

Add-on IOLs

Sulcus-implanted IOLs provide multifocality through a simple and reversible procedure. *Roibeard Ó hÉineacháin reports*

Add-on intraocular lenses have come a long way from the days when standard IOLs were combined for additional refractive correction. The latest generation of lenses are designed for implantation in the sulcus and have optional features including astigmatism correction and multifocality, Detlev Breyer MD told the 37th Congress of the ESCRS in Paris, France.

Back in the late 1990s, eyes with piggy-back IOLs were affected by complications such as interlenticular opacification, the induction of hyperopic defocus and iris capture. The new sulcus-fixated add-on IOLs provide greater clearance between the add-on and primary IOLs and have haptics more suitable for sulcus implantation, reported Dr Breyer, Breyer Kaymak Klabe Augen Chirurgie & Premium Eyes, Dusseldorf, Germany.

Prominent among these new lenses are the Sulcoflex add-on IOLs (Rayner). The lenses are composed of a hydrophilic material, which has a high uveal compatibility and a low tendency for erosion of the sulcus. In addition, the 6.5mm optic is large enough to provide good optical quality and prevent iris capture, with a round edge to prevent dysphotopsias. It has a concave posterior surface to prevent optical distortion and also maintain a safe distance between the two optics.

Moreover, the overall length of the sulcus-implanted lenses, including the haptics, is large enough to provide good centration. The haptics have an angulation of 10 degrees, to provide uveal clearance and thereby prevent pigment dispersion and iris capture, and they are soft to decrease tissue reaction, he explained.

The original injector allows insertion of the lens through a 2.4mm incision. Dr Breyer noted that he implants the lenses through a 1.8mm incision with a cartridge from ZEISS and a single-hand push shooter. He performs the procedure using irrigation, without viscoelastics.

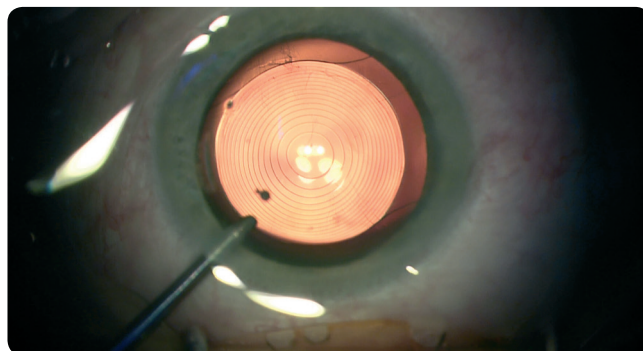
He reported that in his patients, postoperative Scheimpflug photography shows a good clearance of around 0.5mm between the primary and add-on IOLs and the procedure does not induce any astigmatism. Moreover, the mean overall thickness of the two IOLs combined is only around 2.4mm, compared to the 4.5mm thickness of the crystalline lens preoperatively. That makes the lens particularly advantageous in very short eyes.

FOUR-POINT HAPTIC MORE ROTATIONALLY STABLE

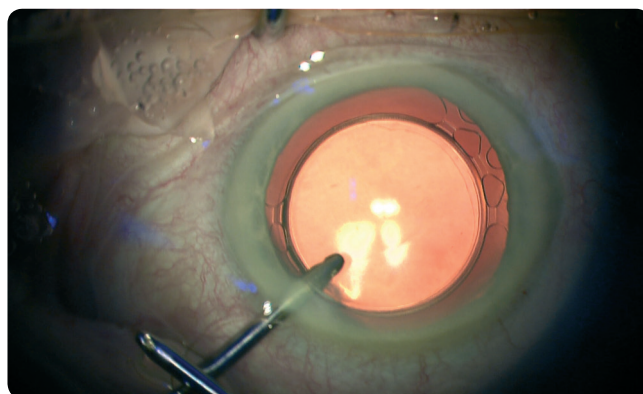
However, he noted that despite the safety, ease of surgery and good results achieved with the lens, he does not use the toric designs because he feels that its C-loop haptics do not provide adequate rotational stability. If C-loop haptics are used they should have a three-piece design and have a large optic, he said. One such design is the HumanOptics add-on IOL. However, that IOL has the disadvantage of requiring a 3.2mm incision.

Add-on IOLs with four-point haptics such as 1stQ Add-On IOLs (Medicentur) are very rotationally stable, which make the outcomes their toric designs more predictable, Dr Breyer said. He cautioned, however, that the IOL's haptics are very fragile and that he has broken haptics in a couple of procedures with the lens.

Dr Breyer noted that there are now a number of refractive and diffractive multifocal IOLs now available that offer the option of easy reversibility, should a patient be unhappy with their outcomes. They include the refractive and diffractive Sulcoflex multifocal add-on lenses and the 1stQ diffractive trifocal and toric



A diffractive Optic



A refractive Optic

Courtesy of Detlev Breyer MD

trifocal add-on lenses. The Sulcoflex refractive multifocal add-on distributes 60% of focused light to distance and 40% to near. The diffractive Sulcoflex multifocal IOL distributes 52% of light to distance, 22% to near and 26% to near, leaving only 11% of light out of focus.

Dr Breyer noted that to determine whether a patient is likely to be happy with a particular multifocal IOL he developed the Dusseldorf miLens® strategy based on publications in peer-reviewed journals and his own investigations. It is designed to match the patient's psychology to the most appropriate multifocal IOL, based on its optical properties. The strategy involves obtaining patients' responses to a questionnaire regarding their psychological tendencies, particularly with regard to compulsive checking, competence, orderliness and dutifulness, high levels of which predict greater subjective disturbance by haloes and glare. Dr Breyer puts great emphasis on the principle of shared decision making by showing charts of photopic phenomena and defocus curves to his patients during counselling.

He added that the three factors in multifocal IOL design that correlate most closely with potentially disturbing dysphotopsias are the power of the near add, the use of diffractive optics to achieve the multifocality and non-emmetropic postoperative refraction.

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