

Implantation of refractive multifocal intraocular lens with a surface-embedded near section for cataract eyes complicated with a coexisting ocular pathology

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Abstract

Purpose To evaluate the postoperative outcomes of cataract eyes complicated with coexisting ocular pathologies that underwent implantation of a refractive multifocal intraocular lens (MIOL) with a surface-embedded near section.

Methods LENTIS MPlus (Oculentis GmbH) refractive MIOLs were implanted in 15 eyes with ocular pathologies other than cataract (ie, six high-myopia eyes with an axial length longer than 28 mm, two fundus albipunctatus eyes, two branch retinal-vein occlusion eyes, four glaucoma eyes (one with high myopia), and two keratoconus eyes). Uncorrected or corrected distance and near visual acuity (VA) (UDVA, UNVA, CDVA, and CNVA), contrast sensitivity, and defocus curve were measured at 1 day and 6 months postoperatively, and each patient completed a 6-month postoperative questionnaire regarding vision quality and eyeglass use.

Results Thirteen eyes (87%) registered 0 or better in CDVA and 12 eyes (73%) registered better than 0 in CNVA. Contrast sensitivity in the eyes of all patients was comparable to that of normal healthy subjects. No patient required eyeglasses for distance vision, but three patients (20%) required them for near vision. No patient reported poor or very poor vision quality.

Conclusion With careful case selection, sectorial refractive MIOL implantation is effective for treating cataract eyes complicated with ocular pathologies.

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Introduction

At present, two types of multifocal intraocular lenses (MIOLs) are available, diffractive MIOLs and refractive MIOLs, and careful patient selection and choice of lens type are key for the successful use of MIOLs.¹ In refractive MIOLs, halo or glare symptoms are more prominent than in diffractive MIOLs because of light scattering at the transitional zone between the distant and near focus of the MIOL.² In addition, the near visual acuity (VA) when using refractive MIOLs tends to depend on pupil size because of the near focus zone of the MIOL being concentrically allocated.³ On the other hand, one underlying problem associated with diffractive MIOLs is the reduced contrast post implantation due to the optical feature of the lens.^{4–6}

The LENTIS MPlus (Oculentis GmbH, Berlin, Germany) is an acrylic refractive MIOL that was designed on the basis of refractive rotational asymmetry. The aim of that design is to reduce sources of light scattering and aberrations that cause disturbing reflections, halos, and glare; several studies have reported the clinical results of that lens design.^{7–10} Although studies have reported that the postoperative contrast sensitivity outcomes using other MIOLs are worse than those with monofocal IOLs,^{11,12} Alió *et al*⁸ reported that the postoperative contrast sensitivity outcomes with MPlus are comparable to those of monofocal IOLs.

Although the use of diffractive MIOLs has become increasingly popular because of their

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