Stefanie Petrou Binder MD

**THE Pulzar Z1 solid state refractive laser (CustomVis)** is safe and efficient for the correction of a whole range of refractive treatments, with results analogous to excimer laser data, reported Emanuel Rosen MD at the XXV Congress of the ESCRS.

"The Pulzar Z1 is more practical than other laser systems in many ways. It can be used for all grades of myopia and hyperopia, with and without astigmatism, and for presbyopic corrections. We look forward to seeing how it evolves in the future," he commented.

He reported a study that included 436 eyes with myopia up to -14.5 D and astigmatism up to -5.5 D, and 195 eyes with hyperopia of up to +5.0 D and mixed astigmatism up to -6.5 D. It also included 25 presbyopic eyes. The study involved eight different, international sites. Surgeons at the individual centres followed their patients for one to three months. The surgeons evaluated the data themselves. This is an ongoing investigation.

Three hundred and sixty-six myopic eyes (84 per cent) achieved vision of within 0.5 D of their intended refraction and 427 eyes (98 per cent) were within 1.0 D of the intended refractive correction after one month follow-up, revealing very good predictability, Dr Rosen said.

An uncorrected visual acuity of 6/6 was achieved in 322 (74 per cent) myopic eyes, with 383 eyes (88 per cent) achieving 6/7.5 or better. The best-corrected visual acuity was improved by one line in 22 of the study eyes. In the hyperopic series, 166 eyes out of 195 (86 per cent) had 6/6 UCVA or better postoperatively.

The post-presbyopic surgical outcomes showed that 95.45 per cent of the patients had good bilateral far and near vision and were satisfied and comfortable. "We are treating the patient and not just a single eye," Dr Rosen pointed out.

All of the eyes with presbyopic correction, had 20/25 (2) or better for near vision and 72 per cent of the treated eyes achieved a UCVA of 20/40 or better. No eye lost over one line BCVA, he noted.

An analysis of the attempted refraction compared to the actual, achieved refraction revealed very few outliers, meaning that the procedure was very predictable and safe, Dr Rosen maintained.

He explained that for presbyopic LASIK corrections, surgeons treated only the non-dominant eyes in this initial trial. Four eyes had only presbyopic correction, while the remaining 21 eyes had combined hyperopic and presbyopic correction.

The surgeons performed multizone presbyopic LASIK, involving central and peripheral zones for distance and a middle zone for near vision. They had the advantage of the iris and limbal registration functions of the CustomVis Pulzar Z1, which aided in precision. These patients were followed for an average of 10 weeks.

Dr Rosen noted that presbyopic LASIK was a compromise solution, but the outcomes seemed nonetheless to give good, solid results that left patients satisfied. He noted a slight increase in higher order aberrations including trefoil, but lower than the numbers found in other published data.

"As with multifocal contact lenses and IOls, we expect the satisfaction rating to increase as the far UCVA improves, which occurs as the patients adapt over time due to the process of neural adaptation," he said.

According to Patrick Condon MD of Waterford Ireland, who moderated the ESCRS Free Paper session, longer wavelengths sounded like a faster laser but perhaps also one causing a higher thermal effect than conventional lasers do.

Dr Rosen noted that there was no difference to the 193nm laser in terms of the thermal effect, however, the speed was enhanced.

He observed that the clinical data using this new technology supported the safety, predictability, and efficacy of the Pulzar Z1 Solid State Refractive Laser (213 nm) for the correction of a whole range of refractive treatments and showed overall equivalence to excimer laser data. The Pulzar Z1 was a viable, practical and convenient alternative to conventional excimer laser systems, he noted.

The Pulzar Z1 is a new high-speed solid-state laser for the correction of myopia and hyperopia, astigmatism and presbyopia by LASIK. It has a solid-state engine, 231nm wavelength (as opposed to 193nm), and 0.6mm flying beam spot, capable of surgical planning, high-speed tracking and limbal/iris registration.

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