MODERN MANAGEMENT OF MGD:
Practical Strategies to Elevate Care

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Meibomian gland dysfunction (MGD) has been shown to affect 86% of patients with dry eye.1 As a chronic, progressive disease, MGD has life-long consequences and requires ongoing care. Whether the patient is a heavy computer user, a contact lens wearer, or a candidate for cataract or refractive surgery, significant attention should be paid to identifying compromised, lost and malfunctioning glands.

Fortunately, our ability to assess gland function and structure has improved significantly with technology like the meibomian gland evaluator and meibography. Furthermore, if a patient has a diagnosis of dry eye disease, we can directly treat the primary causes of the disease as well as manage the ocular surface response (signs and symptoms) to having the disease.

As modern life marches on and patients become increasingly connected to digital devices and interested in refractive surgical procedures, the imperative to optimize ocular surface health should be a top priority. This guide is intended to help you do just that.
DISEASE ASSESSMENT

Dr. Raviv: Do you wait for patients to mention symptoms before actively looking for signs of dry eye and MGD?

Dr. Farid: We cannot diagnose and treat dry eye based on symptoms alone. It is so much harder to treat disease late in the disease process, particularly MGD since the atrophied glands may not recover. Our job is to identify and treat disease even when patients don’t know they have a problem.

Dr. Karpecki: Patients with advanced disease often don’t complain at all.

Dr. Claypool: Many of them start to think that it’s normal to be uncomfortable. Then, over time, they become desensitized and don’t feel the disease as much, despite the fact that it has progressed.

Dr. Matossian: Even in earlier stage disease, many patients avoid mentioning their symptoms, and the signs can be easy to miss. However, these same patients may leave your practice if you don’t address the problem they never discussed with you. That’s why we need to be proactive by asking the right questions. Patients vote with their feet and switch to another doctor who pays closer attention, takes their disease seriously, and treats them accordingly.

TIP: Don’t wait for symptoms. Proactively look for disease.

Dr. Farid: How has meibography changed your practice?

Dr. Matossian: Gland imaging technology has made us newly aware that gland atrophy doesn’t only affect MGD patients. However, meibography can be an important tool in identifying early signs of meibomian gland dysfunction (MGD) and guiding treatment decisions.

Getting Started

Actively looking for dry eye and MGD should be a part of every doctor’s exam. Begin with the patients that are in your chair. Make it simple. It doesn’t need to be time-consuming or affect your clinic schedule.

1. Commit to proactive care: Routinely:
   - Incorporate a validated symptom questionnaire
   - Evaluate meibomian gland function (use a standardized method e.g., MGE)
   - Evaluate meibomian gland structure (e.g., dynamic meibomian imaging)
   - Dedicate a work stream to educate patients
2. Treat MGD effectively (include in-office treatment, e.g., LipiFlow®)
3. Set appropriate short- and long-term treatment expectations

questions and visual complaint questions.

Dr. Farid: For pre-operative patients, I use the modified SPEED questionnaire recommended by the ASCRS clinical cornea committee. It is easy for patients to understand and easy to complete within a few minutes. It also offers clues as to whether or not the patient may be a candidate for a presbyopia-correcting IOL.

Dr. Claypool: Our intake forms include a few questions that trigger basic testing. If a patient indicates any symptoms on the intake form, we automatically perform meibography and the patient will complete a SPEED questionnaire. Based on those findings, the technician will decide whether further point-of-care testing is needed prior to the doctor’s exam.

TIP: Whether you use a standardized questionnaire or create your own, make a detailed survey part of your routine.

"Our job is to identify and treat disease even when patients don’t know they have a problem.” - Marjan Farid, OD
fect older patients. Young patients also experience gland dropout.* This makes perfect sense when you consider the modern digital lifestyle.

Dr. Raviv: Although we don’t have all the answers yet, we know a lot more now about the disease than we did 10 years ago or 15 years ago, which is largely due to our ability to visualize the structure and better capture the function of the glands.

Dr. Claypool: Looking ahead, I hope one day meibography will become as routine in eye care as x-rays are in dentistry.

Dr. Raviv: Logic dictates that the earlier we can diagnose something, the sooner we can study it, intervene, and treat.

Dr. Matossian: Do you perform meibomian gland expression on all patients?

Dr. Karpecki: Yes because it’s not easy to diagnose MGD simply by looking at the eyelid margins. You really need to express the glands.

"LipiScan® is a critical component in my patient education. When the patient is in my chair, we project the scans on a very large LCD monitor and use it to help discuss the pathophysiology of the condition. - Tal Raviv, MD"

Dr. Raviv: It is amazing what you start to find when you express every patient’s meibomian glands.

Dr. Farid: I perform gland expression as a standard diagnostic.

Dr. Claypool: It’s surprising how many patients tell me they don’t have symptoms, yet I find blocked glands. That’s why I don’t wait for symptoms anymore; I express every patient’s glands. Whether or not I find a problem, the information serves as a useful baseline. Also, once you get into the routine, it doesn’t take much time.

TIP: Make gland expression part of your standard routine.

MGD, DRY EYE OR BOTH?

Dr. Matossian: We tend to use the term dry eye interchangeably with MGD. Do you think this has contributed to the confusion about these diseases?

Dr. Claypool: Doctors and patients may mistakenly view MGD as a form of dry eye.

Dr. Farid: That’s because the two conditions frequently go hand in hand.

Dr. Karpecki: But it is important that our colleagues recognize that the two diseases are not the same. MGD is a common contributor to dry eye disease and has been shown to affect 86% of patients with dry eye, but they are two separate conditions. The reason we tend to put them in the same bucket is because when you have decreased oils being expressed from the meibomian glands in an MGD patient, at some point it will likely have an effect on the tear film and ocular surface, leading to evaporative dry eye disease.

TIP: Dry eye and MGD are two distinct, though often overlapping, diseases.

*The LipiFlow® Thermal Pulsation System, Meibomian Gland Evaluator, LipiScan® Dynamic Meibomian Imager (DMI), and LipiView® II Ocular Surface interferometer are intended for use in adult patients.
Dr. Claypool: How do you differentiate the two diseases?

Dr. Karpecki: In many cases, MGD precedes dry eye. If the glands are not functioning and they’re not distributing oils to the tear film, dry eye is the expected consequence. This is why prompt diagnosis of MGD is so critical. Ideally, we should be doing something to address malfunctioning glands before osmolarity surpasses 308 mOsmol/L.

Dr. Farid: Unfortunately, we usually see patients later in the disease process when inflammation is already present. It is critical to assess the rapidity and consistency of the meibomian gland secretions at every visit so that proper treatment can be started.

TIP: Determine whether the patient has dry eye, MGD or both diseases.

PATIENT EDUCATION + MEIBOGRAPHY

Dr. Karpecki: What role does meibography have in patient education?

Dr. Raviv: LipiScan® is a critical component in my patient education. When the patient is in my chair, we project the scans on a very large LCD monitor and use it to help discuss the pathophysiology of the condition.

Dr. Claypool: For several years, we had LipiFlow® but did not have meibography, and it was a lot tougher to talk to patients about their conditions and what we could do about it. Now I can show them. Having meibography has revolutionized the way we’re able to talk about and treat MGD. I couldn’t imagine practicing without it now.

Dr. Raviv: I wish we had something like meibography for every part of our anatomy, including cataracts. It makes it much easier for me to explain. Plus, it has tremendous value for me because it enables me to follow disease progression over the years.

TIP: Use meibography to help patients understand the importance of their meibomian glands and how atrophy can impact them.

Dr. Farid: When do you discuss MGD and dry eye with your patients?

Dr. Matossian: When I meet the patient in the exam room, I already have all of the information at my fingertips and I can use the images and information to educate the patient as I proceed with my clinical exam.

Dr. Claypool: In our workup, imaging is performed first, and when I come in the exam room I will do the gland expression. As I’m doing the gland expression I talk to the patient about the disease. This is a big time saver.

Dr. Farid: Do you have any standard language that you typically use to explain MGD?

Dr. Claypool: I say, “these glands across your eyelid aren’t producing the oil as well as they should.” If they have atrophy, I’ll add, “some of them have died off because they’ve been clogged for so long.” Then I explain that if we don’t do anything it’s just going to keep getting worse. I don’t want to scare them, so I say “you don’t go blind from this, but it can impact the quality of your vision and the comfort of your eyes.”

Dr. Matossian: For cataract patients, I say, “You have two diseases. The cataract I can ‘cure’ by removing it. But the MGD is progressive and chronic, which I cannot ‘cure.’ However, we can work together to find therapies to address the lifelong disease.”

TIP: Develop standardized language to explain MGD so opportunities to educate are not missed and the conversation comes easily.

During your exam, observe the quality of meibum as well as the quantity.
Dr. Raviv: How do you make patients understand that MGD isn’t going to get better on its own?

Dr. Claypool: Patients are a little scared and don’t want to lose more glands. I want to give them hope that prevention is possible, even if restoration may not be. My job is to educate so patients understand the condition and respect how we prefer to alleviate it.

Dr. Karpecki: We don’t want to scare patients but we do need them to take it seriously. I pull up the scan and say, “I’m seeing something here that concerns me.” This one sentence changes the energy in the room right away. Then I show them the pathology.

Dr. Matossian: Asymptomatic patients present the biggest challenge because it’s hard to make them understand that they have a disease that’s advanced enough to require lifelong therapy, for which they may need to pay out of pocket. To address this challenge, our messaging needs to be consistent; we need to reinforce it in the reception room, exam room, in emails and in videos. Not everyone will accept it before it starts to affect how they feel or how well they see, but many will let us help them before it advances to that point.

Dr. Karpecki: I explain that MGD is chronic like arthritis, and the patient will have the disease for life. As with an arthritis flare-up, there will be times when dry eye symptoms will be more bothersome and we will need to treat that accordingly.

Dr. Farid: I also want patients to understand that dry eye is progressive, meaning it gets worse if the patient doesn’t take it seriously and treat it. I want my message to resonate because I worry that if we wait too long, the disease will progress and over time it will likely be harder for me to make the patient comfortable. When this happens it causes a great deal of frustration for me and for the dissatisfied patient.

**TIP: Emphasize that MGD is chronic and will not improve without ongoing treatment.**

### CONTACT LENSES

**Dr. Raviv:** The prevalence of MGD in contact lens wearers is reported between 30% and 60%. What role does LipiFlow® have in your contact lens practice?

**Dr. Karpecki:** We see patients every day who have dropped out of lens wear due to discomfort. Often, they are afraid to tell you about symptoms for fear that you’ll take them out of their lenses. Other times they don’t mention it because they accept discomfort as a normal part of contact lens wear.

**Dr. Claypool:** I’m one of these patients. I stopped wearing contact lenses due to discomfort, but I was
Dr. Farid: I've seen countless patients who have become contact lens intolerant over time due to MGD and have found that, after treating it with LipiFlow®, the tear film improved and I was able to get these patients back into their contact lenses.

Dr. Karpecki: I used to first try switching solutions, modalities, materials and brands, but now I'm using LipiFlow® on patients when they present with MGD and mild to moderate discomfort and many of these patients are back to full day wear.

Surgical Patients

Dr. Claypool: How important is it to address dry eye preoperatively?

Dr. Karpecki: The stakes are higher with pre-op patients than they are with a contact lens patient. A contact lens wearer may move in and out of lenses several times in their lifetime, but once you put an IOL in the eye, it’s unlikely you’re going to replace it.

Dr. Raviv: As a refractive cataract surgeon, I take the ocular surface very seriously and consider it key to a successful outcome. I won’t go into the OR with a premium lens patient without feeling certain that I have done all I can to treat dry eye and MGD.

Dr. Farid: Untreated dry eye disease can affect your preoperative biometry measurements. Research shows that patients who had osmolarity scores within normal limits were within a half diopter of intent, whereas 17% of those with hyperosmolarity would have missed their IOL calculation by more than a diopter.

Dr. Matossian: We conducted a pilot study in our practice on 25 eyes. At visit 1, we performed preoperative measurements and based original IOL calculations on these measurements. We then performed LipiFlow® on these patients. Six weeks
later, at visit 2, measurements were repeated and IOL calculations were performed again based on these new measurements. We found that pre-treatment with LipiFlow® prior to keratometry and topography measurements for cataract surgery correlated with a 40% change in my original surgical plan. Specifically, my surgical plan changed from no intervention to LRI or toric in 28% of cases. It changed from LRI or toric to no intervention in 8% of cases. And, my surgical plan changed from a toric to an LRI in 4% of cases.

**How do you incorporate OSD diagnosis into your pre-op routine?**

**Dr. Raviv:** During my pre-operative exam, I look at the tear film, the topography, the cornea, the conjunctiva and the lids. I then use a cotton swab to express the meibomian glands and evaluate the meibum for consistency and color.

**Dr. Matossian:** I perform a complete ocular surface disease workup in 100% of my cataract consult patients. Every patient completes a variation of the SPEED questionnaire and we perform three tests on every pre-op candidate: tear osmolarity, MMP-9, and meibography.

**Dr. Claypool:** We perform meibography on all of our LASIK and premium IOL patients as well.

**Dr. Farid:** Does LipiFlow® have a role post-op in your practice?

**Dr. Raviv:** Whether or not a patient had LipiFlow® prior to surgery, we sometimes find that it is helpful postoperatively. In fact, we have several patients who have the procedure annually.

**Dr. Matossian:** We frequently use LipiFlow® post-op. Even when you’ve tuned-up the surface and the patient has an outstanding surgical outcome, nature can take its course. It’s not uncommon for patients to stop taking their oral Omega 3s and dry eye medication drops. Before you know it, the patient comes back complaining of fluctuating vision. I always check for posterior capsular opacification (PCO); at times I find the visual change is strictly related to the ocular surface. When this happens, I go back to square one and recommend LipiFlow® as well as additional treatments for MGD.

**Dr. Karpecki:** There are also some patients who go

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into surgery without any signs or symptoms of dry eye, but the surgical procedure pushes them over the edge and they are symptomatic postoperatively. In these cases, I have found LipiFlow® to be very useful to achieve satisfaction with the surgery.

Dr. Claypool: We recently saw a patient who had blurry vision following cataract surgery. She assumed the problem was due to the cataract surgery and said she wanted the new IOL removed. After a comprehensive exam, I explained to her that there wasn’t a problem with the IOL; she had MGD and it was ocular surface disease that was causing her blurry vision. We performed LipiFlow® and two weeks later she came back in tears, and she hugged me and told me that I changed her life.

TREATMENT

Dr. Karpecki: Where do you think some doctors go wrong when treating dry eye and MGD?

Dr. Raviv: All of us have been faced with patients later in the disease spectrum, many of whom present with visual signs and lifestyle-disabling symptoms. That’s why we need to treat this as early as possible.

Dr. Claypool: In some ways, eye care is where dentistry was many years ago, before we knew that you have to brush your teeth to prevent problems. Consider how often we wait until there are symptoms of burning, watering, redness and irritation to treat MGD or dry eye disease. I wish there was a greater focus on prevention. I prefer a natural approach to treatment when possible and LipiFlow® gets the glands pumping to help introduce the eye’s natural oils.

Dr. Farid: What are the key benefits of LipiFlow® in your practice?

Dr. Raviv: A primary benefit to LipiFlow® is the

Remember! MGD is a chronic disease with a high prevalence that interferes with patient lifestyle choices.

1. Choose a diagnostic and treatment process that is routine, consistent, ready for high volume. This should be a pleasant, informative experience for your patients, your staff, and yourself. Don’t be afraid to involve your staff and educate them on power of the disease and how technology can be used to address it.

2. Choose a patient education process that is consistent and efficient, with multiple touchpoints in the patient pathway. These touchpoints should address the disease state, why it needs to be treated, and why your recommended treatment is the best approach.
longevity of efficacy from one treatment. For 86% of patients who received only a single LipiFlow® treatment over 12 months, mean improvement in meibomian gland function and dry eye symptoms was sustained from 1 to 12 months.6

Dr. Matossian: LipiFlow® is versatile, meaning it allows you to treat both the upper and lower lids simultaneously. Plus, it’s automated and user-friendly and doesn’t require you to manually express the glands after heating them up.

TIP: Consider the unique benefits of LipiFlow® and weigh them alongside other available treatments.

Dr. Matossian: Until recently, there weren’t as many treatment options. Now, all of a sudden, the market is crowded and a lot of doctors don’t know where to start. What is your treatment protocol?

Dr. Karpecki: Once you have your diagnosis, you really need to know the type of disease because the treatments are different. Is it aqueous deficient or evaporative? Before osmolarity surpasses 308, my recommendation is LipiFlow®, warm compresses at night, and omega fatty acids. I also address any biofilm that might be present. But, if the patient already has tipped into dry eye, I usually also add an anti-inflammatory drop and blepharostaphy.

Dr. Farid: It is so important to dispel the myths surrounding ocular surface disease. For example, there is a common misconception that MGD leads to a dry surface, and therefore if you wet it, your problem will be solved. But MGD is multifactorial and much more complex. You don’t need every single treatment for every patient. Instead, simply target the treatment to the unique presentation and use products that have a proven track record and are grounded in science.

Dr. Claypool: I’m a big proponent of treating the root cause first and then adding on, if needed, to knock out any secondary issues. For example, if a patient has MGD, my first objective is to treat the glands and get the oil flowing. If that’s not enough to knock out tear quality or inflammation, I may add a prescription drop. I wouldn’t choose to treat MGD the other way around because, even if I reduce some symptoms with an anti-inflammatory, the patient will still be left with obstructed glands.

Dr. Raviv: LipiFlow® has always been one of the first treatments in our hierarchy of options for ocular surface disease and MGD. I wish it could be the first for every MGD patient because the treatment makes perfect sense in terms of directly addressing the cause.

TIP: Don’t be overwhelmed by all the new treatments for ocular surface disease. Start with one that directly addresses your patient’s specific condition.


2. Blackie C. A single vectored thermal pulsation treatment for meibomian gland dysfunction increases mean comfortable contact lens wearing time by approximately 4 hours per day. Clinical Ophthalmology 2018: 12;169-83.


CONTRAINDICATIONS
Do not use the LipiFlow® System in patients with the following conditions. Use of the device in patients with these conditions may cause injury. Safety and effectiveness of the device have not been studied in patients with these conditions:

- Ocular surgery within prior 3 months, including intraocular, ocular-plastic, corneal or refractive surgery procedure
- Ocular injury within prior 3 months
- Ocular herpes of eye or eyelid within prior 3 months
- Active ocular infection (e.g., viral, bacterial, mycobacterial, protozoan, or fungal infection of the cornea, conjunctiva, lacrimal gland, lacrimal sac, or eyelids including a hordeolum or sty) (e.g., strep or staph)
- Active ocular inflammation or history of chronic, recurrent, or recurrent ocular inflammation within prior 3 months (e.g., retinitis, macular inflammation, choroiditis, uveitis, iritis, scleritis, episcleritis keratitis)
- Eyelid abnormalities that affect lid function (e.g., entropion, ectropion, tumor, edema, blepharospasm, lagophthalmos, severe trichiasis, severe ptosis)
- Ocular surface abnormality that may compromise corneal integrity (e.g., prior chemical burn, recurrent corneal erosion, corneal epithelial defect, Grade 3 corneal fluorescein staining, or map dot fingerprint dystrophy)

PRECAUTIONS
Caution: Disinfect the surfaces of the chin rest, forehead rest and Handheld Near Infrared (IR) Lid Everter with isopropyl alcohol immediately prior to use and prior to storage to prevent cross-contamination and patient infection.

ADVERSE EFFECTS
There are no known or anticipated adverse effects associated with use of this device.

ATTENTION
Reference the LipiFlow Thermal Pulsation System Instructions for Use for a complete listing of indications, warnings, and precautions.