A Quick Way to Diagnose and Treat Dry Eye Disease Patients Prior to their Cataract Surgery Measurements



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ataract surgery stands as one of the most frequently performed major surgeries, with an estimated 4 million procedures expected to be performed this year. Patient expectations of excellent vision post-surgery are on the rise. It is important to note that one of the most common causes for patient dissatisfaction after uncomplicated cataract surgery is the presence of poor, uncorrected visual acuity arising from inaccuracies in preoperative measurements of corneal topography and axial length.¹ Among these measurements, keratometry is particularly susceptible to errors, most often due to a dry ocular surface.

Conducting topography on individuals with dry eye disease (DED) can lead to incorrect selection of IOL spherical diopter power, as well as in IOL toric power and axis placement. This results in suboptimal uncorrected visual acuity for the postoperative cataract patient,² which disappoints both patients and physicians alike. Therefore, to increase patient and physician satisfaction and decrease enhancement rate, it's essential for the referring physician and/or surgeon to identify and address a patient's DED before conducting preoperative measurements for cataract surgery.

The identification of DED patients before cataract surgery measurements involves three straightforward steps. First and foremost is obtaining a comprehensive history of ocular surface disease. This can be facilitated through a questionnaire that may trigger measurements of topography, tear osmolarity, or inflammatory markers. Second, during the slit lamp examination, signs of DED including corneal surface lustre, punctate epithelial erosions, tear meniscus height, conjunctival hyperemia, and meibomitis should be evaluated. To further confirm the diagnosis, additional assessments using common dyes for tear film breakup time and epithelial health, such as fluorescein, lissamine green, or rose bengal, may be conducted.

Challenges arise in diagnosing DED among pre-clinical patients who do not yet have symptoms and chronic mild DED patients who may have developed a sympton tolerance or reduced corneal sensation. Nevertheless, the majority of DED patients tend to report symptoms like scratchy, red, or fatigued eyes, along with intermittent blurry vision—particularly while watching TV, reading, or using various digital displays. Their topography images typically show imperfections in the reflected mires (Fig. 1), often one of the earliest associated signs of pre-clinical and mild dry eye disease. Notably, a majority of unsatified post-cataract surgery patients who subsequently experienced dry eye issues and resultant poor vision displayed slightly irregular mires in their initial corneal topography evaluation. Moderate blepharitis, conjunctivochalasis, eyelid malposition, and Demodex eyelash infestation appear more linked with moderate to severe chronic DED and may necessitate consideration if initial DED treatment proves inadequate.



Figure 1. Placido disc image of patient with preclinical DED. Irregular mires indicated with yellow arrowheads.



Once a DED diagnosis is established in a cataract patient, prompt correction is crucial to prevent adverse effects on preoperative topography measurements. This correction is easily accomplished within two weeks for preclinical, mild, and moderate DED patients. I implement a combination of preservative-free artificial tears four times a day, preservativefree steroid eye drops four times a day, and lower lid punctal occlusion. The use of preservative-free eye drops helps minimize toxic effects of benzalkonium chloride on a dry ocular surface. Steroid eye drops effectively suppress cytokine and matrix metalloproteinase production, mitigating ocular surface irritation, prolonged inflammation and epithelial cell damage. Based on my experience, punctal occlusion is critical in DED management, increasing the meibum and aqueous volume of the tear film immediately and between eye drop applications.³

I recommend the Vera180[™] dissolvable punctal plugs for preclinical to mild DED patients, and the nondissolvable VeraPlug[™] Flow plugs with a central lumen for moderate DED patients (Fig. 2). In my hands, these punctal plugs are the easiest and most comfortable plugs to insert. The Vera180[™] intracanalicular plugs provide extended temporary occlusion with excellent retention lasting approximately 180 days, while the VeraPlug[™] Flow's low-profile dome enhances patient comfort and provides proper anatomic fit. The treatment protocol of preservative-free supplementary artificial tear drops followed by a five-minute interval and then preservative-free steroid eye drops four times daily, coupled with punctal occlusion, consistently offers prompt and sustained relief for preclinical and moderate DED patients.

Two weeks after initiating this DED treatment, patients can be re-evaluated for ocular surface improvements. The resolution of previous DED symptoms and the absence of distorted topography mires from the prior examination confirm the patient's readiness for accurate preoperative keratometry measurements. Of course, these topography measurements should be performed first without any anesthetic or dilating drops. Axial length measurements can then be conducted, providing both the technician and physician reassurance regarding accurate keratometry data. Should signs and symptoms show inadequate improvement, a more severe form of DED may be present. In such cases, I recommend inserting a pair of Vera180[™] temporary dissolvable plugs into the upper eyelid puncta, continuation of the previously used eye drops, treatment for other potential causes of dry eye disease, and possibly reducing or discontinuing oral medications known to cause significant ocular surface dryness. For severe cases, patients should return to the clinic in another two weeks for reevaluation.

In the vast majority of cases, this initial 14-day regimen of preservative-free lubricating and steroid eye drops, with punctal occlusion, significantly enhances preoperative keratometry accuracy. More importantly, quick DED diagnosis and treatment protocol leads to improved postoperative uncorrected vision, heightened patient satisfaction, and a decreased enhancement rate in most DED patients desiring optimum cataract surgery results.^{4, 5, 6}

Figure 2.



Vera180[™] dissolvable punctal plug for mild DED



VeraPlug[™] Flow with central lumen for moderate DED

References

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