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Retrospective Analysis of Clear Lens Exchange and Multifocal IOL Implantation

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Alimera¹

Allergan^{1,4}

AMO^{1,2,3,4}

Bausch & Lomb / Technolas Perfect Vision^{1,2,3,4}

Bayer²

Carl Zeiss Meditec^{1,2}

Contamac¹

Dr. Schmidt Intraocularlinsen^{1,3}

Geuder²

Heidelberg Engineering¹

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Oculentis^{1,2,3}

Ophtec²

Physiol^{1,2}

Powervision¹

Rayner^{1,2,3}

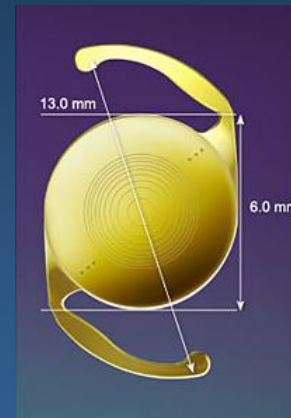
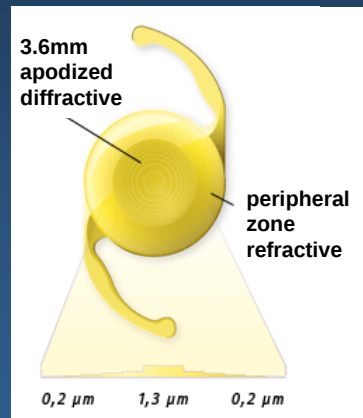


1 = Research grant; 2 = Travel grant; 3 = Lecture honorarium; 4 = Consulting

Methods

Purpose: Retrospective clinical evaluation of clear lens exchange procedures with implantation of multifocal and toric-multifocal intraocular lenses (IOLs).

Methods: In this single centre retrospective evaluation 75 eyes with clear lens exchange and diffractive-apodized multifocal IOL implantation and 26 eyes with diffractive-apodized toric-multifocal IOL implantation (Restor, Alcon) were included. Measured outcomes include accuracy of IOL calculation (intended versus achieved refraction) and functional outcomes for distance and near using ETDRS charts.

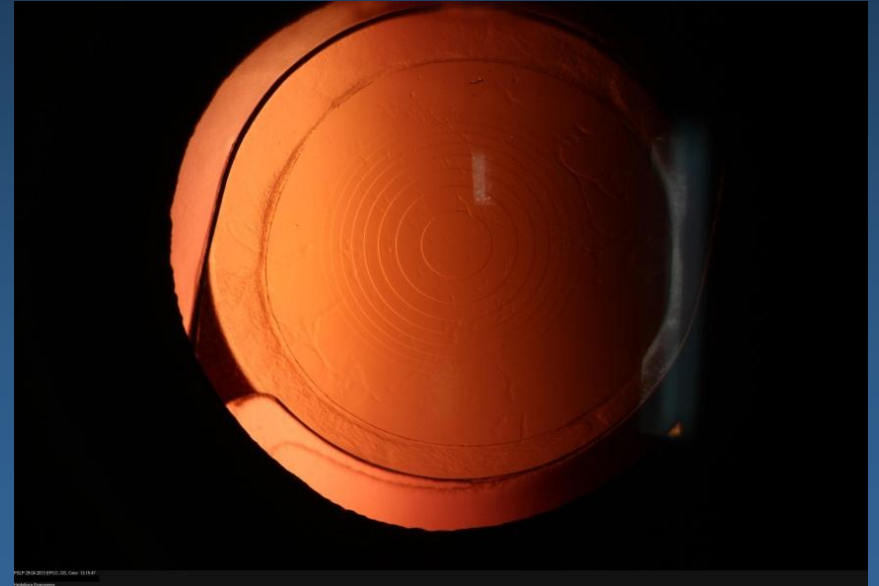
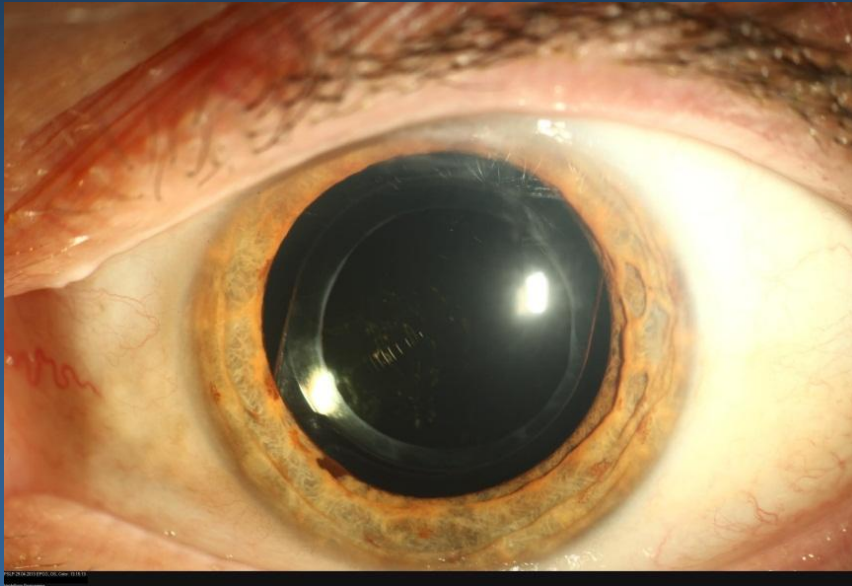


AcrySof IQ ReSTOR multifocal and multifocal toric

Multifocal Optic	Proprietary Symmetric Biconvex Apodized Diffractive Optic, aspheric
Material	Hydrophobic Acrylic
Add Power	+3.0 D

Results

Results: Altogether 101 eyes of 55 patients were included in the analysis. Mean age was 57.7 ± 7.7 years in the multifocal and 54.1 ± 4.3 years in the toric-multifocal group. Spherical equivalent IOL power ranged from +7.5 to +28.5 D and +10.5 to +29.5 D, respectively. The toric power ranged between 1 and 3 D cylinder. Uncorrected distance visual acuity (UDVA) at 3-6 months postoperatively was $0,13 \pm 0,12$ logMAR (multifocal group) and $0,20 \pm 0,16$ logMAR (toric-multifocal). Uncorrected near visual acuity (UNVA) at 3-6 months postoperatively was $0,09 \pm 0,13$ logMAR and $0,14 \pm 0,15$ logMAR, respectively.



Postoperative slit lamp findings of a patient following CLE and MIOL implantation. 360° circular capsule/IOL overlapping. The surgery was performed using a femtosecond laser for the capsulotomy.



preoperative data SN6AD1 MIOL

Refraction	Sph [D]	Cyl [D]	SEQ [D]	UDVA* [logMAR]	BDVA [logMAR]
Median	2.00	-0.50	1.75	0.49	0.00
Range	-12.75 – 6.25	-1.25 – 0.00	-13.00 – 6.00	0.00 – 1.30	-0.20 – 0.20
MV +/- StdDev	0.87 ± 3.84	-0.49 ± 0.28	0.59 ± 3.86	0.55 ± 0.31	0.02 ± 0.07

* n=65; 10 eyes > 1.30 logMAR

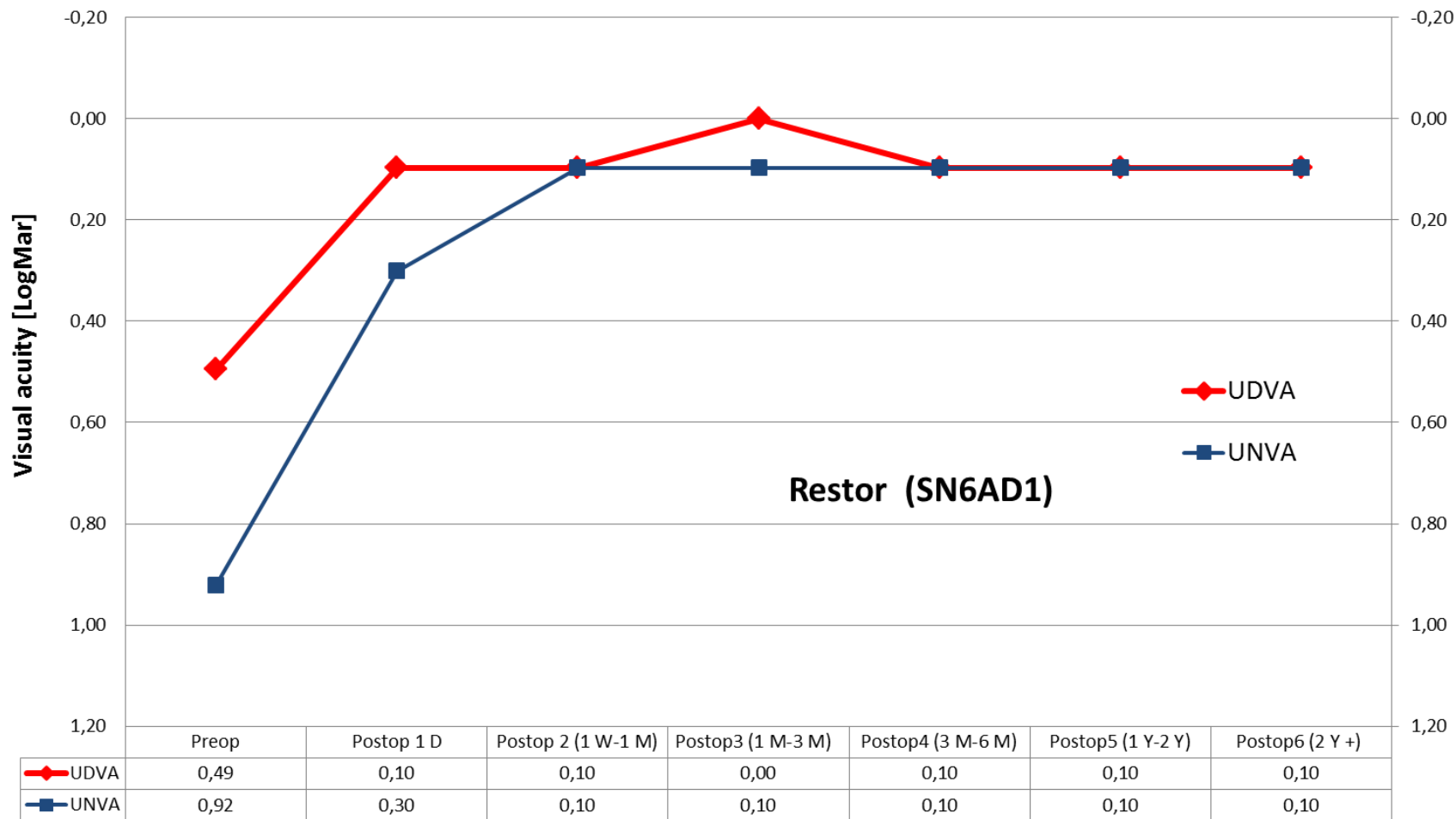
n = 75 eyes

IOL-Master	Median	Range	MV +/- StdDev
Axial Length (mm)	22.9	21.63 – 28.46	23.38 +/-1.51
Cyl (D)	-0.65	-1.33* – -0.15	-0.69 +/- 0.30
ACD (mm)	3.08	2.51 – 3.78	3,12 +/- 0,36

* axis 180°, incision 90°

IOL-Power	Median	Range	MV +/- StdDev
SEQ (SN6AD1)	23.50	7.50 – 28.50	22.51 +/-4.86
Target	-0.09	-0.88 – 0.12	-0.12 +/-0.16

UDVA & UNVA over time (SN6AD1)





Visual acuity 3 months postop SN6AD1 MIOL

Refraction SN6AD1	n [eyes]	Median	MV $\pm$ StdDev
Sph [D]	54	0.25 (-0.50 – +1.25*)	0.22 $\pm$ 0.36
Cyl [D]	54	-0.25 (-1.00 – 0.00)	-0.30 $\pm$ 0.25
SEQ [D]	54	0.00 (-0.75 – +1.00)	0.07 $\pm$ 0.33
UDVA [logMAR]	54	0.10 (-0.10 – 0.49*)	0.13 $\pm$ 0.12
CDVA [logMAR]	54	0.00 (-0.10 – 0.20)	0.04 $\pm$ 0.07
UNVA [logMAR]	52	0.10 (-0.10 – 0.49*)	0.09 $\pm$ 0.13

**n=2; 1 pat. IOL-exchange, CDVA postop= 0.05 logMar,
1 pat. subj. satisfied*



preoperative data SND1TT toric MIOL

Refraction	Sph [D]	Cyl [D]	SEQ [D]	UDVA* [logMAR]	BDVA [logMAR]
Median	2.00	-0.75	1.38	0.60	0.00
Range	-10.50 – +4.75	-3.50 – 0.00	-10.75 – 4.13	0.30 – 1.10	-0.10 – 0.10
MV +/- StdDev	-0.32 ± 4.83	-1.00 ± 0.89	-0.82 ± 4.94	0.61 ± 0.25	0.03 ± 0.06

* n=10; 10 eyes > 1.30 logMAR

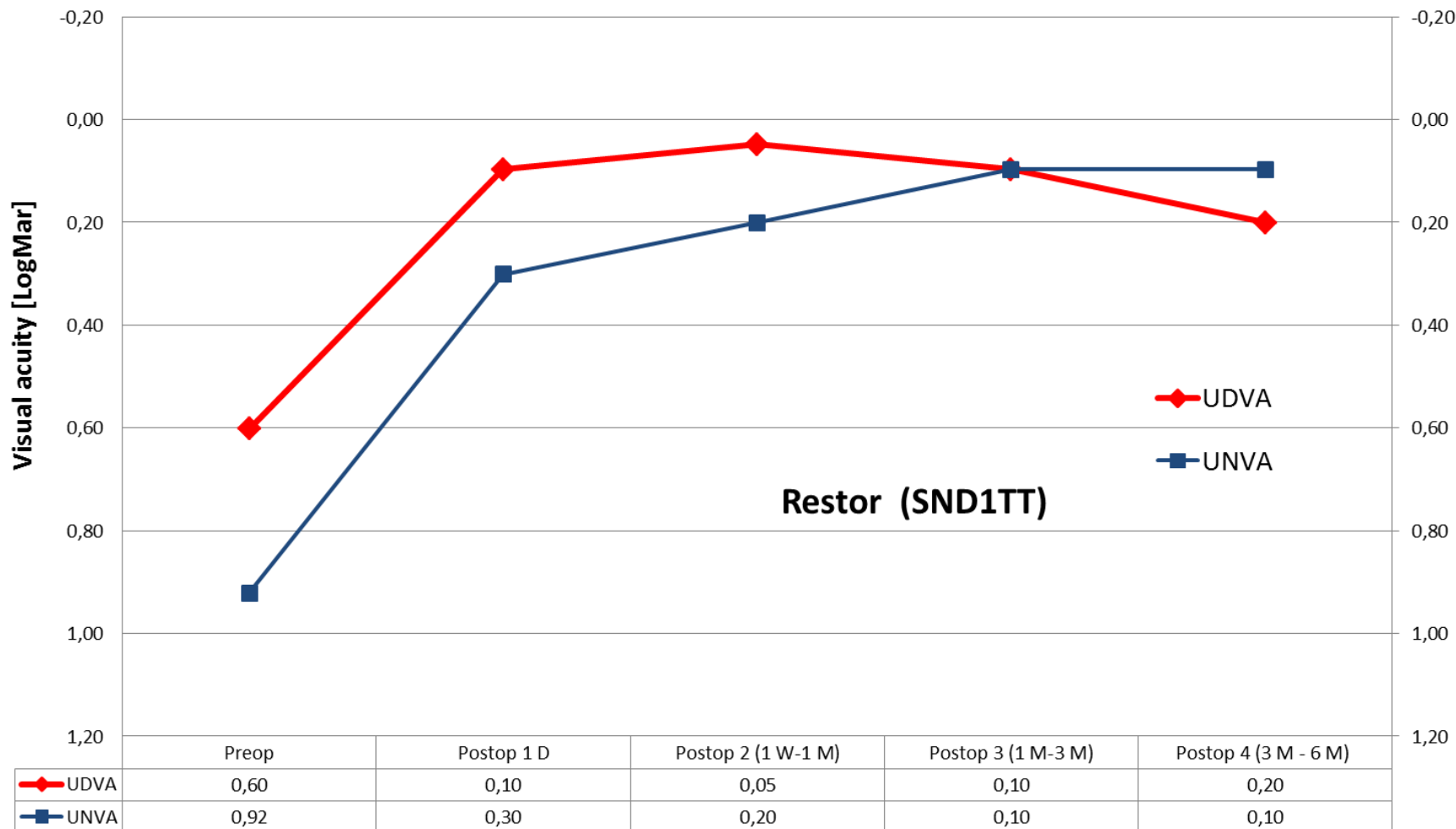
n = 26 eyes

IOL-Master	Median	Range	MV +/- StdDev
Axial Length (mm)	22.65	21.38 – 27.50	23.31 +/-1.76
Cyl (D)	-1.48	-2.37 – -0.42	-1.43 +/- 0.48
ACD (mm)	2.99	2.67 – 3.62	3.05 +/- 0.26

IOL-Power	Median	Range	MV +/- StdDev
SEQ (SN6AD1)	24.75	10.50 – 29.50	22.00 +/-6.29
Target SEQ	-0.12	-0.34 – 0.05	-0.12 +/-0.09
Cyl	1.50	1.00 – +3.00	1.64 +/-0.53
Target Cyl	0.11	0.02 – 0.24	0.11 +/-0.07



Visual acuity over time SND1TT toric MIOL





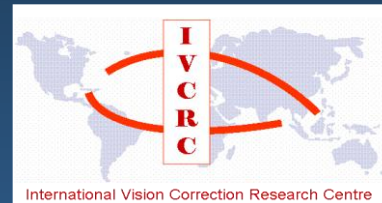
Visual acuity 3 months postop SN6AD1 toric MIOL

Refraction SND1TT	n [eyes]	Median	MV $\pm$ StdDev
Sph [D]	21	0.25 (-0.75 – 1.50)	0.35 $\pm$ 0.52
Cyl [D]	21	-0.50 (-1.50 – 0.00)	-0.40 $\pm$ 0.45
SEQ [D]	21	0.13 (-1.00 – 0.75)	0.12 $\pm$ 0.46
UDVA [logMAR]	21	0.20 (0.00 – 0.49)	0.20 $\pm$ 0.16
CDVA [logMAR]	21	0.00 (-0.10 – 0.30)	0.06 $\pm$ 0.10
UNVA [logMAR]	21	0.10 (0.00 – 0.49)	0.14 $\pm$ 0.15

Conclusion

Conclusion: The clear lens exchange procedures were uneventful in all cases and resulted in high patient satisfaction with significant improvement of uncorrected near and distance visual acuity.

Toric multifocal IOLs were helpful in reducing remaining postoperative refractions.



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