

OSD IN 2017: A DEVICE SUMMARY

Innovation in the world of OSD devices is trending upward.

BY AHMAD FAHMY, OD, FAAO



The year 2017 has produced many innovations in ocular surface disease (OSD) research, diagnostics, and treatment. Researchers have continued the quest to identify key inflammatory factors that drive irregularity of the tear film and alter ocular surface homeostasis. In my OSD clinic in 2017, a few helpful additions have changed

the way I practice. In this article, I share some of my experience with you and describe how these devices have enhanced my practice.

NEUROSTIMULATION

In April, the TrueTear Intranasal Tear Neurostimulator (ITN; Allergan) received marketing authorization from the US Food and Drug Administration (FDA). ITN is the only FDA-cleared device developed to temporarily increase tear production via neurostimulation in adults. The device is designed to trigger tear production by delivering gentle electrical stimulation to the anterior ethmoidal branch of the trigeminal nerve in the upper nasal cavity. Early investigation of ITN showed favorable results, including statistically significant improvements in Schirmer test scores, corneal and conjunctival staining, tear meniscus height, and goblet cell mucin secretion.^{1,2}

A preclinical study also demonstrated improved tear meniscus height, osmolarity, and normal tear proteins, as well as increased tear film lipid layer in rabbit eyes.³ It'll be very interesting to see if these same findings are consistent when evaluated on human eyes.

In my clinic, ITN is a unique nonsurgical and nonpharmacologic option for patients who are typically also using several other treatments to manage their OSD. Most of my patients who are already using several medications to try to restore their ocular surface welcome the addition of an out-of-the-box treatment. As most clinicians usually do, I have tried this device on myself, and there is no doubt that it triggers tear production.

The biggest benefit I've seen in my patients treated with ITN has been a reduction in the most bothersome discomfort associated with OSD. Most of the OSD patients I encounter in clinic are bothered by fluctuation of vision

and moderate discomfort. For this patient subset, ITN has been helpful in decreasing scores on the Standardized Patient Evaluation of Eye Dryness (SPEED) questionnaire. Patients with more advanced OSD tend to be bothered more by pain-like symptoms in addition to poor quality of vision. This is most noticeable in patients with OSD related to comorbidities such as Sjögren syndrome, rheumatoid arthritis, or glaucoma.

I have one unanswered question regarding ITN, and that is when to initiate treatment. Should we be trying to control inflammation as much as possible first, prior to stimulating tear secretion, by making sure osmolarity and MMP-9 are normal? Or will ITN ultimately restore homeostasis in patients with preexisting variable levels of inflammation? In my early experience, ITN improves SPEED scores in patients with hyperosmolar, inflamed eyes, as well as in clinically well-controlled patients.

It will be interesting to learn more about ITN's impact on specific inflammatory markers and corneal nerve function along all severity levels of OSD from large, well-designed clinical studies. As interest in corneal nociception increases, eye care providers need such data. I hope that in coming years our optometry schools and research centers will help us to better understand the links driving abnormal corneal nociception at various levels of OSD. I think there will be significant advances in this area in 2018.



A number of device developments in 2017 have affected how OSD is managed in this clinician's practice.

Neurostimulation is also a part of the proposed mechanism of action of alternative meibomian gland heating devices that employ radiofrequency (RF) energy, such as the Pelleve RF Wrinkle Reduction System (Cynosure). This device has not received FDA authorization for the treatment of meibomian gland dysfunction.

ADDRESSING THE MEIBOMIAN GLANDS

In May, the LipiFlow Activator II (TearScience, now Johnson & Johnson Vision) was released. I have found that patients with OSD who understand the role of the meibomian glands are most likely to buy into a treatment plan, and they are among my most compliant patients.

An important element that TearScience has made available to eye care providers is the ability to acquire high-definition meibomian gland images in 10 seconds in normal lighting conditions. This is a key cog in effectively running a high-volume OSD clinic. The quality of meibomian gland imaging offered by the TearScience device continues to be the gold standard.

LID CONSIDERATIONS

Deciding which OSD instruments are most effective for thorough eyelid debridement, exfoliation, and glandular expression is essential. Most of our OSD patients need routine in-office treatments to reduce biofilm, cylindrical dandruff, and keratinized epithelium in order to maintain the health of that all-important area of transition from the cutaneous side of the lid to the mucous side. Ensuring continued efficient meibum delivery to the ocular surface involves keeping this zone clear of inflammation and physical obstruction, which often slowly accumulate without maintenance.

It is difficult to maintain optimal eyelid health for more than 6 months, even for the most diligent OSD patient. I ask patients to return for in-office debridement, even if they are asymptomatic. I explain to them that this is similar to attending routine dental appointments.

I have recently adopted the LidPro (MiBo Medical Group) device for eyelid debridement. LidPro is a battery-operated, handheld tool that looks like an electric toothbrush. It has a small, disposable, rotating disc that exfoliates the eyelids with a few passes. What I like about this device is that you can use a bit more pressure compared with the BlephEx brush (BlephEx), which seems too soft on most patients and stops spinning if you apply the appropriate amount of pressure needed to perform a thorough debridement.

INTENSE PULSED LIGHT

The most important device-based addition to my OSD clinic in 2017 has been intense pulsed light (IPL) therapy. I anticipate that, by the end of 2018, the number of OSD

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specialists offering IPL will increase significantly. When meibomian gland secretion is very slow on expression, thick (consistency of toothpaste), requires significant pressure with forceps expression, and the lids are telangiectatic, IPL is a fitting treatment.

For patients meeting these criteria, I offer three to five treatments over a 2-to-3-month period. If the mucocutaneous junction is keratinized, I also debride the lid and perform meibomian gland probing. After obstructions are removed and lid inflammation has improved, I maintain the patency of the glands by performing treatment with LipiFlow every 6 months on most patients.

THINGS ARE GOOD IN THE LAND OF DEVICES

It seems to me that the innovation in the OSD space will continue on a steep upward trajectory for the near future. This is truly an exciting time to have a special interest in and passion for OSD treatment. I look forward to using more targeted diagnostic tools in 2018 as our understanding of this complex multifactorial disease continues to evolve. ■

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