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THE ROLE of OMEGA-3s in OCULAR HEALTH

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June 2016

Strategies for Optimizing the Ocular Surface Prior to Cataract Surgery

The health of the ocular surface may be an underappreciated variable in the refractive outcome
By Cynthia Matossian, MD

Advances in technology and surgical techniques have improved the ability of ophthalmic surgeons to offer more predictable refractive outcomes after cataract surgery. However, one often-overlooked aspect of the presurgical workup that can affect outcomes is assessing the health and viability of the ocular surface.

An unhealthy ocular surface prior to surgery can lead to a myriad of implications, such as improper measurement of the axis and magnitude of astigmatism, IOL power calculation errors, and improper or unnecessary disqualification of patients from multifocal and other advanced-technology lens options, among others. In short, failure to optimize the ocular surface prior to surgery could negatively affect visual results and surgical outcomes.

DIAGNOSIS, EVALUATION, TREATMENT

At Matossian Eye Associates, we use a variety of tests to evaluate the ocular surface. We use a dry eye questionnaire, which we designed by selecting questions from the SPEED and the OSDI questionnaires, for all annual eye examinations and when the chief complaint is focused on ocular surface issues. In addition, we use Tear Osmolarity testing (TearLab) to identify irregularities in osmolarity as well as interocular variability of greater than 8 mOsm/l. We also use the InflammDry (Rapid Pathogen Screening) point-of-care test, which demonstrates the existence of pro-inflammatory matrix metalloproteinase-9 biomarkers in the tear film. Additionally, we use placido disc imaging with our Marco OPD-Scan III unit (Nidek) and lissamine green staining of the lid margin, conjunctival and corneal surfaces.

We treat the ocular surface based on the severity of the disease and use a customized, stepwise approach. Use of one or more of the following is fairly typical for most patients: omega-3 oral supplements in the re-esterified

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triglyceride form (PRN Physician Recommended Nutraceuticals), hypochlorous acid lid cleanser (Avenova, NovaBay), cyclosporine 0.05% ophthalmic emulsion (Restasis, Allergan), a microwaveable heated eye mask, intense pulsed light, LipiFlow or short-term topical steroids or a combination of antibiotic and steroid ointment.

NUTRITION AND THE OCULAR SURFACE

Omega-3 fatty acids, specifically eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), are the only active omega-3s useful to the body for normalizing meibum composition. Both the Dry Eye Workshop and International Workshop on Meibomian Gland Dysfunction recommend oral omega-3 supplementation in conjunction with other dry eye treatments to help the meibomian glands produce healthy meibum.

Other evidence is emerging that supplementation can have a beneficial effect on the health of the ocular surface. According to a multicenter, prospective, interventional, placebo controlled, double-masked, randomized trial, oral consumption of re-esterified omega-3 fatty acids (1,680 mg EPA and 560 mg DHA once daily for 12 weeks) effectively improved osmolarity readings, OSDI scores, and tear breakup time at the end of the study (Table).¹

CONCLUSION

The ocular surface may be an underappreciated variable in refractive outcomes after cataract surgery. Treating the ocular surface with omega-3 fatty acid supplementation can prevent poor visual results and surgical outcomes, improving your patients' overall satisfaction with their treatments and procedures.

Cynthia Matossian, MD, is founder and CEO of Matossian Eye Associates, in Pa. and NJ, clinical instructor/adjunct faculty member at Temple University School of Medicine, Philadelphia, and Robert Wood Johnson Medical School, in New Brunswick, NJ. Financial disclosures: Allergan, Nidek, PRN, Rapid Pathogen Screening, and TearLab.

REFERENCE

1. Cynthia Matossian, MD. Strategies for Optimizing the Ocular Surface Prior to Cataract Surgery; Insert to Cataract & Refractive Surgery Today, September 2015; 1-2.

TABLE. EFFECT OF 12 WEEKS OF SUPPLEMENTATION WITH RE-ESTERIFIED OMEGA-3 FATTY ACIDS IN A CLINICAL TRIAL (N = 105)			
	Baseline	6 weeks	12 weeks
Tear Osmolarity (mOsm/L)			
Placebo	326.0 + 15.4, and mOsm/L	317.0 + 20.5	317.7 + 19.7
Omega-3 group	326.2 + 15.8	309.4 + 13.4 (P = .042)	306.9 + 12.1 (P = .004)
OSDI			
Placebo	27.1 ±22.9	19.6 ±17.0	22.0 + 19.3
Omega-3 group	32.4 ±19.2	21 ±14.4 (P = .285)	15.5 + 11.0 (P = .002)
Tear Breakup Time			
Placebo	4.61 ±2.04	5.55 ±2.43	5.81 + 3.13
Omega-3 group	4.78 ±2.96	6.64 ±3.17	8.25 + 4.78