Eyelids

Eyelids are two folds that can be closed by a group of muscles to form a protecting covering over the eyeball against excessive light and injury.

Sagittal section through eye.

Function

Their capital functions is the regular spread of tears and other secretions on the eye surface to keep it moist. They keep the eyes from drying out when asleep. Normally the eyelids close every six seconds by reflex action. If dust or other allergens appear in the eye, eyelids close more often and more tears are produced. The lipid secretion of the Meibomian glands lubricates the eyelids and prevents evaporation of the eye's tear film.

Anatomy

The 4 layers of the eyelid are:

1.Skin

This is a very thin fold of skin that contains ciliary glands (sebaceous glands) and the cilia (eyelashes) that protect the eye from the dust and debris.

2.Muscular layer

This is representative of:

- **Superior Eyelid**:

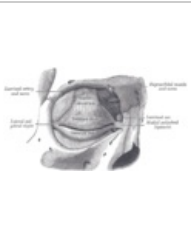
  Orbicularis oculi muscle (palpebral part)
  Levator palpebral superioris
  Superior tarsal muscle

- **Inferior Eyelid**:

  Orbicularis oculi muscle (palpebral part)
  Inferior tarsal muscle

3.Fibrous layer

This is represented by the tarsal plates which is the skeleton of the eyelids. Tarsal plates or palpebral cartilages are two thick plates of connective tissue that give support to eyelids. They are attached to the margin of the orbit by the palpebral ligaments (medial and lateral) and contain tarsal glands and tarsal muscle. The tarsal glands named also Meibomian glands are 30-40 in upperlid and 20-30 in lower lid. These glands are a special type of sebaceous gland that supply the "**meibum**" a **lipid secretion** that prevents evaporation of the eye's tear film. Dysfunction of these glands may cause "**dry eye**" or blepharitis.



4.Inner layer

This consists of the conjunctiva, a mucous membrane that is attached to the eye ball to the eyelids (palpebral conjunctiva) and to the orbit (bulbar conjunctiva)

Innervation

1.Occulomotor (cranial nerve III)

Occulomotor with its superior branch innervates the **Levator palpebral superior** which is responsible for lifting of the superior eyelid.

2.Trigeminal nerve (cranial nerve V)

- **V1 Ophthalmic nerve**. This is the first branch of the Trigeminal nerve and gives three branches:

  a.**Lacrimal nerve**. Innervates the skin of the lateral corner of the eye and via parasympathetic fibers from the zygomatic nerve the lacrimal gland
  b.**Frontal nerve**. Gives the **Supraorbital nerve** which innervates the conjunctiva and the upper eyelid and the **Supratrochlear nerve** which innervates the medial corner of the eye.
  c.**Nasociliary nerve**. Gives the **Infratrochlear nerve** which innervates the medial corner of the eye and the lower eyelid

- **V2 Maxillary nerve**. This is the second branch of the Trigeminal nerve and gives the **Infraorbital nerve** that innervates the lower eyelid.

3.Facial nerve (cranial nerve VII)

The facial nerve innervates the **Orbicularis oculi muscle** which is responsible for shutting the eyelids.

4.The Sympathetic nervous system

This is responsible for the innervation of the **superior and inferior smooth tarsal muscles** which control the size of the palpebral fissure.

Blood supply

- **Superior eyelid** is blood supplied by **Superior palpebral artery** that is a branch of **Lacrimal artery**, a branch of **Ophthalmic artery** and this branch of **Internal carotid artery**
- **Inferior Eyelid** is blood supplied by **Inferior palpebral artery** that is a branch of Ophthalmic artery and this is a branch of **Internal carotid artery**

Blood supply

Medical application

- **Chalazion**:This is the obstruction of the glands. Topical treatment usually resolves the problem, but if not, surgical treatment is required.
- **Blepharitis**:In Greek language "βλεφαρο" = eyelid. Blepharitis is the inflammation of the eyelid that is produced due to scalp dandruff or due to staphylococcus.Topic compress usually are enough for treatment, but sometimes antibiotics are needed.
- **Blepharoptosis**: This is the drooping of the eyelid due to paralysis of Levator palpebral superior muscle, or Orbicularis occuli. This is possible to be produced after nerve damage Occulomotor (III) or Facial nerve (VII) or in case of myasthenia gravis.
- **Blepharospasmos**: This is involuntary spasm of eyelid muscles most frequently due to fatigue, stress and caffeine.

Links

Related Articles

Bibliography

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