CATARACT SURGERY

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Presenter: Off-label use of femtosecond laser in cataract surgery being explored

Lecturers at the OCRT meeting also discussed scleral spacing, 3-D technology, corneal cross-linking and blepharitis.

by Marc R. Bloomenstein, OD, FAAO

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SAN FRANCISCO – The recent meeting of the Optometric Council on Refractive Technology held a slightly different feel than previous years because LASIK surgery was not a hot agenda item. Instead we were treated to 3-D cataract surgery videos, emerging femtosecond intraocular surgeries and a plethora of new novel treatment modalities.

The Optometric Council on Refractive Technology (OCRT), as part of the Cornea, Contact Lens and Refractive Technology section of the American Academy of Optometry, was held prior to the start of Academy 2010.

Femtosecond cataract surgery

George Goodman, OD, described an off-label method for breaking down the crystalline lens with a femtosecond laser. For as long as I can remember, patients have assumed that cataract surgery was performed using a laser. Although phacoemulsification and sound waves are safe, patients have a sense of security in laser technology.

The femtosecond laser can make a precise capsulotomy in 0.25 mm and centered on the visual axis without radial tears. Aside from the capsulotomy, the laser can make clear corneal incisions with perfect dimension and architecture and create limbal relaxing incisions with a specific depth and precision every time. These lasers will have the ability to break down the lens into fine tiny fragments to be removed easily by aspiration.

Dr. Goodman also described the use of the femto to blanch lenses to reduce the lenticular yellowing and delay the surgical necessity with nuclear sclerosis.

Scleral spacing

For many of us who saw Helmholtz's theory of accommodation challenged by Schachar, we understood the use of expansion bands to create an accommodative effect. Schachar believes that in the accommodated state, the equatorial zonules are under increased tension and the anterior and posterior zonules are relaxed.

Dora Sztipanovits, OD, provided an overview of this presbyopic treatment and the current thought process. Although started as a U.S. Food and Drug Administration phase 1 trial in 2000, the current model is a revamped process that started trials again in 2009.

In the current study, 83% of patients with stable implants are 20/40 at near, and 52% are 20/32, Dr. Sztipanovits reported.

Corneal cross-linking with riboflavin and UVA

Corneal cross-linking is a hot topic in all areas of the cornea, and no place better does this fit than in refractive technology.

Scott G. Hauswirth, OD, FAAO, detailed his involvement in a keratoconus arm of the FDA study of this corneal procedure. It was almost 14 years ago that Seiler and Spoerl presented at ARVO the artificial stiffening of the cornea by induction of intrastromal cross links. The covalent bonding was achieved by using high concentrations of vitamin B2 (riboflavin 0.1%) in combination with an ultraviolet A light. This technique is designed to stop the progression of corneal diseases, such as keratoconus and pellucid marginal degeneration.

However, Dr. Hauswirth cited that this procedure will benefit ectasia exacerbated by previous refractive surgery, irregular radial keratotomy and in conjunction with Intacs (Addition Technology). There is also some postulation that corneal cross-linking has biocidal properties with bacterial, fungal and Acanthamoeba isolates.

New technology for the optometric practice

You cannot escape the fact that 3-D technology is seeping into all aspects of media. Surgical procedures are not exempt from this novel video process.

David Friess, OD, had the crowd don 3-D glasses to be treated to a surgical equivalent of Cameron's Avatar. Along with Paul M. Karpecki, OD, FAAO, Dr. Friess presented cases using the Truevision3D high-definition camera that is mounted to a conventional microscope. This technology gives depth of field, full view for the operating room staff, excellent resolution and image quality. It presents opportunities for surgical guidance of free-hand procedures in ophthalmology; neurosurgery; ear, nose and throat; spinal surgery and more. A whole range of new technology will change our practice patterns.

Dr. Karpecki described the Adeno Detector (Rapid Pathogen Screening), as a new adenovirus detector that performs like a pregnancy test, with immediate interpretation and diagnosis of the adenovirus antigen.

The Femtec by Technolas uses femtosecond technology to centrally steepen the cornea with smooth transition zones, thus creating an increased depth of field, Dr. Karpecki reported.

All of this technology is great, but keeping it all connected is the role of EyeRoute Image Management Suite (Topcon), which has programs to allow viewing of your diagnostic images (ocular coherence tomography, fluorescein angiography, slit lamp photos), reports and videos to be viewed on your iPhone or iPod Touch.

This technology boom has also affected the refracting lane. The VMax SR phoropter (VMax Technology) and electronic eye wear are taking the refraction and glasses to a new level. The VMax uses a point spread function (PSF) to measure a refraction to 0.01 D and develop glasses to meet those standards.

PixelOptics is working to bring a frame that houses micro-electronics connected to a lens, which has liquid crystal sandwiched between two layers of transparent electrodes. The cigar-shaped crystals rotate with a change in voltage. The result is a lens with significant reduction in distortion, larger field of view than a standard progressive-addition lens and an intermediate area almost 10 times greater than a standard PAL, Dr. Karpecki said.

MRSA and refractive surgery

Susan Gromacki, OD, FAAO, a diplomate of the Cornea, Contact Lens and Refractive Technology Section analyzed the ocular surface and nasal isolates of 53 recruits at the U.S. Military Academy at West Point seeking PRK, to determine the prevalence of methicillin-resistant Staphylococcus aureus.

In this study, one patient had MRSA in the ocular surface and five had it in the nasal cultures. Although further studies need to be conducted to find a true prevalence, this study illustrates the existence of MRSA in all populations.

Managing blepharitis and improved outcomes

The preeminent scholar in blepharitis research, Kelly Nichols, OD, outlined the importance of diagnosing and managing blepharitis.

As an author of the Dry Eye Workshop Study report in 2007, Dr. Nichols reminded the group of the inflammatory nature and comorbidity that dry eye and blepharitis share. In fact, in a recent survey-based perspective on prevalence and treatment, optometrists report that blepharitis is seen in 47% of their patients.

In another recent study assessing the frequency of occurrence and the severity of blepharitis in 100 cataract patients, the prevalence was as high as 59%.

Dr. Nichols highlighted the importance of treating the blepharitis with off-label use of medications such as AzaSite (1% azithromycin ophthalmic solution, Inspire), to improve the surgical outcomes.

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