



Today's Cataract Practice:

Evolving technology to optimize patient's outcomes

In an EyeWorld Asia-Pacific Corporate Symposium, supported by an educational grant from Johnson & Johnson on Saturday July 31, 2021, key ophthalmologists presented on evolving technology in both the intraocular lens (IOL) world and advances in vision systems.

A First in the Enhanced Monofocal Category

Gerd Auffarth, MD, PhD, FEBO, Germany

There have been many technological advancements with new IOL platforms, and the future is bright for cataract patients. There has been much development in the past coming from a 3-piece lens to a 1-piece lens and from spherical to aspherical. Now, Gerd Auffarth, MD, PhD, FEBO, Germany says, "We have this TECNIS® IOL platform that really increases the quality we expect from a good monofocal IOL."

“TECNIS Eyhance IOL provides statistically significant improvement in monofocal intermediate vision at 66cm.”

Gerd Auffarth, MD, PhD, FEBO

In this new refractive lens design, the TECNIS Eyhance™ IOL uses the lens design of the TECNIS 1-piece Platform, though visually it cannot be distinguished from the TECNIS 1-piece IOL. The basic geometry is identical to all the other TECNIS 1-piece lenses, but there is an additional refractive design without rings and a smooth defocus curve. These features provide an increase in depth of focus and other small advantages.

Dr. Auffarth discussed how this new design has slightly enlarged the depth of focus made possible by a high order aspheric anterior surface that cre-

ates a continuous power progression. This refractive profile increases the power of the enhanced monofocal IOL continuously from the periphery to the center of the lens to extend the depth of focus. The higher order aspheric design of TECNIS Eyhance™, at the same time, compensates corneal spherical aberrations of -0.27 microns.

The European "Quantum" clinical study on TECNIS Eyhance™ is a prospective, multicenter, bilateral, randomized, 6-month clinical trial that was published in the Journal of Cataract Refractive Surgery. This study included 140 patients who were bilaterally implanted with TECNIS Eyhance™ and compared to patients implanted with the TECNIS 1-Piece IOL. At the 6-month visit, results were collected on 67 patients implanted with TECNIS Eyhance™ and 72 subjects implanted with the 1-Piece model. The results from this trial showed that

“TECNIS Eyhance is a new standard in monofocal lens with a larger ‘landing zone’ and enhanced depth of focus.”

Gerd Auffarth, MD, PhD, FEBO

Supported by an educational grant from Johnson & Johnson Vision



Ronald Yeoh, MD



Gerd Auffarth, MD



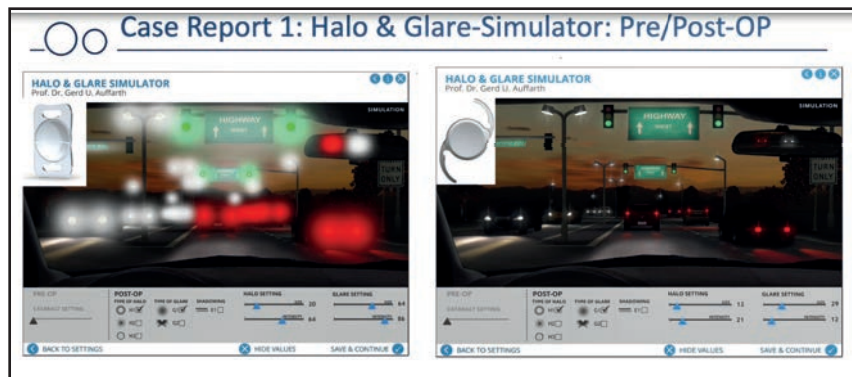
Han Bor Fam, MD



Jae Bum Lee, MD



Jason Jones, MD



With a halo and glare simulator, the image on the left portrays a patient's vision before IOL exchange with the TECNIS Eyhance (previously implanted with a refractive segmental multifocal IOL). The image on the right portrays the patient's clear vision after implantation of the TECNIS Eyhance IOL.

the TECNIS Eyhance™ IOL provided statistically significant improvement in monocular intermediate vision at 66 cm as well as statistically significant improvement in binocular intermediate vision. Although contrast sensitivity and the dysphotopsia profile was similar for patients in both groups, the Eyhance IOL delivered better refractive outcomes than the 1-Piece IOL measured by the mean defocus curve.

In the Asian population, a study conducted by Kang et al. (2021, Korean J Ophthalmol) showed a broader and wider defocus curve with significantly better visual outcomes in patients implanted with TECNIS Eyhance™.

In Dr. Auffarth's personal experience with approximately 400 lenses implanted in 308 patients, he found similar defocus

curves, excellent contrast sensitivity, similar daytime contrast performance, and superior nighttime contrast performance compared to competitor IOLs and monofocal IOLs.

In one case report Dr. Auffarth presented, a 62 year-old healthy male with previously implanted refractive segmental multifocal IOL complained of difficulties adapting to bright and dark changes, extreme glare during car driving, large halos around light sources, and general extreme dysphotopsias. Though his visual acuity was 20/20, he was unhappy due to the dysphotopsia he experienced. Dr. Auffarth conducted an IOL exchange and anterior vitrectomy in the right eye and IOL exchange with TECNIS Eyhance™ in the left eye. Two weeks after surgery, the patient had excellent visual acuity (uncorrected distance visual

acuity [UCDVA] binocular 20/20). However, the patient was most satisfied with the improved visual quality (no halo or glare) from the lens exchange.

In comparison to aspheric monofocal IOLs, Dr. Auffarth has seen patients benefiting from the TECNIS Eyhance™ IOL with enhanced intermediate visual acuity and a comparable profile of photic phenomena to other multifocal IOLs. "All the benefits from the

hydrophobic material of the TECNIS IOL platform remain unchanged," says Dr. Auffarth. Patients do not experience glistening, thus no light scattering, and there is no risk of calcification due to hydrophilic materials. "What is more important than looking at this lens as a premium lens is that we have a new standard in monofocal lens with a larger 'landing zone' and enhanced depth of focus," concludes Dr. Auffarth.

Premium IOL Innovation for Your Presbyopic Patients

Han Bor Fam, MD, Singapore Current IOL innovation provides many solutions to all vision care patients, and Han Bor Fam, MD, Singapore says, "I have implanted multifocal IOLs for many years. As the years progress, we are moving away from good near vision to good intermediate vision. This is because near vision tends to give more glare and halo with a shallow depth of field." Dr. Fam shared with the audience the challenges and outcomes of new

multifocals in his presentation.

Regarding challenges with new multifocals, patients may want to participate in a variety of activities including reading, working on a computer, walking up stairs, and traveling, and this encompasses near, intermediate, and distant vision. "Most multifocals give us some near and some distant vision but at the expense of glares and halos. The worst case scenario is that there is also a loss of contrast," says Dr. Fam.

"Ideally, we want an IOL to give us good distant vision all the way to near vision. At the minimum, we need good distant vision and



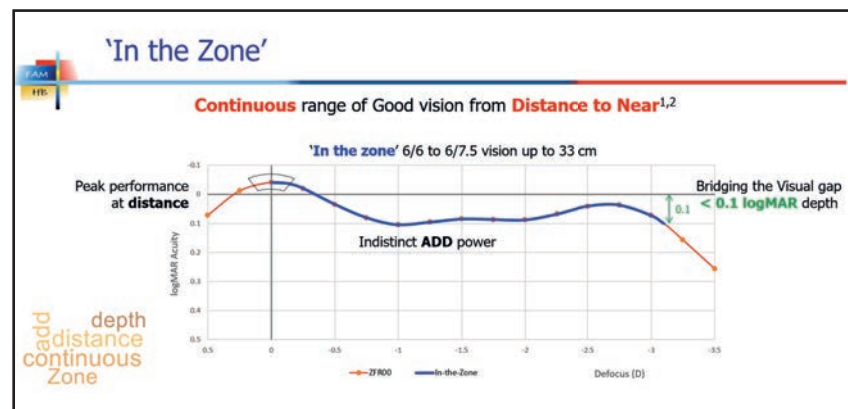
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to not lose more than 2.0 logMAR vision,” continues Dr. Fam. “Now, with diffractive multifocal technology, we have achieved very good distant vision and very good near vision, but there is still a big gap in intermediate vision.”

With the TECNIS Symfony™ Extended Range of Vision IOL, patients are able to experience good distant vision all the way to intermediate vision, but there is a drop off for near vision. The new

TECNIS Synergy™ IOL combines the diffractive multifocal technology with TECNIS Symfony™ synergistically to deliver continuous high-contrast vision across the functional range. Where TECNIS Synergy™ excels is in providing a good continuous range of good vision from distant to near. This allows different patients the freedom to see and work at their preferred personal distances without the need for spectacles.

In a prospective, multi-center, bilateral implant, randomized (2:1) clinical study among 12 centers worldwide, the clinical performance of TECNIS Synergy™ and the AcrySof® IQ PanOptix® Trifocal IOL were compared in patients indicated with bilateral IOL implantation. The results showed that TECNIS Synergy™ outperformed PanOptix at far, intermediate, and near acuities. TECNIS Synergy™ also provided the widest range of continuous vision with the best near vision. “As we approach near vision, this is where TECNIS Synergy™ really stands out. TECNIS Synergy™ subjects also achieved better near and distance vision under mesopic and low-contrast conditions. In a patient-reported questionnaire on subjective symptoms, more patients with TECNIS Synergy™ reported the ability to see objects and read signs in the evening than patients with PanOptix®. There were similar results with reading menus in dimly lit restaurants and noticing curbs and steps in the evening. With TECNIS Synergy™ combining diffractive multifocal technology and EDOF technology, patients can now experience continuous contrasty vision across a wide functional range.



With continuous range of good vision from distant to near, the TECNIS Synergy IOL affords patients with different vision requirements the freedom to see and work at their preferred personal distances.

“TECNIS Synergy allows different patients the freedom to see and work at their preferred distances without the need for spectacles.”

Han Bor Fam, MD

Supported by an educational grant from Johnson & Johnson Vision

New Toric on the Block

Ronald Yeoh, MD, Singapore

Correction for corneal astigmatism using toric IOLs has been a major advancement in the past decade. However, the main challenges to successful toric usage include inertia, biometry, and implantation technique. The greatest challenge for surgeons, though, is a fear of malrotation.

Previous studies have found TECNIS Toric I IOLs required repositioning and tended to rotate counterclockwise. Recently, Johnson & Johnson Vision designed an improved toric IOL with greater rotational stability. Many redesigns were experimented with, but a simple solution worked the best. Because the TECNIS Toric I IOL has polished and smooth haptics, the TECNIS Toric II IOL was designed to have unpolished and frosted haptics. The roughness of the Toric II haptic is what gives the IOL its rotational stability.

Surgeons not familiar with the new TECNIS Toric II platform may wonder whether the IOL will rotate easily if it has a rough haptic, whether the rough haptic can tear the posterior capsule, and whether back-rotation can be done

with this new IOL. Ronald Yeoh, MD, Singapore presented a case in which the IOL was injected, using a platinum injector and cartridge, but was 16 degrees shy of the intended position. Dr. Yeoh managed a big rotation of 60-70 degrees to bring the IOL into alignment, but was still about 10 degrees shy of the perfect position. A last adjustment was made using the toric manipulator to snag the haptic and push it into the correct position. When Dr. Yeoh turned on the optical coherence tomography (OCT) machine, he was able to see the lens sitting snugly on the posterior capsule, maintaining its stability. In a different case, Dr. Yeoh was able to maneuver the IOL into perfect alignment having done a back-rotation by grasping the haptic.

Dr. Yeoh provided surgical pearls for implanting any IOL. He suggests injecting the IOL and aligning the axis 10 degrees shy. Then, one should remove the ophthalmic viscosurgical device (OVD) behind the IOL and dial the IOL into the intended position. Dr. Yeoh cautions to be aware of over-rotation. Then, press the IOL on to the posterior capsule using the side port and leave the eye softish. Dr. Yeoh will counsel all of his

“ With the new haptic design of TECNIS TORIC II, it is still possible to maneuver the IOL into the perfect alignment ”

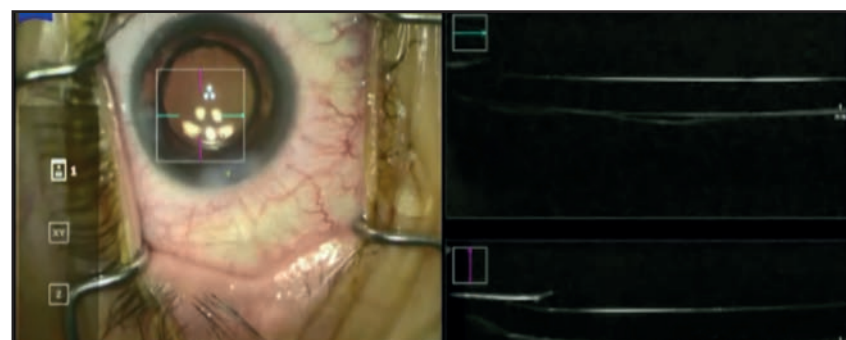
Ronald Yeoh, MD

patients to avoid sudden movements within the first hour after surgery. Additionally, he recommends no jogging or eye rubbing for the following 2 weeks.

With proper technique and the improved haptics of the TECNIS Toric II IOL, surgeons will now be able to experience ease of use with this new platform.



The TECNIS Toric II IOL was designed to have unpolished and frosted haptics which gives the IOL rotational stability compared to the smooth haptic design of the TECNIS Toric I IOL.



From OCT imaging, one can see on the right hand side that the TECNIS Toric II IOL is sitting snugly on the posterior capsule against the back of the lens, maintaining its stability.

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CATALYS™ cOS 6.0 - Technology and Experience Sharing

Jae Bum Lee, MD, Korea

Currently, there are five laser cataract surgery machines on the market, with the CATALYS™ Precision Laser System being one of them. In a talk on the new CATALYS™ cOS 6.0 platform, Jae Bum Lee, MD, Korea shared his experience using CATALYS™ and its advantages over competitor machines.

One advantage Dr. Lee has found with the new CATALYS™ system is that the capsulorhexis (CCC) time is less than one second. CCC centration is performed by scanning the capsular center (pupil, limbus, or a custom point). Dr. Lee also points out that there is less damage done during suction with only a 10 mmHg intraocular pressure (IOP) rise compared to higher IOP rise in other systems.

New features of the CATALYS™ system Dr. Lee pointed out are the improved user software, a built-in Donnenfeld nomogram for arcuate incisions, a toric axis marker on the cornea, and the ability to connect the system with a Cassini topographer. "These features enable us

Astigmatism Management during/after Cataract Surgery

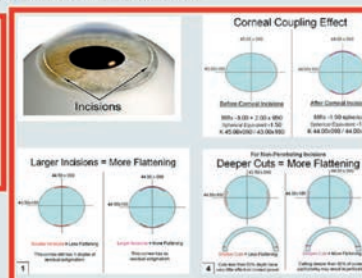
1. Toric intraocular lens

proved to have high accuracy and efficacy in correcting astigmatism



2. Astigmatic corneal incision

- ✓ Limbal relaxing incision
- ✓ On axis wound
- ✓ Astigmatic keratotomy (AK)



3. Laser vision correction

On the CATALYS™ Precision Laser System, surgeons are able to customize the fragmentation direction depending on their preference for incisional precision.

to have advanced astigmatism management," says Dr. Lee.

Scanning with the new updated CATALYS™ is time-saving, according to Dr. Lee, with simultaneous scanning of the cornea and lens. Fragmentation direction for incisional position can also be customized and changed to any direction, whether right-handed, left-handed, or the surgeon's preference. Because CATALYS™ now has a built-in arcuate incision nomogram (Donnenfeld nomogram), limbal relaxing incisions are made easier. Dr. Lee says, "I have previously used 33% reduction of the Donnenfeld nomogram, but the result of the correction of astigmatism was undercorrection. I finally was able to change the reduction to 20% with the Donnenfeld nomogram."

Other new features of the CATALYS™ include reference marking with the robomarkers' infrared ink and manual compensation for cyclorotation utilizing the touch-screen. Toric axis marking is more accurate with this CATALYS™ OCT screen. Surgeons are able to modify the parameter of the optical zone as well as the length. This allows for better visualization of the toric axis marker during surgery and after surgery to check for toric IOL rotation after pupil dilation. With these new features, Dr. Lee believes that surgeons will be able to advance their surgeries for more precise and accurate outcomes.

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 Johnson & Johnson Vision

Veritas™ Vision System

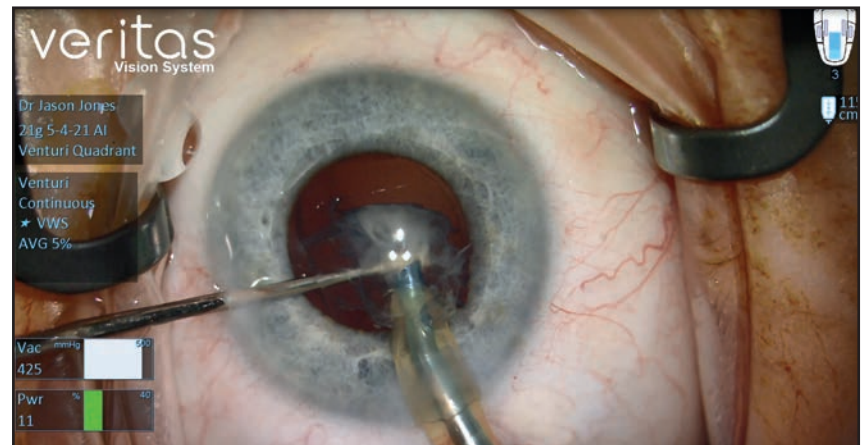
Jason Jones, MD, USA

Jason Jones, MD, USA presented another new platform designed by Johnson & Johnson Vision: the Veritas™ Vision System. This new phacoemulsification experience allows surgeons to perform with improved chamber stability through fluidics management and enhanced user experience with new ergonomic design. From safety and efficiency to design, Veritas™ puts cataract surgeons comfortably in control of every case.

The key features of the system's fluidics includes two phaco packs with an advanced tubing system (ATS). The ATS consists of small-bore, dual-durometer aspiration tubing with a soft outer-wall for flexibility. The stiff inner-wall has a reduced diameter for enhanced chamber stability. These characteristics allow for a higher working vacuum and improved efficiency since the aspiration outflow can be reduced. With the advanced infusion pack, there is a pressurized infusion functionality that works with the intravenous pole to provide a total effective bottle height of 136 cm H₂O.

For surgeons who prefer continuous irrigation, there is now an auto-off feature which can detect when the handpiece is removed from the eye and irrigation will be automatically turned off. One can customize this feature for a delay of 1 to 3 seconds. As for venting, there is now automation for foot positions. "When you grab something you don't intend to, the particle on the tip can be pushed off and the strength of positive pressure can be defined as low, medium, or high," says Dr. Jones.

Ergonomically, Veritas™ features the industry's first swivel phaco handpiece for excellent control and maneuvering, delivering a more comfortable surgical experience. The handpiece is not only lightweight and shorter but allows for up to 220 degrees of rotation. The foot pedal has also been refined with a full-foot treadle with improved tactile feedback between foot pedal zones. A smaller degree of travel allows for greater comfort. There is also an accessory magnetic heel insert option. The system's capacitive touch-screen monitor provides easier viewing and enhanced clarity. Finally, the system has built-in speakers and four wheels with double locking casters for easy storage.



Dr. Jason Jones performs phacoemulsification, chopping the cataract into segments with great stability with the Veritas™ Vision System.

Dr. Jones presented surgical cases with his use of the Veritas™ System. In one case, he found soft to moderate density of the nucleus grossus. Veritas™ allowed him to chop the cataract into segments with great stability in which the pieces "just melt away. In the end, Veritas™ was very stable

allowing for an excellent result," says Dr. Jones. "Veritas™ takes less out of me and my staff for the surgical elements we need to do and allows me to channel that energy into achieving the excellent results our patients have come to expect."

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Jason Jones, MD