Three Generations With ZEISS Refractive Laser Solutions: PRK, LASIK, and SMILE

Highlights from the ZEISS Satellite Symposium held in Copenhagen, Denmark, on Sept. 11, 2016, the 200th birthday of Carl Zeiss.

SMILE AT 7.5 YEARS: A TEST OVER TIME

Rupal Shah, MD, is Group Medical Director of New Vision Laser Centers-Centre for Sight, a large chain of refractive laser centers in India. She has she performed more than 35,000 laser vision correction procedures and is one of the pioneers in the field of refractive lenticule extraction technique.

At the ESCRS in Copenhagen, Dr. Shah shared her experience with refractive lenticule extraction during the past 7.5 years, beginning with femtosecond lenticule extraction (FLEx) and including the current small incision lenticule extraction (SMILE) procedure.

She recently conducted long-term follow-up in patients who underwent FLEx or SMILE between August 2008 and May 2009.[1] Of the 132 patients who had undergone on of these two lenticule extraction technqiues for myopia and myopic astigmatism with spherical equivalent of less than 10.00 D between August 2008 and May 2009, 30 had returned for an additional check-up for statistical reasons. These follow-ups occurred between April and May 2016, and the results were included in the study. At that time, all patients reported satisfaction with the procedure and said that they would recommend the procedure to their friends or relatives. Dryness or grittiness in their eyes and difficulties in driving at night were the only reported adverse effects (n = 6).

Dr. Shah concluded her presentation by saying, "SMILE has come a long way over the years, with better surgical techniques, faster laser, better energy parameters and an improved scan pattern. I think SMILE is here to stay, and we should all adopt it as quickly as possible."

US STUDY OF SMILE FOR MYOPIA AND MYOPIC ASTIGMATISM

Stephen G. Slade, MD, FACS, the National Medical Director of TLC Laser Eye Centers, in Houston, Texas, provided an overview of the study findings that resulted in the recent US FDA approval of ReLEx SMILE (ZEISS) for the correction of myopia.

The study outcomes included that more than 99% of study participants had ≥ 20/40 UCVA at 12 months postoperatively (Figure 1) and that 70% had UCVA better than or equal to preoperative BCVA.[2]

"Predictability and stability were excellent," Dr. Slade said.

In addition to the efficacy data, Dr. Slade also summarized the safety data, which showed that all patients in the study had BCVA 20/40 or better beyond week 1. Further, 1 week following surgery, none of the eyes had lost 2 lines of vision. A total of 14 patients reported minor adverse events, but those resolved as well, Dr. Slade said.

Dr. Slade also gave a brief update on the ongoing study on SMILE for myopic astigmatism: "I am an investigator on that study, and I can tell you that we are quite happy with our results," he concluded.

SMILE FOR HYPEROPIA: SUCCESSFUL PILOT AND FIRST STUDY OUTCOMES

The details of several studies on the use of the ReLEx SMILE software for treating hyperopic patients (ZEISS) were presented by Kishore Raj Pradhan, MD, from the Tilganga Institute of Ophthalmology in Kathmandu, Nepal.

SMILE for hyperopia, Dr. Pradhan explained, is surgically similar to SMILE for myopia, and the lenticule dissection process is as easy to

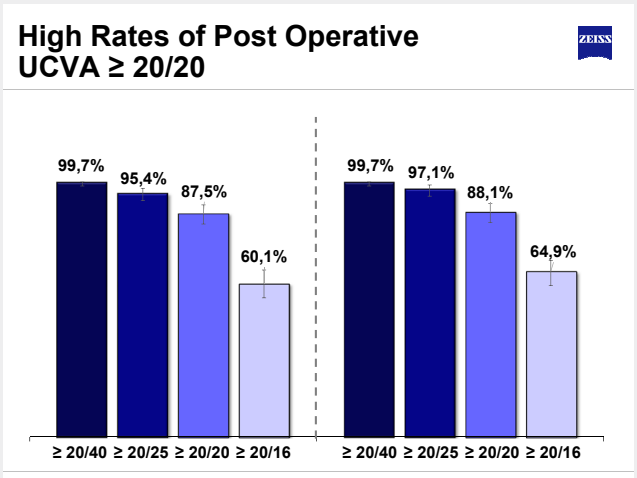

Figure 1. The column on the left shows UCVA at 6 months postoperative and the column on the right shows UCVA at 12 months postoperative.

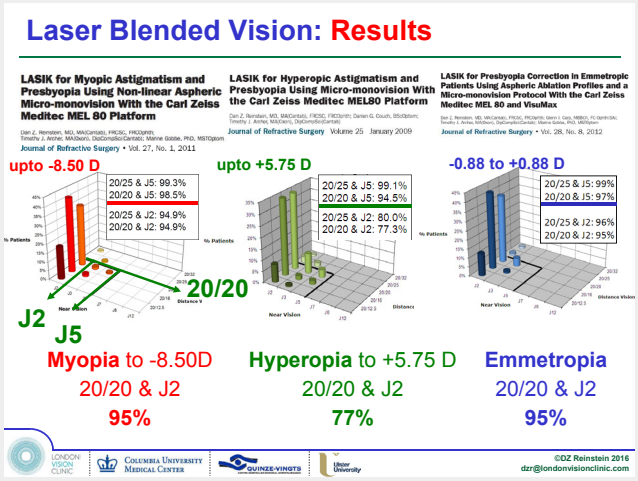

Figure 2. The refractive and visual outcomes with PRESBYOND are similar to LASIK.

handle as it is with myopic cases. The refractive lenticule extraction technique SMILE also brings potential advantages to hyperopic correction due to the elimination of fluence projection and truncation errors. In addition, in his experience, centration of the hyperopic SMILE treatment is as easy as with LASIK. In comparison to LASIK, the achieved optical zone of a 6.3- to 6.7-mm SMILE treatment is larger than a 7-mm LASIK treatment. That means when treating a smaller optical zone with SMILE, the achieved optical zone is larger compared with the treated optical zone with LASIK. The procedure does induce about the same amount of spherical aberration as LASIK, but it provides additional benefits including a large zone, truncation errors and fluence errors eliminated, good centration, less dryness, and strong corneas (Figure 2).[3] Lastly the refractive and visual outcomes are similar to LASIK, said Dr. Pradhan.

"Looking at the efficacy of postoperative uncorrected distance visual acuity and preoperative corrected distance visual acuity, 47% of the patients were same or better uncorrected," Dr. Pradhan said. "This is a very easy surgery."

MECHANISM AND OUTCOMES AND WHY I CHOSE PRESBYOND FOR MY OWN EYES

Dan Z. Reinstein, MD, MA (Cantab), FRCSC, DABO, FRCOphth, FEBO, of the London Vision Clinic, spoke about PRESBYOND, the age-optimized laser vision correction procedure for presbyopic patients (ZEISS) from the perspective of a surgeon who performs this procedure regularly—and also as a patient who underwent the procedure.

Dr. Reinstein said he had a long list of desired outcomes that he considered before choosing PRESBYOND Laser Blended Vision. He wanted clear vision at distance, intermediate, and near, with no gaps in between; a safe procedure that would maintain optical quality and binocularity and that would also retain normal contrast and night vision; simultaneous correction of his refractive error after treating his cylinder; and a quick return to regular activities. Most of all, he wanted whatever procedure he chose to be reversible in the event that a new treatment would become available that could restore his lens accommodation. After evaluating the assets and drawbacks of all possible options, including corneal inlays, LASIK, and refractive lens exchange with multifocal IOLs, he decided that PRESBYOND Laser Blended Vision would best meet his needs and requirements. He underwent the surgery, performed by his clinic partner Glenn Carp, MBBCh, FC Ophth, in April 2016.

"This new procedure extended the depth of field option with my micromonovision. My vision is now 20/10 at distance. I see J1 at near, J3 at intermediate, my contrast is high, I have uncorrected stereo acuity of 40 seconds," he said, adding that results among patients in his clinic have been similarly impressive (Figure 2).[4-6]

"Fifty percent of our practice is Laser Blended Vision; 97% of the presbyopes that cross the door in our clinic receive this treatment," Dr. Reinstein concluded.

MY CLINICAL DECISION PATHWAY FOR PRESBYOPIC PATIENTS AND WHY I CHOSE PRESBYOND FOR MY OWN EYES

Sri Ganesh MBBS, MS, DNB, Chairman and Managing Director at Nethradhama Super Specialty Eye Hospital, Bangalore, India, shared a story similar to Dr. Reinstein: He chose the PRESBYOND Laser Blended Vision procedure for his eyes because of its potentially excellent visual acuity at all distances.

As a high-volume cataract and refractive surgeon, Dr. Ganesh considered corneal inlays, LASIK, and refractive lens exchange with multifocal IOLs but chose to have PRESBYOND because of its customized treatment profiles, excellent visual acuity at all distances, indications range, and immediate impact on visual quality.

He recommends the procedure for his patients so they, too, can achieve the same outcomes, and also because PRESBYOND is beneficial to the profitability of his practice.

When comparing the cost between implanting bifocal or trifocal lenses, with or without laser-assisted cataract surgery, the profitability is 27% and 25%, respectively. With PRESBYOND, however, profitability increases to about 71%, and the cost of delivery is much lower, Dr. Ganesh said. Therefore, the procedure costs less for the patient and is more profitable for the surgeon.

"I am very satisfied overall with my vision and would strongly recommend the procedure to my colleagues," Dr. Ganesh concluded. "It is the best solution for patients and surgeons alike." ■

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