

New microincision IOL provides multifocality and corrects astigmatism



Detlev Breyer

Roibeard O'hEineachain
in Barcelona

A NEW multifocal toric IOL, the Acri.Lisa TD (Acri.Tec/Carl Zeiss Meditec) can provide good functional multifocality and astigmatism correction and is implantable through an astigmatically neutral incision, said Detlev Breyer MD, Augenheilkunde an den Schadowarkaden, Dusseldorf, Germany.

"The Acri.Lisa TD is the only toric and multifocal IOL that you can use with MICS technology, which is crucial for excellent results and predictability in modern phacorefractive surgery," he told the 12th Winter Refractive Meeting of the ESCRS.

Dr Breyer reported that the early results with the lens have been very promising in a series of 10 eyes of five patients, which included eyes with high astigmatism and myopia or which had undergone penetrating keratoplasty. Dr Breyer performed all procedures using a coaxial MICS technique with a 1.6mm incision. The patients' preoperative sphere ranged from -8.75 to +8.75 and their preoperative cylinder ranged from -3.75 D to -0.5 D.

At a follow-up of three to five months, the mean sphere improved from a preoperative value of -5.25 D to 0.4 D and the mean cylinder improved from -2.25 D to 0.44 D. Furthermore, mean postoperative uncorrected visual acuity was 0.69 for distance and 0.78 for near.

Unique lens designs

Dr Breyer noted that the use of multifocal IOLs in astigmatic eyes has in the past required the use of additional procedures, since relatively small amounts of refractive error can undermine the multifocal functionality of the lenses. Moreover, incisional techniques cannot correct higher levels of astigmatism, which has made the option of multifocal IOLs unavailable to many patients.

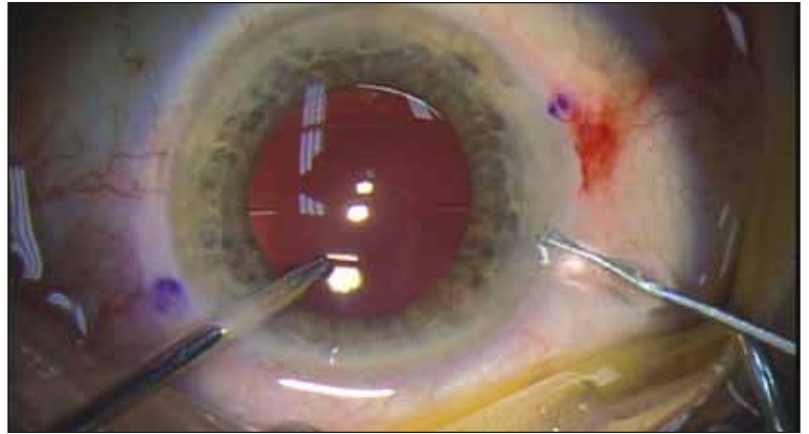
The lens has a biconvex optic with a diffractive bifocal aspheric front surface and a toric aspheric back surface. Like the non-toric Acri.Lisa multifocal, the new IOL allocates 65 per cent of light to the distance focus and 35 per cent of light to the near focus, independent of pupil size, with a near addition of +3.75 D. The material of the lens is a highly compressible hydrophilic acrylate material with a hydrophobic surface.

The lens design also reduces light scattering and glare by having smooth steps in refractive-diffractive structure, and the aspheric anterior and posterior surfaces reduce spherical aberration. The lens is available in dioptric powers of +0.0 D to +32.0 D sphere and +2.0 D to +12.0 D of cylinder.

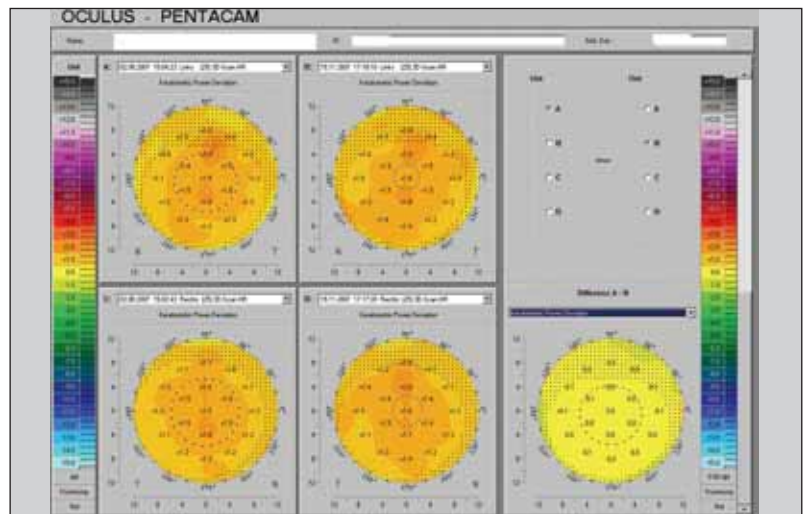
Dr Breyer noted that in order to achieve accurate refractive correction and good bifocal vision with the lens, the surgical technique must induce as little astigmatism as possible. To be astigmatically neutral even in peripheral degenerated corneas, the incision size must be lower than 2.0mm, he said.

He added that he has tried bimanual MICS but was dissatisfied with the technique. He pointed out that MICS instruments have to be placed very tightly in the incisions to avoid leakage problems. Research has shown that the sleeveless phaco tips used in bimanual MICS procedures can cause leakage because they irreversibly stretch the corneal collagen fibres, he observed.

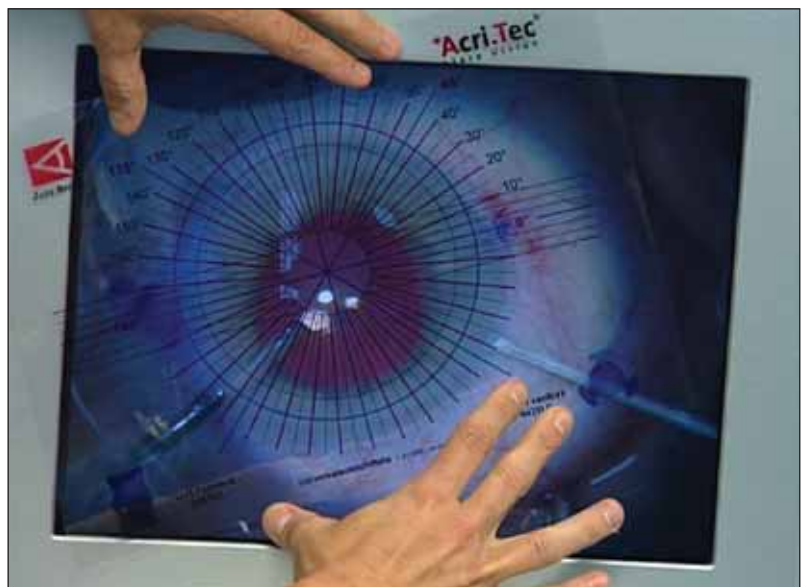
Dr Breyer said that he therefore performs coaxial MICS using a new sleeved phaco tip (CO-MICS, Oertli), which fits through a



Alignment of the IOL marking according to the steep meridian



Comparison Pentacam Pre+Post OP



Universal foil over the screen for precise alignment of the IOL

Courtesy of Detlev Breyer MD

1.6mm incision without stretching it.

Videokeratography studies show that the coaxial MICS procedure leaves the corneal contours virtually unchanged, he added.

He emphasised that accurate biometry, videokeratoscopy and refraction are essential to insure that postoperative astigmatism is not over 0.5 D cylinder. In addition, the capsulorhexis should be 5.5mm in diameter and completely cover the optic border. Moreover, patients who develop a capsular fibrosis should undergo YAG capsulotomy as early as possible.

Furthermore, surgeons should inform their patients regarding the one to three months necessary to adapt to the lens, he said. They should also explain the possibility of moderate haloes, slightly reduced brightness of colours and a greater dependence on bright conditions for good functional vision.

At the same time, Dr Breyer noted that in a study by Dominique Pietrini MD, involving eyes implanted with the non-toric Acri.Lisa multifocal IOL (*EuroTimes June 2007*), 70 per cent of patients had no night vision problems and the remaining 30 per cent had only minimal night vision problems. He added that other studies from Vwehner, Reiter and Menapace MDs have shown that the lens remains rotationally stable throughout six months of follow-up.

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