Long-term complications are still an issue with phakic IOLs

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in Stockholm

THE combination of improved imaging technology and better sizing of phakic IOLs together with advances in surgical techniques has helped to reduce the incidence of serious long-term complications associated with phakic IOL implantation, according to Antonio Marinho MD, PhD.

Addressing a special symposium on phakic IOLs held during the XXV Congress of the ESCRS, Dr Marinho said that no implant could be deemed to be completely free of complications, but that the risk and type of complication varied according to the nature of the phakic implant used.

“We must accept that there is always the potential for long-term complications with an IOL implantation because of its impact on the ocular structures in the immediate vicinity of the IOL,” he said.

Dividing phakic lenses into three broad categories – angle-supported anterior chamber phakic IOLs, iris-supported anterior chamber phakic IOLs and posterior chamber lenses – Dr Marinho said that each category of IOL carried its own particular risk of complications.

Angle-supported lenses, for example, are particularly prone to problems of endothelial cell loss as evidenced by the recent withdrawal from the French market of the Vivarte and NewLife phakic IOLs (both IOLTech/Carl Zeiss Meditec) followed by the ICARe phakic IOL (Cornéa).

“The sizing of these lenses is absolutely critical. If the size is not right, there may be a contact between the IOL and the vital ocular structures which can have a serious impact in the long term,” said Dr Marinho.

Dr Marinho noted that if the selected IOL is too small in the capsular bag, it might be more prone to rotation and decentration and thereby increase the risk of damaging the endothelium. Implanting a phakic IOL that is too large, on the other hand, may lead to problems of pupil distortion and no problems with white-to-white measurements,” he said.

While rotation, decentration and pupil ovalisation remain issues of concern with these lenses, he added that there is less risk of inflammation, intraocular pressure spikes or cataract formation for this type of lens design.

Turning to iris-supported phakic IOLs, Dr Marinho said the best-known lenses in this category are the Artisan lenses (Ophtec) for myopia, hyperopia and astigmatism as well as the foldable Artiflex IOL.

“The big advantage of these IOLs is that ‘one size fits all’, so there are no sizing issues to worry about and no problems with white-to-white measurements. The fact that these IOLs are a safe distance from the endothelium and the natural lens, is a clear advantage. However, the close contact with the iris may lead to its own complications with these lenses,” he said.

Dr Marinho said that rigorous surgical technique is particularly critical with anterior chamber iris-supported phakic IOLs, which may become disengaged producing IOL mobility, corneal endothelial touch, and visual symptoms. Usually, these conditions can be corrected by simple proper re-enclavation.

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“Surgery with this type of lens must be perfect, but of course we are not perfect surgeons, so we may experience problems such as decentration and subluxation of the IOL. Other potential problems to watch for include pigment deposition and sub-clinical inflammation, like a mild form of uveitis. A more aggressive postoperative treatment of steroids may be required in such cases,” he said.

Dr Marinho said that most of the problems associated with iris-fixated phakic IOLs related to the quality of the surgery rather than the IOL itself. Advantages of this type of IOL included the absence of sizing problems, less pupil distortion and no elevated IOP.

“Another benefit is the low risk of cataracts with this lens and the fact that it is kind to the endothelium so long as the implantation criteria have been respected and modern imaging technology has been used to properly measure the dimensions of the anterior chamber not only in the centre, but in the periphery as well,” he said.

Focusing his attention on posterior chamber phakic IOLs such as the Visian Implantable Collamer Lens (STAAR Surgical) and the Phakic Refractive Lens (PRL, IOLTech/Carl Zeiss Meditec), Dr Marinho said that these lenses are less prone to inflammation as they are positioned a safe distance from the iris and the endothelium.

However, he noted that a possible source of complication with the ICL derives from its close proximity to the crystalline lens, a situation complicated by the fact that the crystalline lens grows thicker over time.

“The vault is the space between the posterior chamber implant and the natural lens. If the vault is not sufficient, it can lead to problems. If the lens is too short for the sulcus, decentration of the IOL and touching of the natural lens leading to cataract can result. If the ICL is too long, the lens will vault excessively crowding the angle and possibly causing pigment dispersion and closed-angle glaucoma,” he said.

Dr Marinho also noted that there have been some published reports of spontaneous dislocation of sharp-edged PRLs into the vitreous cavity.

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