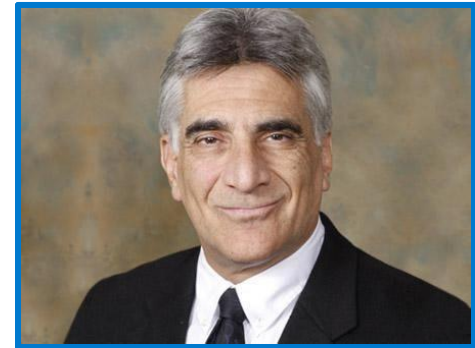


# Graft-versus-Host Disease: Eyes



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**Celebrating a Second Chance at Life  
Survivorship Symposium**

**April 27 – May 3, 2024**

# Ocular GVHD (not just another dry eye)

A practical guide to understanding and management

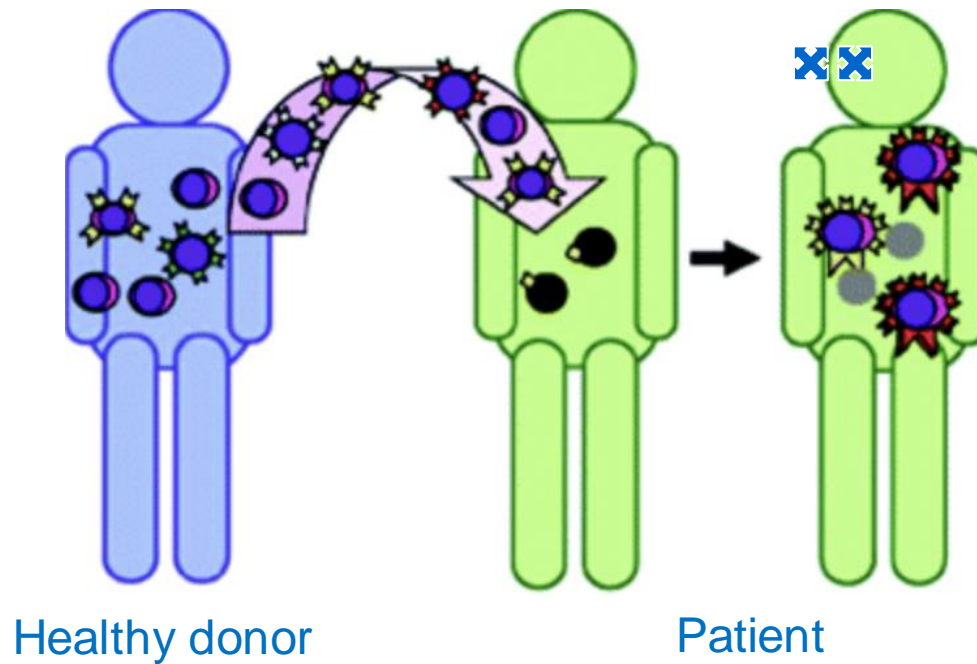
Todd P. Margolis, M.D., Ph.D.

Alan A. and Edith Wolff Distinguished Professor and Chair  
Hardesty Department of Ophthalmology and Visual Sciences  
Washington University St. Louis



# What is ocular GVHD (oGVHD)?

Immune mediated disease of ocular structures following BMT.



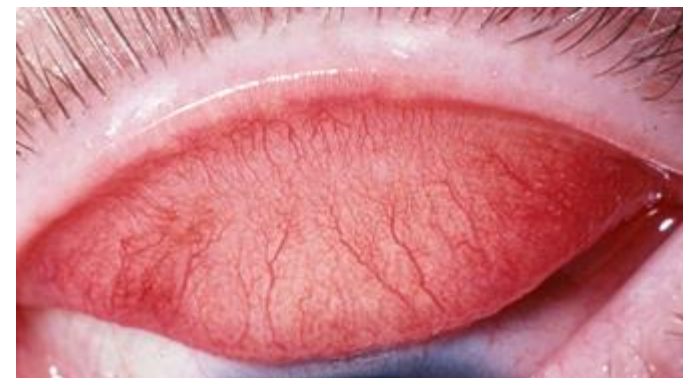
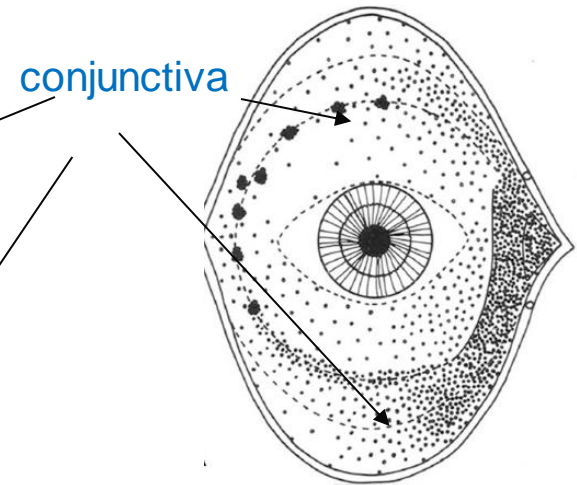
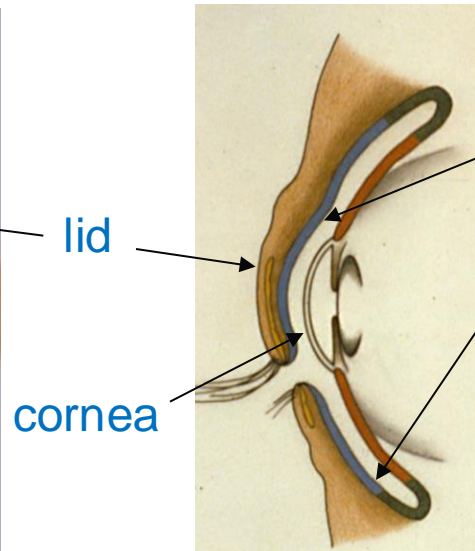
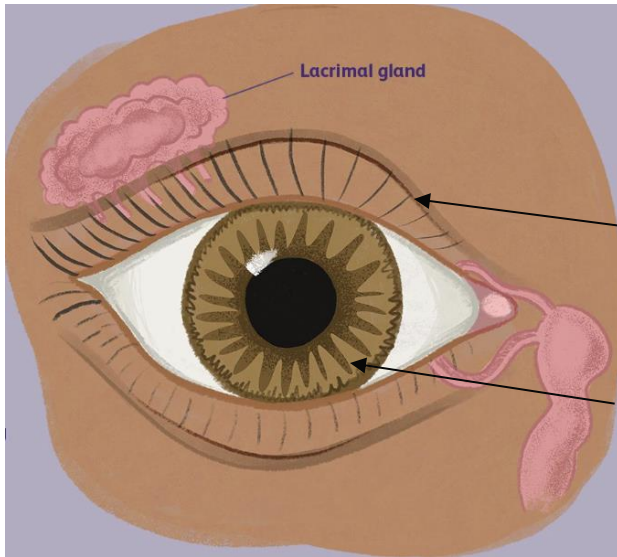
# Things that I will talk about

1. Primary ocular GVHD (oGVHD)
2. Secondary ocular issues (even if primary oGVHD is under control)
3. How to manage primary and secondary issues, and who should do it
4. Patient expectations

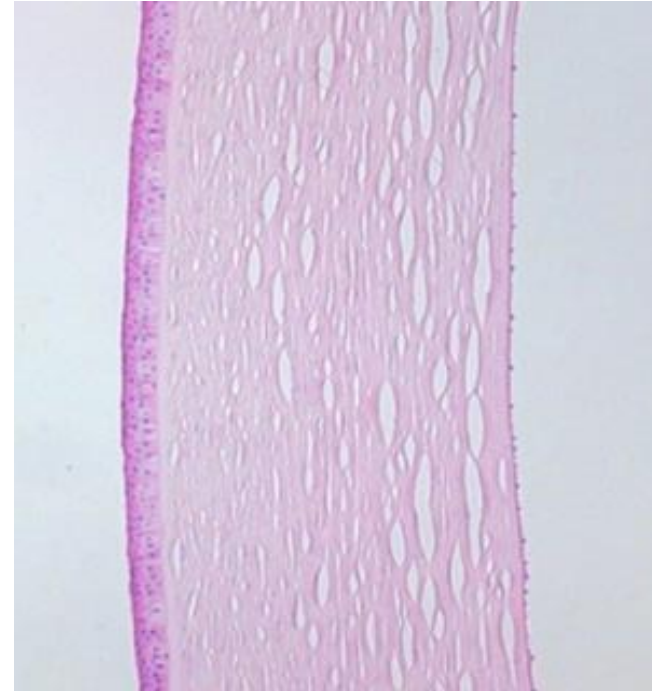
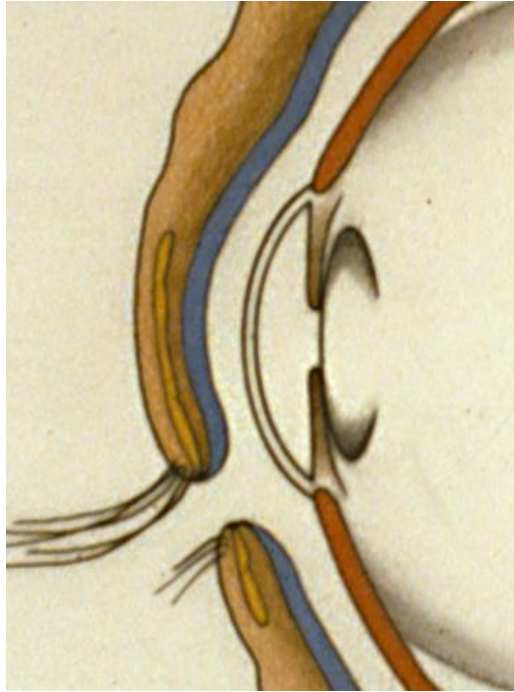
# Things I will not talk about (and why)

1. Epidemiology of oGVHD
2. The pathogenesis of oGVHD
3. oGVHD involving the inside of the eye
4. Staging/grading of oGVHD
5. Lid/lash issues in oGVHD
6. Meibomian gland dysfunction in oGVHD

# Ocular Anatomy/Terminology



# Layers of the Cornea



epithelium



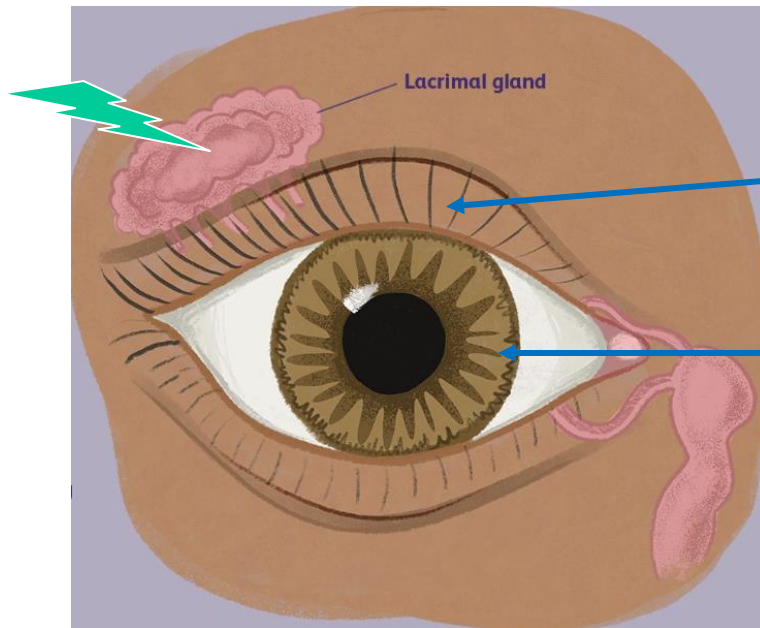
stroma



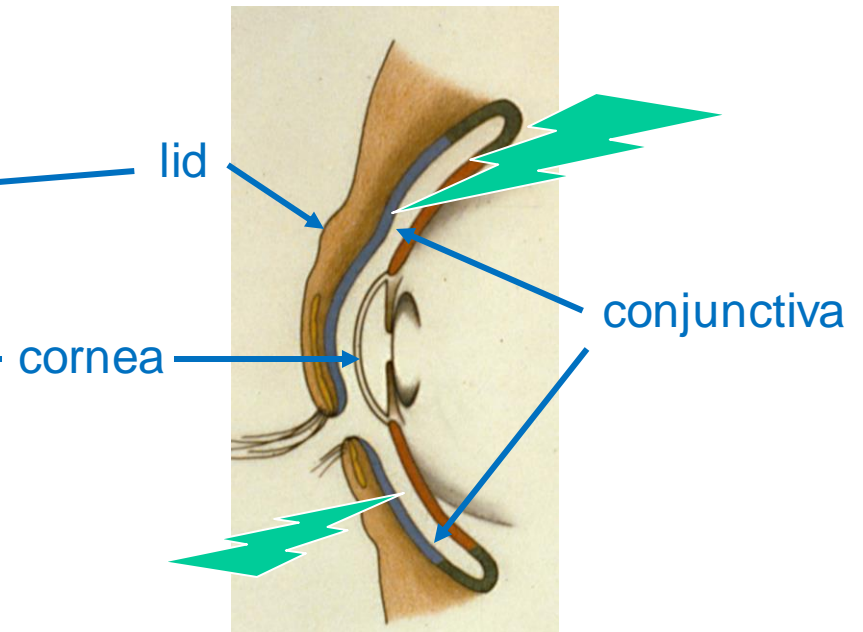
endothelium

# What is primary oGVHD?

Lacrimal gland inflammation



Conjunctival inflammation



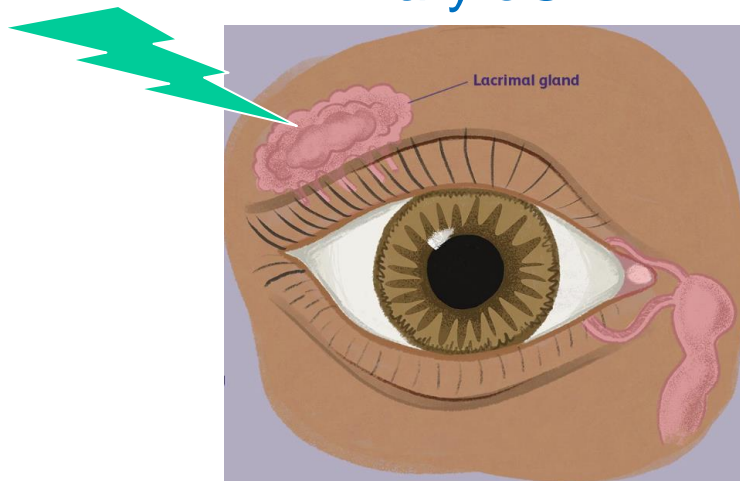
Conjunctiva = Clear mucous membrane covering the inside of the lids and outside of the eye ball



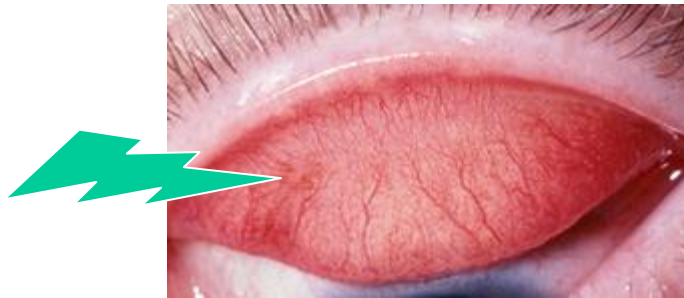
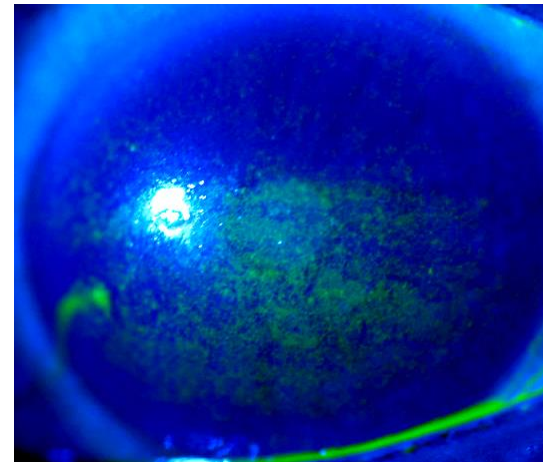
# Why It's Important to Recognize Primary oGVHD?

- i. It requires systemic immune modulatory therapy
- ii. BMT doctors want to know if GVHD is active

Primary oGVHD



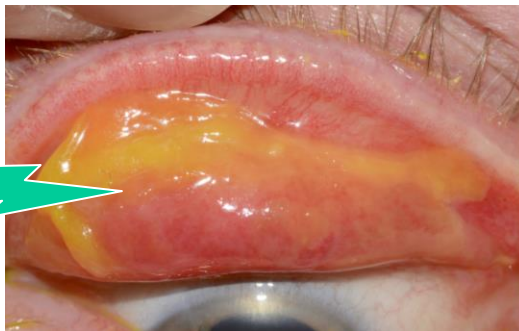
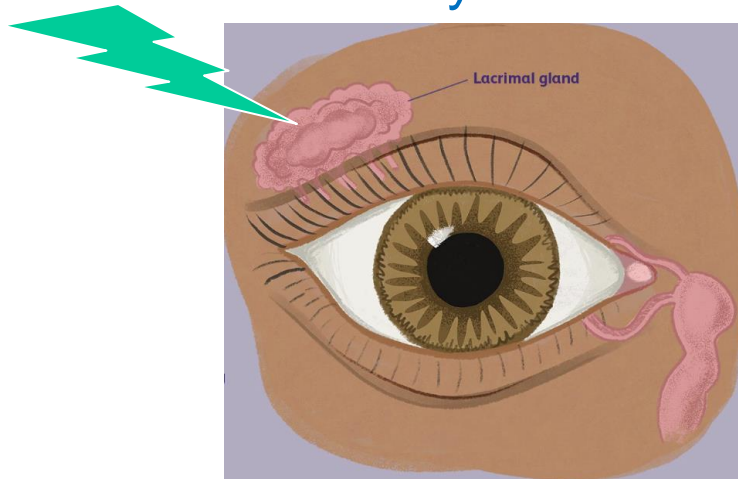
Secondary issues



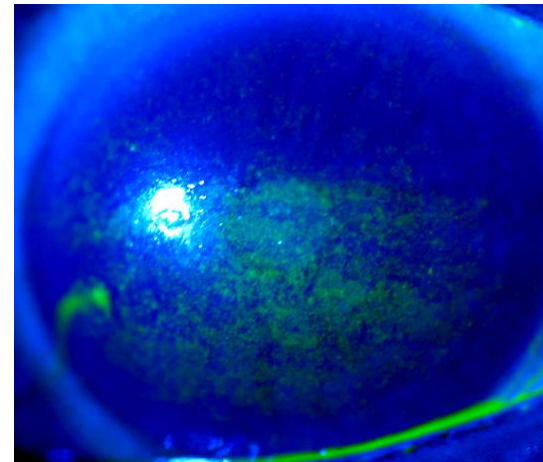
# Why It's Important to Recognize Primary oGVHD?

- i. It requires systemic IMT
- ii. BMT doctors want to know if GVHD is active

## Primary oGVHD



## Secondary issues



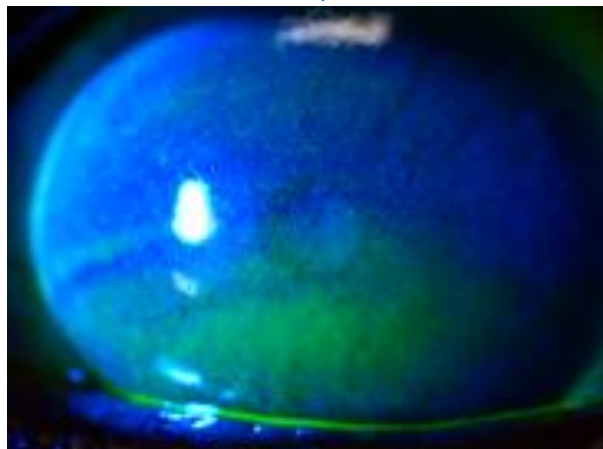
# Schirmer Testing

Gold standard is performed without topical anesthesia

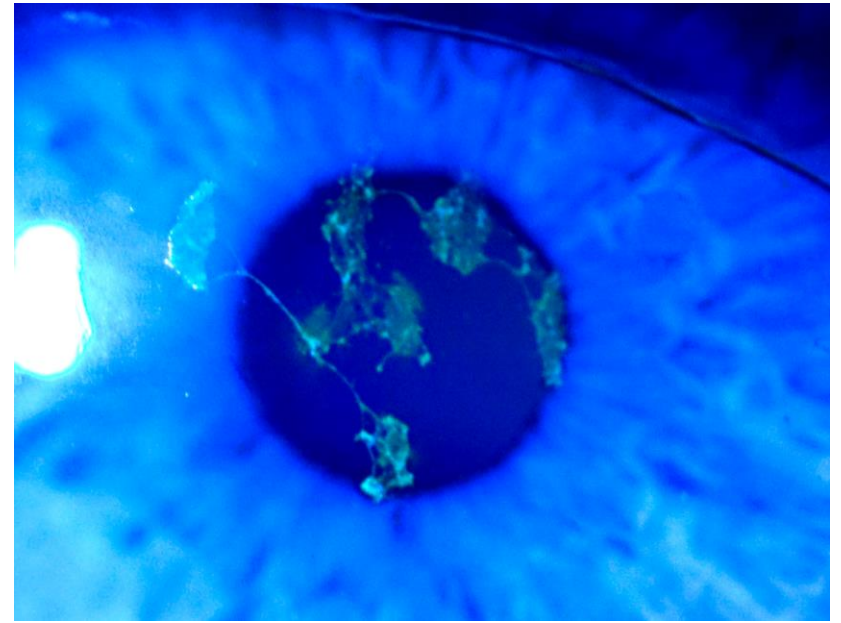
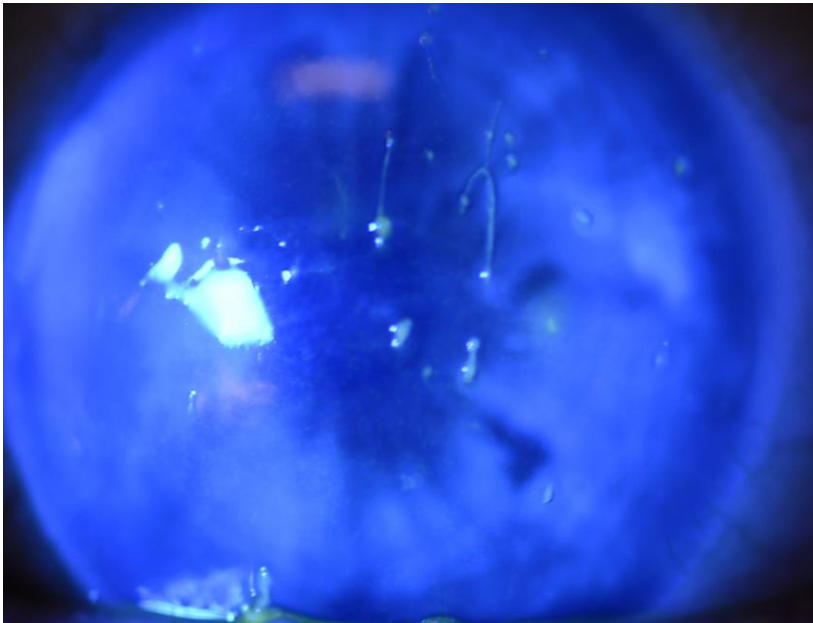


# Ocular Surface Staining

Used to detect ocular surface damage caused by tear deficiency

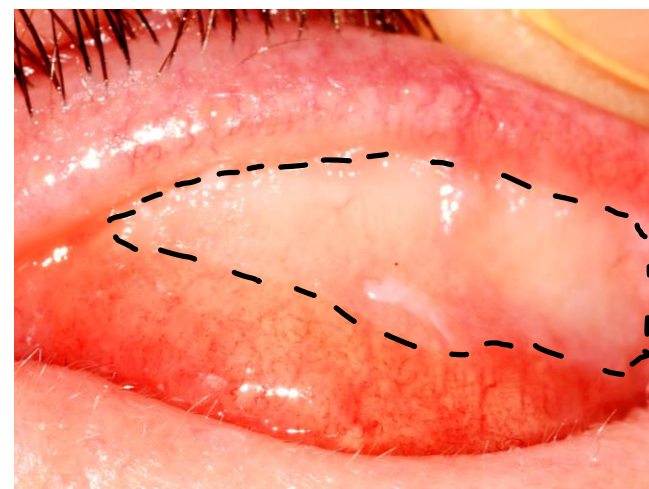


# Corneal Filaments



mucous + strands of corneal epithelial cells

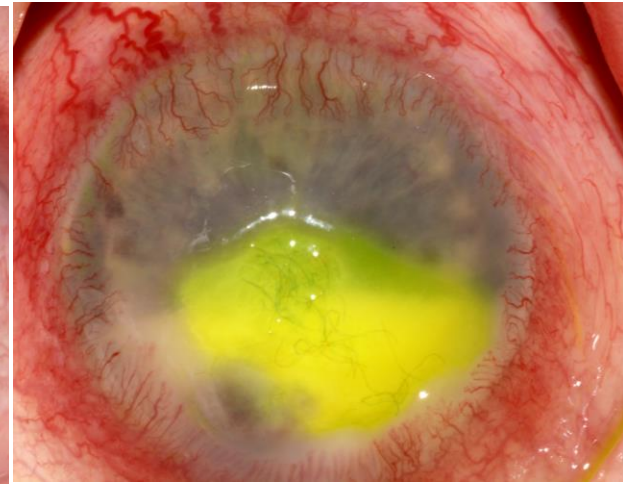
# More Severe Complications of Tear Loss



keratinization



corneal thinning



corneal ulceration

keratinization = production of keratin (waxy skin protein) changing the mucosal epithelial surface from moist and soft, to hard and waxy (skin-like).

# oGVHD: Management

## Goals:

Improve quality of life (comfort, vision)

Prevent more secondary disease

Pay attention to costs

Minimize doctor visits

# oGVHD: Management

## There is No Magic Bullet

1. Systemic therapy: If primary oGVHD is active
2. Manage tear deficiency
  - Tear substitutes
  - Block tear drainage
  - Block tear evaporation
  - Scleral contact lens
3. Manage complications of tear deficiency
  - Acetyl-cysteine for mucous/corneal filaments
  - Antibiotics to prevent infection
  - All-trans retinoic acid (ATRA) for keratinization
4. Control Inflammation



# Tear Substitutes

For comfort and protection.

Use before eyes start hurting!



Q: Which ones?

A: Which ever feel best

Q: Non-preserved?

A: Only if reacting to preserved

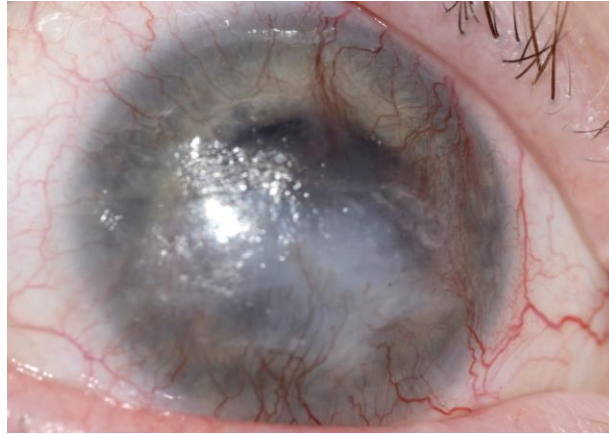
# Eye Drop and Lid Cleaner Toxicity

Lids/conjunctiva



Tobradex

Cornea surface



Retaine MGD

Corneal stroma



Clear eyes

Any drop can do this. Even non-preserved and lid cleansers.

# Other Lubricant Concerns

Proper  
instillation

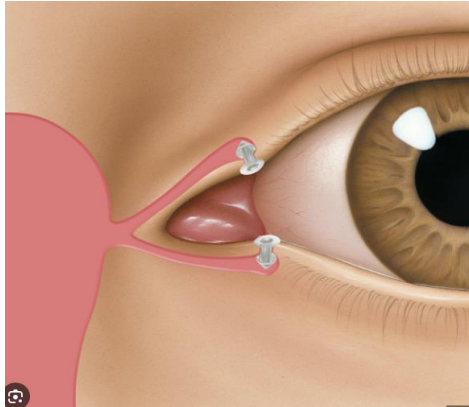


Contaminated  
products

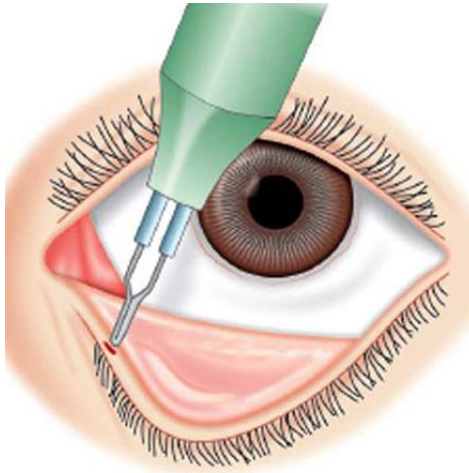


# Block Tear Drainage

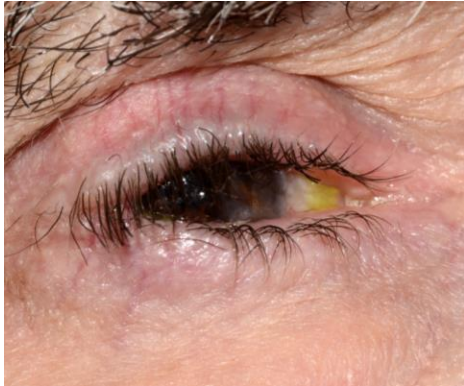
- punctal plugs



- surgical occlusion



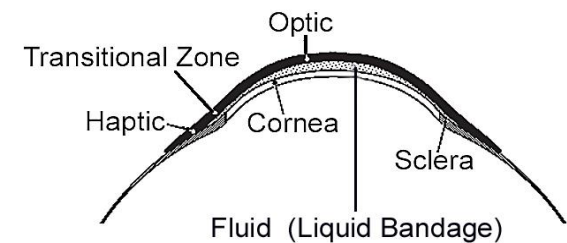
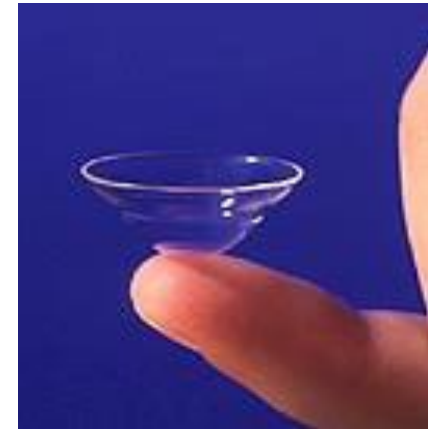
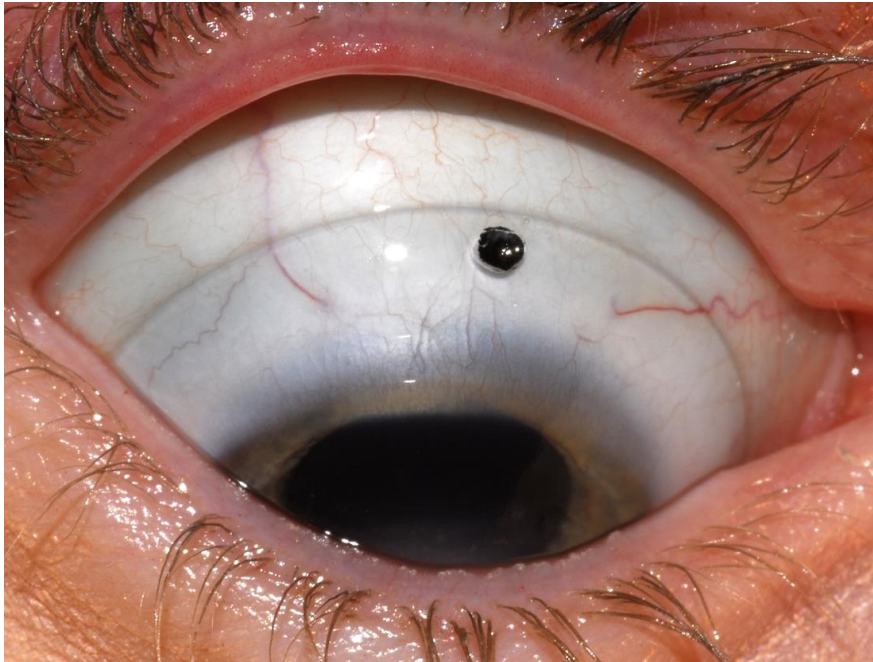
# Reduce Evaporation



# Corneal Healing with Simple Patching after Failing 'Everything'



# Scleral Lens



- Reduce discomfort
- Improve vision
- Protect cornea from further damage
- Resolve corneal damage

# Reduce Inflammation with Steroid Eye Drops

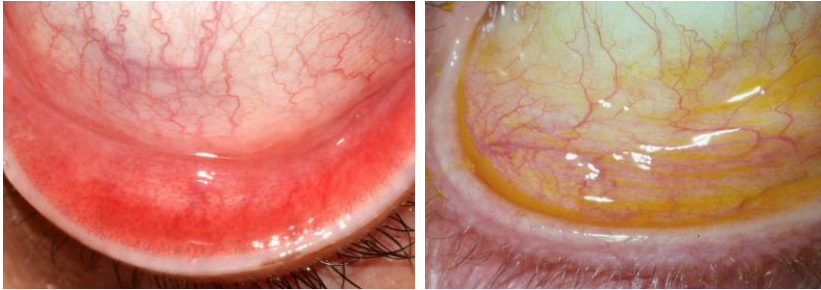
1. Prednisolone, fluorometholone, loteprednol, dexamethasone
2. Major risk: rise in eye pressure >>> cataract
3. Rare risk: infection
4. 75% will not get pressure rise
5. Pressure rise usually occurs within 2 months



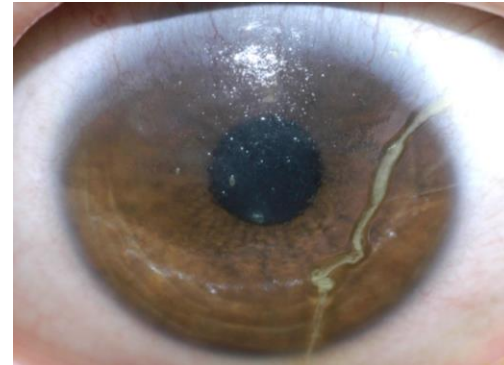
# Costly Therapies of Questionable Value

1. Serum eye drops
2. Amniotic membrane
3. Topical cyclosporine (Restasis, Cequa, etc)
4. Lifitegrast (Xiidra)
5. Meibomian gland therapies
6. Heparin drops, IVIG drops, DNAse drops
7. Varenicline (Tyrvaya)
8. Omega-3 fatty acids

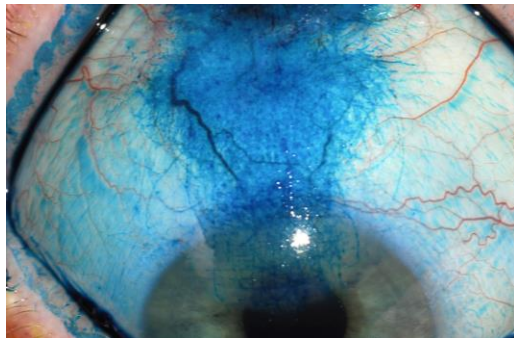
# Other Common Ocular Issues



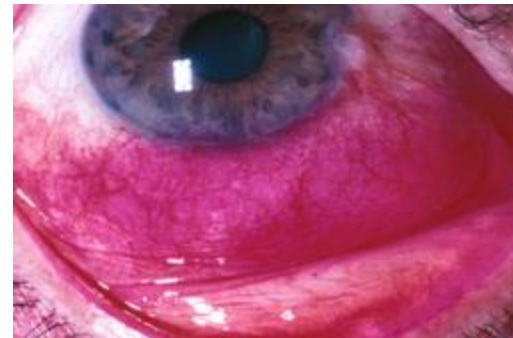
Bacterial conjunctivitis



Mucous



SLK (superior limbic keratoconjunctivitis)



Self injury  
(finger and tissue)

# Pearls 1

- Local therapy effective only if systemic GVHD is controlled
- Local therapy is targeted at symptoms
- Do not fear topical steroids
- Beware of self injury (drops, preservatives, tissue, fingers)

# Pearls 2

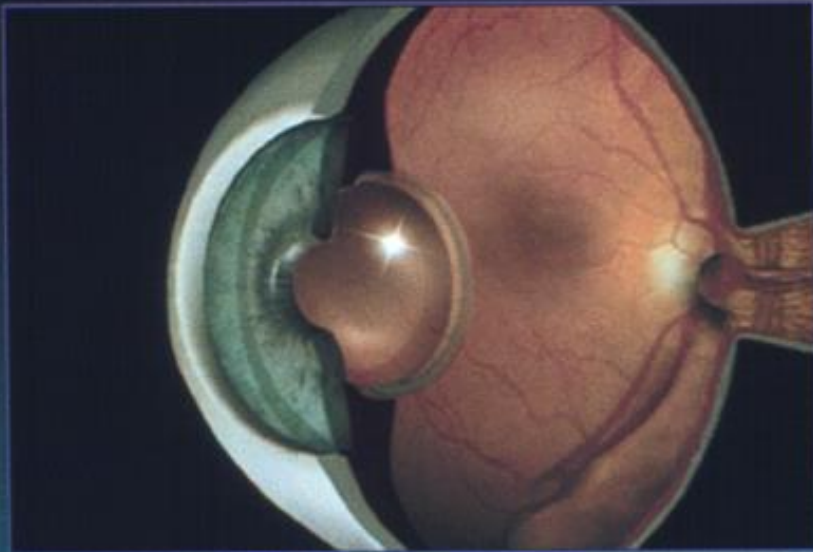
- Leave the damn lids alone!
- Avoid 'get the red out' drops
- Avoid lid/conjunctival surgery
- An experienced eye care provider matters
  - Optometrist (OD) vs Ophthalmologist (MD)
  - Cornea specialist (MD) with oGVHD experience

# Thank You!!

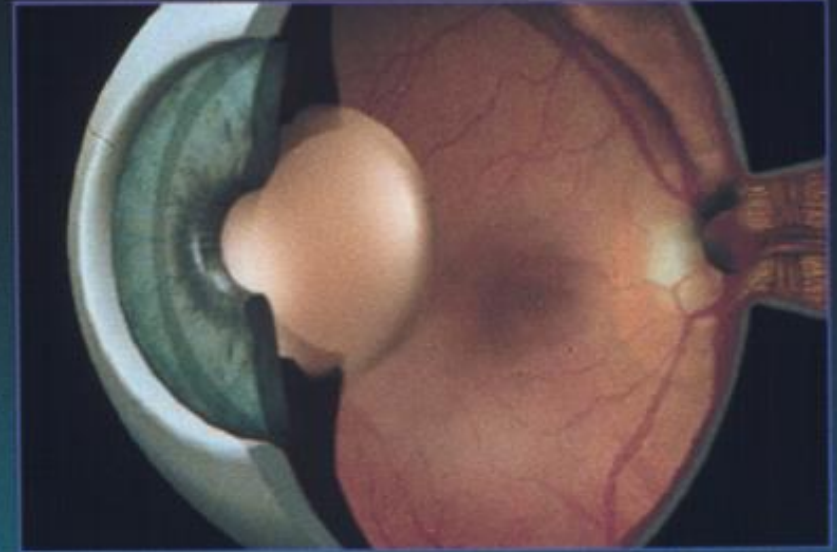


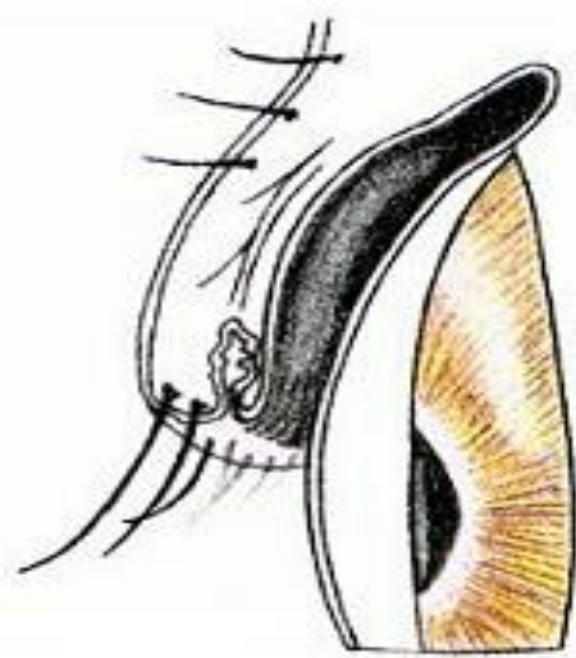
# Cataract = opacification of the lens

## Normal Lens

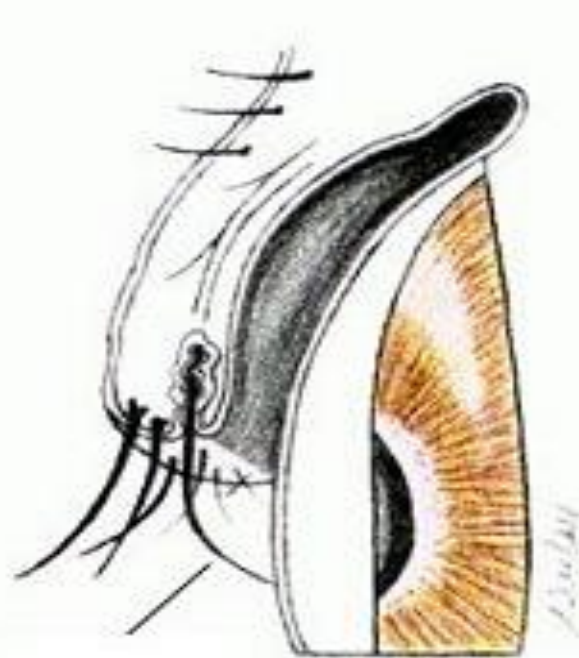


## Cataract

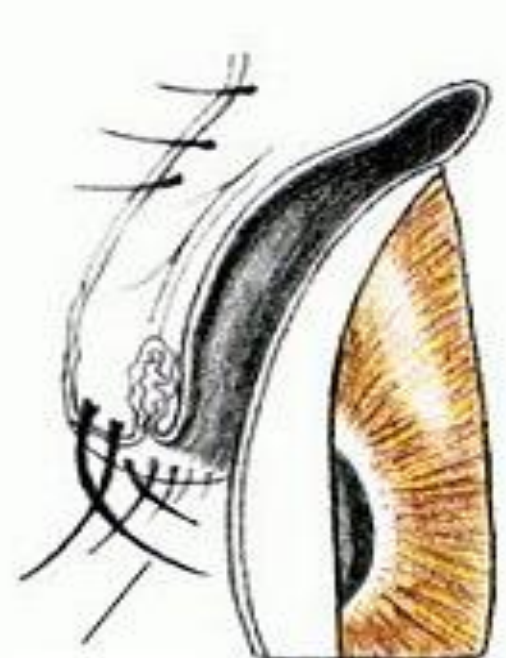




Normal



Distichiasis

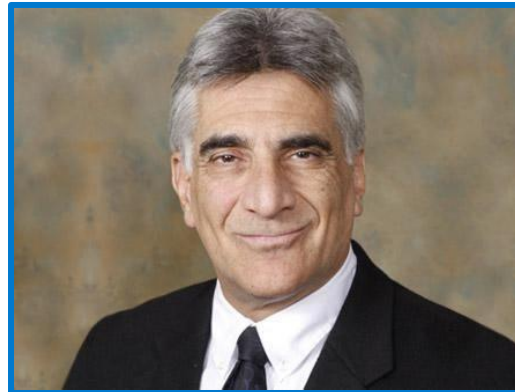


Trichiasis





# Questions?



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Washington University School of Medicine



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