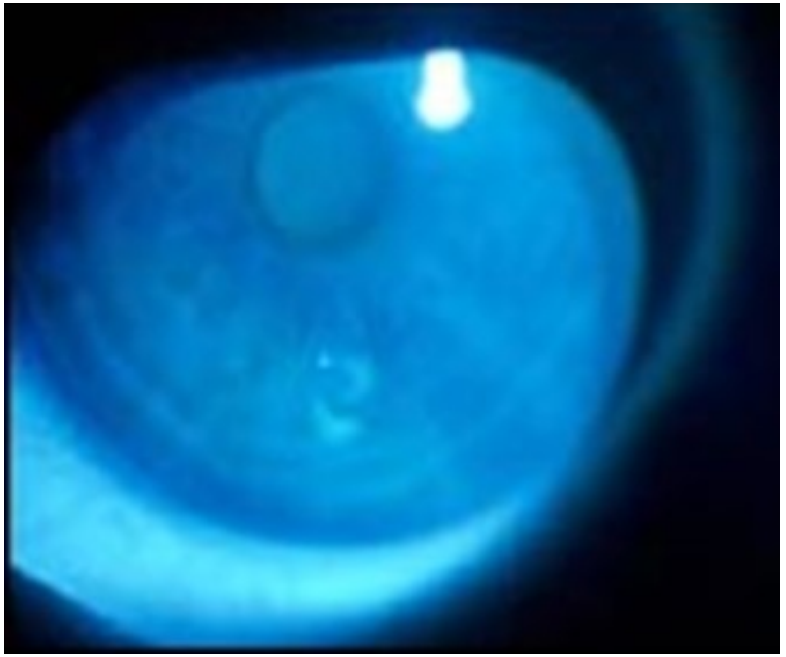
NONINFECTIOUS SUPERFICIAL KERATOPATHIES

Dr. Sushil Tripathi

- Recurrent corneal erosion syndrome
- Filamentary keratitis
- Thygeson’s superficial punctate keratitis
- Superior limbic keratoconjunctivitis
- Neurotrophic keratitis

Recurrent corneal erosion syndrome

Common disorder involving the corneal epithelium and epithelial basement membrane characterised by repeated breakdown of epithelium.



Etiology

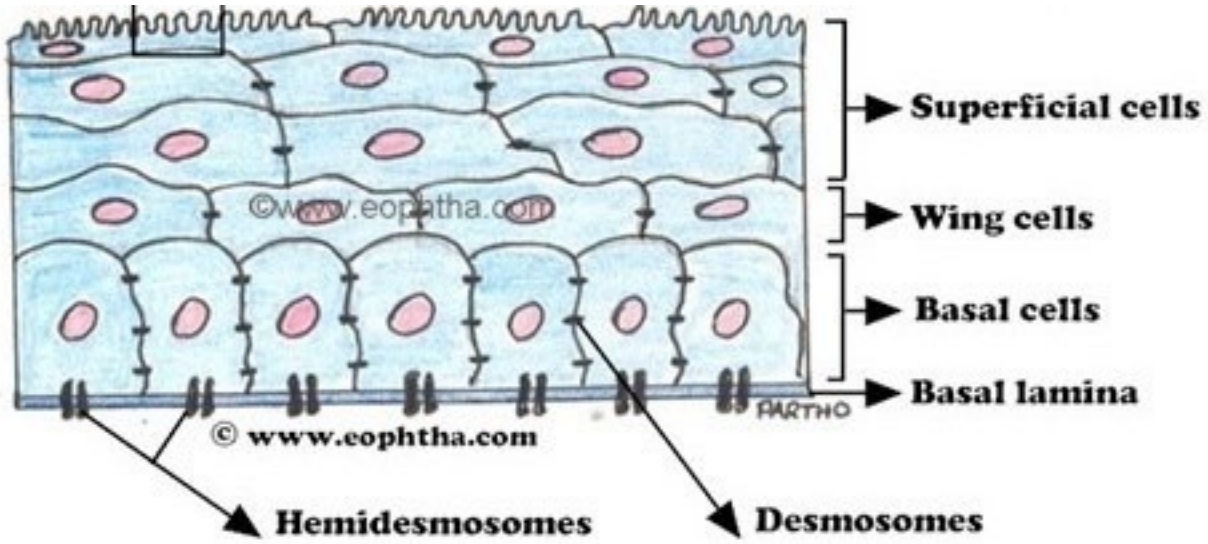
Previous trauma

corneal dystrophies:

Anterior basement membrane corneal dystrophy
lattice,
Reis-Bücklers’,
macular,
granular,
Meesmann's dystrophies

Diabetes mellitus

Pathophysiology



Pathophysiology

Trauma or corneal dystrophy

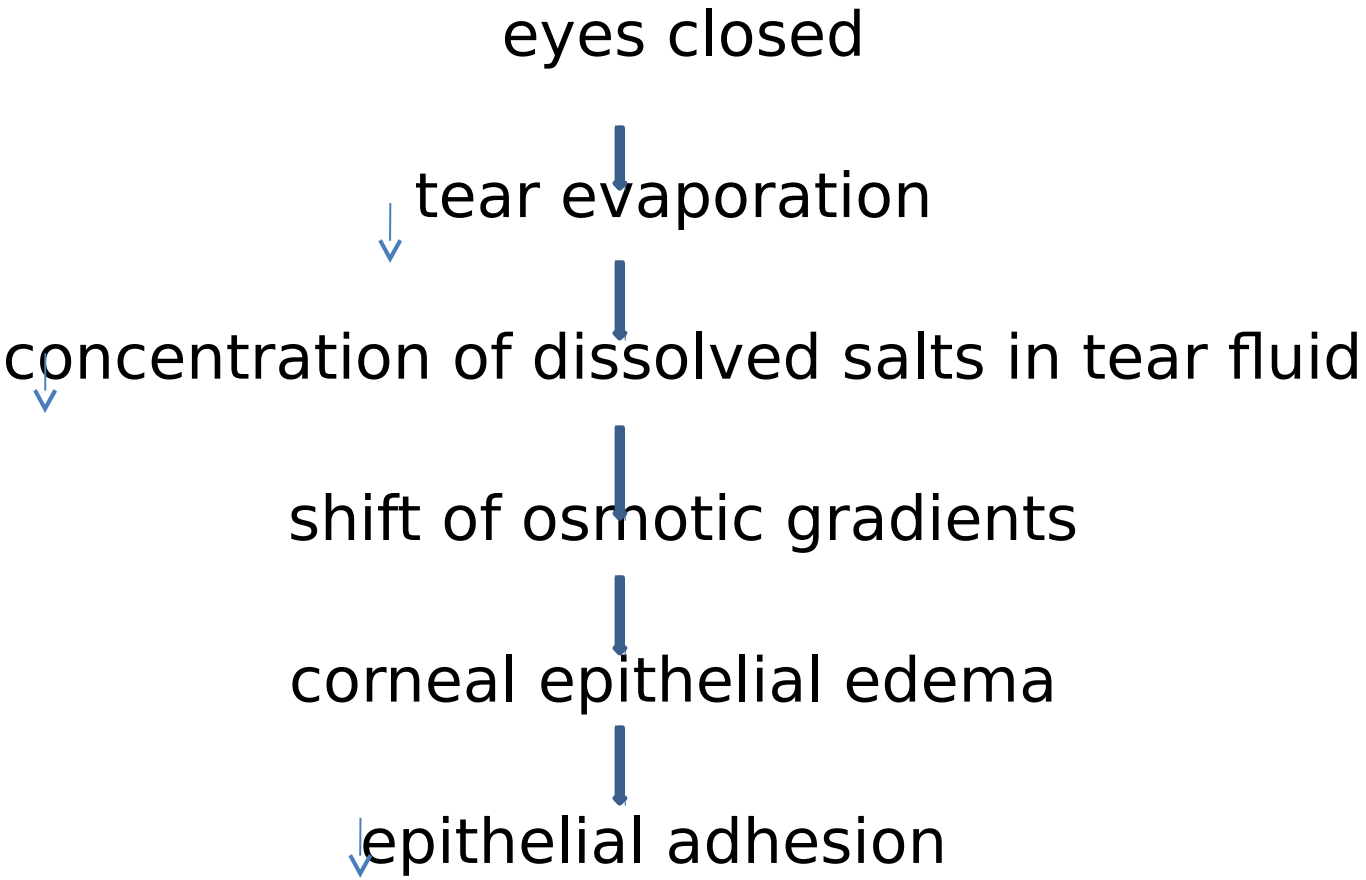
↓

Abnormal attachment complexes

↓

Recurrent corneal erosion

Pathophysiology



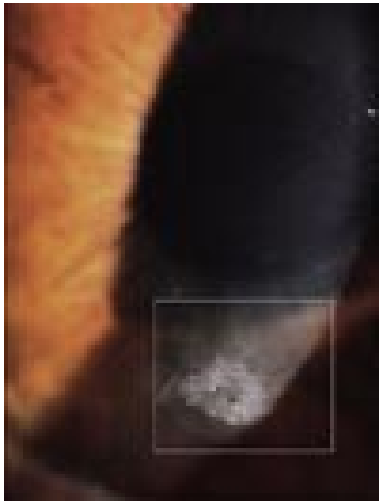
Clinical manifestations

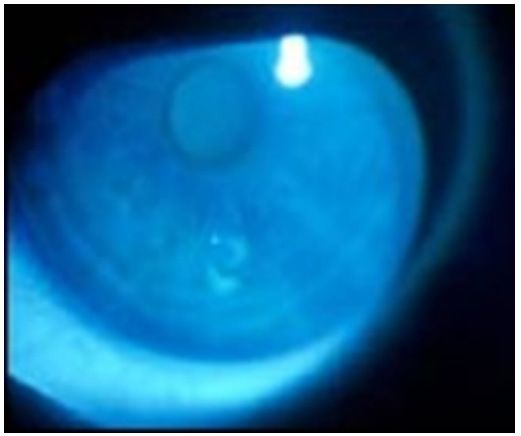
Symptoms:

- episodic in nature
- Sudden onset
- Mostly in early morning
- Sharp pain, epiphora, FB sensation, lid edema
- Anxiety, depression, fear of falling asleep, insomnia.

Diagnosis

- history of previous trauma
- episodes of pain on awakening
- ragged, staining area of epithelium





Medical Treatment

- long-term nightly use of **hyperosmotic lubricating ointments**

Medical Treatment

- long-term nightly use of **hyperosmotic lubricating ointments**
- Hyperosmotic eyedrops during the daytime

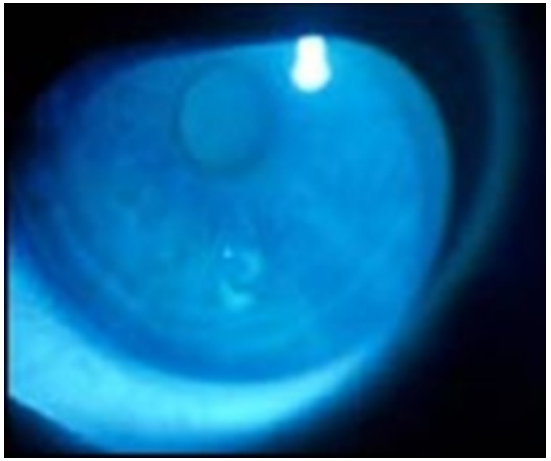
Medical Treatment

- long-term nightly use of **hyperosmotic lubricating ointments**
- Hyperosmotic eyedrops during the daytime
- Patching
- Bandage contact lens

Surgical Treatment

Anterior stromal puncture:

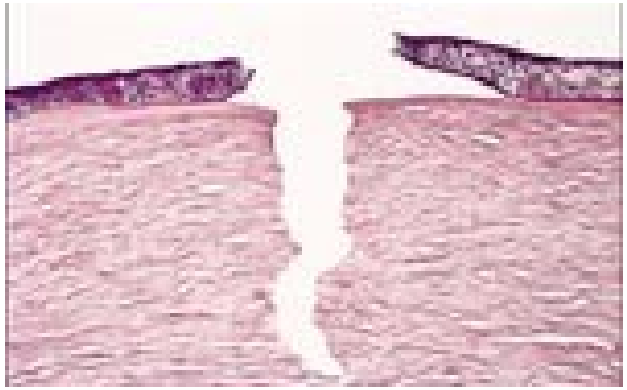
- In 1986 McLean et al
- Also known as epithelial reinforcement, corneal micropuncture
- highly effective OPD procedure
- For Localized erosions

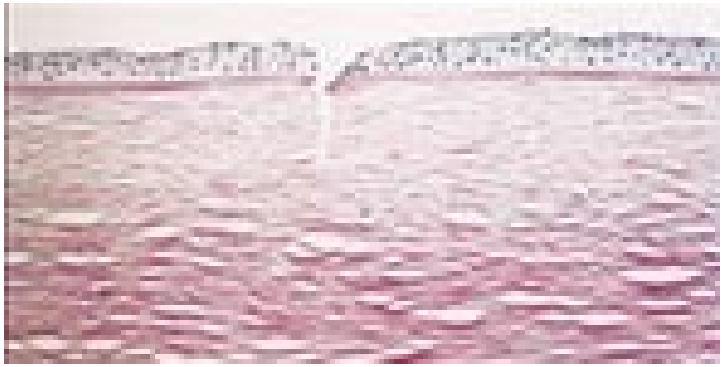


Surgical Treatment

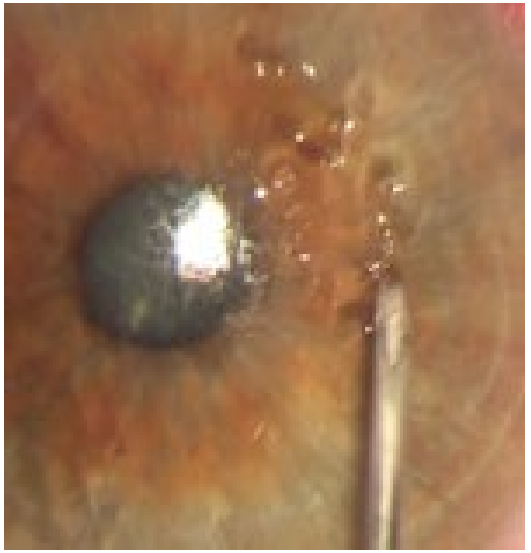
Surgical Treatment

Surgical Treatment

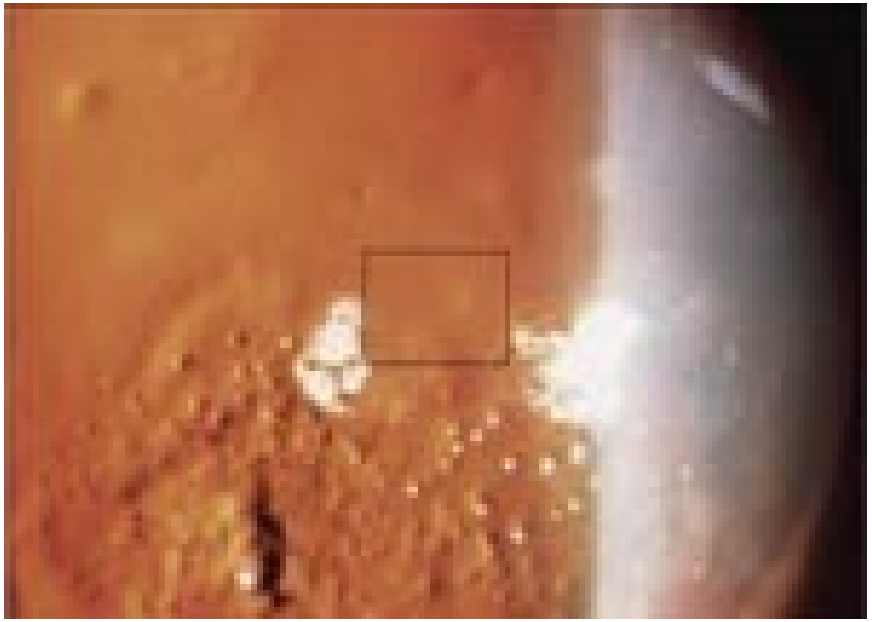




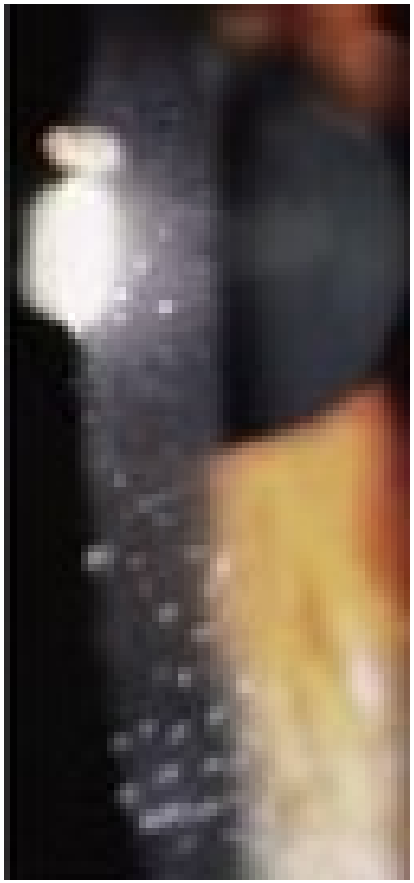
Surgical Treatment



Surgical Treatment



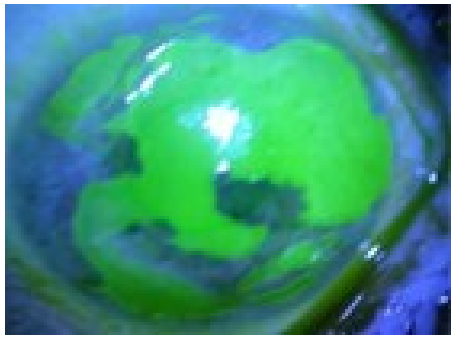
Surgical Treatment

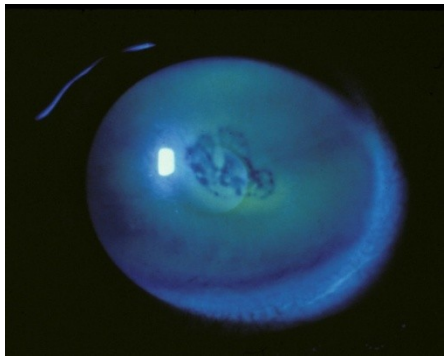


Surgical Treatment

superficial keratectomy:

- multiple erosions in different areas of the cornea
- large areas of loosely adherent irregular epithelium
- Erosions in visual axis
- no history of trauma
- severe basement membrane dystrophy





Surgical Treatment

superficial keratectomy:

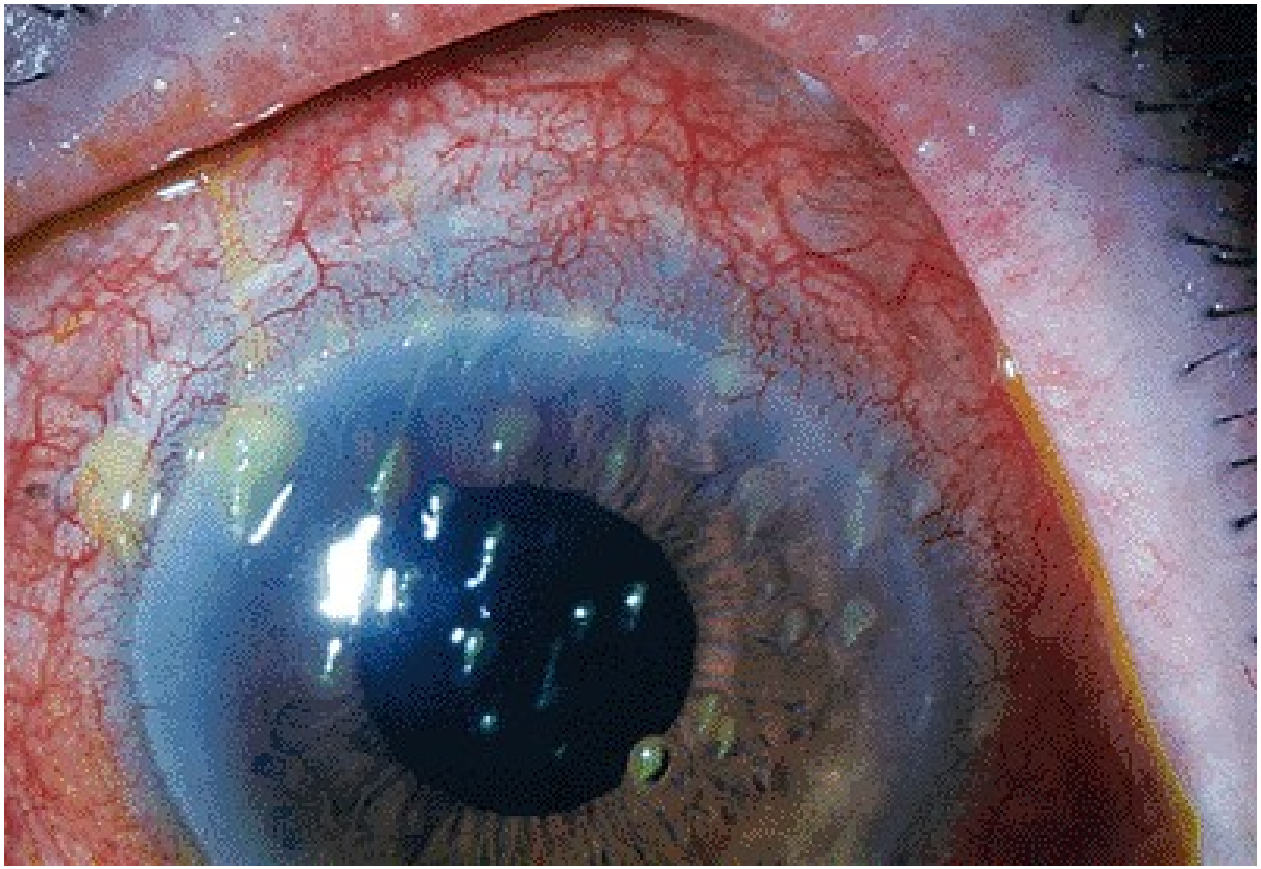
- OT procedure
- Dissect the whole epithelium with no. 15 blade
- Leave 1mm peripheral epithelium
- Do not remove Bowman’s membrane
- Scrape it with blade perpendicular

Surgical Treatment

Postsurgical treatment:

- hyperosmotic ointments and drops
- NSAID drops
- Antibiotics

Filamentary keratitis



Associated diseases

Ocular trauma/surgery:

Abrasion/erosion

Contact lens overwear

Cataract extraction

Penetrating keratoplasty

Associated diseases

Ophthalmic disorders:

Keratoconjunctivitis sicca

Superior limbic keratitis

Neurotrophic keratopathy

Prolonged patching

Ptosis

Aniridia

Associated diseases

Systemic disorders:

Sarcoid

Diabetes mellitus

Hereditary hemorrhagic telangiectasia

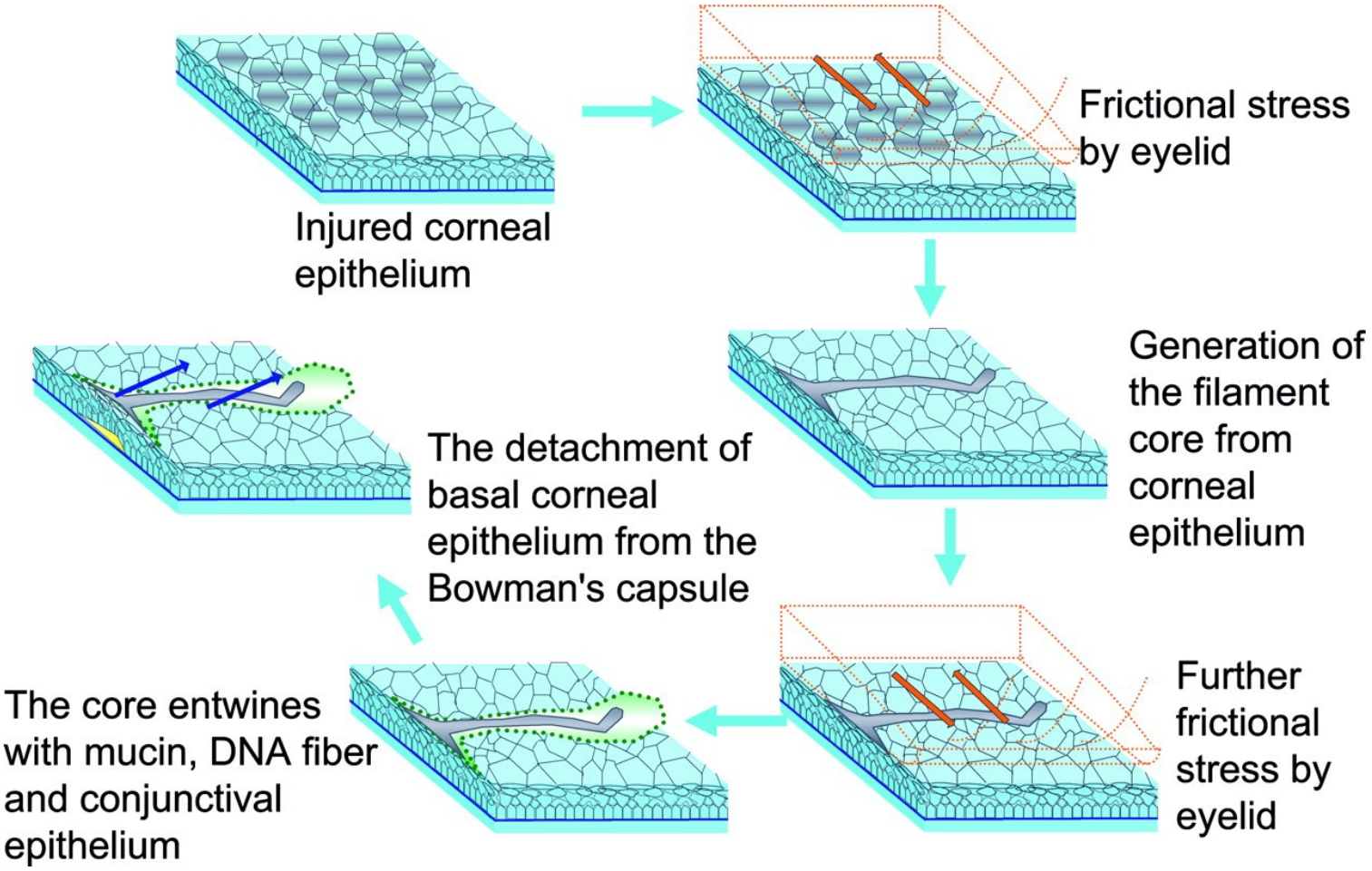
Ectodermal dysplasia

Psoriasis

Atopic dermatitis

Brain stem injury

Pathophysiology



Clinical Manifestations

- foreign body sensation
- photophobia
- blepharospasm
- epiphora

Treatment

- Treat the underlying cause
- Mechanical debridement of the filaments
- Tear substitutes
- Punctal oclusion
- 5% sodium chloride ophthalmic solution
- Bandage soft contact lens
- NSAID eye drops

Thygeson's Superficial Punctate Keratitis

- uncommon epithelial keratopathy of unknown cause
- no known association with other ocular or systemic disease
- coarse punctate epithelial keratitis
- little or no hyperemia of the bulbar or palpebral conjunctiva
- Active and chronic keratitis but no neovascularization
- often misdiagnosed.

Epidemiology

- No sex predilection
- 2.5 years of age to over 70.
- Most common in second and third decades.

Etiopathogenesis

- Not yet understood

Viral suspect

- resemble viral lesions
- Long duration
- exacerbations and remissions
- mononuclear cell response

Autoimmune suspect

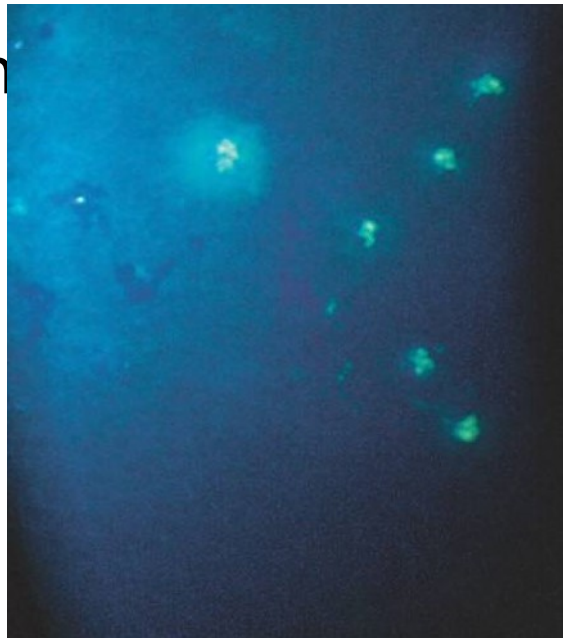
- Presence of HLA-DR3 antigens
- Chronic course
- Presence of lymphocytes
- Corticosteroid response

Clinical manifestations

- Long history of exacerbations and spontaneous remissions
- Foreign body sensation
- Photophobia
- Burning
- Tearing
- Occasional blurring of vision.

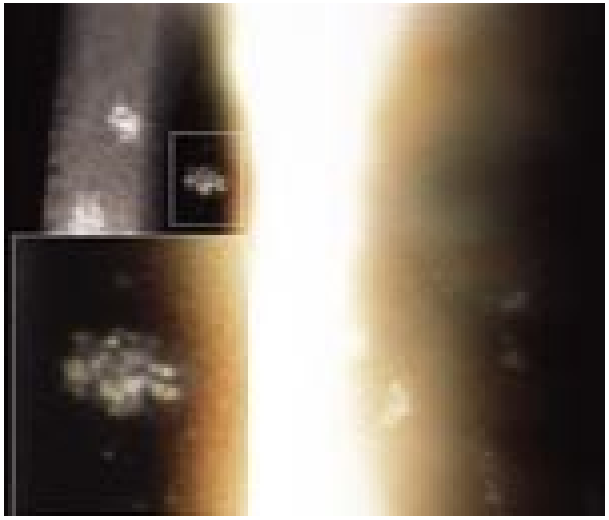
Clinical manifestations

- Bilateral
- Mild or no conjunctival congestion
- oval or round, punctate intraepithelial lesions
- evanescent and migratory



Clinical manifestations

- composed of numerous discrete, fine, granular, white to gray, dotlike opacities



Differential Diagnosis

Thygeson'SPK	Adenoviral SPK
Noninfectious	infectious
No other ocular findings	Lid edema, congestion, conjunctival follicles
coarse	Fine
No subepithelial infiltrates	Subepithelial infiltrates
No scarring	Scarring (Visually significant)

Treatment

- Low-dose topical corticosteroids
- Bandage contact lens
- ciclosporin A

Superior Limbic Keratoconjunctivitis

Epidemiology

- Nonfamilial
- Age – 20-67 years
  mean age - 50 years
- female:male ratio - 3 : 1

Etiopathogenesis

- etiology is not clear

Etiopathogenesis

Associations:

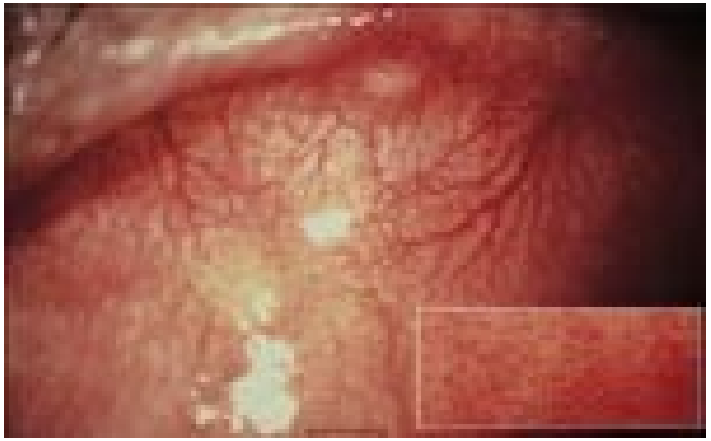
- Thyrotoxicosis – 30% of the cases.
- keratoconjunctivitis sicca

Clinical Presentation

- Long lasting
- Exacerbations and remissions
- foreign body sensation, photophobia, and pain
- Blepharospasm
- Mucoid discharge

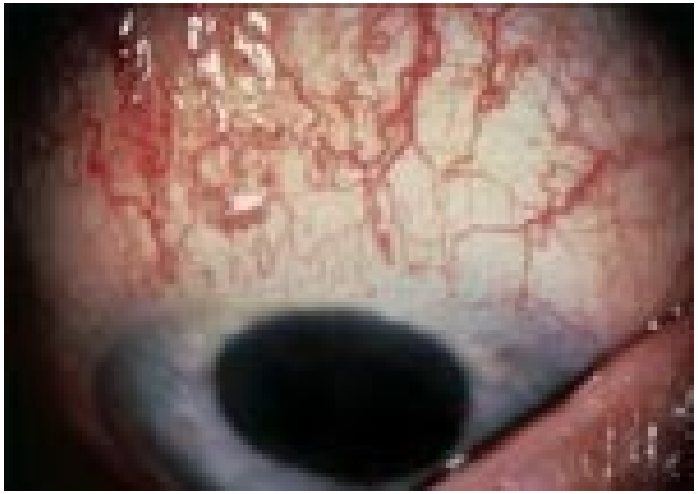
Clinical Presentation

- **Signs:**
- Bilateral
- hyperemia of the palpebral conjunctiva and a fine papillary reaction



Clinical Presentation

- **Signs:**
- The superior bulbar and limbal conjunctiva shows sectoral injection and appears thickened and redundant

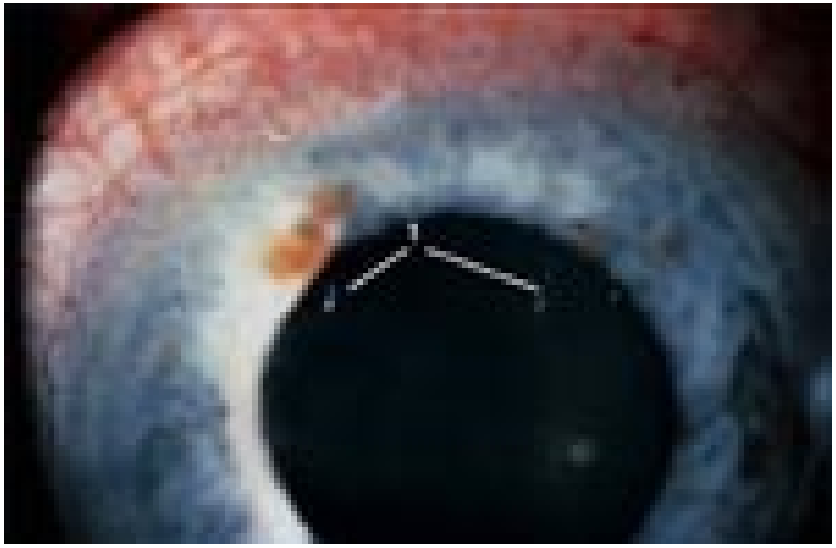


Clinical Presentation

- **Signs:**
- application of rose Bengal often shows coarse punctate staining of the superior bulbar and limbal conjunctiva as well

Clinical Presentation

- **Signs:**
- Superior corneal and limbic filaments
- Thickened limbus



Management

- Assess

-tear function

-lid tension

-thyroid status

Management

- local application of **0.5–1% silver nitrate solution** to the superior palpebral conjunctiva

- superior bulbar conjunctival resection (patients with normal Schirmer test)

Management

- Mondino et al. Reported use of **therapeutic soft contact lens**
- Udell et al. reported the results of treating SLK with **thermal cauterization**
- Yang and colleagues found resolution of SLK symptoms in 22 eyes after **permanent punctal occlusion**
- Ohashi et al. advocated the use of **topical vitamin A**
- Perry et al. advocated the use of **0.5% topical ciclosporin A** as a primary or adjunctive therapy
- Shen et al. treated 20 patients with **triamcinolone injection in Supratarsal conjunctiva**

Neurotrophic Keratitis

- degenerative disease of corneal epithelium characterized by impaired healing.

- Absence of corneal sensitivity is the hallmark

Causes of corneal hypoesthesia

- Infection

- Herpes simplex
- Herpes zoster
- Leprosy

Causes of corneal hypoesthesia

- Fifth nerve palsy
  - Surgery (as for trigeminal neuralgia)
  - Neoplasia (such as acoustic neuroma)
  - Aneurysms
  - Facial traum
  - Congenital

Causes of corneal hypoesthesia

- Topical medications
  - Anesthetics
  - Timolol
  - Betaxolol
  - Sulfacetamide 30%
  - Topical NSAID

Causes of corneal hypoesthesia

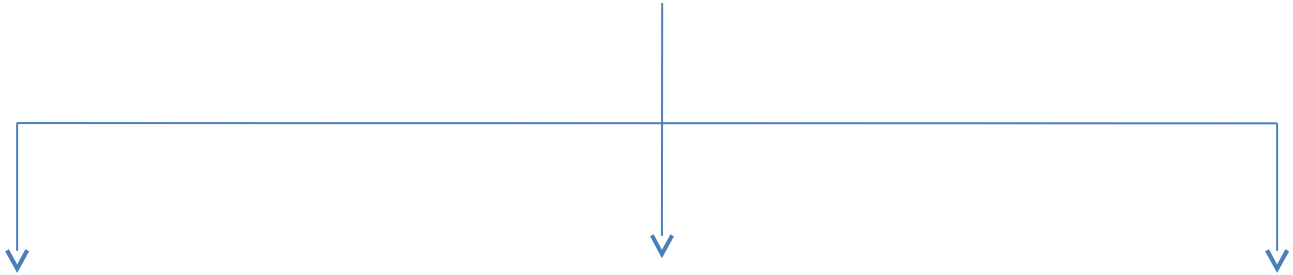
- Corneal dystrophies
  - Lattice
  - Granular (rare)

Causes of corneal hypoesthesia

- Systemic disease
  - Diabetes mellitus
  - Vitamin A deficiency

Pathogenesis

Reduced corneal sensation

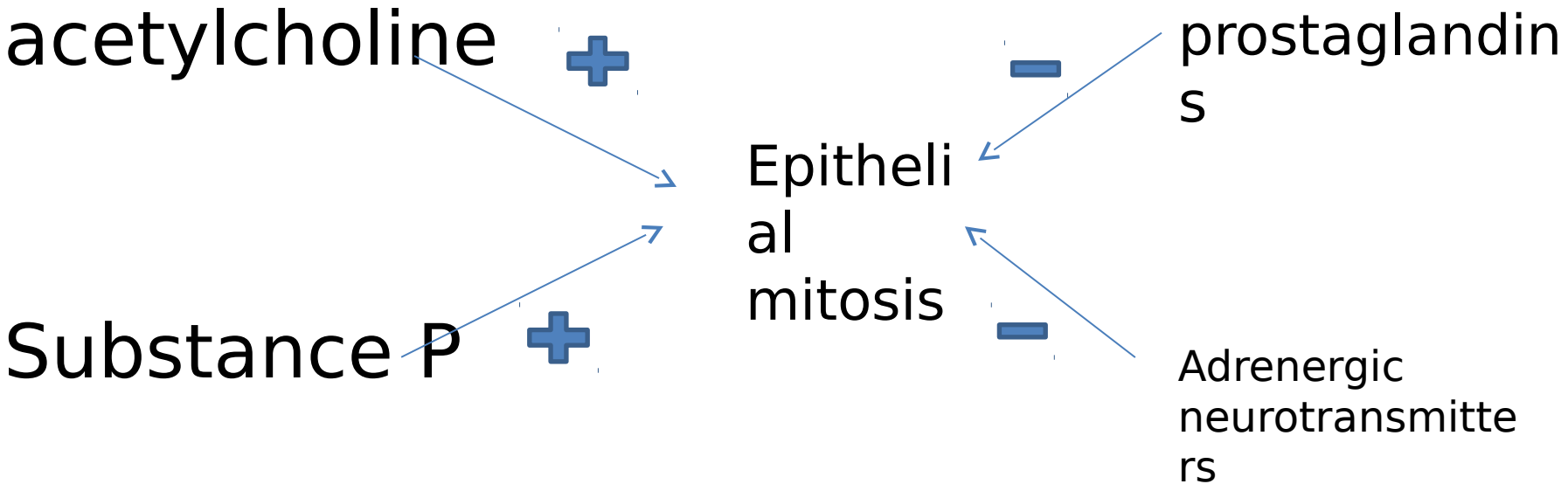


renders the corneal surface prone to occult injury

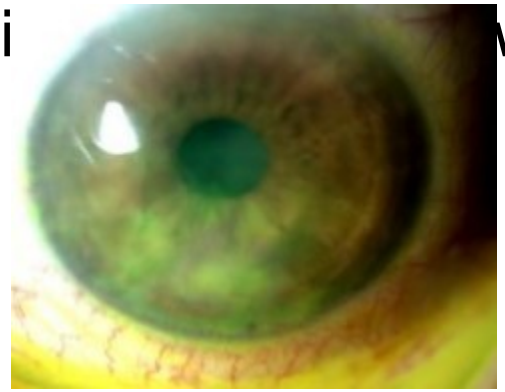
decreases reflex tearing

decrease healing rates of corneal epithelial injuries

Biochemical Basis

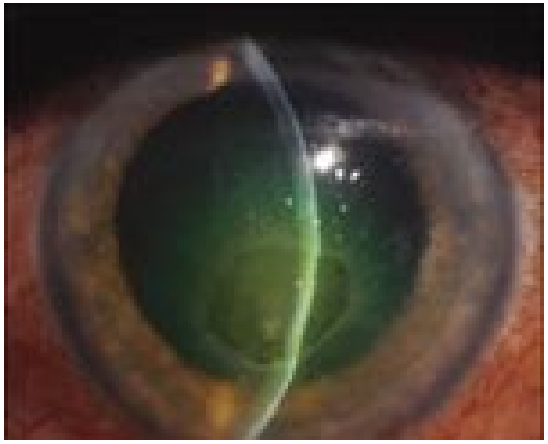


Clinical Findings

- **Stage 1**
- Rose Bengal staining of the palpebral conjunctivae
- Decreased tear break-up time
- Increased viscosity of tear mucus
- Punctate epi  with fluorescein

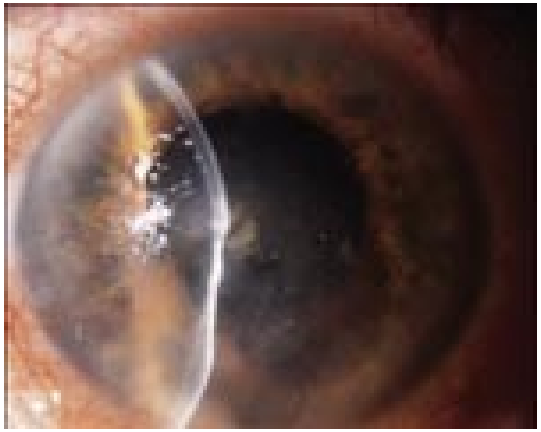
Clinical Findings

- **Stage 2**
- Acute loss of epithelium
- Surrounding rim of loose epithelium
- Stromal edema
- Aqueous cell and flare
- Edges of the defect become smooth and rolled with time



Clinical Findings

- **Stage 3**
- Stromal lysis
- corneal perforation



Management

- topical lubrication
- lateral tarsorrhaphy
- Punctal occlusion

Management

- topical lubrication
- lateral tarsorrhaphy
- Punctal occlusion
- topical tetracycline and Oral doxycycline
- autologous serum eyedrops
- Bandage contact lens

Management

- Cyanoacrylate glue
- tectonic lamellar keratoplasty
- conjunctival flaps
- multilayer amniotic membrane transplantation

Management

- penetrating keratoplasty

Management

- penetrating keratoplasty

  protected by lateral tarsorrhaphy

Management

- penetrating keratoplasty

  protected by lateral tarsorrhaphy

  perioperative nonpreserved steroids and antibiotics

Management

- penetrating keratoplasty

  protected by lateral tarsorrhaphy

  perioperative nonpreserved steroids and antibiotics

  long-term maintenance using autologous serum

Thank You