MANAGING THE LID MARGIN AND LASHES: IN-OFFICE PROCEDURES

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DISCLOSURES

Allergan
Bausch and Lomb
BioTissue
Blephex
ScienceBased Health
TearScience
CONDITIONS TO CONSIDER

• COMMON CONDITIONS SEEN DAILY IN THE OPTOMETRIC PRACTICE. THIS COURSE WILL REVIEW THE PREVALENCE, DIAGNOSIS, AND THEN FOCUS ON IN-OFFICE TREATMENTS OPTIONS FOR EACH.

• MEIBOMIAN GLAND DYSFUNCTION

• ANTEROPLACEMENT AND THICKENING OF LINE OF MARX

• DEMODEX BLEPHARITIS
MEIBOMIAN GLAND DYSFUNCTION
IN-OFFICE PROCEDURES

• MGD
  • LIPIFLOW
  • MiBoFlo ThermoFlo
• MASKIN PROBING
• MANUAL EXPRESSION
• ALTERATIONS IN LINE OF MARX
  • DEBRIDE
• BLEPHARITIS
  • BLEPHEX
Meibomian gland dysfunction (MGD) is a chronic, diffuse abnormality of the meibomian glands, commonly characterized by terminal duct obstruction and/or qualitative/quantitative changes in the glandular secretion. It may result in alteration of the tear film, symptoms of eye irritation, clinically apparent inflammation, and ocular surface disease.

-TFOS INTERNATIONAL WORKSHOP ON MGD, 2011
## MEIBOMIAN GLAND DYSFUNCTION

### PREVALENCE

**Table 2.**  
Frequency of MGD in Selected Clinical Populations

<table>
<thead>
<tr>
<th>Study</th>
<th>n</th>
<th>Parameter</th>
<th>Frequency</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>97</td>
<td>Meibomian gland dysfunction</td>
<td>32.9% (95% CI, 23.8–43.5)</td>
<td>Horwath-Winter et al.(^\text{41})</td>
</tr>
<tr>
<td>California</td>
<td>398</td>
<td>Cloudy or absent secretion of meibum in lower lid</td>
<td>38.9% (95% CI, 34.0–44.0)</td>
<td>Hom et al.(^\text{35})</td>
</tr>
<tr>
<td>China</td>
<td>115</td>
<td>Meibomian gland dysfunction</td>
<td>34.8% (95% CI, 26.2–44.4)</td>
<td>Zhang et al.(^\text{42})</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td>Meibomian gland dropout in more than one half of inferior tarsus</td>
<td>57.9%</td>
<td>Shimazaki et al.(^\text{43})</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td>Meibomian gland dysfunction</td>
<td>61.0% (95% CI,</td>
<td>Shimazaki et al.(^\text{44})</td>
</tr>
<tr>
<td>Sjögren's</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Sjögren's</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Debra A. Schaumberg, Jason J. Nichols, Eric B. Papas, Louis Tong, Miki Uchino, and Kelly K. Nichols
MEIBOMIAN GLAND DYSFUNCTION
DIAGNOSIS

• Get a symptom baseline, SPEED or OSDI

• Grade the function and anatomy of the glands
  
  • Express glands, ideally with Meibomian Gland Evaluator (MGE), which mimics blink pressure, or your thumb
  
  • Count the number of functioning glands. Minimum of 6 should secrete oil

• Visualize glands with transillumination or Lipiview, Lipiscan, or Keratograph
GRADING MG ANATOMY
MEIBOSCALE

Meiboscale

Area of Loss

Degree 0
≈0%

Degree 1
≤25%

Degree 2
26% - 50%

Degree 3
51% - 75%

Degree 4
>75%

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<table>
<thead>
<tr>
<th>Grading scheme</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>All glands patent. Clear fluid is expressed.</td>
</tr>
<tr>
<td>1</td>
<td>One or two glands partially obstructed. Clear to cloudy fluid is expelled on mild digital pressure.</td>
</tr>
<tr>
<td>2</td>
<td>Three or more partially obstructed glands. Cloudy or opaque fluid is expelled on digital pressure.</td>
</tr>
<tr>
<td>3</td>
<td>One or two blocked glands with many partially obstructed glands. Tear film foaming is noted along the lid margins. Inspissation noted; toothpaste-like expression with moderate to hard digital pressure.</td>
</tr>
<tr>
<td>4</td>
<td>Three or more blocked glands with the remaining glands partially obstructed. Meibum difficult to express, even with hard digital pressure.</td>
</tr>
</tbody>
</table>
IMAGING MEIBOMIAN GLANDS
TECHNIQUES AND IMAGES

• TRANSILLUMINATION
• OCULUS KERATOGRAPH
• TEARSCIENCE LIPISCAN
• TEARSCIENCE LIPIVIEW II
IMAGING MEIBOMIAN GLANDS
TRANSILLUMINATION

• Darken the exam room, evert the lower lid with transilluminator as patient looks up

• Slit lamp light is also off

• There should be around 25 glands in the lower lid

• Pros: inexpensive and quick

• Cons: this method include a limited field of view, low contrast between structures limiting visualization of details and some discomfort for the patient, cannot image uppers
Meibomian glands are dark, like tiger stripes
OCULUS KERATOGRAPH

Multi-function instrument:
- Corneal topography
- Anterior seg photography
- Zernike, Fourier analysis
- Contact lens fitting
- Keratometry

JENVIS REPORT
- Tear meniscus height
- Lipid layer thickness
- Meibomian gland imaging
- Tear film break-up time

- Uses IR for gland imaging
- Images not as clear as TearScience products
IMAGING MEIBOMIAN GLANDS
OCULUS KERATOGRAPH

- 25 yo female
- Note gland tortuosity
“The first and only dedicated high definition (HD) gland imager that allows eye care professionals (ECPs) to efficiently evaluate meibomian glands in busy practices.

The new rapid imager was created with end users in mind. Fast and intuitive, LipiScan harnesses patented dynamic meibomian imaging (DMI) technology to produce high definition images of meibomian glands. LipiScan allows ECPs to assess meibomian gland structure during routine workups in any practice setting.”

Press Release
IMAGING MEIBOMIAN GLANDS
TEARSCIENCE LIPISCAN

Note gland tortuosity
IMAGING MEIBOMIAN GLANDS
TEARSCIENCE LIPIVIEW II

Indications for Use: The LipiView II Ocular Surface Interferometer is an ophthalmic imaging device that is intended for use by a physician in adult patients to capture, archive, manipulate and store digital images of:

• Specular (interferometric) observations of the tear film. Using these images, LipiView II measures the absolute thickness of the tear film lipid layer.
• Meibomian glands under near-infrared (NIR) illumination.
• The ocular surface and eyelids under white illumination. -TearScience
The LipiFlow® Activator, a single-use sterile device, safely and comfortably delivers automated therapeutic energies to each meibomian gland while protecting the delicate structures of the patient’s eye.

Supported by 36 patents and seven years of dedicated research, LipiFlow® provides a level of accuracy and quality that allows eye care professionals to treat their MGD patients with confidence and ease.

Takes 12 minutes to do both eyes (at the same time)

Comfortable to patients

Has consumable costs

Single treatment lasts 1 year minimum.

photos by TearScience
The MiBoFlo Thermoflo® is a new therapeutic device for the treatment of dry eye. It employs a proprietary thermoelectric heat pump designed to liquify inspissated secretions and improve meibomian glandular function.

The MiBo delivers an effective temperature of 108 degrees within a variance of less than 3%. The unit has an adjustable timer allowing for physician-controlled customization of therapy.

Perform three consecutive treatments. The first is 12 minutes per lid, the second is performed 1 week later and lasts 10 minutes per lid, and the third is performed 2 weeks later and lasts 8 to 10 minutes per lid.

No consumables

Lacks peer-reviewed research
MGD TX
MASKIN MEIBOMIAN GLAND INTRADUCTAL PROBE

• A cannula used to open obstructed glands

• Topical anesthetic is used

• Seems to provide relief, between 1-6 months, up to 18 months

• Can provide quick relief, but may be uncomfortable and cause orifice heme
• Titanium. Smooth. Designed to gently and effectively express meibum from the meibomian glands.

• When positioned behind the anesthetized eyelid parallel to the glands, gentle digital pressure on the outer lid prompts meibum egress.

• Heat with Bruder mask or similar for 7-10 minutes

• Instill 1 drop proparacaine

• Wear gloves, can use cotton bud.

• Start nasally and work temporally

• Work from the distal end of the gland toward proximal

• Use firm, steady pressure. Give thickened oil time to express.

• Pros: inexpensive, gives symptomatic relief

• Cons: uncomfortable for patients, may need to be repeated often, time consuming (warm compresses prior)
ANTEROPLACEMENT OF LINE OF MARX

REVIEW OF ANATOMY

- The line of Marx is the mucocutaneous junction between palpebral conjunctiva and the eyelid just posterior to the meibomian glands, is around 0.1mm wide, and visible upon upgaze without lid eversion. It is the separation of keratinized and non-keratinized epithelium.

ANTEROPLACEMENT OF LINE OF MARX

DIAGNOSIS

• APPLY LISSAMINE GREEN

• LOOK AT THE LINE OF MARX

• NORMAL IS A THIN, STRAIGHT LINE

• LOOK FOR ENCROACHMENT TOWARD MEIBOMIAN GLANDS AND ELEVATION

• STAINING TOWARD THE EYE IS LID WIPER EPITHELIOPATHY (FRICTION)
DIAGNOSIS

ANTEROPLACEMENT OF LINE OF MARX

• Note encroachment toward MGs
• LWE also present
ANTEROPLACEMENT OF LINE OF MARX
ANTEROPLACEMENT OF LINE OF MARX
LID WIPER EPITHELIOPATHY

GRADING SCALE

| TABLE 1 |
|-------------------|-------------------|-------------------|-------------------|
| **Grading of Lid Wiper Epitheliopath**y* (Korb et al, 2005) |
| Horizontal length of staining | GRADE 0 | GRADE 1 | GRADE 2 | GRADE 3 |
| <2mm | 2mm to 4mm | 5mm to 9mm | >9 mm |
| Average sagittal width of staining | <25% | 25% to 50% | 50% to 75% | >75% |

* The individual grades for each of the two characteristics are averaged for a final grade for staining.

ANTEROPLACEMENT OF LINE OF MARX
THE PROCEDURE

• Apply proparacine or tetravisc in the eye and have the patient blink
• Instill lissamine green
• Visualize the Line of Marx (LOM)
• Use a golf club spud or chalazion scoop
• Debride entire width of the keratinized lower lid margin, going over the meibomian glands, followed by debridement of the stained LOM
• Do not debride the lid wiper region
Start nasally and work laterally. Go over LOM and then over MGs.
DIAGNOSIS

DEMODEX BLEPHARITIS

• Cylindrical dandruff is pathognomonic
• Other signs:
  • conjunctival redness
  • madarosis
  • misdirected lashes
  • weak, brittle lashes
  • lid hyperemia
  • lid telangiectasia
  • lash distention
Demodex blepharitis was present in 32.4% of all subjects
(Scott E Schachter; Aubrey Schachter; Milton M Hom; Scott G Hauswirth, ARVO, 2014)
DEMODEX BLEPHARITIS

MICROSCOPIC APPEARANCE
DEMODEX BLEPHARITIS
DEMODEX BLEPHARITIS

CLINICAL CASE

- 22 yo male. Note uneven lid line and lash distribution, lash distention, collarettes

- Before and after 1 month, Cliradex wipes, bid, OU
BLEPHEX BY RYSURG

- Blephex
- Instill a drop of Tetravisc
- Soak! (saturate) tips in Blephex solution
- It should be foamy as you go
- Use a new tip for each lid
- Work along lash line and lid line over meibomian glands
- Push harder if it tickles too much
- Do touch up behind the slit lamp
- Use gloves
- Rinse thoroughly after
Push the button once to start, again to switch directions, and again to turn off. Work the base of the lashes and the lid margin. Check your work at the slit lamp and can touch up there. CD can be stubborn.
BLEPHEX, BEFORE AND AFTER
EVIDENCE-BASED PROCEDURES

• Read the research to support your treatment decisions
CONCLUSIONS: A single VTP treatment can deliver a sustained mean improvement in meibomian gland function and mean reduction in dry eye symptoms, over 12 months. A single VTP treatment provides significantly greater mean improvement in meibomian gland function and dry eye symptoms as compared to a conventional, twice-daily, 3-month regimen. Early VTP intervention for meibomian gland dysfunction is associated with improved treatment outcomes.

CONCLUSIONS: Intraductal meibomian gland probing seems to improve meibomian gland lipid levels, and it may be a good treatment option for cases of o-MGD that are resistant to conventional treatment.

Analysis of Meibum Before and After Intraductal Meibomian Gland Probing in Eyes With Obstructive Meibomian Gland Dysfunction Nakayama, Naohiko MD; Kawashima, Motoko MD, PhD; Kaido, Minako MD, PhD; Arita, Reiko MD, PhD; Tsubota, Kazuo MD, PhD
Cornea. 2015 Oct;34(10):1206-8
CONCLUSIONS:
The debridement-scaling of the LOM and lower lid margin provides statistically significant symptom relief and improvement in the MG function. The novel procedure should be considered in the management of MGD and evaporative dry eye.

Debridement-scaling: a new procedure that increases Meibomian gland function and reduces dry eye symptoms.
Donald R. Korb, Caroline A. Blackie
Cornea. 2013 Dec; 32(12): 1554–1557. doi: 10.1097/ICO.0b013e3182a73843
"It has been known for over 150 years that treatment for MGD/obstruction to be optimally effective the stagnated contents of the glands must be evacuated. Until recently, the only known method to evacuate stagnated gland contents has been to manually express the glands using physical force. This procedure although effective is also extremely uncomfortable. In fact, it has been reported that the primary limitation to efficacy of manual expression is pain."  Caroline Blackie
IN-OFFICE LID TREATMENTS
PATIENT AND PRACTICE BENEFITS

• Higher level of care
• Distinguish your practice
• Has a cash pay component immune to downward pressure from insurance
• Provides symptomatic relief for patients
• Proactive is better than reactive
• Prevalence of ocular surface disease is increasing as our patients’ vision demands increase
IN-OFFICE PROCEDURES

PRACTICE PEARLS

- Use patient communication sheets
- (join ODs for Ocular Surface Disease on Facebook for resources)
- Recommend, check boxes, staff reviews with the patient
- Use anterior segment photos to explain their condition
- Show before and after Blephex pictures
- Follow back in 1 -2 months. 3 months is too long.
- Recommend at-home care and sell in your practice
SINCERE THANKS FOR YOUR ATTENTION

• QUESTIONS?

• SSCHACHTER@VISIONSOURCE.COM

• FACEBOOK: ODS FOR OCULAR SURFACE DISEASE