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This ongoing series, now in its second year, is featured in each issue of *AOC* and its sister publication *CRST*. The articles will clarify how eye care providers can best work together to provide patient-centered care of the highest quality possible.

REVOLUTIONS AND EVOLUTIONS IN CATARACT SURGERY:

PROGRESS IN THE GOAL OF ACHIEVING REFRACTIVE CATARACT SURGERY

Surgeons have never before been so well equipped to deliver on the promise of improved vision after cataract surgery.

BY MARGUERITE B. MCDONALD, MD

It was not long ago when the term *refractive cataract surgery* began being discussed at medical meetings and other venues. But achieving the goal—cataract surgery that is truly refractive surgery—was not always possible. The introduction of new technologies and tools during the past 5 to 10 years has enhanced surgeons' ability to hit the refractive target in cataract surgery with consistency and accuracy. Today, providing our patients with improved postsurgical uncorrected visual acuity is an expectation.

When we think about the reasons why surgeons now have improved chances of providing patients with the vision they want after cataract surgery, there are really two categories of advances. In the past decade, there have been some truly disruptive technologies to hit the market that fundamentally change how anterior surgeons operate. As important as these revolutionary technologies are, a number of product evolutions also occurred over that time that added significantly to the surgeon's ability to perform truly refractive cataract surgery.

REVOLUTIONS IN CATARACT SURGERY

The most obvious watershed technology to come along in the past few years is the adaptation of femtosecond lasers for use in cataract surgery. Laser cataract surgery has fundamentally changed how surgeons operate; incisions are more accurately placed and shaped, less phaco energy is required when the lens is prefragmented by the laser, and arcuate incisions are arguably more predictable in effect because of their precise location, depth, and perpendicularity. They are also easier to titrate after surgery: intrastromal incisions can be opened up fairly easily at the slit lamp if necessary.

Our ambulatory surgery center on Long Island was one of the first in the United States to acquire a femtosecond laser; now, the technology is readily available in many surgical centers across the country. In our center, 34 surgeons use this technology, and their conversion of patients to the laser ranges from approximately 20% to 100%. That is truly an extraordinary change in the course of just a few years.

Another important technology to emerge in the past few years is intraoperative aberrometry. Two devices have US regulatory clearance: the ORA System with VerifEye+ (Alcon) and the Holos IntraOp (Clarity Medical Systems). Our practice's experience is with the ORA device.

Many patients presenting for cataract surgery have a history of refractive surgery, and it is notoriously difficult to accurately calculate IOL power for this patient population. Intraoperative aberrometry mitigates these difficulties by providing an aphakic reading just before implantation, yielding the most accurate biometric measurements possible.

Regarding toric lenses, in fact, ORA has become a useful tool for ensuring proper positioning and axis alignment with these premium IOLs. Even small degrees of misalignment can cost patients visual acuity—it has been shown that every 1° of misalignment yields a 3.3% reduction in the correction of astigmatism—and in the context of refractive cataract surgery, every little bit counts.

EVOLUTIONS IN CATARACT SURGERY

There is a long and storied history of IOL evolution in cataract surgery. Sir Harold Ridley performed the first successful IOL implantation in 1950, and Charles Kelman implanted the first IOL in the United States in 1952. During ensuing decades, the technology has continually improved, as have the techniques used for the surgery.

In the past decade, multifocal IOL technologies have significantly enhanced our ability to provide options for patients desiring vision at different distances after cataract surgery. This evolution has coincided with a sea change in people's use of technologies such as smartphones and computers. As patients' visual demands have changed, surgeons have been fortunate to have at their disposal lenses that can help patients who have lost accommodative amplitude. Developments in the pipeline of IOL technology portend even greater possibilities for matching patients with the best lens to achieve their refractive goals.

The capability to address patients' astigmatism has likewise improved our ability to perform truly refractive cataract surgery. Toric IOLs have significantly improved in recent years, and there are now more options available in a wider range of powers than at any time before. Combine this with our ability to place these IOLs more accurately using aberrometry and our capacity to perform arcuate incisions with the femtosecond laser, and we surgeons now have the tools to design individualized astigmatism treatment plans to meet each patient's needs.

I mentioned that femtosecond laser has revolutionized how surgeons operate. It is important to point out that even this young technology has also undergone significant evolution since its introduction to ophthalmology. Laser-induced posterior capsule rupture is largely a problem of the past, and anterior capsular tears have been very significantly reduced. Meanwhile, the imaging capabilities of the various manufacturers' platforms have all gotten considerably more sophisticated, leading to better accuracy and confidence in the readings.

THE HUMAN FACTOR

For all the technologies available in the modern OR, it is crucial to remember that there are still humans at the controls. This is key, because even the best technology may not deliver a great outcome unless it is used with care and precision.

Surgeons have certainly benefited from manufacturers' efforts to integrate the diagnostic and treatment technologies so that readings are automatically transferred rather than input by hand from one machine to another. This adds an element of safety as it is a failsafe against poor handwriting and transcription errors. Still, efficient communication in the OR is essential for safe and effective outcomes. Equally so, continued commitment to training and education is a must to ensure correct use of the tools of advanced surgery.

The need for the surgical staff and others to work together in this high-tech environment has led to what I think has been a natural progression over the years. Optometrists, technicians, and surgical staff have become integrated into the perioperative process. Optometrists are tremendously helpful in our practice for assisting the ophthalmologists with the pre- and postoperative workups and evaluations, and this has improved our efficiency and our ability to deliver better outcomes. The role of optometry has evolved in eye care overall, and, in our practice, we have changed how our surgeons interact with both in-house and community optometrists.

THE FUTURE IS BRIGHT

If the past decade in cataract surgery is any indication of where we are heading, then the future is bright indeed. Heads-up surgery is a concept that is still in its infancy but that might someday soon significantly change how surgery is performed. There are myriad technologies and innovations in development that offer great promise to further refine surgical outcomes, affording greater accuracy, predictability, and, potentially, safety.

Most of us feel that this is a fortunate an exciting time to be an ophthalmic surgeon because of the many tools and technologies at our disposal. I would contend that, while this is true, our patients are truly the fortunate ones. Although it is no secret that a potential pitfall of advanced technology is heightened expectations, at no time in the history of cataract surgery have surgeons been as well equipped as they are now to deliver on the promise of refractive cataract surgery. ■

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COMMITTING TO ADVANCED TECHNOLOGY

Purchasing a new piece of equipment is only part of the commitment.

BY SCOTT E. LaBORWIT, MD, AND ROBERT STUTMAN, OD, MBA, FAAO


Long ago, our eye care practice and surgery center decided to be on the cutting edge of technology. We believe that the incredible advanced technologies now available for ophthalmic surgery and eye care offer opportunities to deliver the best patient care possible. There are a number of benefits to this philosphy. Advanced technology can be a great differentiator, can attract patients to the practice, and can broaden the range of services offered. First and foremost, however, a new piece of equipment must improve the care we deliver to patients.

The flip side of being interested in advanced technology is that it requires tremendous commitment, even beyond the obvious financial outlay. Some technologies on the market require large capital expenditure, so purchasing decisions must be made with careful consideration. Further, in general terms, once a new technology is acquired, it has the potential to alter patient flow, clinic or operating room efficiency, and administrative responsibilities including billing, coding, and compliance requirements. As a result, the way a new offering is integrated into a practice can be very important. Another concern is that a new technology may change the doctor-patient interaction, so constant training, education, and reeducation are essential.

These facts should not dissuade one from pursuing advanced technology; however, it is best to think of both the upsides and potential downsides when technology and equipment upgrades are considered, so that pitfalls can be avoided or mitigated whenever possible.

FEMTOSECOND LASER EXPERIENCE

When femtosecond lasers first entered the ophthalmology market, we had no intention of making a purchase. After some early research, however, we opted to make a leap of faith for this technology because of what it could potentially add to surgery. We became the 42nd practice in the world, and the first in Baltimore, to offer laser cataract surgery. Although we were unsure whether patients would want to pay the additional fee for the technology, we were convinced it could help us achieve better outcomes.

After adding the femtosecond laser (LenSx; Alcon), we quickly realized that our laser cataract surgery procedure would only be as strong as its weakest link. Our postoperative outcomes would hinge on our ability to achieve accurate preoperative keratometry and biometry. Therefore, purchasing the laser necessitated additional investment in a new topographer and a 40-year-old manual keratometry platform. Performing manual keratometry on every patient may sound incongruous with an advanced procedure like laser cataract surgery, but we feel confident to this day that this provides us the best means of understanding patients' astigmatism.

The next step we took was to rearrange scheduling protocols to yield better efficiency. We started grouping cataract evaluations to maximize flow, and, as a benefit, we discovered ways to really improve upon the patient experience in our clinic.

Of course, no one would really know that we had this amazing new technology in our surgery center unless we advertised it. Therefore, we established a significant marketing budget to revamp our website, create marketing pieces, and develop educational videos for patients.

After all, the huge capital commitment we made in the laser platform suggested the need for an all-in philosophy.

TRAINING, EDUCATION, AND MORE TRAINING

Our decision to adopt laser cataract surgery also meant a whole new way of operating, and such a change in our practices would be possible only if we got everyone on board. Before we started performing laser catatacy surgery, we gave lectures and shared videos with the staff to help explain not just how the surgery would change, but also why we were making this commitment. If we were going to ask staff members to do more in the office in support of this endeavor, we felt it was important to engage them—everyone from the front-office receptionist to the billing department to the technicians.

We used a four-pronged approach to education: educating patients, educating our staff, educating referring doctors, and educating the surgical center staff, while at the same time revamping surgical procedure. Why such a comprehensive approach? Because if we did not, the doctors would be the only ones who understood the technology and its potential benefits, and everyone else would see it as just another task to check off their list throughout the day.

WHEN NEW TECHNOLOGY IS NOT A FIT

We have been fortunate with our laser cataract surgery experience. To date, we have performed more than 4,000 LACS cases, delivering consistently excellent results for patients. Sometimes, though, it is better to cut losses than to plod forward with a technology that is just not working out the way one hoped.

We had one piece of technology for assessing astigmatism that we wound up returning to the vendor after about a year in our clinic. It was adding too much time to the evaluation, and we had issues with integrating it into the existing network. The technology offered definite advantages, but, overall, what it added did not outweigh the additional work to use it.

Instead of making us gun-shy about adding new technologies, however, that experience taught us that sometimes enthusiasm for new technology can be a distraction. An important element of introducing any new technology or service to one's practice is a commitment to continual reevaluation because sometimes, it just does not work out as planned.

CONCLUSION

No one can make a blanket statement that a commitment to advanced technology in the clinic or practice is right for everyone. For our practice, deciding to make advanced technology an important part of how we attend to patients' needs was the right choice. Although making such a commitment is a big decision, we believe that eye care practices and clinics have tools at their disposal to help integrate new technologies. Journal and magazine articles (like this one) offer ways to learn about what a particular piece of equipment can add. Colleagues who use the technology in question can be excellent sources to learn about how it has affected their patient flow, efficiency, and clinical operations.

Being a provider and user of advanced technologies requires a commitment well beyond the capital outlay. Although adding new technologies to the practice or clinic may improve patient care, we caution colleagues to remember the law of unintended consequences. The technology available to the modern eye care provider is truly remarkable and can add significantly to one's ability to serve patients; however, all aspects of a technology upgrade should be considered, including the benefits and potential pitfalls. ■

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BEST PRACTICE: TOOLS FOR ADVANCED SURGERY

Advances in presbyopia management are expanding options for patients.

BY ERIC BROOKER, OD

Not long ago, there were few options for addressing presbyopia. External options included bifocal or progressive spectacles and certain models of contact lenses. Although laser surgery for presbyopia has improved, it is still a challenging procedure with variable results. Within the past decade or so, surgical options for presbyopia correction, whether at the time of cataract surgery or in a purely refractive surgical procedure, have expanded.

Multifocal IOL technologies have advanced to the point at which patients with a cataract can be offered an implant that may restore visual capability. There are now multiple models of multifocal and pseudoaccommodative IOLs that use different mechanisms to address patients' near vision concerns.

During this same time period, the market of corneal inlays has blossomed. Under the name *keratophakia*, corneal inlays of one type or another have, in fact, been attempted since 1949.[1] However, it was not until 2015 that the first corneal inlay received clearance by the US Food and Drug Administration (FDA): the Kamra corneal inlay (AcuFocus). Several other corneal inlay options are available outside the United States, although there are important differences among the various models.

TYPES OF CORNEAL INLAYS

Corneal inlays come in three basic design modes: refractive corneal inlays, corneal reshaping inlays, and small-aperture inlays.

Refractive Corneal Inlays

Similar in design to some multifocal contacts or IOLs, refractive corneal inlays are designed with a plano or neutral central distance vision zone, surrounded by an add zone with positive power. The multiple vision zones function to change the refractive index of the cornea. Much like with refractive multifocal IOLs, the multiple vision zones may create overlapping images projected on the retina, and thus dysphotopsias, such as glare and halo, may result.

There are two market products in this category: the Presbia Flexivue Microlens (Presbia), now in trials for FDA clearance, and the Icolens (Neoptics AG), which is available outside the United States.

Corneal Reshaping Inlay

Corneal reshaping inlays are designed to change the curvature of the anterior corneal surface. With this approach, presbyopia is theoretically corrected by increasing the curvature of the central anterior cornea, while light rays in the periphery pass through a thinner portion of the inlay to preserve distance vision.

The Raindrop Near Vision Inlay (formerly PresbyLens or Vue+; ReVision Optics), available outside the United States, is the only known inlay of this type.

Small Aperture Inlay

Small aperture inlays use the principle of pinhole optics to improve near vision by increasing depth of field. The small central opening functions to filter out competing light coming from distance (a low-pass filter) so that light in the near vision plane moves directly to the retina.

The Kamra inlay, measuring 3.8 mm in diameter with a 1.6-mm central opening, has FDA marketing clearance in the United States and is also available in Canada, Europe, South America, and countries in the Asia-Pacific region and the Middle East. Refinements in the techniques used to create the pocket for the inlay (in particular, the incorporation of femtosecond laser and a better understanding of preferred depth) have improved outcomes with this inlay.

IOLs

The IOL market has seen an expansion of options for correcting presbyopia at the time of cataract. There are two basic types of presbyopia-correcting IOLs: pseudoaccommodative and multifocal.

Pseudoaccommodative IOLs (Crystalens AO and Trulign Toric; both Bausch + Lomb) incorporate an aspheric design and flexible haptics that theoretically allow anteroposterior movement in the anterior chamber; the Trulign adds a toric component for astigmatism correction. The IOL moves forward as the eye focuses on near objects to increase focusing power. These lenses may not provide as much near vision correction as multifocal IOLs.

Multifocal IOLs utilize multiple vision zones to provide areas of focus for near, intermediate, and distance vision tasks. There are two multifocal IOLs on the US market: the Tecnis Multifocal IOL (Abbott Medical Optics) and the AcrySof IQ Restor (Alcon). Although similar in principle, there are some design differences that differentiate these lenses. The Restor IOL uses an apodized diffractive optic design on the anterior surface of the IOL to provide distance and near foci. Tecnis lenses, with three distinct vision zones, have a wavefront-designed aspheric anterior surface and a posterior diffractive surface. Regardless of design, the multiple vision zones inherently cause competing images on the retina and are prone to association with glare and halo.

IN THE PIPELINE

Two IOL designs in clinical trials offer great promise for patients with presbyopia.

The Tecnis Symfony IOL (Abbott Medical Optics), now available in Europe and under review by the FDA, uses a diffractive echellete optical design to create a novel diffraction pattern that elongates the depth of focus. The result is more accurate focus for near, intermediate, and distant objects. It is believed that this lens reduces dysphotopsias through the same effect because less light is out of focus and competing with focused light on the retina.

The other promising candidate is the IC-8 (AcuFocus), a sort of hybrid of the company's Kamra inlay and a silicone IOL. Because the pinhole is moved inside the eye, issues with corneal healing, which may affect the functionality of a corneal inlay, are eliminated. Unlike with multifocal IOLs, there are no competing vision zones, so issues with glare, halo, and night vision are theoretically reduced. The product has received the CE Mark in Europe but is not yet available in the United States. Postmarketing surveillance in Europe and the Philippines has so far indicated positive results with the IC-8.

CONCLUSION

The options for surgical correction of presbyopia are rapidly expanding. For cataract patients, the broad range of options means that eye doctors can match an appropriate lens to each patient's visual needs, demands, and lifestyle. Similarly, the growing array of IOLs and inlays that address presbyopia provide options to individualize approaches to refractive surgery for presbyopes.

Presbyopia is a particularly difficult disorder to manage, as patients are frustrated by the reality of losing near vision but are often unwilling to wear glasses that help them see at all ranges. Some patients express cosmetic concerns, while others simply do not want to be bothered with suddenly having to wear glasses after a lifetime without them. In the not-too-distant past, there was not much in the way of surgical technology that we could offer to these patients. However, the market for presbyopia-correcting devices has been revolutionized by recent developments, and pipeline candidates offer the promise to do even more. ■

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ADVANCED TECHNOLOGIES FOR PREOPERATIVE ASSESSMENT

Greater precision in the workup increases the likelihood of accurate postoperative outcomes.

BY CHRISTOPHER FREEMAN, OD, FAAO

Technologies for assessing the ocular surface and determining the shape of the cornea have proliferated in recent years. These transformative diagnostic advances contribute to clinicians' preoperative understanding of the health of the eye and its fitness to undergo cataract or refractive surgery. In addition, these technologies have increasingly been recognized as critically important elements in helping patients to achieve the results they desire after surgery.

This article explores how these diagnostic technologies help to direct clinicians' choices of treatment and contribute to successful surgical outcomes.

ADVANCED DIAGNOSTICS FOR THE OCULAR SURFACE

A case can be made that assessment of the ocular surface before ocular surgery has become so important that it has transformed the role of the preoperative evaluation and workup. Surgeons now increasingly expect that patients will be referred for cataract or refractive surgery only once their ocular surface has been assessed and deemed healthy enough to undergo the desired procedure. This follows from the realization that unrecognized ocular surface disease can lead to poor results or refractive surprises after surgery; they can affect the accuracy of keratometry and other measurements before surgery, which can lead to incorrect IOL power calculations or inappropriate refractive surgical plans. In addition, untreated preoperative ocular surface disease (OSD) can lead to patients' discomfort and further problems postoperatively.

That is to say, ocular surface diagnostics do more than add information to the clinical picture of the eye's health. They also fundamentally improve clinicians' ability to help patients achieve their refractive goals.

Cataract surgery has become a high-technology service, with the integration of the femtosecond laser a prime example of this trend. As the volume of cataract patients has increased, so have expectations for postoperative visual results. Laser cataract surgery aims to achieve greater precision. The laser is believed to create incisions with greater accuracy, and lens fragmentation with the laser may reduce the need for phacoemulsification time and energy, with the result of less turbulence and time in the eye during surgery and thus potentially less inflammation afterward. These techniques add a measure of predictable control over elements that might otherwise affect the refractive outcome.

However, refinements in the surgical procedure itself are only one aspect of accurately and repeatedly hitting the refractive target. The process of achieving accurate results begins during preoperative assessment and patient workup.

Fortunately, a number of technologies have emerged that add to screening efforts so that patients in need of ocular surface remediation can be identified. Once the patient's ocular surface has been restored to health, the patient can be referred for surgery with greater confidence in an outstanding result. The first step, however, is identifying those who need treatment for dry eye disease (DED) or other ocular surface issues.

Although they may not seem high technology, questionnaires can be helpful to identify patients in need of ocular surface remediation. Based on the patient's answers regarding ocular discomfort, fatigue, redness, and other signs and symptoms, the clinical examination can be directed to detecting the presence and understanding the nature of any ocular surface abnormalities.

Point-of-care testing has emerged as an important tool. The InflammaDry test (Rapid Pathogen Screening) can indicate the presence and activity of matrix metallopeptidase 9, a marker for inflammation, on the ocular surface. The AdenoPlus (Rapid Pathogen Screening) test can help identify the cause of conjunctivitis in patients presenting with red eyes of undetermined etiology. Similar tests now in the pipeline, including one that will be directed at determining allergic triggers, will add to the clinician's ability to differentiate among pathologies with overlapping signs and symptoms.

Of the ocular surface issues that may become apparent in surgical patients, OSD is the most difficult to diagnose properly and treat effectively. As the understanding of dry eye has evolved over the past 2 decades, it has become obvious that it is a chronic, progressive, multifactorial disease. Increased knowledge about DED has also revealed that targeted treatment strategies, especially when introduced early in the disease course, are more effective than empirical interventions. A plethora of new diagnostic technologies can provide insights into disease severity and its response to treatment over time.

Tear osmolarity plays a role in both evaporative and aqueous-deficient DED. Testing individuals with signs or symptoms indicative of DED with the TearLab Osmolarity System (TearLab) can reveal tear film abnormality and instability. For the test, a sample of tears is collected on a test strip and analyzed by the system. A score of greater than 308 mOsml/L or a difference greater than 8 mOsml/L between eyes indicates tear film instability, a hallmark of DED.

Although osmolarity is useful for diagnosing and staging DED, it does not provide insight on etiology. Evaluation of the meibomian glands is helpful to determine whether a particular patient's DED is evaporative or tear-deficient. The Standard Patient Evaluation of Eye Dryness, or SPEED, Questionnaire (TearScience), consisting of four simple questions about symptom severity and frequency, can help determine whether a gland evaluation should be recommended.

The LipiView II with Dynamic Meibomian Imaging (TearScience) can assess meibomian gland structure and function to identify meibomian gland disease. The device provides high-definition imaging of gland structure. The Korb Meibomian Gland Evaluator (TearScience) provides further information about the status of the meibomian glands by applying standardized pressure on the lids while the function of the glands is observed at the slit lamp.

If the glands are noted to be impacted or the meibum expression is poor, LipiFlow (TearScience) treatment can be used to deliver thermal pulsation to the inner and outer lids. This treatment can help to rebalance the aqueous and lipid content of the tears.

UNDERSTANDING CORNEAL ARCHITECTURE

Ensuring patients the best chance of good postsurgical outcomes goes beyond diagnosing and treating ocular surface pathologies. Eliminating DED, meibomian gland dysfunction, or both, can lessen the likelihood of inaccurate preoperative measurements. Once those barriers are removed as potential sources of data errors, the technology used for biometry, keratometry, and topography must be reliable, accurate, and repeatable.

Many instruments are available to assess corneal dimensions and relationships, and most manufacturers have instituted significant upgrades in their tools for preoperative assessment in recent years. In my experience, the Keratograph 5M (Oculus) is highly accurate in measuring and mapping the corneal surface and curvature. The instrument is also multifunctional for evaluating ocular health. Using the built-in keratographer and color camera, the operator can measure tear meniscus height, evaluate the lipid layer, and noninvasively measure tear breakup time. The device also uses infrared illumination (Meibo-Scan) to directly assess the meibomian gland structure. The user can view blockage, atrophy, and gland dropout.

An interesting revelation of the past decade has been the recognition of the role of posterior corneal curvature in refractive assessment. Lens power calculations that consider only anterior corneal curvature may create optical systems that do not account for posterior corneal curvature. In other words, undetected differences in curvature of the posterior cornea may yield refractive surprises. Measuring anterior corneal astigmatism alone may underestimate the total corneal astigmatism by 0.50 D in 5% of eyes.[1] In isolation, that figure is small; in a high-volume practice, however, if five of every 100 patients goes home with poorer vision than desired, the reputation of the practice and patients' confidence in the surgeon's skills can quickly suffer. Devices such as the Pentacam (Oculus) and the Galilei analyzer (Zeimer) use advanced Scheimpflug and ray-tracing technology to measure posterior corneal astigmatism.

The Cassini Total Corneal Astigmatism device (i-Optics) also measures posterior as well as anterior corneal astigmatism. Rather than using Scheimpflug technology, it uses multicolored LED point-to-point ray tracing and second Purkinje reflection-based analysis to provide measurements. The device provides detailed and accurate analysis of the magnitude and axis of astigmatism. These data offer a more complete understanding of the patient's astigmatism, theoretically leading to more accurate selection of IOL power and more precise implant placement.

CONCLUSION

None of the technologies mentioned in this article are an absolute necessity for every practice; neither is this an exhaustive list of technologies available. Providers should be aware of cost relative to what a given technology can contribute to patient care.

Assessment of patients before ocular surgery requires diagnostic acumen and precise measurement. Sophisticated technology is available to provide accurate and repeatable measurements of topography, keratometry, and biometry. Emerging diagnostics for ocular surface assessment can help stage patients and direct OSD interventions. As patients expect to achieve better vision after surgery, whether laser vision correction or refractive cataract, the need for precision at every step in the process is heightened.

All of the advanced preoperative technology discussed herein has helped to enhance the role of the optometrist in the surgical process. Technology makes it possible for the optometrist to become more of a vested partner in the care of surgical patients. Optometry should look to advanced diagnostic technologies both for what they can add to the clinical ability of clinicians and for the opportunities it creates to participate in the integrated and coordinated care model. ■

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