



Jean-Pierre Rozenbaum

New aspheric implant delivers promising early results

Dermot McGrath
in Paris

INITIAL clinical trial results of the XL Stabi ZO (IOLtech/Carl Zeiss Meditec) aspheric intraocular lens indicate that the implant is well tolerated and delivers a consistently high level of quality of vision for patients, according to Jean-Pierre Rozenbaum MD.

“The results we have seen to date are very encouraging and augur well for the future of this concept. This new IOL differs from other aspheric IOLs in that it caters for the physiological misalignment of the visual axis, and the optical performance of the lens is negligibly affected by lens tilt or decentration,” he said.

Speaking at the annual meeting of the French Implant and Refractive Surgery Association (SAFIR), Dr Rozenbaum said that the advanced design of the XL Stabi ZO, as confirmed by objective modulation transfer function (MTF) measurements, seems to result in improved retinal image quality and provides enhanced contrast perception in mesopic conditions.

“This new IOL differs from other aspheric IOLs in that it caters for the physiological misalignment of the visual axis, and the optical performance of the lens is negligibly affected by lens tilt or decentration”

“The XL Stabi concept seems to be an interesting advance in implant technology because of its potential to offer better quality of vision to all patients, something which has become a common goal of both cataract and refractive surgery nowadays,” said Dr Rozenbaum, of the Centre Hospitalier National d’Ophtalmologie des

XV-XX in Paris, who works at the Centre Eiffel in Paris.

The hydrophilic acrylic IOL can be implanted through a 2.8mm incision with the latest generation sterile single-use Skyjet injector. Results of the first 200 patients implanted with the XL Stabi ZO lens demonstrated a high level of predictability and safety, said Dr Rozenbaum.

“Among the first 200 cases of the XL Stabi ZO, there were no incidences of dysphotopsias, there was no significant error in calculating the correct power for the implant, and no induced astigmatism. Furthermore, looking at a subset of data from 47 eyes at four centres, 47 eyes measured by WASCA Zeiss aberrometry and tested mesopically without pharmacological dilation, the MTF curves validated the excellent performance of the IOLs,” he said.

Discussing the evolution of aspheric IOLs, Dr Rozenbaum noted that the initial impulse came with the development of aspheric photoablation profiles for excimer lasers,

which eliminated many of the problems of night vision and halos seen with non-aspheric profiles.

While noting that cataract patients are traditionally less demanding than refractive patients, and are usually quite happy to recover a good level of visual acuity after their operation, Dr Rozenbaum stressed that expectations are now higher and there is a



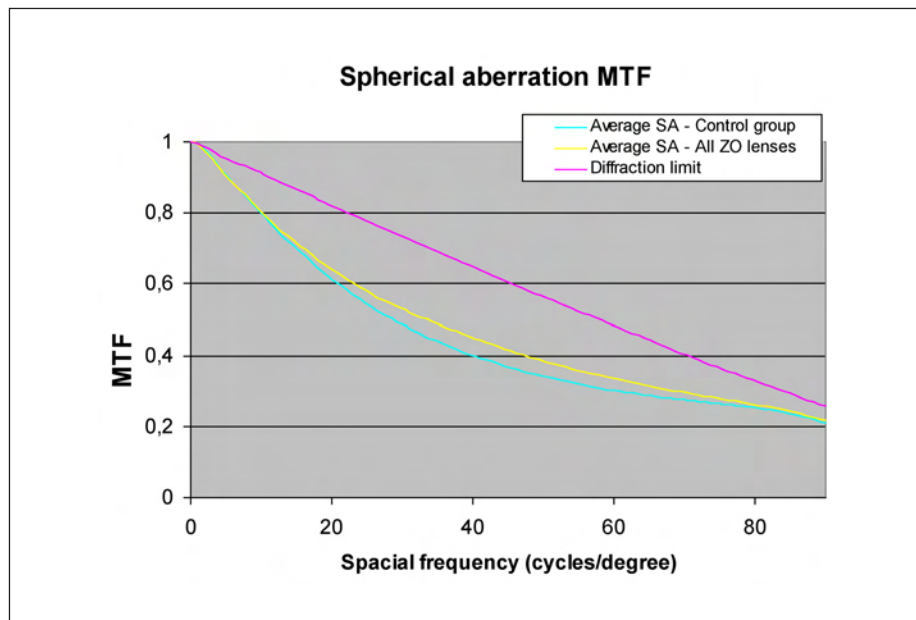
XL Stabi ZO

demand for quality as well as quantity of vision after cataract surgery.

“At a time when the calculation of the IOL power is more and more accurate and the surgical procedure less and less likely to induce astigmatism, the real problem is to determine which patient with the same refractive outcome will obtain a better quality of vision,” he said.

The role of wavefront aberrometry in assessing the abnormalities in any optical system was emphasised by Dr Rozenbaum. The raw wavefront data provides the basis for evaluating several other functions that define optical quality such as the point spread function (PSF), which itself can be transformed by Fourier analysis into the modulation transfer function (MTF).

He explained that point spread function evaluates the quality of an optical system as it images a point source. While a perfect optical system will show an image of a point of light as an almost perfect representation of the same point of light, the point becomes distorted when aberrations are present. The data contained in the PSF also provide the basis to calculate another useful metric, the MTF, which measures contrast degradation as a function of spatial frequency. This



Courtesy of Jean-Pierre Rozenbaum MD

The MTF curve

provides a useful measure of the optical component of contrast sensitivity.

Until relatively recently, IOL manufacturers had not taken the spherical aberration of the eye into account in their spherical lens designs, said Dr Rozenbaum. An excess of positive spherical aberration will have a negative impact on the MTF and the patient's quality of vision, he explained, adding that a small degree of positive spherical aberration actually helps to improve the depth of field.

minimal with these lenses, although some studies have shown that the Tecnis lens, which has an enhanced prolate shape, is more susceptible to tilt and decentration than other aspheric models.

Looking at currently approved aspheric monofocal lenses on the market, Dr Rozenbaum said that they could be broadly divided into prolate and non-prolate lenses.

Of the prolate lenses, the Tecnis Z9000 (AMO) and the AcrySof IQ (Alcon) generate negative spherical aberration, of 0.27 μm and

surfaces that has neither positive nor negative spherical aberration.

Dr Rozenbaum concluded that the ZX Stabi ZO was an interesting addition to the range of aspheric IOLs on the market.

"Aspheric IOLs are now being developed by all the leading companies, which reflects a desire to improve the quality of vision for cataract patients to the same degree that has been achieved for refractive patients. The XL Stabi is a promising addition to the market, as borne out by objective MTF data and its performance to date in a clinical setting," he said.

Etienne Hachet MD of Nancy, France, was co-author of the study presented by Dr Rozenbaum.

jprozen@yahoo.fr

“The XL Stabi is a promising addition to the market, as borne out by objective MTF data and its performance to date in a clinical setting”

A recent study by Dr Rozenbaum and colleagues comparing the Tecnis (AMO) lens and the SofPort AO (Bausch and Lomb) with a number of spherical IOLs confirmed the superior optical performance of the aspheric models. He noted that visual symptoms are

0.20 μm respectively to compensate for the positive spherical aberration of the cornea, which has been calculated as 0.27 μm in the average human cornea. The SofPort LI6IAO (Bausch and Lomb) is a biconvex silicone lens with aspheric anterior and posterior