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Current Treatment Modalities Of Ocular Surface Disease And Glaucoma

Vin Dang, O.D.

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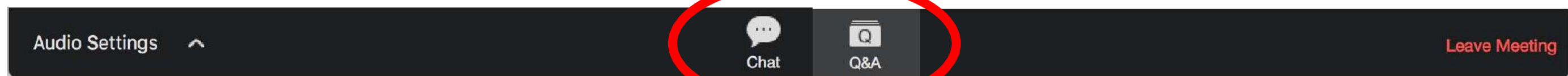
Host: Dr. Jennifer Stewart

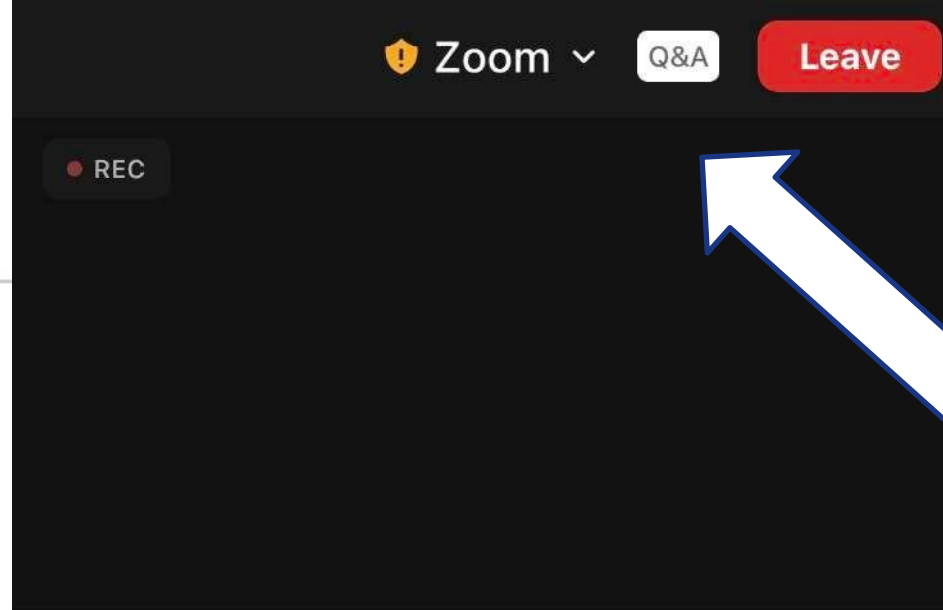


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Opportunity to Partner

Optometrists are at the frontline to recommend treatment for cataract and glaucoma patients.



Established relationships with patients

- › Ability to inform patients of the best technologies available
- › Needs, wants, expectations, and lifestyle



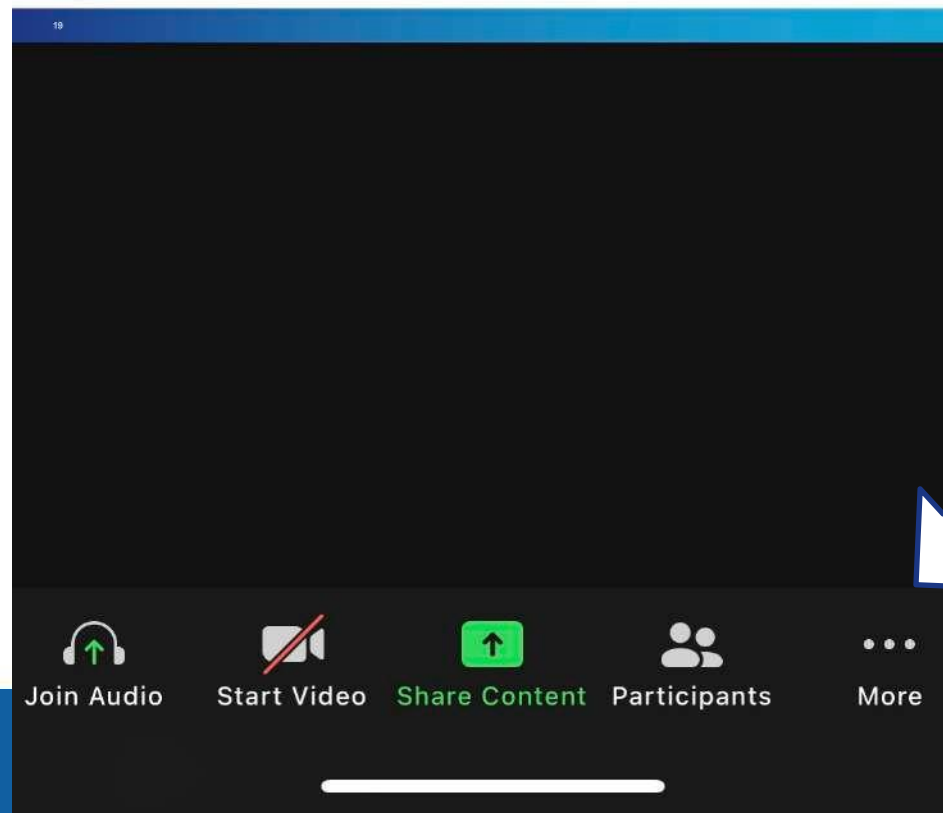
Reduce patient and physician burden

- › Cost/pharmacy visits and prior authorizations
- › Ocular surface disease and potential effects on visual acuity



Ability to impact patients' post-operative lifestyle

- › ONE TIME opportunity during cataract surgery to address a patient's cataract, refractive needs (astigmatism and presbyopia) as well as their glaucoma



Speaker Bio –

Vin T. Dang is an optometrist practicing in Bakersfield, California, with a unique clinical focus on ocular surface disease and dry eye.

Born and raised in Paris, France, Dr. Dang earned his Doctorate of Optometry from Southern California College of Optometry. In 2016, he received his Fellowship with the American Academy of Optometry.

As Director of Dry Eye Center at Empire Eye and Laser Center, Dr. Dang is a specialist in ocular surface diseases, advanced refractive eye surgery care, and glaucoma.

Dr. Dang has contributed to optometric journals and lectures on ocular surface disease treatment and management. He serves on advisory boards assisting in the research and development of dry eye therapies and crafting disease management protocols.

He volunteers nationally and internationally with OneSight and Vision to Learn.



Financial Disclosures

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Current Treatment Modalities of Ocular Surface Disease and Glaucoma

Vin T. Dang, OD, FAAO

Empire Eye and Laser Center
Bakersfield, California, USA

Woo University April 4th, 2024

About me





Incidence of Ocular Surface Diseases



- Dry eye disease is the most common
- ~20M in the US have dry eye disease¹
- ~30M in the US have blepharitis²
- ~25M in the US have demodex blepharitis (DB)³

1. Market Scope. 2016 Dry Eye Products Report: A global market analysis for 2015 to 2021. St Louis Market Scope: 2016

2. Bleph prevalence

3. Trattler W, Karpecki P, Rapoport Y, et al. The prevalence of Demodex blepharitis in US eye care clinic patients as determined by collarettes: a pathognomonic sign. Clin Ophthalmol. 2022;16:1153-1164.

Incidence of Glaucoma



- ~3M have glaucoma in the US¹
- Glaucoma and dry eyes?
 - Risk factors are age, DM, inflammation
- Co-incidence of glaucoma and dry eyes
 - Some studies indicate the prevalence to be as high as 50%²
 - Rate of SPK in glaucoma patients as high as 54%²
 - >60% of glaucoma patients have abnormal TBUT and Schirmer scores²

1. <https://www.cdc.gov/visionhealth/resources/features/glaucoma-awareness.html>

2. Wong ABC, Wang MTM, Liu K, Prime ZJ, Danesh-Meyer H V., Craig JP. Exploring topical anti-glaucoma medication effects on the ocular surface in the context of the current understanding of dry eye. Ocul Surf. 2018;16(3):289-293. doi:10.1016/j.jtos.2018.03.002.

Inflammation in glaucoma and ocular surface disease



- OSD has always been thought to have an inflammatory pathway¹
- What about glaucoma?
 - Newer evidence talks about neuro-inflammation, oxidative stress, and the topical medications which induces more inflammation²
- If we're treating inflammation, we could be treating both glaucoma and OSD

1. Hessen M, Akpek EK. Dry eye: an inflammatory ocular disease. *J Ophthalmic Vis Res.* 2014 Apr;9(2):240-50. PMID: 25279127; PMCID: PMC4181208.
2. Quaranta L, Bruttini C, Micheletti E, Konstas AGP, Michelessi M, Oddone F, Katsanos A, Sbardella D, De Angelis G, Riva I. Glaucoma and neuroinflammation: An overview. *Surv Ophthalmol.* 2021 Sep-Oct;66(5):693-713. doi: 10.1016/j.survophthal.2021.02.003. Epub 2021 Feb 11. PMID: 33582161.

Glaucoma therapies effects on OSD



- What's the biggest offender?
- PRESERVATIVES!!!
 - BAK is the worst
- What's BAK (Benzalkonium Chloride)
 - Bacteriocidal, surfactant properties
 - Most commonly used preservative
 - Cheap and easily accessible
 - Prevalent in generic formulations

BAK effects



- BAK causes oxidative stress on the trabecular meshwork, which leads to cell death then leads to elevated IOP
- This explains why sometimes IOP improves when switching patient over to preservative free meds

Other Preservatives?

- SofZia (only in Travatan Z, not Travoprost)
- Purite (only in Alphagan-P, not Brimonidine)
- Potassium Sorbate (only in Xelpros, not Latanoprost)
 - BAK-free but not preservative free

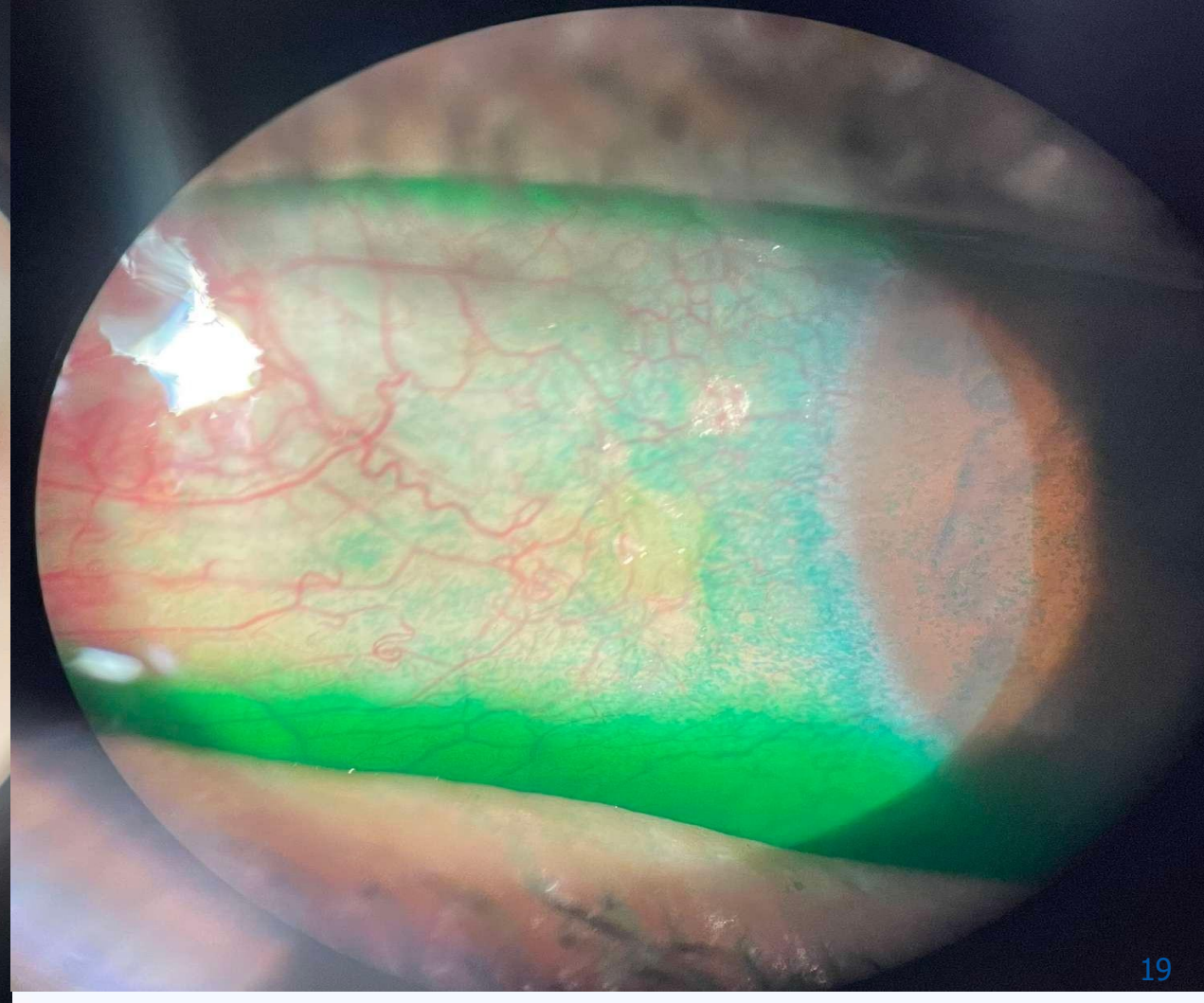
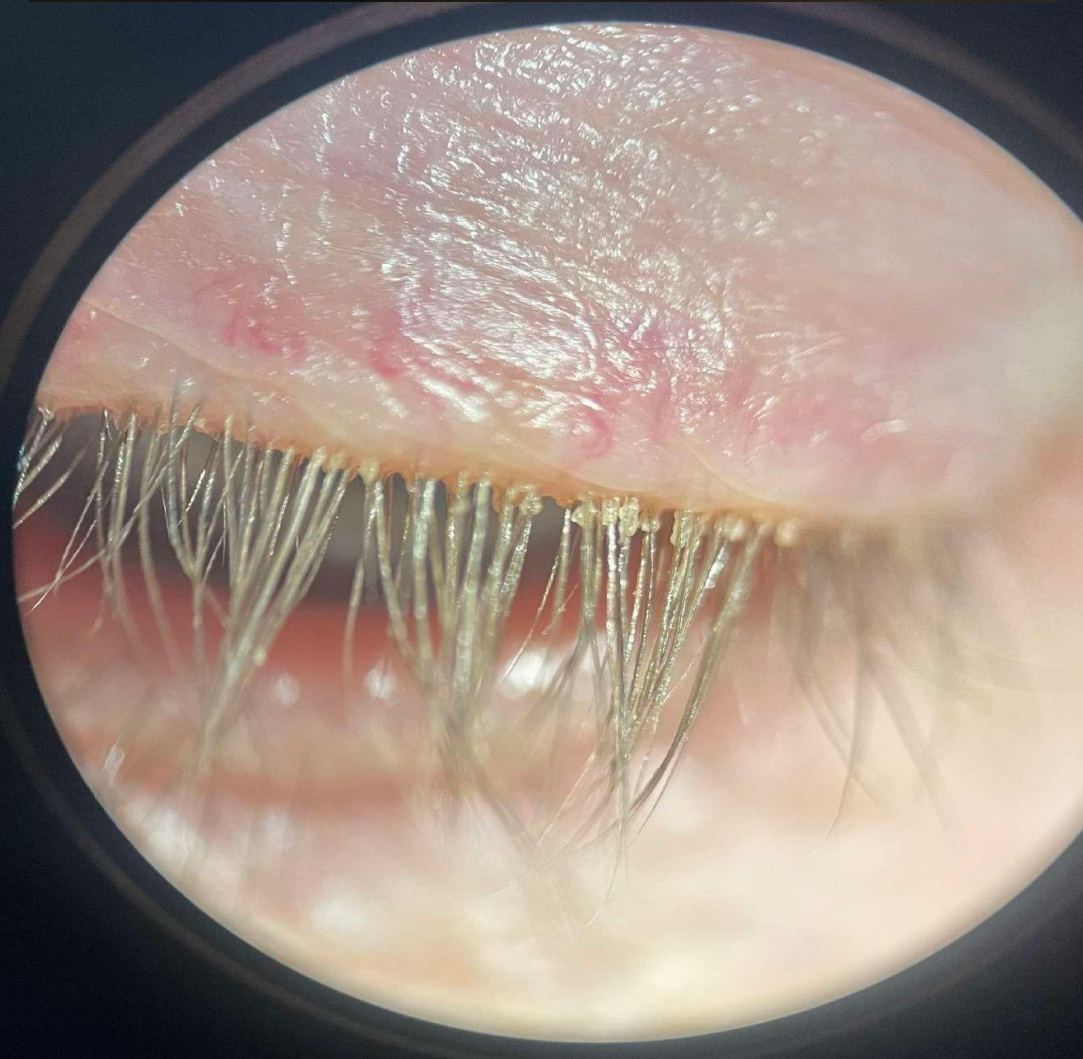
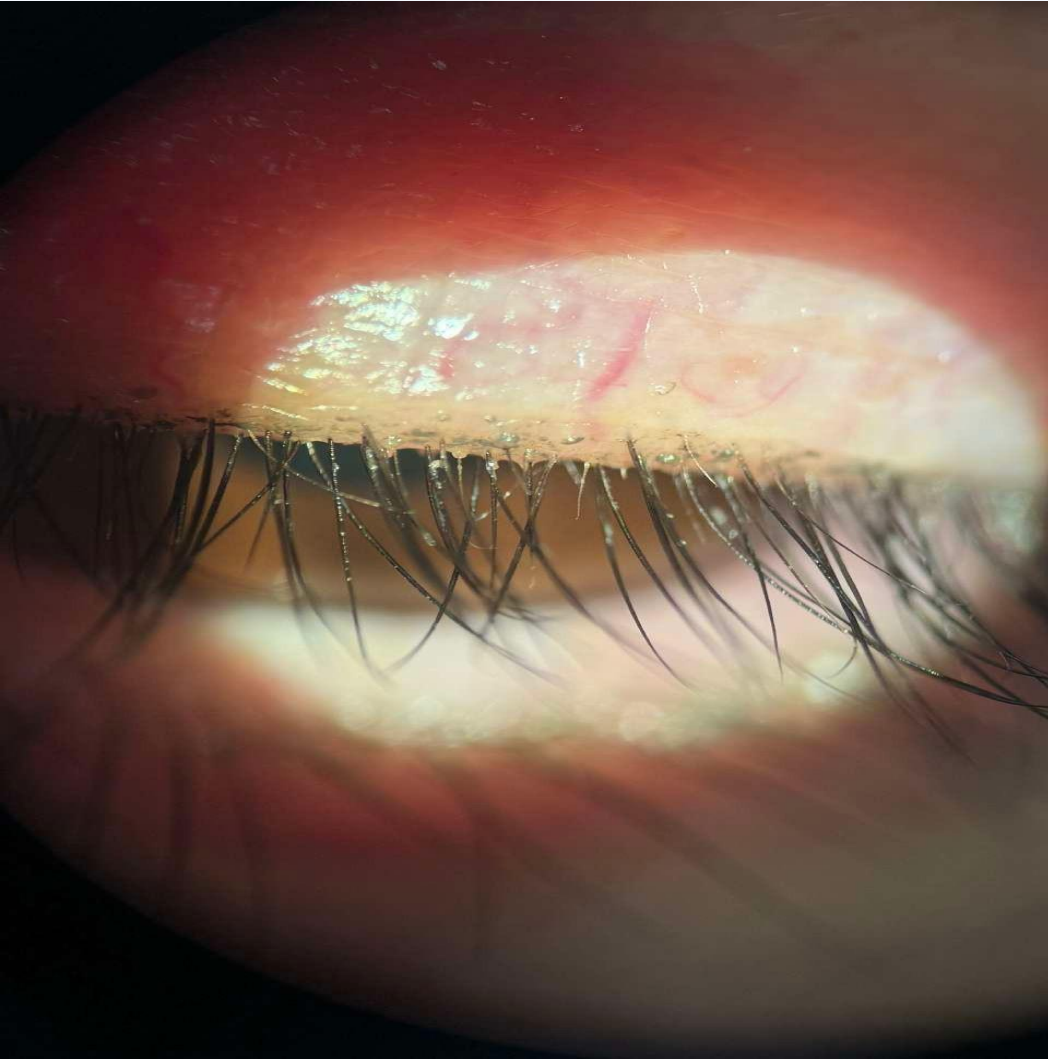
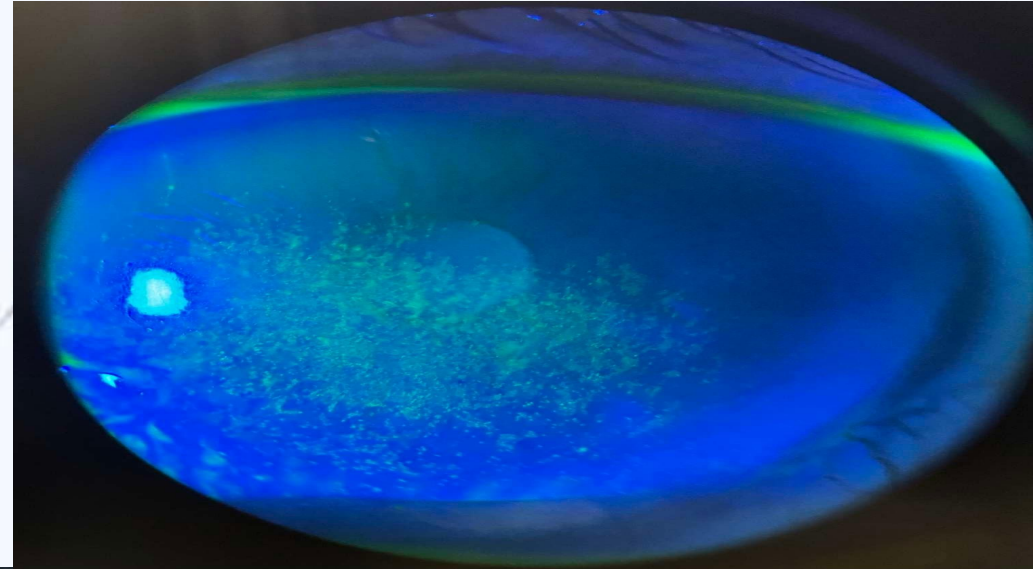


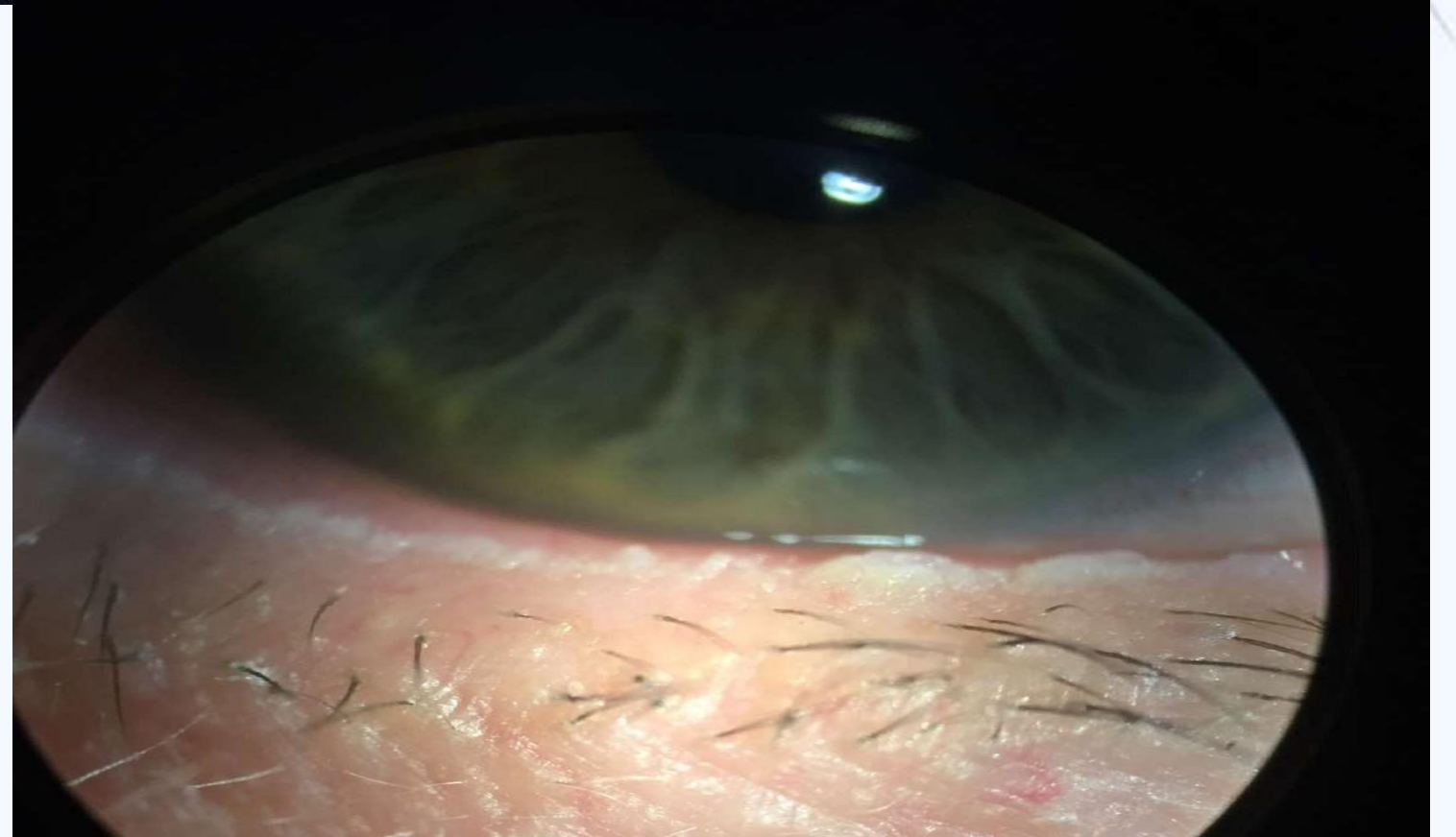
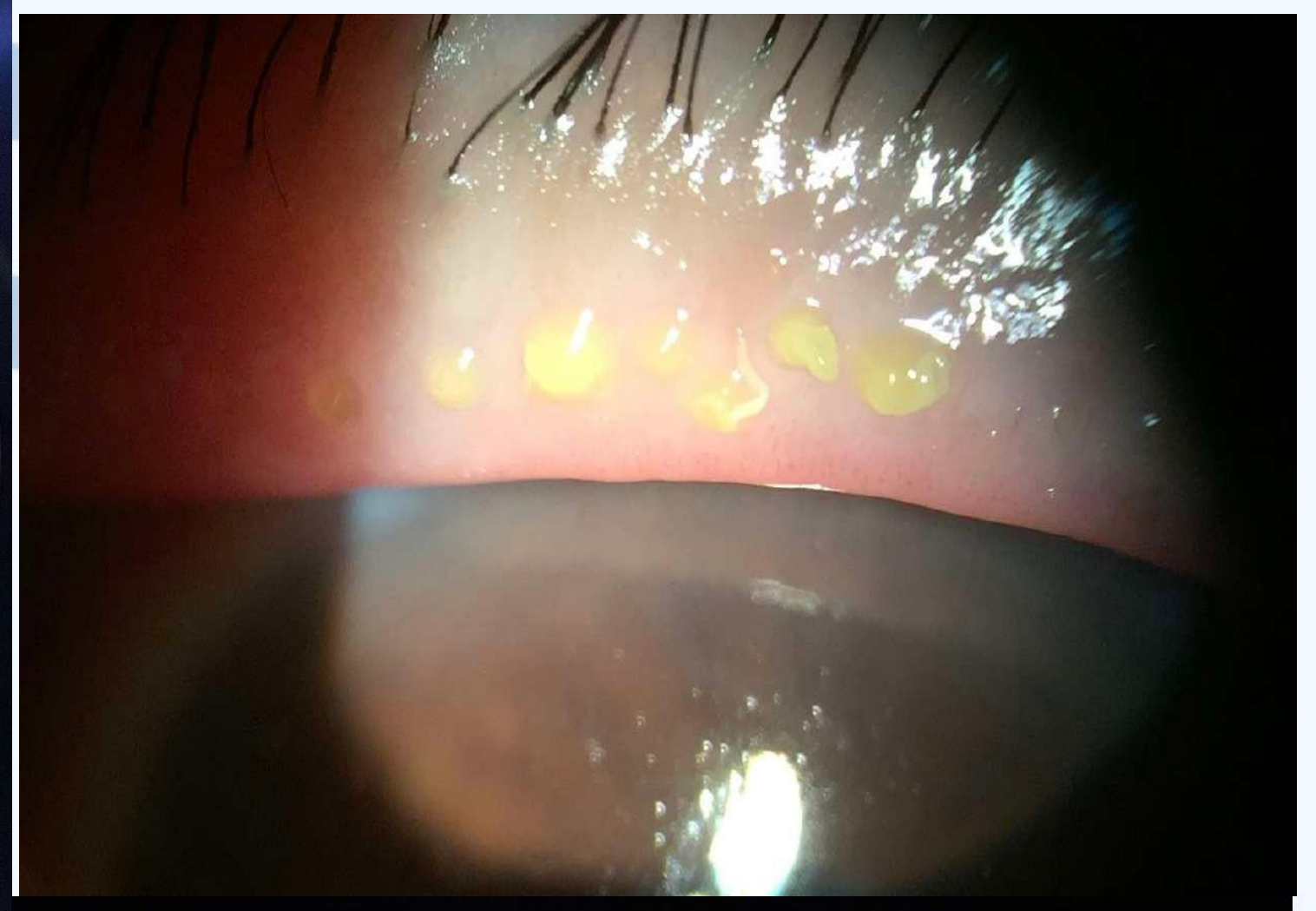
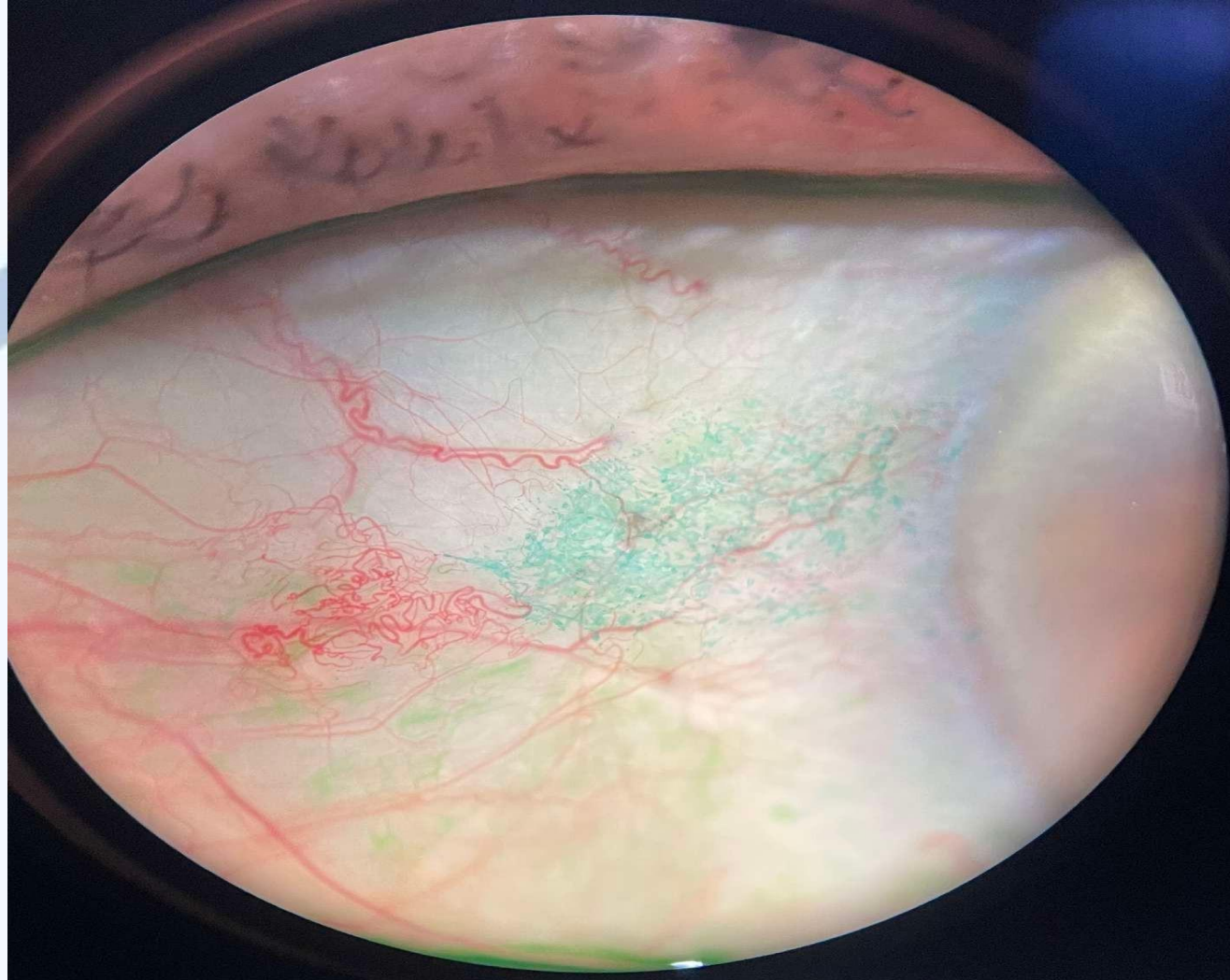
Testing for Ocular Surface Disease

- Questionnaire and case history
 - DEQ5
- POC testing? (InflammaDry? TearLab?)
 - Not done at our office
- Vital dyes
 - NaFl and LG
- Meibography
- Meibomian gland expression/function testing
- Great slit lamp evaluation (Look at the lids!)



Things you could be missing

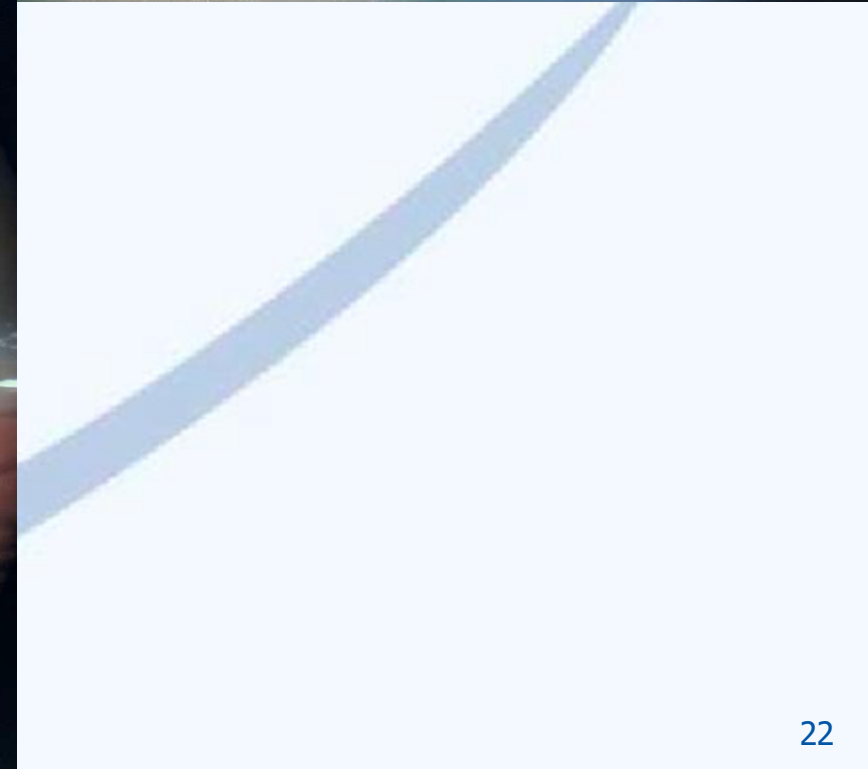
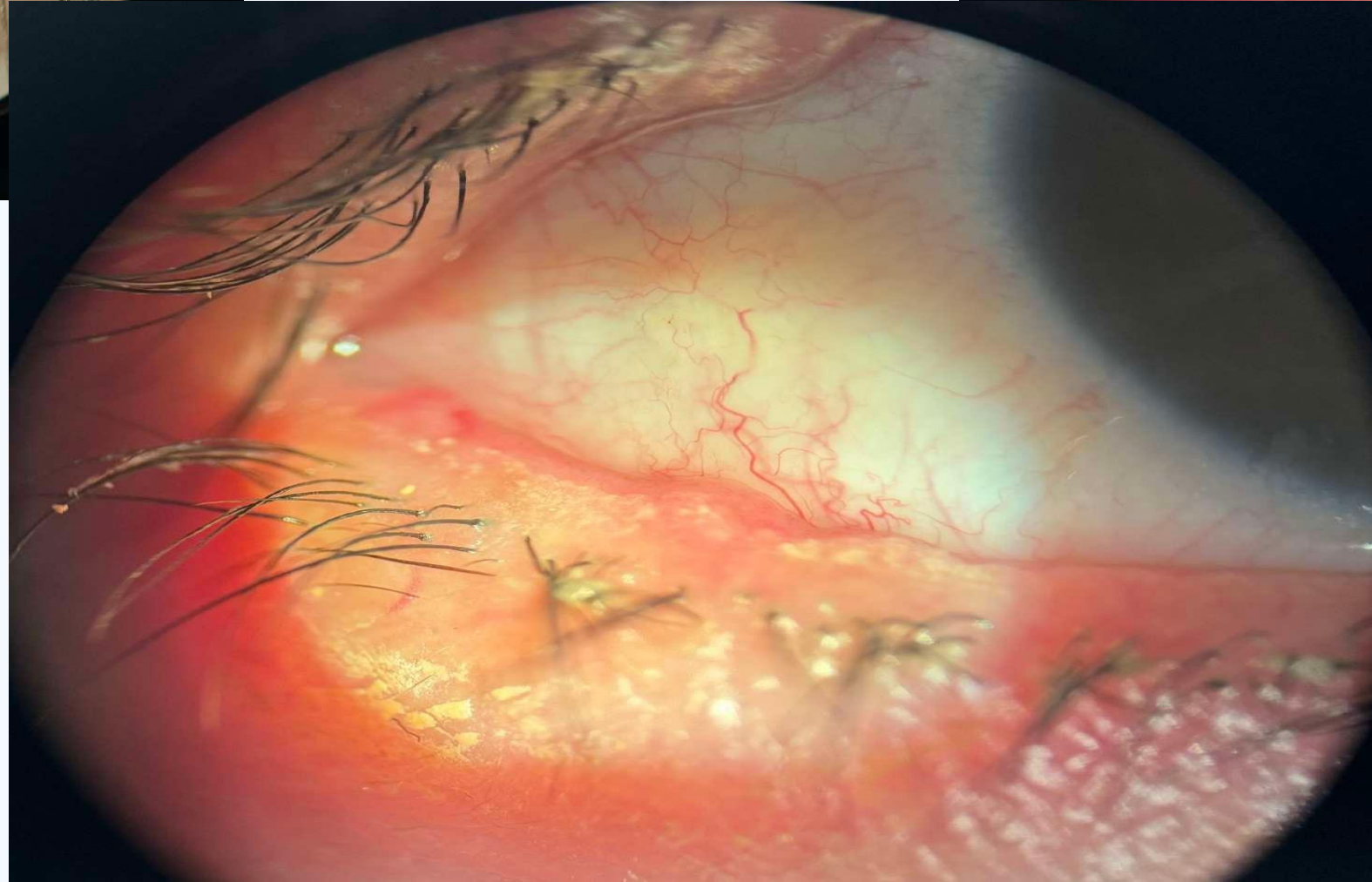
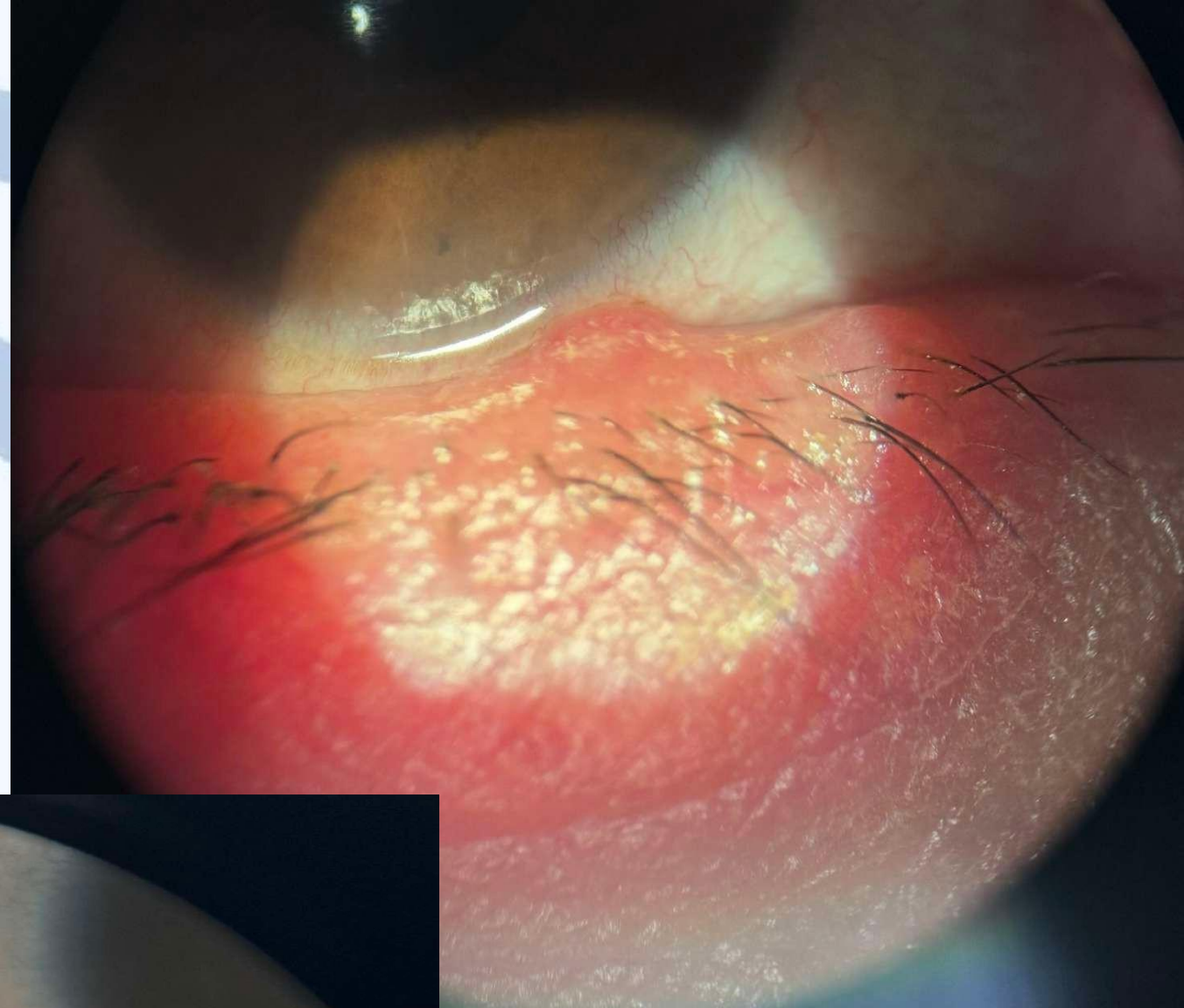
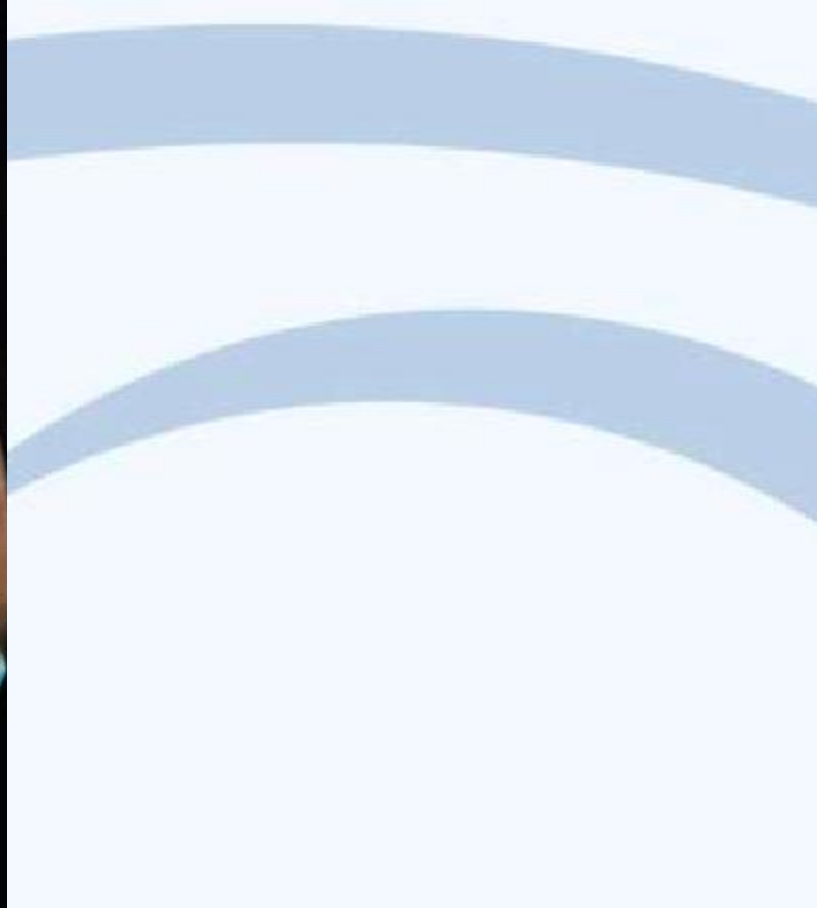
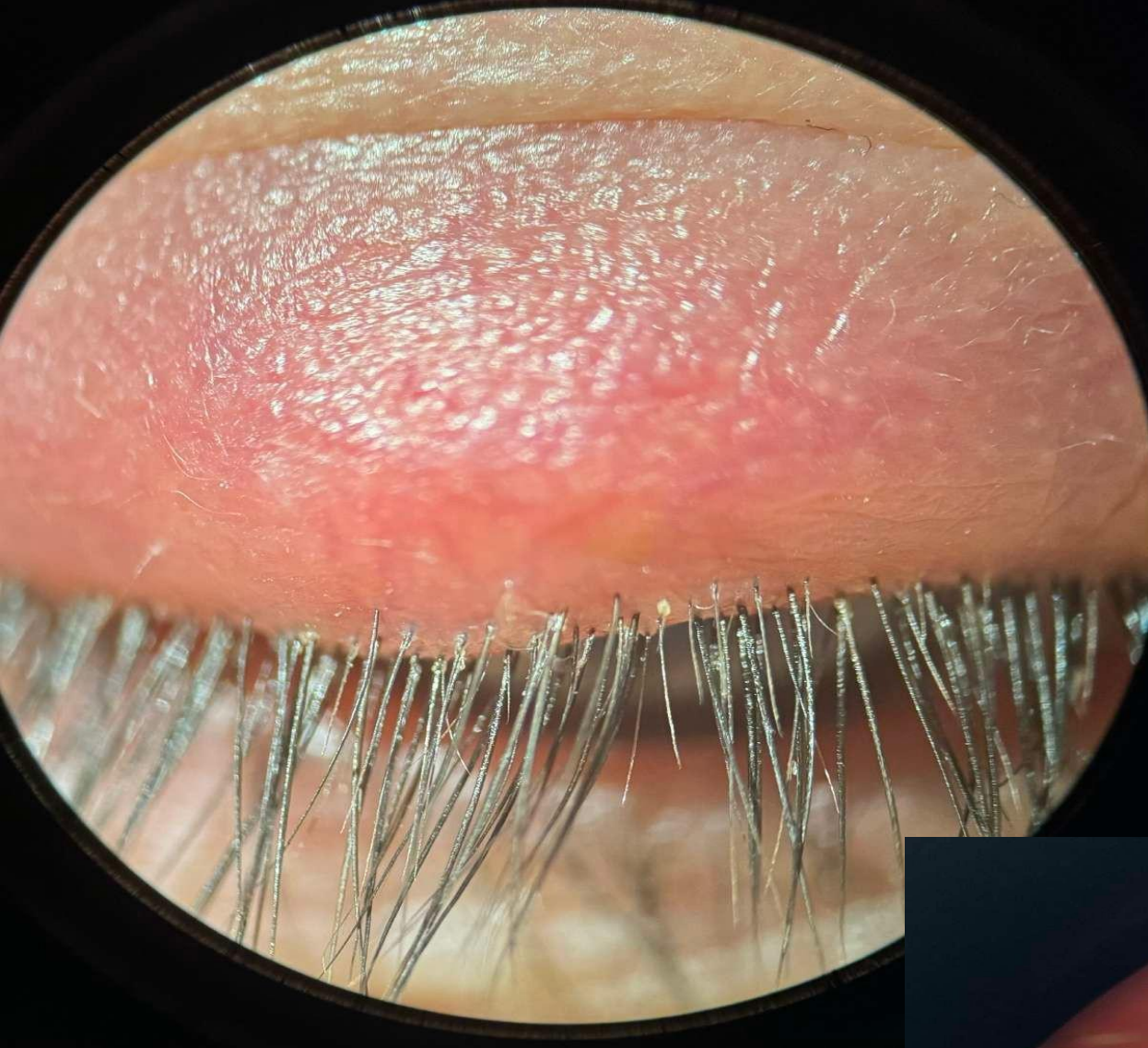




Demodex blepharitis

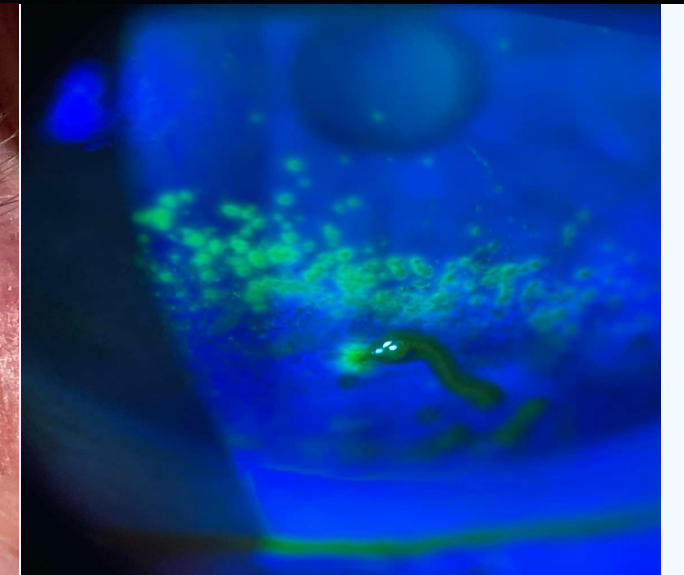
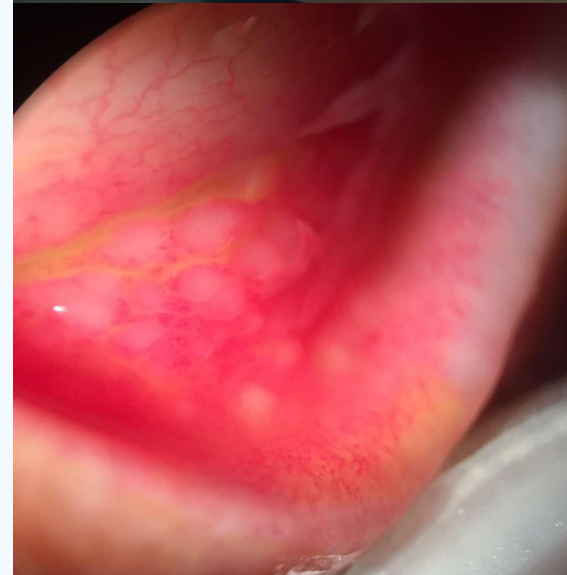
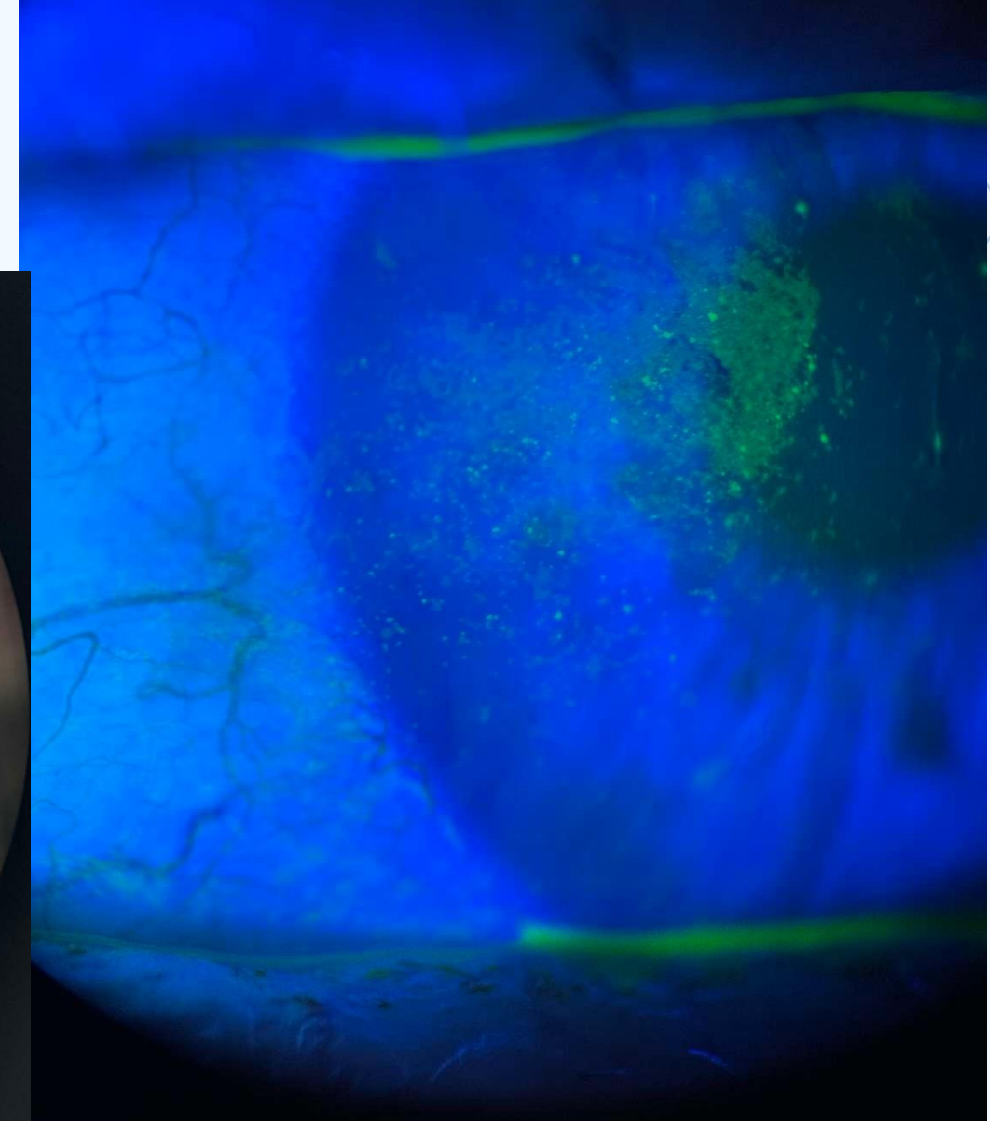
- 2 types
 - Demodex folliculorum (lash follicles)
 - Demodex Brevis (meibomian glands)
- High correlation with Ocular Rosacea
- MGD
 - Clog MGs
 - Leading to hordeolum and chalazion





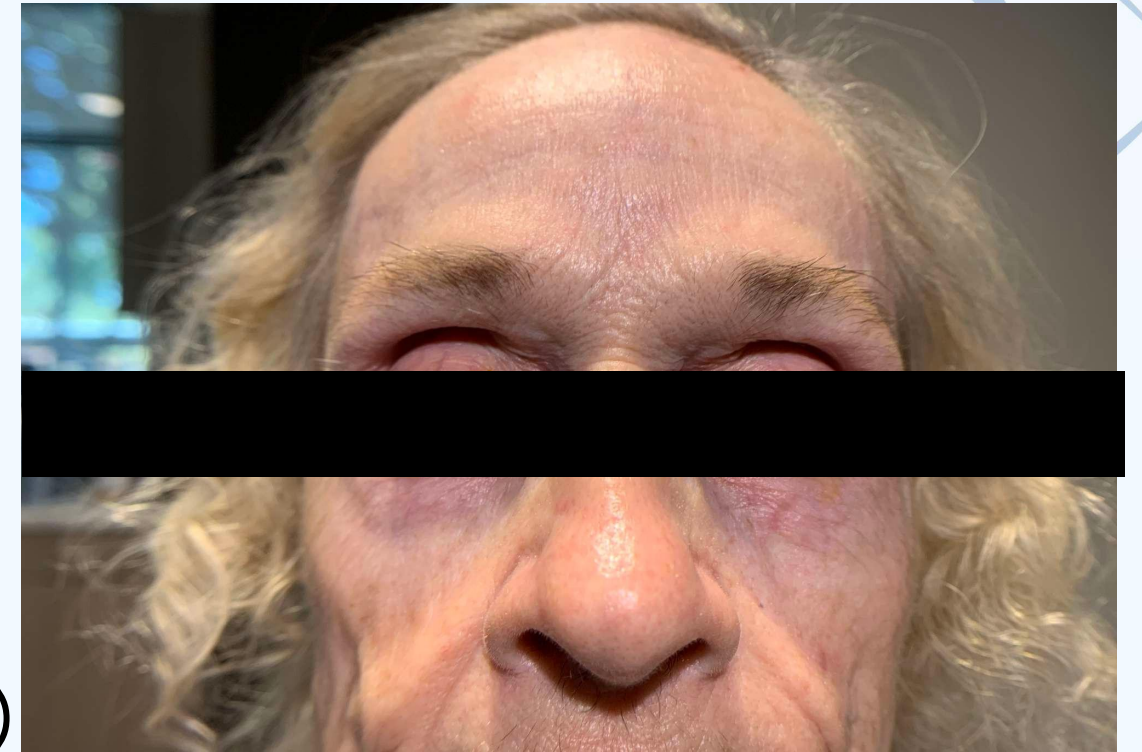
Ocular Surface Diseases and Glaucoma

- KCS/DES
- Demodex/Staph Blepharitis
- Filamentary Keratitis
- Follicular conjunctivitis
- Conjunctival hyperemia



Topical medications for glaucoma

- What do we use first?
 - Prostaglandins
- How do they work?
 - Known inflammatory mediator (stop use during uveitis flares)
 - Stimulate production of matrix metalloproteinase which hydrolyze excessive extra cellular matrix (ECM), opening up extracellular spaces and decrease fluid resistance flowing through these spaces. In addition, they induce relaxation of the TM and ciliary muscle, which reduces tension and increases the outflow pathways.



Observational Study

Prostaglandin associated periorbitopathy in patients using bimatoprost, latanoprost and travoprost

Murat Kucukevcilioglu et al. Clin Exp Ophthalmol.

2014 Mar.

Conclusions: Prostaglandin-associated periorbitopathy is as common as other adverse effects when careful examinations are performed and is more frequent and more severe in bimatoprost users. The loss of the periorbital fat pad is the first sign to occur during the evolution of prostaglandin-associated periorbitopathy, especially in older patients.

Topical medications for glaucoma

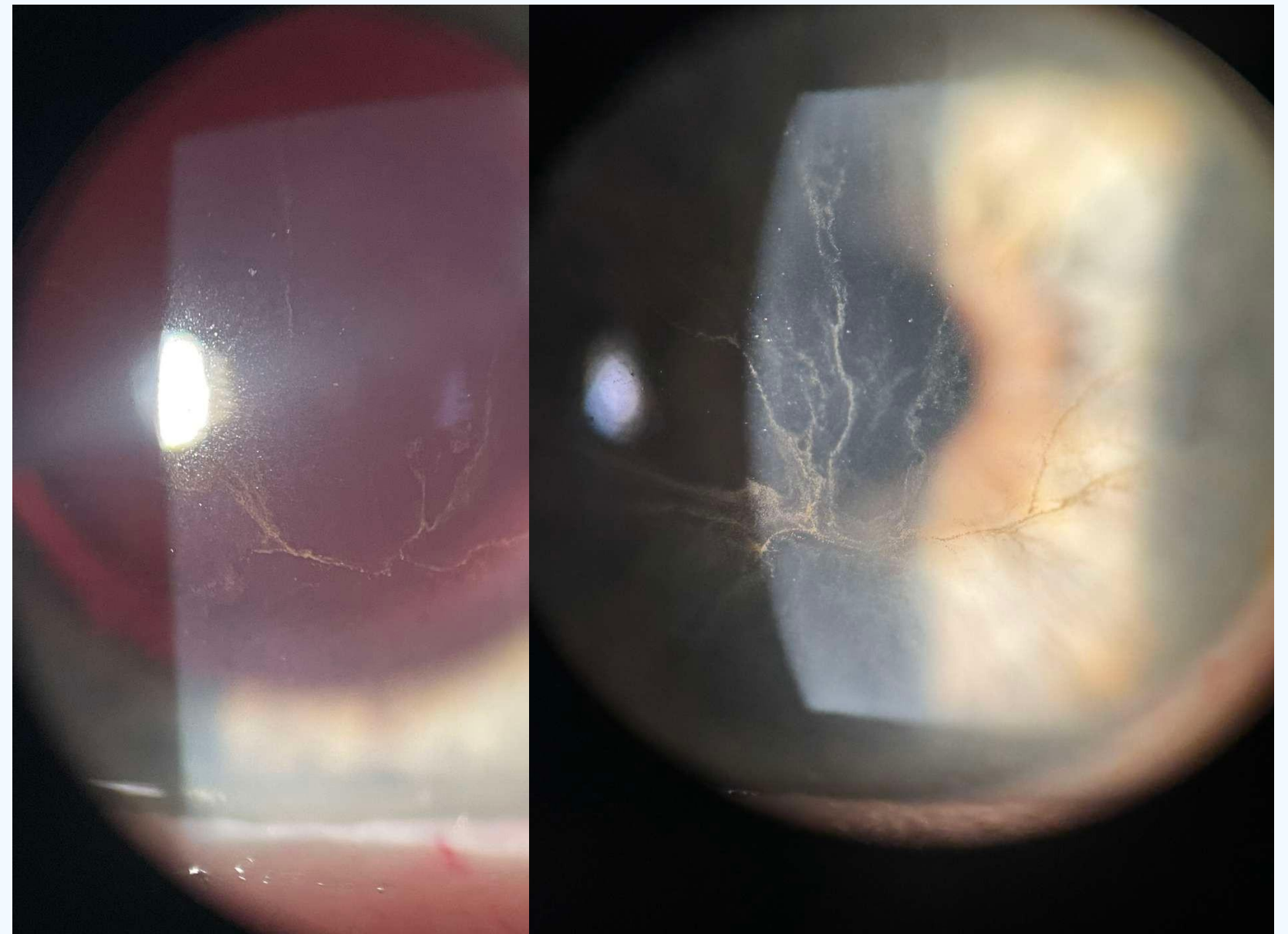
- Brimonidine
 - High risk for allergenic reaction (after several years of use)
 - Worse with generic formulations vs branded
 - Follicular reaction
 - Rare case - it can induce a granulomatous uveitis that can be treated with steroids
- How does it work?
 - α -2 adrenergic receptor agonist that decreases aqueous humor production and increases aqueous humor resorption by the uveoscleral channels



Topical medications for glaucoma



- Rho kinase inhibitor
 - Conjunctival hyperemia
 - Whorl keratopathy
 - Visually significant?
- How does it work?
 - 3 potential mechanism of action
 - Decrease aqueous production
 - Increase outflow through TM
 - Lower episcleral venous pressure



BAK concentrations



TABLE 2. COMMONLY PRESCRIBED GLAUCOMA MEDICATIONS WITH THEIR CORRESPONDING PRESERVATIVE^a

Medication	Preservative
Xalatan	BAK 0.02%
Lumigan	BAK 0.02%
Azopt	BAK 0.01%
Timoptic	BAK 0.01%
Trusopt	BAK 0.0075%
Cosopt	BAK 0.0075%
Combigan	BAK 0.005%
Travatan Z	SofZia
Alphagan P	Purite
Zioptan	None
Cosopt PF	None
Timoptic in Ocusose	None

Abbreviation: BAK, benzalkonium chloride

Vyzulta 0.02% BAK
Rhopressa 0.015% BAK
Simbrinza 0.003% BAK
Rocklatan 0.02% BAK
Xelpros 0.47% Potassium Sorbate

November/December 2016



Preservative-Free Alternatives
 Options for decreasing ocular toxicity in patients with glaucoma.
By Arkadiy Yadgarov, MD, and Reena A. Garg, MD

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E EYE

... Instill 1 drop in the affected eye(s) once daily in the evening.

... since it has been shown that more frequent administration of prostaglandin analogs may decrease the IOP-lowering effect.

- Reduction of IOP starts approximately 2 hours after the first administration with maximum effect reached after 12 hours.
- May be used concomitantly with other topical ophthalmic drug products to lower IOP. If more than 1 topical ophthalmic drug is being used, the drugs should be administered at least 5 minutes apart.

VYZULTA (latanoprostene bunod (0.024%) ophthalmic solution)

Prostaglandin Analogs
Indications/Usage:
 Indicated for the reduction of intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension.

Typical Dosing:
 ► Elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension, recommended:

- Instill 1 drop in the conjunctival sac of the affected eye(s) once daily in the evening.
- Do not administer more than once daily since it has been shown that more frequent administration of prostaglandin analogs may lessen the IOP-lowering effect.
- If used concomitantly with other topical ophthalmic drug products to lower IOP, administer each drug product at least 5 minutes apart.

How Supplied:
 • 2.5 mL bottles
 • 5 mL bottles

ZIOPTAN (tafluprost (0.0015%) ophthalmic solution)

Prostaglandin Analogs
Indications/Usage:
 Indicated for reducing elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension.

Typical Dosing:
 ► Elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension, recommended:

- Instill 1 drop in the conjunctival sac of the affected eye(s) once daily in the evening.
- The dose should not exceed once daily since it has been shown that more frequent administration of prostaglandin analogs may lessen the IOP-lowering effect.
- Reduction of the IOP starts approximately 2 – 4 hours after the first administration with the maximum effect reached after 12 hours.
- May be used concomitantly with other topical ophthalmic drug products to lower IOP. If more than 1 topical ophthalmic product is being used, each one should be administered at least 5 minutes apart.
- The solution from 1 individual unit is to be used immediately after opening for administration to one or both eyes. Since sterility cannot be maintained after the individual unit is opened, the remaining contents should be discarded immediately after administration.

How Supplied:
 • 0.3 mL in 10 single-use containers per pouch

Preservatives:
 None listed in package insert.

XALATAN (latanoprost (0.005%) ophthalmic solution)

- Instill 1 drop in the affected eye(s) 3 times daily.
- May be used concomitantly with other topical ophthalmic drug products to lower IOP. If more than 1 topical ophthalmic drug is being used, the drugs should be administered at least 5 minutes apart.

How Supplied:
 • 10 mL bottles

Preservatives:
 benzalkonium chloride

XALATAN (latanoprost (0.005%) ophthalmic solution)

Prostaglandin Analogs
Indications/Usage:
 Indicated for the reduction of elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension.

Typical Dosing:
 ► Elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension, recommended:

- Instill 1 drop in the affected eye(s) 1 time daily in the evening. If 1 dose is missed, treatment should continue with the next dose as normal.
- The dosage should not exceed once daily; the combined use of 2 or more prostaglandins, or prostaglandin analogs including XALATAN is not recommended. It has been shown that administration of these prostaglandin drug products more than once daily may decrease the IOP-lowering effect or cause paradoxical elevations in IOP.
- Reduction of the IOP starts approximately 3 – 4 hours after administration and the maximum effect is reached after 8 – 12 hours.
- May be used concomitantly with other topical ophthalmic drug products to lower IOP. If more than 1 topical ophthalmic drug is being used, the drugs should be administered at least 5 minutes apart.
- Contact lenses should be removed prior to the administration of XALATAN, and may be reinserted 15 minutes after administration.

How Supplied:
 • 2.5 mL bottles

Preservatives:
 benzalkonium chloride

Storage:
 • Protect from light.
 • Store unopened bottle(s) under refrigeration at 36° – 46°F (2° – 8°C).
 • During shipment to the patient, the bottle may be maintained at temperatures up to 104°F (40°C) for a period not exceeding 8 days.
 • Once a bottle is opened for use, it may be stored at room temperature up to 77°F (25°C) for 6 weeks.

Cost: Compare Prices
Assistance: Payment Assistance

XELPROS (latanoprost (0.005%) ophthalmic emulsion)

- Since in some patients the pressure-lowering response to Preservative-free TIMOPTIC in OCUDOSE may require a few weeks to stabilize, evaluation should include a determination of IOP after approximately 4 weeks of treatment with Preservative-free TIMOPTIC in OCUDOSE.
- If the IOP is maintained at satisfactory levels, the dosage schedule may be changed to 1 drop once a day in the affected eye(s).
- Because of diurnal variations in IOP, satisfactory response to the once-a-day dose is best determined by measuring the IOP at different times during the day.

XELPROS (latanoprost (0.005%) ophthalmic emulsion)

Prostaglandin Analogs
Indications/Usage:
 Indicated for the reduction of elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension.

Typical Dosing:
 ► Elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension, recommended:

- Instill 1 drop in the affected eye(s) once daily in the evening.
- If 1 dose is missed, treatment should continue with the next dose as normal.
- The dosage should not exceed once daily; the combined use of 2 or more prostaglandins, or prostaglandin analogs including XELPROS is not recommended. It has been shown that administration of these prostaglandin drug products more than once daily may decrease the IOP-lowering effect or cause paradoxical elevations in IOP.
- Reduction of the IOP starts approximately 3 – 4 hours after administration and the maximum effect is reached after 8 – 12 hours.
- May be used concomitantly with other topical ophthalmic drug products to lower IOP. If more than 1 topical ophthalmic drug is being used, the drugs should be administered at least 5 minutes apart.
- Contact lenses should be removed prior to the administration of XELPROS, and may be reinserted 15 minutes after administration.

How Supplied:
 • 2.5 mL bottles

Preservatives:
 potassium sorbate

Storage:
 • Protect from light.
 • Store at 36° – 77°F (2°C – 25°C).
 • During shipment to the patient, the bottle may be maintained at temperatures up to 104°F (40°C) for a period not exceeding 8 days.
 • After opening, XELPROS can be used until the expiration date stamped on bottle and then discarded.

Cost: Compare Prices
Assistance: Payment Assistance

Assistance: Payment Assistance



PF glaucoma med options

- Newest Iyuzeh (PF latanoprost 0.005%) by Thea pharma
- Zioptan PF* (Tafluprost 0.0015%) by Thea Pharma
- Cosopt PF* (Dorzolamide 0.2% and Timolol 0.5%) by Thea Pharma
- Timoptic PF occudose 0.5% by B&L





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<p> Call Eagle Pharmacy at 844-813-3864 Mon to Fri 9AM – 7PM EST</p>	<p> Mail to Akorn EyeRx Direct c/o Eagle Pharmacy PO Box 90937 Lakeland, FL 33804</p> <p>Click here to download an enrollment form</p> 
<p> Fax Eagle Pharmacy at 855-618-4610</p>	
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Doctor Information

VIN DANG
 DEA #: 
 Phone: (661) 325-3937

Address:
 4105 Empire Drive
 Bakersfield, CA 93309

Prescription Information

Drug desc.	Quantity	Days Supply	Sig	Refills	DAW	Written On	Notes to pharmacist	Additional Detail	Vitals	Actions
Zioptan (PF) 0.0015 % eye drops in a dropperette  2 Drug Warnings	30 Each	30	Location: Both Eyes. Administer into both eyes daily. 1 gtt QHS OU	3	Dispense as written	02/09/2024				Edit Remove from this list

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What about SLT?



- LiGHT study 3 year study (2012-2014) - showed that SLT is safe alternative option to medications as first line treatment
- Update to the LiGHT study - safety and effectiveness of SLT at 6 years.
- Delayed the need for meds and/or surgery by 3 years
- First line treatment at our office for OHT and treatment naive patients OAG patients

What about MIGS?



- Do they have VS cataracts?
 - No brainer
 - But which one?
- Glaukos Istent->Istent inject -> Istent infinite
- Goniotomy - remove part of the TM (KDB, Trabectome)
- Trabeculotomy (cutting up the TM)+ canuloplasty (viscodilation of the Schlemm's canal vessels (Omni))

Treatment options based on location

- Eyelids, eyelashes, and lash extensions
- 1st line aka home therapy
- Still using baby shampoo scrubs?
- Alternative options?



What about demodex?

- Hypochlorous acid spray?
 - Pure vs shelf life

[Clin Optom \(Auckl\)](#). 2018; 10: 115–117. Published online 2018 Oct 2. doi: [10.2147/OPTO.S182534](https://doi.org/10.2147/OPTO.S182534)

PMCID: PMC6181810 | PMID: [30319303](https://pubmed.ncbi.nlm.nih.gov/30319303/)

Hypochlorous acid solution (Avenova[®]) is not demodicidal

[Alan G Kabat](#)

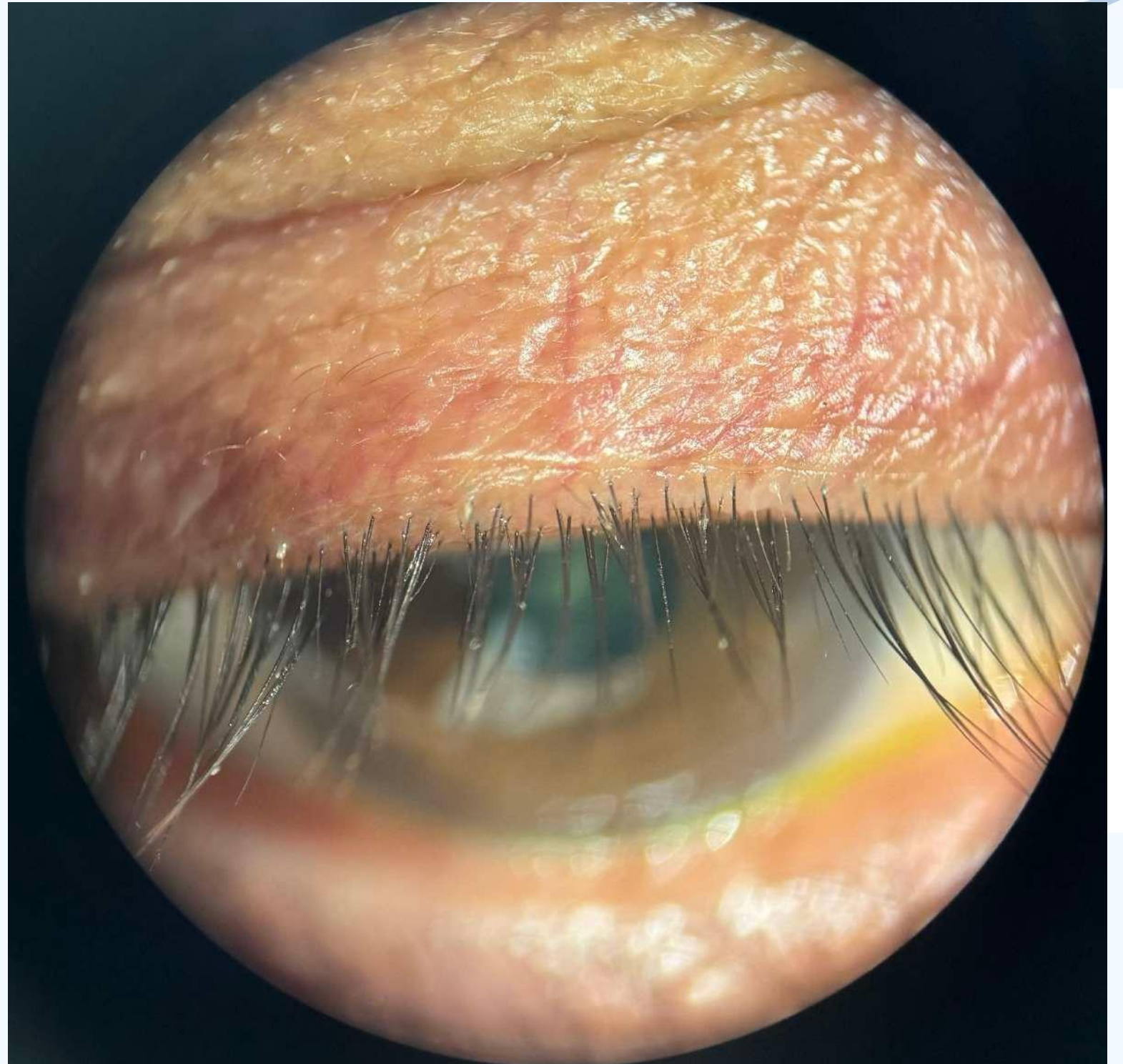


Demodex Tx in the past

- TTO (100% vs diluted)
- 4% terpinen-4-ol (main ingredient in Cliradex wipes)
- Combined with an in-office procedures
 - MBE
 - ZEST



Demodex Tx now



NuLids

- At home deep cleaning device
- Be mindful of abrasions



Treatments for Ocular Surface Disease



- OTC tears (pick your poison)
- Rx meds
- Aqueous and part of inflammatory cascade
 - Immunomodulators = Cyclosporine 0.05%, 0.09%, 0.1% x 2 (different vehicles)
 - LFA-1 antagonist = lifitegrast 5%
- Evaporative
 - Perfluorohexyloctane 100%
- Anti-inflammatory
 - Low dose steroids
 - Loteprednol 0.25% (on label)

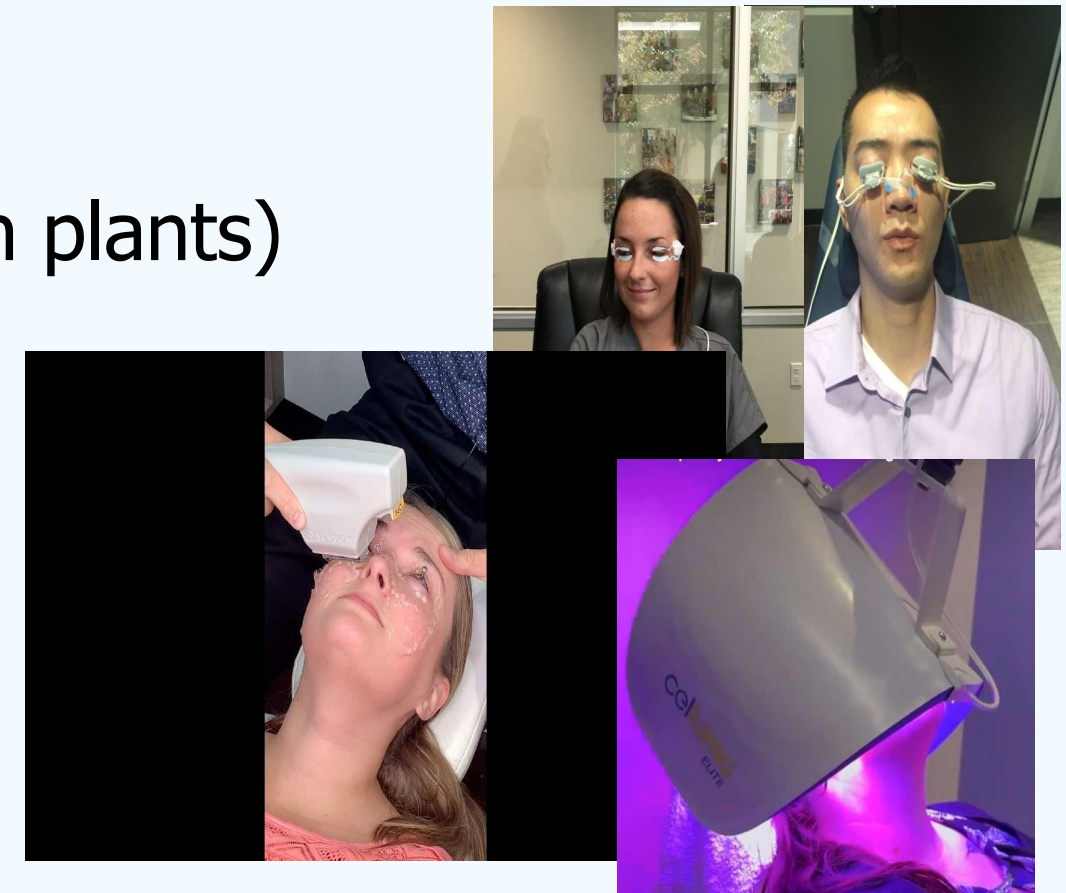
Treatments (cont'd)



- Neurostimulator
 - Varenicline 0.03 mg (may activate lacrimal gland, MGs and mucin on conjunctiva)
 - iTear100 (vibrational vs chemical activation)
- Punctal plugs (big fan of 6 months dissolvable intra-canalicular plugs)
- ASED vs PRP drops
 - Access ?

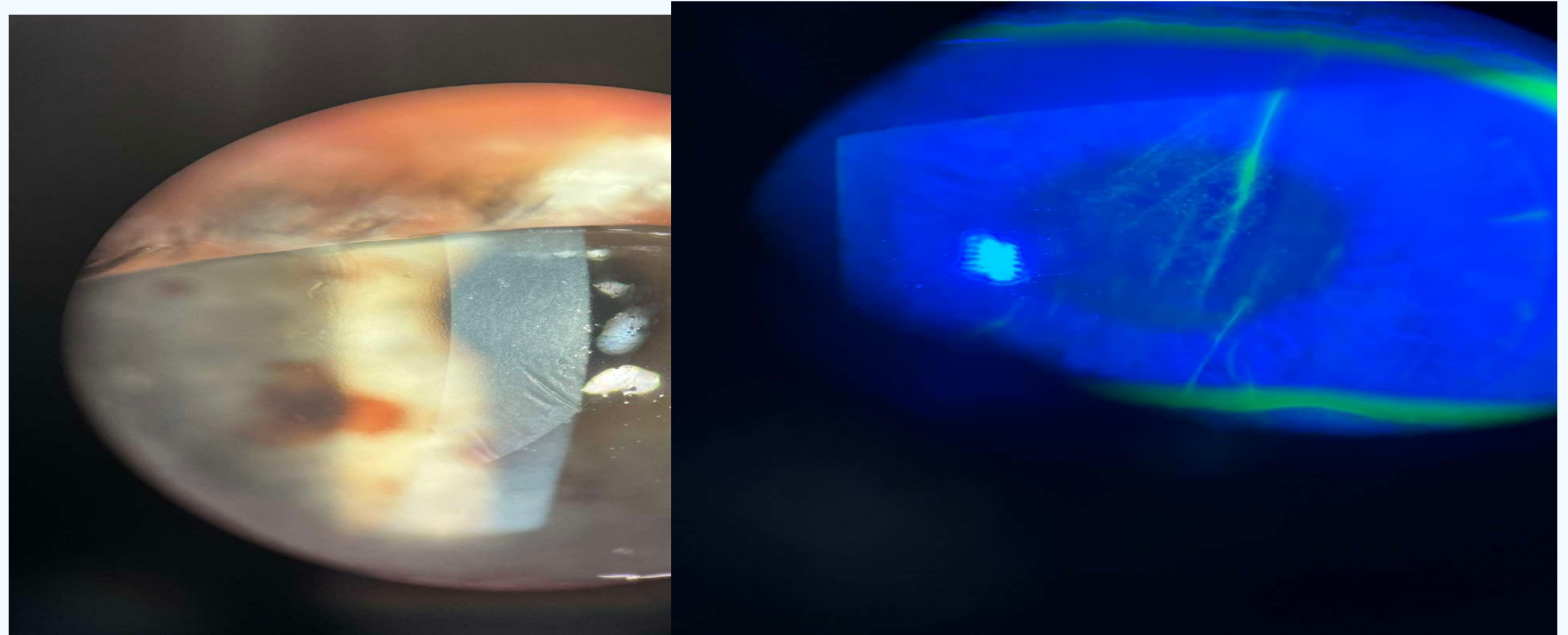
MGD In-Office Treatments

- Heating
 - Miboflo
 - iLux2
 - Thermo vector pulsation
 - TearCare
 - Radiofrequency
- Light based* (Photobiomodulation - Photosynthesis in plants)
 - IPL
 - LLLT



Amniotic Membranes

- Cryopreserved (cAMT) vs Dehydrated (dAMT)
- Contraindications?
 - H/o trabeculectomy for cAMT
 - Corneal indentation from folds in the dAMT



OSD pipeline?

- Aldeyra Reproxalab
- Azura ophthalmic AZR-MD001
- Aramis Biosciences new immunomodulator - A197 -IL-17A antagonist



Take Home Points

- Use preservative free options for glaucoma meds
- Look at the lids and treat the blepharitis
- Treat one thing at a time
- Dry eye is everywhere, treat your patients or send them to a colleague and patients will thank you





Thank You!




Thank you! Please join us for our next COPE events

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THE UPDATED PREVALENCE OF PEDIATRIC KERATOCONUS. MUCH GREATER THAN YOU THOUGHT

April 8th, 2024
5:30 PM - 6:30 PM PT



Dr. Jennifer Harthan
SPEAKER

COPE accredited CE credit

Date: April 8, 2024
Time: 5:30 PM - 6:30 PM PT

WOO UNIVERSITY

DRY EYE DISEASE: DIAGNOSIS AND TREATMENT PEARLS FROM THE TRENCHES

Wednesday
APR 10 | 5:30 PM - 6:30 PM PT



Speaker
Dr. Mile Brujic

COPE accredited CE credit

Date: April 10, 2024
Time: 5:30 PM - 6:30 PM PT