

New and Emerging Perspectives on MGD & Dry Eye

**NEW AND EMERGING
PERSPECTIVES
ON
MGD & DRY EYE**

AND MAYBE A FEW OTHER CONDITIONS AS WELL...

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Fort Lauderdale, Florida

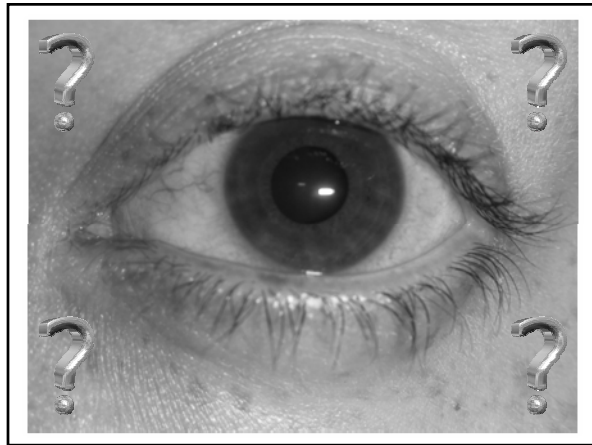


Financial Disclosure: Dr. Alan Kabat

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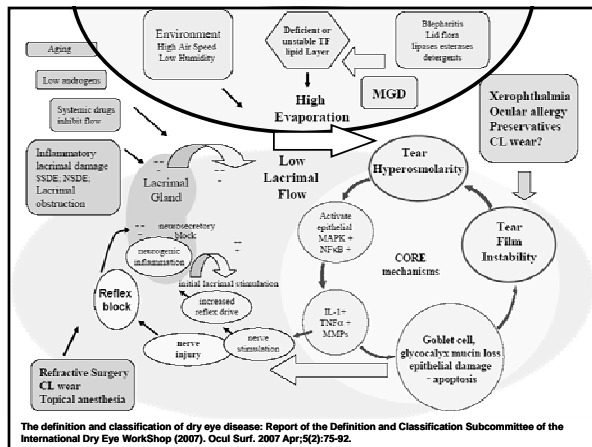


"Symptomatic **ocular surface disease** is an umbrella term that includes:

- 1) Classical, symptomatic dry eye, as defined above, i.e., patients experiencing the symptoms of dry eye and also exhibiting objective features of dry eye, however determined.
- 2) Symptomatic lid disease, including meibomian gland dysfunction (MGD) and anterior blepharitis, in the absence of dry eye;
- 3) Symptomatic conjunctivitis and keratitis (e.g., allergic conjunctivitis, infective and non-infective keratitis and conjunctivitis) in the absence of dry eye."

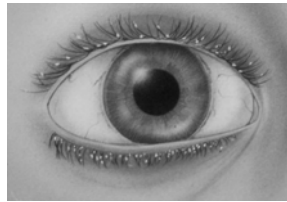


Methodologies to diagnose and monitor dry eye disease: report of the Diagnostic Methodology Subcommittee of the International Dry Eye Workshop (2007). *Ocul Surf.* 2007 Apr;5(2):108-52.



Defining Blepharitis

- ♦ Anatomically describes a non-infectious or infectious inflammation involving the eyelid and lid margins.

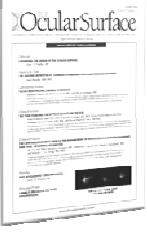


New and Emerging Perspectives on MGD & Dry Eye

Supplement

Blepharitis in the United States 2009: A Survey-based Perspective on Prevalence and Treatment

MICHAEL A. LEMP, MD, AND KELLY K. NICHOLS, OD, MPH, PhD, FAAP*

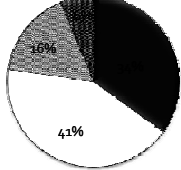


Lemp M, Nichols K. Blepharitis in the United States 2009: A survey-based perspective on prevalence and treatment. Ocul Surf. 2009 Apr;7(2 suppl):S1-14.

Blepharitis Prevalence

- Eye Care Professionals estimated 37-47% of patients presented with some form of blepharitis.
- Of patients diagnosed:

Blepharitis Patients Initial Motivation for Seeking Treatment (MDs)



- Blepharitis symptoms (41%)
- Dry eye symptoms (26%)
- ▨ Surgical evaluation (10%)
- ▩ Routine exam/vision complaints (23%)

Lemp MA, Nichols KK. Blepharitis in the United States 2009: A survey-based perspective on prevalence and treatment. Ocular Surface 2009;7(2): S1-14.

Prevalence and Frequency of Symptoms

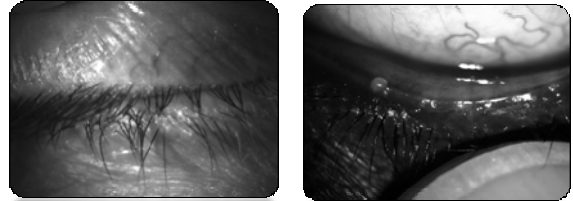
(n = 5,000)

Finding	Percent	Extrapolated Prevalence*
At least 1 symptom in past 12 months	79.3	182 million
More than 1 symptom in past 12 months	63.2	145 million
History of bumps on eyelids	4.5	10 million
History of styes	17.8	41 million
Thinning of eyelashes within past year	9.1	21 million

*Based on percentage of US population of ~293 million ≥18 years of age in 2008.

Lemp MA, Nichols KK. Blepharitis in the United States 2009: A survey-based perspective on prevalence and treatment. Ocular Surface 2009;7(2): S1-14.

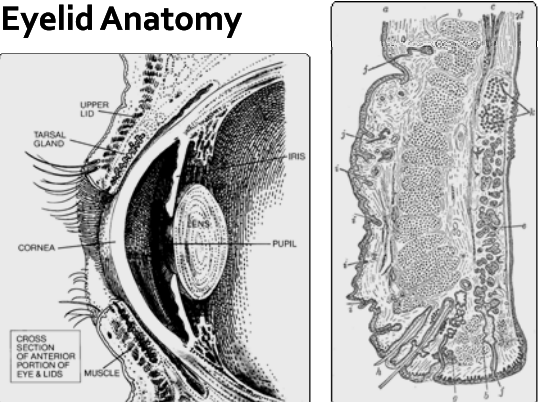
Types of Blepharitis



Anterior Blepharitis *Meibomian Gland Dysfunction*

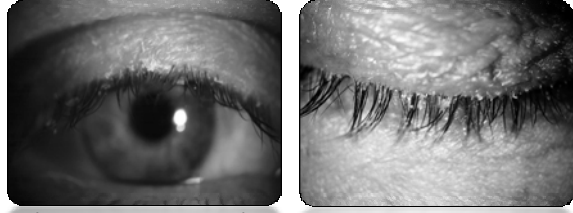
A consensus of clinical experts held on February 12, 2011 concluded that an anatomical differentiation was the easiest and most clinically relevant classification system for blepharitis.

Eyelid Anatomy



CROSS SECTION OF ANTERIOR PORTION OF EYE & LIDS

Anterior Blepharitis



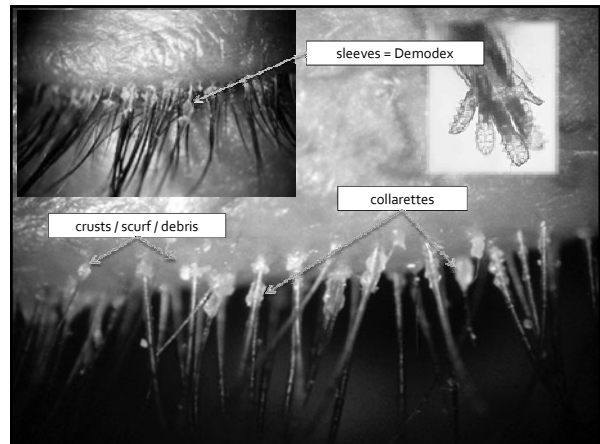
Secondary to Bacteria, esp. Staph. *Secondary to Seborrhea*

Expert Panel - Treatment Algorithm for the Management of Blepharitis. February 12, 2011, Dallas, Texas.

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Staph Blepharitis

- ♦ Bacterial colonization of lid margins by both normal flora and potential pathogenic invaders
 - Most common organism - *S. epidermidis* (~96%)
 - Excessive colonization or a shift in bacterial populations can trigger a pathogenic response
- ♦ Bacterial lipases hydrolyze lipid secretions into free fatty acids
 - Leads to increased tear evaporation & dry eye
 - Free fatty acids are directly toxic to the cornea



Seborrheic Blepharitis

- ♦ Almost always associated with seborrheic dermatitis (head, face)
- ♦ Greasy scales on lashes
 - may also see similar presentation on cilia of eyebrows and head
- ♦ Modest lid inflammation / thickening; some erythema



Management: Anterior Blepharitis

- ♦ Warm compresses ("*lid hyperthermia*")
- ♦ Lid cleansing ("*lid scrubs*")
- ♦ Topical pharmaceutical therapy
 - Antibiotic
 - Combination antibiotic/corticosteroid

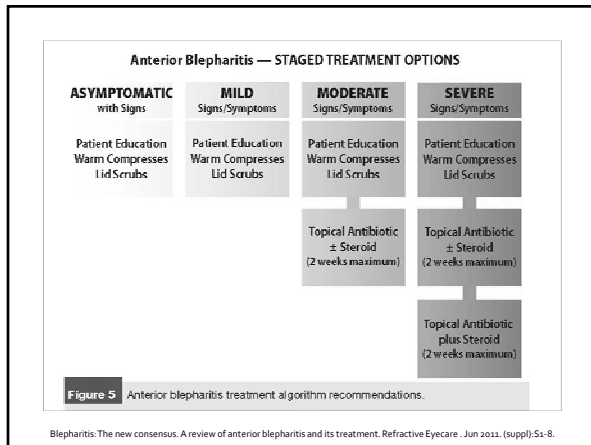
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Staph Blepharitis



- ◆ DO use warm compresses!
 - Heat diminishes bacterial reservoirs and “melts” accumulated crusts & lid debris
- ◆ DO use lid scrubs!
 - Detergent hinders bacterial growth and helps wash away debris (the bacteria’s “food supply”)
- ◆ DO use topical antibiotics for more severe or advanced cases!
 - Antibiotics help to suppress bacterial overgrowth

Blepharitis: The new consensus. A review of anterior blepharitis and its treatment. *Refractive Eyecare*. Jun 2011. (suppl):S1-8.



Seborrheic Blepharitis



- ◆ DO use warm compresses!
 - Heat “melts” waxy seborrheic scales
- ◆ DO use lid scrubs!
 - Detergent helps to remove excess sebum from the lids and skin surface, as well as scales
- ◆ DO NOT use topical antibiotics or steroids!

Meibomian Gland Dysfunction (Posterior Blepharitis)

- ◆ Condition leads to:^{1,2}
 - Changes in quality & quantity of meibomian gland lipid
 - Gland plugging and thickened, abnormal secretions
 - Insufficient lipids to provide a stable tear film
- ◆ Patients experience signs & symptoms of dry eye.³

1. American Academy of Ophthalmology Retina Panel. Preferred Practice Pattern® Guidelines. Blepharitis. San Francisco, CA: American Academy of Ophthalmology; 2008. Available at: <http://www.aao.org/ppp>.

2. Gilbard JP. Dry eye and blepharitis: approaching the patient with chronic eye irritation. *Geriatrics*. 2009; 64(6):22-6.

3. Horn MM, Martenson JR, Knapp LL, Paugh JR. Prevalence of Meibomian Gland Dysfunction. *Optom Vis Sci*. 1995; 67:710-712.

“Meibomian gland dysfunction, or posterior blepharitis... is the most common cause of evaporative dry eye.”

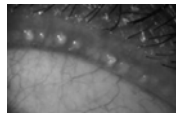
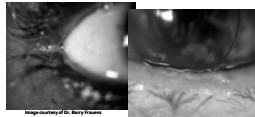
The definition and classification of dry eye disease: Report of the Definition and Classification Subcommittee of the International Dry Eye Workshop (2007). *Ocul Surf*. 2007 Apr;5(2):75-92.



New and Emerging Perspectives on MGD & Dry Eye

Signs of MGD

- ◆ Change in lipid secretions: "foamy" or "frothy" tears
- ◆ Obstruction of the meibomian glands
- ◆ Gland dropout



American Academy of Ophthalmology Retina Panel. Preferred Practice Pattern™ Guidelines. Bephraxis. San Francisco, CA. American Academy of Ophthalmology. 2018. Available at www.aao.org

Sullivan BD, Lemp MA. Distribution of aqueous deficient and evaporative dry eye in a general patient population. Poster presented at the annual meeting of the Tear Film & Ocular Surface Society (TFOS). Florence, Italy; Sept. 2018.

Distribution of ADDE and EDE

- ◆ Multi-center, consecutive, single-arm study conducted at 11 clinical facilities worldwide
- ◆ 224 patients with a diagnosis of "dry eye"
- ◆ Differentiated between ADDE and EDE on the basis of Schirmer scores and MGD grade
 - Purely ADDE: Schirmer < 7 mm, MGD ≤ 2
 - Purely EDE: Schirmer ≥ 7 mm, MGD > 2
 - "Mixed": Schirmer < 7 mm, MGD > 2

Sullivan BD, Lemp MA. Distribution of aqueous deficient and evaporative dry eye in a general patient population. Poster presented at the annual meeting of the Tear Film & Ocular Surface Society (TFOS). Florence, Italy; September 2018.

Results

- ◆ 180 of 224 were able to be classified into one of these categories (ADDE, EDE, or Mixed)
- ◆ Of the 180:
 - 100 (55%) had purely EVAPORATIVE dry eye
 - 14 (8%) had purely AQUEOUS DEFICIENT dry eye
 - 66 (37%) had MIXED dry eye mechanisms
- ◆ Out of the entire study population (224), 74% demonstrated some degree of MGD.

Sullivan BD, Lemp MA. Distribution of aqueous deficient and evaporative dry eye in a general patient population. Poster presented at the annual meeting of the Tear Film & Ocular Surface Society (TFOS). Florence, Italy; September 2018.

Conclusions:

- ◆ In a given population of "dry eye" patients, MGD is an exceedingly common causative factor.
 - Less than 10% of individuals in this study demonstrated a purely aqueous deficient etiology.
- ◆ Clinical evaluations of dry eye patients should ALWAYS include an assessment of meibomian gland health and function.

Sullivan BD, Lemp MA. Distribution of aqueous deficient and evaporative dry eye in a general patient population. Poster presented at the annual meeting of the Tear Film & Ocular Surface Society (TFOS). Florence, Italy; September 2018.

The International Workshop on Meibomian Gland Dysfunction. IOVS 2011;52(3):1917-2085.

New and Emerging Perspectives on MGD & Dry Eye



Objectives...

- Conduct an evidence-based evaluation of meibomian gland structure and function in health and disease;
- Develop a contemporary understanding of the definition and classification of MGD;
- Assess methods of diagnosis, evaluation and grading of severity of MGD;
- Develop appropriate norms of clinical trial design to evaluate pharmaceutical interventions for the treatment of MGD;
- Develop recommendations for the management and therapy of MGD;
- Create an executive summary of recommendations for future research in MGD.

TFOS MGD Workshop Homepage. Available at: <http://www.tfos.com/Workshop/> Accessed December 10, 2010.

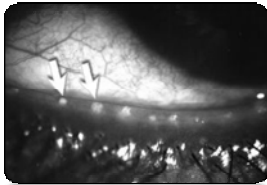
“Overall, MGD is an extremely important condition, conceivably underestimated, and very likely the most frequent cause of dry eye disease.”



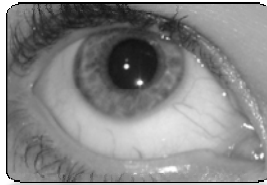
Nichols KK, Foulks GN, Bron AJ, et al. The international workshop on meibomian gland dysfunction: Executive summary. Invest Ophthalmol Vis Sci. 2011 Mar 30;52(4):1922-9.

MGD

Obvious

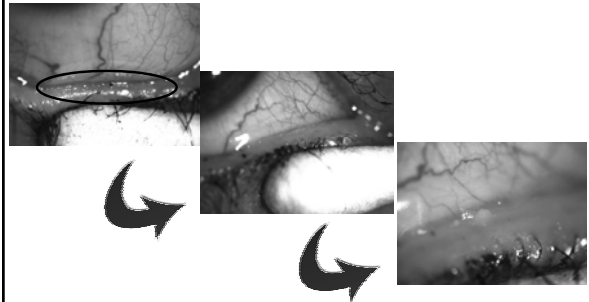


Non-Obvious



Blackie CA, Korb DR, Knop E, Bedi R, Knop N, Holland EJ. Nonobvious obstructive meibomian gland dysfunction. Cornea. 2010 Dec;29(12):1333-45.

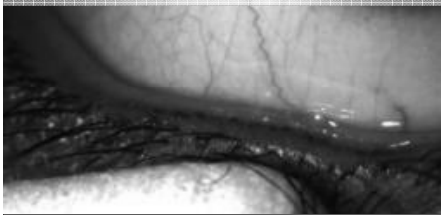
Non-obvious MGD



Photos courtesy of Justin Webb, OD, Alcon Research Ltd., 2010.

Meibomian Gland Expression

- **target the lower / middle glands**
- **evaluate both meibum quantity and quality**



Clinical Pearl:

Older patients – especially post-menopausal women – often have diminished lid elasticity.

Photos Courtesy of K Nichols, OD, MPH, PhD.

Meibomian Gland Expression

using the Mastrota Paddle



Video courtesy of Dr. Mile Brujic (and Youtube!).

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Grading Meibomian Gland Expression

Grade 0

Clear meibum easily expressed

Grade 1

Cloudy meibum expressed with pressure

Grade 2

Cloudy meibum expressed with more than moderate pressure

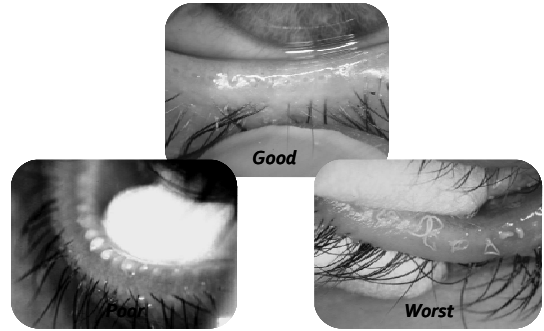
Grade 3

Meibum cannot be expressed even with strong pressure



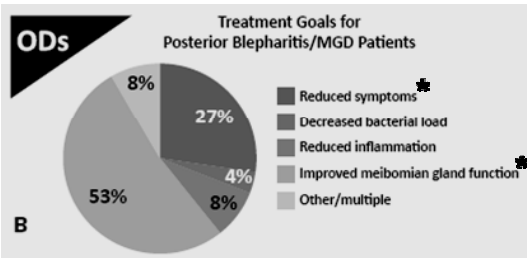
Shimazaki J, Sakata M, Tsubota K. Ocular surface changes and discomfort in patients with meibomian gland dysfunction. Arch Ophthalmol. 1995; 113:1166-70.

Meibomian Gland Excretia



Blackie CA, Korb DR, Knop E, Bedi R, Knop N, Holland EJ. Nonobvious obstructive meibomian gland dysfunction. Cornea. 2010 Dec;29(12):1333-45.

Treatment Goals

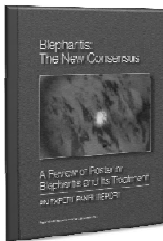


Lemp MA, Nichols KK. Blepharitis in the United States 2009: A survey-based perspective on prevalence and treatment. Ocular Surface 2009;7(2): 53-64.

Treatment Modalities: MGD

"... improved meibomian gland function... reduced symptoms..."

- ◆ Supportive:
 - Lid hyperthermia & gland expression
 - Lid cleansing
 - Surface lubrication
- ◆ Essential fatty acid supplements
- ◆ Topical antibiotics
 - AzaSite
- ◆ Oral tetracycline analogues
- ◆ Other treatments...?



Blepharitis: The new consensus. A review of posterior blepharitis and its treatment. Refractive Eyecare . Aug 2011. (suppl):S1-8.

OVERVIEW

Blepharitis is a chronic inflammatory condition of the eyelids. The most common form is anterior blepharitis, which is caused by infection with Staphylococcus aureus or Demodex mites. Posterior blepharitis is a chronic inflammatory condition of the eyelids, which is caused by dysfunction of the meibomian glands. The most common form of posterior blepharitis is meibomian gland dysfunction (MGD), which is characterized by thick, crusty discharge from the eyelids and by dysfunction of the meibomian glands. The most common treatment for MGD is lid hygiene, which involves warm compresses and lid massage. Other treatments include topical antibiotics, oral tetracycline analogues, and essential fatty acid supplements.

MEIBOMIAN GLAND DYSFUNCTION (MGD)

MGD is a chronic inflammatory condition of the eyelids, which is caused by dysfunction of the meibomian glands. The most common form of MGD is obstructive MGD, which is characterized by thick, crusty discharge from the eyelids and by dysfunction of the meibomian glands. The most common treatment for MGD is lid hygiene, which involves warm compresses and lid massage. Other treatments include topical antibiotics, oral tetracycline analogues, and essential fatty acid supplements.

MGD/Posterior Blepharitis — STAGED TREATMENT OPTIONS			
ASYMPTOMATIC with Signs	MILD Signs/Symptoms	MODERATE Signs/Symptoms	SEVERE Signs/Symptoms
Patient Education Warm Compresses Lid Massage Lid Scrubs	Patient Education Warm Compresses Lid Scrubs Lid Massage Lipid Restorative/Lubricant Eye Drops Omega-3 Nutritional Supplements Topical Antibiotics	Patient Education Warm Compresses Lid Scrubs Lid Massage Lipid Restorative/Lubricant Eye Drops Omega-3 Nutritional Supplements Topical Antibiotic + Steroid (2 weeks maximum) Oral tetracycline derivatives	Patient Education Warm Compresses Lid Scrubs Lid Massage Lipid Restorative/Lubricant Eye Drops Omega-3 Nutritional Supplements Topical Antibiotic + Steroid (2 weeks maximum) Oral tetracycline derivatives Oral anti-inflammatory therapies for dry eye

Blepharitis: The new consensus. A review of posterior blepharitis and its treatment. Refractive Eyecare . Aug 2011. (suppl):S1-8.

New and Emerging Perspectives on MGD & Dry Eye

Protocol sheet

- ♦ Milton M. Hom, OD, FAAO
- ♦ Jerry Paugh, OD, PhD
- ♦ Alan Kabat, OD, FAAO
- ♦ Kelly K. Nichols, OD, MPH, PhD
- ♦ Kirk Smick, OD, FAAO
- ♦ Adrian Bruce, PhD, FAAO
- ♦ Donald Korb, OD, FAAO
- ♦ Shelley I. Cutler, OD, FAAO
- ♦ Louise Sclafani, OD, FAAO
- ♦ Paul Karpecki, OD, FAAO


Lid hygiene and massage

The eyelids have several hair glands. It is important that the hairless projects to wet eye eye. If the glands are not open, the hairless projects can dry up and become brittle, leading to more sebum of the eyelids. This can lead to the formation of a thick, white, waxy material on the eyelids. This material can be removed with warm water. The following steps should be followed:

1. Wash your hands with soap and water.
2. Use a clean, warm, moist cloth to wipe the eyelids.
3. Gently massage the eyelids with your fingers.
4. Use a clean, warm, moist cloth to wipe the eyelids.
5. Repeat the steps for the other eye.

Lid massage


1. Use a clean, warm, moist cloth to wipe the eyelids.
2. Gently massage the eyelids with your fingers.
3. Use a clean, warm, moist cloth to wipe the eyelids.
4. Repeat the steps for the other eye.



Available at: <http://ossopt.com>

Lid Cleansing...

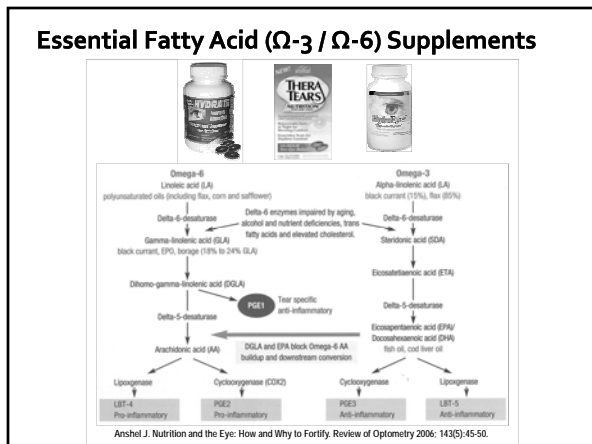
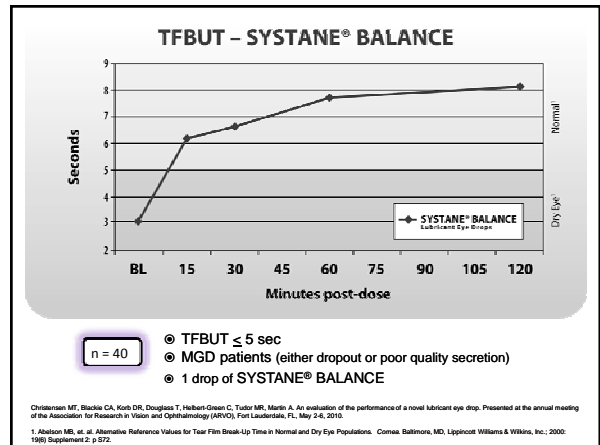
- ♦ ... is controversial for pure MGD
- ♦ "Sebum should never contaminate the tear film."
- Wm. McCulley, MD
- ♦ If employed, use SPARINGLY!
 - Enhanced free fatty acid formation saponifies lipids
 - Additional detergent can irritate and further deplete lipids



Lubrication Therapy for MGD – an oft overlooked step



All artificial tears are not created equal!



Pinna A, Piccinini P, Carta F. Effect of oral linoleic and gamma-linolenic acid on meibomian gland dysfunction. Cornea 2007;26(3):260-4.

Conclusions: At 6 months, all groups showed statistically significant improvement.

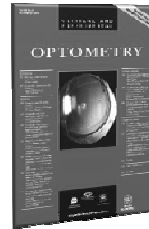
- Group A: ↓ secretion turbidity & meibomian obstruction
- Group B: ↓ eyelid edema, corneal staining, secretion turbidity, & meibomian obstruction.
- Group C: ↓ eyelid edema, foam collection in the tear meniscus, corneal staining, secretion turbidity, & meibomian obstruction.

New and Emerging Perspectives on MGD & Dry Eye

Topical Azithromycin in the Management of Blepharitis



- Luchs J. Efficacy of topical azithromycin ophthalmic solution 1% in the treatment of posterior blepharitis. *Adv Ther.* 2008;25(9): 858-70.
- Foulks GN, Borchman D, Yappert M, et al. Topical azithromycin therapy for meibomian gland dysfunction: clinical response and lipid alterations. *Cornea.* 2010 Jul;29(7):781-8.
- Haque RM, Torkildsen GL, Brubaker K, et al. Multicenter open-label study evaluating the efficacy of azithromycin ophthalmic solution 1% on the signs and symptoms of subjects with blepharitis. *Cornea.* 2010 Aug;29(8):871-7.



OPTOMETRY

RESEARCH PAPER

Efficacy of azithromycin 1% ophthalmic solution for treatment of ocular surface disease from posterior blepharitis

Opitz DL, Tyler KF. Efficacy of azithromycin 1% ophthalmic solution for treatment of ocular surface disease from posterior blepharitis. *Clin Exp Optom.* 2011 Mar;94(2):200-6.

Topical Azithromycin for MGD

- Single arm, open label, prospective study conducted at Illinois College of Optometry
- 33 patients with MGD
- Treated with azithromycin 1.0% BID X 2 days, then qHS for a total of 30 days.
- Evaluated at baseline and after 30 days for: TBUT, corneal & conjunctival staining, Schirmer, meibomian gland score and symptom score.

Opitz DL, Tyler KF. Efficacy of azithromycin 1% ophthalmic solution for treatment of ocular surface disease from posterior blepharitis. *Clin Exp Optom.* 2011 Mar;94(2):200-6.

Results:

- Tear break-up time and Schirmer were increased by 53% ($p < 0.0001$) and 24% ($p < 0.05$), respectively.
- There was a reduction in corneal and conjunctival staining by 83% and 68%, respectively ($p < 0.0001$).
- Lid margin scores decreased by 34% ($p < 0.0001$).
- Patient's symptom score improved from 2.73 at baseline to 2.21 after treatment ($p < 0.01$).

Opitz DL, Tyler KF. Efficacy of azithromycin 1% ophthalmic solution for treatment of ocular surface disease from posterior blepharitis. *Clin Exp Optom.* 2011 Mar;94(2):200-6.

Tetracycline Analogs

- Used widely in medicine & dentistry because of unique bacteriostatic antimicrobial and anti-inflammatory properties.¹
- Also demonstrate activity at sub-antimicrobial doses of <50 mg/day (low-dose doxycycline, or LDD)
 - Doxycycline 20 mg twice daily significantly reduced collagenase activity in adults with periodontal disease, while maintaining maximum plasma concentrations below the antimicrobial threshold of 1.0 mcg/mL.^{2,3}

1. Golub LM, Lee HM, Lehrer G, et al. Minocycline reduces gingival collagenolytic activity during diabetes: preliminary observations and a proposed new mechanism of action. *J Periodont Res.* 1983;18:356-356.
 2. Data on file (Periostat NDA, Section 6: Human Pharmacokinetics and Bioavailability), CollaGeneX Pharm., Inc.
 3. Burns F, Stack M, Gray R, et al. Inhibition of purified collagenase from alkaline-burned rabbit corneas. *Invest Ophthalmol Vis Sci.* 1989;30:1569-1575.

Low Dose Doxycycline

Periostat®
(doxycycline hyclate)



Yoo SE, Lee DC, Chang MH. The effect of low-dose doxycycline therapy in chronic meibomian gland dysfunction. *Korean J Ophthalmol.* 2005 Dec;19(4):358-63.

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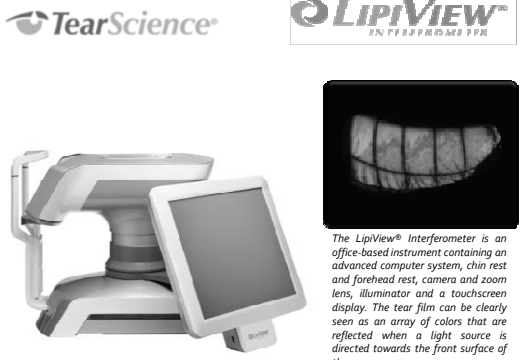
Korb DR, Blackie CA. Restoration of meibomian gland functionality with novel thermodynamic treatment device—a case report. Cornea. 2010 Aug;29(8):930-3.

Korb DR, Blackie CA. Restoration of meibomian gland functionality with novel thermodynamic treatment device—a case report. Cornea. 2010 Aug;29(8):930-3.

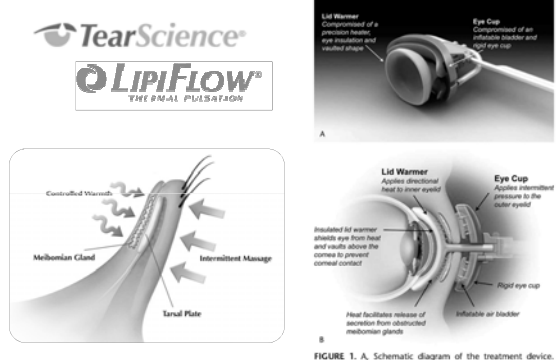
- Described a single case: a 39-year-old white female with obstructive MGD and severe EDE
- Treated with Korb’s prototype thermodynamic device, which “applies heat directly to both inner eyelid surfaces with a precision-controlled resistive heater while pulsating pressure is simultaneously applied to the outer eyelids using an inflatable air bladder.”
- One treatment successfully restored meibomian gland functionality in this subject



Morrisville, NC
www.tearscience.com




The LipiView® Interferometer is an office-based instrument containing an advanced computer system, chin rest and forehead rest, camera and zoom lens, illuminator and a touchscreen display. The tear film can be clearly seen as an array of colors that are reflected when a light source is directed towards the front surface of the eye.



Korb DR, Blackie CA. Restoration of meibomian gland functionality with novel thermodynamic treatment device—a case report. Cornea. 2010 Aug;29(8):930-3.

FIGURE 1. A, Schematic diagram of the treatment device. B, Schematic diagram of the treatment device in use.

© 2010 Lippincott Williams & Wilkins



Maskin SL. Intraductal meibomian gland probing relieves symptoms of obstructive meibomian gland dysfunction. Cornea. 2010 Oct;29(10):1145-52.

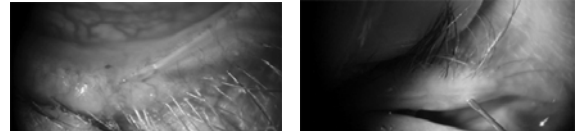
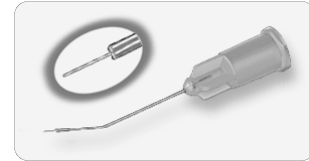
New and Emerging Perspectives on MGD & Dry Eye

Intraductal Probing for MGD

- ◆ Single arm, retrospective chart review
- ◆ 25 consecutive patients with obstructive MGD
- ◆ Treated with intraductal meibomian gland probing in-office using a proprietary device.
- ◆ Described the technique in detail...
- ◆ Evaluated subjects at baseline and 4 weeks after the procedure; also evaluated need for repeat probing.

Maskin SL. Intraductal meibomian gland probing relieves symptoms of obstructive meibomian gland dysfunction. Cornea. 2010 Oct;29(10):1145-51

The Maskin Meibomian Probe



Meibomian Gland Probing

using the Maskin Probe

Meibomian Gland Intraductal Probing

Steven L. Maskin, M.D.
The Dry Eye & Cornea Treatment Center,
Tampa, Florida

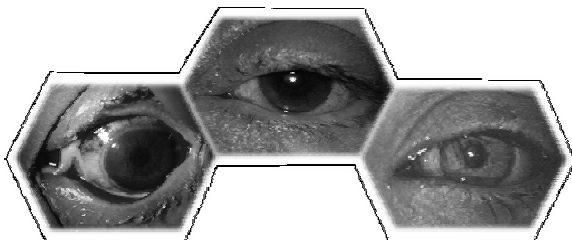
Video courtesy of Dr. Stephen Maskin (and Youtube!).

Results

- ◆ 24 of 25 patients (96%) had immediate relief, whereas all 25 patients (100%) had relief of symptoms by 4 weeks after procedure.
- ◆ 20 patients (80%) only required 1 treatment and had an average of 11.5-month follow-up. Five patients (20%) had retreatment at an average of 4.6 months.
- ◆ Patients frequently reported improvement in newly recognized but previously subclinical symptoms.

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Other forms of OSD



Adenoviral Conjunctivitis

- ◆ Human adenovirus is IMMUNE to antiviral agents (e.g. trifluridine)... right?
 - Tabbara KF, et al. 2001. Ganciclovir effects in adenoviral keratoconjunctivitis. Poster B253. Presented at ARVO. Fort Lauderdale, Florida.
- ◆ Management consists of:
 - **Supportive therapy** - cold compresses, ocular lubricants, topical NSAIDs
 - More severe presentations may warrant judicious use of topical corticosteroids, though this remains controversial
 - Physical removal of pseudomembranes

New and Emerging Perspectives on MGD & Dry Eye

Testing...?

- ◆ Empirical diagnosis
- ◆ RPS (Rapid Pathogen Screening) **Adeno Detector**
 - Point-of-care, immunochromatographic testing
 - Qualitative, in-vitro detection of viral antigens
 - Clinical results:¹
 - Sensitivity: 88%
 - Specificity: 91%
 - Test time: 10 minutes
 - Shelf life: 18 months
 - Cost: ~\$17⁰⁰/test (case of 20)



1. Samikavsky R, Teuber S, Schirra F, et al. The RPS adeno detector for diagnosing adenoviral conjunctivitis. *Optometric*. 2008 Oct; 79(10): 37-41.

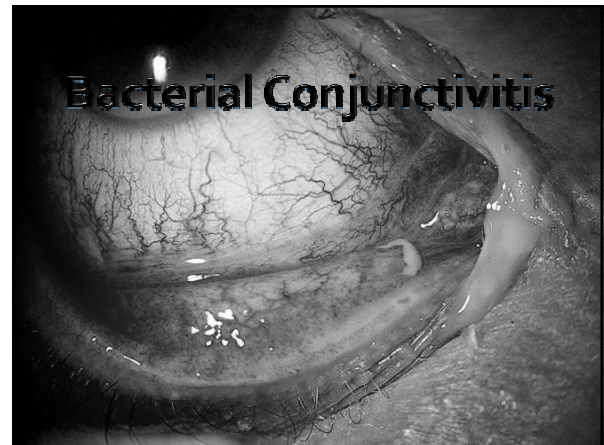
Alternative Therapies for EKC

- ◆ 5% Betadine® solution (povidone/iodine)
- ◆ Protocol:
 - anesthetize the eye with 0.5% proparacaine
 - instill one drop of an NSAID (e.g. Acular)
 - instill four to five drops of Betadine 5% solution
 - rub along the eyelid margins using a gloved finger or a cotton swab moistened with Betadine
 - after 60 seconds, lavage the ocular tissues with sterile saline irrigation solution.
 - Rx a steroid drop (e.g. Lotemax QID) for several days to hasten recovery and enhance comfort.



Richard W. Thurman, D. Bruce BGC with a review of the new of Optometric Report

◆ www.betadineforekc.com



Bacterial Conjunctivitis

- ◆ A self-limited disorder... so why treat?
 - Reduce symptoms & shorten course
 - Reduce the risk of contagious spread
- ◆ Dosing depends on individual drug, e.g.
 - **Zymaxid** - q2h (≤ 8 times) X 24 hours, then BID – QID X 6 days
 - **Besivance** - TID X 7 days
 - **Moxeza** - BID X 7 days
 - **AzaSite** - BID X 2 days, then qD X 5 days

Moxeza™ (Alcon Laboratories)

FDA approval: November 19, 2010



- 0.5% moxifloxacin ophthalmic solution
- 3 mL bottle
- Xanthan gum: improves pharmacokinetics
 - rapid penetration, increased bioavailability
- No BAK – “self-preserved”
- pH ≈ 6.8
- Indication: treatment of bacterial conjunctivitis in patients aged four months or older
- Dosing: **BID X 7 days**

New and Emerging Perspectives on MGD & Dry Eye

Kabat AG, Granet DB, Amin D, Tort MJ, Blais MS. Evaluation of olopatadine 0.2% in the complete prevention of ocular itching in the conjunctival allergen challenge model. Clin Optom. 2011;3 57-62.

- ◆ n = 40
- ◆ Randomized, double-masked, placebo-controlled CAC trial
- ◆ Assessed complete prevention of itching ("zero itch") at 3, 5, & 7 minutes post-challenge (27 minutes after dosing)

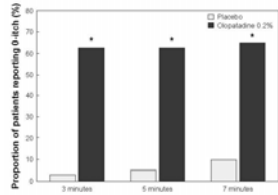


Figure 1 Proportion of patients reporting itching scores of 0 in each eye following study drug administration.
 Notes: *Denotes significant difference between olopatadine 0.2% and vehicle; P < 0.05. Profiles are from McNameer's visit.



THANK YOU!

- Al Kabat
 Questions?
 Email me at: kabat@nova.edu

DISCLAIMER: Dr. Kabat has no direct financial interest in any of the products mentioned in this presentation.