"If the tear film is not optimized, it leads to trouble with accuracy, with less than ideal results, and unhappy patients, and you’re not making the best of what surgery can offer."

Michael Lawless, MD, Sydney, Australia,

that this is not to cure dry eye, but only to optimize the film for better surgery results.

This protocol has improved the quality of their preop biometry, reducing suboptimal results from 40% to 5%. Dr. Lawless said that it has made preop assessment efficient and repeatable and ensures that patients are optimally prepared for both corneal laser and cataract surgery. Furthermore, issues are identified preop so there are no postop surprises, and no “difficult conversations” to be had with the patient a month after surgery. Finally, this process of tear optimization ensures patients are engaged in achieving better results for themselves.

Personalizing A-constants

The postop outcome has a close relationship with IOL calculation, and the A-constant plays a very important role in those calculations, said Jiang Yaqin, MD, China.

Dr. Jiang said that while many doctors think that the manufacturer-provided A-constant is sufficient, subjective factors can affect the value, including surgeon habits, incision type and quality, suture material, IOL design and structure, patient factors such as axial length, and choice of IOL formula.

In her experience, 90% of patients who were unhappy with their postop results had a residual refractive error, which in turn resulted from a non-optimized A-constant. Optimizing their A-constant according to postop refractive error, effective lens position, and the defocus curve of the particular IOL used gave Dr. Jiang’s clinic an accuracy rate of 95%.

Currently, Dr. Jiang is actively optimizing A-constants for more IOLs, collecting a larger sample, and discussing the use of A-constants with different doctors. Surgeons at the clinic are looking into optimizing A-constants according to corneal curvature.

Dr. Jiang said that continuous A-constant optimization is important and necessary to achieve the best results after refractive cataract surgery.
Extending the range even further: The AT LARA family of EDOF IOLs

Ashvin Agarwal, MD, Chennai, India, introduced ZEISS’s new IOL technology, which “basically brings the perfect balance in between having fewer side effects and the best spectacle independence.”

The AT LARA family of EDOF lenses have become one of the mainstays in Dr. Agarwal’s practice. These lenses, he said, “stay somewhere in the middle of the range of genres from monofocals to multifocals” and bring “great vision at distance and intermediate and relieves you from the tension of all the side effects existing in all higher-end premium lenses.”

“This is something that is huge when it comes to patient satisfaction,” he added.

“AT LARA features a diffractive optical design with 2 power additions at intermediate and far intermediate distances: This ‘light bridge’ optical design is balanced in a way such as to extending the depth of focus and create a continuous range of sharp vision from far to intermediate distances.”

It uses ZEISS’s patented smooth microphase (SMP) technology that does away with the sharp edges that cause glare and halos in older EDOF and multifocal IOL designs. The AT LARA’s design also expands the range of focus beyond that of existing EDOF lenses as illustrated by its defocus curve and features a color-corrected optic design for correcting chromatic aberrations.

Dr. Agarwal and his colleagues conducted a study on the different IOLs from monofocals to multifocals that they were using in their clinic, collecting data about all the complications and reports of problems patients encountered with each type of lens. The LARA, he said, fit right in the middle of the range with all the EDOF lenses, with simpler trifocals on the other extreme.

Regarding the implantation technique, Dr. Agarwal has found the LARA has the best plate-haptic design going into the bag. “Usually with a plate-haptic design, I use more force, but with this design I’m not using as much force to push it in,” he said. The result is an effortlessly well-centered lens at the end of each case.

After the eight cases he had performed by the time of the user meeting, Dr. Agarwal found that aiming for a 0.5-D myopic correction provides great distance vision, losing only a little bit of near—which he indicated was true for any EDOF lens. For more near vision according to the patient’s preference, aim for a 1 D myopic shift.

“The biggest advantage to me is the lack of halos,” he said. Ultimately, the AT LARA provides the widest range available of all EDOFs but with great balance between great vision and reduction in side effects.”

Multifocals in post-SMILE cataract surgery

Conventional wisdom dictates that multifocal IOLs are a less than ideal choice for less-than-pristine eyes. Sri Ganesh, MD, Bangalore, India, reported on their first case of a post-SMILE patient undergoing cataract surgery and receiving a multifocal IOL implant.

The patient, a 50-year-old, underwent SMILE in 2013, when he had high myopia of –9.5 D, 0.5 D cyl in the right eye and –10 D, 0.5 D cyl in the left eye—almost at the upper limit of treatment. Post-SMILE results were very good, with the patient achieving an uncorrected visual acuity of 6/6 in each eye; however, 5 years later he experienced diminished vision and poor night vision, subjectively unable to see well at distance.

On examination, Dr. Ganesh noted grade 2 nuclear sclerosis in the right eye and grade 1 nuclear sclerosis in the left eye; an uncorrected distance visual acuity (UDVA) of 6/24 –2.75 Sph –0.75 Cyl @ 30 improving to 6/9 in the right eye, 6/12 –2.0 Sph –0.75 Cyl @ 140 improving to 6/7.5 in the left eye.

The patient posed Dr. Ganesh with a challenge—he did not want to wear glasses and specifically wanted multifocal IOLs.

Pentacam studies showed that the SMILE outcome was retained and well-centered; meanwhile, a Holladay equivalent k-reading (EKR) detail report produced a single peak showing regular distribution of Ks. Zernike analysis was “not bad for someone who had high myopia since you expect induced aberra-
After trying various different IOL formulas, to determine target correction, Dr. Ganesh finally decided to go with the actual measurement using the total-K values from the IOLMaster (IOLMaster 700 with Total Keratometry, ZEISS) with the Barrett Universal II formula and to implant the AT LISA TRI (ZEISS) in both eyes, +19.0 D in the right eye, +18.0 D in the left.

Postop, the patient achieved binocular UDVA of 6/6; uniocular UDVA of 6/9+ in the right eye, 6/9 in the left; binocular uncorrected near visual acuity (UNVA) of N6; uniocular UNVA of N8+ in the right eye, N6 in the left.

Postop refraction, he said, was “bang on target”: 0.00 Sph +0.62 Cyl@130 6/6p, N6 in the right eye; +0.50 Sph –0.50 Cyl@160 6/6p, N6 in the left.

There was no difference, he said, between a post-SMILE patient and a post-LASIK patient; however, post-SMILE patients have fewer aberrations, with better EKR graphs especially for very high myopia correction, so post-SMILE eyes may be better suited to multifocal IOL implantation than post-LASIK eyes.

ZEISS’s cutting-edge technologies provide a number of options should a patient require enhancement after surgery.

“CIRCLE completes the armamentarium for enhancement,” said Iain Dunlop, MD, Canberra, Australia. “Although one might only use it on very rare occasions, ZEISS has provided this solution for an enhancement that turns the SMILE procedure essentially into a LASIK procedure.”

SMILE, Dr. Dunlop said, is more robust than LASIK and theoretically creates lower dry eye states due to preservation of corneal nerves. SMILE is currently for myopia and myopic astigmatism; FLEx is half way to SMILE, still useful as a closed procedure (PseudoSMILE), and useful if enhancement is expected.

Glenn Carp, MBBCh, FC Ophth (SA), recommends performing thin-flap LASIK after SMILE (OFF Label). The thin flap creates a more superficial flap compared to CIRCLE which forces the flap to be the same depth as the original cap.

Dr Carp’s standard cap thickness in SMILE is between 135 to 145 μm, which gives plenty of room to create a 100 μm flap. Dr Carp’s Golden Rule is “don’t operate blindly.” Every femtosecond laser has a standard deviation that must be taken into account, he said. Therefore, it is essential to use OCT or VHF digital ultrasound to precisely measure the epithelial thickness and original cap thickness when planning a retreatment.

When lifting the thin LASIK flap, Dr. Carp noted that it is important for surgeons not to enter near the original SMILE incisions to decrease the chance of crossing...
Finally, the inferior one-third of the flap can be separated (Figure 3D). It is also important to apply some upward pressure as the tip is passed across to avoid the tip breaking through to the original SMILE interface.

In the first 4,000 SMILE procedures performed at London Vision Clinic, London, UK, by Dr. Carp and Prof. Dan Reinstein, 2.5% required a retreatment. All retreatments were performed by thin-flap LASIK. An M ring was used in 93% of eyes to make sure there was enough clearance from the small incisions. Finally, Dr. Carp said that almost all of the intraoperative complications occurred prior to development of this technique. The complications were due to inadvertently accessing the original interface at the superior portion of the flap. Once the new flap-lift technique was perfected,