

FOCUS ON THE LIDS FOR OSD SUCCESS

MELISSA BARNETT OD, FAAO,
FSLs, FBCLA



DISCLOSURES – MELISSA BARNETT, OD, FAAO

- ABB
- Acculens
- Allergan
- Bausch + Lomb
- Bruder
- BostonSight
- Contamac
- CooperVision
- Dompé
- Gas Permeable Lens Institute (GPLI)
- JJVC Vistakon
- Lenstechs
- Mojo
- Ocusoft
- Oyster Point
- Percept
- RVL Pharmaceuticals
- Science Based Health
- Scleral Lens Education Society
- SightSciences
- STAPLE program
- SunPharma
- SynergEyes
- Tarsus

Digital Device Use

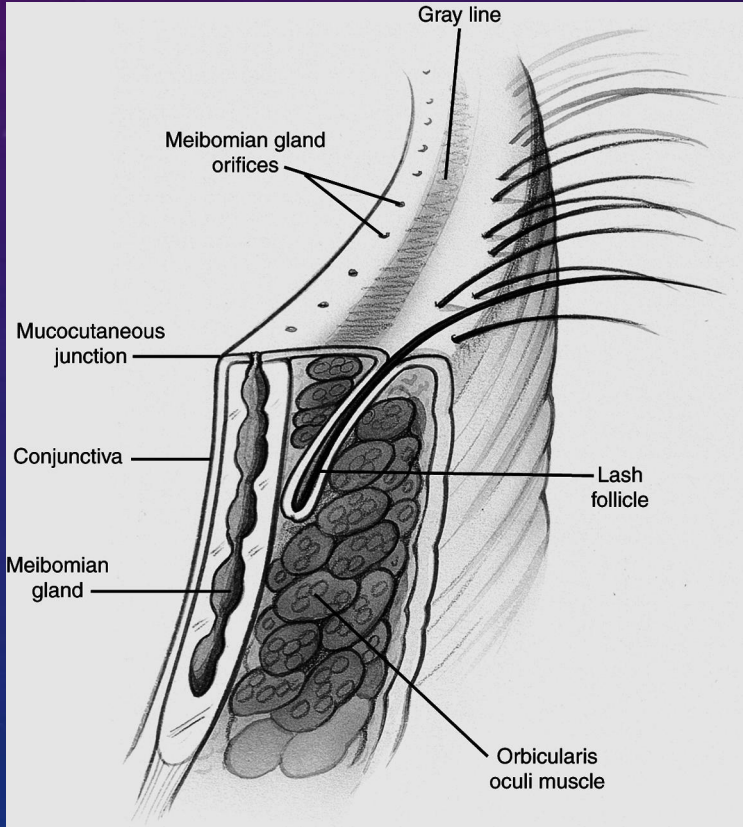
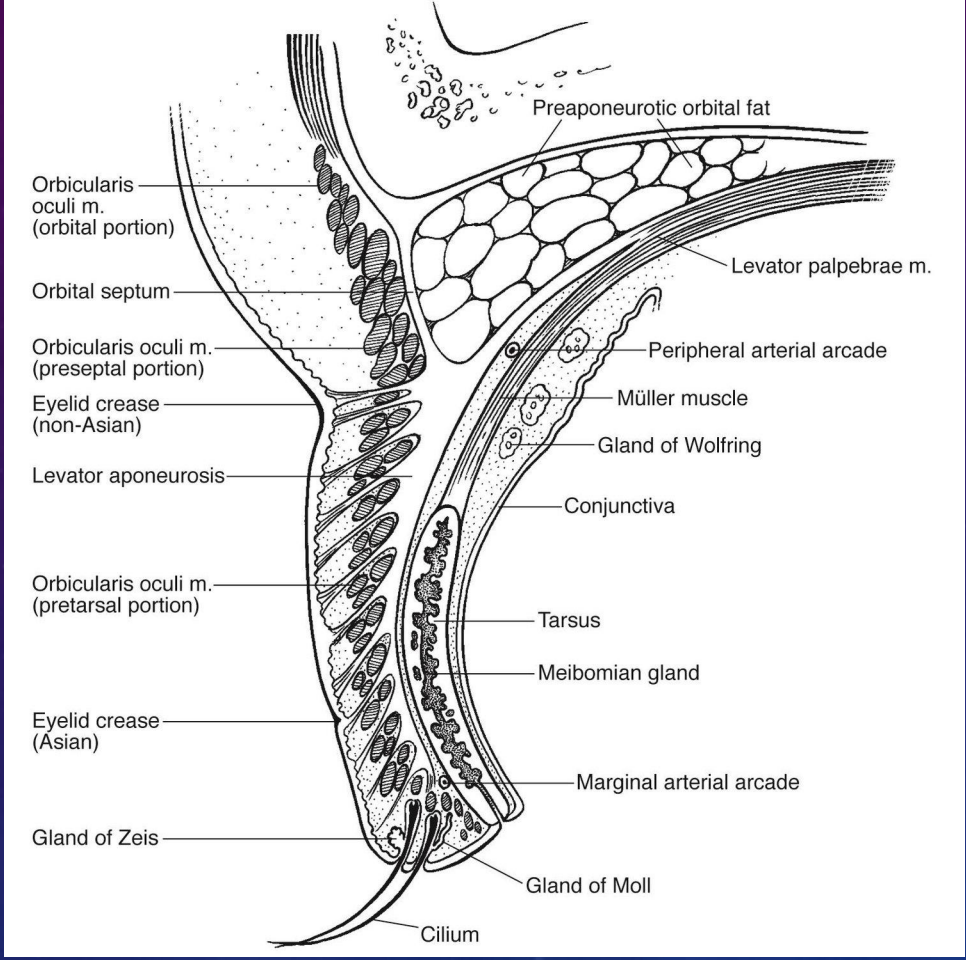
MGD

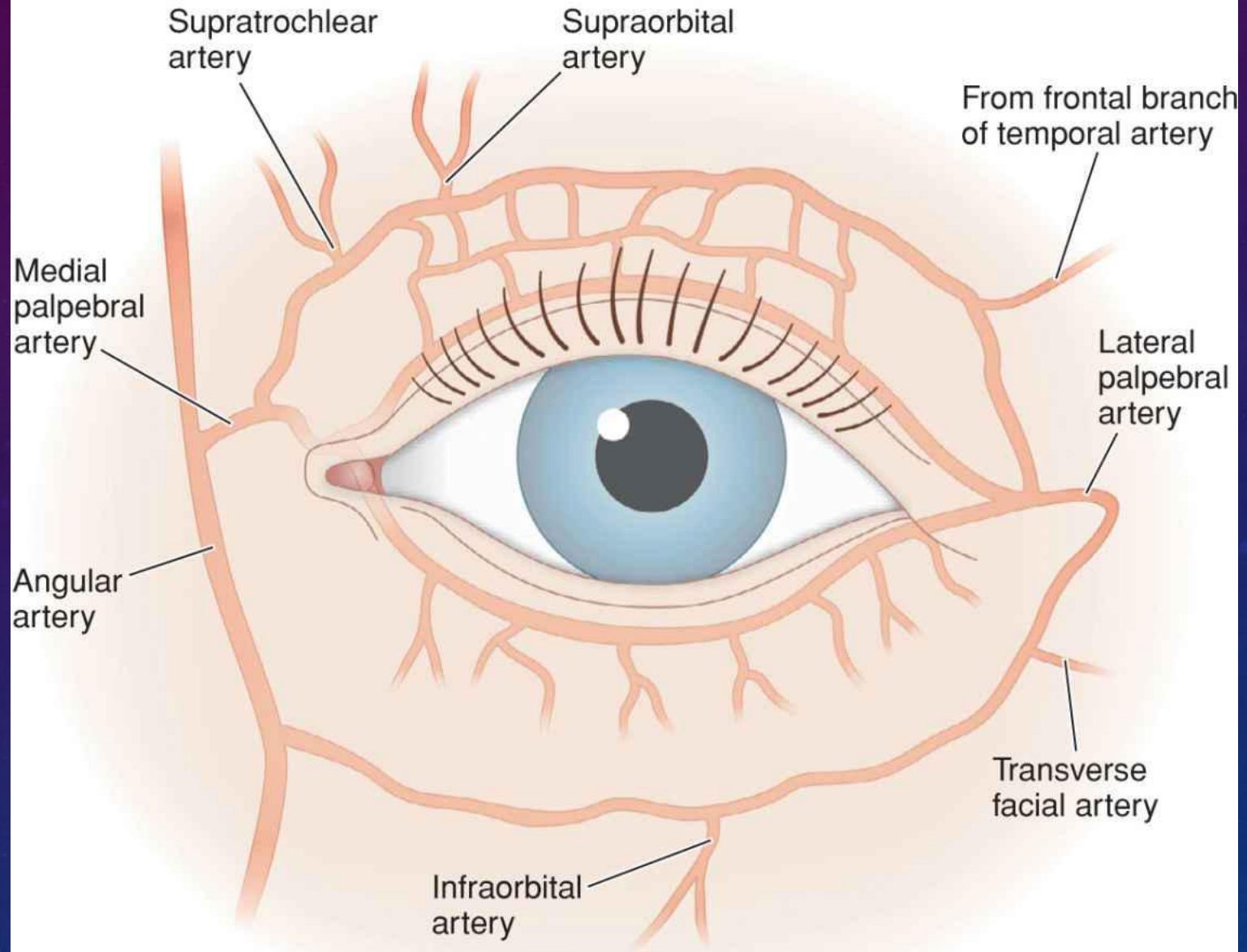
MADE

Ptosis

Demodex

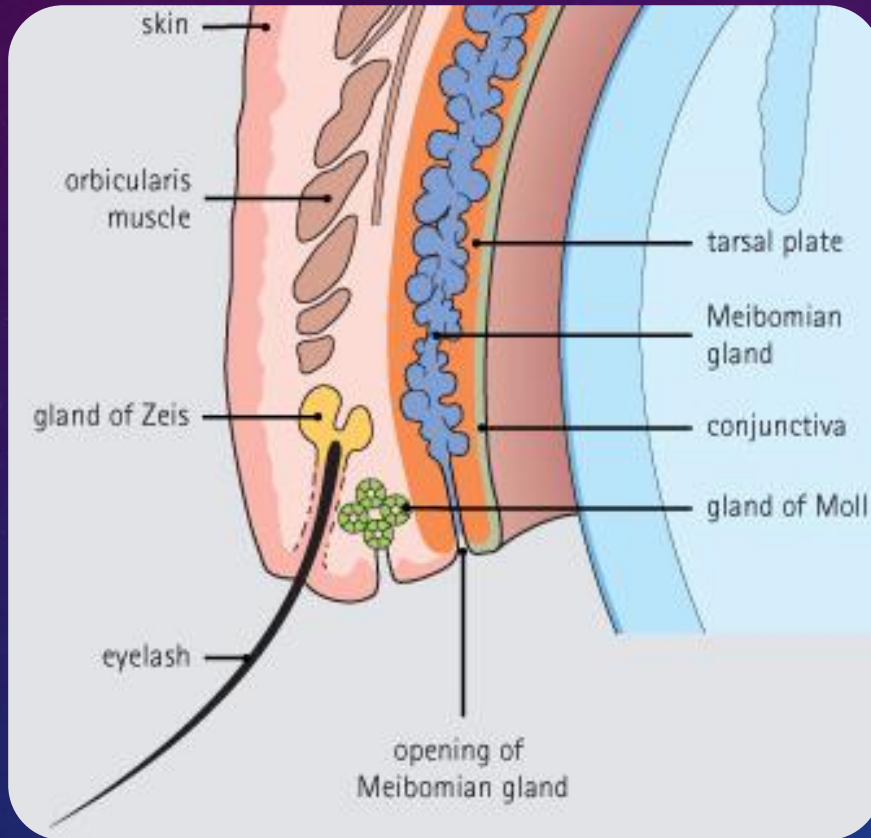
Incomplete Lid Seal





B

MEIBOMIAN GLAND ANATOMY



Mechanism of Excretion



Action of blinking



Contraction of the
orbicularis oculi muscle



Compression of tarsal plate



Milking action



DIGITAL DEVICE USE



yoursightmatters.com



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Familylivingtoday.com

BLINK RATE

1040-5488/91/6811-0888\$03.00/0
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Vol. 68, No. 11, pp. 888-892

Effect of Visual Display Unit Use on Blink Rate and Tear Stability

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Department of Optometry and Vision Science, Glasgow Polytechnic, Glasgow, Scotland, United Kingdom

VDU blink rate was 5x less than non-VDU

Clinical Optometry

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ORIGINAL RESEARCH

Changes in blink rate and ocular symptoms during different reading tasks

Blink rate decreased significantly both when reading book and electronic tablet compared to non-reading tasks

DIGITAL DEVICE USE AND DRY EYE

- Global dependence on digital devices
- Associated visual complaints, eye strain, ocular dryness, burning, blurred vision, and irritation
- Dry eye demonstrated in multiple studies
- Reduction in blink frequency and blink amplitude associated with DE symptoms in VDT users
- VDT use associated with MGD
- Increased tasks with cognitive demand linked decreased blink rate

Increased Tasks Cognitive Demand Linked to Decreased Blink Rate

- Increased task cognitive demand has also been linked to a decreased blink rate^{1,2}
- Study of people with DE and controls (16 each)
- Blink frequency evaluated
 - “high cognitive demand task”
 - “low cognitive demand task”
- The blink rate was lower during the high versus low cognitive task in both the DE (9 vs 21) and control (9vs 14) groups¹
- Difference only significant in DE group
- ☆ Task difficulty contributes to VDT- associated blink rate on those with DE

1. Himebaugh NL, Begley CG, Bradley A, Wilkinson JA. Blinking and tear break-up during four visual tasks. *Optom Vis Sci.* 2009;86:E106–E114.

2. Rosenfield M, Jahan S, Nunez K, Chan K. Cognitive demand, digital screens and blink rate. *Comput Human Behav.* 2015;51:403–406.

20/20/20

TO PREVENT DIGITAL EYE STRAIN



TAKE A
20
SECOND
BREAK



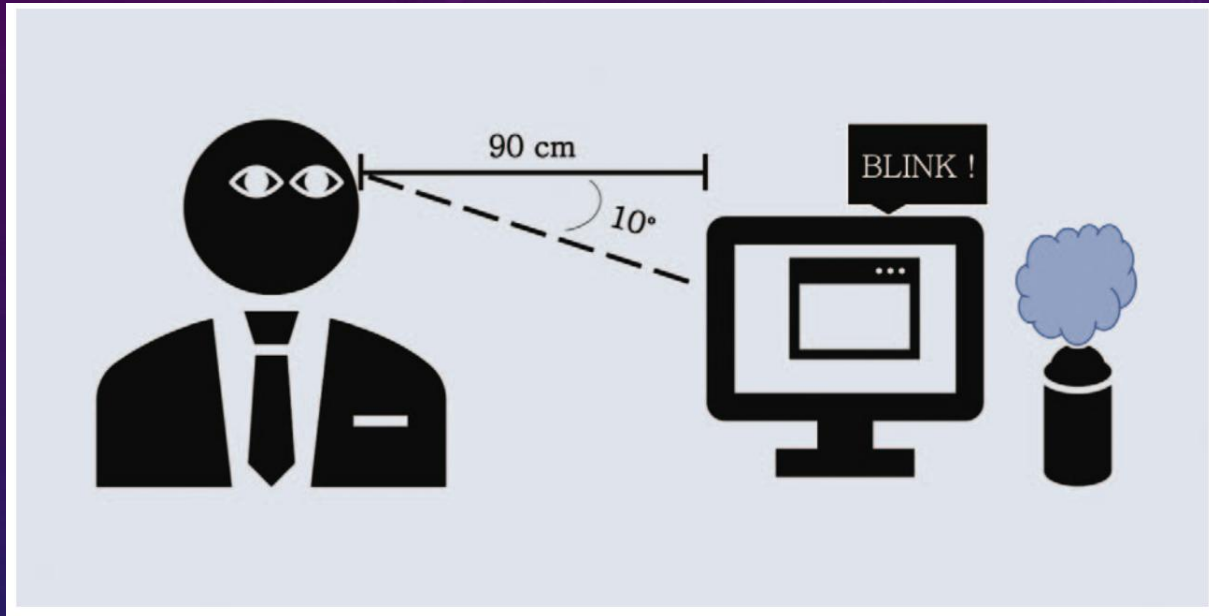
EVERY
20
MINUTES



LOOK AT
SOMETHING
20
FEET
AWAY

Visit www.aoa.org for more tips on how to protect your eye health and to find a doctor of optometry near you for your annual comprehensive eye exam.

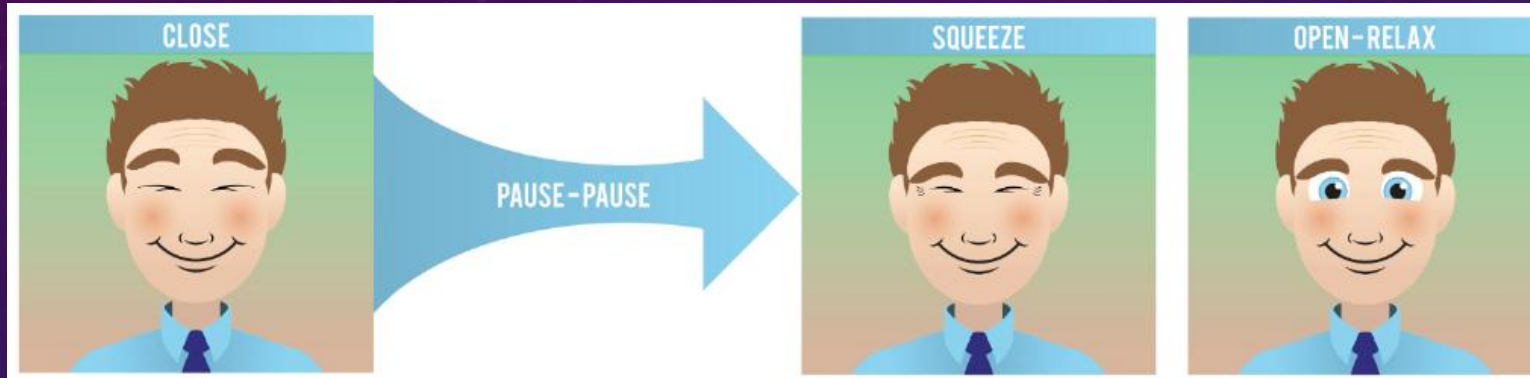
 AMERICAN OPTOMETRIC ASSOCIATION



- Lifestyle modifications to prevent screen-associated dry eye
- Appropriate viewing distance ~90 cm or ~35 inches
- Downward gaze 10 degrees
- Blinking exercises
- Desktop humidifier

Blinking Exercises

CLOSE - PAUSE 1, 2 - SQUEEZE 1, 2 - OPEN 1, 2



Sequence:

1. **Close** – teach the lids to touch
2. **Pause** for a count of 2 to reinforce the lids touching
3. **Squeeze** down lightly for a count of 2 to help develop and train the muscles and to stimulate the neural pathways that control the downward phase of the blink
4. **Open** for a count of 2 to complete the blinking sequences

OPTIMIZE WORKPLACE HUMIDITY

- Alterations in humidity associated with DE
- Especially indoors^{1,2}
- Both low and high humidity associated with DE
- Low humidity
 - Tear evaporation and thinning of the tear film^{2,3}
- High humidity
 - Survival, transmission, and growth of microorganisms^{2,4}
- Optimal recommended humidity ranges from 40% to 55%^{2,5}
- ☆ Add a humidifier!



1. Idarraga MA, Guerrero JS, Mosle SG, et al. Relationships between short- term exposure to an indoor environment and dry eye (DE) symptoms. *J Clin Med.* 2020;9.

2. Wolkoff P, Kjærgaard SK. The dichotomy of relative humidity on indoor air quality. *Environ Int.* 2007;33:850–857.

3. Wolkoff P. External eye symptoms in indoor environments. *Indoor Air.* 2017;27:246 – 260.

4. Gorski M, Genis A, Yushvayev S, et al. Seasonal variation in the presentation of infectious keratitis. *Eye Contact Lens.* 2016;42:295 – 297.

5. Pulimeno M, Piscitelli P, Colazzo S, et al. Indoor air quality at school and students' performance: Recommendations of the UNESCO Chair on Health Education and Sustainable Development & the Italian Society of Environmental Medicine (SIMA).

Health Promotion Perspectives. 2020;10:169 – 174.

MASK ASSOCIATED DRY EYES (MADE)

- Facemasks use to reduce COVID-19 disease transmission
- Marked increase in dry eye symptoms
- Mask wear several hours per day
 - At increased risk of developing or exacerbating ocular dryness and irritation
 - Even if previously asymptomatic
- Why are facemasks causing so much dry eye?
- What can we do to responsibly intervene?



MASK ASSOCIATED DRY EYES (MADE)

- Drying effect on the ocular surface when air blows upward instead of outward
- Increases tear film evaporation and leads to ocular irritation and discomfort
- Poorly fit facemasks are often the cause and are contributory



Mask Associated Dry Eye (MADE)

Wearing masks is essential to helping reduce the spread of COVID-19, but may lead to symptoms of dry eye. Why does this occur and what can you do?

Cause

- 1 Air from breathing out is channeled up, out the top of the face mask, and over the surface of the eye.¹
- 2 Movement of air over the eye causes tears to evaporate, leaving the surface of the eye dry.
- 3 Eyes may feel dry, gritty, irritated, itchy, watery and look red.



Solution

- 1 Ensure your mask fits well, and consider taping the top edge of the mask for prolonged wear.
- 2 Lubricating eye drops may help alleviate dry feeling eyes. Consult with your eye care professional for their recommendation.
- 3 Limit time in air-conditioned environments where possible, and take regular breaks from digital devices.

Remember! Avoid touching your face and rubbing your eyes with unwashed hands.

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CORE | **UNIVERSITY OF WATERLOO** | **COVIDEyeFacts.org**

Ojo Seco Asociado a Mascarilla (OSAM)

El uso de la mascarilla es esencial para ayudar a reducir la propagación de la COVID-19, pero puede provocar síntomas de ojo seco. ¿Por qué ocurre esto y qué se puede hacer?

Causa

- 1 El aire de la respiración se canaliza hacia arriba por la parte superior de la mascarilla y pasa sobre la superficie del ojo.
- El movimiento del aire sobre el ojo causa la evaporación de las lágrimas, dejando la superficie del ojo seca.
- Los ojos pueden sentirse secos, irritados, con picazón, lagrimeo y enrojecimiento.

Solución

- 1 Asegúrese de que la mascarilla quede bien ajustada y considere fijar el borde superior de la mascarilla con cinta adhesiva.
- 2 Las lágrimas artificiales pueden ayudar a aliviar la sensación de sequedad en los ojos. Consulte con su profesional de la salud para obtener su recomendación.
- 3 Evite el tiempo en ambientes con aire acondicionado siempre que sea posible y tome descansos regulares de los dispositivos digitales.

¡Recuerda! Evita tocarte la cara y frotarte los ojos con las manos sin lavar.

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Сухость глаз при ношении маски

Использование защитной маски - необходимая мера для снижения распространения COVID-19, но она может приводить к ощущению сухости глаз. Почему это происходит и что делать?

Причины

- 1 При выдохе воздух под маской направляется вверх и выходит из верхней части маски и проходит над поверхностью глаза.
- Движение воздуха над поверхностью глаза вызывает испарение слезы.
- Это может вызвать ощущение сухости, раздражения, зуд, слезотечение и покраснение глаз.

Что делать

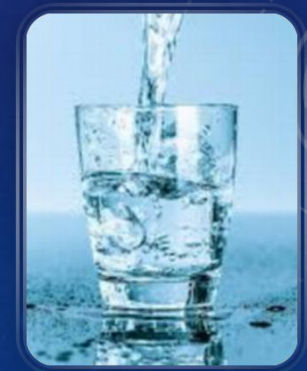
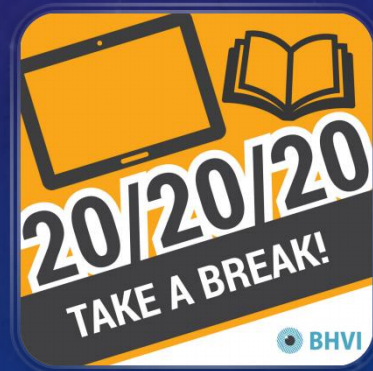
- 1 Убедитесь, что маска хорошо сидит и плотно закрывает лицо. Рассмотрите возможность заклеить верхнюю часть маски скотчем, чтобы предотвратить выход воздуха из верхней части маски.
- 2 Используйте искусственные слезы, чтобы увлажнить глаза. Обратитесь к своему врачу для получения рекомендаций.
- 3 Не оставайтесь в помещениях с кондиционированным воздухом, насколько это возможно, и делайте регулярные перерывы от цифровых устройств.

Запомните! Не трогайте лицо и не трите глаза невымытыми руками.

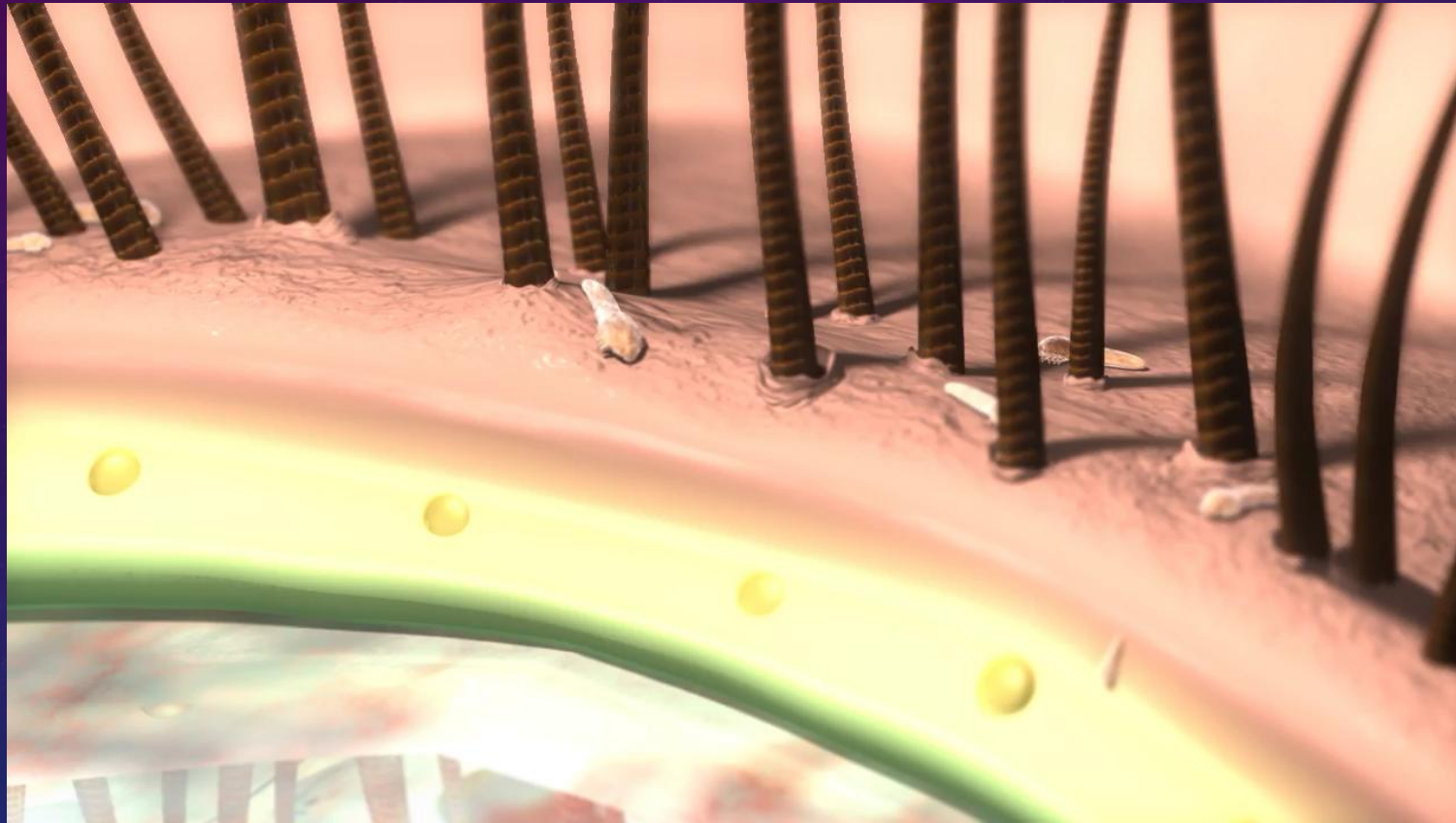
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STRATEGIES TO ALLEVIATE MADE

- Taping top of mask to the face (helps with fogging and MADE)
 - Caution to avoid pulling on the eyelid → lagophthalmos
 - Masks with pliable nose – wires preferred option
- Lubrication with eyedrops
- Limit time in air conditioning
- Breaks on digital devices
- Hydration



DEMODEX INFESTATION



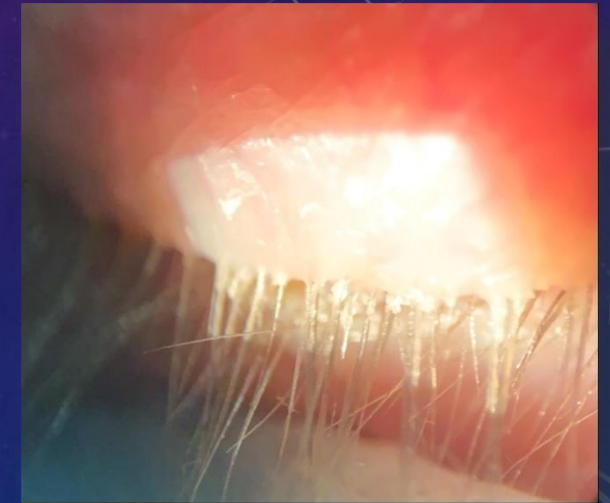
DEMODEX

- *Demodex* infestation is underdiagnosed and undertreated
- Significant symptom overlap with other anterior segment conditions
- Ocular demodicosis, or mite infestation
- Characterized by the pathognomonic presence of cylindrical dandruff or collarettes at the base of the eyelashes
- Implicated in a variety of anterior segment conditions



DEMODEX

- *Demodex folliculorum* and *Demodex brevis* are ectoparasites of phylum Arthropoda that inhabit the skin of humans.^{1,2}
- *D. folliculorum* resides at the base of eyelashes
 - Larger (0.3–0.4 mm)
- *D. brevis* preferentially resides in the sebaceous glands
 - Smaller (0.2–0.3 mm).³
- Both adult mites are cigar-shaped with four pairs of legs to grip a cylindrical structure such as an eyelash.^{4,5}



1. Kheirkhah A, Casas V, Li W, et al. Corneal manifestations of ocular demodex infestation. *Am J Ophthalmol*. 2007;143(5): 743–749.
2. Bhandari V, Reddy JK. Blepharitis: always remember demodex. *Middle East Afr J Ophthalmol*. 2014;21(4):317–320.
3. Liu J, Sheha H, Tseng SC. Pathogenic role of *Demodex* mites in blepharitis. *Curr Opin Allergy Clin Immunol*. 2010;10(5):505–510.
4. Bhandari V, Reddy JK. Blepharitis: always remember demodex. *Middle East Afr J Ophthalmol*. 2014;21(4):317–320.
5. Nicholls SG, Oakley CL, Tan A, et al. Demodex species in human ocular disease: new clinicopathological aspects. *Int Ophthalmol*. 2017;37(1):303–312

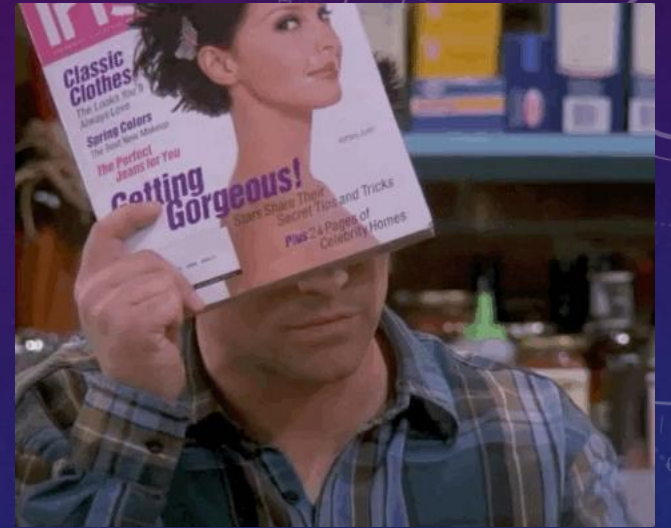
DEMODEX MITE CORRELATION



- Correlation between *Demodex* mites and
 - Blepharitis
 - Eyelash alterations including madarosis, trichiasis and triangulation
 - Conjunctivitis
 - Keratitis
 - Basal cell carcinoma of the lid ⁶⁻⁸

OCULAR DEMODICOSIS SYMPTOMS

- Itching
- Lacrimation
- Hyperemia⁹
- *Demodex* mites present in both symptomatic and asymptomatic individuals
- Poor correlation between symptoms and *Demodex* infestation



Atlas Study Reveals Symptomatic and Psychosocial Burden of Demodex Blepharitis: 80% Report Negative Impact on Daily Life

- Multicenter, observational study of patients pre-screened for the Saturn-1 pivotal trial
- Evaluated the clinical and patient reported impact of *Demodex* blepharitis (interim analysis of 311 patients)
 - Presence of *Demodex* mites (at least 1 mite per lash)
 - Presence of collarettes (> 10, upper lid)
 - At least mild erythema

51%

Experienced signs and symptoms > 4 yrs

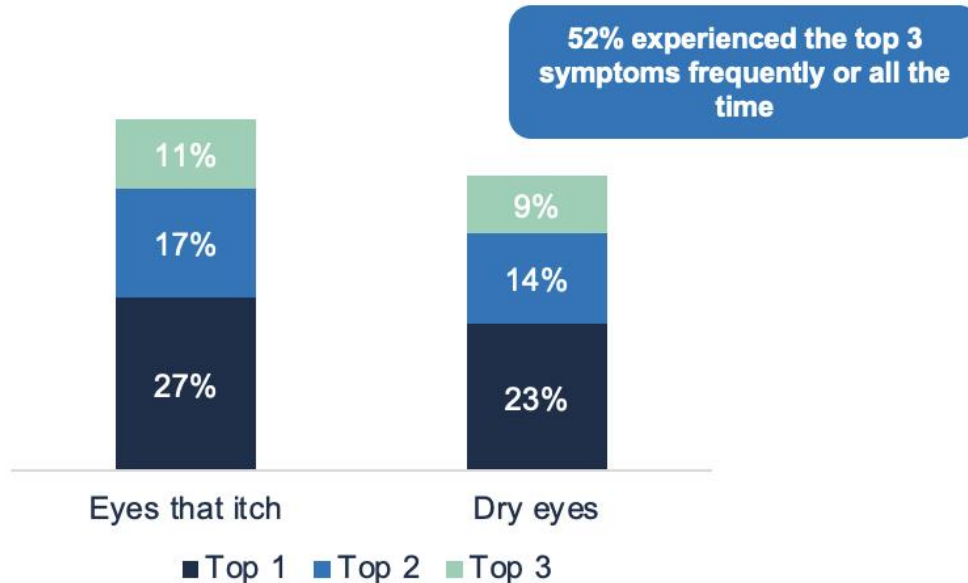
58%

Never diagnosed with blepharitis

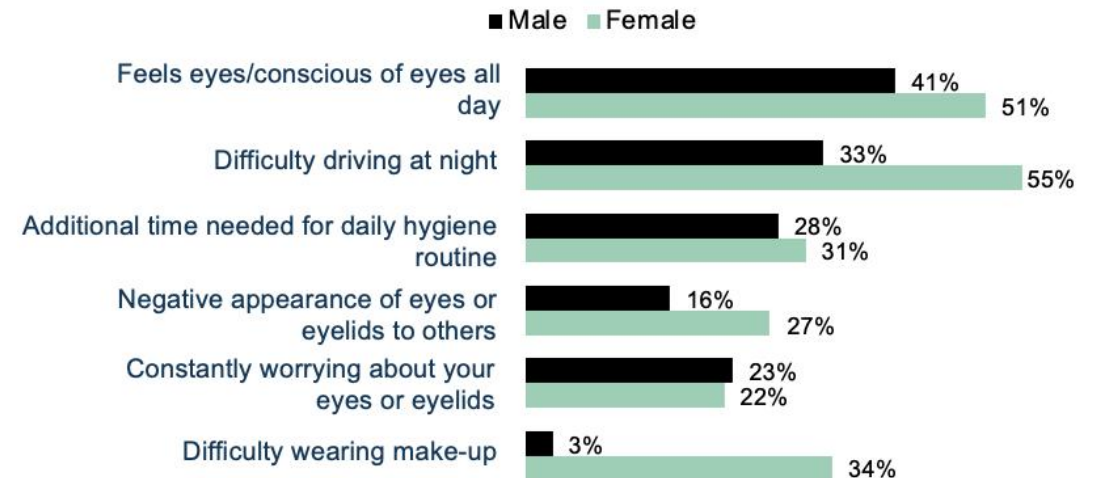
33%

Made at least 2, and sometimes more than 6, visits to a doctor for this condition

Most Bothersome Symptoms



Functional and Psychosocial Impact



Q7. Does your blepharitis affect any of the following aspects of your daily life (if applicable or how you feel about your life?)

DEMODEX AND CONTACT LENS WEAR

- Number of *D. folliculorum* mites did not differ between each eye
- Daily use of contact lenses, cosmetics and glasses may be main culprits of infection¹⁰



DEMODEX AND CONTACT LENS WEAR

- Is *Demodex* infestation more frequent in contact lens wearers compared to non-wearers?
- Asian females (20 contact lens wearers and 20 non-wearers)
- Mean age of 27
- Confocal microscopy
- ☆ *Demodex* (90%) of lens wearers and in 65% of non-wearers ($p = 0.06$)¹¹

SCENARIOS FOR THE INCREASED PROPENSITY FOR CL WEARERS TO HOST *DEMODEX*

- CL wear may provide a more advantageous environment for *Demodex* mites to proliferate
- Blepharitis provides a favorable environment for *Demodex* infestation^{12,13,14} associated with colonization of lid margins by microorganisms (*Staphylococcus epidermidis*, *Propionibacterium acnes*, *Corynebacteria*, and *Staphylococcus aureus*)^{12,15}
- Same microorganisms have been discovered more frequently in contact lens wearers¹⁶
- ☆ A CL may offer a more favorable environment for excessive bacteria and act as a vector for microorganisms, which may lead to further *Demodex* infestation

12. Liu J, Sheha H, Tseng SC. Pathogenic role of Demodex mites in blepharitis. Curr Opin Allergy Clin Immunol 2010; 10: 505–10.

13. Lee SH, Chun YS, Kim JH, et al. The relationship between Demodex and ocular discomfort. Invest Ophthalmol Vis Sci 2010; 51: 2906–11.

14. Li JJ, O'Reilly N, Sheha H, et al. Correlation between ocular Demodex infestation and serum immunoreactivity to Bacillus proteins in patients with facial rosacea. Ophthalmology 2010; 117: 870–7.e1.

15. Kim JT, Lee SH, Chun YS, et al. Tear cytokines and chemokines in patients with Demodex blepharitis. Cytokine 2011; 53: 94–9.

16. Stapleton F, Willcox MD, Fleming CM, et al. Changes to the ocular biota with time in extended- and daily-wear disposable contact lens use. Infect Immun 1995; 63: 4501–5.

DEMODEX

- *Demodex* mites detected in up to 90% of CL wearers¹¹
- 93% of wearers with CL intolerance were positive for *Demodex*
- 6% of patients with *Demodex* denied symptoms of discomfort^{21,22}

- Positive correlation between the presence of *Demodex* and intolerance to soft CLs
- *Demodex* mites may exacerbate CL discomfort symptoms

11. Jalbert I, Rejab S. Increased numbers of Demodex in contact lens wearers. *Optom Vis Sci*. 2015 Jun;92(6):671-8. doi: 10.1097/OPX.0000000000000605. PMID: 25882593.

21. Lee SH, Chun YS, Kim JH, et al. The relationship between demodex and ocular discomfort. *Invest Ophthalmol Vis Sci*. 2010 Jun;51(6):2906-11. doi: 10.1167/iovs.09-4850. Epub 2010 Feb 3. PMID: 20130278.

22. Tarkowski W, Moneta-Wielgoś J, Młocicki D. Demodex sp. as a Potential Cause of the Abandonment of Soft Contact Lenses by Their Existing Users. *Biomed Res Int*. 2015;2015:259109. doi: 10.1155/2015/259109. Epub 2015 Jul 21. PMID: 26290865; PMCID: PMC4523645.

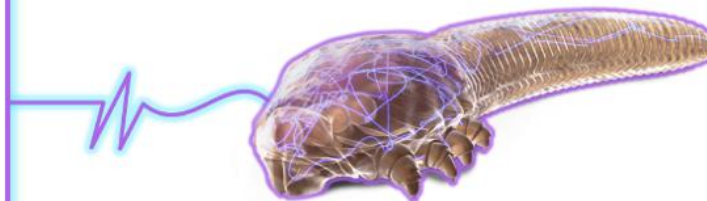
DEMODEX








- Studies illustrate the importance of evaluating the ocular surface
- Assess the eyelashes and eyelid margins to assess Demodex infestation in CL wearers
- Manage the ocular surface to reduce CL lens discomfort and dropout
- Potentially improve CL retention

TP-03 is a Novel Therapeutic Designed to Eradicate Demodex Mites and Treat Demodex Blepharitis



- Potent non-competitive antagonist of insect and arachnid GABA-Cl channels
- Highly lipophilic molecule



	Product Form	Multi-dose eye drop solution bottle, preserved
	Targeted Use	Treatment of Demodex blepharitis
	MOA	Paralysis and death of Demodex mites
	Diagnosis	Collarettes identified in standard eye examination
	Dosing	BID* for 6 weeks
	Efficacy Goal	1° collarette cure, 2° mite eradication, 2° redness + collarette cure
	Safety Goal	Well-tolerated safety profile

*BID means twice per day



Complete Collarette Cure

**Baseline (Day 0)
Grade 4**



**Post Treatment (Day 43)
Grade 0**





BLEPHAROPTOSIS (PTOSIS)

- Abnormal low-lying (drooping) upper eyelid margin with the eye in primary gaze
- Severity depends on degree of eyelid droop¹
- May be
 - Unilateral or bilateral
 - Congenital or acquired



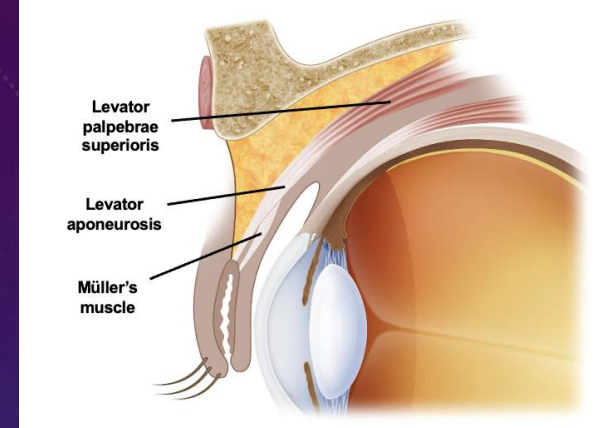
BLEPHAROPTOSIS (PTOSIS)

- Ptosis can affect
- Function
 - Pupil obstruction, superior visual field deficits, contrast sensitivity, dry eye
- Cosmesis
 - Asymmetric or 'sleepy' look



PTOSIS

- Congenital ptosis^{1,2}
- Typically a result of developmental myopathy of the levator muscle or innervation abnormality
- Acquired ptosis^{1,3}
- A result of stretching of the levator muscle or disinsertion of the levator muscle complex (**Aponeurotic** – most common)
- Also be caused by
 - Reduced nervous input to the upper eyelid retractor muscles (**neurogenic**)
 - Injury (**traumatic**)
 - Excess skin / eyelid heaviness (**mechanical**)
 - Primary muscle dysfunction, such as myotonic dystrophy (**myogenic**)



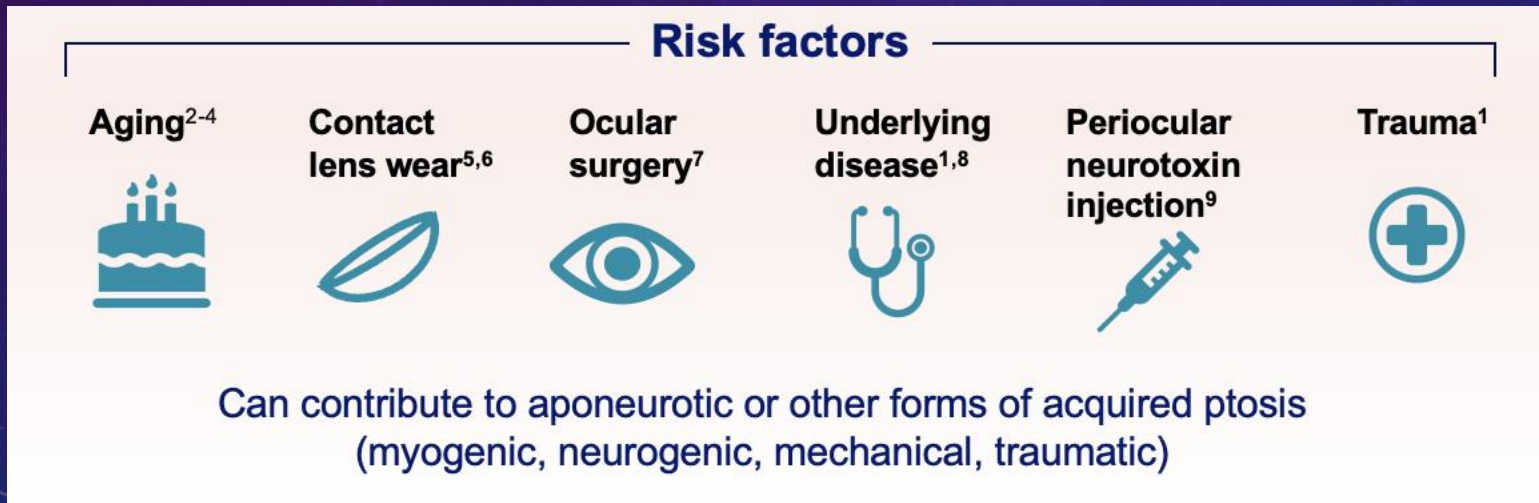
AGING CHANGES IN THE EYE

- Upper lids
- Disinsertion or attenuation of the levator muscle may cause involutional ptosis
- Age related descent of the brow (brow ptosis) also contributes to the ptosis formation
- Excess upper eyelid skin along with anterior migration of the preaponeurotic fat pads results in dermatochalasis or pseudoptosis



PTOSIS

- Highly prevalent
- US 13 million people age 50+ in 2020^{1,2}
- Risk factors



DIFFERENTIAL DIAGNOSIS: NEUROLOGICAL DISEASE

- **Focused neurological examination** should be conducted prior to treating ptosis¹
- Ptosis can be a **sign of more serious underlying neurological disease**,^{1,2}
- **Horner's syndrome:** mild ptosis associated with ipsilateral pupil constriction, eye redness, and anhidrosis^{1,2}
 - Can be secondary to trauma, stroke, or vascular disease
- **Myasthenia gravis:** unilateral or bilateral ptosis with upper eyelid position variability, often accompanied by diplopia and / or strabismus^{1,2}
- **Chronic progressive external ophthalmoplegia:** symmetric, bilateral ptosis and ophthalmoparesis, with initial presentation typically in a patient's 30s^{1,2}
- **Oculomotor nerve (CN III) palsy:** ptosis associated with ophthalmoplegia, diplopia, and poorly-reactive dilated pupil^{1,2}
 - Can be a result of ischemic injury or aneurysm

PTOSIS TESTING

- **Marginal Reflex Distance (MRD-1)**

- Distance between the center of the pupillary light reflex and the upper eyelid margin with the eye in primary gaze
- Normal range: 4-5 mm

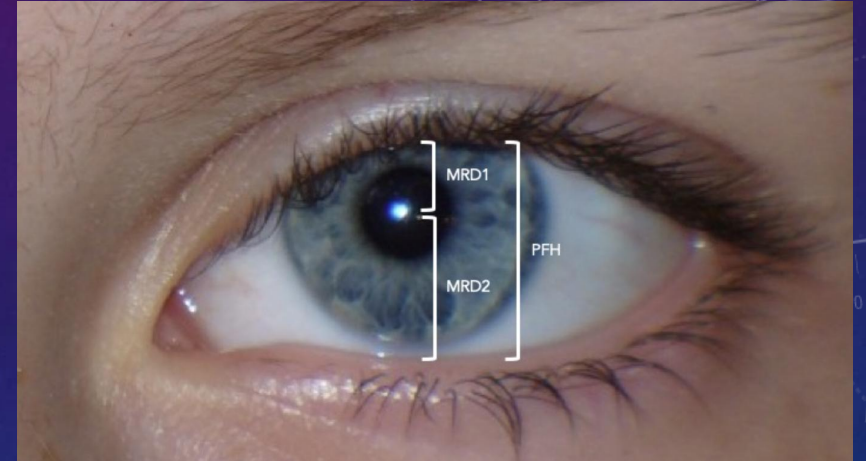
- **Levator muscle function**

- Upper eyelid excursion when the patient shifts from downgaze to upgaze (with frontalis negated)
- Normal range: >15 mm

- **Eyelid crease height (superior sulcus deformity)**

- Distance between the upper eyelid margin and eyelid crease
- Normal range: 7-8 mm in males, 9-10 mm in females

- **Visual field testing**



OXYMETAZOLINE HYDROCHLORIDE OPHTHALMIC SOLUTION) 0.1%

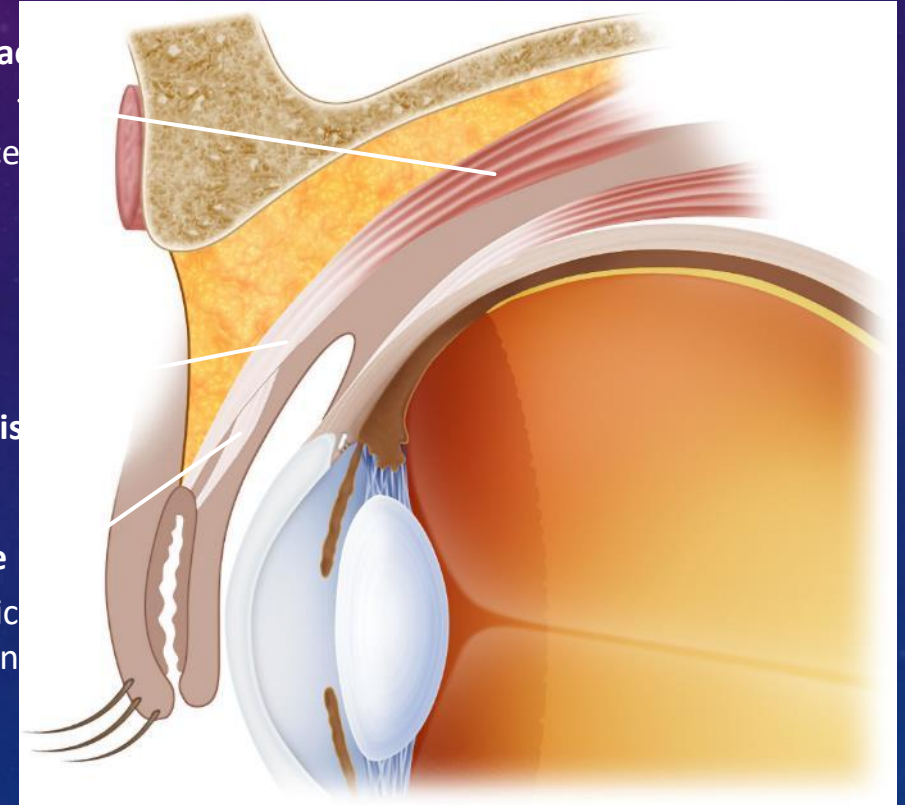
- The active ingredient **oxymetazoline**:
 - Is a potent, direct-acting **α -adrenergic receptor agonist**^{1,2}
 - Has \approx 5-fold greater affinity for α_2 receptors^{3*}
- Targets receptors in **Müller's muscle**, causing contraction and raising the eyelid



Selectively activates receptors in Müller's muscle

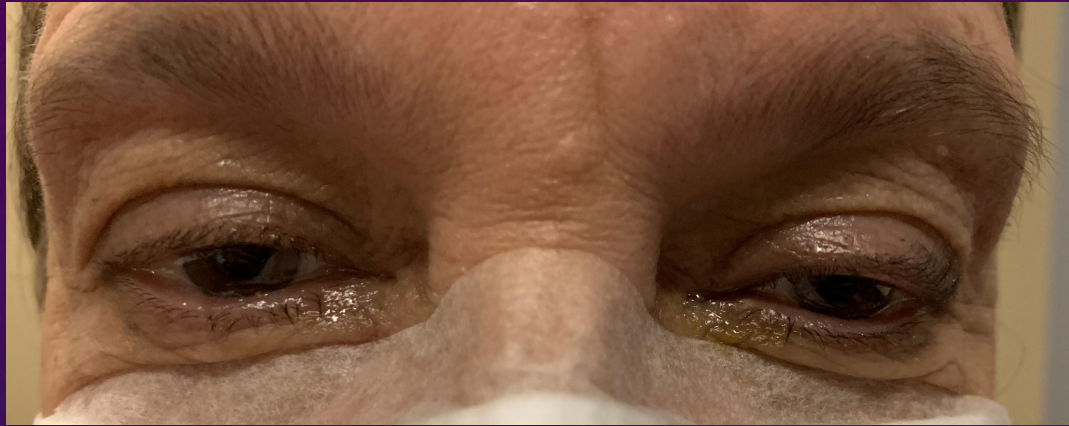
Levator palpebrae superioris
 $\uparrow \beta_1$ adrenergic receptor expression⁴

Levator aponeurosis
Müller's muscle
 $\uparrow \alpha_{1/2}$ adrenergic receptor expression



* Receptor binding affinity is defined via *in vitro* binding assays

1. Haenisch B, Walstab J, Herberhold S, et al. Alpha-adrenoceptor agonistic activity of oxymetazoline and xylometazoline. *Fundam Clin Pharmacol*. 2010;24(6):729-739. 2. Sugden D, Anwar N, Klein D. Rat pineal α_1 -adrenoceptor subtypes: studies using radioligand binding and reverse transcription-polymerase chain reaction analysis. *Br J Pharmacol*. 1996;118(5):1246-1252. 3. Hosten LO, Snyder C. Over-the-counter ocular decongestants in the United States - mechanisms of action and clinical utility for management of ocular redness. *Clin Optom*. 2020;12:95-105. 4. Esmali-Gutstein B, Hewlett B, Pashby R, Oestreicher J, Harvey J. Distribution of adrenergic receptor subtypes in the retractor muscles of the upper eyelid. *Ophthalmic Plast Reconstr Surg*. 1999;15(2):92-99. 5. Skibell BC, Harvey JH, Oestreicher JH, et al. Adrenergic receptors in the ptotic human eyelid: correlation with phenylephrine testing and surgical success in ptosis repair. *Ophthalmic Plast Reconstr Surg*. 2007;23:367-371. 6. Park SJ, Jang SY, Baek JS, et al. Distribution of adrenergic receptor subtypes and responses to topical 0.5% apraclonidine in patients with blepharoptosis. *Ophthalmic Plast Reconstr Surg*. 2018;34:547-551.





BAZAAR NEWBEAUTY ELLE realself. VOGUE



WINNER OF A
2022 SHAPE
SKIN AWARD



Two Primary Forms of Dry Eye

14% Aqueous Deficient

of patients with chronic eye discomfort of *known cause* have aqueous insufficiency

Lacrimal Gland

86% MGD

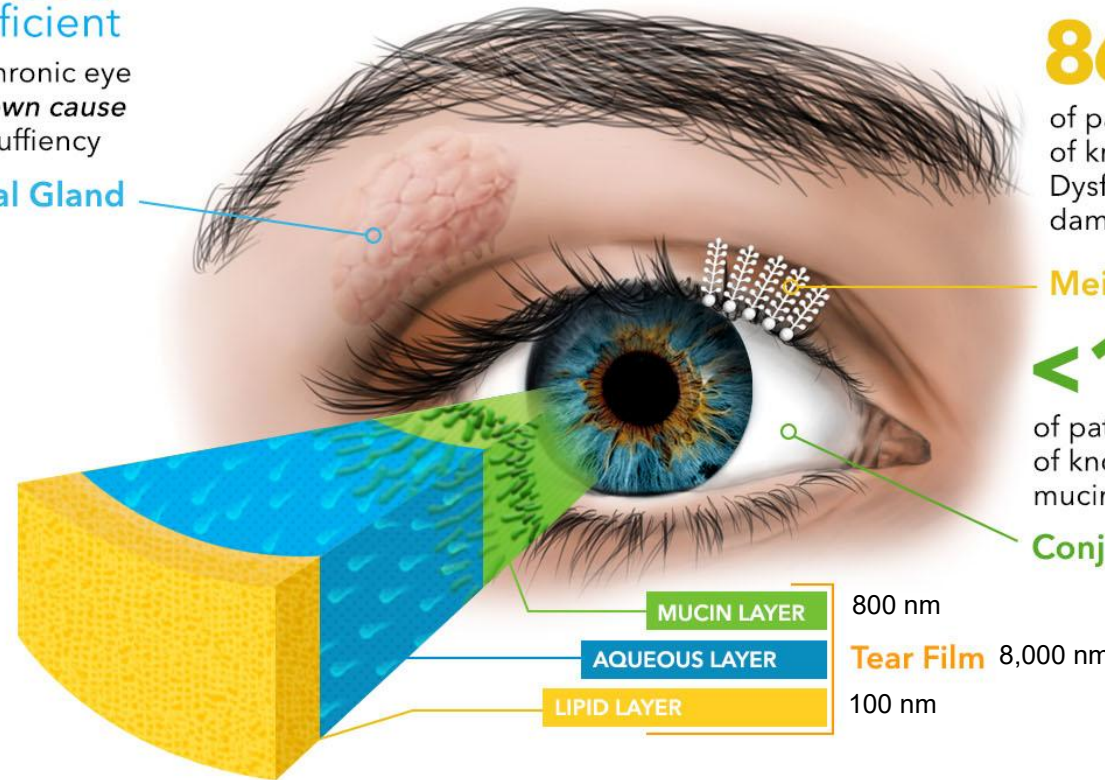
of patients with chronic eye discomfort of known cause have Meibomian Gland Dysfunction as a result of blocked or damaged meibomian glands

Meibomian Glands

<1% Other

of patients with chronic eye discomfort of known cause results from lack of mucin protection

Conjunctiva



MUCIN LAYER 800 nm

AQUEOUS LAYER **Tear Film** 8,000 nm

LIPID LAYER 100 nm

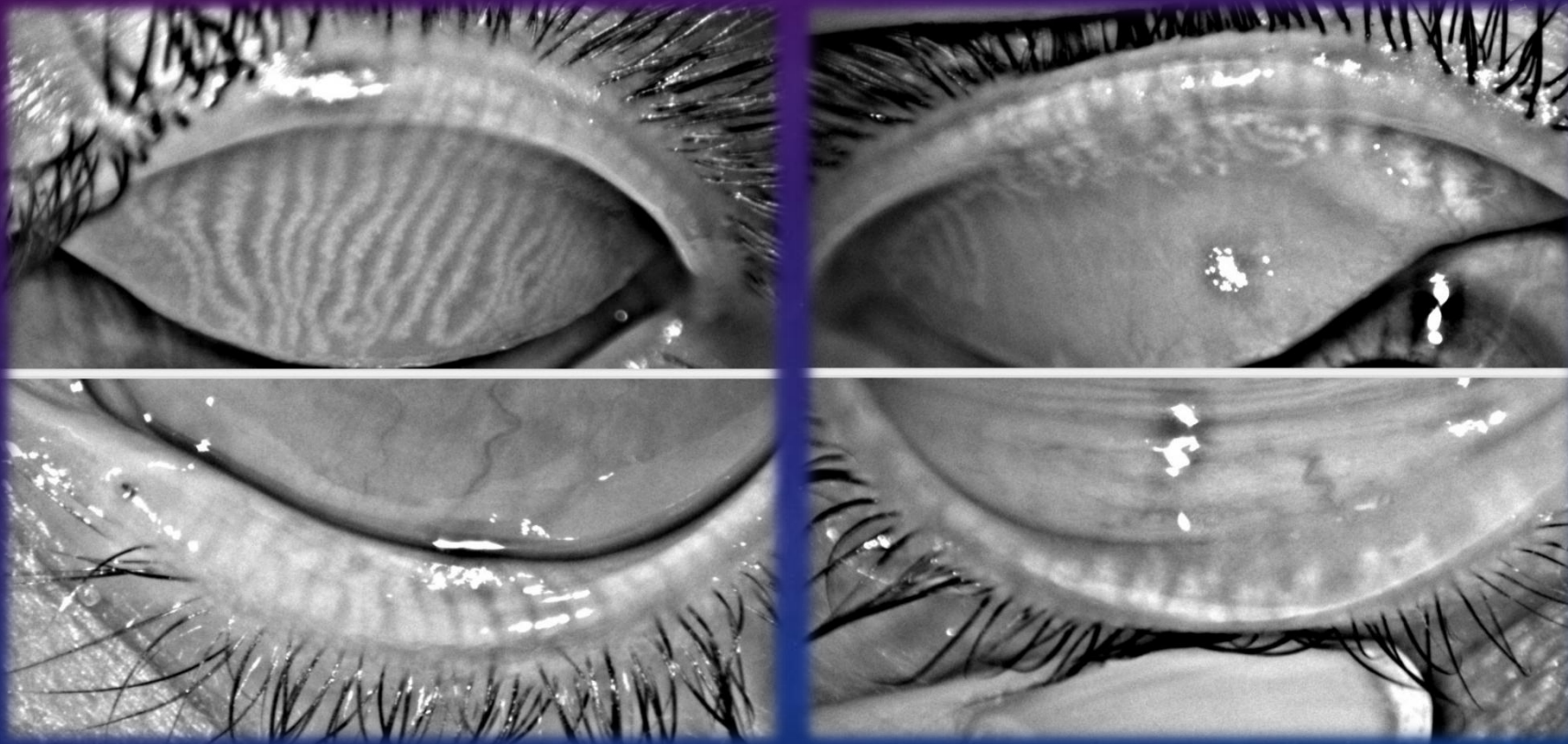
MEIBOMIAN GLAND ANATOMY

A normal eye houses approximately 30 meibomian glands in the upper lid and 25 in the lower lid which run parallel along the length of the tarsal plate and open at an orifice at the eyelid margin²



²Knop E, et al. The International Workshop on Meibomian Gland Dysfunction: Report of the Subcommittee on Anatomy, Physiology, and Pathophysiology of the Meibomian Gland. IOVS 2011; 52(4):1938-1978.

Meibography: Evaluate meibomian glands for atrophy



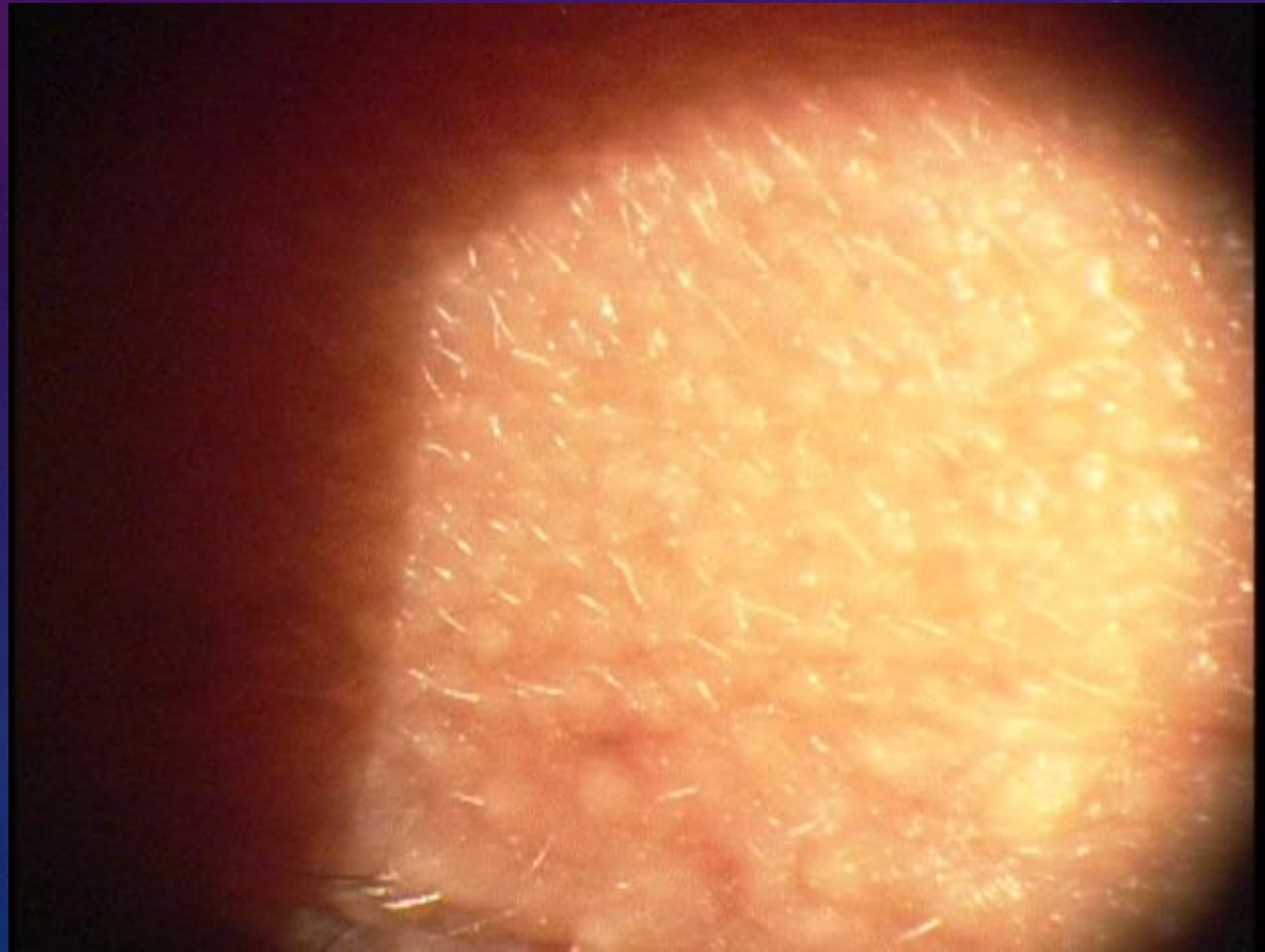
Meiboscore: 0 (0% total area affected), 1 (<33% affected), 2 (33-67% affected), 3 (>67% affected)

Meibomian Gland Clear Expression: TearScience Meibomian Gland Evaluator



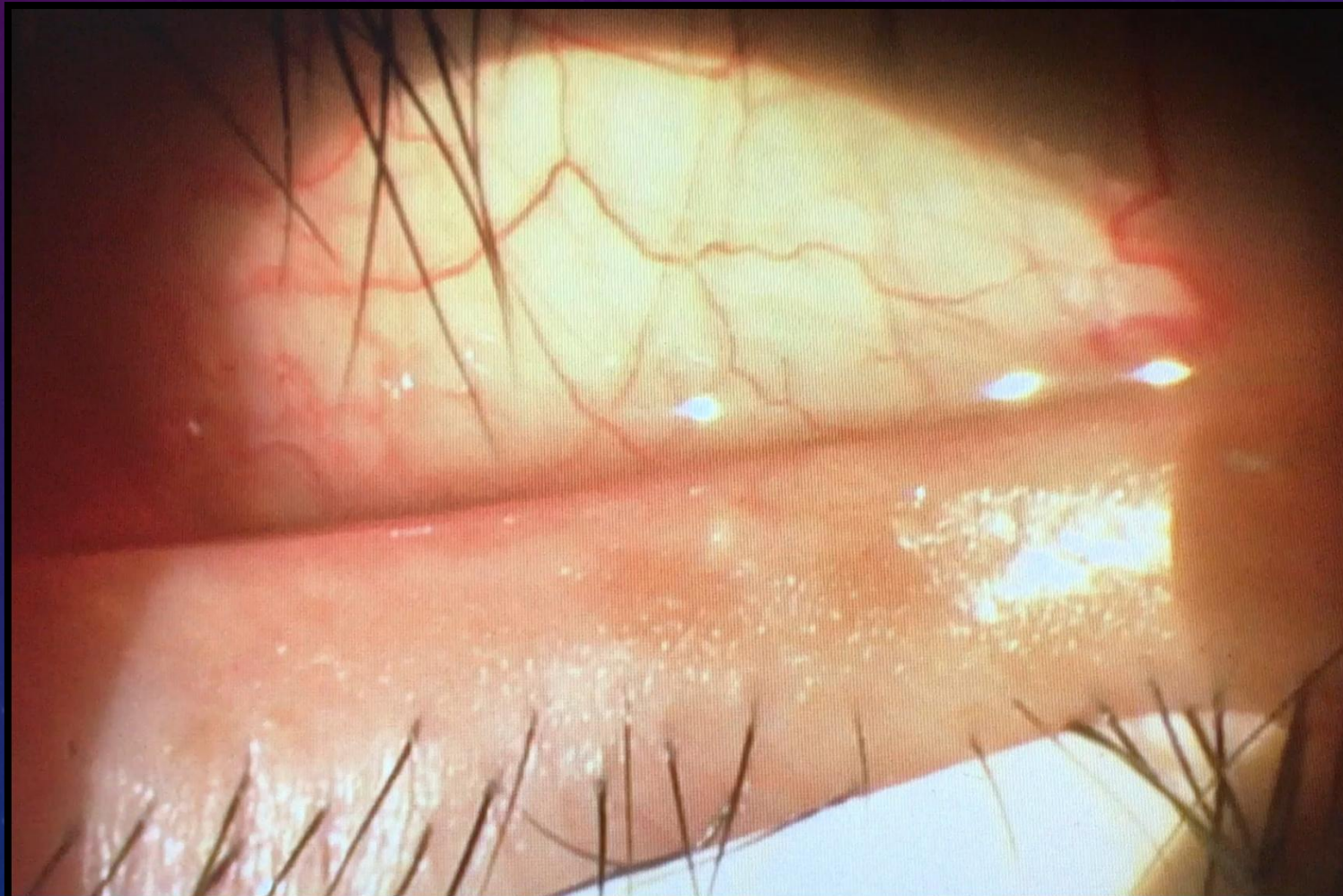
Video credit
Pam
Satjawatcharaphong

Meibomian Gland Turbid Expression: TearScience Meibomian Gland Evaluator



Video credit
Pam
Satjawatcharaphong

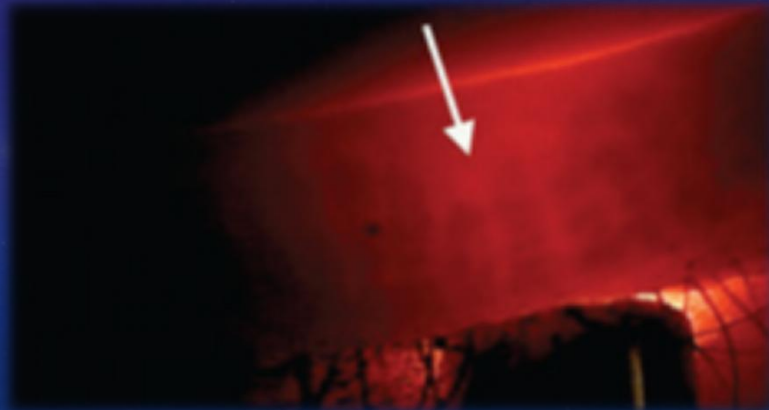
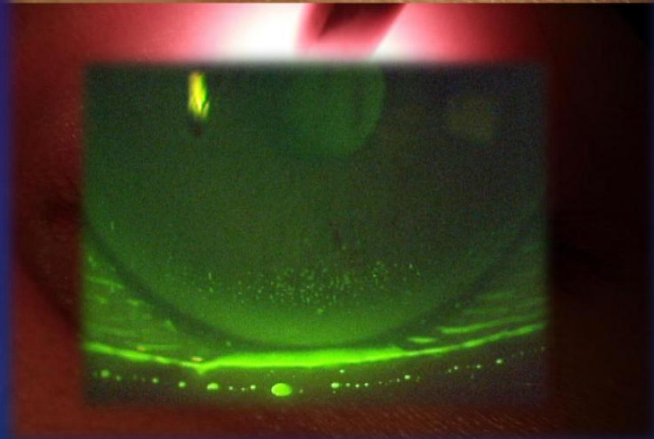
Meibomian Gland Toothpaste Expression: TearScience Meibomian Gland Evaluator



Video credit
Pam
Satjawacharaphong

DRY EYE EVALUATION

Transilluminator:
Evaluate for lagophthalmos and gland atrophy



KORB-BLACKIE LID-LIGHT EVALUATION

- Dark room
- Fully illuminated transilluminator placed against relaxed, closed upper eyelid at superior junction of the tarsal plate
- Minimal pressure, just enough to maintain contact
- Amount of light emanating between the upper and lower lid margins is graded
- Light emanating from between "closed" lids associated with symptoms of ocular discomfort on awakening
- Symptoms of discomfort may be linked to the inability of the lids to achieve an adequate seal to prevent subtle ocular surface desiccation during sleeping.



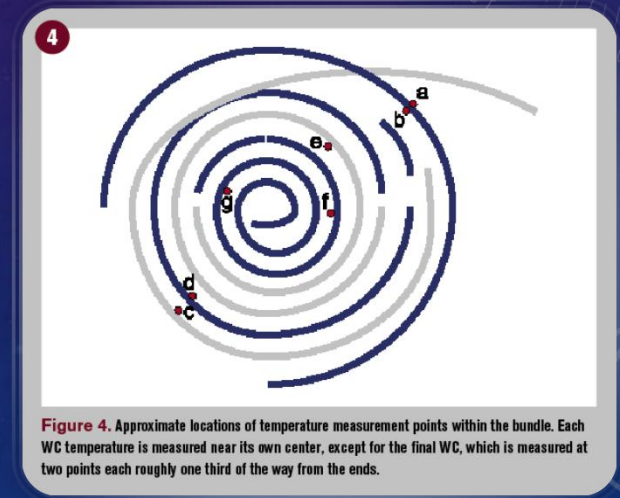
Photo Caroline Blackie, OD

PREVALENCE OF INCOMPLETE LID SEAL AND DRY EYE SYMPTOMS UPON AWAKENING IN A CLINICAL POPULATION

- 39.4% reported dryness symptoms upon waking
- 53.7% incomplete lid seal
 - 32.4% in 21-40 year olds
 - 52.6% 41 to 60 years old
 - 75.0% 61-80 years old
- Recommendation
 - Question patients for symptoms of dryness upon awakening
 - Evaluate for incomplete lid seal
 - Management
 - Nighttime protection with ophthalmic ointment at bedtime or sleep goggles

MANAGEMENT

- Home Therapy Recommendations
- Warm compresses: 10-15 minutes
 - Use microwavable masks, gel/bean bags (washcloths get cool quickly)



COMPRESS FOR CONTACT LENS-RELATED DRY EYE

Effect of the Bruder moist heat eye compress on contact lens discomfort in contact lens wearers: An open-label randomized clinical trial

Anna A. Tichenor^a, Stephanie M. Cox^{a,b,c}, Jillian F. Ziemanski^a, William Ngo^a, Paul M. Karpecki^d, Kelly K. Nichols^a, Jason J. Nichols^a 

- Study of the Bruder Moist Heat Compress on CL discomfort in subjects with contact lens-related dry eye (CLDE)
- 4-week, single-center, three-arm, randomized, open-label clinical trial in subjects diagnosed with CLDE
- Randomized to one of three treatment groups
 - Application of the Bruder Compress twice a day
 - Bruder Compress once a day
 - Warm washcloth used for ten minutes twice a day without reheating
- Fifty-one subjects (98% female) in the study
- Subjects using a washcloth reported more uncomfortable CL wear time (mean = 5.1 ± 2.8 h) compared with subjects in the Bruder Compress group

COMPRESS FOR CONTACT LENS-RELATED DRY EYE (CLDE)

- Significant reduction in the blockage of meibomian glands in Bruder compress group
- No significant difference in uncomfortable wear time was found between subjects using the Bruder Compress twice daily versus once daily ($p = 0.48$)
- Subjects using the Bruder Compress once daily had the highest rate of compliance at 90.2% ($p < 0.01$)
- The Bruder Moist Heat Compress resulted in a significant improvement in comfortable CL wear time in subjects with CLDE

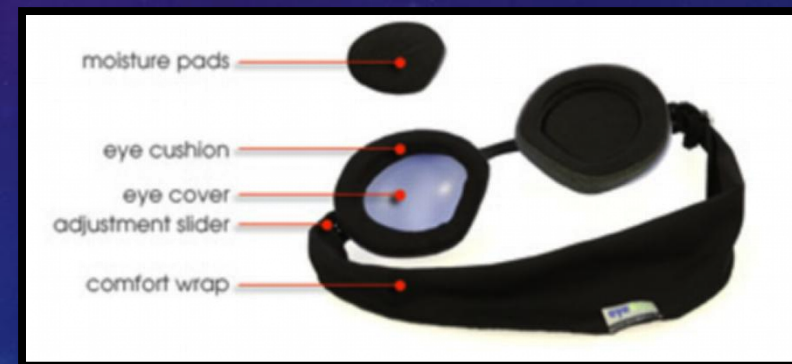


Contact Lens and Anterior Eye
Volume 42, Issue 6, December 2019, Pages 625-632



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HOME THERAPY RECOMMENDATIONS

LID SCRUBS

PACKAGED SCRUBS, WIPES, FOAMS, SPRAYS



MANAGEMENT

- Topical Medication Options
 - Antibiotic
 - Ex. Azasite (azithromycin)
 - 1 gtt bid x 2 days then 1 gtt qd x 5 days
 - Macrolides exhibit immunomodulatory and anti-inflammatory effects separate from their direct antimicrobial actions
 - Antibiotic/Steroid combination
 - Ex. Blephamide (sulfacetamide sodium 10%, prednisolone acetate 0.2%)
 - Suspension (can rub into lashes/lid margin) or ointment qid

- Topical Medication Options

- Anti-inflammatory

- Low dose steroid

- Ex. Lotemax (loteprednol 0.5%)

- 1 gtt qid x 1 month off-label shown to be beneficial for MGD in conjunction with home therapy (Lee H et al, AJO 2014)

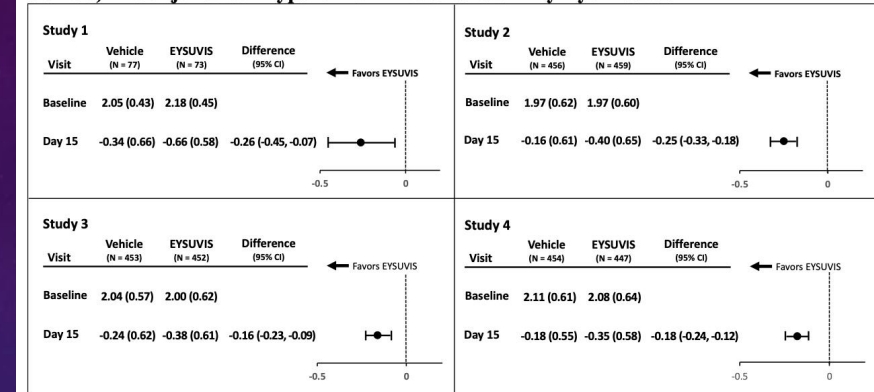
- Short term use

- Immunomodulator

- Ex. Restasis (cyclosporine 0.05%), Cequa (cyclosporine 0.09%) and Xiidra (lifitegrast 5%)

- Single dose vials

Figure 2: Mean Change (SD) from Baseline and Treatment Difference (EYSUVIS – Vehicle) in Conjunctival Hyperemia in Patients with Dry Eye Disease



Treatment differences between the EYSUVIS and vehicle groups are displayed for each study, based on least square means and 2-sided confidence intervals for the change from baseline.

- Oral Medication Options

- Doxycycline 40, 50, 100 mg po bid x 6 weeks+
 - Anti-inflammatory and antimicrobial effects
 - Counsel patients on potential GI upset

- Oral Dietary Supplements

- Benefit of omega fatty acids in question
 - No consensus on dose, length of treatment, efficacy
 - DREAM Study suggests not a beneficial treatment
 - Placebo effect?



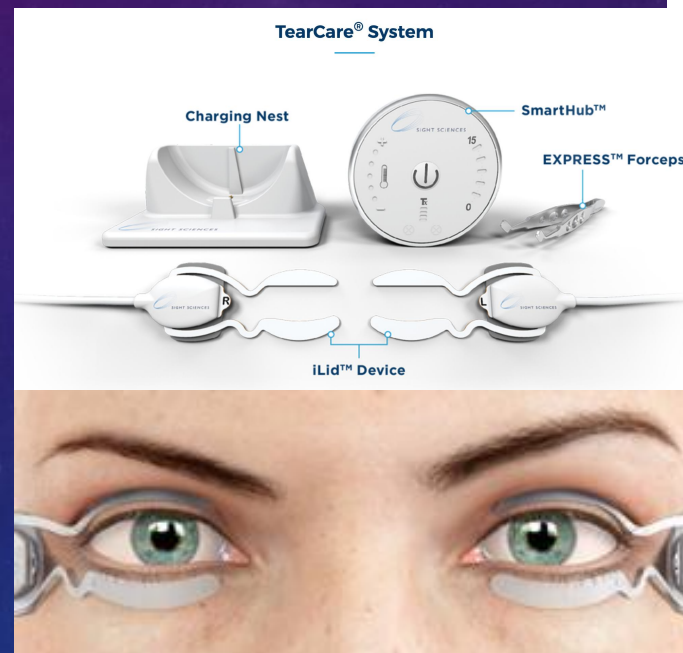
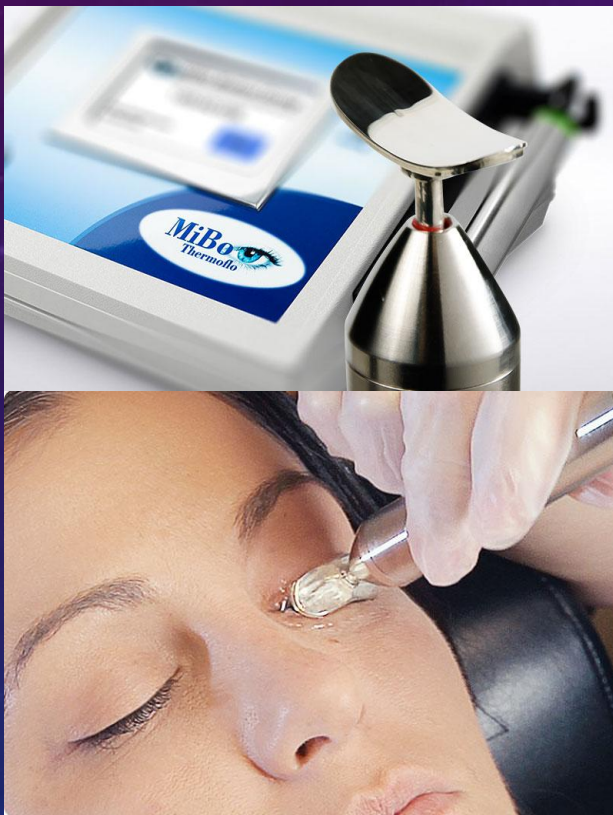
DREAM

- Adjunct therapy in DED
- Structured to model “real world” conditions
- Participants could use current DED therapies
 - Artificial tears, prescription cyclosporine drops, warm lid soaks and fish oil supplements if less than 1,200 mg EPA + DHA daily

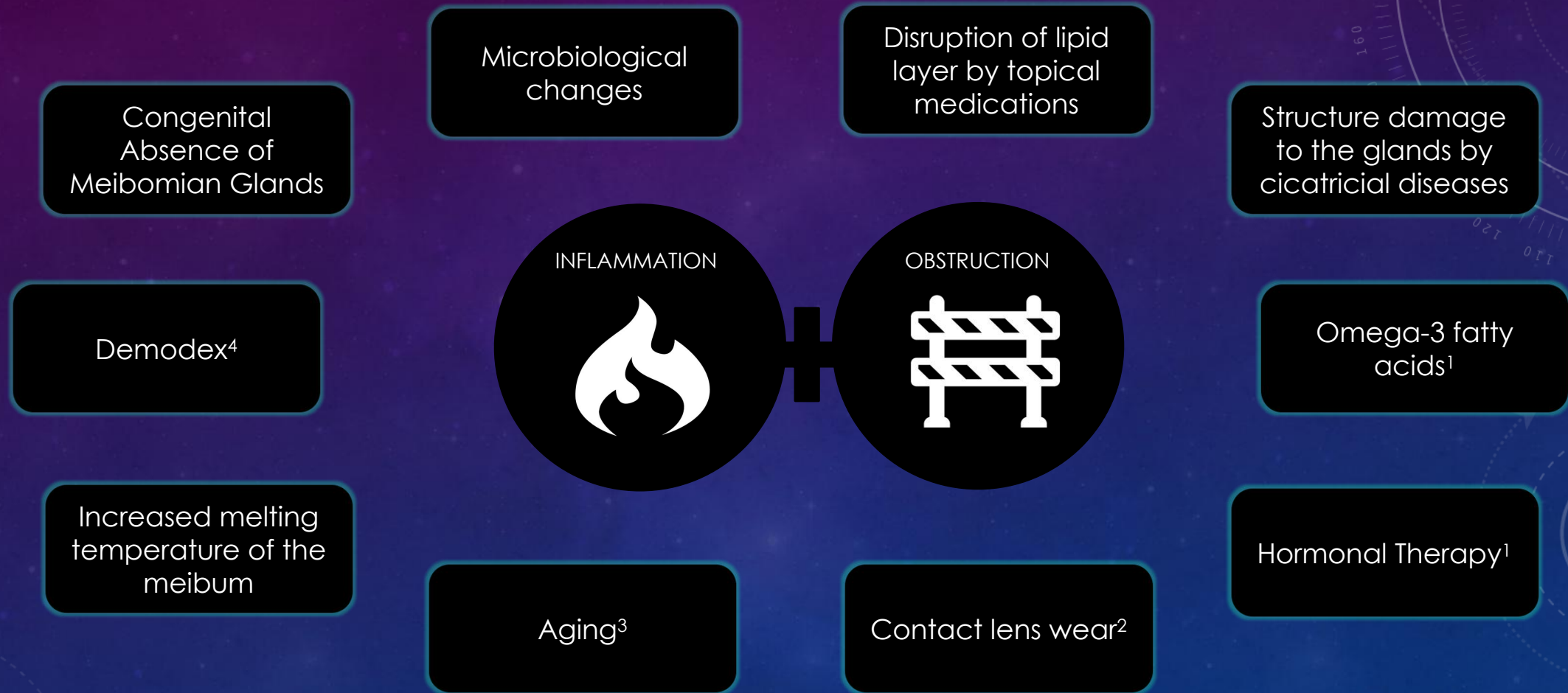
DREAM STUDY

- Mean change from baseline for OSDI
- 13.9 points in the omega-3 group
- 12.5 points in the placebo group
- Not statistically significant
- 61% of the omega-3 group and 54% of the control group achieved at least a 10-point reduction in the OSDI score
- No significant differences between groups in DED signs (conjunctival and corneal staining scores, TBUT, Schirmer's test)

ALTERNATIVE TECHNOLOGIES



Action Plan Should Address Both...



Why the Disconnect?

87%

believe obstruction
is a key component
of MGD¹

71%

state obstruction removal
should be the first-line
treatment for patients
with MGD¹

Yet only...

5%

of patients
receive thermal
expression
treatment²



Optique Dry Eye Center
Dr. Sonsino and Dr. Van Dell

The OLYMPIA study, a prospective, randomized multicenter trial, enrolled 235 dry eye patients at ten (10) U.S. sites. The trial was designed to demonstrate the safety and effectiveness of a single TearCare procedure compared to a single LipiFlow® Thermal Pulsation System (Johnson & Johnson, Jacksonville, Fla., USA) procedure in treating the signs and symptoms of dry eye disease.

Results from the study found that a single TearCare treatment safely and effectively achieved clinically meaningful improvements in all signs and all symptoms of dry eye disease (i.e., all p values <0.01). Improvement

DRY EYE EVALUATION

Eyelid and lashes

- Meibomitis (expression, debridement, meibography)
- Blepharitis (slit lamp evaluation)
- Demodex (slit lamp or microscope evaluation, lash twirl method)
- Lid Wiper Epitheliopathy (lissamine green)
- Lagophthalmos (transilluminator)

Cornea

- Assess for staining (fluorescein)

Tear film

- Tear film stability (tear break-up time)
- Tear film debris (slit lamp evaluation)
- Tear volume (Schirmer's or Phenol Red Thread)
- Tear osmolarity

Conjunctiva

- Hyperemia (slit lamp evaluation)
- Assess for staining (lissamine green, Rose Bengal)

Address the underlying dry eye first to improve success with CLs, surgery, etc.



THANK YOU FOR
YOUR TIME AND
ATTENTION!

