



Two-year results of rotational asymmetric optic IOL implantation for presbyopia correction in glaucoma patients

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Background:

Modern cataract refractive surgery offers several pseudophakic solutions to presbyopia. One of the most widely accepted is multifocal IOL, offering patients high visual function at far, intermediate and near distances due to structural features of the optic. Along with the advantages, multifocal IOLs demonstrate a number of serious unwanted optical phenomena such as glares, halos and reduced contrast sensitivity.

Several studies have shown that multifocal IOLs reduce mean deviation (MD) values of retinal photosensitivity in automated perimetry compared to monofocal IOLs or native crystalline lens, which may hamper evaluation of possible progression of glaucomatous optic neuropathy. However, patients with glaucoma often have the same high expectations for vision quality and spectacle independence after surgery as patients with age-related cataracts.

Lentis Comfort IOL (Teleon Surgical BV, the Netherlands) is one of the possible solutions for this group of patients. IOL design is based on the principle of rotational asymmetry with a sector-shaped add zone of +1,5 diopters in the lower half, which focuses light on a point in front of the retina with the remaining light energy delivered to fovea with minimal loss. Both focus points are located on the same optical axis of the lens, which provides high contrast sensitivity and promotes faster neuroadaptation by reducing to a minimum light aberrations and glare.

Purpose: to compare outcomes of implanting EDOF and monofocal IOLs in patients with complicated cataracts secondary to glaucoma, to evaluate safety and effectiveness of an EDOF IOL in this population

Materials and Methods

	EDOF	Monofocal
N	47 eyes (47 patients)	39 eyes (39 patients)
Preop UCVA LogMAR	0.64 ± 0.26	0.6 ± 0.23
Preop BCVA LogMAR	0.28 ± 0.18	0.3 ± 0.19
Glaucoma type	Angle-closure – 27 Open-angle – 20	Angle-closure – 20 Open-angle – 19
Glaucoma stage	St. I – 22 St. II – 18 St. III – 7	St. I – 18 St. II – 16 St. III – 5
Mean IOP, mmHg	19.2 ± 6.8	19.0 ± 4.6
Phaco + IOL (patients with open-angle glaucoma who had previous glaucoma surgery)	12	11
Phaco + IOL + Trabeculotomy ab interno (all patients with angle-closure glaucoma)	27	20
Yag-Laser Trabecula Activation + Phaco + IOL (patients with open-angle glaucoma under antihypertensive therapy)	8	8

EDOF IOL

Lentis Comfort
(Teleon Surgical BV)
n = 47



Monofocal IOL

AcrySof IQ
(Alcon)
n = 20

RPR-2
(Reper)
n = 19



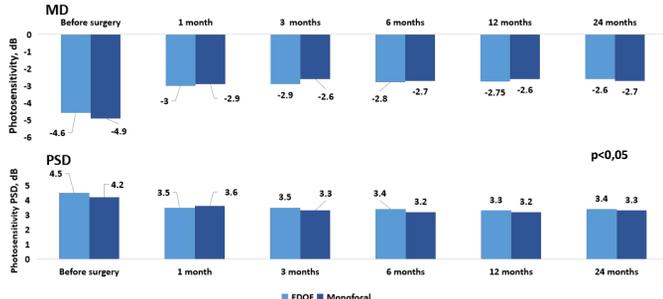
Results

IOL	VIS	Before surgery	1 month	3 months	6 months	12 months	24 months
EDOF	UCVA	0.64 ± 0.26	0.03 ± 0.14	0.02 ± 0.14	0.02 ± 0.15	0.03 ± 0.14	0.02 ± 0.12 n = 13
	BCVA	0.28 ± 0.18	0.01 ± 0.02	0.01 ± 0.02	0.01 ± 0.03	0.02 ± 0.02	0.01 ± 0.04
	UCIVA	-	0.31 ± 0.06	0.31 ± 0.05	0.32 ± 0.05	0.31 ± 0.06	0.3 ± 0.04
	UCNVA	-	0.50 ± 0.1	0.49 ± 0.09	0.48 ± 0.08	0.49 ± 0.09	0.47 ± 0.1
Monofocal	UCVA	0.6 ± 0.23	0.04 ± 0.04	0.03 ± 0.05	0.04 ± 0.05	0.05 ± 0.06	0.03 ± 0.06 n = 13
	BCVA	0.3 ± 0.19	0.01 ± 0.02	0.0 ± 0.01	0.0 ± 0.02	0.01 ± 0.02	0.03 ± 0.03
	UCIVA	-	0.93 ± 0.13	0.91 ± 0.14	0.92 ± 0.13	0.9 ± 0.08	0.93 ± 0.13
	UCNVA	-	1.02 ± 0.13	1.01 ± 0.14	1.02 ± 0.13	1.04 ± 0.12	1.00 ± 0.1

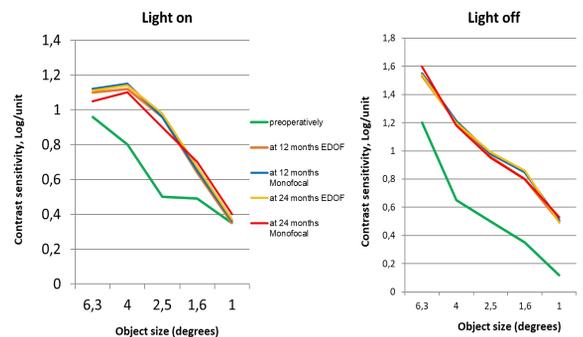
p < 0,05

UCVA - uncorrected visual acuity
BCVA - best corrected visual acuity
UCIVA - uncorrected intermediate visual acuity
UCNVA - uncorrected near visual acuity

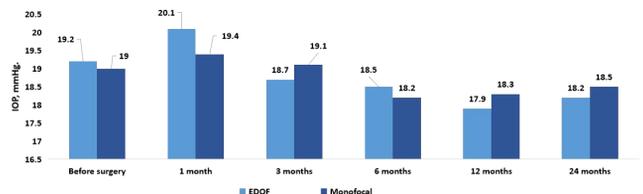
Humphrey field analyser



Contrast sensitivity



IOP



Conclusions

Implantation of the Lentis Comfort EDOF IOL increases distance and intermediate visual acuity, eliminates the need for additional spectacle correction for intermediate distances, and does not reduce retinal contrast and light sensitivity when compared to monofocal IOLs in patients with complicated cataracts secondary to glaucoma