

At APACRS 2022 in Seoul, ZEISS hosted a lunch symposium on Saturday June 11, 2022 moderated by Beom Jin Cho, MD, PhD, South Korea and Thomas Kohnen, MD, PhD, FEBO, Germany. In this symposium, three leading ophthalmologists discussed new technologies in Corneal Refractive and Cataract Workflow. With the technologies of PRESBYOND® LBV, the VISUMAX® 800, and EQ Workplace, surgeons are able to experience greater efficiency in their Corneal Refractive and Cataract Workflow, and operating rooms.

Presbyond – Looking Beyond Monovision

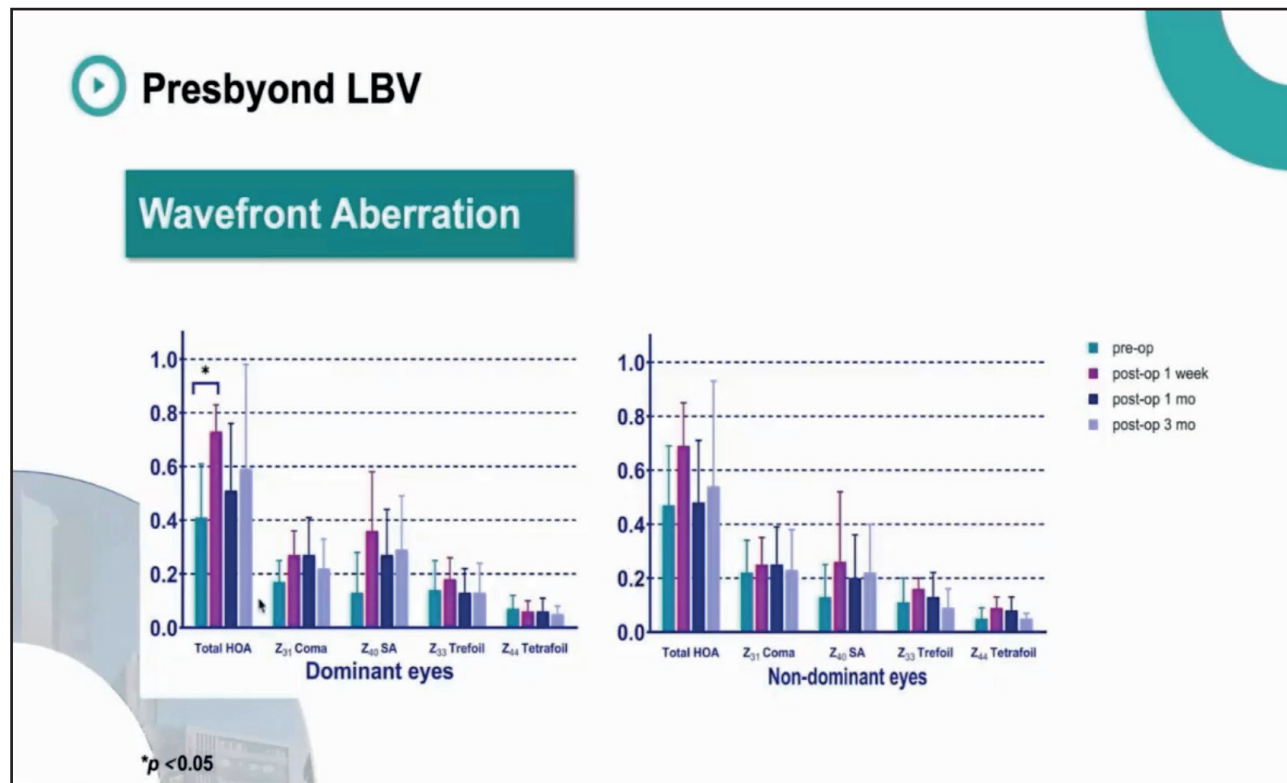
Feng Ju Zhang, MD, PhD,
China



Experience in LBV Treatment for Myopic patients with age-related accommodative insufficiency

Presbyopia is an age-related condition in which the lens stops focusing light correctly on the retina. This refractive error makes it hard for older adults to see up close. A large number of the population remains unaware of their presbyopic issue, which makes management of presbyopia an important consideration in the older population.

There are many methods to treat age-related accommodative insufficiency: non-surgical



In terms of wavefront aberration, spherical aberration values increased preoperatively to postoperatively in both dominant and non-dominant eyes in patients who underwent PRESBYOND® LBV.

treatment, corneal surgery, use of intraocular lens (IOL), and scleral surgery. Different types of corneal surgery may be performed, and a variety of IOLs may be utilized to manage presbyopia in older patients. Feng Ju Zhang, MD, PhD, China, focused her discussion on corneal surgery as there can be limitations with standard laser vision correction. One concern is whether insufficient accommodation can be managed properly while correcting existing refractive error. Another concern is that patients who do get rid of their spectacle dependence may become dependent on “reading glasses” instead, which also poses a great inconvenience to their daily life.

PresbyMAX® is one surgical procedure that can be utilized for presbyopic patients. This procedure consists of hybrid bi-aspherical micromonovision ablation. The cornea is ablated to a multifocal pattern by an excimer laser. “The target refraction is 0 diopters in the dominant eye, while the target refraction is -0.90 diopters in the non-dominant eye,” explained Dr. Zhang. With PresbyMAX®, spherical aberration induced by a multifocal design will be compensated automatically with the calculation using the anterior segment analysis system.

However, with PRESBYOND® Laser Blended Vision (LBV), Dr. Zhang explained that this laser provides laser-blended

vision with target refraction for the dominant eye being 0 diopters and target refraction for the non-dominant eye being -1.5 diopters. If the patient cannot tolerate the difference during the initial test, surgeons should reduce the difference and adjust the spherical aberration based on the measurements of accommodative amplitude and functional age, stated Dr. Zhang. With PRESBYOND® LBV, surgeons can induce the patient’s spherical aberration, expand their depth of focus, and increase their visual range.

Dr. Zhang shared data from her hospital of 21 patients who underwent PRESBYOND® LBV. From postoperative data at 1 day, 1 week, 1 month, and 3

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months, Dr. Zhang found improved uncorrected distance visual acuity (UDVA) in both dominant and non-dominant eyes and improved uncorrected near visual acuity (UNVA) in dominant and non-dominant eyes. In terms of binocular accommodation function, negative relative accommodation (NRA) and positive relative accommodation (PRA) did not show much difference between preoperative values and postoperative values. Accommodative amplitude (AMP), though, showed an increase preoperatively to postoperatively. For dominant and non-dominant eyes, NRA and PRA values remained similar preoperatively to postoperatively. As for wavefront aberration, spherical aberration values increased preoperatively to postoperatively in both dominant and non-dominant eyes.

Within this study, Dr. Zhang also measured satisfaction from patients through a survey. A majority of patients reported that they felt visual recovery was very fast 1 week, 1 month, and 3 months after surgery. Patients also reported having either very good or good visual quality after surgery. When asked if they were satisfied with their decision to undergo surgery with PRESBYOND® LBV, 100% of patients were satisfied at all three follow-up time points. Finally, 100% of patients reported that they would recommend this procedure to their friends and family. Dr. Zhang recommends using PRESBYOND® LBV for patients within the age range of 40 years to 55 years of age. Dr. Zhang did also note the limitations of her study. The patient population was quite

small with a short follow-up time. Additionally, most cases included in this study consisted of early-stage presbyopia.

Dr. Zhang concluded her presentation with key take-home messages. She emphasized that there may be different kinds of treatment profiles for patients, though not all are universal. Individualization to the patient's status is still important when managing their presbyopia. Surgeons must understand that none of the current and available solutions will be perfect; patients' needs are unique and their expectations must be appropriate to their presbyopic situation.

At the Forefront of Technology - VISUMAX® 800 and Clinical Outcomes

Sri Ganesh, MBBS, MS, India

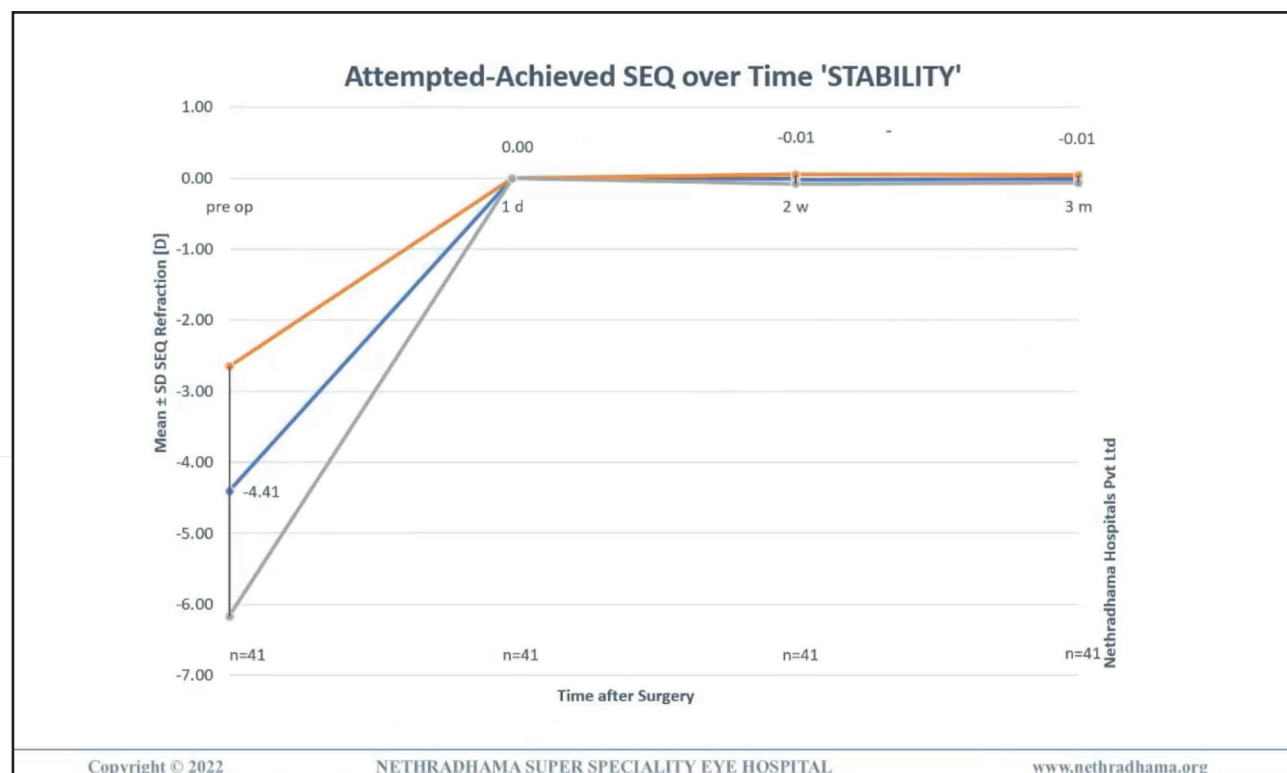


The VISUMAX® 800 provides advancement in visual technology from the previous

VISUMAX 500® with a variety of new features. With the VISUMAX® 800, Sri Ganesh, MBBS, MS, India, explains that the patient bed is completely separated from the machine, allowing for easier

adjustment and movement of the patient's positioning. There is a graphic user interface on the VISUMAX® 800 that can be connected to a variety of diagnostic devices. Patient data can also be imported from these devices to the machine. Another key feature is that the VISUMAX® 800 has two swivel arms: one for the laser and one for the operating microscope. Because the VISUMAX® 800 provides a more efficient workflow with a faster laser, Dr. Ganesh is able to perform more surgeries day-to-day.

The ZEISS Refractive Workplace software provides Dr. Ganesh with easier management, evaluation, and storage of data. This software connects to the VISUMAX® 800 so



The VISUMAX® 800 provided excellent stability in terms of spherical equivalent refraction (SEQ) over a time period of 3 months after surgery.

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that all relevant operating procedure documentation can be assigned to each respective patient. Dr. Ganesh explained that surgeons can now streamline their workflow and carry out patient data management and treatment planning from anywhere in their clinic.

Dr. Ganesh describes his workflow as such: after the patient has been draped, the treatment arm is moved down and the treatment can be selected on the VISUMAX® 800. The machine itself provides a top and side camera view that both assist in docking the eye. The VISUMAX® 800 also has a centration guide, which aids in centering the treatment to the corneal vertex accurately. With a cyclotorsion compensation aid that gets activated after docking, surgeons can align the treatment to the anticipated marks by rotating the machine's joystick. Automatic cyclotorsion adjustment is also possible if the iris images are imported from the IOLMaster. "The laser treatment is extremely fast," says Dr. Ganesh, "and takes just 8 seconds to complete." Lenticule extraction can be performed very comfortably to complete the procedure.

Dr. Ganesh shared clinical outcomes from his clinic in which he examined a total of 232 eyes. Two-week follow-up was available for 194 eyes, while 3-month follow-up was available for 41 eyes. Dr. Ganesh used a nomogram with 10% overcorrection for sphere, 15% overcorrection for WTR cylinder, 10% overcorrection for oblique cylinder, and no astigmatism for ATR cylinder. Postoperative outcomes at 2 weeks for 194 eyes showed significant improvement in

UDVA, corrected distance visual acuity (CDVA), and objective scatter index (OSI). In Dr. Ganesh's patient population, 95% of patients were within +0.125 diopters of attempted refractive outcome. Additionally, 73% of eyes remained unchanged in terms of CDVA with no eyes showing loss of lines, demonstrating an excellent safety profile. Over a time period of 3 months, Dr. Ganesh found excellent stability in terms of spherical equivalent refraction (SEQ).

With improved femtosecond laser technology for performing SMILE for myopic, hyperopic, and astigmatic patients, the VISUMAX® 800 provides a more efficient and quicker workflow for surgeons. The lenticule extraction technique remains the same as the previous VISUMAX® 500 with proven clinical results, so it has "never been easier to start with SMILE," said Dr. Ganesh.

Digitalization in IOL Power Calculation: My Current Workflow with Toric IOLs

Oliver Findl, MD, MBA,
Austria

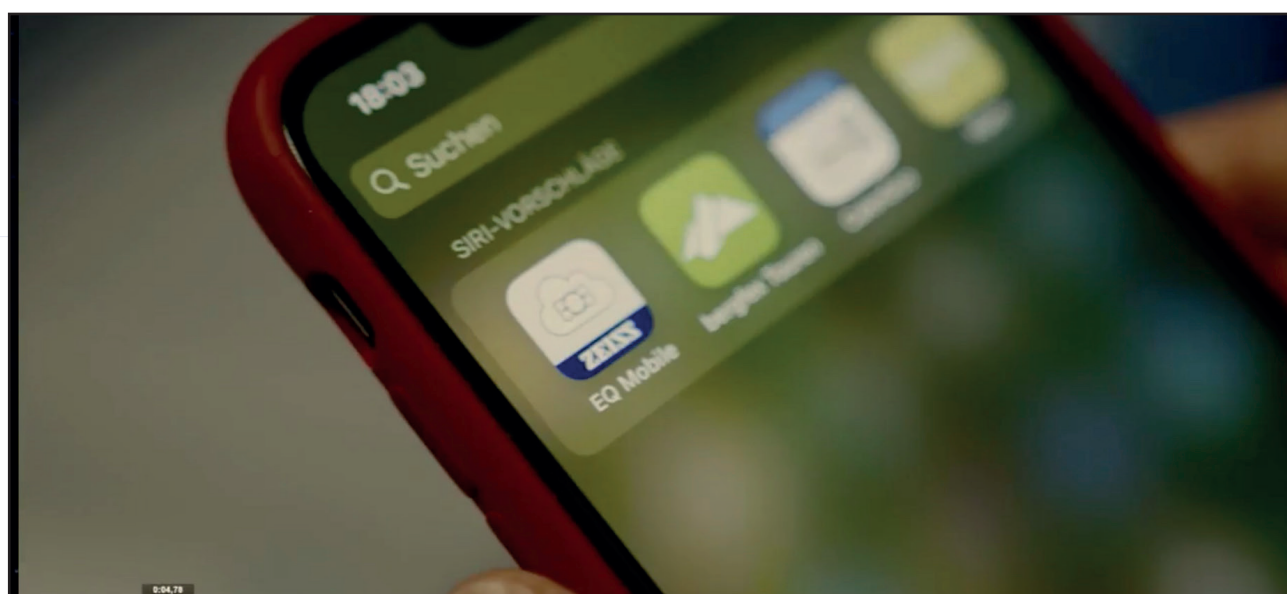


With an increasing incidence of moderate or high corneal astigmatism in the cataract population, Oliver Findl, MD, MBA, Austria, said, "We know that toric lenses are being used more readily and that they result in better outcomes for patients." However, there is still some work to be done in increasing toric IOL success rates for patients.

In Dr. Findl's current workflow, he takes measurements using the IOLMaster 700 for swept-source optical coherence to-

mography (ssOCT) and corneal tomography along with a CSO MS-39. He then goes into the planning and transfer phase with EQ Workplace and EQ Mobile followed by treatment using the LUMERA® 700 with CALLISTO eye®.

In the measurement phase, Dr. Findl explained that the greatest source of error when implanting toric IOLs come from imprecisions in corneal measurements for residual astigmatism. "Misalignment and tilt of the IOL also play a role, but the corneal measurements are the main reason especially for patients with moderate or lower amounts of astigmatism," said Dr. Findl. Because of this, Dr. Findl advises to use at least 2 different devices for measurement: IOLMaster 700 with Total Keratometry (keratometry and ssOCT) and a placido-based topographer (ssOCT). If Dr. Findl finds discrepancies between the



The EQ Mobile application on the smartphone allows surgeons to transfer patient data directly to a computer connected with the microscope in the operating room.

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two measurements either in the axis or astigmatism amplitude, he may have to assess whether this patient may have dry eye. It is also very important to measure the posterior corneal surface as it is known that the anterior and posterior surfaces behave differently. “We know that if we use ssOCT, which measures the posterior cornea, you get even better results than using, for example, Scheimpflug tomography,” said Dr. Findl.

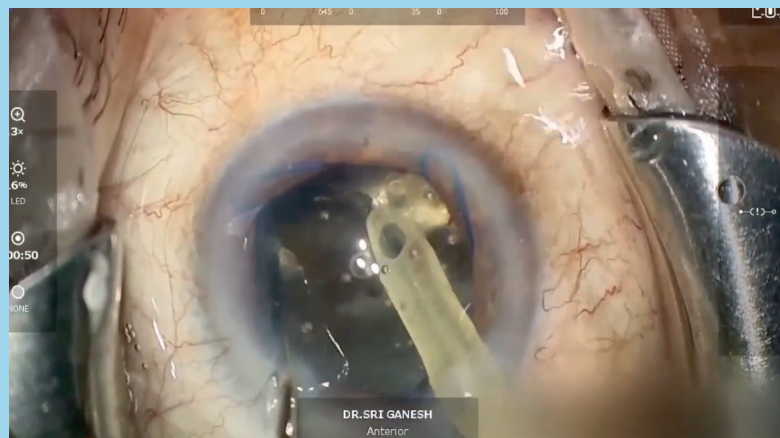
How does one deal with deviations between measurements, then? Currently, there are no evidence-based guidelines available to deal with deviations in measurements. Thus, Dr. Findl approaches this issue by planning his patients’ treatment in EQ Workplace. In this program, data is taken from the IOLMaster 700 and guides the surgeon through the entire planning phase. Keratometry values can be selected to the surgeon’s preference, and different IOL types can be selected by the surgeon based on the patient’s needs. A key feature Dr. Findl pointed out is that EQ Workplace can export data for both the left and right eye in an email which can then be directly sent to the IOL manufacturer for IOL ordering. “This is a neat feature because you don’t have to do any transfer of data, which has the trouble of making some errors or mistakes,” said Dr. Findl.

Until now, Dr. Findl used to do preoperative marking. However, with quite some variabil-

ity among different marking devices, Dr. Findl now prefers digital marking using images taken with the IOLMaster 700. These images provide an overlay of preoperative and intraoperative images, which then gives the possibility of doing a proper alignment of the toric IOL.

Dr. Findl is also able to use the EQ Mobile application on his smartphone to transfer patient data directly into the computer connected to the microscope in the case that his operating room (at a hospital) is located away from his clinic. “The EQ Mobile is my bridge between the data I have in my private practice and the computer that is connected to the microscope,” said Dr. Findl.

With EQ Workplace, Dr. Findl is able to increase the efficiency of his workflow in more ways than one. An automatic transfer of data steers clear of manual entry for IOL power calculations, thus avoiding potential errors. IOLs can be selected when patient informed consent is provided, and IOLs can be ordered directly from the workplace as well. “When the patient leaves my room, everything is planned and everything is done. That is, for me, the biggest asset of using the EQ Workplace,” said Dr. Findl. With more automation, surgeons can prepare, perform, and follow up on cataract surgeries with greater efficiency.



Fast & Fabulous - The VISUMAX 800 & the QUATERA 700 Experience

On Sunday June 12, 2022, ophthalmologists gathered at a video symposium hosted by ZEISS to discuss experiences with the VISUMAX 800 and QUATERA 700 systems. John S. M. Chang, MD, Hong Kong, began the discussion talking about whether speed matters during surgery and whether a faster speed in surgery means more danger to the patient. In Dr. Chang’s experience with a smaller machine, the VISUMAX 800 provides integration with the Corneal Refractive Workflow, allowing for more efficient processes. Some specific advantages of the VISUMAX 800 is that this machine provides better centration, faster treatment at 2 MHz, and better ergonomics. Additionally, it can also provide better astigmatism treatment in that it has the ability to match treatment to cornea marking after suction. In a study that Dr. Chang presented, he found that the VISUMAX 800 did result in better centration with no decentration and the cyclotorsion adjustment feature provided better astigmatism results. Furthermore, a faster surgery meant zero suction loss and thus less stress and more convenience for the patient.

Sri Ganesh, MBBS, MS, DNB, DSC, FRCS, India discussed his experience with the QUATERA 700. The QUATERA 700 consists of a QUATTRO® pump which is a synchronized fluid-exchange system with two infusion chambers, variably controlling the infusion rate. Two aspiration chambers control the aspiration and vacuum levels. With the four syringe-like chambers working together, there is a synchronization and reciprocal exchange of fluid. In the cases Dr. Ganesh presented, he was able to show that the new quattro pump of the QUATERA 700 enhances both safety and efficiency for the patient without any compromise due to its complete chamber stability even at the highest flow and vacuum rates. The surgical cockpit also integrates the QUATERA with the IOL Master 700, Callisto eyes, and Surgical Microscope seamlessly, making the workflow very efficient.