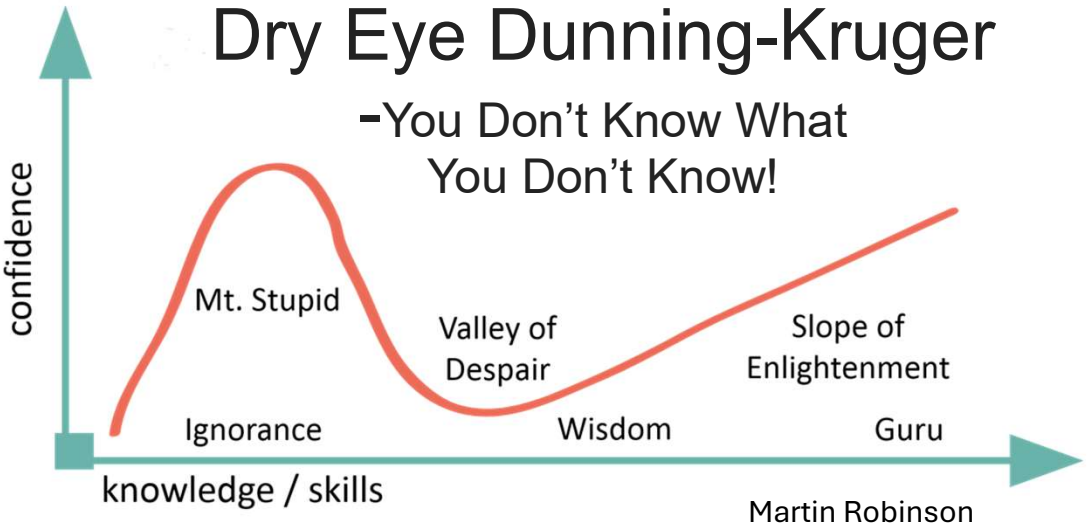
Dry Eye Dunning-Kruger

-You Don't Know What You Don't Know!



Martin Robinson

National President CCLSA

Financial disclosures

- Alcon
- Optometry Australia
- Good Optical
- Seqirus
- Rohto Mentholatum

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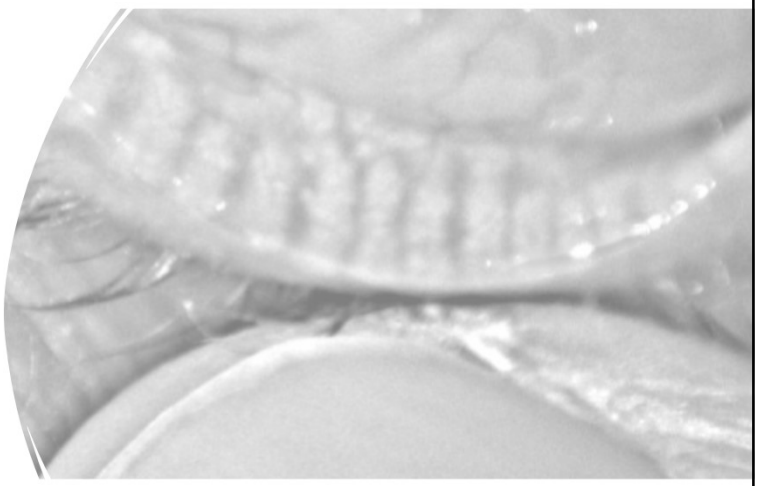
1

When you, as eye care practitioners think about dry eye, what is the first thing you think about?

- Meibomian Gland Dysfunction?
- Inflammation and Eye Drops?
- Hormones and Gender Bias?
- Chemotherapy and Isotretinoin?
- Demodex and Bacteria?
- BEISTO?
- **But what do your patients first think about??????**
- **Can Case History help?**
- **What about asymptomatic patients?**



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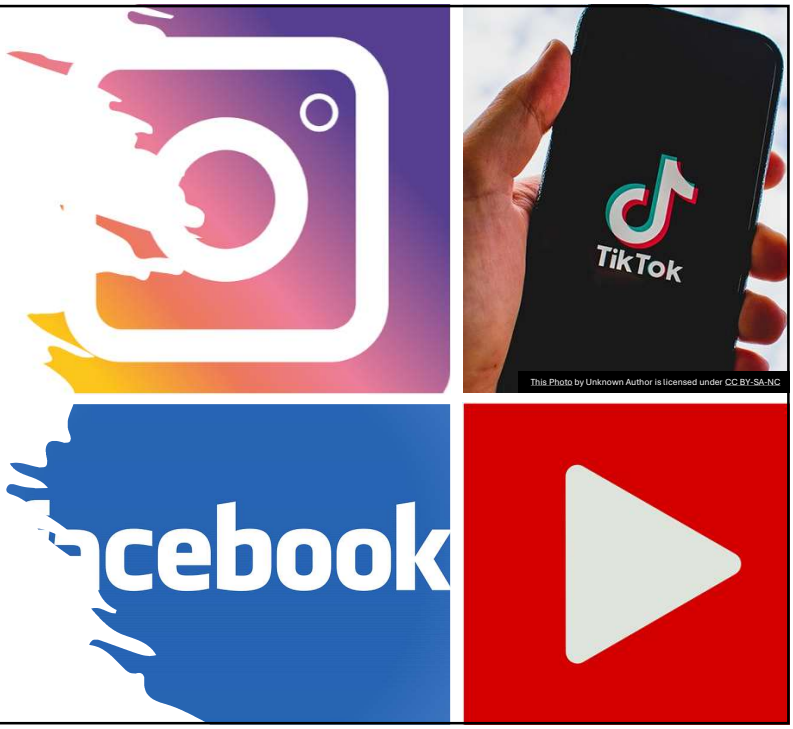
2

Your best chance for Dry Eye Success is for you to be aware of the trends your patients are aware of in this space.

- Makeup/Beauty Tips are used by over half your patient base.
- Mermaid core, Siren Eyes, Doll Eyes, Glossy Lids, Lash Clusters, At home lash tinting
- Hacks for lash extensions, watery eyes and lash growth are all over social media

- 1 Billion Active Users on TikTok
- >2 Billion on Instagram
- 2.7 Billion on YouTube
- 3 Billion on Facebook

- It is safe to assume some of your patients will be trying these trends.



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3

Makeup, Dry eye and Cosmetic Social Media Trends to be wary of:

Vaseline for Watery Eyes [1].

- Hack to prevent watery eyes ruining your makeup is to apply Vaseline to your eyelid's waterline!
- On TikTok with 100 million views but it is on all platforms!

- Risks to consider
  - Increased incidence of Milia due to the occlusive nature
  - No one's Petroleum Jelly is sterile, it will have been used on lips, cracked heels, and other things
  - Cross-contamination/infection risks are high, combined with its occlusive nature:
    - potential stye formation

1. Bushak L. Can smearing petroleum jelly prevent watery eyes? TikTok trend, explained. Medical Marketing and Media. February 21, 2024. Accessed April 22, 2024. www.mmm-online.com/home/channel/petroleum-jelly-prevent-watery-eyes-tiktok-trend-explained/

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4

Castor Oil as a 'wonder' cure for dry eye, cataract cure, fading floaters and more

- Some claims are highly questionable. Lacking scientific evidence
- Evidence for lash growth is not substantiated
- Evidence of Dry eye symptom and sign reduction with reduced telangiectasia, reduced collarettes [2].
- Anti-inflammatory, antimicrobial and emollient

- Risks/cautions:-
- High concentrations of Castor Oil can cause conjunctival toxicity
- OTC product use should be cautioned:
- Sterility, purity and concentration are highly variable

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2. Sandford EC, Muntz A, Craig JP. Therapeutic potential of castor oil in managing blepharitis, meibomian gland dysfunction and dry eye. Clin Exp Optom. 2021;104(3):315-322.

5

Blow-dry Lash Curling Trend

- This one has been around for a few years but has seen a revival recently
- It aims to curl the eyelashes using a hair dryer and it works
- Risks to be aware of:
  - Increased dryness
  - Increased injection and red eyes
  - Ocular Surface abrasions

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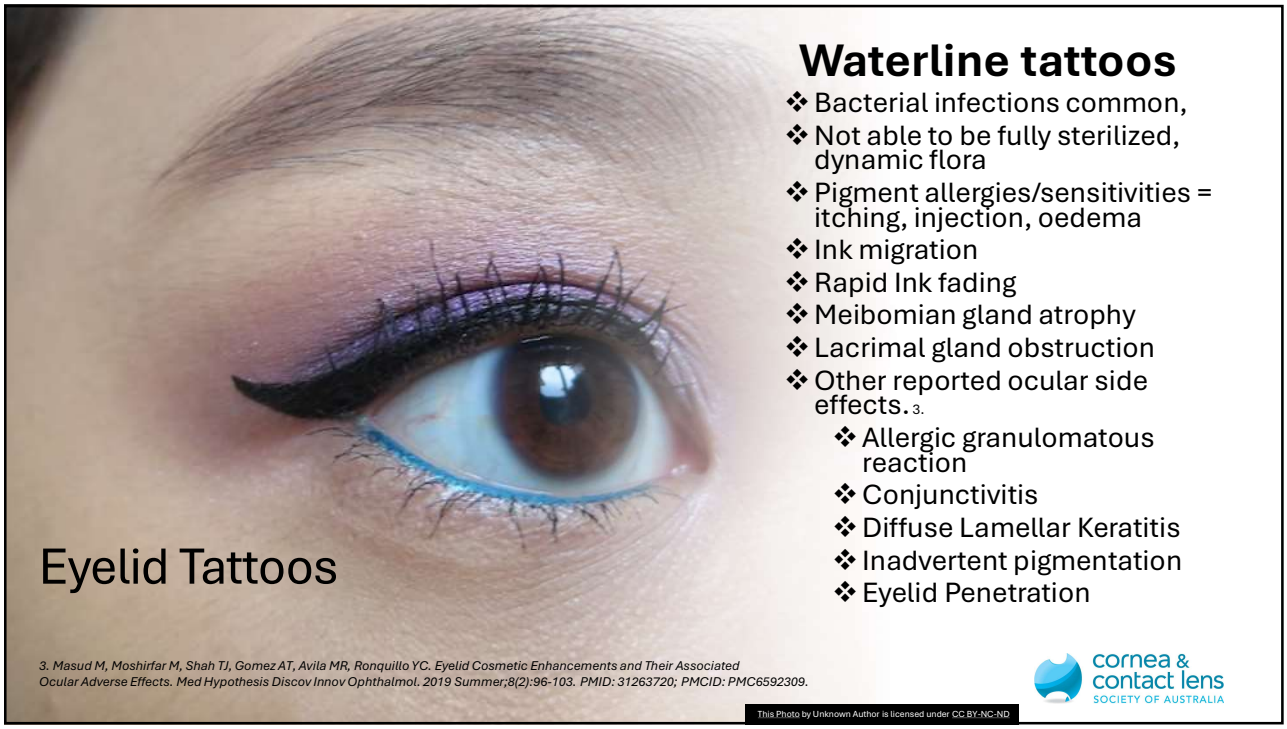

Waterline tattoos

- Bacterial infections common,
- Not able to be fully sterilized, dynamic flora
- Pigment allergies/sensitivities = itching, injection, oedema
- Ink migration
- Rapid Ink fading
- Meibomian gland atrophy
- Lacrimal gland obstruction
- Other reported ocular side effects. 3.
  - Allergic granulomatous reaction
  - Conjunctivitis
  - Diffuse Lamellar Keratitis
  - Inadvertent pigmentation
  - Eyelid Penetration

3. Masud M, Moshirfar M, Shah TJ, Gomez AT, Avila MR, Ronquillo YC. Eyelid Cosmetic Enhancements and Their Associated Ocular Adverse Effects. Med Hypothesis Discov Innov Ophthalmol. 2019 Summer;8(2):96-103. PMID: 31263720; PMCID: PMC6592309.

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Lash Tinting .....

- Mascara replacement
- promoted as a safer than tattoos
- DIY Hacks - use beard or hair dye
- Home/self tinting = higher risk
- bleach – pH 9-10 =burn risk
- Hair/beard tints contain PPD-(Phenylenediamine)
- PPD = toxic.(via mucosal, skin, inhalation)
- PPD = Cataract, conjunctivitis, ulcers, glaucoma, gangrene, optic neuritis and proptosis.
- Silver Nitrate – argyrosis of cornea/conjunctiva. 4

4. Gallardo MJ, Randleman JB, Price KM, et al. Ocular argyrosis after long-term self-application of eyelash tint. Am J Ophthalmol. 2006;141(1):198-200.

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Eyelash extensions – the elephant in the room

- ❖Heavily used in China, Japan, Australia, Nigeria, Ghana and the USA.
- ❖73.3% experienced ocular side effects with application
- ❖Such as :-
  - ❖Itching 45.8%
  - ❖Pain 43.9%
  - ❖Redness 45.5%
  - ❖Heavy Eyelids 41.6%
- Due to :-
  - ❖Mechanical Impact
  - ❖Glue
- ❖ Adhesives contain latex and ammonia and to be formaldehyde-emitting
- ❖ Long-term exposure :- Contact dermatitis, Keratoconjunctivitis, Blepharitis, and even Limbal Stem Cell deficiency

5. Abah ER, Oladigbolu KK, Rafindadi AL, Audu O. Eyelash extension use among female students in a Tertiary Institution in Nigeria: A study of kaduna polytechnic, Kaduna. Niger J Clin Pract. 2017;20(12):1639–43.

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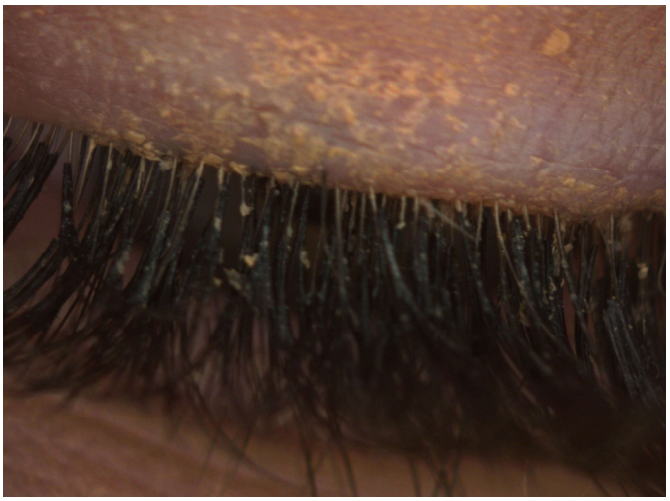
9

Eyelash extensions – the elephant in the room



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10

Eyelash extensions – the elephant in the room

- **Mechanical consequences to consider:-**
  - Gel pads used under the lash base for application of the extensions
  - Pads contain methylisothiazolinone (MI) as a preservative
  - MI = allergic reactions to periorbital area
  - Induced Lagophthalmos
  - Lid hygiene reduced from fear and difficulty
  - Increased bacterial flora
  - Intensive Demodex infestation found in studies. (vector for bacteria)
  - Misdirected lashes become a vector

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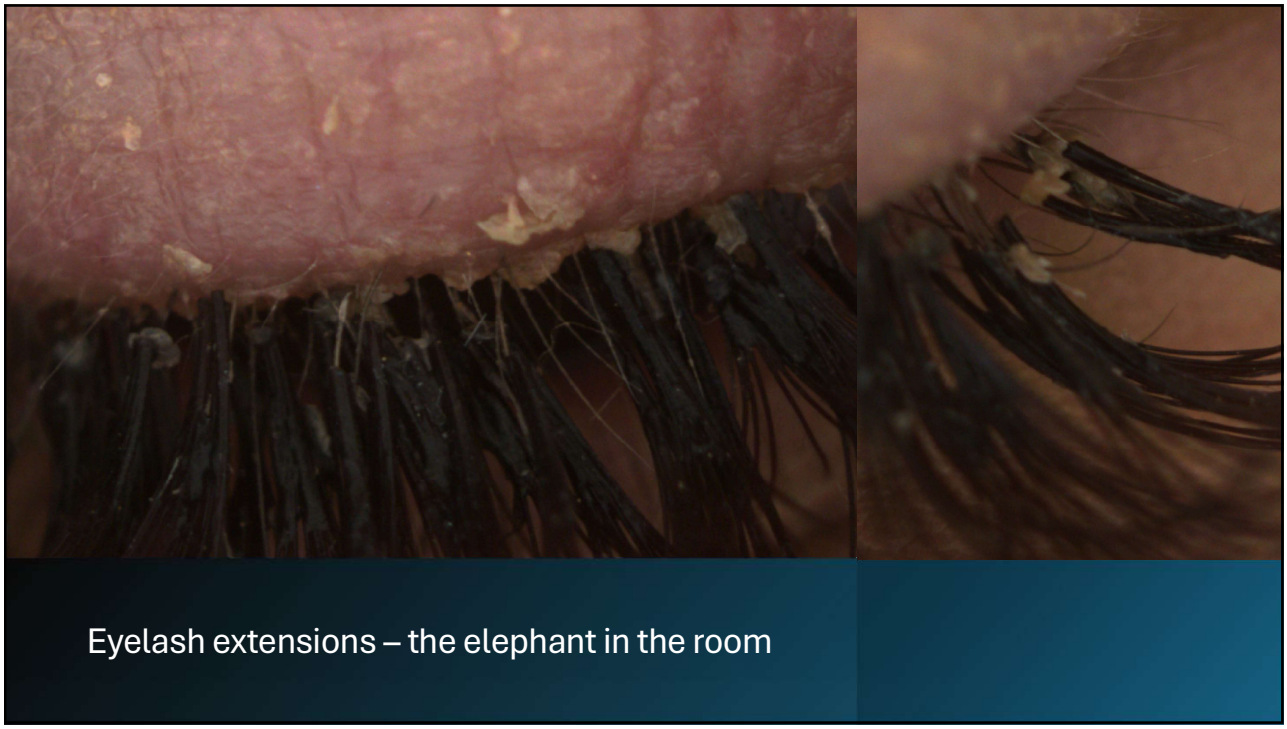

12

Eyelash extensions – the elephant in the room

- ❖Lash extensions – use microscope at 16X mag.
- ❖Glue vs collarettes. – location, location, location!

Pearl

- ❖Collarettes are at the base of the lashes
- ❖Glue is higher up (easier to tell with older extensions)

- ❖99% of lash extensions will have demodex.
  - ❖Can safely treat with ZEST in office.
  - ❖In the USA they have Lotilaner, brand name - Xdemvy,
- ❖Avoid oil only makeup removers as they can make the glue detach

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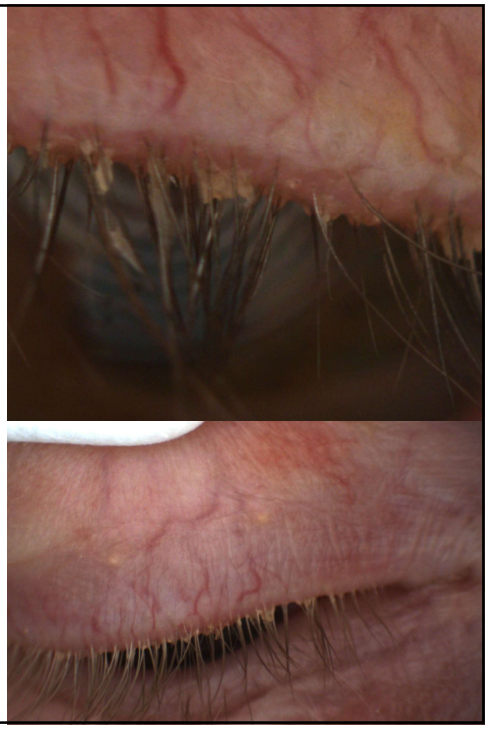
Demodex oddities update

- Demodex from Greek "Fat Boring Worm"

2–3-week breeding cycle, 6 weeks treatment

- Transfer is from skin to skin, Esp Mother to child.
- Found in all races, ages and sexes.
- Historically felt to have been commensal, now exo-parasitic skin to skin transfer
- Patients should be told this is exceedingly common overpopulation is key
- Best to see with 25-30X mag (often missed)
- Get patients to look down!



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Demodex

Chemical impact:-

Regurgitation of waste and digestive enzymes

Bacterial impact:-

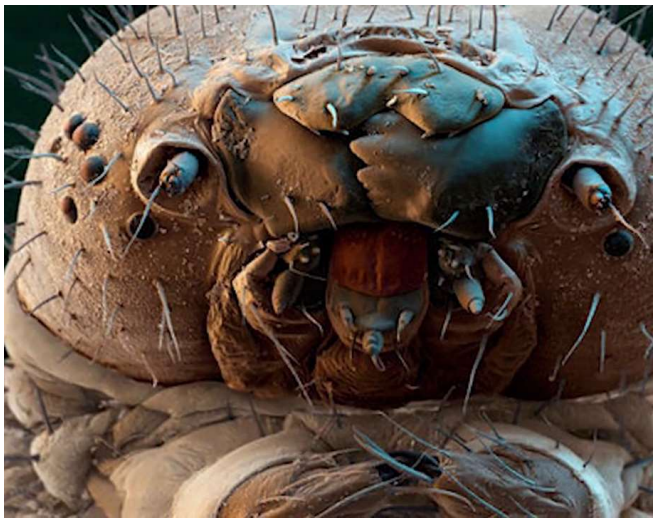
Are a vector for bacteria

Mechanical impact:-

Sharp legs cause micro-trauma, the feed on epithelial cells and meibum and sebum.

93% of Px's with contact lens intolerance have demodex blepharitis

Pearl



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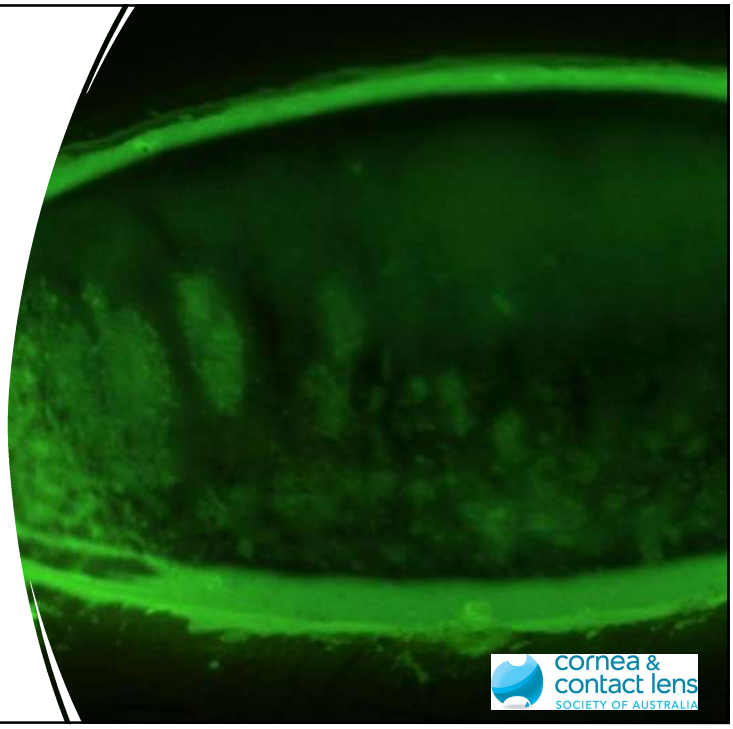
Fluorescein

- Under utilized stain in many clinics
- Can help identify incomplete blinking
- Identify severity of DED
- Identify asymmetry Pearl

- Think Neurotrophic Keratitis

- Also, don't forget Lissamine Green, 1 drop, added twice, 1 min apart. More is better!



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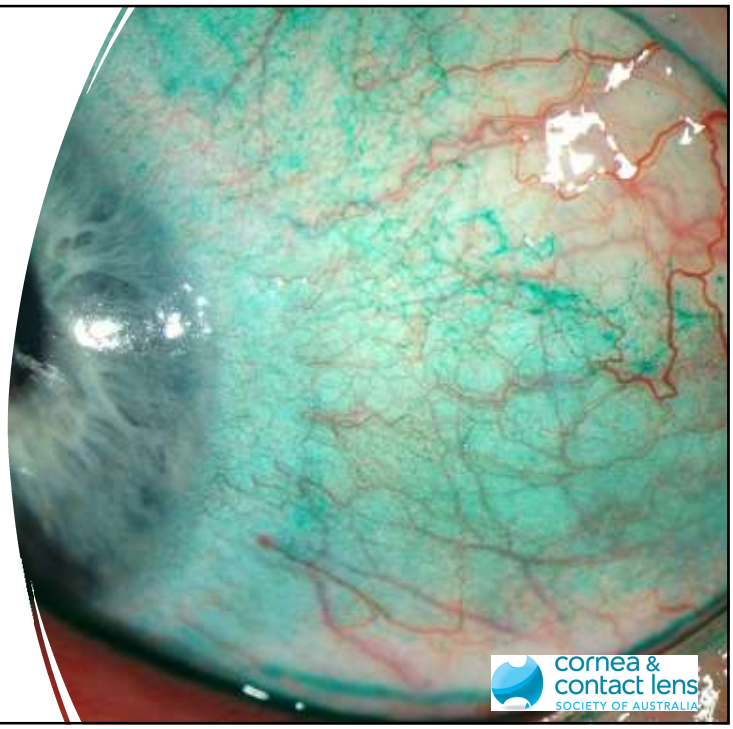
Lissamine Green vs Fluorescein

- In basic terms
  - LG better stains the conjunctiva
  - Fl better stains the cornea
  - LG best stains dead cells
  - Fl best stains less damaged cells
  - Fl is slightly more tolerated than LG
  - Fl with a yellow filter (Wratten) is almost as good as LG

Pearl

Comparison of conjunctival staining between l issamine green and yellow filtered fluorescein sodium by Youngsub Eom MD etal



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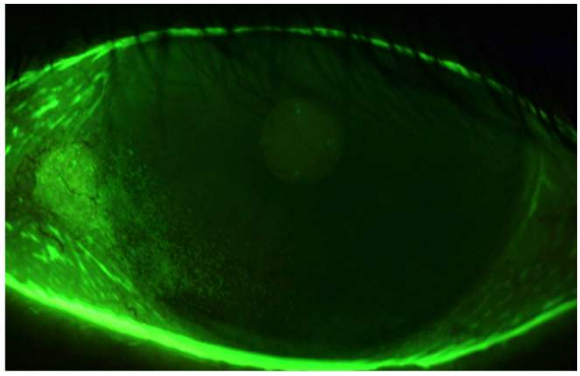

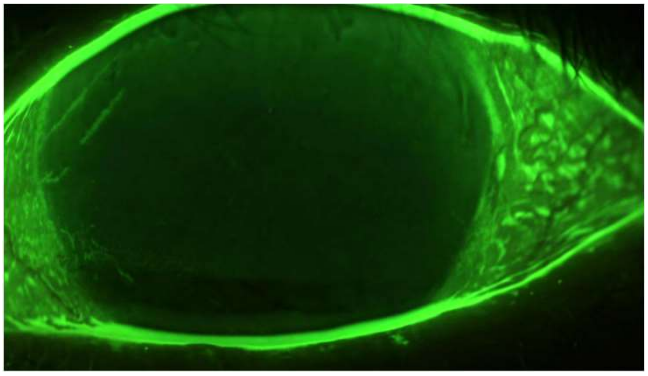

Corneal Staining patterns

Pearl

- Dry eye staining typically is inferior and more prevalent nasally due to the increased punctal drainage
- If staining has a linear angular pattern suspect incomplete blinking
- Dry eye staining is best seen after 3 mins

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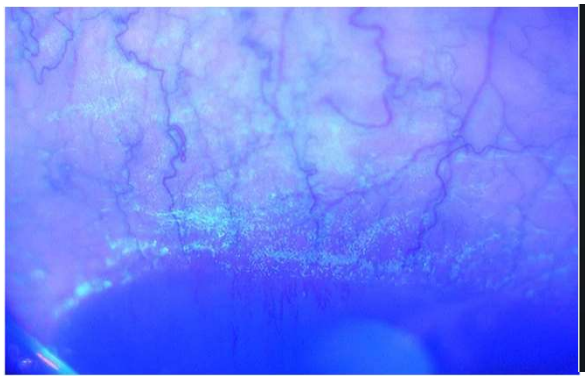

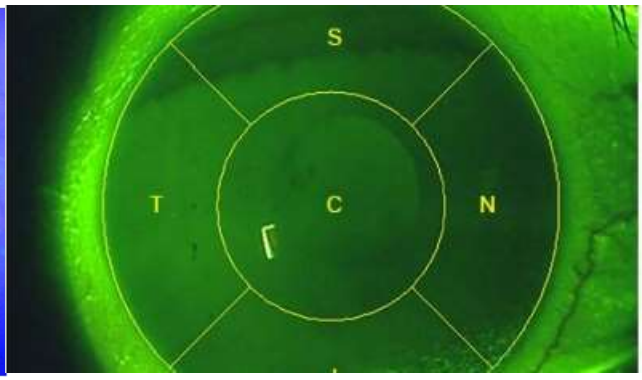

Corneal Staining patterns

Pearl

- When seeing superior staining, think Floppy eyelid syndrome
- Use simple grid system to record staining, Nasal, Temp, Sup, Inf, Central

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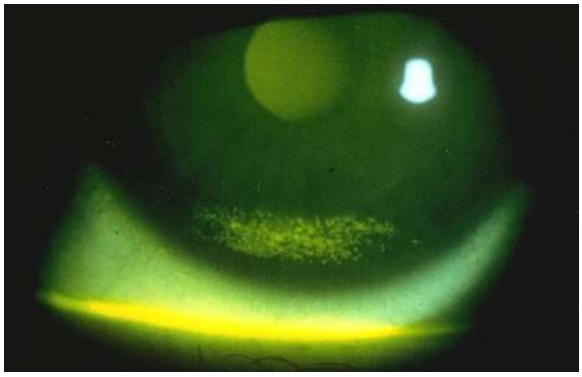

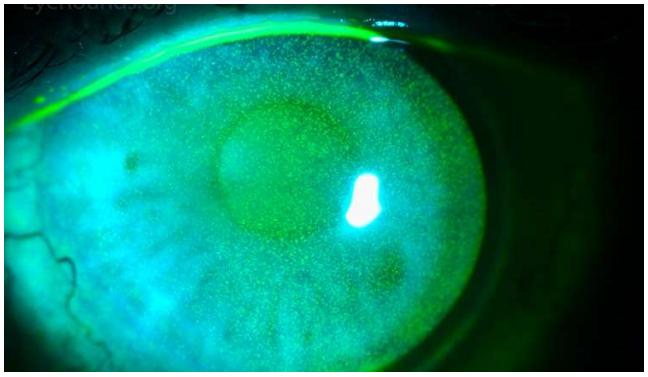

Corneal Staining patterns

Pearl

- If the inferior staining is more horizontal – Lagophthalmos
- If staining is more even and diffuse – Sjogren's Syndrome
  - Cracker Test

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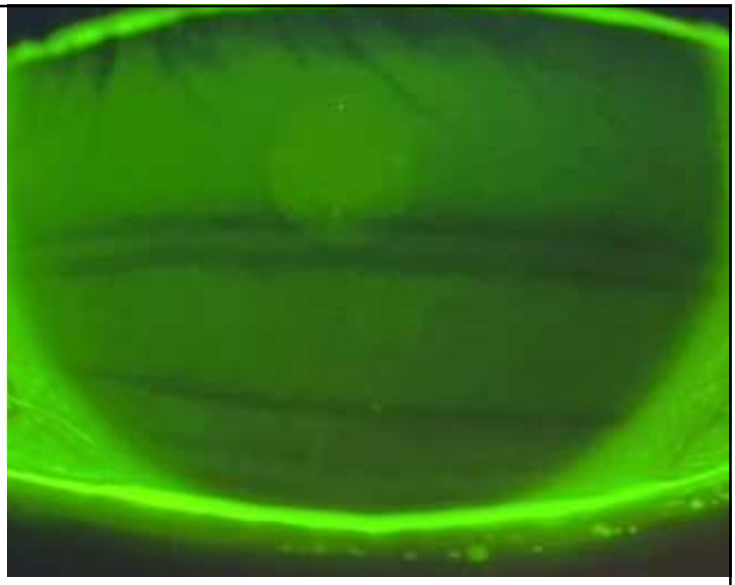
Incomplete Blinking

- Extremely common
- Best seen with Fluorescein
- Watch the inferior meniscus Pearl
- Prescribe Blink Training:
  - Full, Slow Blinks
  - Donald Korb Blink App available
  - Close, Pause, Pause, Open, Relax
- Gives a patient purpose
- Video proof helps with education.



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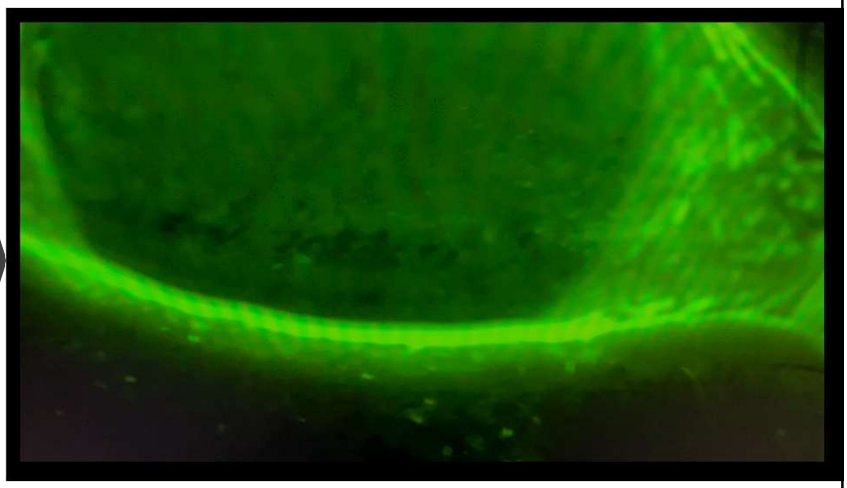
Incomplete blinking slowed to half speed



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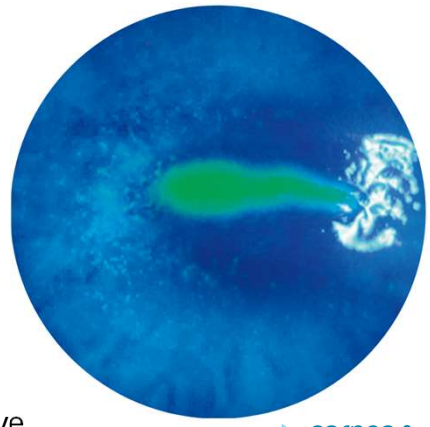
22

Neurotrophic Keratitis

- Often misdiagnosed as DED
- 2 key factors
  - Decreased corneal sensitivity
  - Signs of keratitis – central to infero-central
- Stain without pain - Patients don't use drops
  - Diabetes, MS, Parkinson's
  - LASIK/Corneal Surgery
  - Ocular Toxicity and Extended CL wear
  - HSV and HZO
  - PRP involving 3 and 9 o'clock treatment
  - Retinal surgery – ports impact Axenfeld's Nerve Loop



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23

Neurotrophic Keratitis:

Pattern recognition is key

Pearl

NK vs DED

Lots of overlap
Both have

- neurosensory abnormalities
- Persistent PEK
- Stromal Ulceration
- Loss of homeostasis
- Clinically NK is similar to moderate DED

Traditional Mackie Classification

Stage I: Punctate Keratitis
But no mention of pattern or location (approx. 90% of cases)
Routinely misdiagnosed as DED

Stage II: **Persistent epithelial defect (PED)** Nonhealing lesion with rolled epithelial edges, Descemet's folds, sterile AC reaction

Stage III: **Stromal melt/ulceration**
Deeper ulceration into stroma, perforation/melt risk

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Neurotrophic Keratitis:

Pattern recognition is key

Pearl

Stage 1 NK patients
Are mostly asymptomatic
Be vigilant

Expanded Mackie Classification from John E. Affeldt, MD (soon to be published)

Stage I: Punctate Keratitis (5 distinct variants) All central to infero-central in the HOT zone! Pearl

- **Galle Spot**
- **Central Band**
- **Blizzard/Milky Way**
- **Hurricane/Vortex**
- **Dendriform**

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NK Stage I Punctate Keratitis (must use Fluoresceine)

- Galle spots:
  - is the most treatment responsive of all NK variants
- Rare -discrete vertically elongated facets of PEE's
  - located within/above the corneal vertex zone HOT zone
  - Best seen 4 mins after dye instillation

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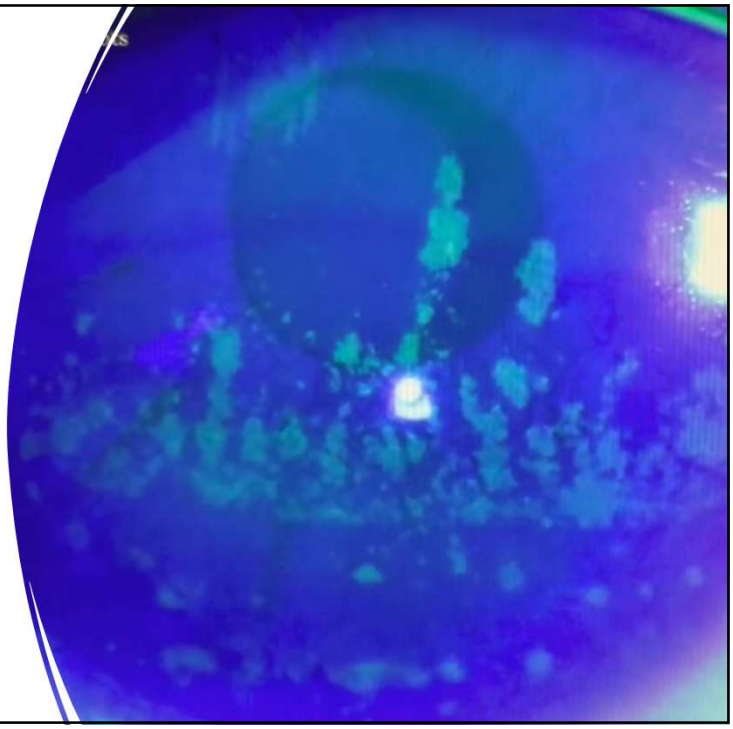

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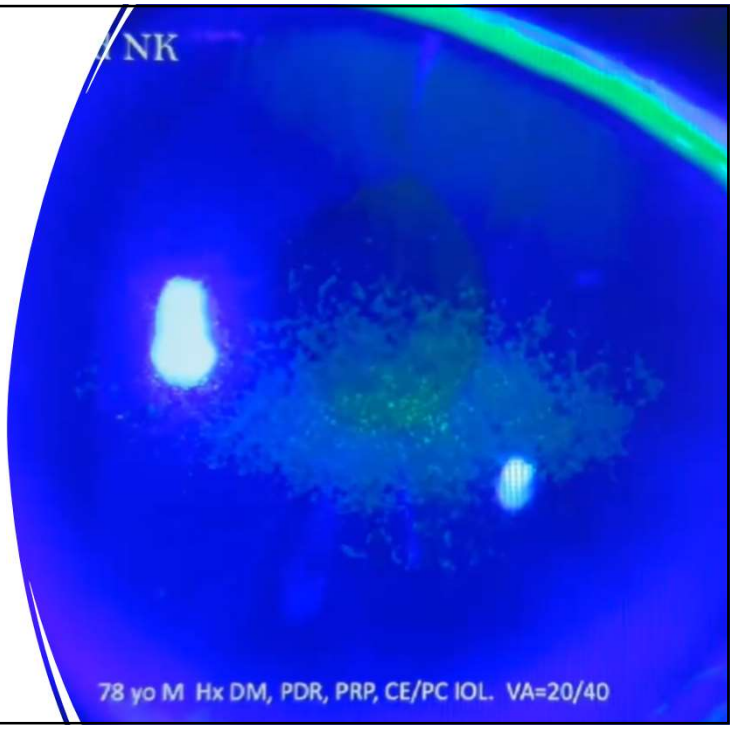
NK Stage I Punctate Keratitis

- Central Band:
  - most common presentation of all NK variants
  - This is in the HOT-zone – Central/Infero-central



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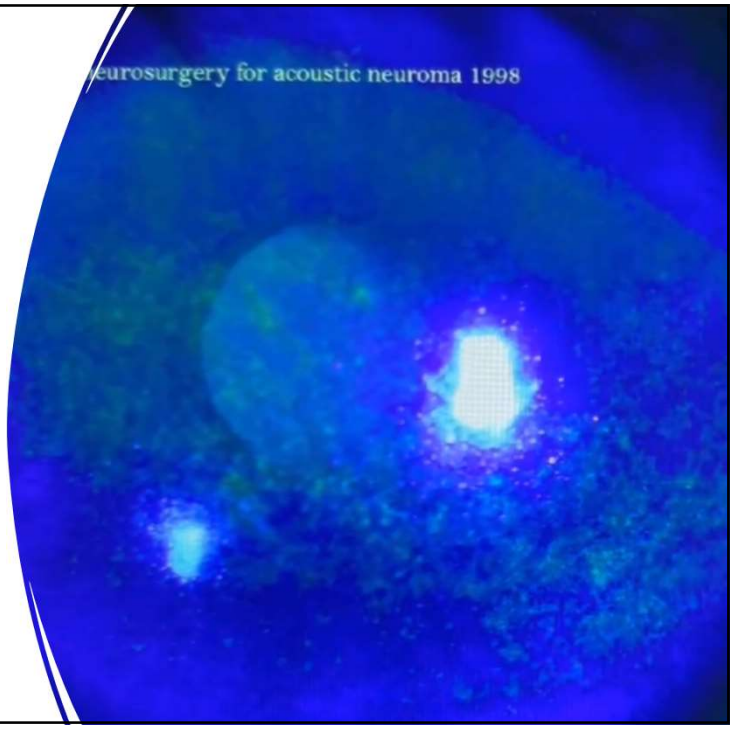
NK Stage I Punctate Keratitis

- Blizzard/Milky Way:
  - Often mistaken for DED
  - This is in the HOT-zone – Central/Inferocentral



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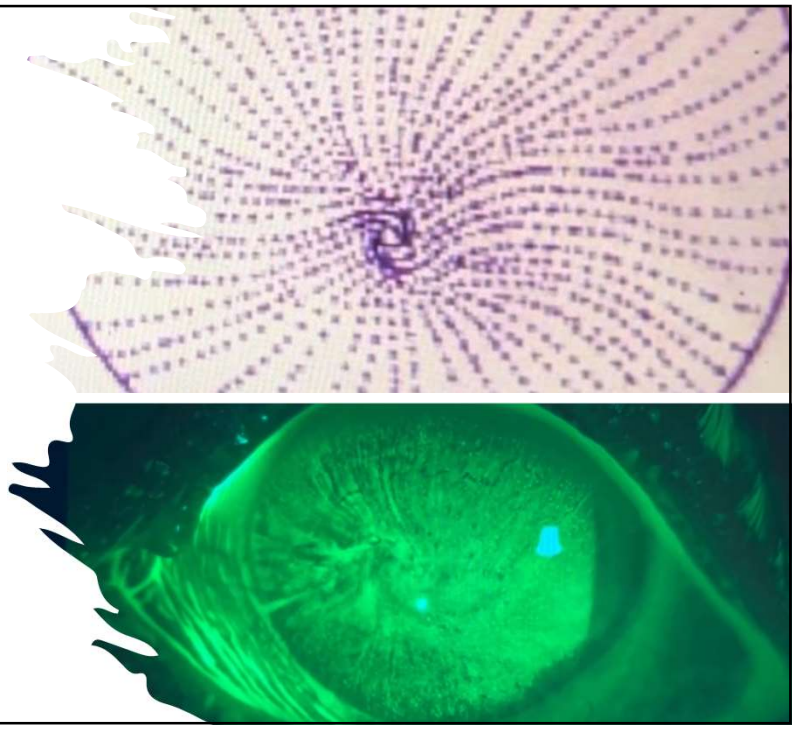
NK Stage I Punctate Keratitis

- **Hurricane/Vortex:**
- Follows the corneal nerve pattern closely



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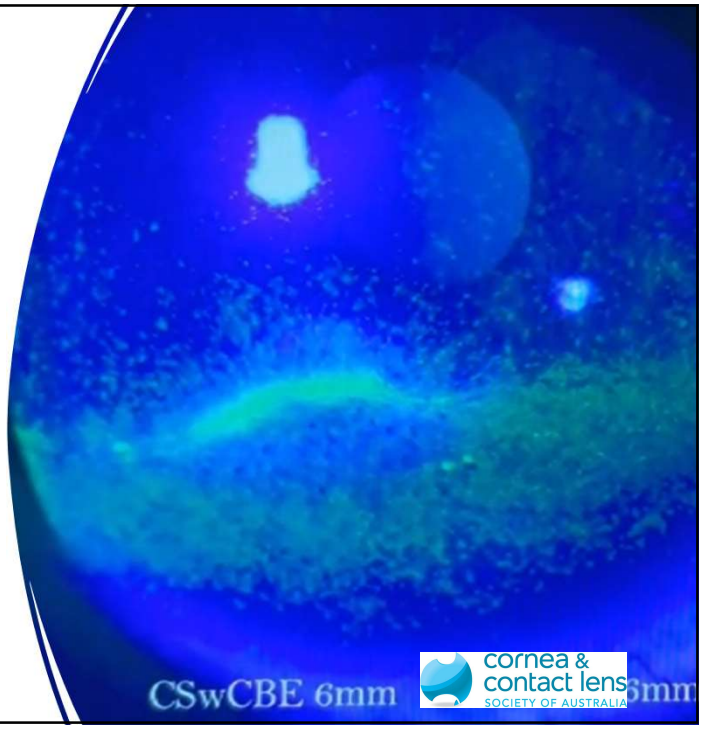
NK Stage I Punctate Keratitis

- **Dendriform: -** vortex variant
- Like drug keratopathies (amiodarone)
- Not like herpetic dendriform lesions

no dichotomous branching, no end bulbs

- Horizontally elongated, infero-central,

sitting in a field of punctate keratopathy.



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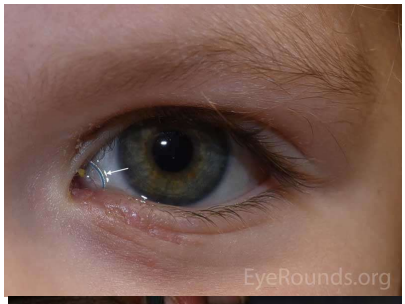
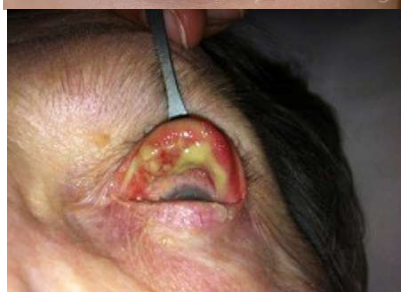
Dry Eye Masquerader's

- Nasolacrimal Duct Obstruction
  - Epiphora often unilateral
  - Sticky eye
  - Muco-purulent discharge
  - Often worse upon waking
- Giant Fornix Syndrome
  - Over 65
  - Purulent proteinaceous discharge
  - Chronic course often misdiagnosed
  - Superior fornix most common





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Dry eye and RGPs

Pearl

- Several RGP wearers >20 yrs
- Not protein cleaning
- Commonly use all-in-one Cleaner/Conditioner
- Do you routinely check on what care and maintenance your patients are using?

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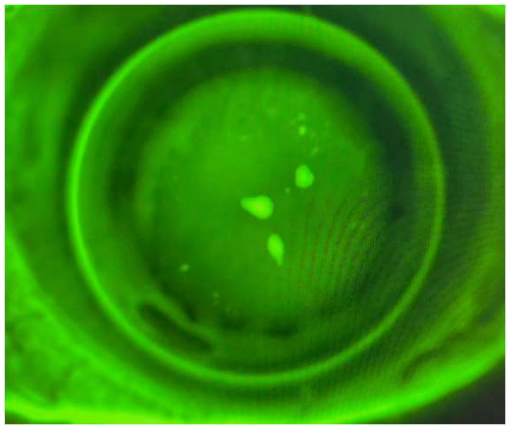

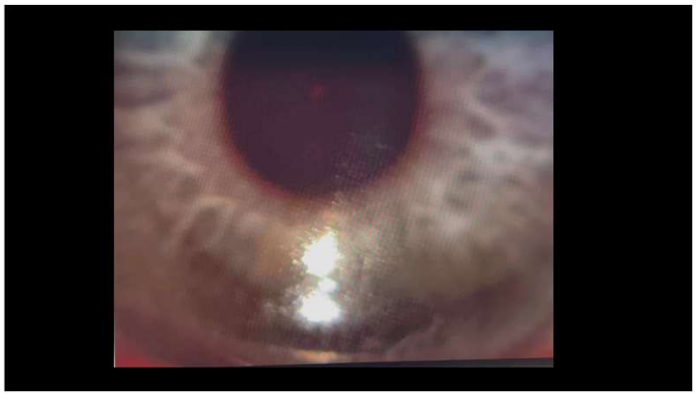

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Case History Revelations from an RGP Patient

- Has never used protein treatment
- All-in-one Solution NO RUB.
- Rinses case and RGPs in tap water
- Several times a day, places in his mouth to clean
- Never washes his hands
- Tops up CL case solution
- Case >5 years old – mouldy, dirty, slimy inside
- RGPs > 5 years old
- Worried about dry eyes and unstable vision…
- Asked for care instructions……

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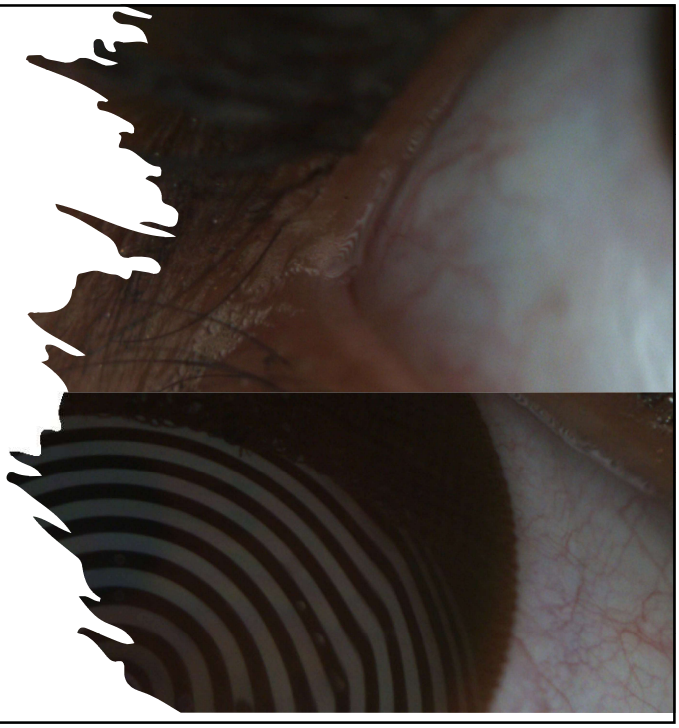
Dry eye and Soft CLs

- CL drop out reason
- Greasy tears have been shown to improve comfort but…
- Changed/increased biofilm – look for froth
- Do you routinely check on what care and maintenance your patients are using?



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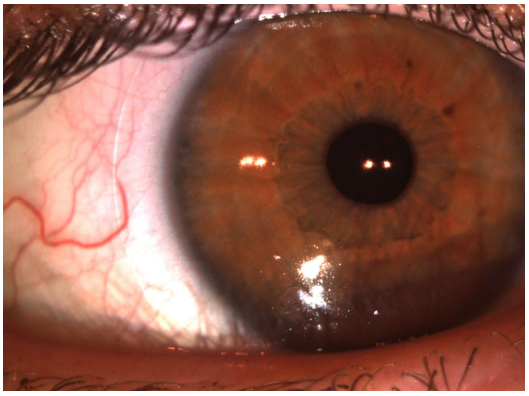
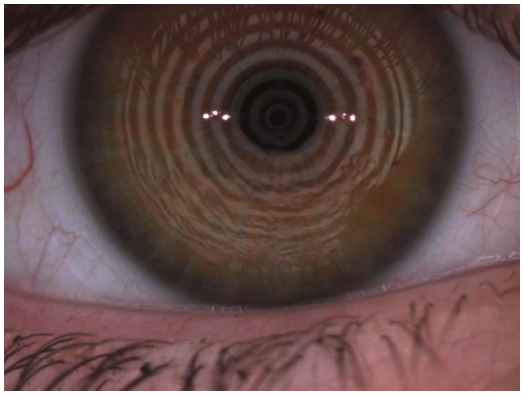
Dry eye and Soft CLs

Pic: Protein drying on the surface



Pic: Breakup amid greasy tear film



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Case History and Education and KPIs ('Key Patient Indicators')

Dr. Art Epstein :- "Our patient is the most sensitive instrument we have."

- ❖Many Patients may come to you having used lots of things without success
- ❖Detailed Case History is essential
- ❖Start with broad open questions, then listen!
- ❖Make a list of tried and failed therapies
- ❖Make a list of what they are currently doing/using
- ❖Patient education essential
- ❖Dry eye questionnaires are some of the most important metrics we can capture.

Damon Dierker, OD, FAAO, Tracy Doll, OD, FAAO (2024, Jun 25). Practice Makes Perfect: The Dry Eye Dialogue. Eyes On Eyecare. https://eyesoneyecare.com/resources/practice-makes-perfect-the-dry-eye-dialogue/

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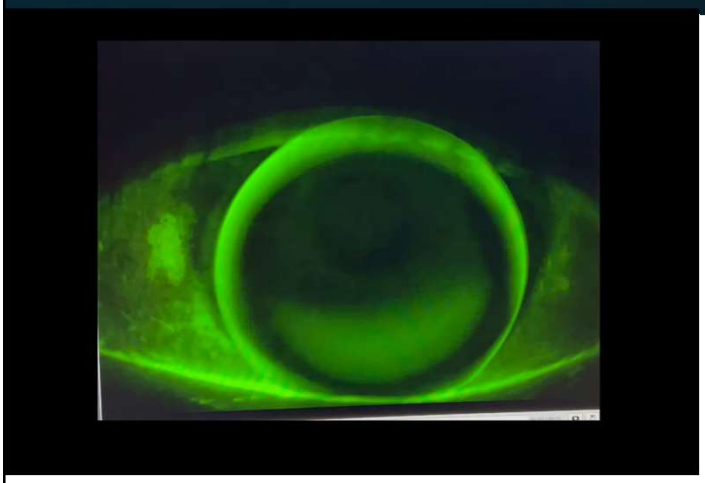
Education is key



- Patient's eye anatomy knowledge?
- Photos and videos - educate my patients
- No access to imaging - discuss and demonstrate e.g. blinking
- No different to talking RGP fitting
- How many problems can you see in this video?

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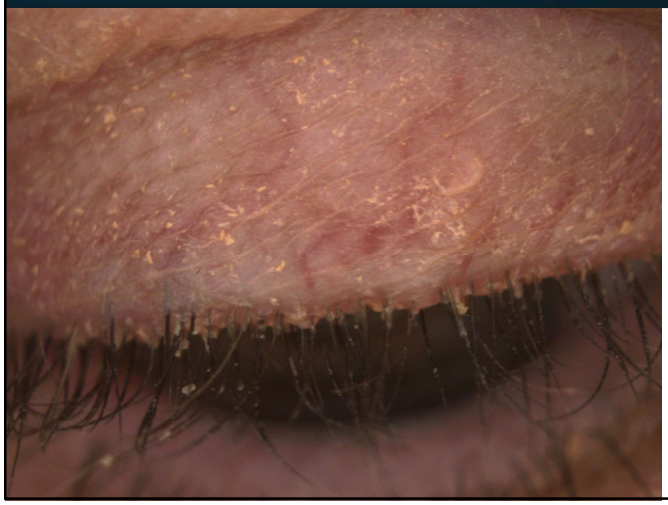
Slit Lamp - Lids and Lashes (L.L.P.P.E.P.R.) Look Lift Push Pull Educate Prescribe Review



- First thing to examine
- Collarettes
- Telangiectatic vessels
- Notching, Thickening, lash loss
- Froth
- Blinking
- FES
- Korb-Blackie light test

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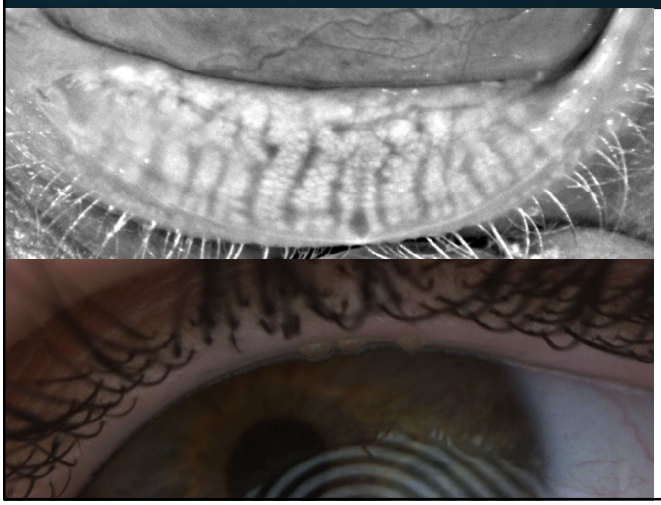
Slit Lamp – Meibomian Glands



- Gland capping
- Inflammation
- Gentle sustained pressure
- Cloudy, turbid, paste
- Transilluminator/penlight behind an everted lid

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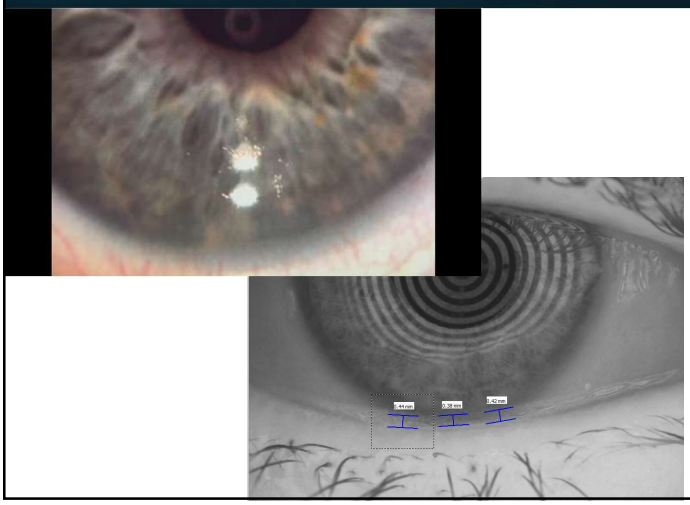
Slit Lamp – Tear Film



- Tear Meniscus <0.2mm (abnormal)
- Schirmer strip <5mm (abnormal)
- NITBUT <11 secs (Short)
  - <7 Secs (abnormal)
- S/Lamp mirror reflection
  - Blurry/ unstable
  - Debris and viscosity

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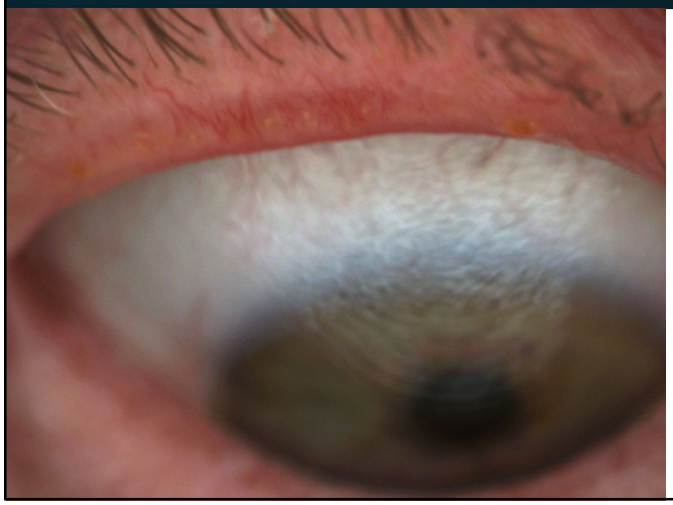
Ocular Rosacea example



- Ocular Rosacea
  - a picture says a…….
- Show the image - discuss correlation with symptoms
  - Telangiectatic vessels
  - Thickened lid margin
  - Blocked meibomian glands
  - Secondary demodex
- Offer the best treatment options, topical vs IPL or LLLT

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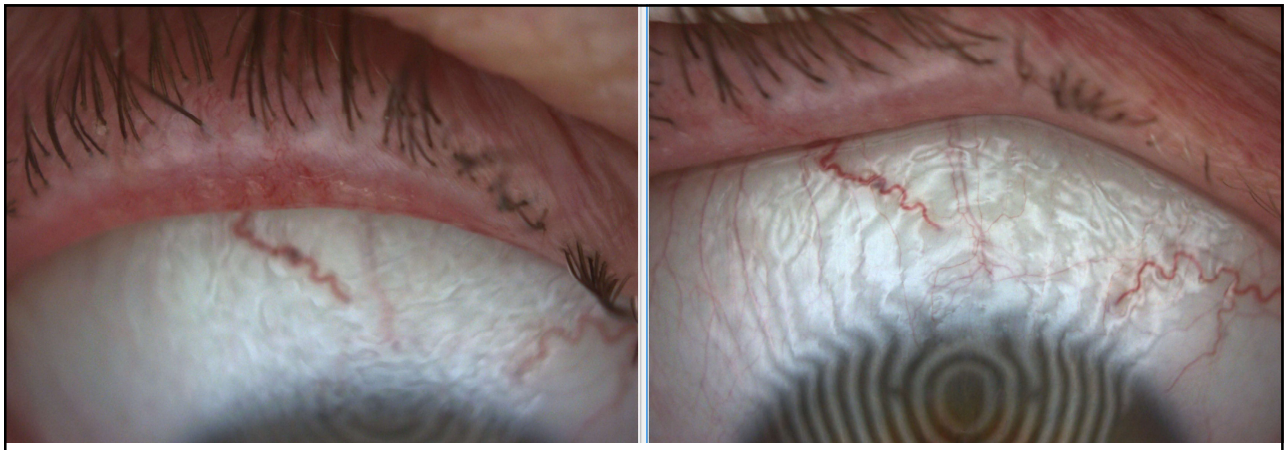

Before and After Zocular Foam for 14 days

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Offer the best treatment option

- Offer the best treatment option for each patient
  - If concern is raised about expense, propose alternatives with explanation on expected outcomes
- Avoid being Wishy-washy – insinuates that all treatments are the same
- Be clear- each treatment is personally tailored
  - Treat the signs
  - Don't repeat mistakes

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Final thoughts

- Keep it as simple as you can
- Try a three-step process like the following
- Clean , Calm, Protect
  - Clean – Zocular/Blephadex
  - Calm - IPL/ZEST
  - Protect – Silicon sleep googles/Cationorm
- Avoid giving more that 5 things to do, 3 is better
- Use Follow up emails to provide more information
- If you have more then discuss at the review

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Emails

To avoid overloading your patient

Send a sequence of emails

Email 1. Cleaning eyes. Can discuss all options to keep eyes clean, makeup removal, foams, non-waterproof mascara, replacement periods

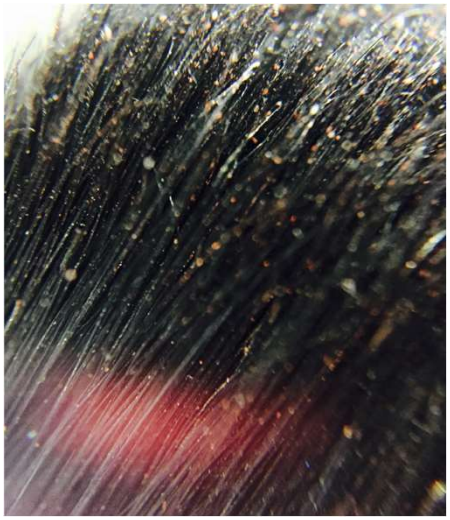
This educates the patient about good behaviour and repeats instructions and advice.

Email 2. Medication prescribed summary

Clarifies complex instructions and various eye drops and oral options.

Email 3. In clinic treatment options etc.

IPL/Blephasteam/Rexon/Lid debridement



Pearl **Include a personal line in each email, eg, By the way I have 4 miniature goats at home.**

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Always give credit…

- Don’t badmouth
- Dry eye therapies - rapidly emerging science and research
- Send educational and thoughtful reports back
- I send I copy of my Initial workup report to the patient
- I ask if they are happy if I share it with the referring practitioner

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Pipeline Drugs

- **Livatrep** – Topical ocular TRPV 1 Antagonist
  - Reduces pain through inhibition of nociceptors
- **Acoltremon** – Topical TRMP8 Agonist
  - Increases basal tears, cooling sensation, homeostasis restorer
- **AZR-MD-001** – Keratostatic, Keratolytic, Lipogenesis
  - Decreased keratinisation, Breaks up keratin aggregates, Increases meibocyte maturation rate.
- **Reproxalap** - RASP inhibitor – potent anti-inflammatory
  - Similar to steroids – less risk, alternative
  - Action is upstream of immunomodulators

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Thank You

- Martin Robinson
- Martin's Eyecare
- Ph 0409874355
- Email:- martinrobinsonoptom@gmail.com

- Remember to Listen
- Remember Patterns
- Remember Fluorescein
- Remember B.E.I.S.T.O.
- Remember L.L.P.P.E.P.R.

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