

(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-

lar astigmatism, while those with irregular astigmatism, keratoconus, pellucid marginal degeneration, corneal scars, pterygium or any corneal irregularity should be excluded.

Correct and precise topography and IOL calculation, proper alignment and stability of the lens and preoperative marking are some of key items for success.

In clinical study with 16 patients binocularly implanted with trifocal toric intraocular lens we had reduction of mean astigmatism from  $2,25\pm 1,00$  D to  $0,32\pm 0,25$  D. All patients were free of any spectacles three months after the surgery.

Another clinical study in Eye Hospital Svjetlost, with implantation of toric Extended range of vision IOLs to 24 patients in both eyes showed reduction of mean astigmatism from  $2,85\pm 0,56$  D to  $0,25\pm 0,24$  D and only two patients have to wear reading glasses for small print.

In conclusion, we can say that toric presbyopia correcting intraocular lenses can correct astigmatism and presbyopia and enable patient's high spectacle independence.

**Keywords:** toric intraocular lenses; extended range of vision lenses; astigmatism; presbyopia.

## REFRACTIVE LENTICULE EXTRACTION IN TREATMENT OF SHORT-SIGHTEDNESS WITH OR WITHOUT ASTIGMATISM

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Refractive surgery has gained high popularity within the last 20 years. One of the main reasons for the success story of refractive surgery is the high quality of laser technology in corneal surgery. Zeiss company introduced around 10 years ago the latest step in corneal refractive surgery: "Refractive Lenticule Extraction (ReLEx - SMILE)".

This technique is suitable for myopia up to 10 D and astigmatism up to 5 D. Hyperopia treatment is under clinical investigation at the moment and commercially not available yet. ReLEx - SMILE has the advantage of a very short operation time, the need for only one femtolaser, a very fast visual recovery time and a very low complication rate.