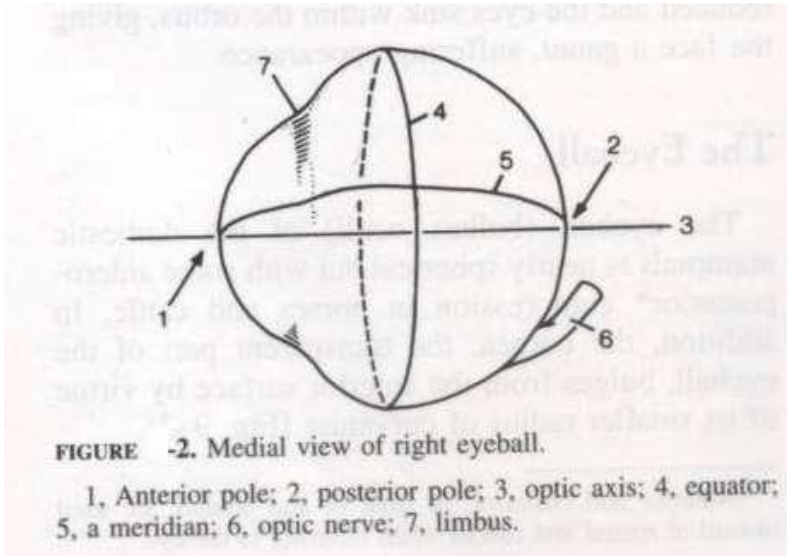
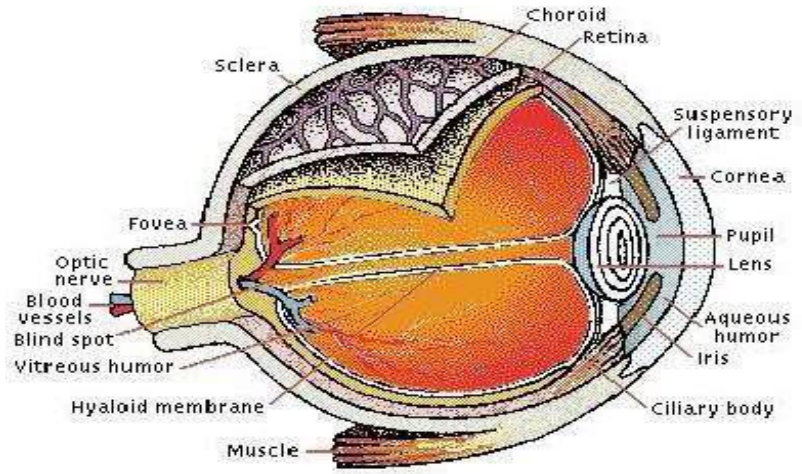


FIGURE -2. Medial view of right eyeball.
1, Anterior pole; 2, posterior pole; 3, optic axis; 4, equator; 5, a meridian; 6, optic nerve; 7, limbus.

- **Cornea**: the transparent part of the eyeball.
- **Sclera:** the opaque posterior part of the eyeball
- **Anterior pole**: the highest point on anterior surface of cornea .
- **Posterior pole**: the highest point on posterior surface of cornea.
- **Optic axis**: the straight line passing through both poles.
- **Equato**r :an imaginary line about the eyeball, which is the equidistant from the poles.
- **Limbus**–sclera corneal junction.

Eyeball

- The eyeball is the organ of sight. The camera closely resembles the eyeball in its structure.
- It is almost spherical in shape and has a diameter of 2.5 cm.
- Light entering the eyeball passes through several refracting media.
- From before backward these are the cornea, aqueous humor, lens, and the vitreous body.



The three tunics and their functions are:

- It is made up of 3 concentric coats.

Outer or fibrous coat/tunic -sclera and cornea.

Middle or vascular coat/tunic (uveal tract) –choroid, ciliary body and iris.

Inner or nervous coat/tunic –retina.

I. **An external fibrous tunic:** that consist of fibrous tissue that maintains the shape of the eyeball and also protects the eyeball.

II. **A middle vascular tunic:** that consist of blood vessels and smooth muscle.

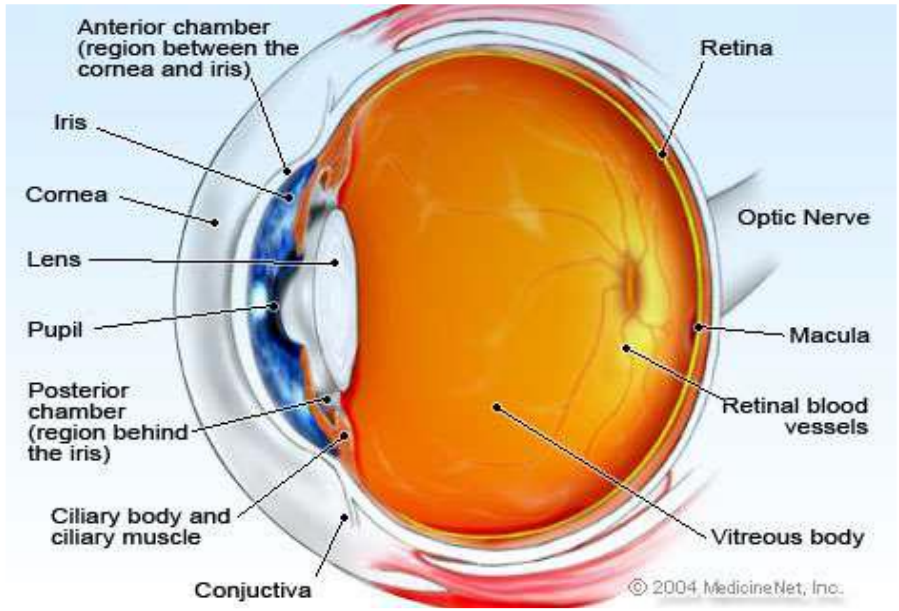
Also concerned with the nutrition of the eyeball and the regulation of the shape of the lens and size of pupil.

III. **An internal nervous tunic:** that consists largely of nervous tissue

concerned with vision and translation of visual stimuli into nerve impulses for interpretation by the brain.

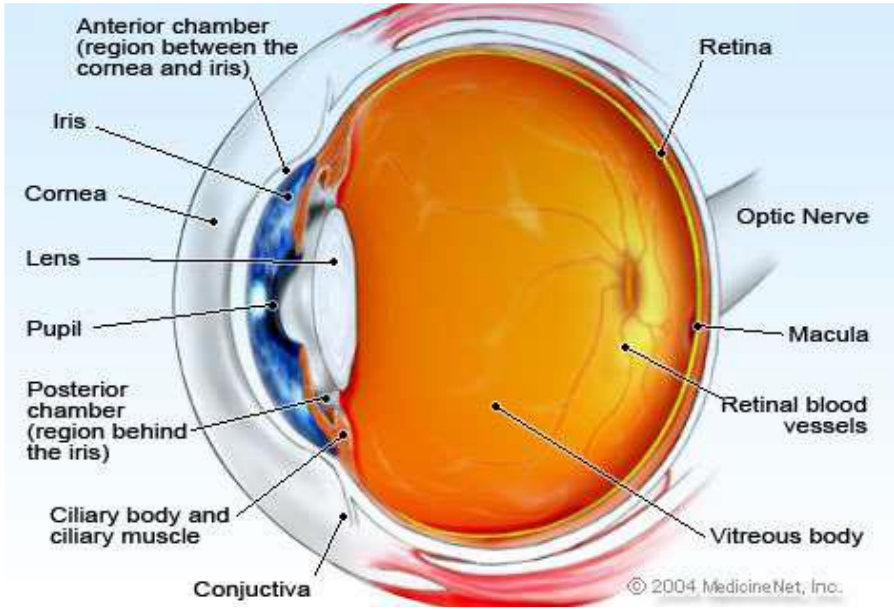
Aqueous Humor

- This is a clear watery fluid which fills the space between the cornea in front and the lens..
- The space is divided by the iris into anterior and posterior chambers which freely communicate with each other through the pupil.



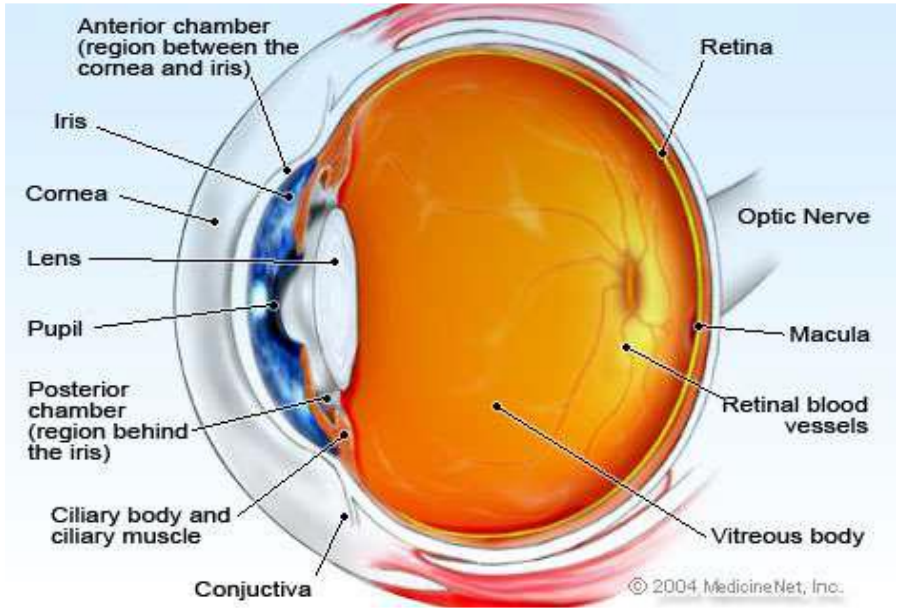
LENS

- The lens is a transparent biconvex structure which is placed between the anterior and posterior segments of the eye.
- It is circular in outline and has a diameter of 1 cm.



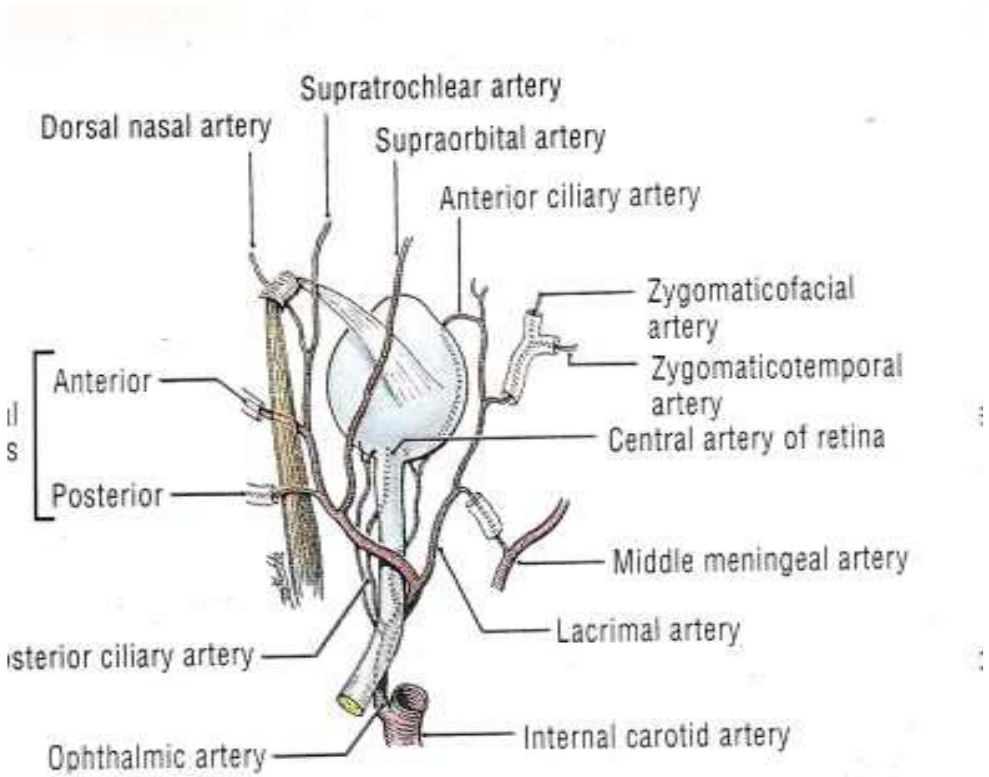
Vitrous Body

- It is a colourless, jelly-like transparent mass which fills the posterior segment of the eyeball.
- It is enclosed in a delicate homogenous hyaloid membrane.



Blood supply of the eye

- Ophthalmic artery carries the principle supply of the blood to the eye.



Nerve Supply

- **The optic nerve II:** enters the orbit through the optic foramen and passes to the light receptor cells in the retina.
- **The Oculomoter nerve III:** control the movement of the eyeball.
- **The abducent nerve VI:** innervates lateral rectus muscle.
- **The trochlear nerve IV:** innervate superior oblique muscle.
- **The trigeminal nerve V:** send branches to the eye, and supplies eyelids and conjunctiva.

Applied Anatomy

- Lesion in retina leads to scotoma, ie. at certain points there may become blind spots.
- Optic nerve damage results in complete blindness of that eye.
- Complete destruction of optic tract, optic radiation, and visual cortex of one side results in loss of the opposite half of field of vision.
- Optic neuritis –lesion of optic nerve that results in decrease of visual acuity.

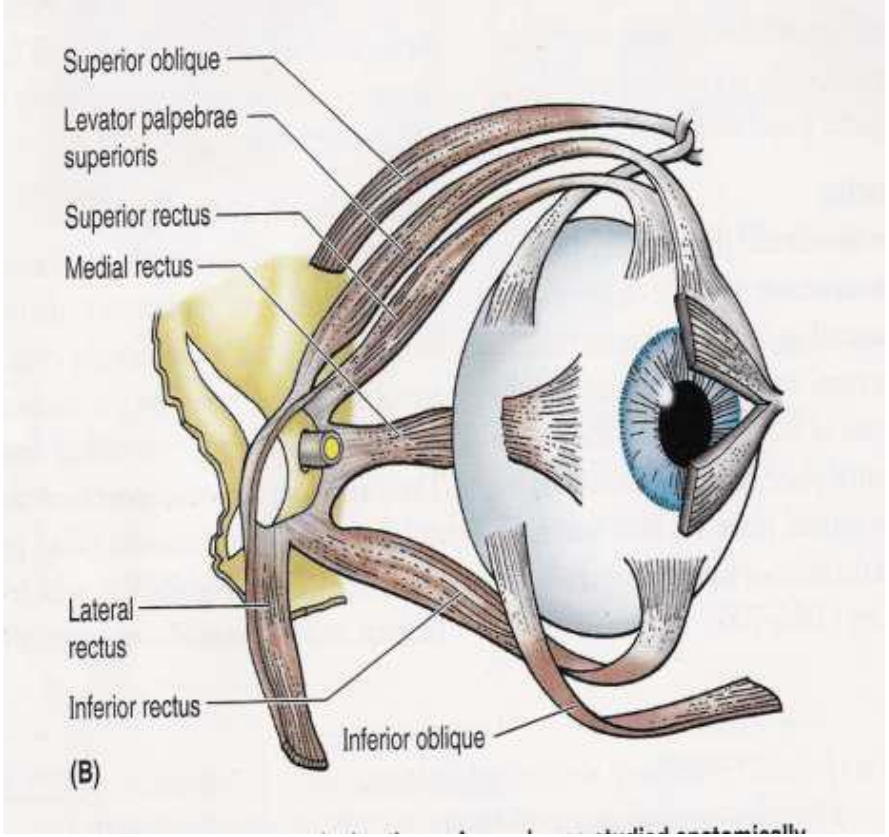
Extra ocular muscle

7 VOLUNTARY MUSCLES

- 4 Recti
- 2 Oblique
- 1 Levator palpaberal superioris

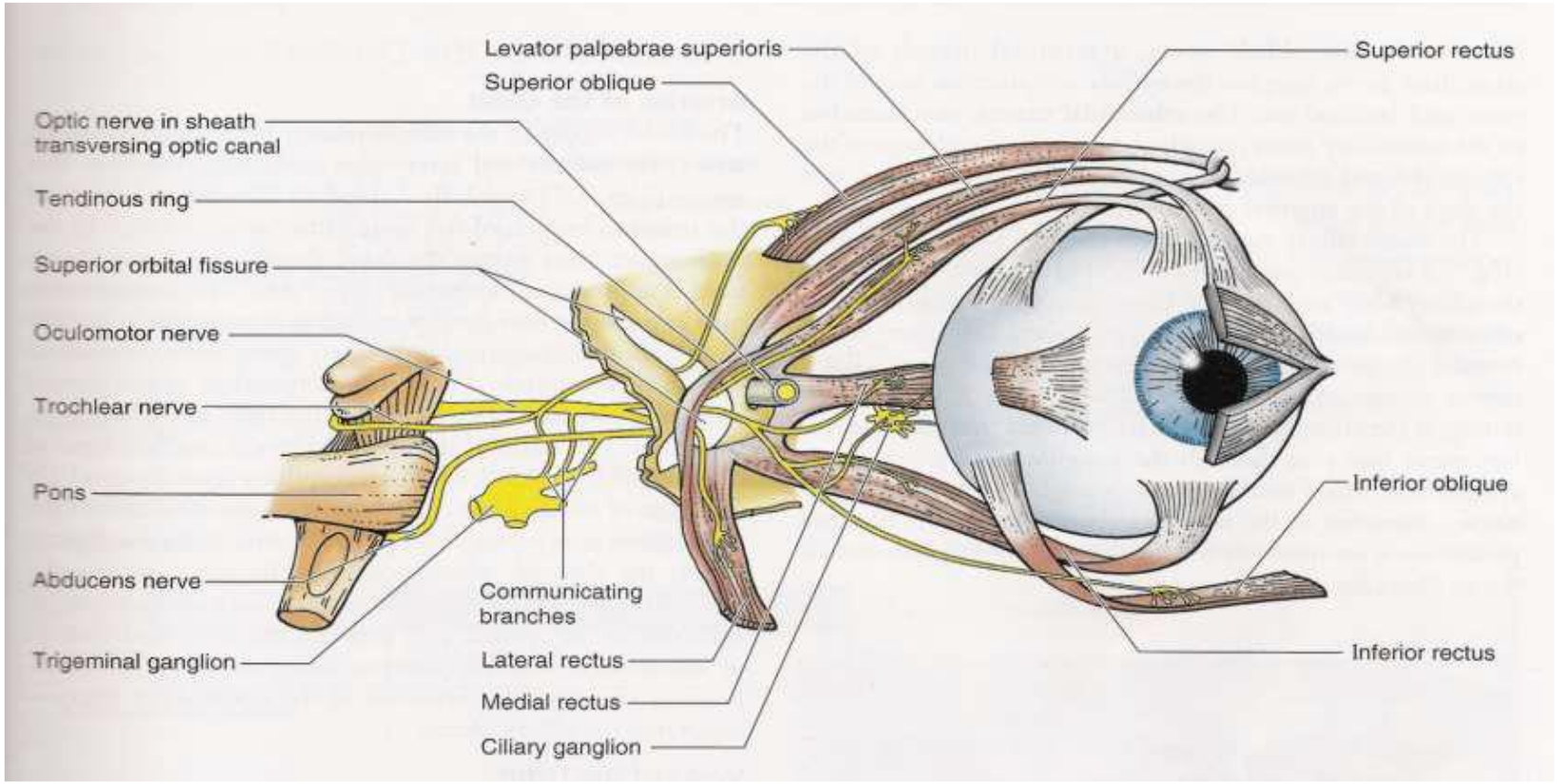
3 INVOUNTARY MUSCLES

- Superior tarsal
- Inferior tarsal
- Orbitalis

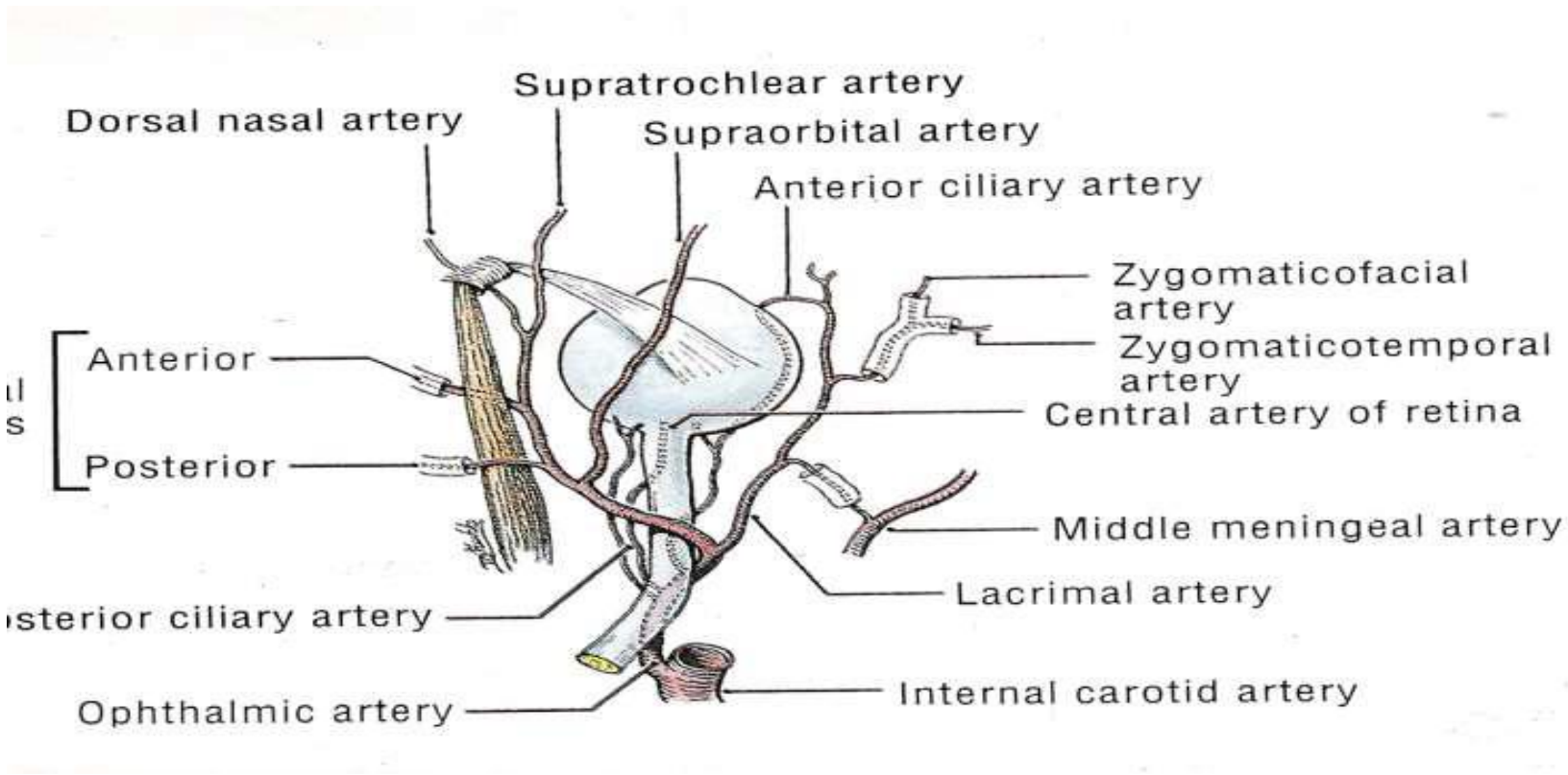


Nerve Supply of muscle

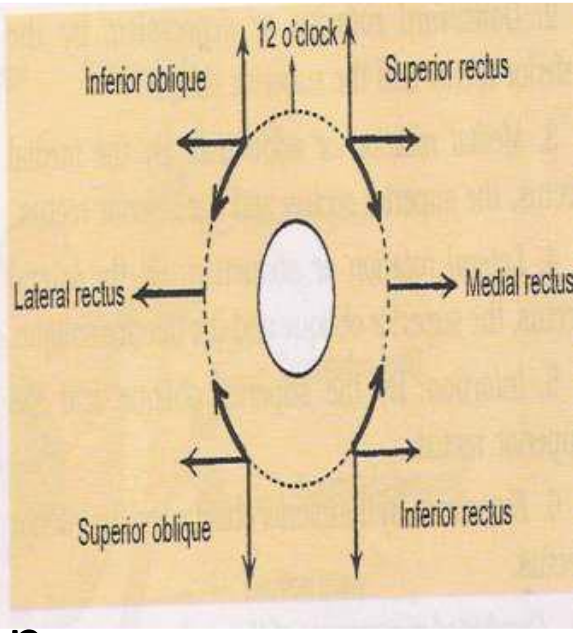
- All the extraocular muscles of the eyeball are supplied by oculo motor nerve except superior oblique by trochlear nerve and lateral rectus by abducent nerve.



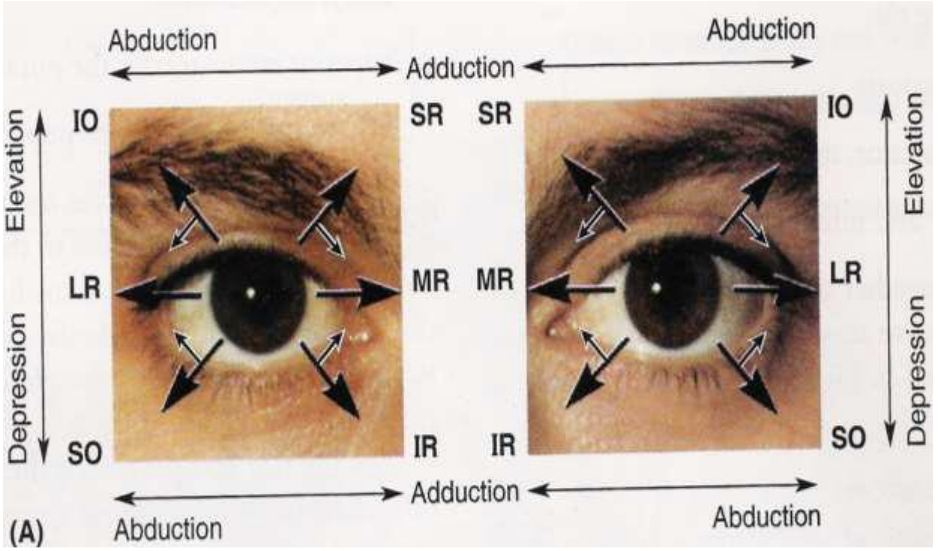
Blood Supply – Ophthalmic artery and its branches



Actions of individual muscles



- Superior rectus: Elevation, Adduction, Intortion
- Inferior rectus: Depression, Adduction, Extortion
- Inferior oblique: Elévation, Abduction, Extortion
- Superior Oblique: Depression , Abduction, Intortion
- Medial Rectus: Adduction
- Lateral Rectus: Abduction



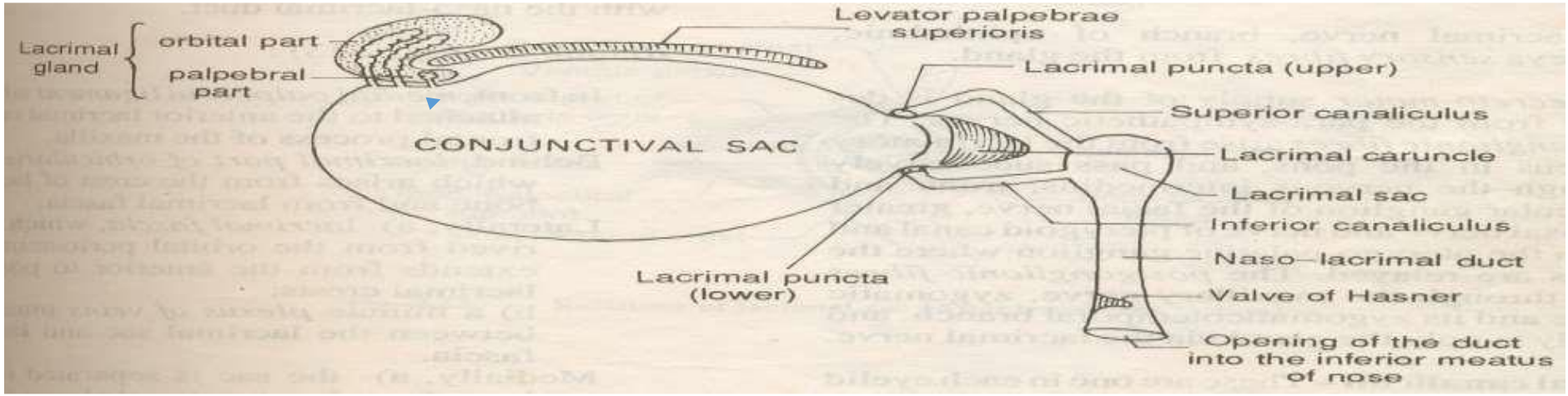
Applied Anatomy

- The oculomotor nerve lesion produces lateral strabismus and nearly complete opthalmo plegia of the eyeball, ptosis of the eyelid.
- The trochlear nerve lesion produces diplopia(double vision) when looking downwards.
- The abducent nerve lesion produces medial strabismus (crossed eyes)

Lacrimal Apparatus

- It is concerned with the tear formation & transport.
- Lacrimal gland which secretes tears and its ducts conveying the fluid to the conjunctival sac and lacrimalia.
- Lacrimal passage which convey tears to the inferior meatus of nose.

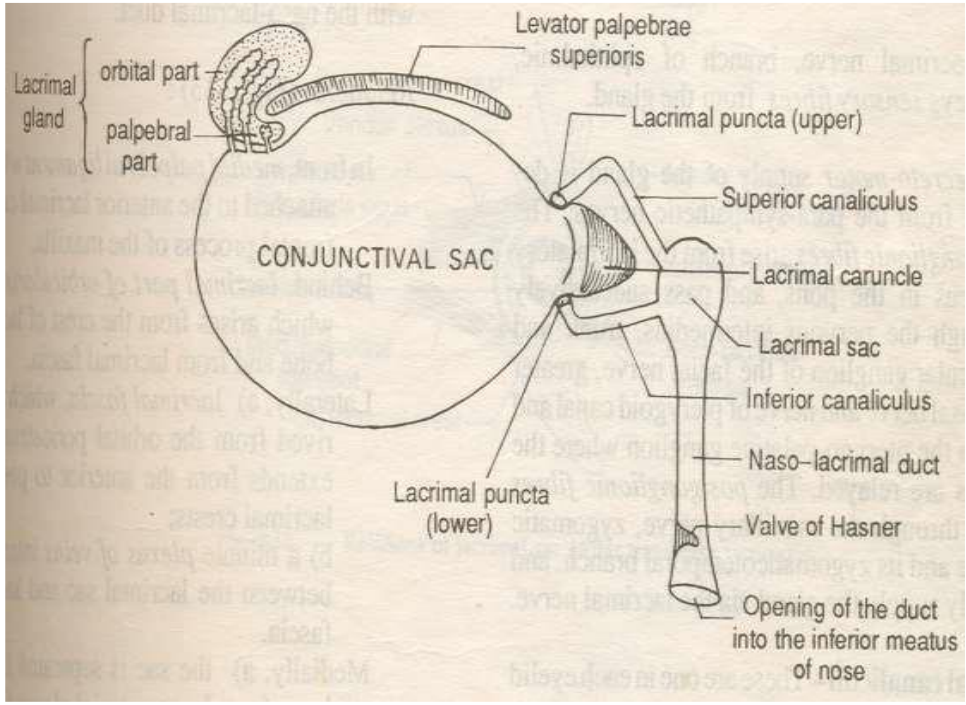
Lacrimal gland ⟶ Conjunctival sac ⟶ Lacrimal puncta ⟶ Lacrimal canaliculi ⟶ Lacrimal sac ⟶Nasolacrimal



Lacrimal Gland

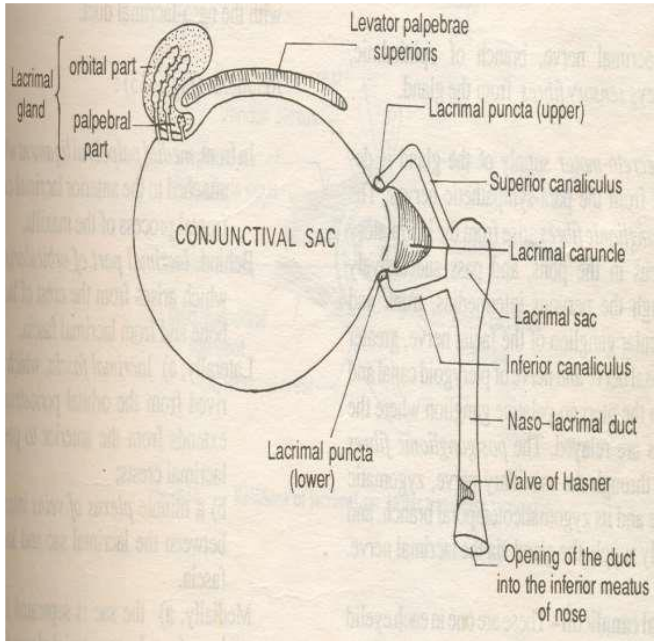
It consists of

- ***Larger Orbital Part***
- ***Smaller Palpebral Part***



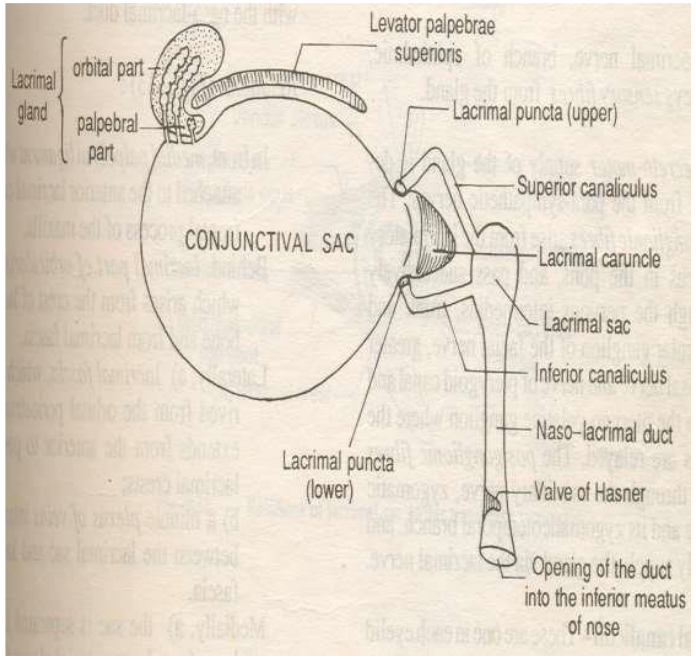
- Lateral expansion of levator palpebral superioris separates the parts.

- **The Orbital Part**
- Almond-shaped glands.
- It is present in a fossa on the anterolateral part of the roof of the orbit.
- **The Palpebral Part**
- It is flat and is 1/3rdsize of the orbital part.
- It is situated upon the course of ducts.



Ducts of Lacrimal Gland

- Ducts of the lacrimal gland are about 12 in no, 4-5 in the orbital part about 6-8 in the palpebral part.
- All ducts open into the lateral part of superior conjunctival fornix after passing through the palpebral part.



- **Blood Supply**

Artery supply : Lacrimal artery, branch of ophthalmic artery.

Venous drainages : Ophthalmic Vein.

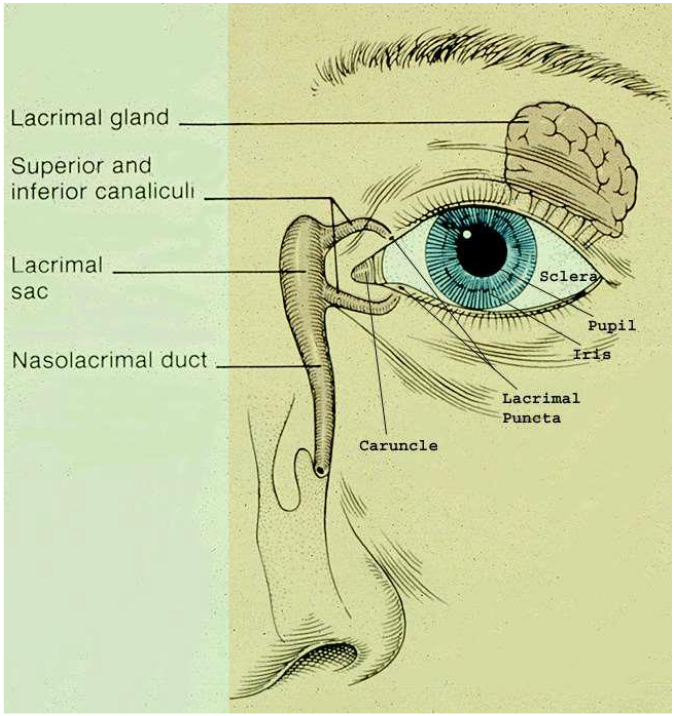
- **Nerve supply**:

Lacrimal nerve, branch of ophthalmic division of Vth nerve

Lacrimal Passage

The Puncta

- A small, round or oval orifice on the elevation, the papilla lacrimalis.



Lacrimal Canalculi

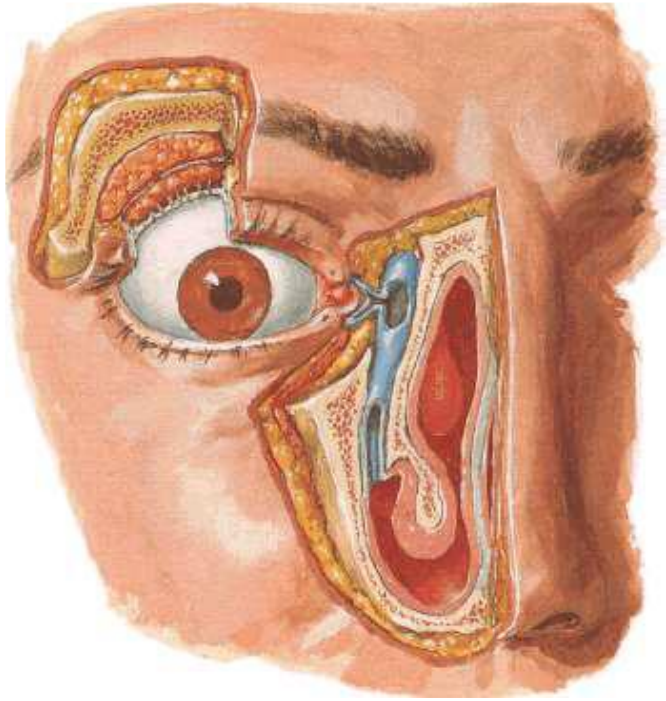
- These are one in each eyelid and measures about 10 mm in length.
- First vertical part and then horizontal part.
- Vertical part is 2 mm & turns medially at right-angle to become horizontal 8 mm
- Begins from lacrimal punctum and opens into lacrimal sac.

Lacrimal Sac

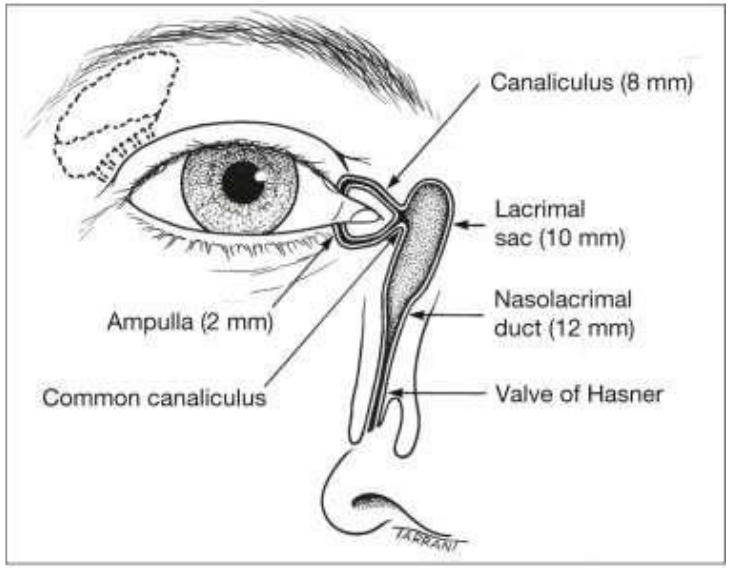
- It is upper blind end of the naso-lacrimal gland and is about 12mm long.
- Situated in the Lacrimal fossa, formed by lacrimal bone and frontal process of maxilla .
- The sac, closed above and open below, is continuous with the nasolacrimal duct.

Nasolacrimal Duct

- The nasolacrimal duct, continuation of lacrimal sac to the inferior meatus.
- About 15 mm long.
- The duct is directed downwards.



- The valves of naso-lacrimal duct
- They are folds of mucous membrane with no valvular function.
- The most important is the 'valve' of Hasner at the lower end.
- It prevents the backward flow of the fluid.



Function of Tear

- Flushes the conjunctival sac & keeps the cornea moist and transparent.
- Provides nourishment of cornea.
- Bactericidal action.
- Express emotion with outbreak of tears.

Applied Anatomy

- Dacryoadenitis-inflammation of lacrimal gland.
- Dacryocystitis-inflammation of lacrimal sac.
- Dacryocystectomy-surgical removal of lacrimal sac.

THANK YOU