

# Recurrent Corneal Erosions

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# Dr. Sorkin Industry Disclosures

- B&L Specialty Vision Products
- Blanchard Labs
- Boston Sight
- Shire
- Visioneering Technologies Inc.
- Medical Advisory Board: International Keratoconus Academy



International Keratoconus  
Academy  
Of Eye Care Professionals

BAUSCH+LOMB  
Specialty  
VISION PRODUCTS

  
blanchard  
Contact Lenses



BOSTONSIGHT

  
Shire

  
REDEFINING  
VISION

# Pathophysiology of RCE

- Trauma 45-64% of cases- most common etiology
- EBMD- 19-29% of cases
- Dystrophy associated RCE- stromal dystrophies- lattice/granular dystrophy
- Thorough History is necessary
- Must examine contralateral eye

# History

- Trauma
- Concomitant Ocular Surface Disease
- Dry eye
- MGD/ rosacea
- Floppy Lid Syndrome
- Nocturnal Lagophthalmos
- Ocular Surgery- refractive surgery
- CL use
- DM

# Pathophysiology of RCE

- Epithelium 5-7 cells in thickness
- 50 microns thick
- Mature superficial layer

Wing cell layer

Basal cell layer- mitotic monolayer

Joined below to the basement membrane, Bowman's layer and anterior stroma by adhesion complex- hemidesmosomes and type VII collagen-anchoring fibrils

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→ **Tear Film**

→ **Glycocalyx**

→ **Microvilli**

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→ **Superficial cells**

→ **Wing cells**

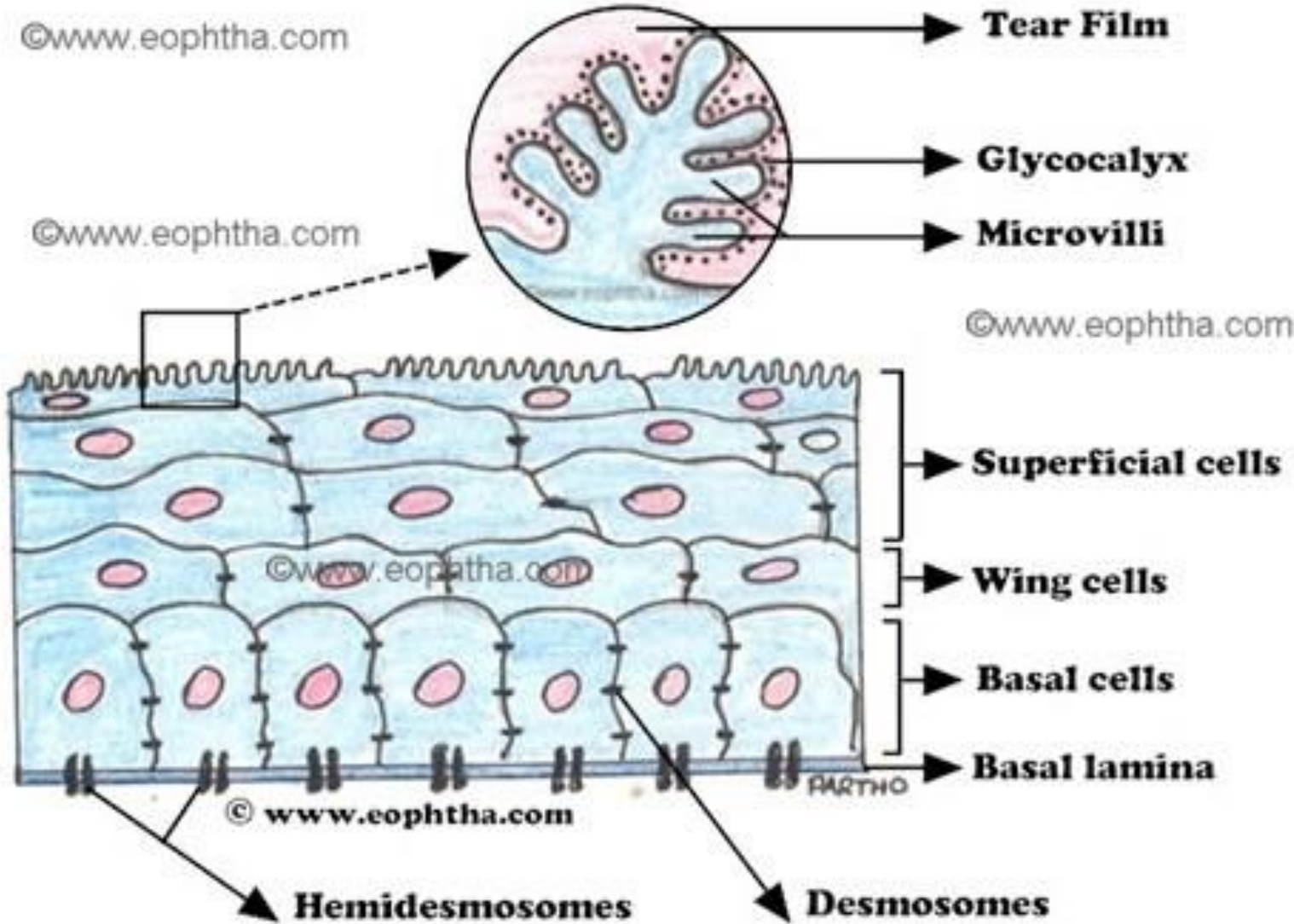
→ **Basal cells**

→ **Basal lamina**

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→ **Hemidesmosomes**

→ **Desmosomes**



# Timeline of RCE repair

- Healing in 5-7 days if there is an intact basement membrane
- If basement membrane is damaged/removed during RCE, healing takes 6-8 weeks
- Reattachment of epithelium is faulty following abrasion

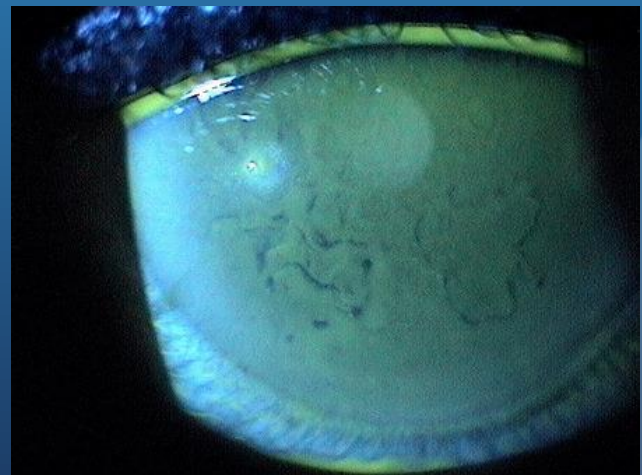
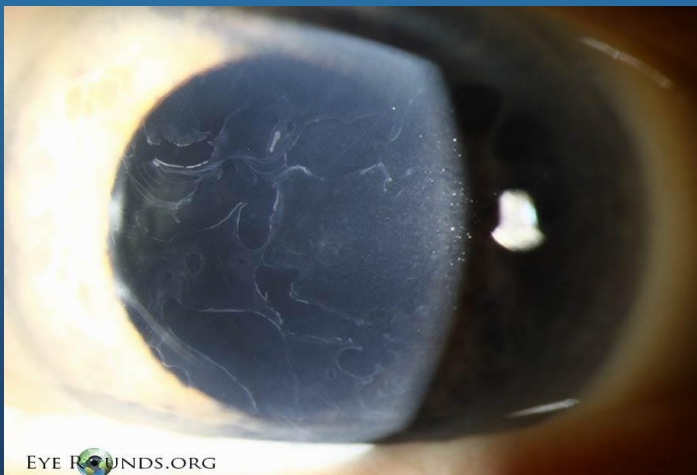
# Recurrent Erosion Syndrome

- Equal distribution between male/female
- Majority occur in the lower half of the cornea
- Pain, watery eyes and blurred vision are the most common symptoms



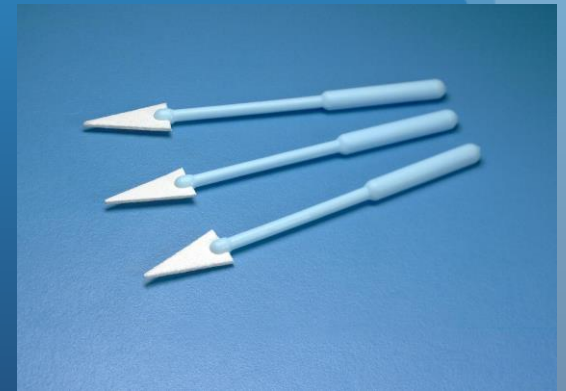
# EBMD

- AKA AMBD, Map-Dot Fingerprint Dystrophy, Cogan's
- Autosomal Dominant
- Prevalence increases with age
- Vital to evaluate contralateral eye



# Clinical findings in EBMD

- Gray chalky patches
- Intraepithelial microcysts
- Combination of maps, dots and/or fingerprints
- Patient complaints of blurry VA
- Irregular astigmatism? Topography
- Negative staining with slit lamp evaluation
- 10% of EBMD patients experience RCE
- Weck cel sponge- check for loose epithelium



# RCE

- Microform erosions - minor episodes that last 30 min.  
+ intact epithelium
- Macroform erosions - more severe episodes
- May last for several days  
+ epithelial defects/poorly adherent, edematous epithelium

# RCE Treatment

- Two goals:
- 1) Facilitate re-epithelialization
- 2) Relieve pain
- Prevent further RCE occurrences

# Medical treatment of RCE

- Artificial tears (AT)
- Non preserved AT
- Gels/ ointments
- Reduces friction and optimizes tear film



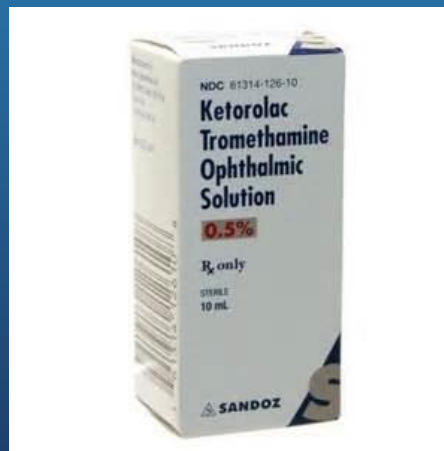
# Medical Treatment of RCE

- Fresh Kote
- Focus Laboratories
- High oncotic pressure



# Medical Treatment

- Topical NSAIDS
- May reduce pain
- long term use may delay epithelial healing
- Watch use of thick gel NSAIDS (Prolensa and Illevro)



# Medical treatment

- Inhibition of MMP-9
- Topical steroids- watch IOP
- Doxycycline - helpful in treating concurrent MGD
- Azasite- anti inflammatory? Cost/ Insurance coverage-
- MGD- treat aggressively





# Medical treatment- Hyperosmotics

- Muro 128 - NaCl
- Drops/ointments may sting
- Nighttime lubrication/protection of lid/cornea interaction upon awakening
- Minimizes epithelial edema



© Eye Care and Cure

# Medical treatment

- Bandage Contact Lenses
- Pain relief
- Protects ocular surface from lid interaction
- CPT code 92071
- 3 FDA approved BCLs
  - B+L PureVision
  - J+J Acuvue Oasys
  - Alcon Night+Day



# Medical treatment

- Bandage Contact Lenses protects ocular surface from shearing forces of lids and provides pain relief
- Antibiotic prophylaxis: avoid thick drops (Moxeza and Besivance) - ASCRS white paper
- Can use BCL during acute phase or consider continuous EW for 6-12 weeks.



# Medical treatment

- Pain relief
- Cycloplegia- reduces secondary inflammation
- Homatropine 5%
- Non narcotic- alternate Ibuprofen/ acetaminophen
- Narcotics- Ultram, Tylenol #3 or Vicodin



# Dry Eye Treatment

- Autologous serum
- Non preserved. Limited shelf life
- Limited availability of labs to process
- Utilizes the patient's own blood serum
- Cost is typically \$200-300 per 3 months



# Amniotic Membranes

- Dehydrated vs. Cryopreserved
- Anti inflammatory
- Anti scarring
- Promotes healing
- Cost
- Insurance coverage
- CPT 65778
  - zero day global period
  - includes supply of AMG



# Amniotic Membrane

- Dehydrated
- Multiple companies
- Sheet or pre cut
- May need to orient corneal side
- Use of lid speculum
- Must use BCL - can place inside BCL for application or apply to dried corneal surface
- Cost for dehydrated AMG is less than cryopreserved



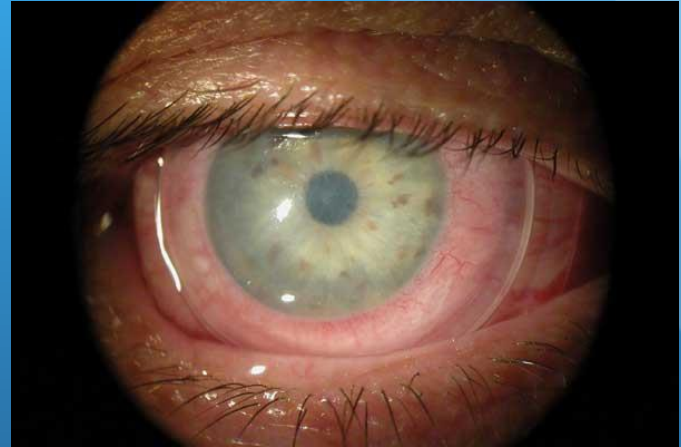
# Amniotic Membranes

- Cryopreserved- Prokera
- Biotissue (only manufacturer)
- May need lid speculum
- Requires refrigeration
- Must rinse off Prokera prior to insertion (storage media has fluroquinolone and amphotericin B)



# Amniotic Membranes

- Cryopreserved- Prokera
- PMMA ring
- 3 versions- Prokera, Slim, Plus
- Tape tarsorrhaphy
- Pt education/expectations
- Can instill drops with Prokera in place
- Must remove ring after amniotic membrane dissolves



# Surgical Treatment of RCE

- Epithelial Debridement
- Use weck cel sponge or spud
- Remove loose epithelium at edges with jeweler's forceps-work towards center of cornea
- Followed by BCL or AMG
- Diamond burr polishing of Bowman's membrane
- CPT 65435

# Surgical treatment of RCE

- Anterior Stromal Puncture
- Performed at the slit lamp 23 or 25 g needle
- Topical anesthesia
- +/- Debridement
- Can perform in conjunction with PTK
- Punctures placed 0.5-1 mm apart and should extend 1-2 mm outside erosion area
- Treatment in visual axis is controversial
- Post treatment similar to corneal abrasions- BCL/antibiotics/pain meds/cycloplegia
- Studies show ASP effectiveness 65-80%
- CPT 65600

# Surgical treatment of RCE

- PTK-excimer laser
- Epithelial debridement- alcohol brush or manually
- Transepithelial PTK
- Success rate is variable
- May cause hyperopic shift in Rx
- May be combined with PRK
- Risk of post operative haze

# MMP 9

- Family of enzymes that play a role in remodeling of the epithelial basement membrane
- Doxycycline
- Category D- do not use in pregnancy or children
- Treatment of MGD

# Ocular surface disease

- Preservative free artificial tears
- Nighttime ointments
- Punctal plugs
- Restasis/ Xiidra
- Topical steroids
- Autologous serum
- Heat masks/ Lipiflow/ meiboflow
- Hypochlorous acid lid scrubs- Avenova/ Hypochlor



# In summary...

- Very common clinical entity in optometric practice
- Many options in treating RCE
- Combination treatments