

Case Files - OSD

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Financial Disclosures For Marc R Bloomenstein, OD, FFAO

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All financial relationships have been mitigated.

Dry eye meds

What are my options?
Are they all the same?
How to choose?

What are my options?



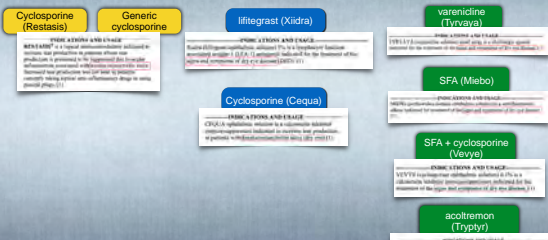
Milton Hom, OD, FFAO.

Are they all the same?



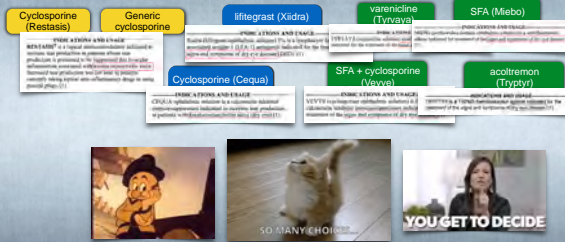
Milton Hom, OD, FFAO.

Are they all the same?



Milton Hom, OD, FFAO.

How to choose?



Milton Hom, OD, FFAO.

Case: The Impatient patient



Impatient patient

- 62-year-old retired teacher
- Started generic cyclosporine 5 weeks ago
- BID, compliant
- Says: "Still scratchy and red... I thought this would work by now"
- TBUT 3 sec
- Inferior SPK
- Wants to quit

Impatient patient

- 1st generation cyclosporine drops takes 1-3 months to work
- Cyclosporine = hydrophobic (water hating)
- Emulsion technology (like salad dressing)
- Emulsions: release from "soap bubble" and penetrate the cornea.
- Low bioavailability

Impatient patient

- Semifluorinated alkane (SFA):
 - Fluorinated end (Hydrophobic)
 - Hydrocarbon end (Hydrophilic)
- Fast release
- Low surface tension = great spreading
- Higher bioavailability

Impatient patient

- "Loteprednol etabonate induction therapy 2 weeks before the initiation of long-term tCsA treatment for chronic dry eye disease provides more rapid relief of dry eye signs and symptoms with greater efficacy than tCsA and AT alone"
- "When rapid rehabilitation of the ocular surface is needed to reduce aberrations, CsA-LE is an appropriate choice"

Sheppard JD, Donnerfeld ED, Holland EJ, Skornin CB, Solomon R, Solomon KD, McDonald MB, Perry HD, Lane SS, Pflugfelder SC, Samudre SS. Effect of loteprednol etabonate 0.5% on initiation of dry eye treatment with topical cyclosporine 0.05%. *Eye Contact Lens*. 2014 Sep;40(5):289-96. doi: 10.1097/ICL.000000000000049. PMID: 25083776.
Hovanesian J, Chester T, Sorenson RC. A Prospective Study of Cyclosporine A 0.1% Combined with Loteprednol 0.2% vs Cyclosporine A 0.05% Alone in the Treatment of Dry Eye. *Clin Ophthalmol*. 2023 Aug 2;17:2181-2191. doi: 10.2147/OPTH.S419600. PMID: 37554931; PMCID: PMC10404532.

What?

Cyclosporine takes too long 1-3 months

So what?

1st G cyclosporine = low bioavailability due to emulsion/emulsion-like vehicles

Now what?

Supplement w/steroid for 2 weeks
Switch to cyclosporine w/SFA drop
Stay and reassure

Case: "I can't take my lenses out at work"

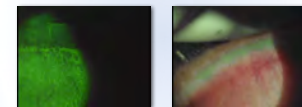
CL discomfort

29-year-old ER nurse
12-hour shifts
Daily disposable soft CLs
End-of-day dryness and blur
Removes lenses early most days
Tried lipid tears → blurs vision
Says: "I can't keep taking lenses out to use drops"

CL discomfort

TBUT 4 sec
Mild lid wiper epitheliopathy
Minimal staining
Normal Schirmer

Case: CL dryness



When patients can't use drops...

Don't change the drop,
Change the route

What?

CL discomfort, even while wearing daily disposables

So what?

Does not want to take CL out during the day to use meds

Now what?

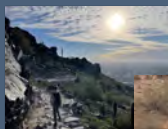
Add varenicline nasal spray; use rewetter with HA.

"Bobby...!"

911: "What's your Emergency?"

BD: "I have a nine alarm fire on my eyelids"

- Bobby is a Fire Captain for Phoenix
- He is the spokesperson PFD
- "Those bumps are coming back! And I can't stand to look at myself...(09.2023)
- Previous Treatment
 - Moist heat, Z-Pack, Zylet drops aid
 - Help!



Oy vey!!

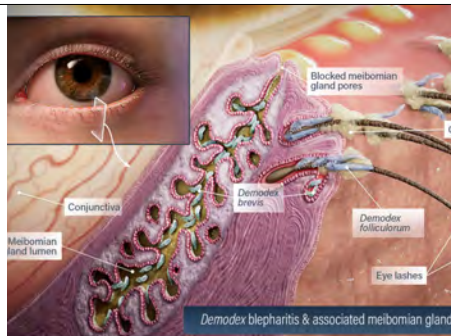
I told Bobby to come into the office.
He has a flat choroidal lesion in OS
and he has this:



Demodex Blepharitis

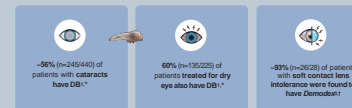
October 2023-Patient #1

- Discussed the use of lotilaner 1% BID
 - "Do you think it was the demodex that has increased and is causing my lid issues?"
- Started lotilaner ophthalmic solution 0.25% Nov 2024 (BID for 6 weeks)
- "This is amazing, my eyes feel great."
- You may be the best doctor I have been to in my life (I presume he thought that)
- August 2024
 - "I think I am getting a new bump. I started the Xdemvy from last year. This is a miracle drug."
 - May I have some more please???



Demodex blepharitis (DB) is highly prevalent, but underdiagnosed.^{1,2}

- DB affects ~58% of eye care patients in the US!
 - That's approximately 25 million patients!



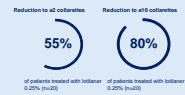
References: 1. Taylor W et al. Clin Ophthalmol. 2022;16:1153-1164. 2. O'Day J et al. Clin Ophthalmol. 2021;16:2879-2887. 3. Tolosa W et al. Binocular Res Vis. 2022;10:201616.



Key Study Data – ERSA and RHEA

ERSA and RHEA were two separate, randomized pilot studies evaluating the safety and efficacy of lotilaner ophthalmic solution 0.25% and vehicle for the treatment of DB with MG. Eligibility criteria and endpoints for the ERSA and RHEA studies were identical.

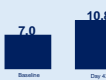
ERSA: Collarette grade reduction and responder rate at day 43



RHEA: At Day 43, vehicle (n=10) did not show statistically significant improvement in mean collarette grade compared with baseline (P < .1)

ERSA: Patients treated saw ~54% improvement in mean meibomian glands yielding lipid secretion (MGYLS) at day 43 compared with baseline

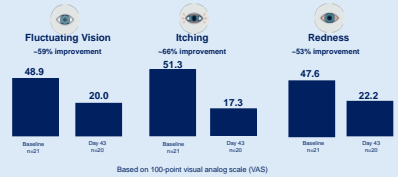
Number of expressible glands



RHEA: At Day 43, vehicle (n=10) did not show statistically significant improvement in number of MGYLS compared with baseline (P < .1)

Data on file, Teva Pharmaceuticals, Inc.

Key Study Data – Patient Reported Outcomes



RHEA: At Day 43, vehicle (n=10) did not show statistically significant improvement in patient-reported fluctuating vision compared with baseline (P < .1)

RHEA: At Day 43, vehicle (n=10) did not show statistically significant improvement in patient-reported itching compared with baseline (P < .1)

RHEA: At Day 43, vehicle (n=10) did not show statistically significant improvement in patient-reported redness compared with baseline (P < .1)

Data on file, Teva Pharmaceuticals, Inc.

Demodex and Hordeola

Treatment strategies

- Microbepharoexfoliation: manual with okra polysaccharide, oscillatory cleaning in office
- Lotilaner 0.25%
- Intense Pulsed Light
- ASCRS 2022
- Full Periman IPL Protocol on YouTube: DryEyeMaster



FIGURE 5: Improvements in appearance of chalazion after one session of IPL treatment. IMAGE COURTESY LAURA M. PERIMAN, MD

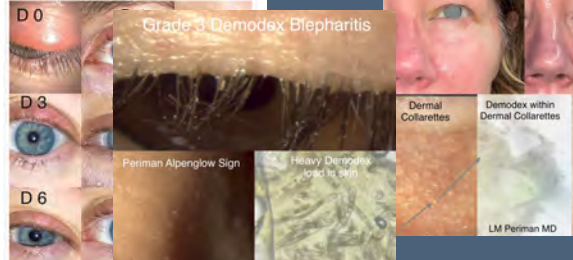
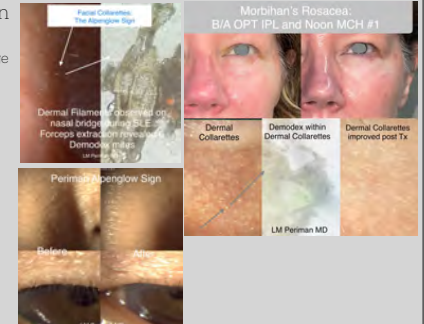


FIGURE 5: Improvements in appearance of chalazion after one session of IPL treatment. IMAGE COURTESY LAURA M. PERIMAN, MD

The Alpenglow Sign

Look at the nasal bridge

- Rapid clinical exam finding to pick up cases of suspected demodex in patients with excellent lid hygiene
- ASCRS 2024, ARVO 2024



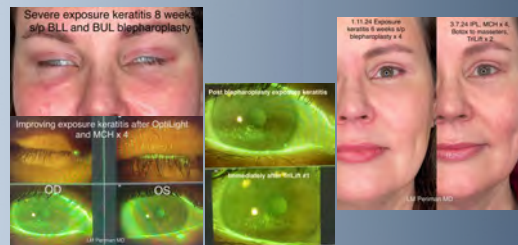
Rosacea Management

- Treat demodex:
 - In office chemical peels
 - OPT IPL
 - compounded ivermectin cream
 - dermatological skincare
 - Lotilaner 0.25%



Managing Lagophthalmos

Vectors and Muscles



Case: Ineffective meds

Ineffective meds

67-year-old male golfer
 Complains: "I've tried everything — nothing helps"
 Currently on:
 Cyclosporine BID
 Lipid tear QID
 Still fluctuating blur and dryness outdoors
 TBUT 2 sec
 Expressibility poor
 Minimal corneal staining

Manual expression



Leslie O'Dell, OD, FAAO.

Manual expression



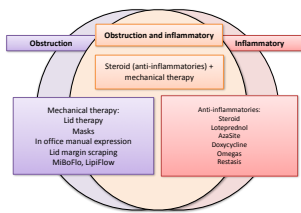
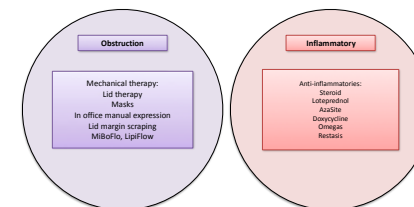
Jimmy Deom, OD

Ineffective meds

This is not a pharmacology failure
 Lipid drops can't replace secretion
 Anti-inflammatories can't penetrate
 Tear film still unstable

Ineffective meds

Two camps:
 Obstruction vs Anti-inflammatory



What?

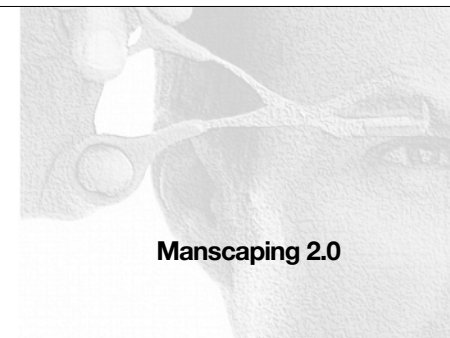
Most dry eye has MGD component

So what?

Anti-inflammatories, by themselves, have limited effect on MGD

Now what?

Supplement with mechanical therapy



Manscaping 2.0

Manscaping 2.0

- 77 yo HM
- "My primary doctor has been on my ass to get an exam. So, here I am!"
- Smokes and "Don't tell me I can't drink my beers"
- NIDM
 - Metformin 8.5ml/day
- NKMA
- Ohx-Negative

Manscaping 2.0

- Vasc
 - 20/40 ph 20/20
 - 20/25
- IOP
 - 13 mmHg OU
- Slex
 - OD: Grade 2 demodex, MGGS 3, PCIOL (open capsule)
 - OS: Grade 3 demodex, MGGS 2, PCIOL (open capsule)
- Dilated Fundus Exam
 - C/D 0.35/0.40
 - Peripheral retina flat, NNOH/NNE, No Tears or holes.



But my f...
Manscaping...
asked me...
that was...
trying to...
I did ask...
trim his..



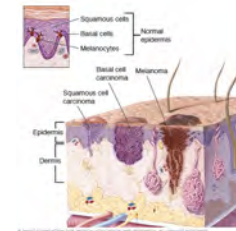
... He...
said...
't...
... one

- 90-95% of eyelid malignancies
- Most common malignant tumor of the eyes
- Arise from hair-bearing skin
- Cystic type resemble a benign inclusion cyst
 - Fibrosing difficult to Dx
 - Lie beneath and lose lashes
 - Entropion/ectropion
 - Lid notch/retraction/chalazia
 - Chronic blepharitis

Basal Cell Carcinoma (BCC)

- ▶ Location
 - ▶ LL: 50-60%
 - ▶ MC: 25-30%
 - ▶ UL: 15%
 - ▶ LC: 5%
- ▶ Hx: fair skin, sun exposure, smoking, prior BCC
- ▶ Forms: nodular, morpheaform
- ▶ Rarely metastasize
 - ▶ Recurrent or neglected may invade orbit and need exenteration

Basal Cell Carcinoma (BCC)



Ulcerated lid margin lesion



Final & Definitive Diagnosis

BIOPSY

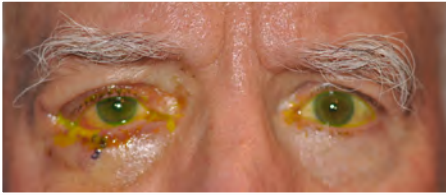
- Incisional – when we suspect a malignant lesion
 - Shave Bx
 - Punch Bx
- Excisional - ideal when we suspect a benign lesion
 - Margins are not checked



After Excision



2D PO



2M PO



Be wary of

Eyelid Neoplasms

- May arise from epidermis, dermis or eyelid adnexal structures
 - Keratinizing epidermis
 - Prominence of sebaceous glands and blood vessels
- Epidermal origin most common
- Main goal: identify and diagnose malignancy

Most periocular epithelial lesions non-malignant

Clinical judgment < 100% accurate

Whenever in doubt -> BIOPSY:

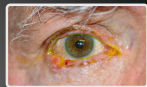
- absolutely necessary for the definitive Dx

Clinical Evaluation:
History

- Hx prior cancer
- Sun exposure
- Past radiation
- Smoking
- Skin type

Clinical Signs

- Slow painless growth
- Ulceration, bleeding, crusting
- Irregular pigmentary changes
- Destruction of normal architecture
 - Lash loss, meibomian orifices
- Pearly edge, central ulceration
- Telangiectasia
- Loss of cutaneous wrinkles



Other
Clinical
Signs

Palpable induration:
infiltration into dermis,
subcutaneous tissue

Lesions near punctum:
possible lacrimal
invasion

Fixation to deeper
tissues/bone

Lymph nodes

Restricted EOM,
proptosis: orbital
invasion

BCC

Before



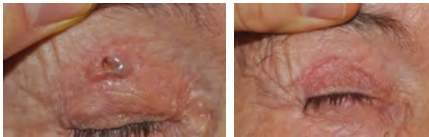
After



BCC

Before

After



BCC

Before

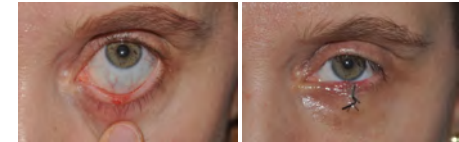
After



BCC

Before

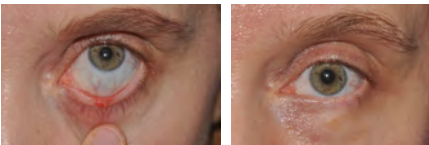
After



BCC

Before

After



BCC

Before

After



BCC

Before

After



BCC

Before

After



Other Carcinomas

Squamous Cell Carcinoma

- 40x less common than BCC for the lid
- More common epithelial malignancy of the conjunctiva
- More aggressive
- Solar injury
- In areas of actinic keratosis,



Actinic Keratosis

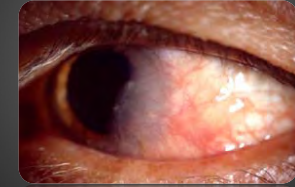
Squamous Cell Carcinoma

- Potentiated by immunodeficiency
- May resemble various benign inflammatory lesions
 - Pseudoepitheliomatous hyperplasia
 - Inverted follicular keratosis
 - Keratocanthoma
- Metastasis by lymphatic, blood, direct extension (along nerves)

Squamous Cell Carcinoma



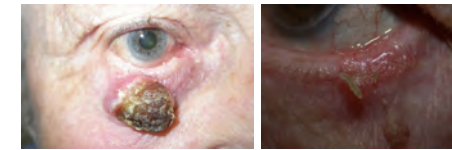
Squamous Cell Carcinoma



Squamous Cell Carcinoma



Squamous Cell Carcinoma



Treatment of SCC

- Aggressive surgical excision
- Recurrences may require orbital exenteration

Sebaceous Adenocarcinoma

- Rare malignancy
 - 1-5.5% of eyelid malignancies in U.S.
 - 33% of eyelid malignancies in China
- Highly malignant, lethal
- Sebaceous gland origin: meibomian, Zeis, caruncle, eyebrow or facial skin

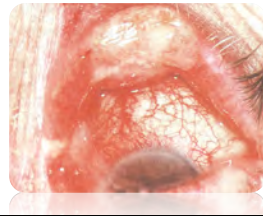
Sebaceous Adenocarcinoma

- F>M
- UL>LL
- Multicentric origin common

Sebaceous Adenocarcinoma



Sebaceous Adenocarcinoma



Presentation

- Patients commonly > 50 y/o
- Yellowish coloration
- Often masquerades as chalazion, chronic blepharitis, SLK, pannus associated w/ adult inclusion conjunctivitis
 - Misdiagnosis is delayed by average of 3 yrs.

Key Point

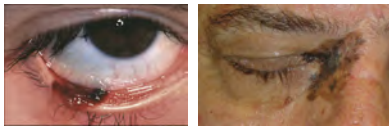
- Beware of the “chalazion” that later causes loss of eyelashes and destruction of meibomian gland orifices

Malignant Melanoma

- 5% of all skin cancers
- <1% of eyelid malignancies
- UV, genetic predisposition, mutagens
- Arise de novo, from nevi or lentigo maligna
- Acquired pigmented lesion >20-30y/o

Malignant Melanoma

- Appearance: variable pigmentation, irregular borders, may ulcerate and bleed
- Forms
 - Lentigo maligna melanoma*
 - Nodular melanoma*
 - Superficial spreading melanoma
 - Arco-lentiginous melanoma



Treatment of MM

- Depth of invasion affects prognosis
- Preop metastatic workup
- Regional lymph node dissection

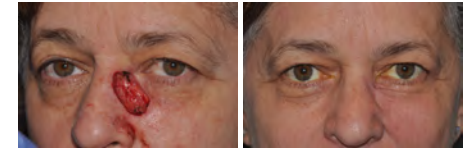




Melanoma

Before

After



Case: Tears To Trust The Tests

Eye Snow

43 year old male
Poor results with OCT and
Visual field testing
Blinks too much, eyes drying
out during testing

During GLC work-up, how
often do you instill artificial
tears for Visual Fields and/or
OCT?

- A. Seldom
- B. Sometimes
- C. Frequently
- D. Always

Visual fields testing

Frenemy

50 patients
24-2
Baseline and 1 week
Artificial tear QID

Kocabayoglu, Sibel, et al. "Effect of artificial tears on automated visual field testing in patients with glaucoma and dry eye." Canadian Journal of Ophthalmology/Journal Canadien d'Ophthalmologie 48.2 (2013): 110-114.

Frenemy

50% dry eye
Test duration, MD, number of depressed
points, and PSD improved ($p < .05$)

Kocabayoglu, Sibel, et al. "Effect of artificial tears on automated visual field testing in patients with glaucoma and dry eye." Canadian Journal of Ophthalmology/Journal Canadien d'Ophthalmologie 48.2 (2013): 110-114.

Frenemy

40 patients
Artificial tears QID Tears Naturale II
1 week
Reliability parameters, MD and PSD
significantly improved

Yenice, Ö. A. Temel, and Ö. Özümlü. "The effect of artificial tear administration on visual field testing in patients with glaucoma and dry eye." *Eye* 21.2 (2007): 214-217.

Frenemy

"Visual field testing requires concentration. This concentration during examination cause fewer blinks resulting decrease in tear film stability."

Yenice, Ö. A. Temel, and Ö. Özümlü. "The effect of artificial tear administration on visual field testing in patients with glaucoma and dry eye." *Eye* 21.2 (2007): 214-217.

Frenemy

"The use of artificial tears in patients with glaucoma with dry eye syndrome decreased VF testing time and improved test results."

Kocayöröglü, Sibel, et al. "Effect of artificial tears on automated visual field testing in patients with glaucoma and dry eye." *Canadian Journal of Ophthalmology/Journal Canadien d'Ophthalmologie* 48.2 (2013): 110-114.

OCT

Frenemy

11 patients
Time Domain OCT (TD-OCT)
1 drop Systane [mid to low viscosity tear]
Mean Signal Strength improved

Ghazi, Nicola G., and Jason W. Much. "The effect of lubricating eye drops on optical coherence tomography imaging of the retina." *Digital Journal of Ophthalmology: DJO* 15.2 (2009): 24.

Frenemy

"Eyes with poor quality OCT...with no apparent cause may benefit from the administration of lubricating drops just before image acquisition even in the absence of dry eye syndrome"

Ghazi, Nicola G., and Jason W. Much. "The effect of lubricating eye drops on optical coherence tomography imaging of the retina." *Digital Journal of Ophthalmology: DJO* 15.2 (2009): 24.

Frenemy

"We currently keep a bottle of artificial tears available on the OCT machine table for potential use in such cases."

Ghazi, Nicola G., and Jason W. Much. "The effect of lubricating eye drops on optical coherence tomography imaging of the retina." *Digital Journal of Ophthalmology: DJO* 15.2 (2009): 24.

Tears

Which artificial tear is the best?
3 artificial tear types
Compare OCT measurements
prior and post tear

Schwartz S. Hom MM. Impact of 3 different artificial tears on Ocular Coherence Tomography results. *Optom Vis Sci* 2018 American Academy of Optometry, San Antonio, TX.

Tears

Which artificial tear is the best?

52 patients
Multi-site
6 OCT measurements (3 before, 3 after)
Emulsion: Refresh Optive Mega-3
Mid viscosity (Gel): Refresh Gel drops
Low viscosity: Refresh Optive

Schwartz S. Hom MM. Impact of 3 different artificial tears on Ocular Coherence Tomography results. *Optom Vis Sci* 2018 American Academy of Optometry, San Antonio, TX.

“we recommend the use of an emulsion as it had the least negative impact on results.”

-Scott Schwartz



Schwartz S, Ross MM. Impact of 3 different artificial tears on Oracular Coherence Tomography results. Optom Vis Res 2018 American Academy of Optometry, San Antonio, TX.

Instrument	Test time	Tears
Visual field	Minutes	Mid (Gel) to low viscosity
SD-OCT	Seconds	Emulsion

Test	Tears
Visual field alone	Mid (Gel) to low viscosity
SD-OCT alone	Emulsion
SD-OCT and Visual field	Emulsion

Product	Ingredients & Action	Ingredients	Category
Systane Ultra-Classic	pH activated mucopolysaccharide	HP Guar	Viscosity
Refresh	mineral oil	oil	Viscosity
Refresh PMG/zinc Nighttime	dimers	mineral oil/wella petrolatum	Viscosity
Soothe Lubricant Nighttime	compatible solutes	L-carnitine/erythritol/cmc	Osmo-protectants/Viscosity
Optive	oil tears	mineral oil	Emulsion
Refresh Optive MGD	oil tears	mineral oil	Emulsion/Viscosity
Systane Balance	oil tears/nanoemulsifier	mineral oil HP Guar castor oil	Emulsion/Viscosity
Systane Complete	oil tears	compatible solutes	Emulsion
Refresh Digital	compatible solutes	L-carnitine/erythritol/cmc betaine	Osmo-protectants/Viscosity Cytoprotective
Refresh Optive Mega-3	oil tears/nanoemulsifier	castor oil L-carnitine/erythritol/cmc Cytoprotective	Emulsion Osmo-protectants/Viscosity
IVi2a	high shear thinning	sodium hyaluronate (HA)	HA
blink tears	high shear thinning	sodium hyaluronate (HA)	Osmo-protectants HA
Refresh Relieva	high shear thinning	sodium hyaluronate (HA)	Osmo-protectants/Viscosity
Biovue Hydration Boost	compatible solutes	L-carnitine/erythritol/cmc	HA
Oasis	high shear thinning	sodium hyaluronate (HA)	HA
Systane Hydration	high shear thinning	sodium hyaluronate (HA)	HA/Viscosity
blink Triple Care	high shear thinning	HP Guar	Emulsion
Refresh Optive Mega-3	compatible solutes	betaine	Emulsion
Refresh Relieva PF Xtra	high shear thinning	sodium hyaluronate (HA) L-carnitine/erythritol/cmc	HA Cytoprotective
Systane Pro	high shear thinning	HP Guar	Osmo-protectants/Viscosity
	oil tears/nanoemulsifier	sodium hyaluronate (HA)	Emulsion/Viscosity HA

Soothe XP	oil tears	mineral oil	Emulsion
Refresh Optive Mega-3	oil tears	mineral oil HP Guar castor oil	Emulsion/Viscosity
Systane Balance	oil tears/nanoemulsifier	mineral oil HP Guar castor oil	Emulsion/Viscosity
Systane Complete	oil tears	compatible solutes	Emulsion
Refresh Digital	oil tears	L-carnitine/erythritol/cmc betaine	Osmo-protectants/Viscosity Cytoprotective
Refresh Optive Mega-3	oil tears/nanoemulsifier	castor oil L-carnitine/erythritol/cmc	Emulsion Osmo-protectants/Viscosity
blink Triple Care	high shear thinning	sodium hyaluronate (HA) castor oil	Emulsion HA
Systane Pro	high shear thinning	mineral oil HP Guar sodium hyaluronate (HA)	Emulsion/Viscosity HA

What?

Patient poor OCT results

So what?

Use an artificial tear, no guidance on which one

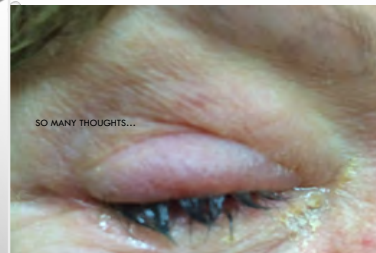
Now what?

Use an emulsion tear prior to OCT

HOLIDAY AT HOLIDAY INN

MAY I HAVE SOME MORE PLEASE?

SO MANY THOUGHTS...



DIFFERENTIAL

- ALLERGIC CONJUNCTIVITIS
- BUG BITE
- BACTERIAL CONJUNCTIVITIS
- VIRAL CONJUNCTIVITIS
- PRESEPTAL CELLULITIS
- CELLULITIS
- CORNEAL ULCER
- FOREIGN BODY
- HOT TUB
- TRAUMA



3 TYPES OF EYE BURNS

- **ALKALI BURNS:** THESE BURNS INVOLVE HIGH PH CHEMICALS, AND THUS ARE THE MOST DANGEROUS. THEY ARE POWERFUL ENOUGH TO PENETRATE THE EYE, AND CAUSE DAMAGE TO ITS VITAL INNER COMPONENTS. IN THE WORST CASES, THEY CAN LEAD TO CONDITIONS LIKE CATARACTS AND GLAUCOMA AND MAY CAUSE VISION LOSS OR BLINDNESS.
- **ACID BURNS:** LOWER PH BURNS THAT ARE LESS SERIOUS THAN ALKALI BURNS, BUT STILL DANGEROUS. THESE BURNS ARE UNABLE TO PENETRATE THE EYE, BUT STILL MAY CAUSE SIGNIFICANT DAMAGE TO THE CORNEA, WITH THE POTENTIAL TO CAUSE VISION LOSS.
- **IRRITATIONS:** THESE BURNS ARE NEUTRAL IN PH

SYMPTOMS OF CHEMICAL BURNS

- EYE REDNESS
- EYE IRRITATION
- EYE PAIN
- SWELLING OF THE EYE
- BLURRED VISION
- INABILITY TO OPEN THE EYE
- FEELING OF FOREIGN OBJECTS IN THE EYE

TELEPHONE TRIAGE TIPS

- IRRIGATION PROCESS BEGINS ON SITE BEFORE THE PATIENT SEEKS CARE.
- USE SHOWER OR HOSE IF OUTSIDE WORK PLACE
- ATTEMPT TO DETERMINE IF THE TYPE OF CHEMICAL THAT ENTERED THE EYES;
- ATTEMPT TO DETERMINE IF THE PATIENT IS WEARING CONTACT LENSES. IRRIGATION SHOULD NOT STOP IN AN EFFORT TO REMOVE CONTACT LENSES.
- A MINIMUM OF 20 TO 30 MINUTES BEFORE THE PATIENT IS BROUGHT TO THE OFFICE.
- WHEN THE PATIENT IS READY TO MAKE THE TRIP TO THE ER OR OFFICE, REMIND THEM TO BRING THE CONTAINER THAT HELD THE OFFENDING CHEMICAL. IMPORTANT INFORMATION MAY BE OBTAINED FROM THE LABELING.
- IF THE INJURY OCCURRED IN THE WORKPLACE, ASK THE PATIENT TO BRING THE MSDS (MATERIAL SAFETY DATA SHEET) IF AVAILABLE.
- IF THE INJURY OCCURRED WHERE THERE IS NO OR LIMITED ACCESS TO WATER FOR IRRIGATION, REFER THEM TO THE NEAREST EMERGENCY ROOM OR YOUR OFFICE, WHICHEVER IS CLOSER.
- ASSIST WITH DISPATCHING EMERGENCY SERVICES AS NEEDED.

TREATMENT

- ASSESS THE CORNEA AND CONJUNCTIVA
 - CORNEA INTACT-MILD SPK
 - PROPHYLACTIC ANTIBIOTIC
 - TOPICAL STEROID (LOTEMAX GEL)
 - PRESERVATIVE FREE TEARS
 - CYCLOPLEGE FOR PAIN
 - CORNEA HAZE/NECROTIC
 - ALL THE ABOVE
 - CONSIDER DEBRIDMENT
 - SODIUM ASCORBATE DROPS (10%) Q1H WHILE AWAKE
 - VITAMIN C-1000MG/DAY
 - PROKERA



thank you!

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