Coaxial centration

Even very small amounts of subclinical decenteration during excimer laser vision correction can degrade retinal image quality. Problems associated with ablation decenteration include coma aberration, causing ghosting and monocular diplopia. Japanese researchers compared refractive outcomes, higher-order aberrations and contrast sensitivity of myopic wavefront-guided aspheric LASIK using two centration techniques, coaxially sighted corneal light reflex or line of sight. At the three-month postoperative point, the study of more than 500 eyes showed that centration on the coaxially sighted corneal light reflex resulted in better safety, effectiveness and contrast sensitivity than line-of-sight centration. Higher order aberrations and coma were statistically significantly higher in the line-of-sight group. The line-of-sight group also had a significantly greater change in contrast sensitivity. Centration on the coaxially sighted corneal light reflex was safer for myopic eyes with P-distances greater than 0.25mm. Therefore, the researchers suggest that to avoid suboptimal refractive outcomes and diminished visual quality, surgeons should determine the difference in the pupil centre and the coaxially sighted corneal light reflex and consider centring the excimer laser ablation on the coaxially sighted corneal light reflex once the difference is 0.15mm or larger.

Hybrid monovision

Hybrid monovision may offer an effective approach for managing loss of accommodation in select cataract patients, while reducing some of the problems sometimes seen with multifocal IOL implantation. Bilateral multifocal IOL implantation is currently the most popular surgical approach for treatment of presbyopia. However, problems include glare and halo, loss of contrast and a high level of lens exchange. Moreover, this approach is not optimal for patients with glaucoma, retinal or macular disease. Researchers in Kanagawa, Japan, implanted 32 patients with a monofocal IOL (AQ310Ai) in the dominant eye and a diffractive multifocal (Tecnis ZM900) in the contralateral eye. They targeted both eyes for emmetropia. All eyes achieved mean binocular visual acuity better than 0.1 logMAR at all distances. Binocular contrast sensitivity was better than monocular vision in the eye with the diffractive multifocal IOL. Near stereopsis within normal range was maintained in 62.5 per cent of patients. Some 18.8 per cent of patients reported spectacle dependence. With binocular vision, no patients reported waxy vision. The main cause of dissatisfaction was the lack of visual clarity at near and intermediate distances. Therefore, the researchers note that this option may not be best for patients whose work or lifestyle requires excellent near vision.

Reducing hyperopia

Eyes with axial lengths of greater than 25.0mm often end up with postoperative hyperopia owing in part to problems with current IOL power calculation formulas. An international study group looked at the accuracy of refractive prediction of four popular IOL power calculation formulas in eyes with axial length greater than 25.0mm in an attempt to improve outcomes. They evaluated refractive prediction errors associated with the Holladay 1, Haigis, SRK/T, and Hoffer Q formulas in consecutive cases. The optimised axial length values were highly correlated with the IOLMaster AL (R2 from 0.960 to 0.976). In the validating group, the method of optimising axial length significantly reduced the mean numerical errors for IOLs greater than 5.00 D, from +0.27 to +0.68 D to -0.10 to -0.02 D. Errors in IOLs of 5.00 D or less improved from +1.13 to +1.87 D to -0.21 to +0.01 D. In two additional validation data sets, this method significantly reduced the percentage of eyes that would be left hyperopic. The researchers recommend caution when using the optimised axial length formulas as slightly myopic results may occur. They noted that as data are accumulated, the manufacturer’s lens constants should be optimised and the accuracy could be improved further.

JCRS HIGHLIGHTS

Journal of Cataract and Refractive Surgery

2nd EURETINA Winter Meeting

‘Innovation in Management of Retinal Disease’

Rome Cavalieri Waldorf Astoria Hotel

Saturday 28 January 2012

Include topics:

- Imaging
- Eye and Brain
- Regeneration and Degeneration of the Retina
- Retina and Stem Cells
- Gene Transfer
- Retina Basic Research

www.euretina.org

FURTHER STUDY

Become a member of ESCRs to receive a copy of EuroTimes and JCRS journal

ASSOCIATE EDITOR OF JCRS

Thomas Kohnen