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Meibomian Gland Dysfunction Gains New Attention

By Linda Roach

Ophthalmologists received a wake-up call from a distinguished panel of international experts on ocular surface diseases last month. In a consensus report developed over two years, the International Workshop on Meibomian Gland Dysfunction called on ophthalmic surgeons and clinicians to pay closer attention to this underdiagnosed, underappreciated and undertreated ocular disorder.¹⁻⁹

The Tear Film & Ocular Surface Society (TFOS) asked a group of more than 50 clinicians and researchers to take an evidence-based look at the role of the meibomian gland in health and disease.

Published by ARVO's Investigative Ophthalmology & Visual Science (IOVS) journal in March, the 168-page manuscript contains exhaustive reviews of results from hundreds of scientific studies, incorporating new concepts in meibomian gland dysfunction (MGD) that are only now beginning to emerge. As the International Dry Eye WorkShop (DEWS) report did for dry-eye disease four years ago,¹⁰⁻¹⁵ this new MGD report also identifies the future research needed to address the many unanswered questions about MGD pathophysiology and treatment.

Translations on the way

TFOS intends to disseminate the MGD Workshop's findings to as many clinical ophthalmologists and surgeons as possible around the world. It plans to produce complete or partial translations into several languages, including Dutch, French, German, Greek, Italian, Japanese, Polish, Portuguese, Spanish, Turkish and Russian.

The report essentially draws a road map toward a goal of better clinical recognition, classification and management of MGD. Answering the many questions about the meibomian glands' function is crucial to developing better therapies for MGD, dry eye and other ocular surface diseases, the workshop's participants suggested.

"This report will have a significant impact on the diagnosis and treatment of lid disease and evaporative dry eye. It is intended to be a stimulus for future MGD research that will benefit the clinical care of patients around the world for years to come," said Kelly K. Nichols, OD, MPH, PhD, associate professor at Ohio State University College of Optometry in Columbus and chair of the MGD Workshop Steering Committee.

Studies are unsatisfactory

The Workshop found that there are few studies published on MGD, and many of these are riddled with inconsistencies regarding how outcomes — and even the disease itself — were defined and tracked. Nonetheless, Workshop participants crafted the available evidence into an algorithm for diagnosing and treating MGD.

For refractive and cataract surgeons, this algorithm is important for providing quality patient care because unrecognized MGD can lead to unhappy patients, said Penny A. Asbell, MD, professor of ophthalmology at Mount Sinai Medical Center in New York City. Dr. Asbell chaired the Workshop's subcommittee on the design and conduct of clinical trials.

"The key to success in refractive surgery is good postoperative vision. And one thing all of us have found is that to get good vision, you need a good ocular surface. But the role of the meibomian glands in providing that good ocular surface has been underappreciated," she said.

"Typically, as refractive surgeons we look at the ocular surface and ask if it's good or not, but we forget to look at the lids to see how the glands are doing," she said. "That has to change. We have to open ourselves up to evaluating the whole eye."

Avoiding postoperative complications

Joseph Tauber, MD, an anterior segment subspecialist and refractive surgeon in Kansas City, Mo., agreed, noting that, "untreated MGD increases the risk of postoperative complications. Staging MGD is important because, in some cases, the addition of lid hygiene measures will be sufficient prior to surgery, while in other cases, surgery should be deferred for weeks or even months until high-grade MGD is brought under control."

MGD also has implications for cataract surgery patients. Changes in the tear film from untreated MGD can alter corneal reflectivity and make preoperative K readings inaccurate, Dr. Asbell noted. Patients who are paying extra to have presbyopic IOLs implanted will be

especially upset at the poor visual acuity from an IOL that's the wrong power, she said.

Untreated MGD also might put cataract patients at higher risk of postoperative infection and inflammation, Dr. Asbell said. "We want to avoid any signs of lid inflammation that could be a source of contaminants during surgery, as well as a risk factor for greater postoperative inflammation," she said.

A hodgepodge of labels

Since the term, "meibomian gland dysfunction," was first used in the mid-1980s, it has been used interchangeably with a confusing array of ill-defined terms to describe meibomian gland and lid disease, Dr. Nichols wrote in the executive summary of the Workshop's results.

These have included posterior blepharitis, meibomian gland disease, meibomitis, meibomianitis, MGD (with no reference to disease or dysfunction) and meibomian keratoconjunctivitis.

Consequently, an important element in the MGD report is its definition of meibomian gland dysfunction:

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. This may result in alteration of the tear film, symptoms of eye irritation, clinically apparent inflammation and ocular surface disease.

The group divided MGD into two major types: low delivery states, the most common form, which are characterized by a reduction in meibum secretion; and high delivery states, which are characterized by hypersecretion.

The link between MGD and clinically significant dry eye does not figure into this classification system until there are tear film alterations. That, in turn, causes irritation and inflammation of the ocular surface, the group said.

What clinicians need to know

Acknowledging that busy ophthalmologists might not have time to read the full report, the group produced a two-page overview of the highlights for clinical use. This is available for free from the TFOS website, while IOVS offers downloads of the full report for free.¹⁻⁹

The two-page summary includes:

- a flow chart of the many paths that lead from MGD to ocular surface disease, an umbrella category that includes dry eye.
- an illustration of MGD pathophysiology, showing the factors thought to influence its development. These include aging, contact lens wear and gender and hormonal differences (often as a side effect of medication).
- a unique staging and treatment algorithm for MGD. Displayed as a table, it shows four stages of MGD, lists their symptoms and clinical signs and suggests treatments for each stage. The treatments are rated as "supported by the evidence" (+) or "supported by limited or emerging evidence" (\pm).

Dr. Nichols said she pressed the Workshop's diagnostic and treatment subcommittees to break new ground by developing the staging and treatment algorithm from the available evidence. "There is not an existing diagnosis and treatment algorithm in the literature," she said.

Next: Shooting holes in the algorithm

"Once our algorithm is out there and is seen by clinicians, studies can be designed around it to test it to see if it works. You have to start somewhere, and I felt like we would be doing a disservice if we didn't try to define something that people could try to shoot holes in," Dr. Nichols said.

Dr. Tauber agreed on the importance of the algorithm to clinicians. He called MGD, "the most underrecognized, underappreciated and undertreated disease in ophthalmic care. MGD is so common as to be taken as 'normal' in many clinical practices," he said.

"Clinicians must pay attention to the signs of MGD to properly treat patients complaining of nonspecific eye irritation or visual blur," he said.

He added this clinical pearl: Symptoms of MGD are very close to the symptoms of aqueous-deficient dry eye. However, complaints of burning suggest lid margin disease.

Tips for detecting lid problems

Dr. Asbell had two other tips for clinicians looking for MGD: (1) Examine the lids thoroughly at the slit lamp by pulling down on the lower lid and up on the upper lid to expose the lid margin. (2) Use pressure to express some meibum, and evaluate its appearance, which indicates the MGD stage.

"I bet that nine out of 10 ophthalmologists, when doing an eye exam

before surgery, don't look closely at the lid," she said. "To detect MGD, you have to look at the orifices, at the areas where the meibomian gland secretions come out."

"Both of these steps should be routine in every preop patient, Dr. Asbell said. "Ophthalmologists should consider it part of their routine, external ocular examination. They have to remember to do this."

Dr. Tauber urges colleagues to read the Workshop's entire nine-section report.

"I hope every ophthalmologist who treats ocular surface disease reads this report from cover to cover, and I hope all those who are concerned with optimizing patients' visual function read it, too," he said. "I think that includes every one of us."

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Disclosures

Dr. Nichols has received speaking or consultant fees from Alcon, Allergan, Inspire Pharmaceuticals, Pfizer and TearLab. Dr. Asbell has received speaking or consultant fees from Inspire, Aton, Pfizer, Bausch+Lomb, Johnson & Johnson, Vindico, Merck, Santen and Otsuka. Dr. Tauber is a consultant to Alcon, Allergan and Inspire.