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## GROWING YOUR PRACTICE IN 2012 AND BEYOND:

### OCRT TECHNOLOGY AND TREATMENT UPDATE

An enduring print supplement and interactive digital journal.



Produced by the Optometric Council for Refractive Technology  
and Bryn Mawr Communications LLC, publisher of *Advanced Ocular Care*

# GROWING YOUR PRACTICE IN 2012 AND BEYOND:

## OCRT TECHNOLOGY AND TREATMENT UPDATE

OCRT and BMC, publisher of *Advanced Ocular Care*, bring you this multimedia supplement to help provide the tools you need to enhance the delivery of integrated care, maximize patients' outcomes, and improve your business. This print and digital project, powered by [EyetubeOD.com](http://EyetubeOD.com), features articles, video interviews, and product demonstrations. Look for web links to the digital content throughout the articles. Access the online content by clicking the OCRT button at [www.AdvancedOcularCare.com](http://www.AdvancedOcularCare.com) or directly at [EyetubeOD.com/portals/OCRT2012](http://EyetubeOD.com/portals/OCRT2012).

### About OCRT:

Organized in 2002 and chartered in 2004, the OCRT is optometry's voice in the field of refractive surgery and other technologies. Its mission is to bring together optometrists and researchers with an interest in refractive technologies, providing a forum for education and interaction.

Optometric involvement in refractive technology grows by the day. The OCRT gives those professionals a forum for discussion and allows them to present as key players in supporting patients interested in altering their refractive status. The OCRT and its members act as a resource for optometric colleagues who are not directly involved in refractive surgical care but whose patients seek such care. The OCRT's mission is to advance the art and science of refractive technology and the knowledge and skills of optometrists participating in refractive technology, as well as provide clinical and practice management education to optometrists through various forms of communication and forums.



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# Educating Patients About Refractive and Premium IOL Procedures

Managing expectations and ruling out contraindications are at the heart of achieving the desired outcome.

BY J. JAMES THIMONS, OD

In many ways, patients seeking laser vision correction (LVC) and patients interested in premium IOLs are alike, in that both want refractive improvement. On the other hand, they are distinctly different patient populations, and although each patient is unique in his or her own way, there are stark contrasts in how to manage these different patient subsets.

Below are some tips and insights that I use in practice when I encounter a patient seeking either LVC or a premium IOL. For the purposes of this article, I will use the term *LVC* to mean patients seeking LASIK or PRK, with an understanding that each of these procedures has unique indications.

## LVC

The primary role of the optometrist in the context of LVC is to create a sense of appropriate expectations on the part of the patient. This entails the dual responsibility of selecting the right patients for the procedure as well as educating them about potential outcomes—both good and bad.

There are myriad medical reasons that may contraindicate LVC in patients, many of which are temporary in nature. Some patients, however, are not good candidates for LVC because they come to the office with unreasonable expectations. If a patient desires a correction that is simply unattainable, then it is best to exclude him or her early from LVC and speak to this patient about other potential options. This is the intersection of patient selection and education.

The surgeons in our practice have finely tuned their LVC procedures so as to better serve our patients. Part of that refinement is in better understanding what



Dr. Thimons illuminates important aspects of preparing patients for elective procedures ([eyetubeod.com/?v=scelapedu](http://eyetubeod.com/?v=scelapedu)). 



OCRT President Dr. Geffen discusses the role of optometrists in comanaging patients ([eyetubeod.com/?v=lufesowor](http://eyetubeod.com/?v=lufesowor)). 

makes a patient a good candidate. Sometimes, patients will not grasp the capabilities of the surgical technology and that despite how good our results have become, there are still some outcomes we cannot achieve.

Of the medical disqualifications, dry eye disease (DED) and/or ocular surface disease constitute the largest category of patients. Our practice has adopted

the use of the TearLab Osmolarity System (TearLab Corporation), which has proven invaluable for identifying patients with poor tear quality. Fortunately, DED is often manageable, and numerous patients in our practice who were initially ruled out for LVC, have been treated and later underwent a vision correction procedure.

I changed my preoperative treatment of LVC candidates about 2 or 3 years ago to require 1 month of anti-inflammatory treatment. I initiate Restasis (cyclosporine ophthalmic solution 0.05%, Allergan, Inc.), for 4 to 6 weeks preoperatively and then restart 4 days postoperatively after the flap has healed. Additionally, I will prescribe omega-3 fatty acid 2,000 mg by mouth per day to improve meibomian gland function both

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before and after surgery. In many cases, the omega-3 regimen will be maintained indefinitely after surgery as a natural therapy to enhance ocular surface physiology. This step, which is established in the literature, preempts a lot of postoperative issues with DED.

The shape of the cornea in LVC candidates is an important consideration and an area that deserves some attention during the pretreatment counseling process. Corneas that show atypical or irregular astigmatism or demonstrate signs of forme fruste disease or frank keratoconus had to be excluded in the past due to the potential for instability and thinning after LASIK. The advent of corneal crosslinking (not yet approved for use in the United States) has been a boon in terms of expanding the indication for LVC to patients with keratoconus or ectasia. There are still some eyes, however, that must be excluded from LVC because of the corneal shape. For example, if the magnitude of treatment (eg, +4.00 D) will result in a cornea in an eye that is already steep prior to surgery (eg, 45.00 D), then LVC is not a good option. In our theoretical example, the LVC would yield an eye with a keratometry reading of 49, a result that will inevitably regress and one that has effectively induced a keratoconus-like cornea.

Excluding patients because LVC would result in a flat cornea is all a matter of refining the process. It used to be that eyes with corneas below 40.00 D preoperatively would be included for LVC. As surgical outcomes have become better understood, we have learned that options such as multifocal IOLs and intraocular contact lenses were preferable for patients with flatter corneas

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“Patients who are candidates for premium IOLs are, indeed, seeking a refractive correction in addition to removal of their cataract.”

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in that they offer better optical outcomes when compared with LASIK in patients who will show a final K reading at 35.00 D or less. Getting patients in tune with that message and getting them to understand that LVC may not deliver the outcome they seek, improves both the result and the satisfaction rate.

#### PREMIUM IOLs

Patients who are candidates for premium IOLs are, indeed, seeking a refractive correction in addition to removal of their cataract. These patients, however, are typically a decade or two older than the typical LVC patient, and so there is a different category of age-related pathologies that need to be evaluated in the workup. Patients with active macular disease of any type, whether it's age-related macular degeneration, diabetic macular edema, myopic maculopathy, epiretinal membrane, or other, are contraindicated for premium IOLs. The reason for these relative exclusions is that the optics of the multifocal lens amplify the visual impact of these conditions and reduce the contrast sensitivity to levels that make visual satisfaction difficult to achieve. Unlike LVC patients, where most can be pretreated and later receive the procedure, these aforementioned contraindications are more absolute. The use of optical coherence tomography to image the back of the eye is an absolute must in all premium IOL patients.

As with LVC patients, DED/ocular surface disease must be addressed prior to surgery for optimal outcomes. The most complex eyes in this category tend to belong to glaucoma patients, because the medications used to treat the disease induce surface dysfunction. If the ocular surface is not treated aggressively, the patient can have an unsatisfactory outcome.

Another similarity between premium IOL and LVC patients is that the management of expectations, counseling, and education are important. Even though expectations are high with premium lens patients, I find that it is much easier for them to accept a small variation in outcome compared with LVC patients, because cataract patients already had poor vision to begin with.

The workup for premium IOL patients should

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“It is worth mentioning that the introduction of femtosecond lasers to cataract surgery has the very real potential to reduce postsurgical complications.”

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include topography, and I use the Pentacam Comprehensive Eye Scanner (Oculus Optikgeräte GmbH) for this. Unlike LVC patients, premium IOL patients frequently end up having corneal dystrophies, anterior basement membrane dystrophies, and other epithelial defects that may lead to less-than-optimal outcomes. One of the real subtleties of premium IOLs is that in older patients, the cornea can be dysfunctional without many obvious signs, so the preoperative examination has to be thorough, thoughtful, and careful.

It is worth mentioning that the introduction of femtosecond lasers to cataract surgery has the very real potential to reduce postsurgical complications. Although this is anecdotal at this time, the surgeons in my practice are performing laser cataract surgery, and, as a result, I am seeing fewer patients with cystoid macular edema and other inflammatory complications. I believe this is due to the gentler surgery afforded by the use of the laser to make the incision and the capsulorhexis. In addition, femtosecond lasers can be used to ablate the cataract, thus reducing phacoemulsification time. This may result in the surgeon's ability to perform surgery on less dense cataracts in the future (earlier in the patient's life), which may well be a harbinger of even better outcomes.

## CONCLUSION

Every patient that comes to the office is unique, and each individual seeking LVC or premium IOL surgery will have his or her own expectations and demands. The optometrist plays an important role in regard to patient selection and education. These patients are different but the same, and it comes down to effectively communicating the risks and benefits of the procedure and carefully guiding the patient to the option that will best benefit his or her vision long term. ■

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# Counseling LASIK Patients Using a Module

Creating a pleasant surgery day for patients improves the entire experience.

BY SONDRA BLACK, OD

**H**ave you ever put yourself in your patients' shoes to consider the experience they go through when undergoing LASIK?

Typically, the day feels long and drawn out—LASIK patients may be in the clinic for 4 to 5 hours. It can be an unpleasant ordeal for patients who are already extremely nervous. It is a process we should be able to make better for the sake of our patients.

It is with that goal in mind that my colleague, Jeffrey Machat, MD, cofounder of TLC, and I set up a program called Crystal Clear Vision (CCV). This program, which we first implemented in Birmingham, Alabama, and are hoping to use again as we set up a new clinic in Toronto, relies on a computer-based portal specifically designed for patient education. Through it, referring optometrists and their patients can access a library of videos and resources targeted to make them more comfortable with the entire LASIK surgery process.

## CCV PORTAL

In our practice, patient education begins with the technician who performs the preoperative testing. The patient then sees an optometrist, who will both decide whether he or she is a candidate for LASIK, as well as continue discussing the potential risks and outcomes associated with the procedure they are electing to have. It is very important that patients fully understand exactly what they should expect from the treatment itself as well as the expected outcome. Following this step, patients meet with the practice's counselor to go through any last minute questions.

Patients deemed to be good candidates for LASIK will also be told about the CCV portal. He or she will receive an e-mail with login instructions to the portal, where all of the information that patients need to be prepared for surgery day can be accessed. The portal serves to remind patients of the practical steps—such as arranging transportation,



Dr. Black discusses managing expectations for LASIK patients ([eyetubeod.com/?v=nehenuin](http://eyetubeod.com/?v=nehenuin)). 

taking the appropriate time off from work, and ceasing contact lens wear for the proper amount of time—and it is also used to schedule the procedure. That part of the system is similar to how airline bookings work: patients can schedule the procedure and take up to 48 hours to pay, otherwise the spot opens up to other patients.

The LASIK portal includes data contained in the Food and Drug Administration's booklet for patients to review. It also contains a novel method for obtaining informed consent. We worked with Eyemaginations, Inc., to create a 25-minute video with 43 modules. Patients watch the video, and every time they complete a section, they must confirm that they understand what they viewed and acknowledge that they are ready to move on to the next module. The portal contains questions that patients are required to answer to gauge their comprehension. This allows us to know where patients stand in the process. As part of the informed consent process, the patient downloads and prints a copy of the written informed consent to read and also review with the surgeon on the day of the procedure. With the surgeon, the patient then signs a digital copy, which is stored in our cloud-based system.

We also designed videos on LASIK complications

The practitioner's referral for the LASIK procedure.



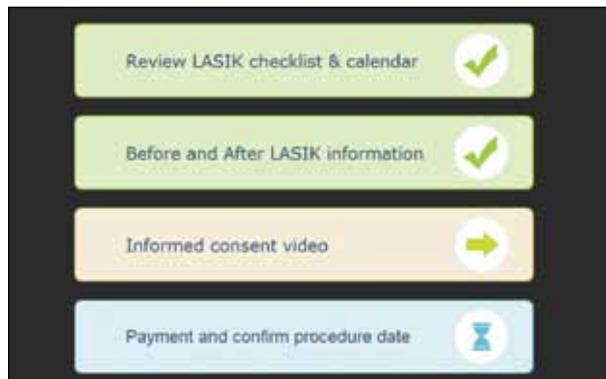
Video informed consent via the patient portal.

within the informed consent, like epithelial ingrowth and diffuse lamellar keratitis, so that patients can see exactly what these adverse events look like and how they manifest. We want to ensure that our LASIK patients are accurately educated, but it also helps us obtain great rates on malpractice insurance.

### IMPROVING THE SURGERY DAY EXPERIENCE

Now, when they come in for surgery, we can see a patient every 30 minutes, with each spending about 1.5 hours at the practice, which dramatically improves the surgery day experience.

We are currently planning to work on modules for premium IOLs and presbyopic correction. These concepts are much more complex in terms of educating patients. Most patients know someone who has had LASIK, but with IOLs, it is different. Explaining to patients that the surgeon will perform a procedure inside the eye where the natural lens is removed and replaced with an implant tends to induce much more anxiety. Because cataract surgery is more dramatic for the patient compared with LASIK, education becomes paramount. Not all surgeons are adept at counseling cataract patients, and sometimes they neglect to address such things as glare and recovery



The CCV patient portal.

time, especially in the premium market. In our practice, we believe that if we consider premium IOL procedures similarly to refractive ones, using the same methods to educate patients using animations and the portal, they will be better prepared and educated.

### THE OD'S ROLE

I strongly believe that patients want the eye care practitioner to make the clinical decision for them. Of course, I educate them as to what their options are, and then I tell them what I would choose for myself. It definitely helps when talking to patients that I have monovision LASIK and I have had a custom PRK enhancement. I am also planning to get the Kamra corneal inlay (AcuFocus, Inc.) when it is approved.

I believe in steering patients toward what I think is the best option for them, and I rarely had a patient request something else. Specialists must take control, in my opinion: I do not agree with a staff member making a clinical decision for the patient or making it all about the cost.

As part of CCV, we also developed an online doctors' portal so all of the clinical information is housed on the web in a secure host, including the treatment record so the doctor can view it immediately after the patient's surgery is complete. The doctor submits the referrals and postoperative visit data through the portal so that everything is in the chart and it is completely paperless. A refractive counselor who is assigned to the patient will keep in contact with him or her throughout the entire process. I give all patients my card and let them know they can call or email me with their questions. I want them to know I am available for them. ■

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# The Optometrist's Role in Generating Revenue

Delivering excellence has a direct and indirect impact on a practice's bottom line.

BY J. CHRISTOPHER FREEMAN, OD

The optometrist's role in building and maintaining the practice's revenue stream will differ based on the model of care. Where I practice, TLC Laser Eye Centers in Oklahoma City, our business is built around refractive laser procedures, and optometric services are included as part of the package price. That leaves relatively few services that I can provide that are directly billable. Even though I have only an indirect role in generating revenue, there is inherent value in helping to justify patients' out-of-pocket expenditures. Even for those practitioners with more direct contact with the bottom-line, there are lessons to learn from building a positive experience for patients.

## RELATIONSHIP BUILDING

Increasingly, it is recommended that eye care practitioners think about patients as also customers. In a very real sense, the viability of today's practice hinges on the ability to create a great experience for patients that goes beyond delivering excellent outcomes. The entire staff, from the front desk receptionist all the way through to the eye care providers, including the surgeon, need to be cognizant of emphasizing an exceptional experience.

Constructing a service-oriented practice can be a matter of open conversation among the staff about how to provide better service, or it can be facilitated more formally through the use of training and workshops. Consulting services also provide advice to practices wishing to grow their business.

What role does the optometrist play? Simply put, optometrists, often the first contact for patients, can set the tone for the rest of the care-providing experience. We optometrists perform the initial consultation, answer questions, and address patients' concerns. We initiate the surgical discussion and try to enhance patients' comfort level.

If optometrists are successful during this initial contact, it will start the patient down the road to a rewarding experience. As well, positive patient experiences



Dr. Freeman discusses generating revenue ([eyetubeod.com/?v=tafijeteb](http://eyetubeod.com/?v=tafijeteb)). 

lead to good word-of-mouth advertising as that patient relates his or her experience to friends and family members who might consider laser vision correction (or a premium IOL, for that matter). The patient who enjoys his or her encounter with the optometrist may go back to the referring doctor and talk about the positive encounter. By attending to reputation and relationship building, even optometrists who do not directly bill patients can affect the revenue-generating process.

Some optometric practices designate one of the staff to coordinate with the referral network. At TLC Laser Eye Centers, we have what is called a *professional relations consultant* who is tasked with communicating with referring practices and providing information, resources, or any other type of assistance they might need to help them take care of or educate patients. While the optometrist clinical director works with referring doctors as much as possible, a busy clinic schedule may limit the time that can be spent on relationship building and assistance to referring doctors. The professional relations consultant, or a similarly titled liaison role, has been utilized in several practices around the country, providing a dedicated resource for referring doctors.



The LipiFlow Thermal Pulsation System (TearScience) addresses the blockages in eyelid glands for the management of meibomian gland dysfunction and evaporative dry eye ([eyetubeod.com/?v=govigebih](http://eyetubeod.com/?v=govigebih)). 

### THE OCULAR SURFACE

Part of the service I provide for laser vision correction patients at my practice is to ensure the optimization of the ocular surface prior to surgery. This can have an indirect and direct impact on a practice's bottom line.

Ensuring the health of the ocular surface and addressing dry eye disease will go a long way toward achieving the patient's desired postoperative outcome. Getting patients to where they expect to be after surgery speaks to building a positive experience and justifying the expense of the procedure. Taking care of the ocular surface may also necessitate multiple visits, diagnostic testing, and treatments, which may be billable services.

There are new treatment and diagnostic technologies in the area of dry eye management including intense pulse light therapy (Quadra Q4, DermaMed), LipiFlow and LipiView Analyzer, and TearLab Corporation's osmolarity testing system. These advancements not only enhance the care of patients, they also drive revenue. Patients who require treatment before laser vision correction or cataract surgery will likely require ongoing treatment and monitoring postoperatively.



The TearLab device allows the eye care practitioner to collect a sample of the patient's tears and test osmolarity ([eyetubeod.com/?v=zogiledee](http://eyetubeod.com/?v=zogiledee)). 

### CONCLUSION

There are many opportunities for optometrists to contribute to a practice's revenue stream, both inside and outside the framework of patient care. Even in settings where optometric services are an included service, ensuring quality integrated care is paramount to success. Patients will want to return to practices that provide excellent service, and in today's health care economy, it is important to realize that outstanding care extends well beyond the realm of quality outcomes. ■

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# Managing Ocular Allergies: You Are the Pro

Being proactive saves patients from discomfort and a disruption of their activities.

BY MARC BLOOMENSTEIN, OD

An optometrist is part therapist, part detective, part physician, and always a caregiver. This fusion of roles is most evident when dealing with patients with ocular allergies. The allergy sufferer is often a chameleon of sorts, masquerading as a routine examination or a pink eye, and the challenge of diagnosing these patients is made more difficult by the fact that allergies affect patients across the age spectrum. The hallmark rubbing and itching of the eye, which can decrease the quality of a patient's life, start him or her on a downward spiral, a fact that is often overlooked. Part of the reason for this oversight may relate to the way optometrists are trained: We are not taught to be proactive and think preventively. Yet, in the case of the allergy patient, this is what is needed.

## INCREASING PREVALENCE

Around 30% of the US population has ocular and/or nasal symptoms multiple times per year,<sup>1</sup> and so the question is, why are we not taking more of an active role in helping our patients? This is not an ephemeral problem, in fact, statistics show that the prevalence of allergies is on the rise.<sup>2</sup> With the impact of climate change, industrialization, pollution, mobilization from different regions, new toxins, car exhaust, and cigarette smoke, we can expect to have more patients with allergic conjunctivitis in the near future. The problem is also exacerbated by the decreased immunity that we are perpetuating among children with the constant use of antibacterial wipes and gels, as well as antibiotics that are used in food—the phenomenon that has come to be known as the *hygiene hypothesis*.<sup>3</sup>

## TAKE CONTROL

Optometry is a symptom-based profession, and optometrists routinely underestimate the negative impact that ocular surface disease can have on patients' daily life experiences. Allergies are like family members coming for



Dr. Bloomenstein discusses strategies to position your practice as an allergy center ([eyetubeod.com/?v=nopumotis](http://eyetubeod.com/?v=nopumotis)). 

a visit: We think we know when they will arrive, and yet they tend to come early and stay longer than expected, and most often, we wish we could just make them go away. Unlike family members that overstay their welcome, however, chronic allergies can make patients' eyes more vulnerable to stronger and more severe symptoms like rhinitis. Research has shown that with sustained allergic responses, the conjunctival epithelium loses the tight gap junctions, thereby reducing the integrity of the conjunctiva.<sup>4</sup> The epithelium therefore becomes more permeable to allergens even when it is not allergy season.

We optometrists are uniquely positioned to help our patients halt—or at least slow down—the cycle of an allergen initiating an immunoglobulin E hypersensitivity reaction leading to a chronic inflamed state. What does it say when Ben Stein and his Clear Eyes commercials have more sway over patients' ocular health than an eye care specialist? As a profession, we need to stop letting patients succumb to the treatment du jour and take control of them when they are sitting in the examination chair.

## TREATMENT CONSIDERATIONS

The treatment of allergic conjunctivitis can be broken down into a combination of avoidance and prevention.

Patients generally have a good idea of what triggers their allergic response. Many patients, however, are either unwilling or unable to avoid those triggers even though limiting exposure to those allergens—staying inside on high-pollution days, avoiding exercising in the middle of the day when the pollen count is high or when it is windy, and staying away from animals that may initiate the response—is a necessary part of the management plan.

Treatment most often begins with the use of artificial tears. The first line of defense the eye has is its thin layer of tear film, which can be damaged by inflammation secondary to allergic conjunctivitis. An artificial tear

that balances the lipid layer and provides an increase in the aqueous portion will also be mildly retardant to allergens. Systane Balance (propylene glycol 0.6%; Alcon Laboratories, Inc.) is a good emulsion to provide that protection, although it has a high concentration of oil that may cause blurry vision. Refresh Optive Advance (carboxymethylcellulose sodium, glycerin, and polysorbate 80; Allergan, Inc.) is a new tear formulation with less oil than Systane Balance, and it still provides the proper layer of tear coverage. Because the comorbidity of allergy and dry eye disease is often indefinable, an allergy patient may already be using a tear because of concomitant

## Use of Artificial Tears in Refractive Surgery

Much has been written about the tear film and its capacity for instability, the symptoms that derive from a poor tear film, and the visual consequences of that instability. As clinicians, we are acutely aware of the multiple factors that influence the production of tears, such as medications, systemic disease, gender, age, and environment. Recently, another risk factor for dry eye is the influence surgery has on the ocular surface.

Issues with transient postoperative dry eye after refractive surgery have been well established. In general, refractive surgery reduces the glycocalyx that hold the tears to the ocular surface and produce alterations to surface tension by virtue of curvature changes. Moreover, surgery induces an inflammatory response that contributes to the reduction in the tear film.

Because of these recognized changes, the use of an artificial tear combined with a topical anti-inflammatory following any corneal refractive surgery has become the standard of care. Some eye care specialists have realized that artificial tears are a necessary, palliative, form of visual rehabilitation and, thus, have included the use of a topical cyclosporine. Restasis (cyclosporine ophthalmic solution 0.05%; Allergan Inc.) is the only commercially available medication approved for the treatment of dry eye. It stands to reason that incorporating an immunomodulator, bathed in an emulsive vehicle, will contribute to an increase in tear production following refractive surgery.

Given the recognition that modern cataract surgery has many of the same objectives as corneal refractive

surgery, there may be a role for use of artificial tears in the pre- and postoperative period among these pseudophakic patients.

### ARTIFICIAL TEARS AND REFRACTIVE SURGERY

Not all pharmaceutical tear preparations are created equal, and care should be taken by the clinician to ensure that each patient is receiving the appropriate formulation. Following refractive surgery, a tear that provides relief without increasing the potential for blur is desired. The use of sodium hyaluronate, the main ingredient of Blink Tears (Abbott Medical Optics Inc.), enhances the viscosity of the tear leading toward longer stability. This becomes beneficial in providing both stability and increasing clarity following refractive surgery. In a 2009 poster presented at the American Society of Cataract and Refractive Surgery meeting, Stephen Slade, MD, reported that 88.6% of 112 post-LASIK patients felt that the use of artificial tears helped improve symptoms of dry eye, with 56.7% preferring the use of Blink to other tears.<sup>1</sup>

More recently, new tear formulations have received approval from the Food and Drug Administration for alleviating dry eye symptoms. The newest tear to enter the market, Refresh Optive Advance, is an extension of the Refresh brand (Allergan, Inc.) and is designed to optimize all three layers of the tear film. Refresh Optive Advanced penetrates the ocular surface to provide osmoprotection of the corneal epithelial cells against

keratoconjunctivitis sicca. For this reason, I prescribe Restasis (cyclosporine; Allergan, Inc.) sooner rather than later for these patients to increase their aqueous production and to decrease the inflammatory load associated with keratoconjunctivitis sicca that exacerbates the allergic response.

Histamine is the predominant villain in this drama. Histamine receptors are differentiated and cause myriad allergic symptoms.<sup>5,6</sup> For example, the H1 receptor is the principal activator of the itch response, whereas H4 receptors increase eosinophil chemotaxis.<sup>7,8</sup> Thus, competitively antagonizing H1 receptors will relieve

itching, and competitively antagonizing H4 will work to reduce the inflammatory nature of the disease. Stopping the release of any mast cell components is important, because when left unchecked, they can further exacerbate the inflammatory cascade.

Fortunately, we have some truly effective pharmacologic choices to prescribe—agents that move our patients out of the grocery store aisle and toward the pharmacy. The use of an H1 antagonist with mast cellstabilizing properties should be the treatment of choice in mild to moderate cases of allergy. One such option is Bepreve (bepotastine besilate ophthalmic solution 1.5%; Ista

excessive salt levels. Due to its optimized lipid content, Refresh Optive Advanced does not separate. Instead, it provides consistent stability, and, therefore, does not require shaking prior to use.

In a multicenter, double-masked, randomized clinical trial (n = 288), patients using Refresh Optive Advanced demonstrated statistically significant improvements in symptoms (data on file with Allergan, Inc., April 30, 2010). In a separate multicenter trial (n = 47), Refresh Optive Advanced was generally well tolerated based on measures of comfort, stickiness, blur, and burning/stinging (data on file with Allergan, Inc., September 30, 2009). The availability of Refresh Optive Advanced provides clinicians with an alternative to the other lipid-based tear formulation (Systane Balance [Alcon Laboratories, Inc.]), which is specifically designed for dry eye patients with associated meibomian gland dysfunction.

#### ARTIFICIAL TEARS AND CATARACT SURGERY

There tends to be a misconception that refractive surgery patients are the only patients that would benefit from copious use of artificial tears. The removal of the crystalline lens and its replacement with an artificial lens is considered by many practitioners to be a type of refractive surgery. Unlike corneal refractive surgery, the small incision used to enter the anterior chamber and the phacoemulsification technique affects minimal change to the corneal curvature. Thus, the use of presbyopia-correcting IOLs provides the patient with an opportunity to have excellent visual acuity without the need for spectacle correction. In contrast to the intracapsular surgical days or before small incisions, when inducing upward of 5.00 D of corneal astigmatism was the norm, modern cataract surgery is refractive surgery, and patients should be provided the best ability for postsurgical convalescence.

Recently, I concluded a small study that evaluated the safety, efficacy, and overall patient satisfaction of artificial tear use in patients implanted with a diffractive multifocal IOL (Tecnis Multifocal IOL; Abbot Medical Optics Inc.). In the 3-month, prospective, randomized, multicenter study (N = 38), patients were assigned to receive Blink Tears q.i.d. or no artificial tears. The intent was to mimic the protocol used for refractive patients and see if there was any visual and/or symptomatic improvement in patients using an artificial tear.

I found that 33% of the patients assigned to Blink Tears reported never having blurry vision, and no patient in the no-tears group reported the same; 80% of Blink Tears patients reported an improvement in their life with their new vision, whereas only 63% of the no-tears group reported the same.<sup>2</sup> At the 2-month postoperative visit, there was a reduction in lissamine staining, corneal staining, and an improvement in the tear breakup time among patients using tears. This small study demonstrated that optimizing the ocular surface and relieving the signs of and symptoms of tear film insufficiency improved visual outcomes among cataract patients.

#### CONCLUSION

Clinicians need to make a conscious effort to hydrate the ocular surface before and after surgery. In corneal refractive surgery, the use of tears is ubiquitous; however, this is not the accepted protocol following cataract surgery. Adopting the same dry eye protocol for cataract patients can only lead to happier patients and, possibly, to the timely reduction of their postoperative visual symptoms.

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Pharmaceuticals, Inc.), which is indicated for twice-daily use for the treatment of ocular itching associated with allergic conjunctivitis. Bepreve comes in a 10-mL bottle and allows patients to dose when their allergic response is at its greatest. Bepreve has shown a strong affinity to the H1 receptor and in clinical trials has demonstrated the ability to rapidly reduce the itch response.<sup>9,10</sup>

For some patients, twice-a-day dosing may not be the optimal choice, especially because no drop is indicated for use with contact lenses. There are two mast cell-stabilizing antihistamines that are approved by the Food and Drug Administration for once-daily dosing. Pataday (olopatadine; Alcon Laboratories, Inc.) is a higher concentration of the company's Patanol formulation, which is indicated for twice-daily use. Pataday has been proven to be comfortable and formidable for treating mild allergic conjunctivitis.<sup>11-13</sup> The 2.5-mL bottle, if used properly once a day, should last 1 month. The other once-daily formulation is Lastacaft (alcaftadine; Allergan, Inc). In a trial of conjunctival allergens, Lastacaft, delivered in a convenient 3-mL bottle, was associated with minimal itching at 16 hours, making it a nice option for single dosing. Lastacaft is the only allergy drop with an indication for the prevention of itching associated with allergic conjunctivitis. Lastacaft is also unique in that it carries a pregnancy category B approval, thus making it a safe choice for women thinking about pregnancy or who currently are pregnant. Allergies often occur in younger patients who may only present with ocular symptoms. Knowing that a medication is approved for use in pediatric patients as young as 2 years old should offer peace of mind, especially if one product must be prescribed for an entire family of allergy patients.

The allergy cascade is not just limited to the histamine response, and thus, the mediators that induce inflammation may need to be treated topically. The concomitant use of a steroid like Alexx (loteprednol etabonate 0.2%; Bausch + Lomb, Inc.), which is indicated for the temporary relief of the signs and symptoms of seasonal allergic conjunctivitis, is a great adjunctive therapy for chronic allergy patients. The agent has been

shown to be safe and effective in limiting the inflammatory portion of the chronic allergic state without inducing any long-term steroid-associated complications.<sup>14</sup>

## CONCLUSION

Choosing to be a participant in the care of our patients' eyes is what we do every time we walk into an examination lane. The question-and-answer session of our workups should not be limited to, "What brought you in today?" Ask about your patients' systemic medications, know what drops they are putting in their eyes, and ask that simplest of all questions: "Do your eyes ever itch?" Prevention is worth a pound of smiles and happy patients, and ultimately, this will mean a robust waiting room. ■

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# Advancements in Contact Lenses and Solutions

A QUESTION-AND-ANSWER SESSION WITH OCRT'S SUSAN J. GROMACKI, OD, MS.

**ADVANCED OCULAR CARE.** With regard to optical technology, what have been some of the major developments in contact lenses in the past few years?

**SUSAN GROMACKI, OD, MS.** One of the most promising advances in contact lens technology has been the incorporation of wavefront optics or aberration control into the lenses. What is even better, is that what once was special is now commonplace—this advanced technology is now available in most modalities of lenses, including disposables.

## LENS MATERIALS

**AOC:** What about advances in lens materials?

**SG:** Silicone imparts a tremendous level of oxygen permeability to soft contact lenses, which has eliminated many of the complications of hypoxia. As a result, silicone hydrogel lenses now dominate the soft lens market share. The category has been around since 1999; however, the technology has been constantly improving. For example, earlier generations of the material required a surface treatment of an internal wetting agent to wet the lenses optimally. Today, newer materials have this wettability as an inherent part of their matrix. There are also innovative nonsilicone hydrogel lens materials being developed like nesofilcon A, which has a water content of 78%.

## CLEAN LENSES ARE BETTER LENSES

**AOC:** Regarding lens' modalities, can you explain the benefits of disposables versus other types? How should practitioners approach patients' education, and what factors go into the optometrists' recommendations? Do you have a preference?

**SG:** The more frequently patients can replace their contact lenses, the better. A clean lens is much healthier



David Geffen, OD, president of OCRT, discusses the challenges of dealing with complications from contact lens wear ([eyetubeod.com/?v=deretegul](http://eyetubeod.com/?v=deretegul)). 

for patients. Even if a patient does a perfect job cleaning his or her lenses, microscopic deposits remain, which can attract the pathogens that lead to infection. Deposits also reduce the lens' comfort and impede the ability of oxygen to pass through to the cornea. On top of these factors, most patients do not adhere strictly to their contact lens care regimen or replacement interval, which leads to even greater deposition.

I find it beneficial to educate patients about what options are the healthiest for their eyes. Most patients enjoy learning about the science of what we prescribe for them, even if it is in layperson's terms. This discussion helps to reinforce my recommendation of which lens material, replacement interval, and lens care system is best for patients.

## ADVANCED TECHNOLOGIES

**AOC.** What modalities have toric options available? Have there been advances in presbyopia-correcting contact lenses? What about bifocal/multifocality? What are

the indications for gas permeable (GP) versus soft lenses?

**SG.** Toric contact lenses are available now in every modality, from conventional to daily disposable to everything in between, and in a variety of materials. In addition, practitioners sometimes overlook the fact that the technology behind GP materials is also improving, and that these lenses do a great job correcting astigmatism.

Multifocal contact lenses are also now better than

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ever—improved materials, advanced designs, and more variety from which to choose—but they are still imperfect in some ways. As a result, the impetus for success with this modality lies with the eye care professional. I always instruct practitioners that it is important to be intimately familiar with the patient you are fitting and with one or two products from each multifocal lens category. A small tweak here or there goes a long way toward a successful outcome.

Although GP lenses have lost some market share during the past few years, they have a place in all eye care practices. They remain the lenses of choice for the treatment of keratoconus, irregular astigmatism, corneal reshaping, and postrefractive surgery. These lenses also perform optimally for eyes with presbyopia, astigmatism, and dry eye disease. In general, they stay cleaner than soft lenses and may be easier for some patients to care for and handle.

#### **MUTIPURPOSE CLEANING SOLUTIONS**

**AOC.** How do today's multipurpose cleaning solutions compare with those of the past? What are some of the major developments in cleaning systems? Can you discuss the importance of the practitioner's vigilance in terms of keratitis and contact lens-related infections? What is the optometrist's role with regard to educating patients on the importance of lens care?

**SG.** The technology behind contact lens solutions is also improving. The newest multipurpose solutions for soft lenses may include attributes that were inspired by nature, such as novel wetting agents and superior disinfection capabilities. The other item of note is that almost all of the most popular solutions have removed the words "no-rub" from their labels. Research had always shown that digitally rubbing a contact lens removes

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“I prescribe all of the available products, and I make sure to instruct patients on the proper way to use their specific lens care system.”

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1 to 3 log units of bioburden.<sup>1</sup> The contact lens-related *Fusarium* and *Acanthamoeba* keratitis outbreaks of just a few years ago demonstrated to all of us that convenience at the expense of ocular health is not a good thing. In addition, the outbreaks illustrated not only how important it is for patients to comply with their prescribed care regimen, but also for doctors to provide adequate education regarding lens care.

**AOC.** What are your preferred products? Why? Are there key ingredients you look for? How do you get information about new lens care products? How do you determine which new products to offer to your patients?

**SG.** I prescribe all of the available products, and I make sure to instruct patients on the proper way to use their specific lens care system. As examples, for patients with dry eyes, I recommend a novel wetting agent,

and for hypersensitive patients, I prescribe a hydrogen peroxide-based care system. I tell the patient that I have carefully selected a care system to work specifically with his or her lens material, replacement modality, and ocular health, and that he or she is not to switch solutions without my approval.

## CONCLUSION

There are many ways to stay current with contact lenses and their care. Industry sales representatives or professional relations directors/managers can be great resources for understanding companies' products. Of course, publications, peer-reviewed research articles, and continuing education meetings provide a wealth of information about new products. I have always taken pride in offering my patients the latest technologies in both lenses and solutions—and I know that they appreciate it. ■

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# Incorporating Diagnostic Technology in the Setting of Advanced-Technology IOLs

Technology aids in effective clinical decision making.

BY WALTER O. WHITLEY, OD, MBA

There are more than 3 million cataract operations performed annually in the United States, and increasingly, patients desire a visual outcome that can reduce their dependency on spectacle correction. With advanced-technology IOLs (ATIOLs), many patients and practitioners see an opportunity to not only remove a cataract, but also to achieve better vision—both in quality and quantity.

More recently, improvements and the implementation of diagnostic technology used pre-, intra-, and postoperatively have increased our ability to select appropriate IOL technology to achieve the desired outcome. As a result, both optometrists and surgeons play an invaluable role in comanaging cataract surgery, in terms of education and properly assessing patients to match them with the right technology.

## ESTABLISHING REASONABLE EXPECTATIONS

Every IOL used in cataract surgery carries a degree of compromise that may offset its benefits. This information should be clearly communicated to patients as part of the preoperative educational process.

With a standard monofocal IOL, the cloudiness of the cataract will be replaced, but the patient will still likely require spectacles for distance and/or near vision. Multifocal IOLs use multiple visual zones to provide focusing power at near, intermediate, and distance. Some lenses use a diffractive/refractive design (AcrySof Restor; Alcon Laboratories, Inc.) or are fully diffractive (Tecnis

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“With diffraction, a proportion of light energy is divided into distance, intermediate, or near focus. These . . . lenses may sacrifice a bit of intermediate vision to provide good distance and near acuity.”

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Multifocal; Abbott Medical Optics Inc.), which splits light waves depending on where they hit the optical surface. With diffraction, a proportion of light energy is divided into distance, intermediate, or near focus. These kinds of lenses may sacrifice a bit of intermediate vision to provide good distance and near acuity. The recent design of the AcrySof +3.00 lens has addressed this concern by moving the near focus zone out to a more comfortable working distance, while improving visual performance at intermediate distances.

Because of their multiple optical zones, however, multifocal lenses may cause visual disturbances such as halo and glare, especially in low-light conditions at night. Additionally, patients may need additional readers in low illumination to optimize the near vision. The Crystalens (Bausch + Lomb) works by pseudoaccommodation, meaning it shifts its position in the eye relative to the object of focus. These lenses are believed to offer excellent intermediate and distance vision, but patients will



OCRT's Jim Owen, OD, MBA, discusses new technologies and treatments, including corneal collagen crosslinking, deep anterior lamellar keratoplasty, new contact lenses, Intacs, laser-assisted penetrating keratoplasty, and what the optometrist's role is in matching patients with the appropriate technology ([eyetubeod.com/?v=wawogagif](http://eyetubeod.com/?v=wawogagif)).

For more on corneal collagen crosslinking, visit [EyetubeOD.com](http://EyetubeOD.com).



likely need spectacles for near tasks.

Toric IOLs are an option for patients with preexisting astigmatism at the time of surgery. Recent surveys suggest that as many as 20% of patients eligible for cataract surgery have at least 1.5 D of corneal astigmatism.<sup>1</sup> In clinical studies, implantation of a toric IOL (AcrySof, Alcon Laboratories, Inc.) led to spectacle independence in about 97% of patients.<sup>2</sup>

### PREOPERATIVE EVALUATION

Regardless of the lens choice, an accurate evaluation of the eye and assessing expectations are important for patient selection and to improve outcomes. Implementing ATIOLs successfully also depends on optimizing the ocular surface before surgery to achieve better healing postimplantation. Likewise, optimal performance of the implant relies on correctly measuring the eye to match the best lens to the particular patient.

### Patient Selection

Patients with certain retinal or macular pathologies are poor candidates for ATIOLs. Patients are paying a premium price and expect optimal results. Any presence of macular pathology will reduce their visual outcome. Although many macular conditions can be

identified upon clinical observation, most are readily recognized and imaged using optical coherence tomography (OCT) technology. OCT is the preferred imaging technique because the resulting image is not degraded by the corneal or lens opacification (ie, the cataract), and it allows for the identification of drusen or subtle epiretinal membrane that might not be visible on clinical evaluation.

Patients with moderate to advanced ocular surface disease may also be less than optimal candidates for ATIOLs, or at a minimum, may require efforts to optimize the ocular surface prior to surgery. Dry eye disease may lead to less than optimal healing and cause discomfort in the postoperative period. The TearLab Osmolarity System (TearLab Corporation) is an objective assessment of tear osmolarity, which correlates with dry eye signs and symptoms. The use of vital dyes such as lissamine green and fluorescein are invaluable in grading the severity of the condition, while the Schirmer test can help to identify patients with aqueous-deficient dry eye. Additionally, corneal topography systems, like the Keratograph (Oculus, Inc.), offer the ability to objectively measure tear quality on the ocular surface, although this is relatively new, and its exact role is as yet unclear.

### Patient Evaluation

Patients with unrecognized astigmatism and significant higher-order aberrations may experience an unwanted refractive surprise after cataract surgery. Accurate keratometry and aberrometry is an essential component of the workup for ATIOL patients. This step will identify the presence and amount of corneal astigmatism and any higher- (coma, trefoil, spherical aberration) or lower-order aberrations (sphere, coma) that might interfere with visual performance after surgery. In our practice, we have implemented refraction systems such as the Epic-5100 (Marco), which has allowed us to efficiently gather diagnostic data including unaided and aided acuities, lensometer readings, autorefraction, objective refraction, wavefront aberrometry, and pupil size measurements.

Biometry is also critical to ensure that a correctly powered IOL is selected. We have adopted the Lenstar LS 900 (Haag-Streit AG), which provides multiple data points simultaneously: pachymetry, lens thickness, pupillometry, keratometry, axial length, anterior chamber depth, and white-to-white measurements. This device has improved both the accuracy of our assessment as well as the efficiency with which data is acquired, both of which are important components in determining whether new technology is right for the

# When to Adopt and When to Not

When it comes to adding any new technology to the practice, the most important thing to consider is how it might benefit patients. There has to be an improvement in care, otherwise new technology may be a poor investment. But this is certainly not the only consideration when it comes time to think about new devices or technologies.

For example, is the new technology going to change the way care is provided? Will it provide a reasonable return on investment? Are there enough patients in the practice to justify the expenditure? Will it attract new patients? A new device may be the latest and greatest, but if it will not be financially feasible to the practice, it may not be worth investing in it.

Another important thing to consider is how easily a device or technology can be incorporated into the practice. If the new technology slows down the flow of patients, for example, a practice may recognize profit losses as a result of longer examination times. Technology should improve efficiency, which is becoming increasingly important to maximizing revenue.

Overall, new technology should fit into the practice's predesigned model of care. For example, where I practice, technicians perform diagnostic testing. Using the data that have been collected, our providers are able to do what doctors do best: analyze and determine the appropriate course of action. If a new device is going to change that paradigm, thereby altering our efficiency, we would have to consider whether its potential benefit is worthwhile.

New technology should complement the clinical evaluation. It is important to evaluate new devices in several contexts, and to re-evaluate the new technology after implementation to make sure it had its desired effect.

For more on innovation in cataract surgery visit [EyetubeOD.com](http://EyetubeOD.com).



practice (see *When to Adopt and When to Not*).

In the future, new technologies like confocal microscopy and ocular response analyzers, as well as improvements on current technologies are likely to further enhance the assessment of patients seeking premium vision after their cataract surgery. On the other hand, these data may also help determine which patients may not be optimal candidates for ATIOLs due to preexisting pathology.

## INTRAOPERATIVELY

The surgeons in our practice have adopted femtosecond laser technology (LenSx, Alcon Laboratories, Inc.) for use in premium cataract surgery. Our surgeons are using the LenSx for all phases of the cataract operation, from making the incision to ablating the lens to cutting the capsulorhexis. It is also an excellent way to correct astigmatism at the time of surgery.

Prior to adopting laser cataract surgery, if we had an ATIOL patient who had significant astigmatism, we had two options. The first option would be to perform the cataract operation with the AcrySof Restor (Alcon Laboratories, Inc.) or the Crystalens (Bausch + Lomb), then a couple months later or after the eye healed completely, perform a second surgery to correct the

astigmatism. The second option was to perform limbal relaxing incisions concurrently with the cataract procedure. Manual limbal relaxing incisions have been a great option, although the outcomes can be more variable. Now, we are able to perform both steps simultaneously and deliver on the premium promise more quickly. One of the unique features of femtosecond technology is that the surgeon can create an arcuate incision during surgery, and then he or she can extend that incision at the slit lamp if needed.

## PATIENT FOLLOW-UP

Delivering on a premium cataract surgery does not stop after the surgeon implants the lens. Postoperative care of the premium IOL patient is an essential component of optimal performance and his or her satisfaction with the procedure. According to some studies, as many as 80% to 87% of patients present with dry eye symptoms postoperatively.<sup>3</sup> At the least, this causes discomfort to the patient, but at worst, could cause suboptimal healing and response.

Although not classically thought of as a "technology," there are various pharmaceutical agents and treatment options available for managing dry eye disease. For example, Restasis (cyclosporine ophthalmic emulsion, 0.05%;

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“Attending to the ocular surface is one of the more obvious needs of cataract patients in the postoperative period.”

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Allergan, Inc.) is a great adjunct to use with whatever medications the patient is already taking. Punctal occlusion is another option to help address ocular surface disorders postoperatively.

Attending to the ocular surface is one of the more obvious needs of cataract patients in the postoperative period, but there may be other situations that can affect the lens' performance postoperatively. For example, in the case of an unexplained loss of visual acuity, it might be wise to perform a repeat OCT to look for cystoid macular edema and other retinal pathologies. The presence of even mild posterior capsular opacification can also reduce image quality, and a Nd:YAG laser capsulotomy may be indicated earlier in the postoperative course. Also, any residual refractive error may warrant further evaluation for refractive surgery to “fine tune” the patient's vision.

## CONCLUSION

The use of technology in the modern practice of eye care is certainly a double-edged sword. On the one hand, we eye care specialists are afforded invaluable information about our patients' eyes. Yet, there is also a risk of paralysis by analysis or, on the other end of the spectrum, overreliance on technology. In the setting of ATIOLs, diagnostic technologies should be used to help guide the clinician's decision-making process in matching the correct lens to an individual patient's unique set of circumstances. Premium cataract surgery is not simply about using the latest technology and implanting the newest lens; more so, it is about using our best resources to help deliver quality vision that will significantly have an impact on patients' lives. ■

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