Treating Dry Eye Symptoms in Contact Lens Patients
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Dry eye is both common and complex, and because its effect on the patient can be wide-ranging, it has been a primary reason for many patients to discontinue contact lens (CL) wear. The impact of dry eye on the patient may include discomfort, poor vision, or even corneal injury. Fortunately today there are an ever-growing number of options available for CL wearers who suffer from dry eye, and many of these problems can be resolved before the patient presents at the office.

The number of people who stop wearing CLs is staggering. In a 2009 study, it was reported that CL dropout rates are as high as 16% to 30%. Of those respondents in the United States, 50% listed comfort as their number one reason for discontinuing CL wear. By ignoring dry eye symptoms, we are doing a disservice to our patients and losing a significant revenue stream.

The loss of CL patients has led to an increasing number of discussions about how to recruit new CL patients into the practice. Often, the most obvious solution is missed: by simply keeping current contact lens wearers satisfied, there would be less lost revenue due to dropout. Thus, the least expensive way to grow a CL practice is to satisfy the patients already “in the chair.”

During the typical exam, practitioners may ask if the patient’s CLs are satisfactory. Many of the patients respond “yes,” however they are taking their CLs out earlier than they might like. These patients are living with what they believe to be an acceptable level of comfort. CooperVision, Inc., reports that 71% of patients believe all CLs are the same, and that practitioners believe they cannot do much to improve their comfort in CLs.

Several advances have been made in CLs and their relationship to dry eye in recent years, with the majority dealing with the materials used to manufacture them. The biggest step forward has been silicone, which works for a variety of reasons. Solutions have also improved, with manufacturers being more concerned with patients’ all day comfort. Finally, several medical therapies have been developed to help practitioners keep patients in contacts longer and more comfortably.

**Advances in Lens Materials**
A key factor for determining the comfort of CLs has been water content. Although it sounds counter-intuitive, the higher the water content, the more likely the lenses will dry out. A CL that has lost its water content can pose several problems. First of all, the comfort of the CL will decrease drastically. Second, the optics in most CLs depends on the hydration level. If the hydration level changes, the optics...
of the lens decreases, resulting in less than optimal vision. Finally, dry lenses can result in limbal injection or redness.

The obvious solution would be to make CLs with lower water content. However, oxygen permeability (Dk) and water content are directly proportional in the lens materials manufactures have been using. Conventional lenses (HEMA) had to have a higher hydration level in order to achieve adequate levels of oxygen transmissibility. CLs for extended wear have to have even higher levels of water in order to meet industry criteria.

The opposite is true of silicone hydrogel (SiHy) CLs: the higher the Dk value, the lower the water content. There is some variation to this statement, but for the scope of this article it will be considered absolute. Therefore, if a lens has a higher Dk that promotes good corneal health, the water content is lowered, creating a lens that patients report as having less dryness. Of course, for every positive there is a negative. While very healthy, a lens made completely of silicone would be uncomfortable for the patient.

The Bausch & Lomb PureVision® and CIBA Vision Night & Day® lenses, which were the SiHy lenses brought to market in the late 1990’s, were surface-treated to increase patient comfort. Then in 2004, Vistakon introduced the AcuVue Advance® two-week disposable CL, which was the first SiHy lens that was not surface-treated. Instead, Vistakon used their patented HYDRACLEAR® Technology to create a unique “silky” feel to their lenses. And though these first-generation lenses were designed for comfort, many had a higher modulus, making them stiffer than many conventional CLs. This created decreased initial comfort and greater lens awareness. Lens manufactures have continued to improve their SiHy materials, and modulus is less of a concern today than it originally was.

All CLs are not created equal. Each type of CL and its material offer benefits. SiHy lenses have allowed many dry eye patients to remain in lenses. Each patient reacts differently to each CL type. Because of this, patients should be educated that numerous lens materials are available to help dry eyes. If the first CLs do not work, others should be tried before giving up on CL wear.

**CL Solutions**

If changing CL material does not relieve dry eye symptoms, the next logical step is to address disinfection solutions with the patient. As little as nine years ago, we gave little thought to solutions and their importance on successful CL wear. However, recent studies show that disinfecting solutions can have an impact on patient comfort.

The first thing is to determine which solution the patient is using. If possible, have the patient bring their solution with them to their appointment. Many patients will say they use “saline solution” to clean their lenses, when in actuality they mean “multi-purpose solution”. A chart with up-to-date photos of currently available disinfection solutions is an invaluable asset in the exam lane. Most patients can point to their habitual solution, even if they don’t remember the name.

Once it has been determined what solution the patient is using, you will want to determine if they are using it correctly. Rather than ask, “Do you rub your lenses?” a more open-ended question such as, “What do you do to clean your lenses after you remove them?” can give the practitioner a better idea if the solution is being used as intended. Although “no-rub” solutions were once the market leaders, the U.S. Food & Drug Administration (FDA) determined that a “rub-and-rinse” regimen was better at preventing microbial adhesion and formation of biofilms, and reducing the microbial load on the CL and in the lens case.
If the proper disinfection procedure has been used and discomfort is still an issue, either switching to a different multi-purpose disinfecting solution or moving the patient into a hydrogen peroxide solution can relieve their symptoms. In any case, be sure the patient is following the package directions for best results. Changing your patients’ cleaning solutions is simple, and when successful can result in dramatically increased comfort for the patient.

**Prescription Drugs**

Many practitioners avoid using prescription medications and over-the-counter drops to help CL patients with comfort. Often, practitioners feel the cost and inconvenience is not worth it to the patient. In many cases, this is anything but true. Most CL patients consider their lenses to be an integral part of their life and are willing to go to almost any length to continue wearing their contacts.

To date, Restasis® is the only drug approved by the FDA to treat dry eyes. Restasis® is a topical cyclosporine drop that works to reduce inflammation of the ocular surface, allowing for increased tear production. Although studies using Restasis® in CL patients with dry eye appear to be inconclusive, many practitioners, and more importantly, their patients, believe otherwise. If the patient would like to try Restasis® to help alleviate their CL associated dry eyes, they should be advised of a few important notes. They should be told that it can take 3-6 months of using Restasis® before they note signs of improvement. The patient should be advised to wait a minimum of 15 minutes after instilling Restasis® drops before inserting their CLs, and that Restasis® should at no time be used during CL wear. Topical steroids can also reduce inflammation and decrease dry eye symptoms. Steroids are more difficult to use with CL-wearing patients because the CLs must be removed from the eyes before the drop can be instilled. There is also the risk of an increase in the intraocular pressure with long-term steroid use.

Lotemax® (loteprednol etabonate) has been studied in dry eye with very positive results. Treatment with four-times daily dosing provided relief in almost all categories of patients suffering with dry eye. Usually CL wear is suspended during the short-term treatment period due to the frequency of instillation, and can be resumed immediately at the conclusion of the treatment period.

Alrex®, a topical steroid with a lower concentration of loteprednol etabonate, was used in a longitudinal study to investigate its management of chronic allergic conjunctivitis. The study followed patients on Alrex® for a three-year period. During that time, no negative changes were noted in the ocular status of the patients, including ocular health. Alrex® is used four times daily to relieve the symptoms of dry eye patients. Most often, this is used when the symptoms are increased by seasonal allergies. Most optometrists won’t use Alrex® with CL’s since it is a steroid. Patients should be advised to wait a minimum of 15 minutes after instilling Alrex® before inserting their contact lenses.

**OTC Drops**

There are numerous non-prescription, over-the-counter (OTC) drops available to help relieve the symptoms of dry eyes. There are eight different categories of OTC remedies available for a variety of ocular symptoms. As all of them can and will be used by uncomfortable patients, we will touch on each of them briefly. Unless specifically noted on the package, none of these should be used when CLs are in the eyes.

**Artificial tear drops:** Also called lubricants. Designed to lubricate the eye and can provide short-term relief for dry-eye symptoms. Can be used two to six times per day.

**Ointments or emollients:** Thicker consistency than drops, often similar to petroleum jelly. Generally effective longer than drops. As many cause blurred vision, are often used only at bedtime.
Eye washes: Also known as ocular irrigants. Used to rinse irritants, chemicals or debris from the eye. Although they are designed to not irritate the eye, they are not recommended for the relief of dry eye symptoms.

Hyperosmotics: Used to treat corneal swelling. Usually used under the direction of an eye care provider for. Provide no relief of dry eye.

Decongestants: Often marketed as providing relief of “red-eye.” Uses vasoconstrictors to reduce the visible blood vessels on the sclera. With continued use, can exacerbate symptoms of dryness. Should be used infrequently.

Antihistamines: Usually used to treat ocular allergy symptoms, including itching and watering. Little to no relief of dry eye symptoms.

Scrubs: Eyelid scrubs are useful for cleansing the lids & lashes of makeup, scurf, mucous, and other irritants. They are gently formulated for the sensitive skin surrounding the eye. As blepharitis and MGD can be causative for dry eye symptoms, scrubs can often be used pro-actively to stabilize the tear film.  

CL rewetting drops: Designed specifically to be used with CLs to improve patient comfort and increase wear time. As with CLs themselves, different rewetting drops will work differently for each patient. While we will not go into a breakdown of individual rewetting drops here, it is important that you understand the general composition of these drops.

Most rewetting agents are composed of an electrolyte system, a buffer, a preservative, and a wetting ingredient. Proper electrolyte levels are important in tear production and rewetting drops. There has been some research that showed an imbalance in the electrolytes found in the tear film can create a loss of conjunctival goblet cells which provide the necessary lubrication of the ocular surface. Buffers are added to maintain the pH balance of the drops, prevent degradation of the product, and act as surfactants. Preservatives are added to prevent microbial contamination and create a longer shelf-life. Lastly, wetting agents are used to lubricate the ocular and lens surfaces.

The key to success in the use of CL rewetting drops is to use them on a schedule; depending on each patient’s symptoms, this can be as frequently as every 1-2 hours. If a patient knows they will be participating in an activity which exacerbates their symptoms, such as computer use, they should be advised to use the drops before beginning the activity, and then continue use while participating in the activity. It is generally more difficult to reverse the irritation from dry CLs than it is to moisten them before symptoms occur.

Diet and Nutritional Supplements

A healthy diet should not be ignored when treating dry eye. There is currently no Recommended Daily Allowance (RDA) for omega-3 fatty acids, but the American Heart Association suggests 0.5 milligrams to 1.8 grams of fatty acids daily may be beneficial. Although results at this time appear to be inconclusive, there are findings that show supplements such as fish oil and flaxseed oil may be helpful.
In considering all of the above solutions for dry eye, don’t forget patient management and expectations. Sometimes a patient may want to wear their CLs for 18 hours a day, seven days a week, 365 days a year. This patient’s expectations may be far beyond what their eyes are capable of. But if you can have a frank conversation and set reasonable expectations for wear time, what could have been considered a failure (i.e. only 14 hours of wear time) may actually be a great success.

There is no “cookbook” approach to helping dry-eye patients wear CLs. Contact lens material, solutions, over-the-counter products and prescribed medications should be considered when a patient presents with symptoms. Start with one change at a time. Often, all areas will need to be addressed before the patient is comfortable.

The contact lens market is stagnating. Due to problems like dry eye, almost as many current CL wearers are dropping out as enter the marketplace each year. The marketplace is also becoming more competitive, with an increasing number of providers. This competition often comes from discount retailers and Internet providers. Optometric practices can counter both of these problems by keeping current CL patients in their lenses. Keeping current patients happy will result in new referrals for contact lens fittings, adding to the total number of patients.

With today’s materials, many of the problems associated with dry eye can be prevented before they develop. By evaluating subjective symptoms and examination findings (TBUT, staining, tear prism), many of the patients at risk for dry eye can be identified. Steps can easily be taken to prevent problems before they develop. When a practitioner proactively addresses dry eye issues, the patient often views him or her as being “cutting edge”. To wait until a problem develops is often viewed as reactive. Which practice would patients feel most loyal to?

By setting reasonable expectations, evaluating symptoms, and trying different solutions, dry eye symptoms can be minimized and contact lens comfort can be improved for maximum comfortable wear time.

About our Author
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References:


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To receive one hour of continuing education credit, those taking the quiz must be AOA Associate members and answer 7 of the 10 questions correctly. This exam consists of multiple-choice questions designed to measure the level of understanding of the material covered in the continuing education article “Treating Dry Eye Symptoms in Contact Lens Patients”.

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Select the option that best answers the question.

1) The number one reason patients participating in the 2009 study, reported discontinuing contact lens wear was for:
   a) Too time consuming   
   b) Too expensive   
   c) Poor comfort   
   d) Poor application and removal techniques

2) Which of these is NOT a result of a lens that has lost its water content?
   a) Limbal injection
   b) Decreased comfort
   c) Poor vision
   d) Decreased dryness
3) Silicone hydrogel lenses offer the patients the advantage of
   a) High oxygen permeability / high water content
   b) High oxygen permeability / low water content
   c) Average oxygen permeability / low water content
   d) Low oxygen permeability / high water content

4) Which of the following is NOT important when discussing disinfecting solutions with the patient?
   a) Show them a chart with photos of current solutions and have them point to the one use
   b) Ask them which brand of saline solution they use
   c) Ask them open-ended questions to determine if they are using their solutions correctly
   d) Show them a list of all the current solutions available and ask them to tell you which one they use

5) Which of the following drops is approved to treat dry eye?
   a) Lotemax®
   b) Restasis®
   c) Alrex®
   d) Hyperosmotics

6) Contact lens wear does not need to be suspended during the use of which of these types of drops?
   a) Topical steroids
   b) Artificial tear drops
   c) Hyperosmotics
   d) Rewetting drops

7) Which over-the-counter remedy can help to stabilize the tear film, thus relieving symptoms of dry eye?
   a) Ointments or emollients
   b) Antihistamines
   c) Scrubs
   d) Decongestants
8) Most contact lens rewetting drops consist of the following:
   a) An electrolyte system, a buffer, a preservative, and a wetting ingredient
   b) An electrolyte system, a buffer, a preservative, and goblet cells
   c) An electrolyte system, a buffer, a surfactant, and a wetting ingredient
   d) An electrolyte system, a surfactant, a preservative, and a wetting ingredient

9) Contact lens rewetting drops should be used how often?
   a) Only when participating in specific activities such as computer use
   b) As little as needed, to decrease dependence
   c) As often as needed for symptoms
   d) Only after removing their lenses

10) What is the best way to maximize patients’ contact lens comfort?
    a) Wait until symptoms arise and treat as necessary
    b) Evaluate subjective symptoms and objective exam findings, set reasonable expectations, and try various solutions
    c) Ask every contact lens patient if their lenses are satisfactory
    d) Prescribe the latest contact lens that has come to market