

bination of multifocal and toric design, resulting in multifocal toric design of the lens which provides a complete visual recovery for patients with astigmatism and presbyopia.

Keywords: refractive lens exchange; multifocal intraocular lenses; astigmatism; intraocular lenses.

MULTIFOCAL IOL IMPLANTATION AFTER LASIK

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Purpose: As part of the normal aging process patients who are undergoing keratorefractive procedures may ultimately develop cataract and will need cataract extraction with intraocular lens implantation. Those patients, used to very good vision, have very high expectations and demand perfect vision without correction after cataract surgery. Until recently refractive results were not as good as expected. Most of the patients had some refractive surprise after cataract surgery – mainly hyperopic shift after previous myopic correction. The reason for this can be found in current instrumental error in keratometry readings which consequently result in IOL formula error. Numerous IOL calculation methods were developed over the years for improvement of final outcomes. Due to the inaccuracy in IOL calculations and optical quality of cornea altered with laser refractive surgery until recently multifocal IOLs were not advised for implantation. With improvement in IOL calculations and development of new MFIOLs combined with improvement in excimer lasers and techniques nowadays MFIOL can be considered as an option for that kind of patients.

Material and methods: 21 patients underwent binocular cataract surgery with implantation of Symphony IOL. All patients had some type of keratorefractive surgery in the past. 13 eyes were myopic prior to the keratorefractive surgery and 8 eyes were hyperopic. IOL power was calculated with two methods IOL Master and AS-CRS web page (<http://iol.ascrs.org/>). Uncorrected distance (UDVA) and near (UNVA) visual acuity, spherical equivalent (SE) and high order aberrations were measured at 3 months postoperatively.

Results: In eyes with previous myopia average UDVA was $0,06 \pm 0,08$ LogMAR (range 0,2 to 0,0), average UNVA was $0,07 \pm 0,08$ LogMAR (range 0,2 to 0,0) and SE was $+0,28 \pm 0,34$ D (range -0,50 to +0,75 D). Average values of trefoil were $0,09 \pm 0,07$ μ m

(range 0,03 to 0,18), coma $0,18 \pm 0,10 \mu\text{m}$ (range $0,07 \pm 0,21$), and spherical aberration $-0,05 \pm 0,07 \mu\text{m}$ ($-0,14$ to $0,07$). In previous hyperopic eyes average UDVA $0,05 \pm 0,08 \text{LogMAR}$ (range 0,2 to 0,0), average UNVA was $0,06 \pm 0,07 \text{LogMAR}$ (range 0,2 to 0,0) and SE was $-0,12 \pm 0,20 \text{D}$ (range $-0,50$ to $+0,25 \text{D}$). Average values of trefoil were $0,13 \pm 0,08 \mu\text{m}$ (range 0,06 to 0,24), coma $0,23 \pm 0,10 \mu\text{m}$ (range 0,10 to 0,28) and spherical aberration $-0,02 \pm 0,13 \mu\text{m}$ (range $-0,15$ to $0,08$).

Conclusion: Implantation of multifocal IOLs after previous keratorefractive surgery offers satisfactory postoperative results. Further refinement in IOL power calculations is needed to improve refractive outcome.

Keywords: keratorefractive surgery; cataract surgery; multifocal intraocular lens; IOL power.

TORIC MULTIFOCAL AND EXTENDED RANGE OF VISION INTRAOCULAR LENSES IN CORRECTION OF ASTIGMATISM AND PRESBYOPIA

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Modern cataract surgery is becoming refractive surgery. Patient's expectations are growing and they wish to be free of spectacles as much as possible. Postoperative astigmatism is the main reason for patient's dissatisfaction after implantation of multifocal intraocular lenses or extended range of vision intraocular lenses. Residual astigmatism more than 0,5 dcyl will decrease quality of vision in such patients.

"With the rule" astigmatism of 1.00 dcyl or less can be corrected with intraoperative incision at steep axis. Incision in corneas with "Against the rule" astigmatism is almost completely neutral and in these patients, we have to consider toric lenses even with 1.00 dcyl of astigmatism.

Toric intraocular lenses can correct low to high amount of astigmatism. They spread indications for use of presbyopia correcting lenses. (multifocal or extended range of vision intraocular lenses). Patients suitable for toric presbyopia correcting lenses are those with astigmatism more than 1.00 or 1.25 dcyl, depending on axis and the patient's age. Effect of incision on younger corneas is weaker than older ones. Toric presbyopia correcting lenses should be used only in patients with regu-