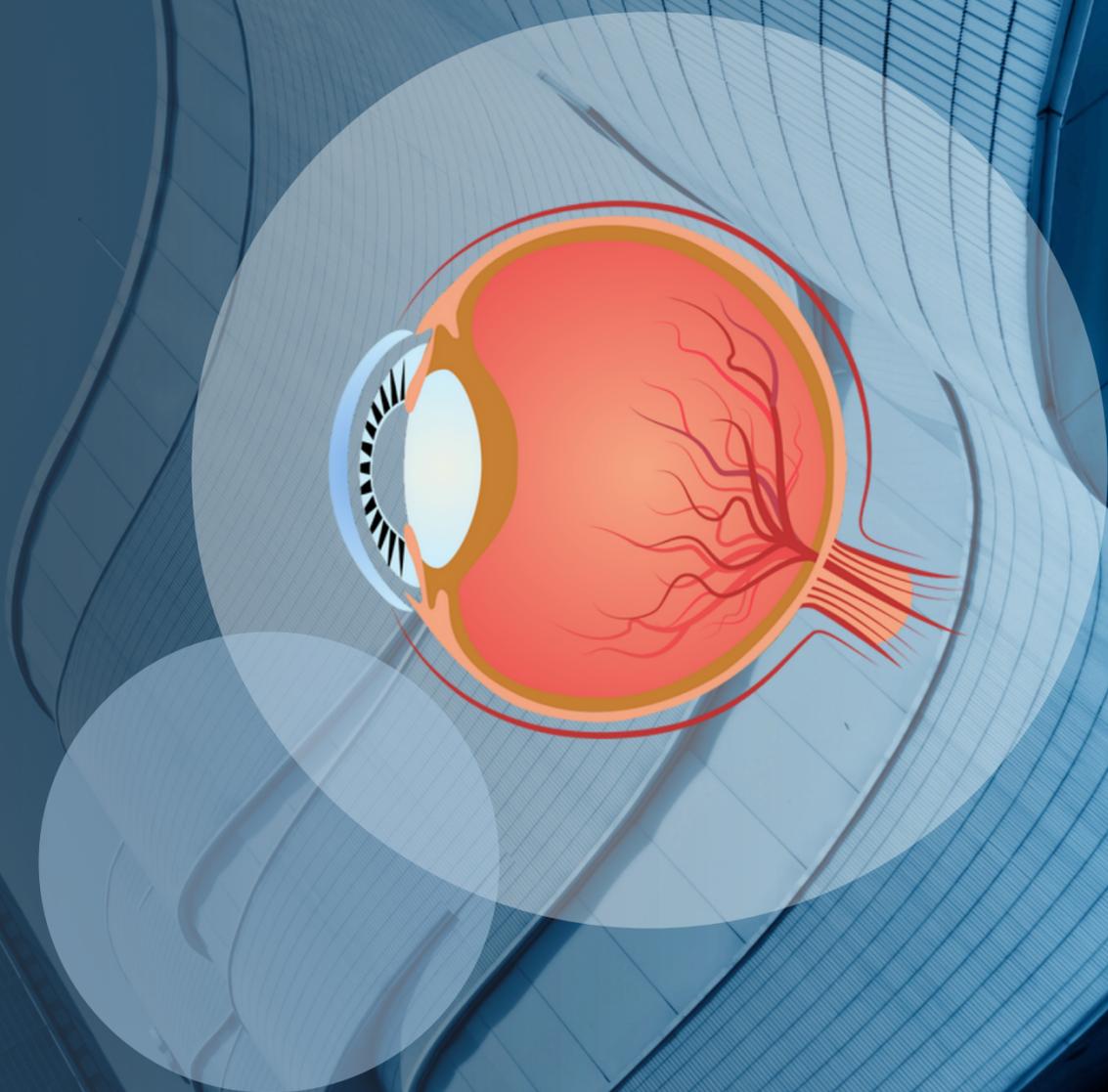


THE LACRIMAL SYSTEM

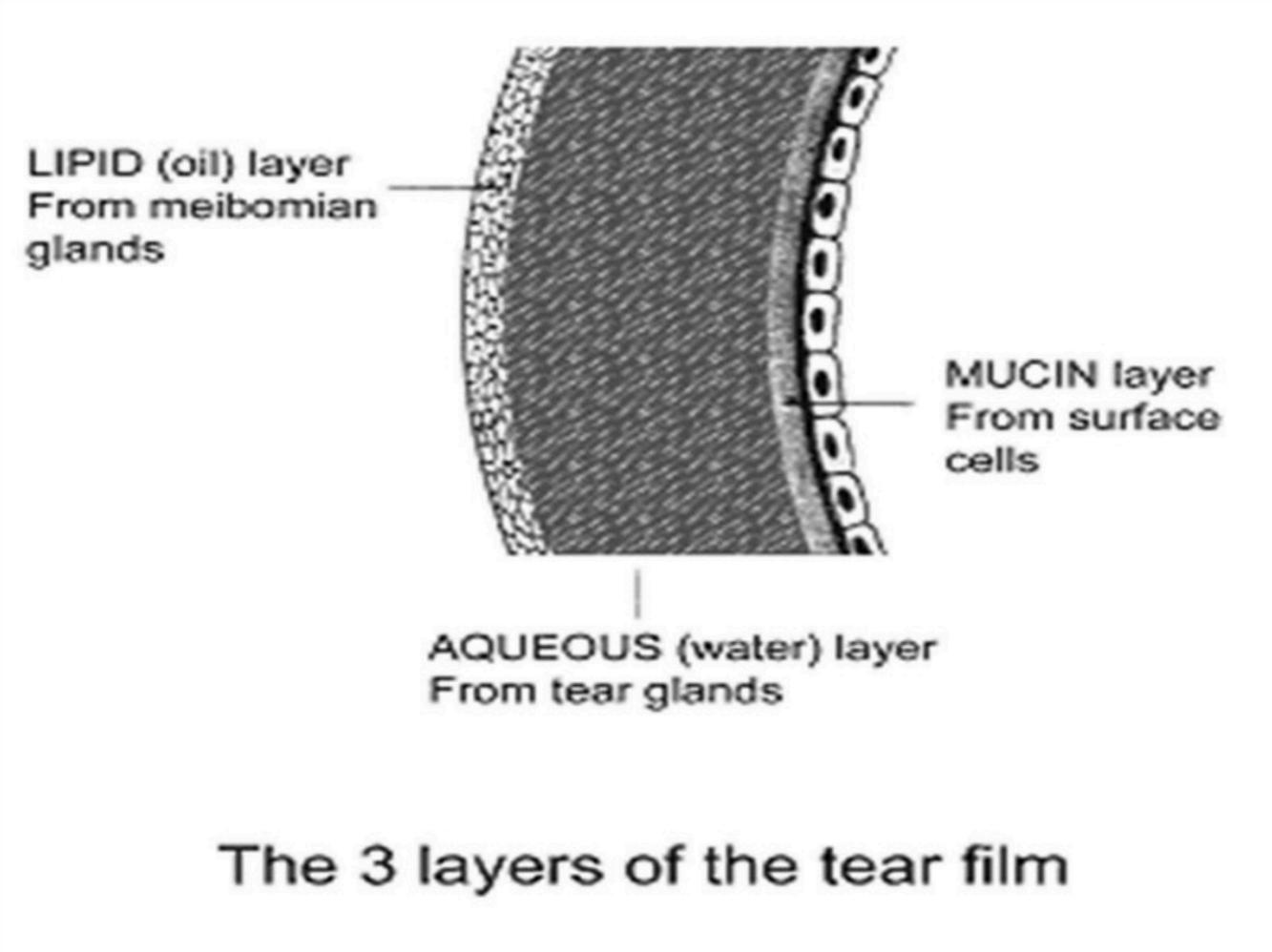
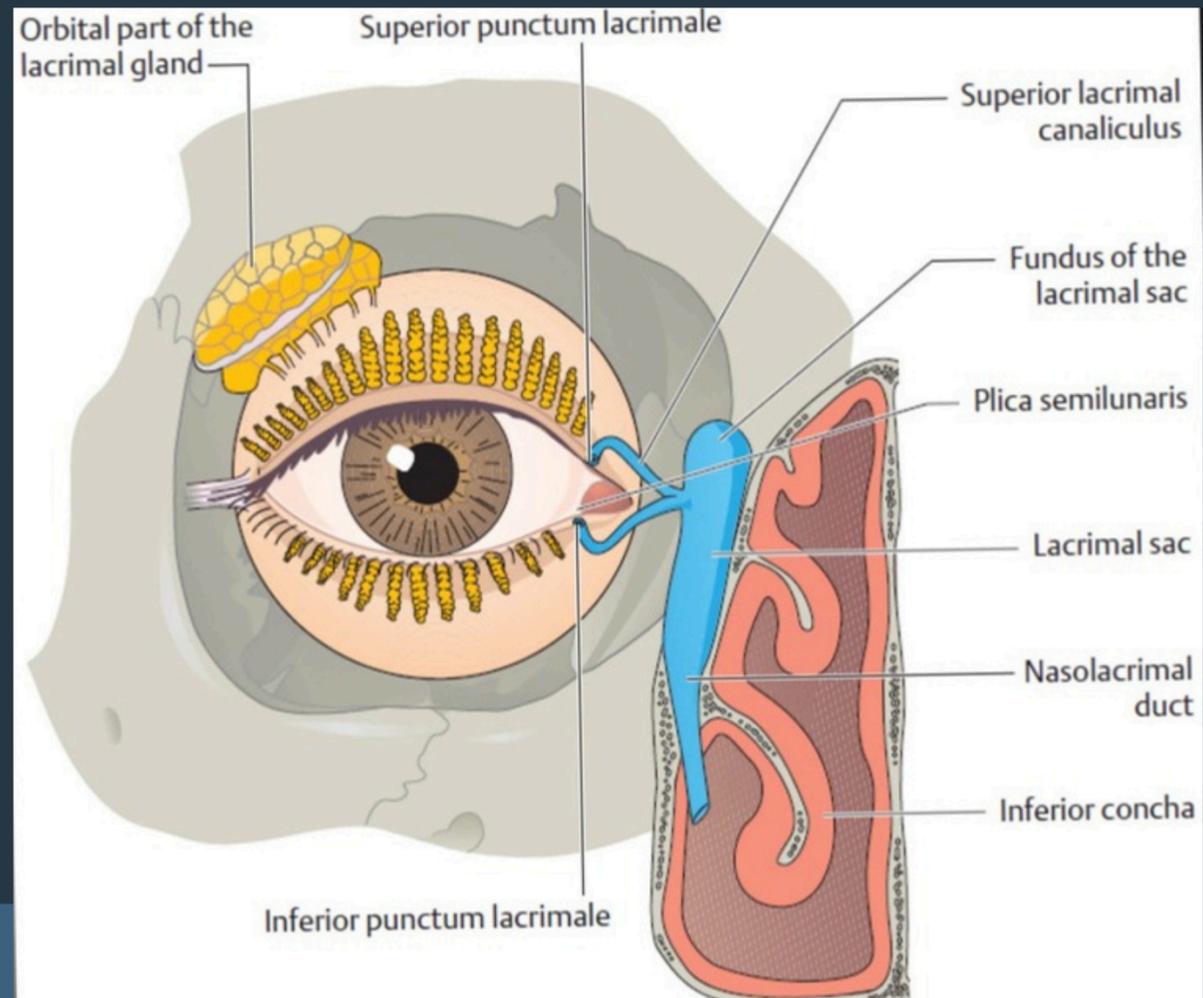
SHAHED MAHMOUD
TOQA SALAMAT



Focus

Study

Listen



Focus

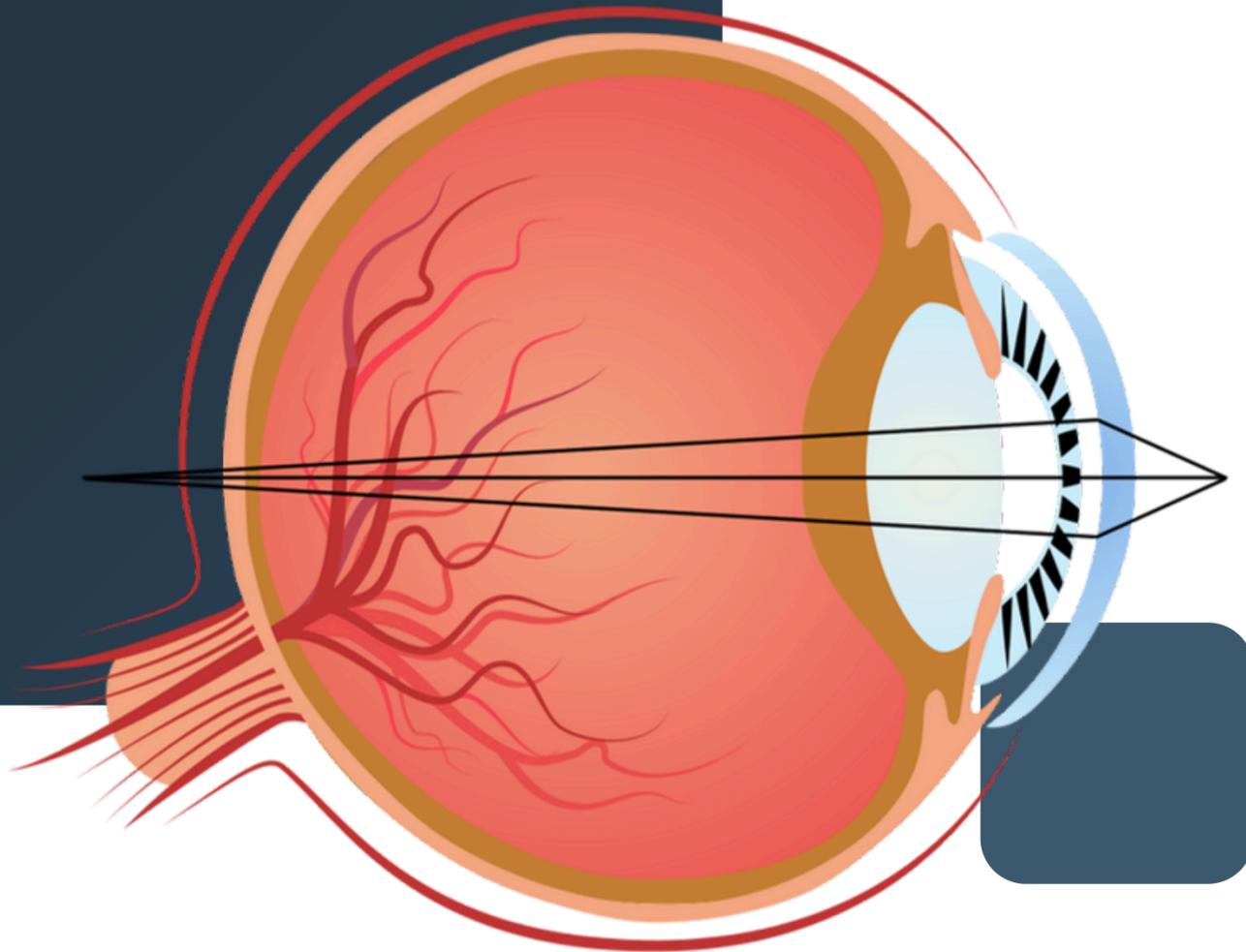
Study

Listen



PHYSIOLOGY

- Importance of good apposition
- Importance of smooth ocular surfaces
- Importance and function of the facial pump
- Importance of the tear layer integrity and components
- Normal production rate $1.2\mu\text{l}/\text{min}$

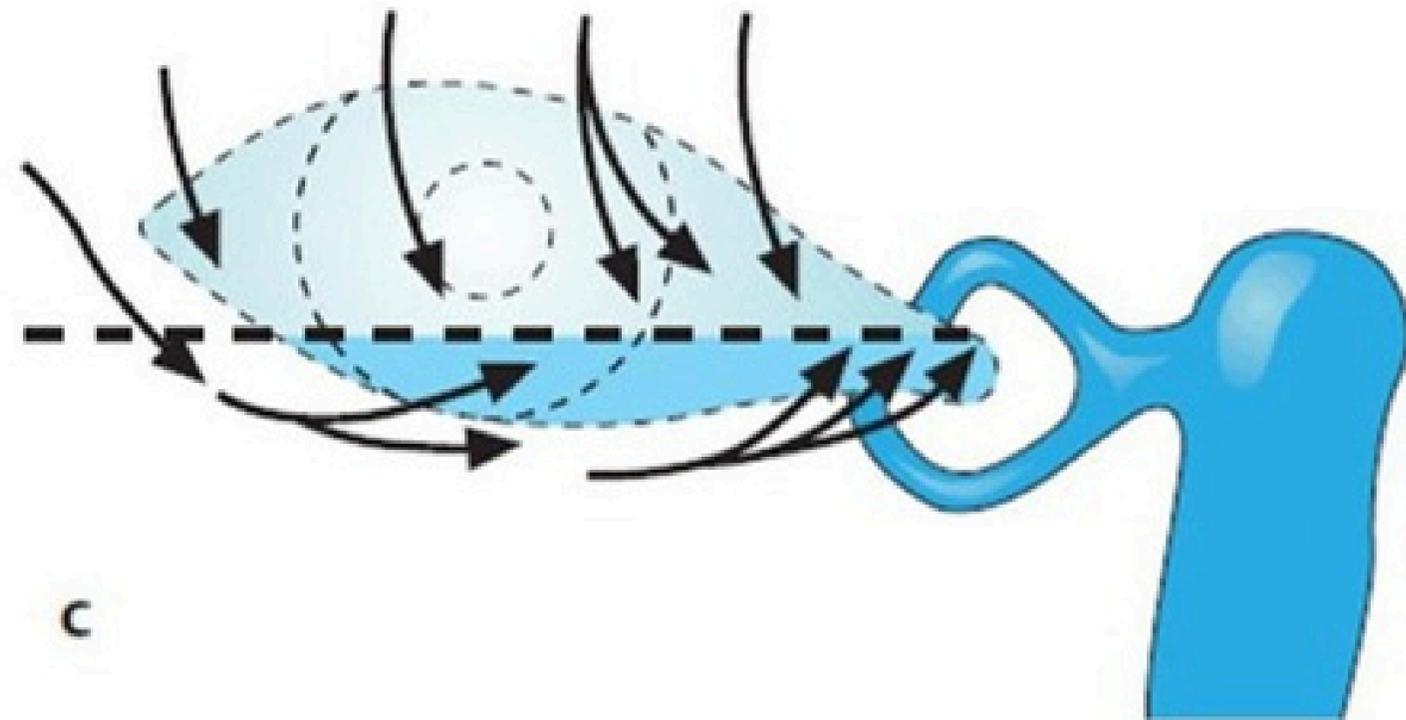
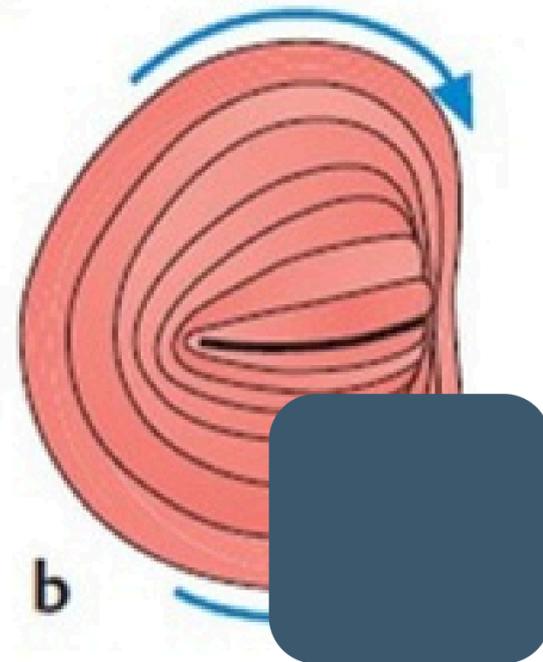
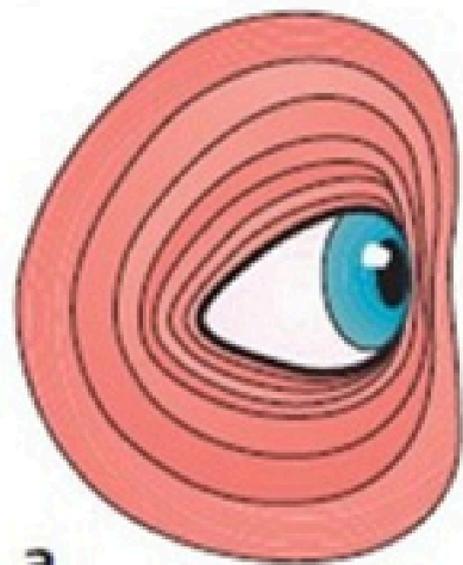




— Combined function of the orbicularis oculi muscle and the lower lacrimal system —
system.

Opening the eye
Levator palpebrae
superioris muscle
(oculomotor nerve)

Closing the eye
Orbicularis oculi
muscle (facial
nerve)



Figs. 3.3 a – c As the eyelids close, they act like a windshield wiper to move the tear fluid medially across the eye toward the puncta and lacrimal canaliculi.

ABNORMALITIES OF LACRIMAL SYSTEM

-Tear composition abnormalities

- Abnormal aqueous production**
- Abnormal mucus production**
- Abnormal meibomian secretion**

-Drainage system abnormalities



AQUEOUS INSUFFICIENCY

- Deficiency of lacrimal secretions occur with age and results in KeratoConjunctivitisSicca(KCS)**
- Primary Sjogrensyndrome : dry eye and mouth, is an autoimmune disease**
- Secondary Sjogren: when associated with connective tissue disease with Rheumatoid Arthritis as the commonest**

SYMPTOM & SIGNS

- Non-specific symptoms as FB sensation , tiredness ,grittiness ,burning ,heaviness photophobia and ocular fatigue .**
- These symptoms are worse at the end of the day and when exposed to dry or windy atmosphere .**

SIGNS

- In mild cases may show staining of the cornea with fluorescence (punctate staining)**
- In severe cases Tags of mucus attached to the corneal surface (filamentary keratitis)**
- Very severe cases may show structural corneal changes .**

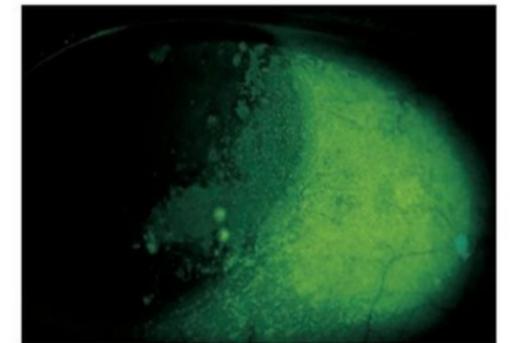


Figure 6.1 Fluorescein staining of cornea and conjunctiva in a severe dry eye.

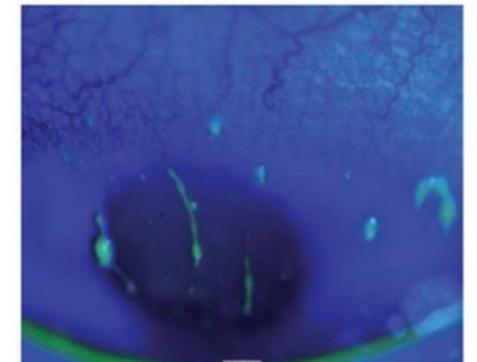


Figure 6.2 Fluorescein staining of filamentary keratitis.

MANAGEMENT

1-Identify and treat the underlying cause

2-tear replacement

3-anti-inflammatory (in early stages)

ABNORMAL OR INADEQUATE MEIBOMIAN GLAND SECRETION

- It will cause tear film instability**
- Giving symptoms of dry eye**
- Treatment is the same .**

INADEQUATE MUCUS PRODUCTION

Cicatricial conjunctival disorders Loss of goblet cells occurs in most forms of dry eye, but particularly in cicatricial conjunctival disorders such as erythema multiforme (Stevens – Johnson syndrome).

In this there is an acute episode of inflammation causing macular 'target' lesions on the skin and discharging lesions on the eye, mouth and vulva-chemical burn -Tachoma -Vit.A deficiency (xerophthalmia)

MANAGEMENT



Artificial Tear



Vit A supplement for Xerophthalmia

MALPOSITION OF THE EYELID MARGIN

Causes :

Ectropion

Entropion

Facial palsy

Proptosis

All of these will cause unstable pre-ocular tear film





Management

01

**Artificial Tear
& lubricants**

02

**Temporary ptosis
induction by
Botullinum Toxin
injection in the
levator muscle**

03

**Lateral
tarsorrhaphy when
permanent cause**

Tear drainage disorders



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**-When tear production exceeds the drainage the tear will overflow on the cheeks -Can be caused by : * Ocular surface irritation , or infection causing (Lacrimation)
* Occlusion pf part of the drainage system (**Epiphora**)**

Nasolacrimal Duct Obstruction

- Congenital**
- Acquired**

Congenital NLD obstruction

- Normally the NLD develops as a solid cord which completes canalization just before birth - Sometimes incomplete canalization occur specially for the lower part .
- Leading to epiphora, mucocele formation and sometimes dacrocystitis (infection of the lacrimal sac) - Pressure on the sac will cause mucus to be expressed from puncti..



Most obstructions resolve **spontaneously** in the first year of life. **If epiphora persists** beyond this time, patency can be achieved by passing a probe via the punctum through the nasolacrimal duct to perforate the occluding membrane (probing). A general anesthetic is required

Most common cause of congenital obstruction is **incomplete canalization at the distal end** (closest to the nose). • Spontaneous resolution occurs by **6 months of age in 90% of infants**. • obstructions persisting beyond the age of 12 months are unlikely to resolve spontaneously ! • Exclude other ocular causes of lacrimation as blepharitis • ***Suspect it's an infantile glaucoma* When • (abnormal tearing with photophobia, and/or large or asymmetric corneal diameters)**

Clinical features:

- Chronicorintermittent tearing.
- Mild redness ofthelower eyelid (irritation from overflow tearing and chronic rubbing of the eyes).
- Overflow of tears when the child is in an environment that stimulates a greater production of tears (eg, wind or cold) or reduced outflow of tears (swelling of nasal mucosa during an upper respiratory infection).



Causes of persistent tearing with or without eye redness or discharge in children

Condition	Characteristic clinical features
Nasolacrimal duct obstruction	
Simple	Increased tear meniscus; reflux of tears/mucoid discharge through puncta with palpation of lacrimal sac
Dacryocystocele	Bluish swelling overlying the lacrimal sac; superior displacement of medial canthal tendon
Glaucoma	Photophobia; corneal clouding; increased corneal diameter; increased intraocular pressure
Uveitis	Photophobia, pain, ciliary injection; may occur after trauma or with various systemic conditions
Conjunctivitis	
Viral	Watery, stringy discharge; respiratory symptoms
Bacterial	Purulent discharge
Allergic	Pruritus; allergic stigmata
Mechanical	History of trauma
Toxic	History of ocular exposure
Ophthalmia neonatorum	Infants younger than one month; usually associated with systemic illness (eg, gonorrhea, chlamydia)
Corneal abnormalities	
Corneal abrasion	Photophobia, erythema, history of trauma; positive fluorescein examination
Corneal foreign body	Photophobia, erythema, history of trauma; foreign body may be viewed directly or with slit lamp
Conjunctival foreign body	Photophobia, erythema, history of trauma; foreign body may be viewed directly or with slit lamp
Lid abnormalities	
Entropion	In-turning of the eyelid
Epiblepharon	Extra fold of skin along the lower lid margin extending over the medial canthal tendon
Trichiasis	Ingrown eyelashes
Blepharitis	Inflammation/infection of the eyelids; debris on eyelashes; itching; burning; redness
Posttraumatic lid and orbit abnormalities	History of trauma

Symptomatic congenital nasolacrimal duct obstruction



Instruct caregivers to perform nasolacrimal massage at home*



Observe patient until age 6 months



Persistent symptoms at age 6 months?

Yes



Refer to ophthalmologist



Evaluation should include comprehensive eye examination, including cycloplegic refraction Δ

Surgical interventions include: \diamond

▪ First line:

- Lacrimal duct probing
- Nasolacrimal duct intubation

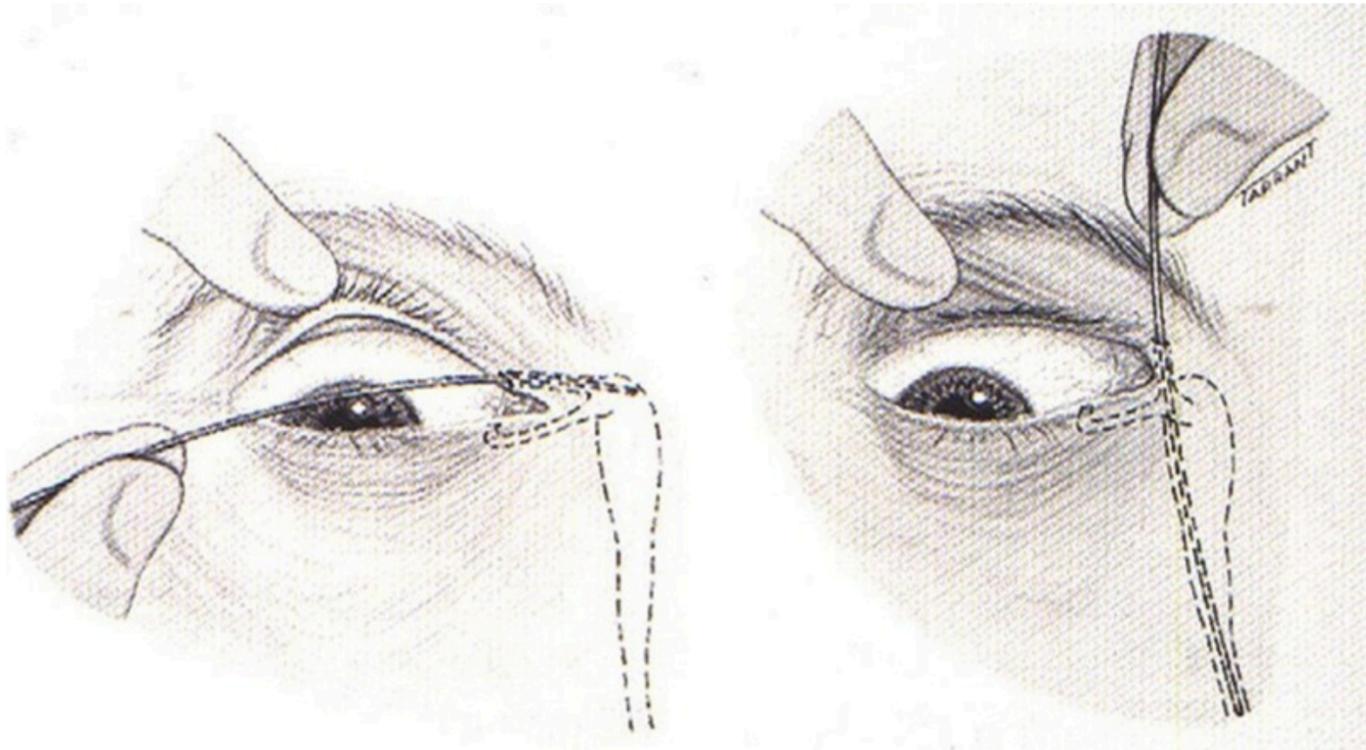
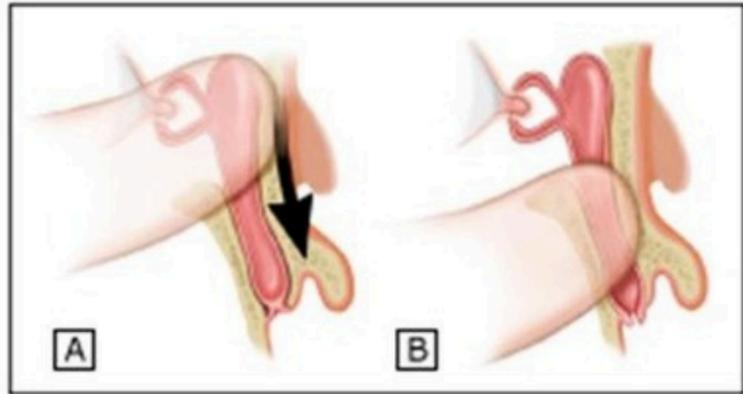
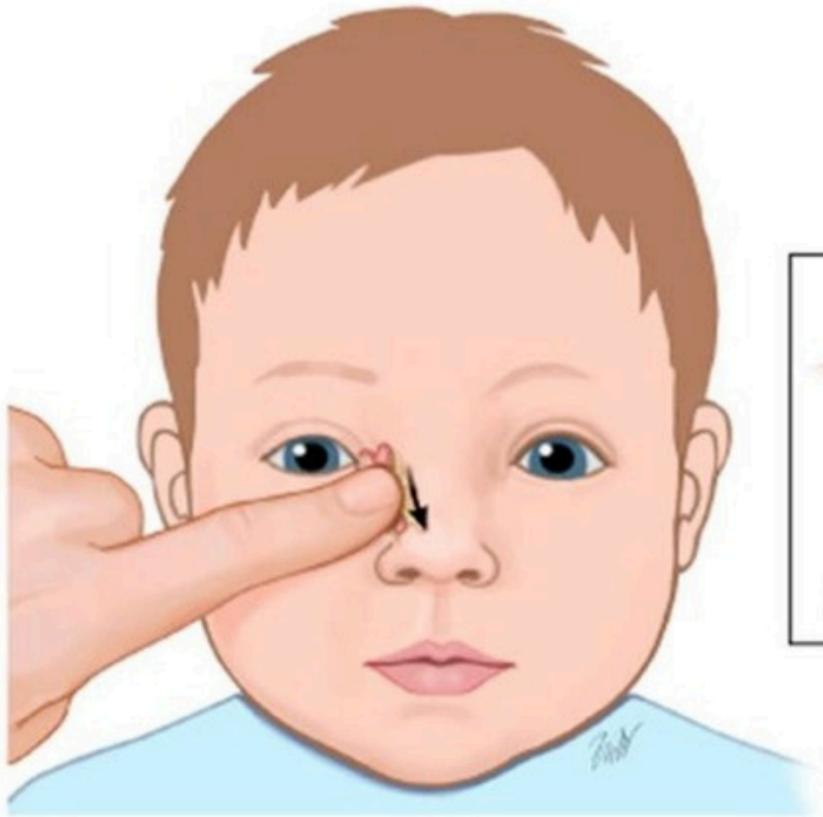
▪ Second line:

- Balloon dacryocystoplasty
- Dacryocystorhinostomy
- Conjunctivodacryocystorhinostomy

No



Monitor for recurrence of symptoms \uparrow



A small probe is introduced into the punctum and advanced through the lacrimal drainage system until it abuts the obstruction.

. **Obstruction of tear drainage (adult)**

The tear drainage system may become blocked at any point, although the most common site is the **nasolacrimal duct**.

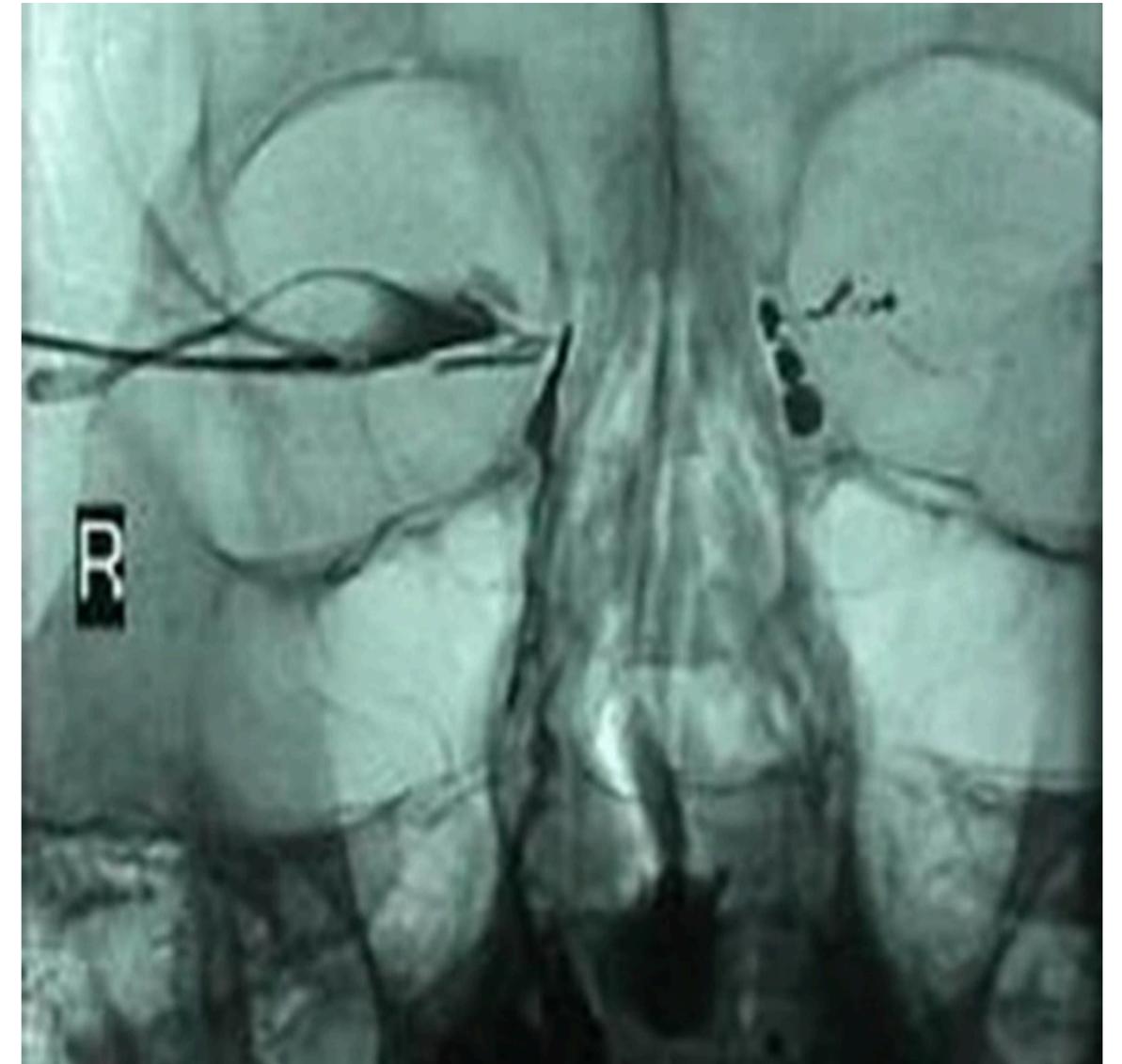
Causes include **infections** or direct **trauma** to the nasolacrimal system and, occasionally, topically applied drugs.

History

The patient complains of a watering eye, sometimes associated with stickiness. The eye is white. Symptoms may be worse in the **wind or in cold** weather. There may be a history of previous trauma or infection.

Examination

- Punctal occlusion can be seen using slit lamp .
- Syrringing and saline injection
- Dacrocystogram.



Management

-Exclude other ocular causes of lacrimation as blepharitis -Syringing and probing can be tried . - DacroCystoRhinosotomy(DCR) or other modifications ,to create a fistula between the lacrimal sac and nasal mucosa by destroying the intervening bone .

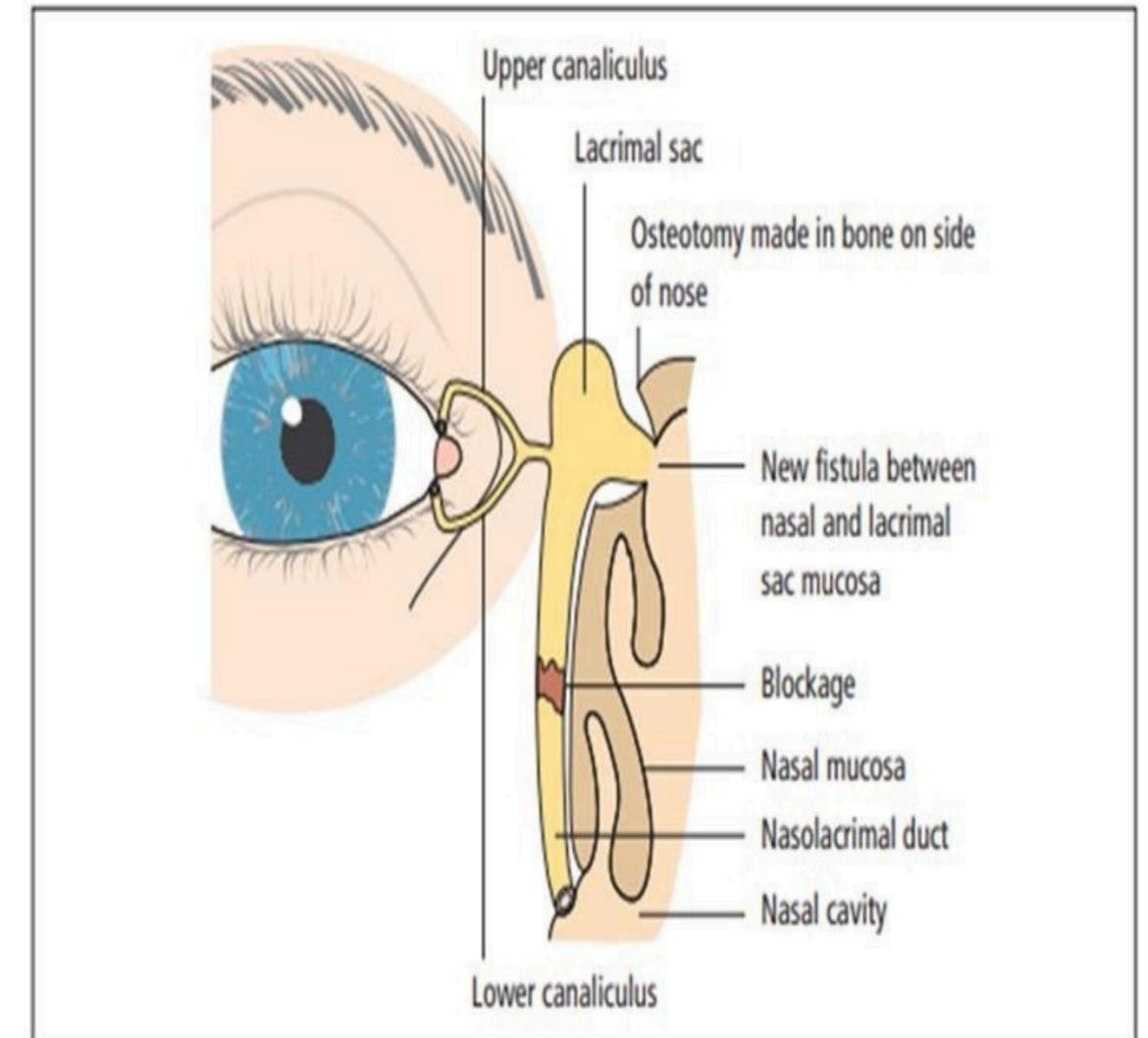


Figure 6.5 The principle of a DCR (dacryocystorhinostomy).

Acute dacryocystitis

- The most common cause : *Staph aureus*.
- **Symptomes:** erythema, swelling, warmth, tenderness of the lacrimal sac, and/or purulent discharge. Fever and Subtle early symptoms of infection include mild erythema over the lacrimal sac, poor feeding..
- A rare complication of isolated congenital NLD obstruction but occurs commonly with dacryocystoceles.
- A medical emergency, complications (preseptal or orbital cellulitis, sepsis, meningitis, or brain abscess).
- Blood cultures and cultures of material obtained during drainage guide definitive antimicrobial therapy
- Empiric **systemic antibiotic** should be provided with suspected acute dacryocystitis pending culture results.

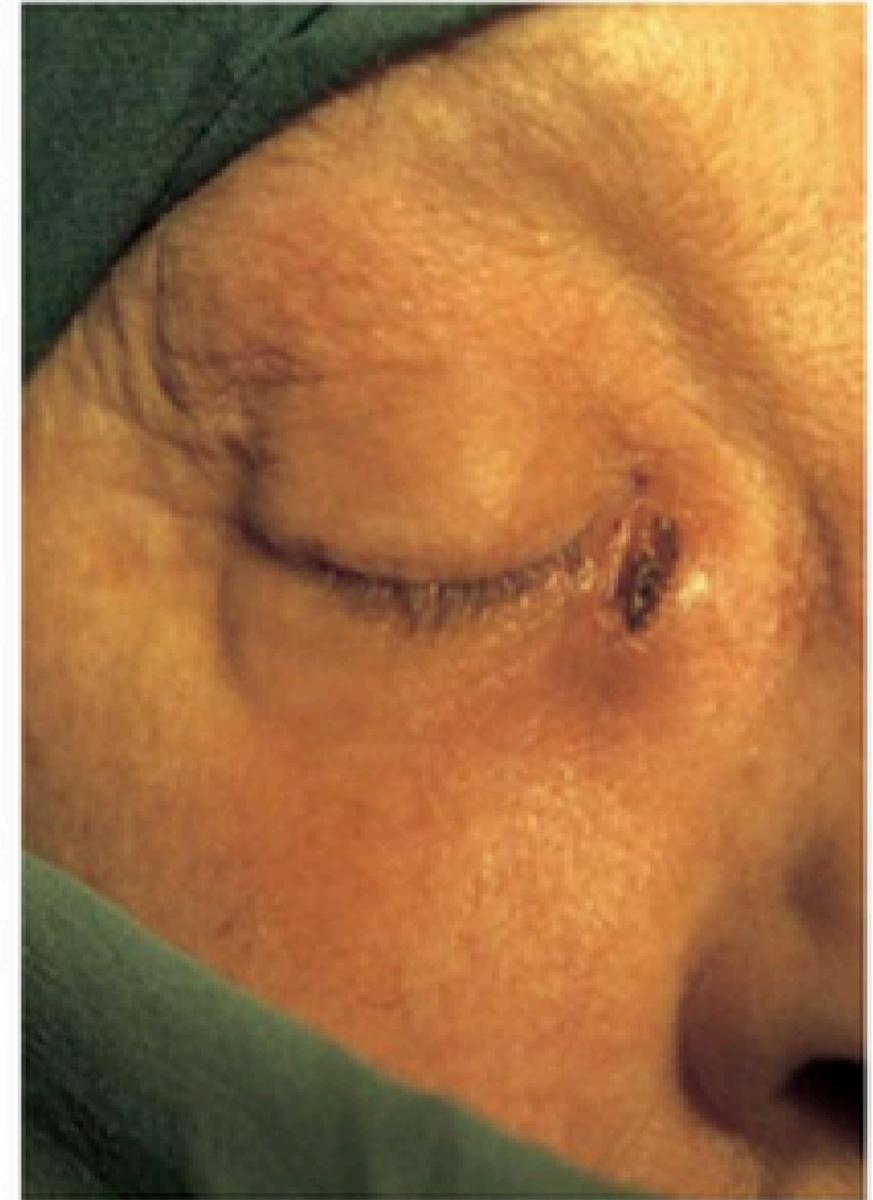


Figure 6.6 Dacryocystitis, unusually, in this case, pointing through the skin.

(وَقُلْ رَبِّ زِدْنِي عِلْمًا)

