

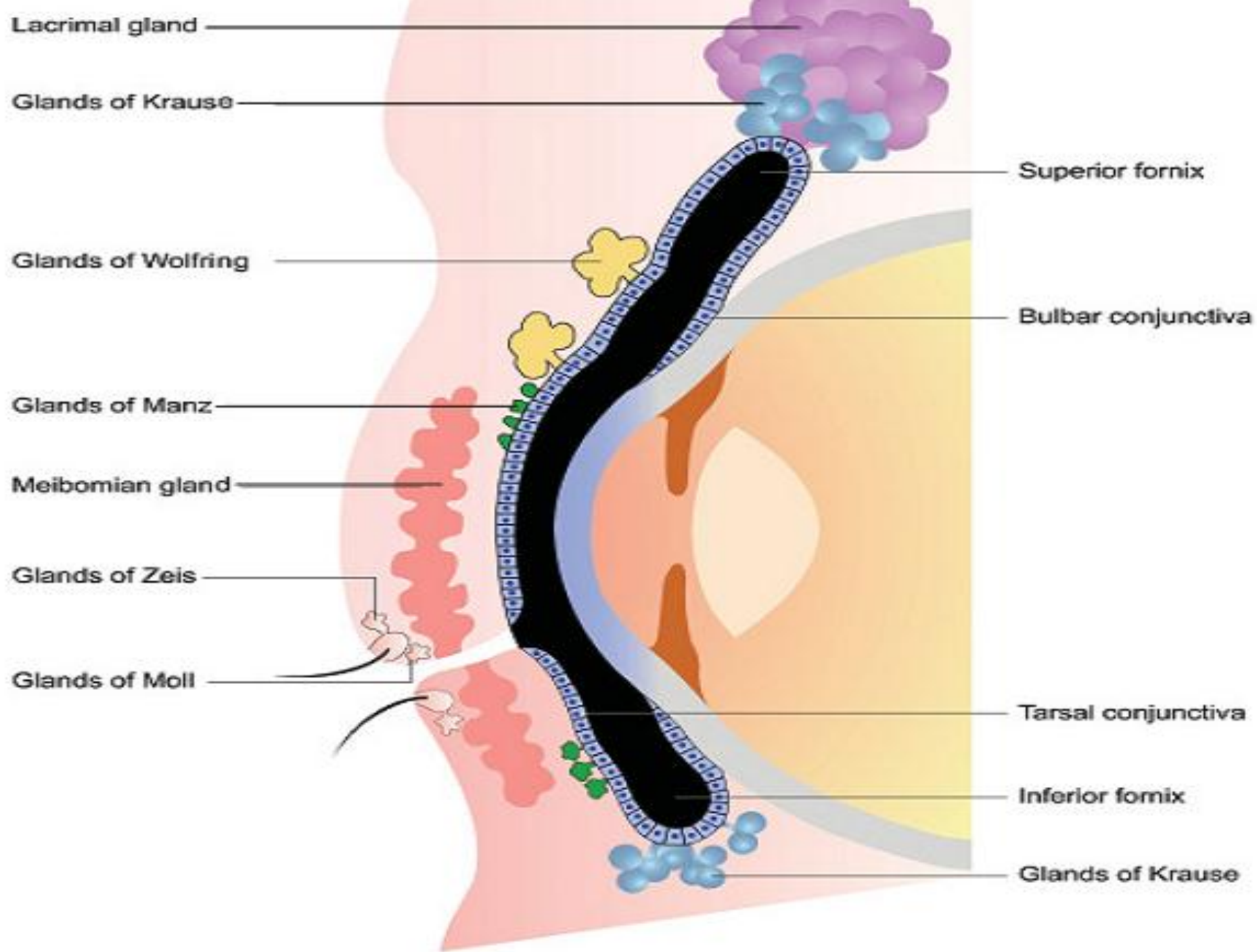
Conjunctiva

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APPLIED ANATOMY

The conjunctiva is a translucent mucous membrane which lines the posterior surface of the eyelids and anterior aspect of eyeball.

It stretches from the lid margin to the limbus, and encloses a complex space called *Conjunctival sac* which is open in front at the palpebral fissure.



Parts of conjunctiva

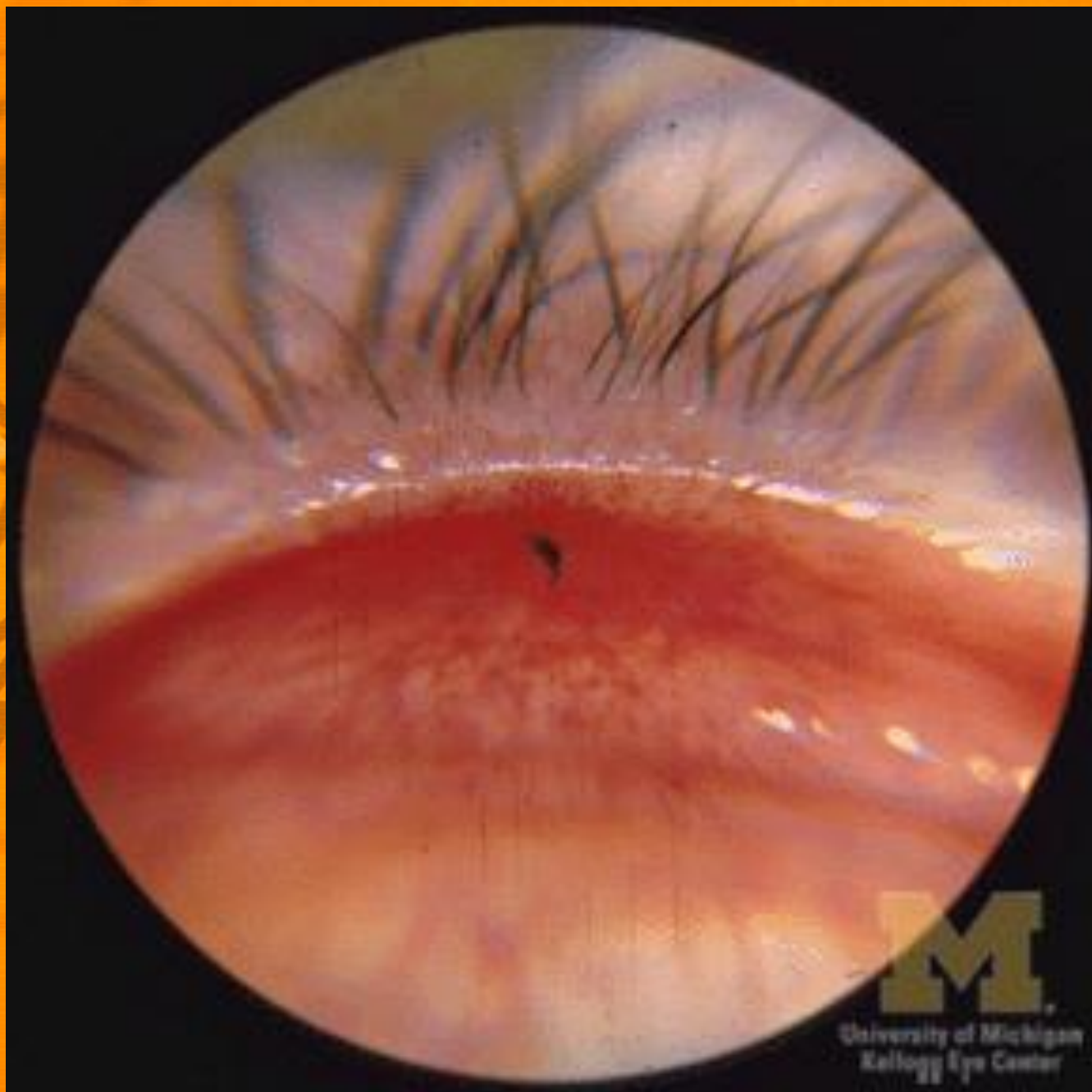
1. *Palpebral conjunctiva.*

It lines the lids and can be subdivided into marginal, tarsal and orbital conjunctiva.

i. *Marginal conjunctiva*

extends from the lid margin to about 2 mm on the back of lid up to a shallow groove, the

sulcus subtarsalis.



ii. *Tarsal conjunctiva*

Thin, transparent and highly vascular. It is firmly adherent to the whole tarsal plate in the upper lid. The tarsal glands are seen through it as yellow streaks.

iii. *Orbital part*

Lies loose between the tarsal plate and fornix.



1

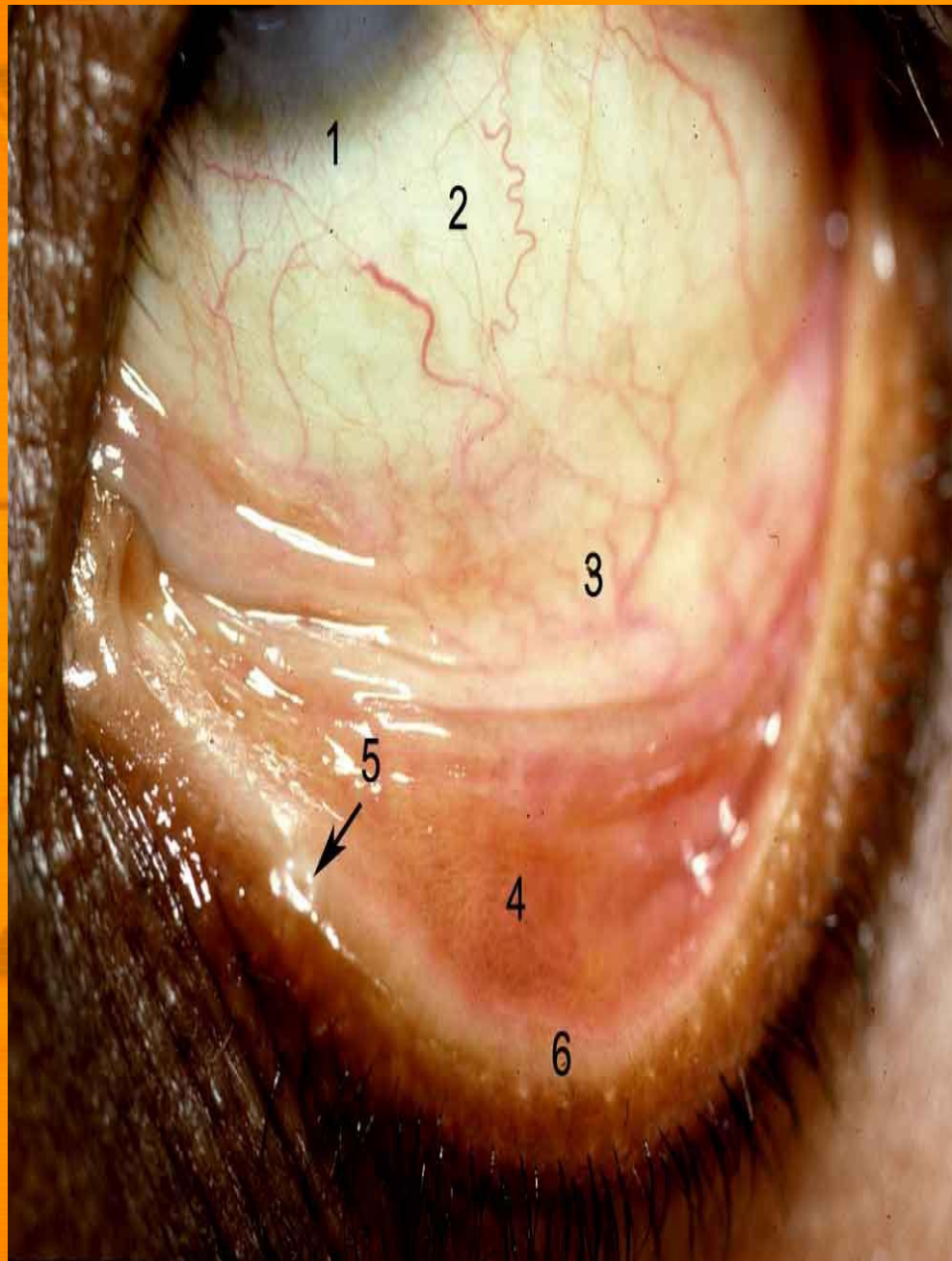


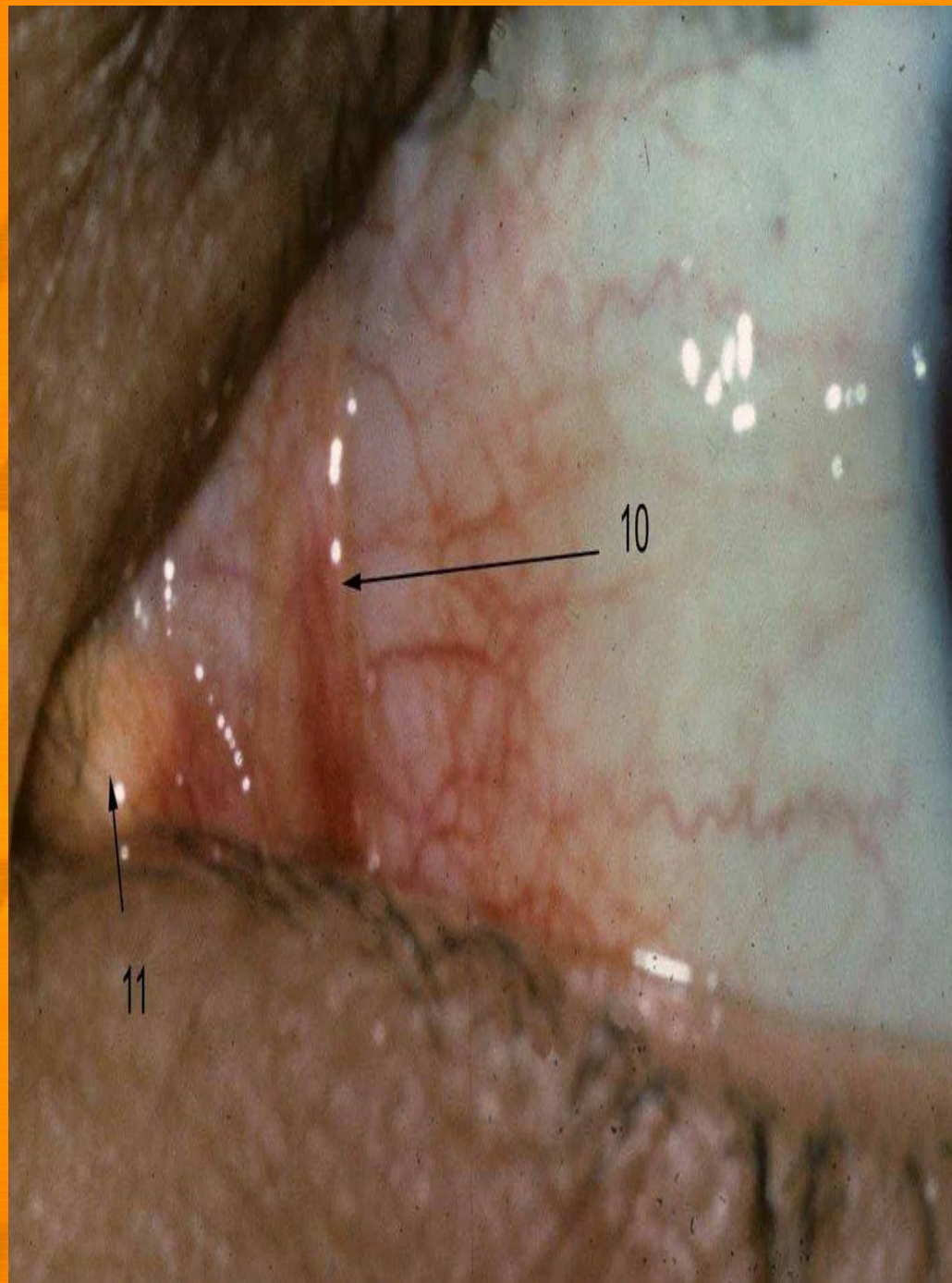
2. Bulbar conjunctiva.

Thin, transparent and lies loose over the underlying structures and thus can be moved easily. It is separated from the anterior sclera by episcleral tissue and Tenon's capsule.

3. Conjunctival fornix.

Continuous circular cul-de-sac which is broken only on the medial side by caruncle and the plica semilunaris. Conjunctival fornix joins the bulbar conjunctiva with the Palpebral conjunctiva.





Structure of conjunctiva

Epithelium.

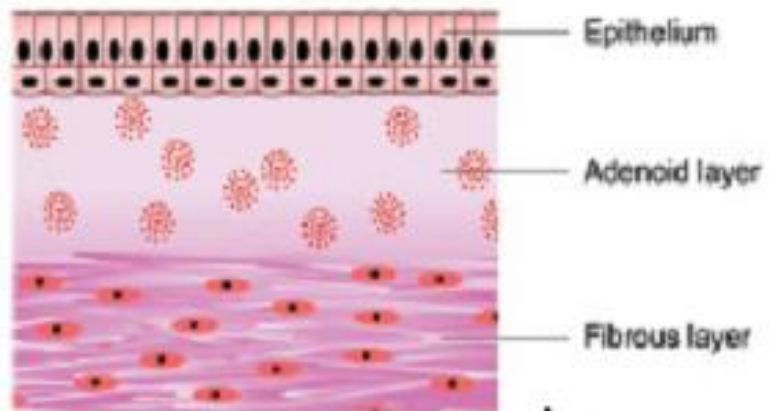
The layer of epithelial cells in conjunctiva varies from region to region.

- ***Marginal conjunctiva***

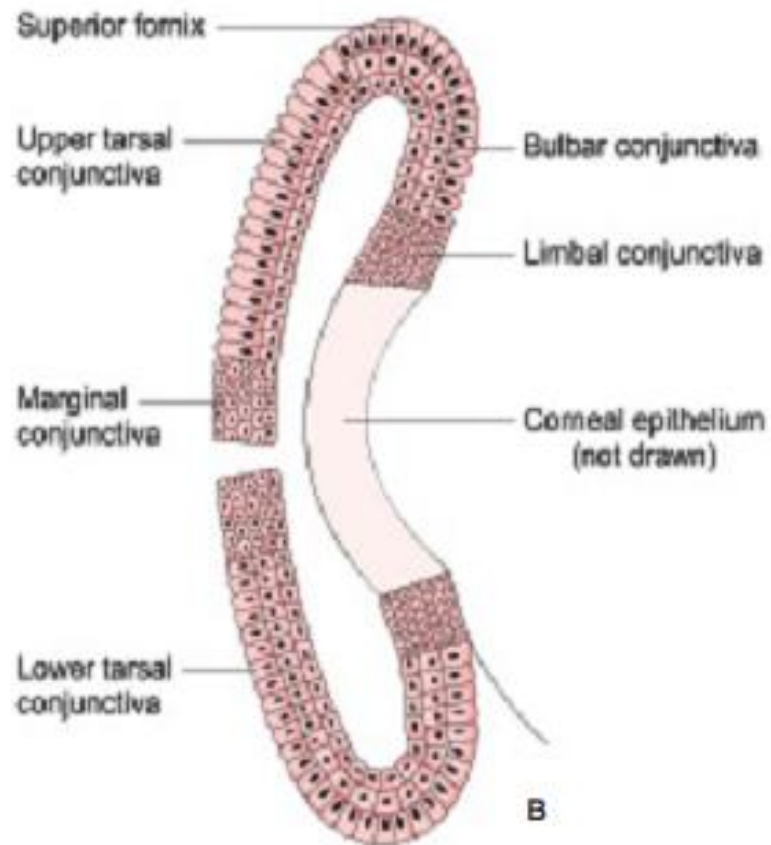
5-layered **stratified squamous** type of epithelium.

- ***Tarsal conjunctiva***

2-layered epithelium: superficial layer of cylindrical cells and a deep layer of flat cells.



A



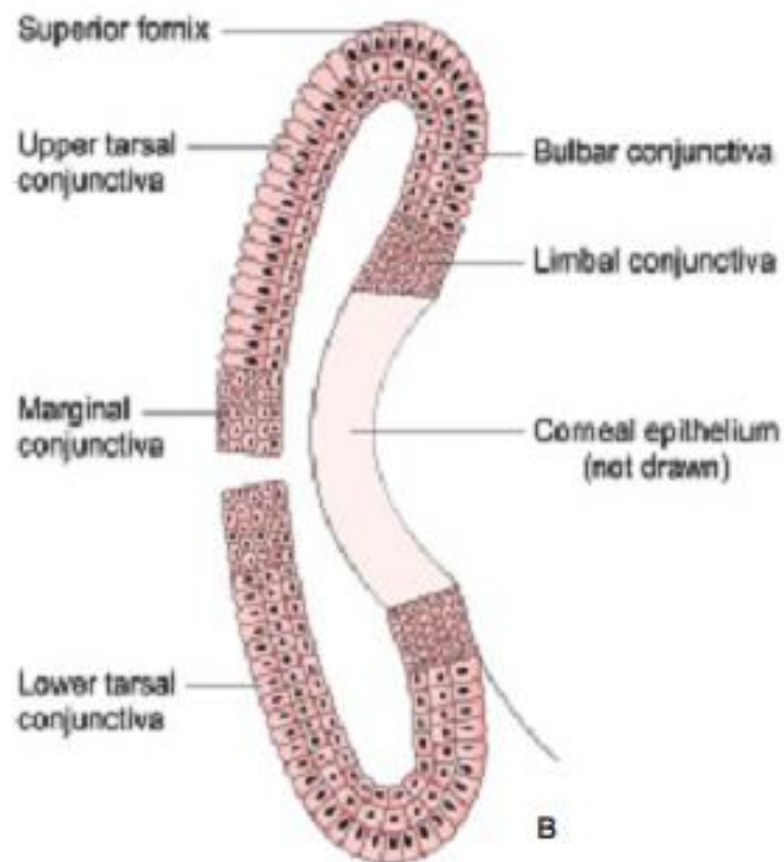
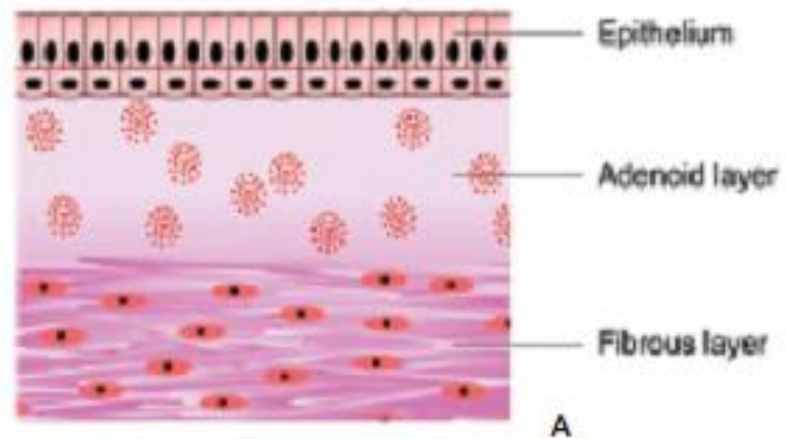
B

- Fornix and bulbar conjunctiva

3-layered epithelium: a superficial layer of cylindrical cells, middle layer of polyhedral cells and a deep layer of cuboidal cells.

- Limbal conjunctiva

Again many layered (5 to 6) **stratified squamous** epithelium.

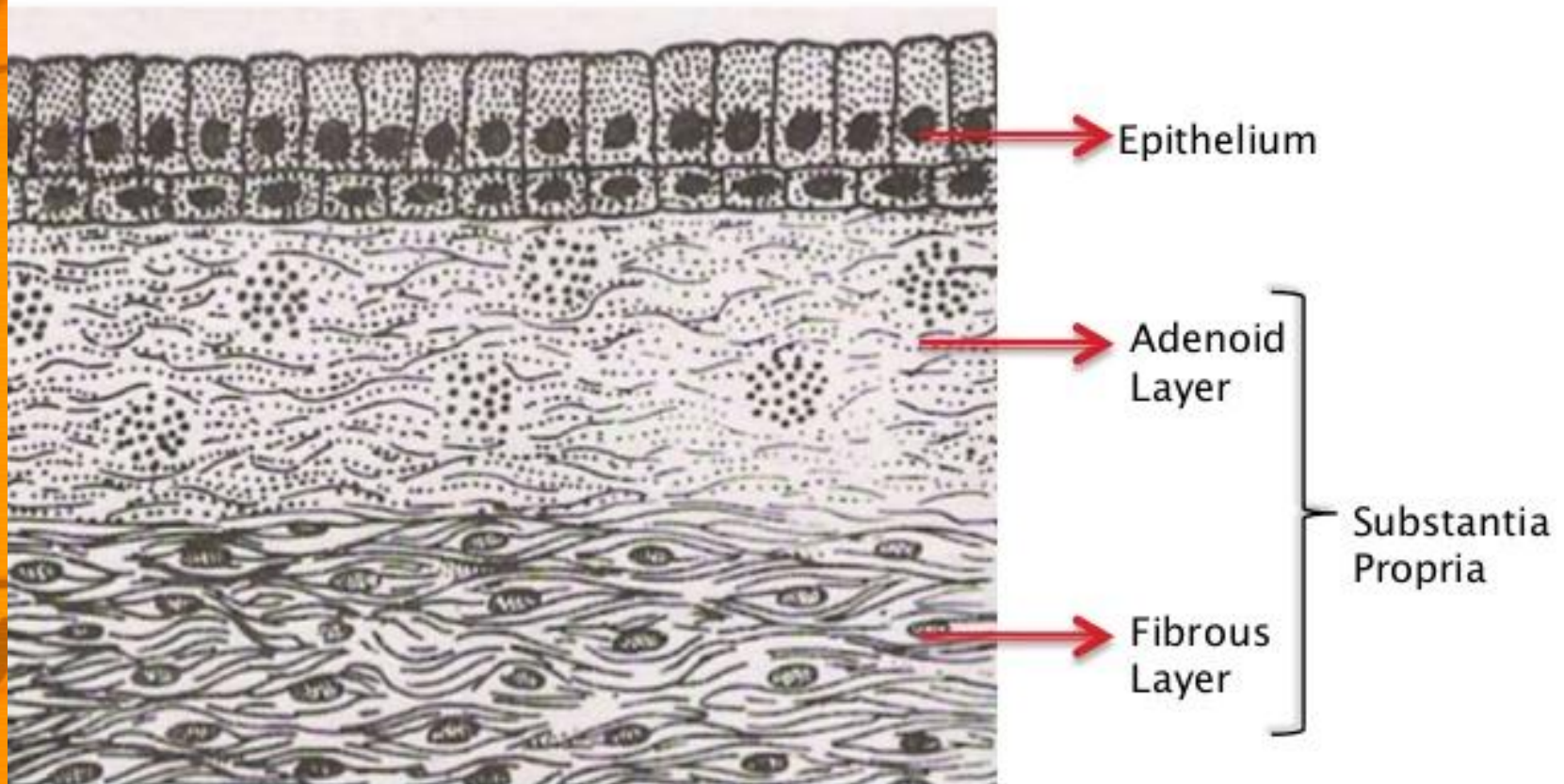


Adenoid layer.

It is also called ***lymphoid layer*** and consists of fine connective tissue reticulum in the meshes of which lie lymphocytes.

This layer is most developed in the fornices. It is not present since birth but develops after 3-4 months of life. For this reason, conjunctival inflammation in an infant does not produce follicular reaction.

Layers Of Conjunctiva

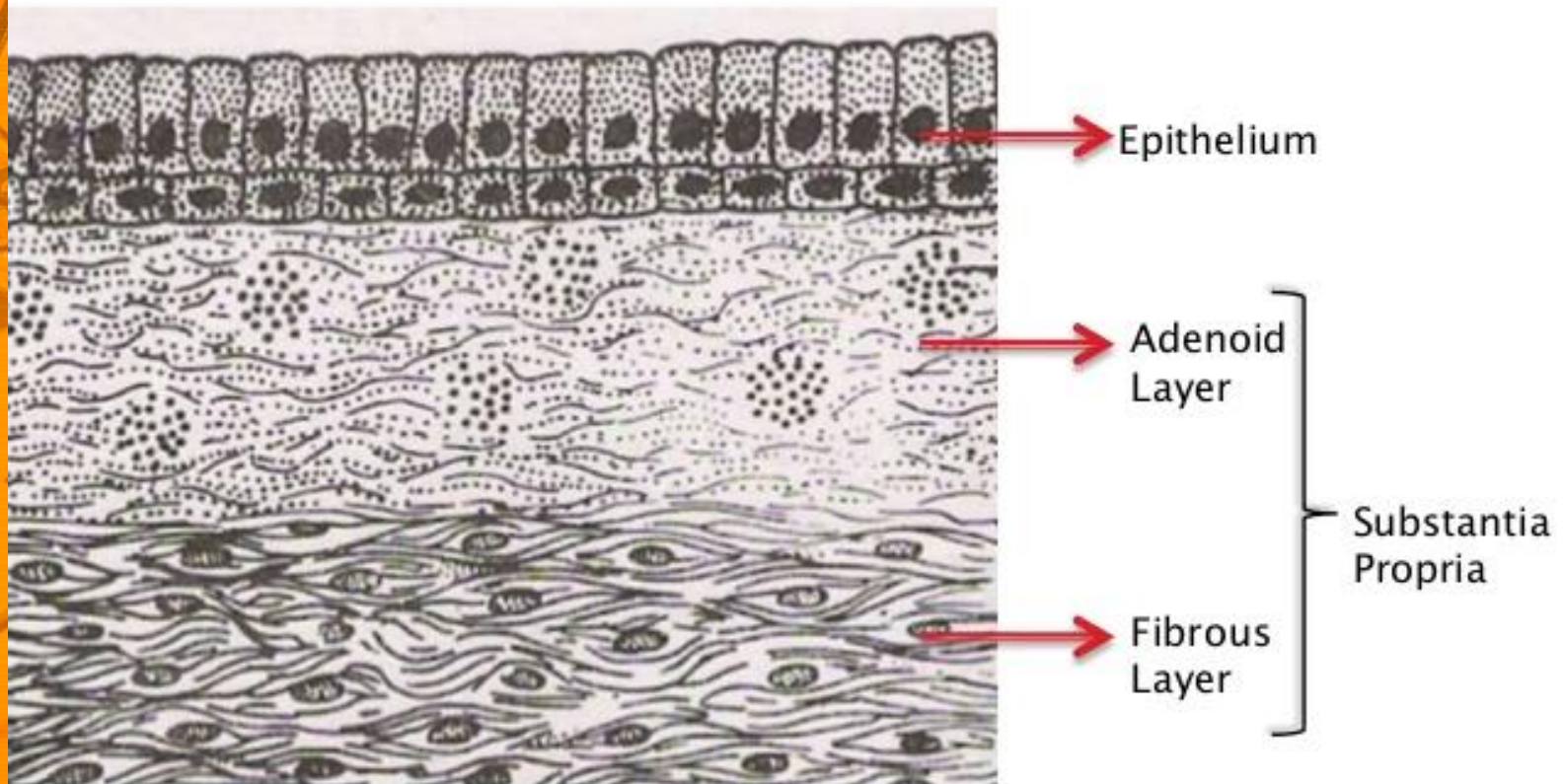


Fibrous layer.

It consists of a meshwork of collagenous and elastic fibres. It is thicker than the adenoid layer, except in the region of tarsal conjunctiva, where it is very thin.

This layer contains vessels and nerves of conjunctiva. It blends with the underlying Tenon's capsule in the region of bulbar conjunctiva.

Layers Of Conjunctiva



Blood supply of conjunctiva

Arteries

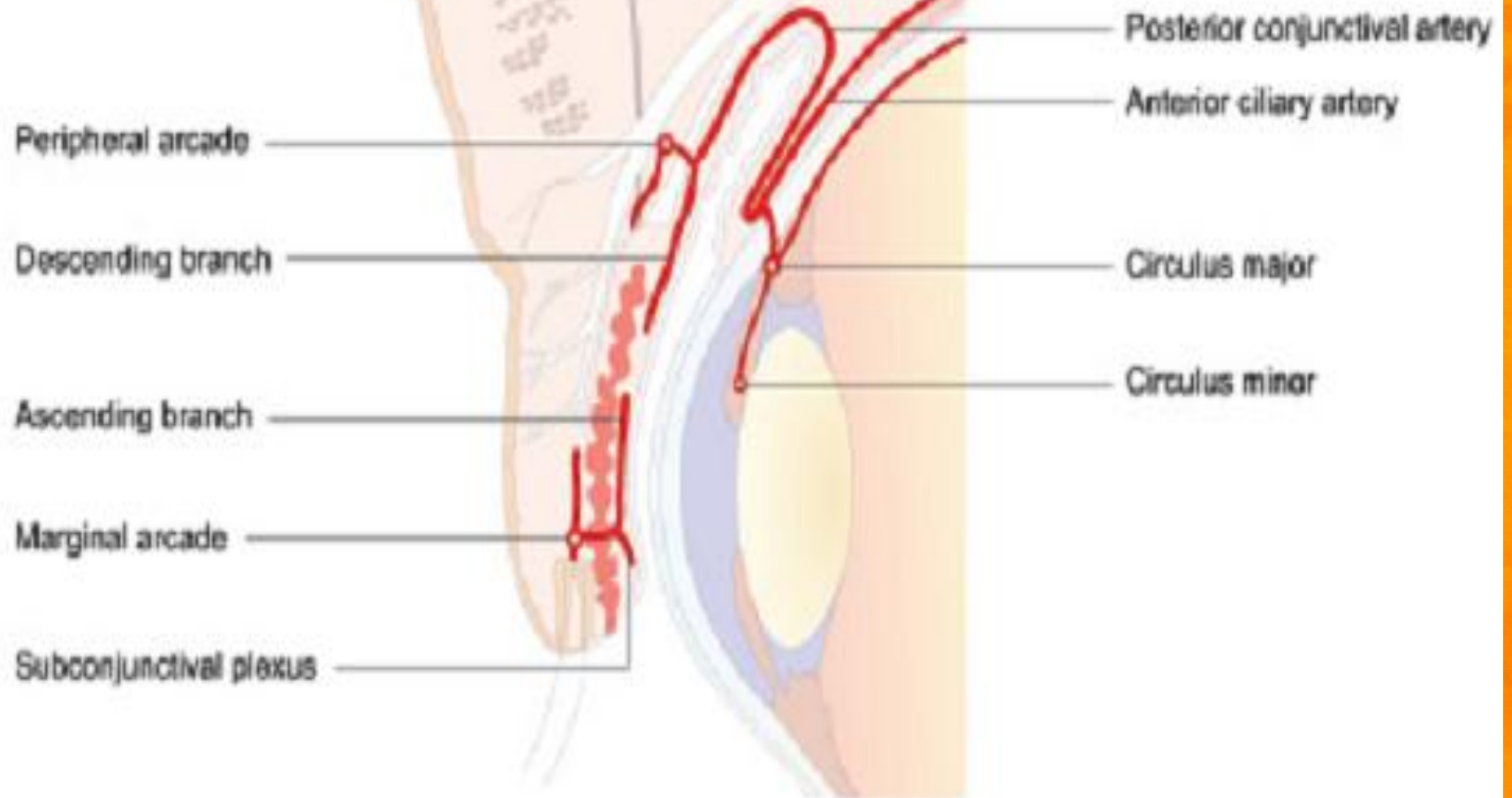
- (1) peripheral arterial arcade of the eyelid
- (2) marginal arcade of the eyelid
- (3) anterior ciliary arteries.

Veins

from the conjunctiva drain into the venous plexus of eyelids and some around the cornea into the anterior ciliary veins.

Lymphatics

Lymphatics from the lateral side drain into *preauricular lymph nodes* and those from the medial side into the *Submandibular lymph nodes*.



Nerve supply of conjunctiva

A circumcorneal zone of conjunctiva is supplied by the branches from **long ciliary nerves** which supply the cornea.

Rest of the conjunctiva is supplied by the branches from lacrimal, infratrochlear, supratrochlear, supraorbital and frontal nerves.

INFLAMMATIONS OF CONJUNCTIVA

Inflammation of the conjunctiva (conjunctivitis) is classically defined as conjunctival **hyperaemia** associated with a **discharge** which may be watery, mucoid, mucopurulent or purulent.

Conjunctivitis

Etiological Classification

1- Infective conjunctivitis:

bacterial, chlamydial, viral, fungal, rickettsial, spirochaetal, protozoal, parasitic etc.

2- Allergic conjunctivitis.

3- Irritative conjunctivitis.

4- **Keratoconjunctivitis** associated with diseases of skin and mucous membrane.

5- Traumatic conjunctivitis

Clinical Classification:

- 1- Acute catarrhal or mucopurulent conjunctivitis.
- 2- Acute purulent conjunctivitis
- 3- Serous conjunctivitis
- 4- Chronic simple conjunctivitis
- 5- Angular conjunctivitis
- 6- Membranous conjunctivitis
- 7- Pseudomembranous conjunctivitis
- 8- Papillary conjunctivitis
- 9- Follicular conjunctivitis
- 10- Ophthalmia neonatorum
- 11- Granulomatous conjunctivitis
- 12- Ulcerative conjunctivitis
- 13- Cicatrising conjunctivitis

Differential Diagnosis Of Conjunctivitis

Type of discharge

Watery discharge

Acute Viral

Acute allergic

Mucinous discharge

Spring catarrh (chronic allergic)

Keratoconjunctivitis sicca (dry eye)

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Mucopurulent discharge

Acute bacterial conjunctivitis
Chlamydial conjunctivitis.

Purulent discharge

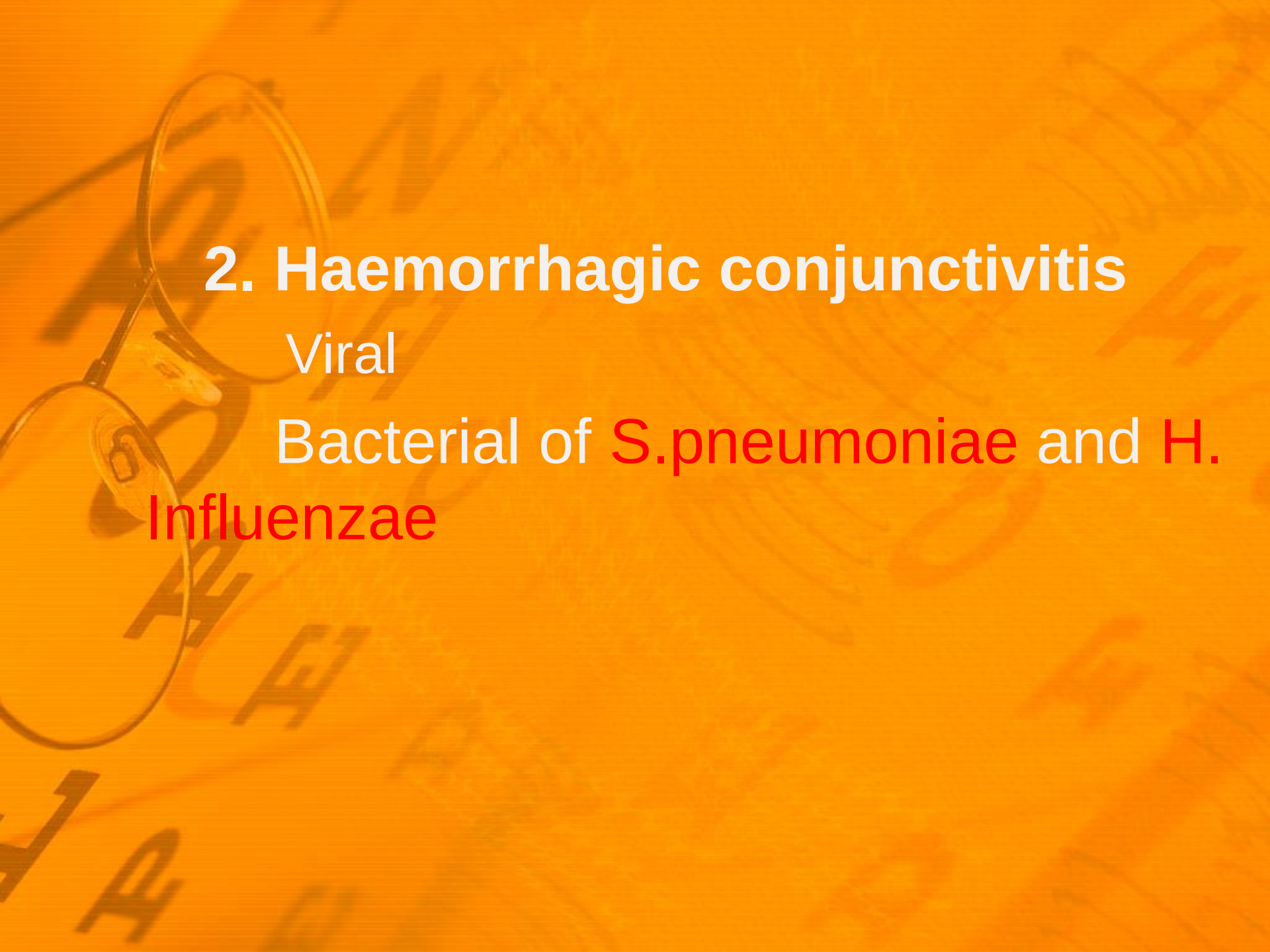
Gonococcal conjunctivitis.

conjunctival reaction

1. Conjunctival Injection

Diffuse, beefy-red and more intense away from the limbus is typical of **bacterial** infection.



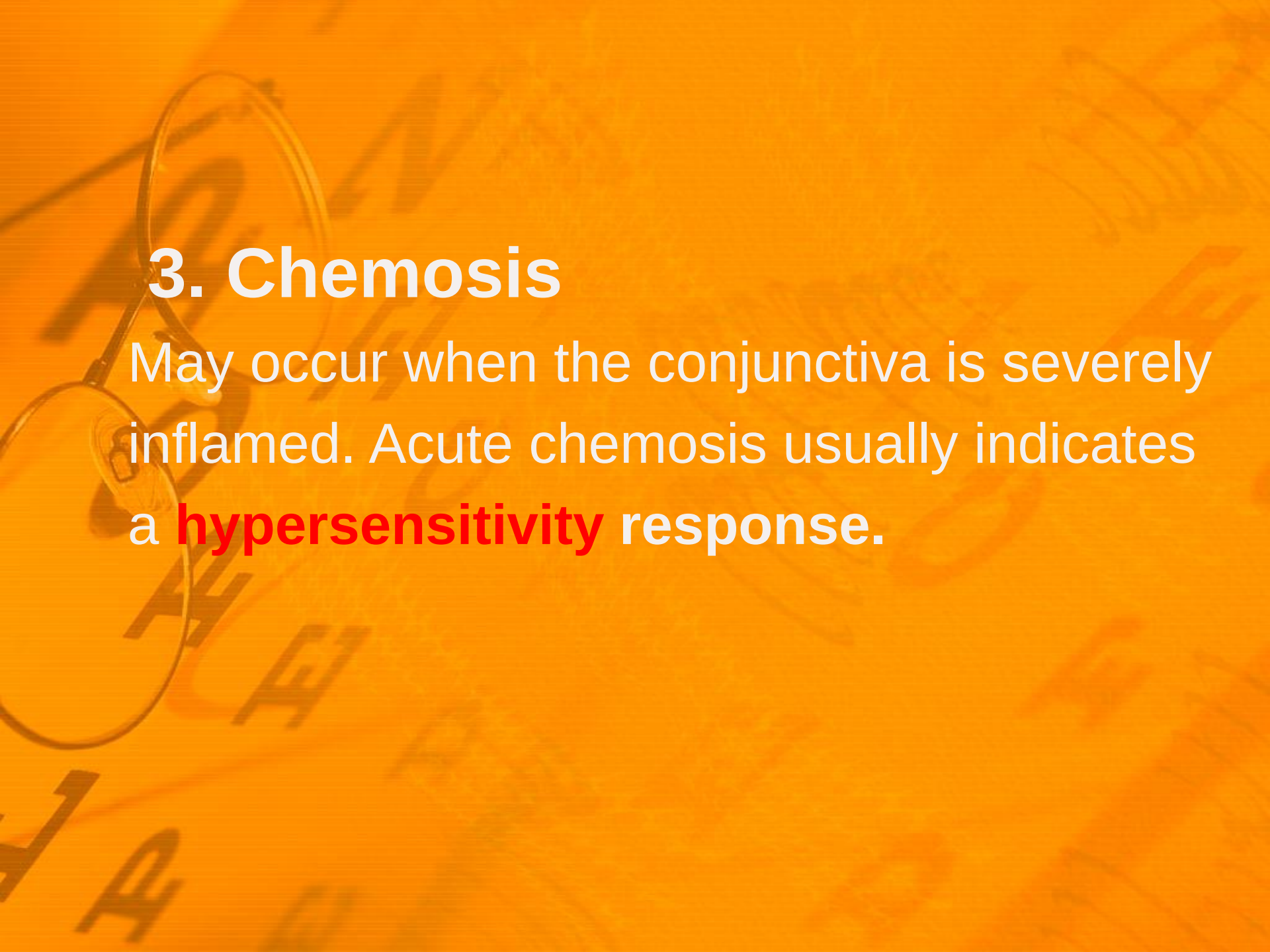
A pair of glasses is positioned on the left side of the slide. The background is a solid orange color with faint, overlapping medical terms such as 'VIRAL', 'BACTERIAL', 'HAEMORRHAGIC', 'CONJUNCTIVITIS', 'S. PNEUMONIAE', and 'H. INFLUENZAE' in a lighter shade of orange.

2. Haemorrhagic conjunctivitis

Viral

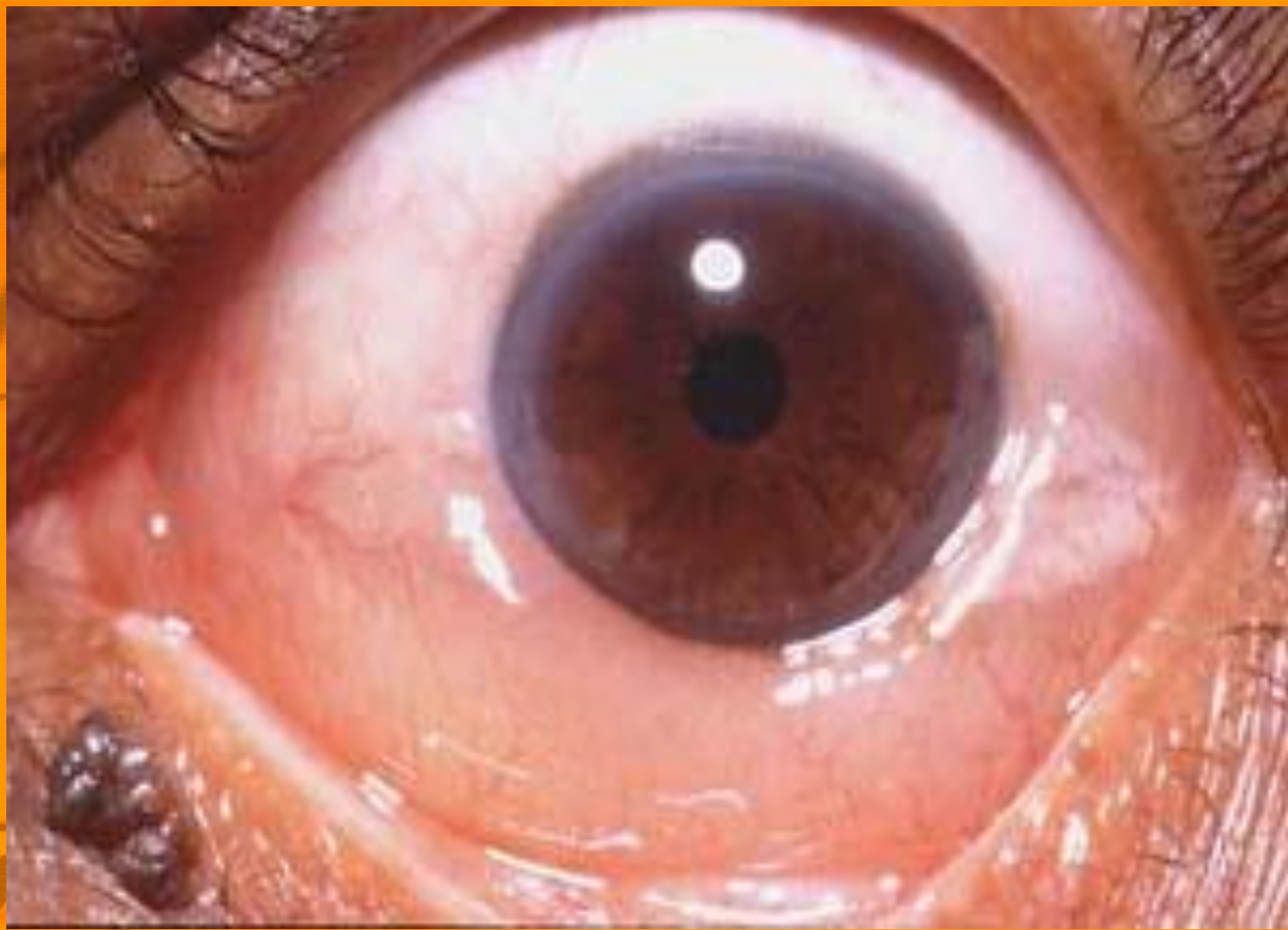
Bacterial of *S.pneumoniae* and *H.*
Influenzae





3. Chemosis

May occur when the conjunctiva is severely inflamed. Acute chemosis usually indicates a **hypersensitivity** response.

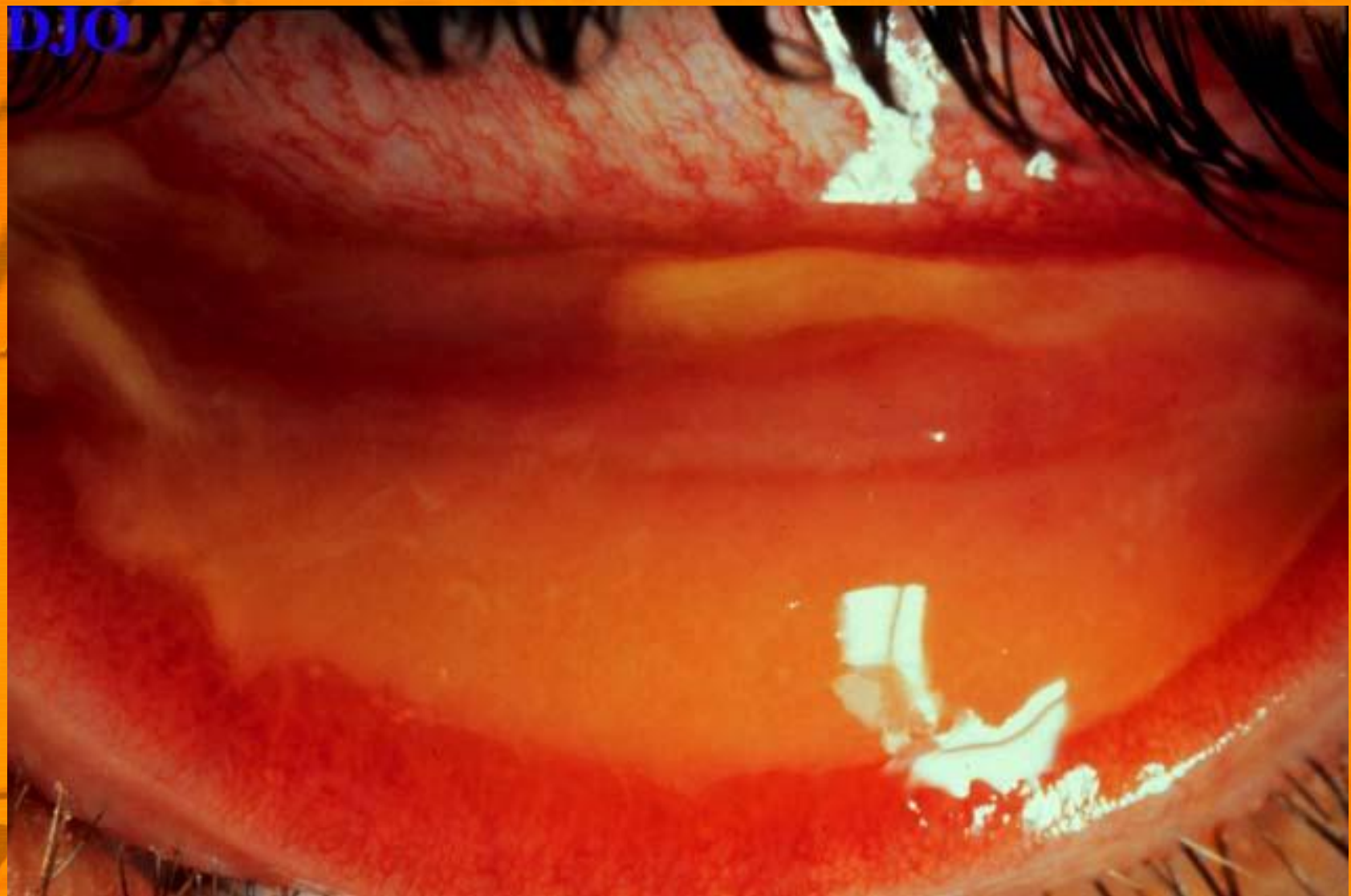


Membranes

Pseudomembranes

Consists of coagulated exudate adherent to the inflamed conjunctival epithelium. They can easily be peeled leaving intact epithelium.

It is caused by **adenovirus**, **Herpes Simplex** and **Gonococcal** conjunctivitis.







True membranes

Infiltrate superficial layers of the Conjunctival epithelium. Attempted removal may be accompanied by bleeding. It is caused by **Corynebacterium Diphtheriae**

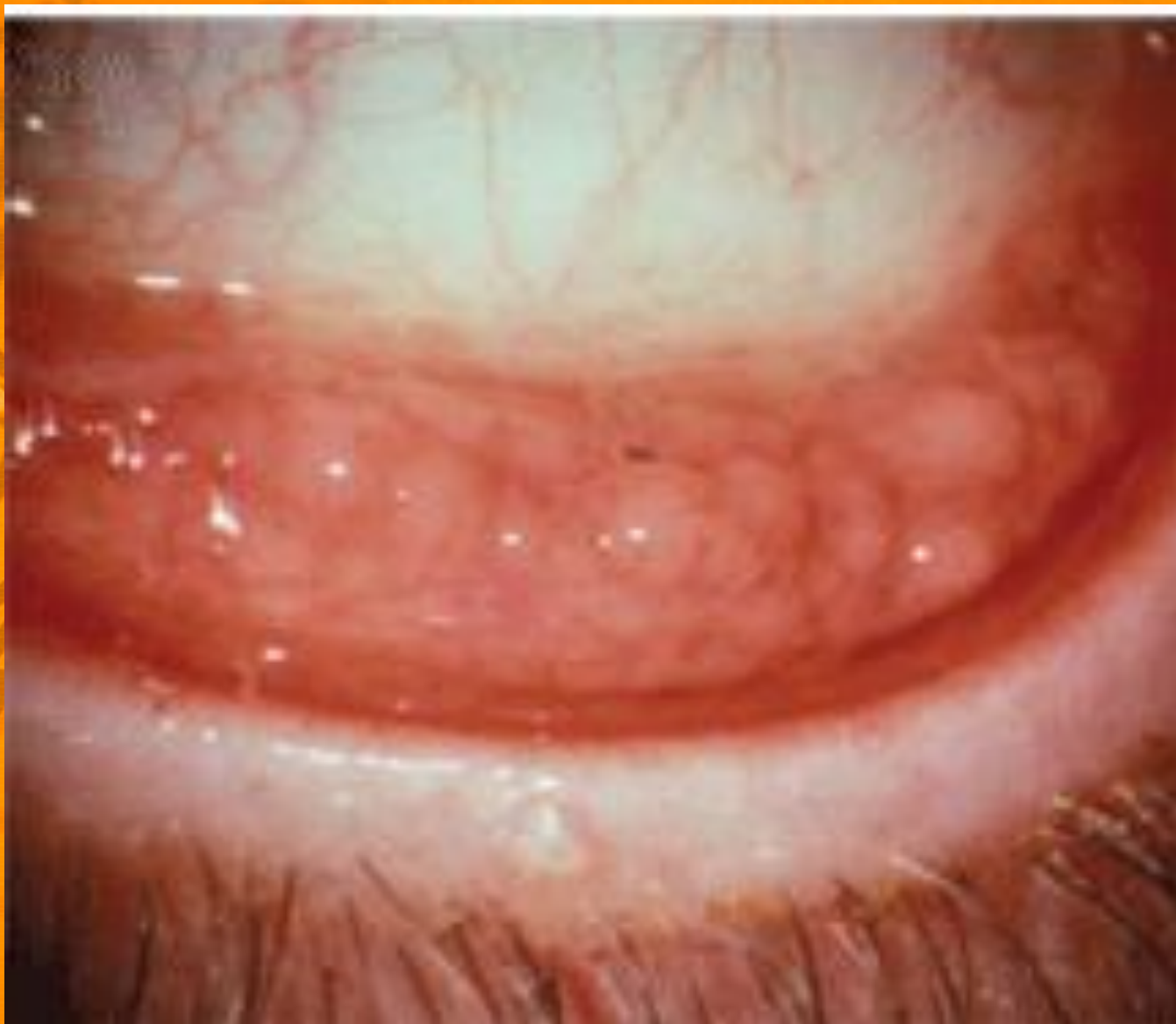
Follicular Reaction

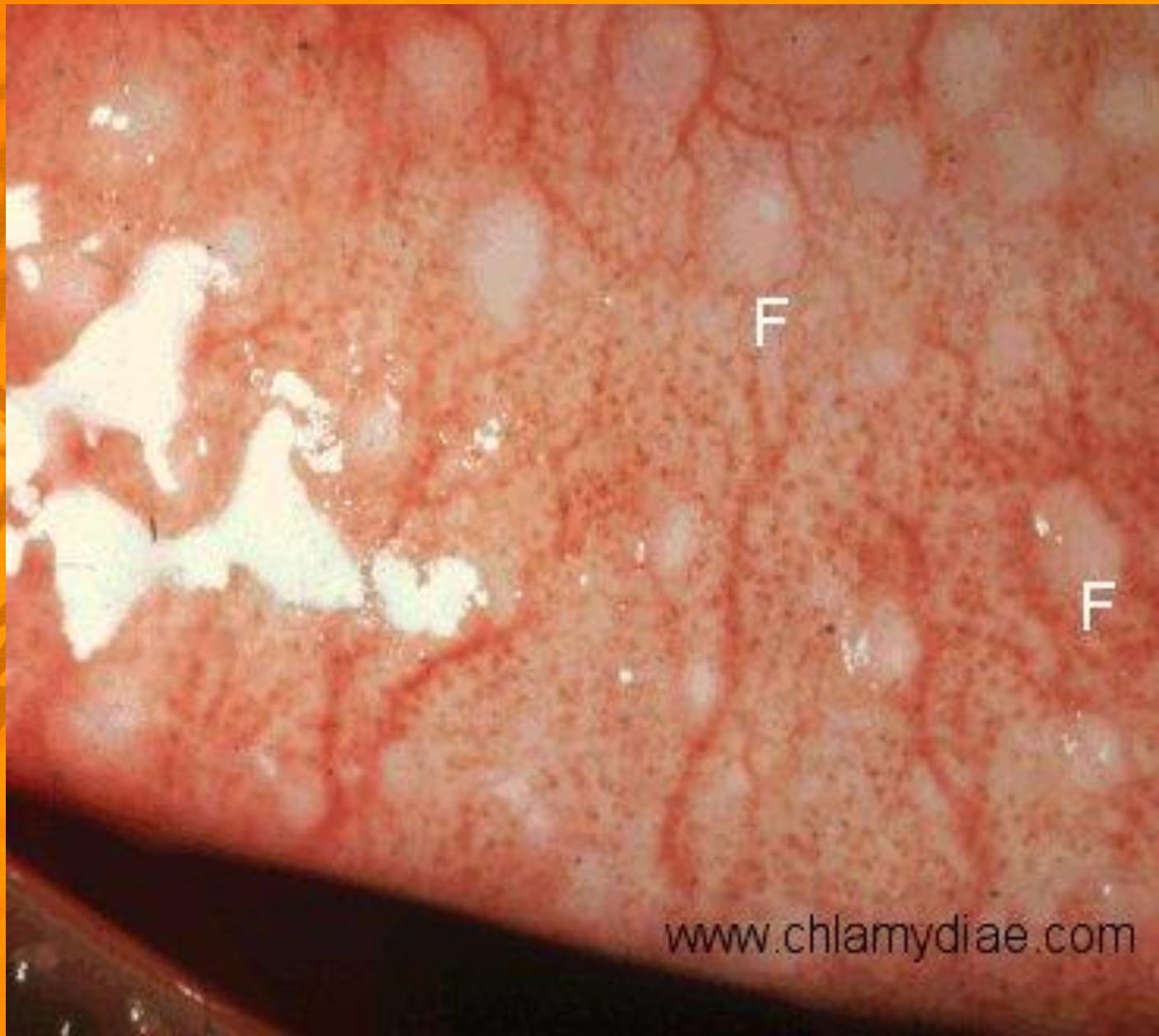
Signs

Multiple, discrete, yellowish, slightly elevated lesions most prominent in the **fornices**. Vessels normally pass over the surface of the follicle and as it increase in size, they are displaced peripherally. the size of the lesions is related to severity and duration of the disease.

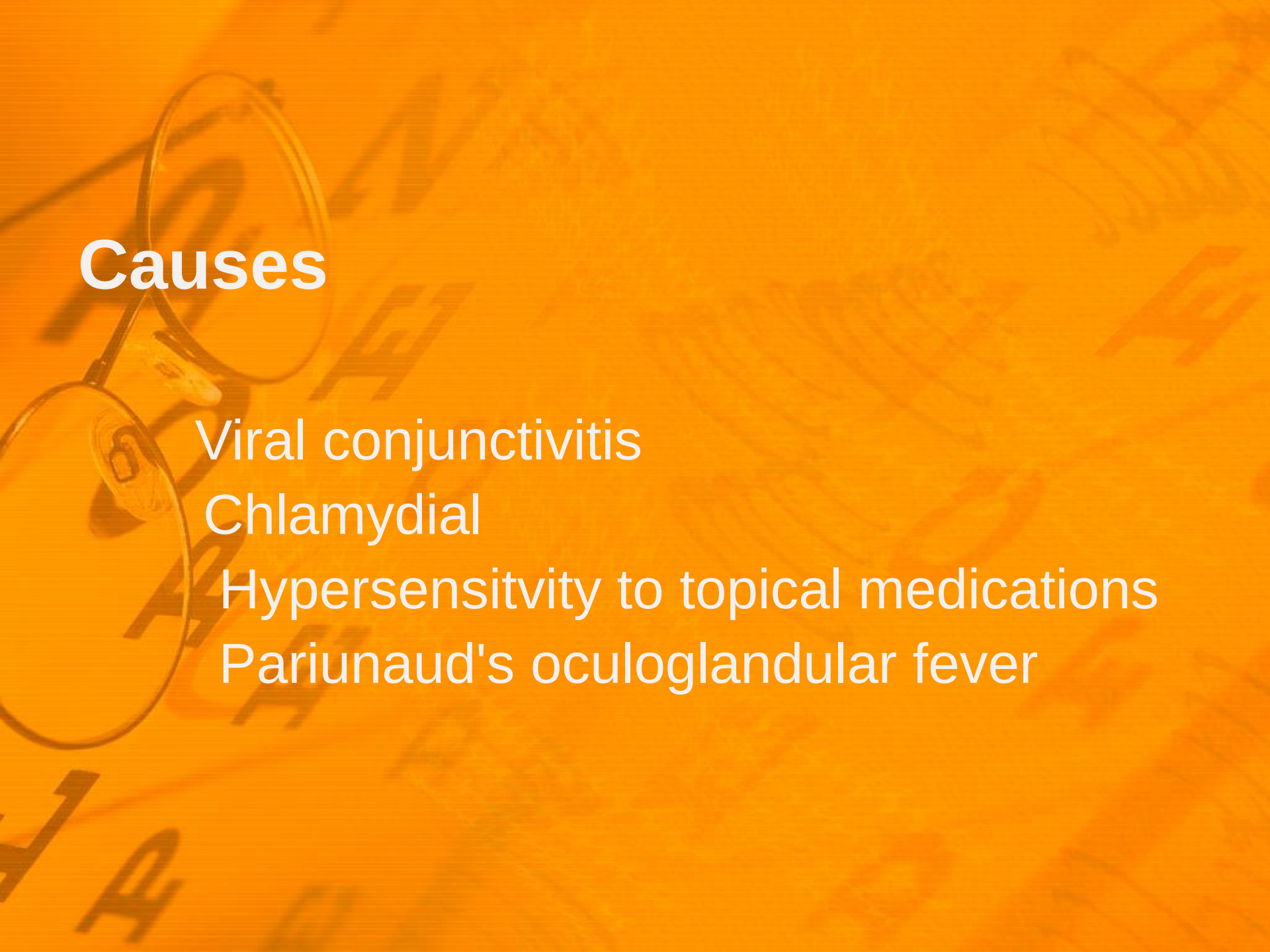
Histology

Subepithelial germinal center with immature lymphocytes centrally and mature peripherally.







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Causes

Viral conjunctivitis

Chlamydial

Hypersensitivity to topical medications

Pariunaud's oculoglandular fever



Acute follicular conjunctivitis

1- viral

(adeno-, picorna-, herpes simplex & zoster, influenza, mumps, measles, rubella, Epstein-Barr).

2- Inclusion conj.

Chronic follicular conjunctivitis

Any follicular conj. that persists for more than 16 days is regarded as chronic

- 1- Trachoma, Inclusion conj., Moraxella lacunata.**
- 2- Parinaud's oculoglandular fever**
- 3- Toxic reaction to drugs (such as pilocarpine, idoxuridine, atropine)**
- 4- Giant papillary conj.**
- 5- Acne Rosacea**
- 6- Lyme disease**

Papillary reaction.

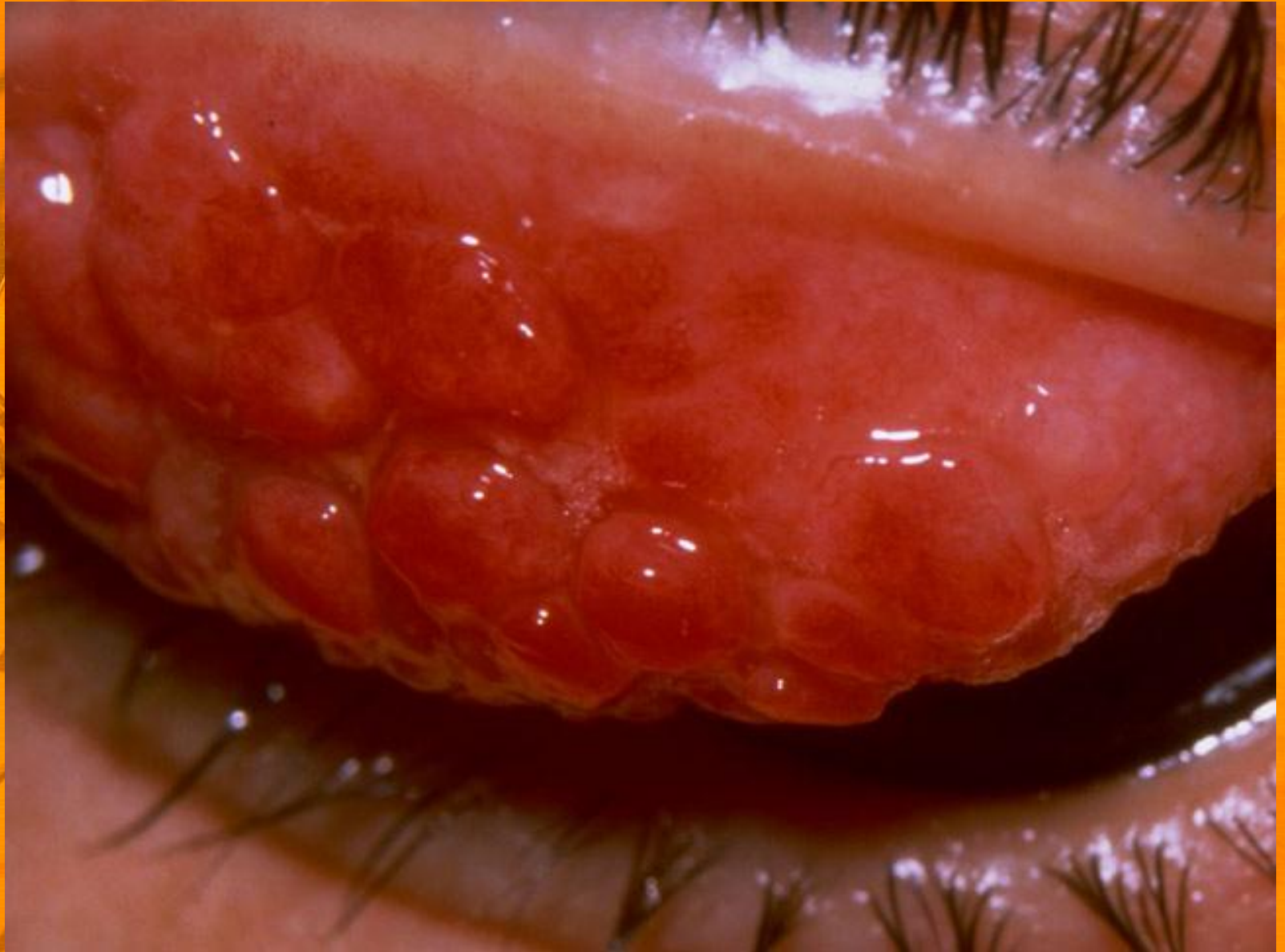
Signs

Papillae can only develop in the **palpebral** conjunctiva and the limbal bulbar conjunctiva. On slit lamp, they appear as mosaic like pattern of slightly elevated polygonal hyperaemic areas separated by paler channels. They are non-specific response of the conjunctiva to any irritative stimulus.

Histology

Folds of hyperplastic conjunctival epithelium with fibrovascular core and subepithelial stromal infiltration with inflammatory cells.





A pair of glasses is positioned on the left side of the slide. The background is a solid orange color with faint, repeating text in a script font, likely 'AMERICAN', visible through the background. The text is light orange and serves as a subtle pattern.

Causes

- Chronic blepharitis
- Allergic conjunctivitis
- Bacterial conjunctivitis
- Contact lens wear

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Causes

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Causes

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- Allergic conjunctivitis
- Bacterial conjunctivitis
- Contact lens wear

Lymphadenopathy

Enlargement of the preauricular nodes is a feature of **viral** and **Chlamydial** infections.

The image features a solid orange background. On the left side, there is a pair of thin-framed glasses. The background is filled with faint, overlapping, and slightly blurred letters and symbols, including 'A', 'N', 'U', 'E', 'F', and '1', creating a textured, intellectual feel.

Thank You