

Comparison of two multifocal IOL types – short and medium-term visual outcomes

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Aim

- To compare the refractive and visual outcomes collected during the **first six postoperative months** after the implantation of two types of different one-piece acrylic diffractive multifocal intraocular lenses (IOL).



Patients

- Prospective randomised study
- Crystalline lens extraction, 100 eyes of 50 patients
- Indication: partly age-related cataracts, partly refractive lens exchanges (RLE)

- Motivated patients, informed consent
- Exclusion criteria:
 - Any, potentially vision-restrictive eye diseases
 - Preoperative refraction: more than +/- 6.0D spherical or 1.0D torical
 - Any intraoperative complications

Patients

- Group A: 50 eyes of 25 patients
 - Medicondur Bi-Flex 677MY
 - PAD (Progressive Apodized Diffractive) technology
- Group B: 50 eyes of 25 patients
 - Alcon Acrysof Restor SN6AD1
 - Diffractive multifocal technology
- Randomised study groups



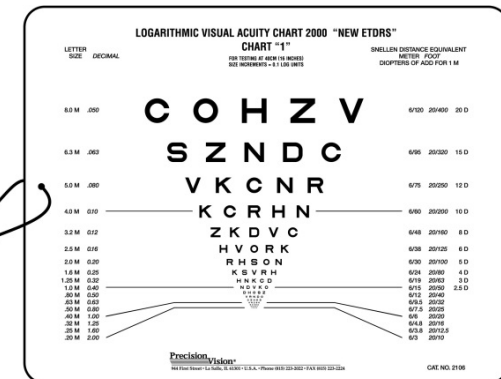
<http://www.medicondur.com>



<http://www.reviewofoptometry.com/>

Pre- and postoperative examinations

- Uncorrected and corrected ETDRS LogMAR visual acuity (VA)
 - Far (UDVA, CDVA)
 - Intermediate (UIVA, CIVA)
 - Near (UNVA, CNVA)
- Autorefractometry
 - MRK-3100P, Huvitz Co., Gunpo-si Gyeonggi-do, Rep. of Korea
- Manifested refraction



www.intechopen.com



<http://www.medwow.com>

Optical biometry

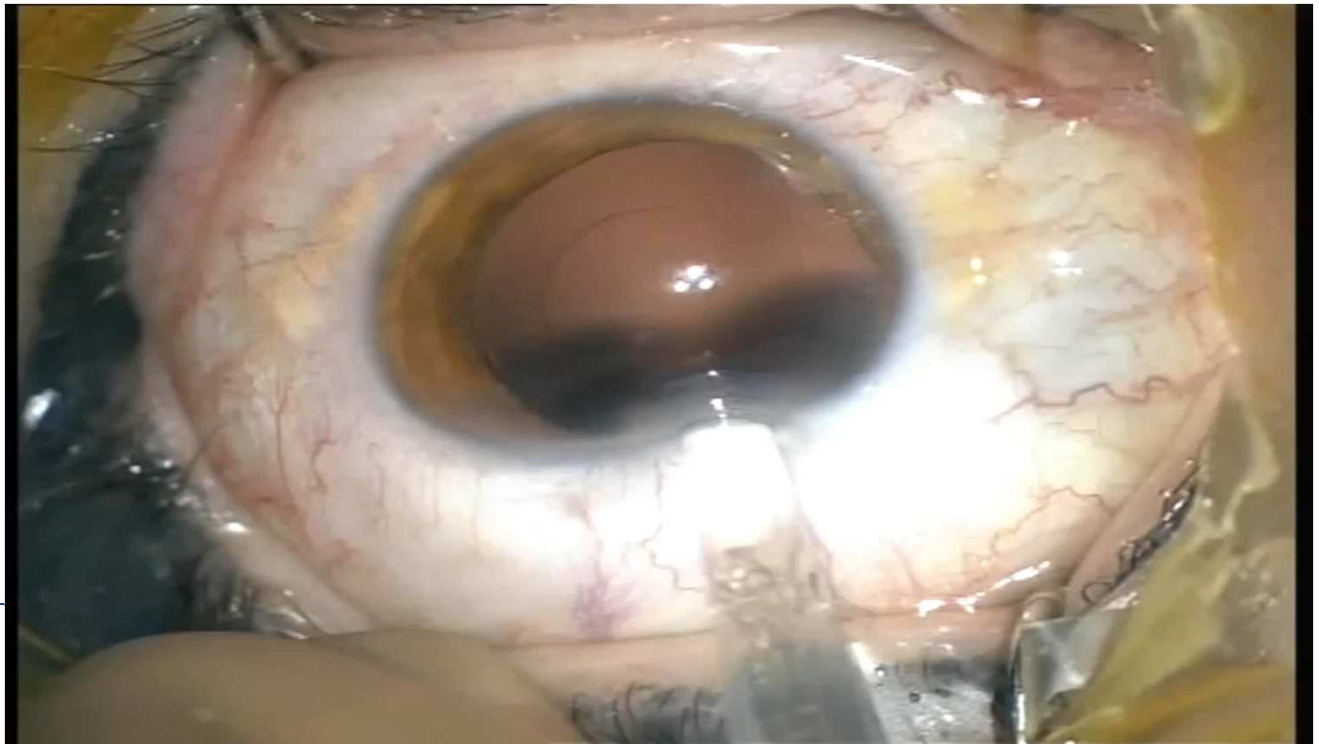
- IOL planning
 - Lenstar LS900; Haag-Streit AG, Koeniz, Switzerland
 - Multi formula
- Postoperative follow-up of the biometric parameters



<http://haag-streit-usa.com>

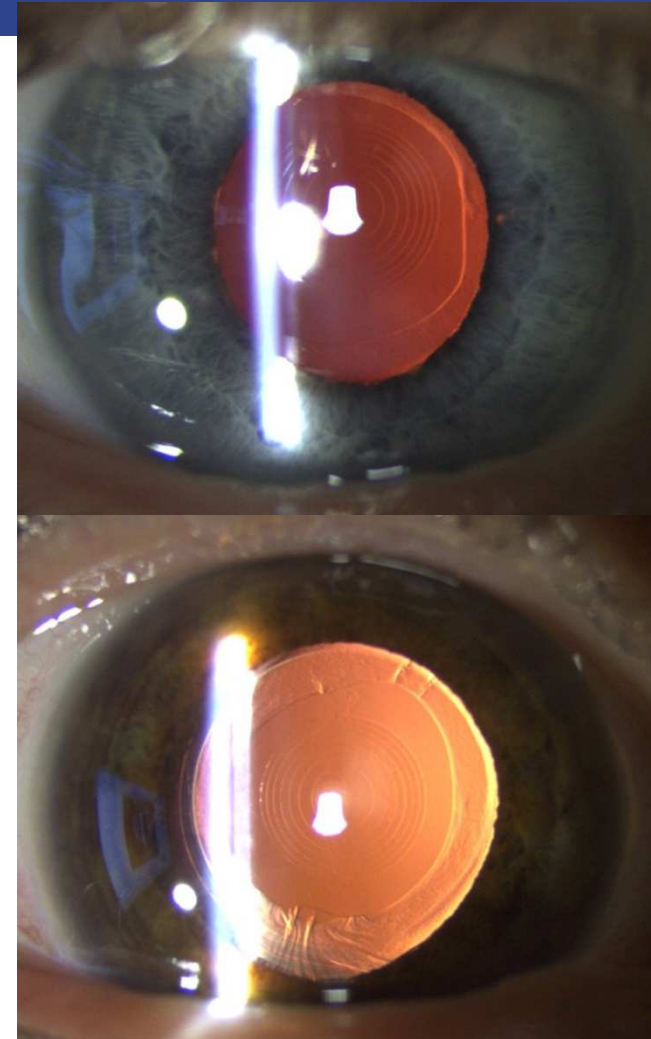
Surgical technique

- 3 experienced surgeons (ZZsN, AD, TF)
- Same instruments and surgical technique
- Superior incisions (90-100°)
- No intraoperative complications
- In-the-bag implantations



Postoperative examinations

- 1 day, 1 week, 4 weeks
- 3, 6, 12, 24 months
- Digital slitlamp photos in retroillumination, dilated pupil (IOL position)
 - BQ 900® Haag-Streit AG, Koeniz, Switzerland

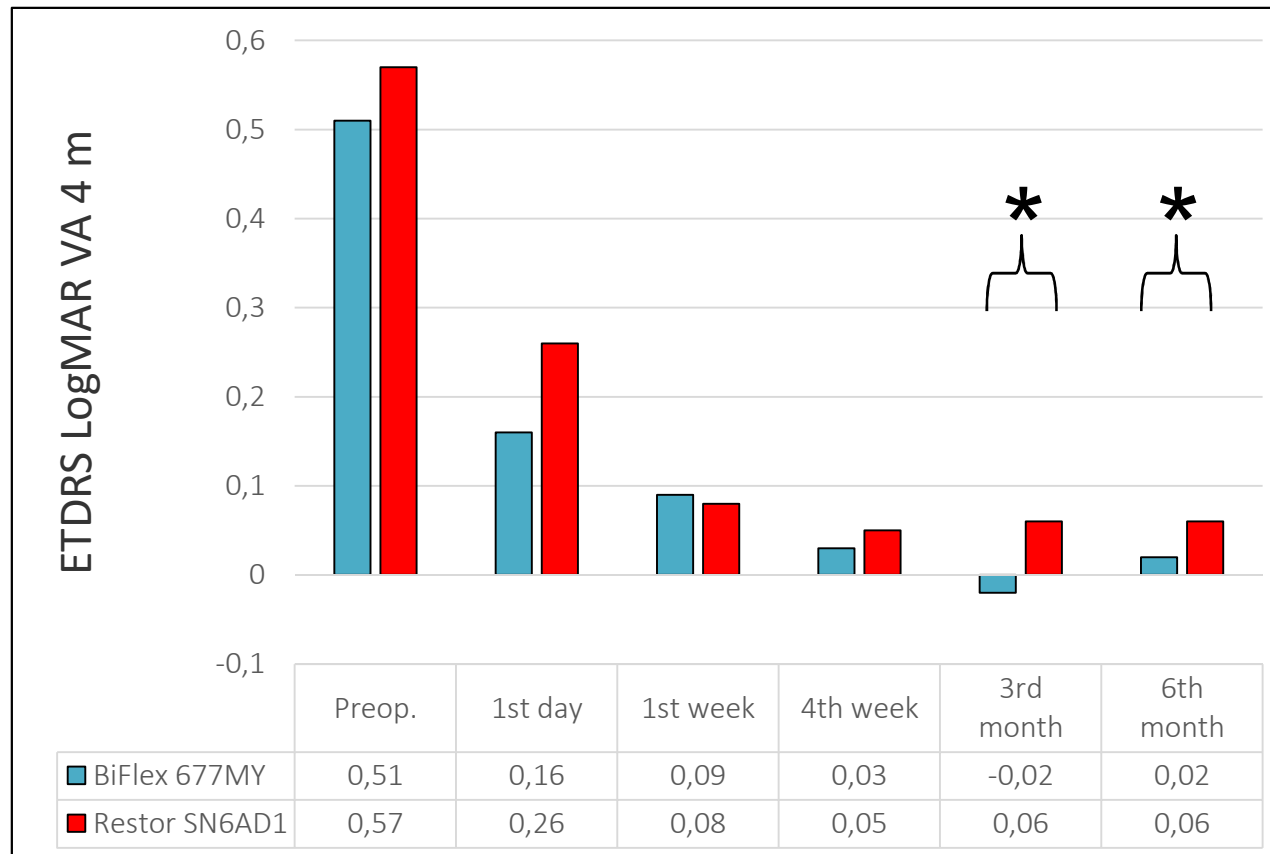


Epidemiological and biometric data

	Group A (MC 677MY)	Group B (Restor)	P*
Number of cases (patients)	50 (25)	50 (25)	
Age (years)	65.0 ± 11.6	67.5 ± 9.4	0.547
Gender (male/female)	15/10	8/17	
Preoperative far visual acuity			
Non-corrected (UDVA, LogMAR)	0.51 ± 0.36	0.57 ± 0.35	0.492
Best corrected (CDVA, LogMAR)	0.14 ± 0.10	0.15 ± 0.20	0.626
Absolute value of preop. SE (diopters)			
	2.37 ± 1.82	1.88 ± 1.32	0.526
Preop. manifested astigmatism (diopters)			
	0.34 ± 0.42	0.26 ± 0.39	0.475
Spherical power of IOLs (diopters)			
	21.19 ± 4.61	22.28 ± 2.02	0.554

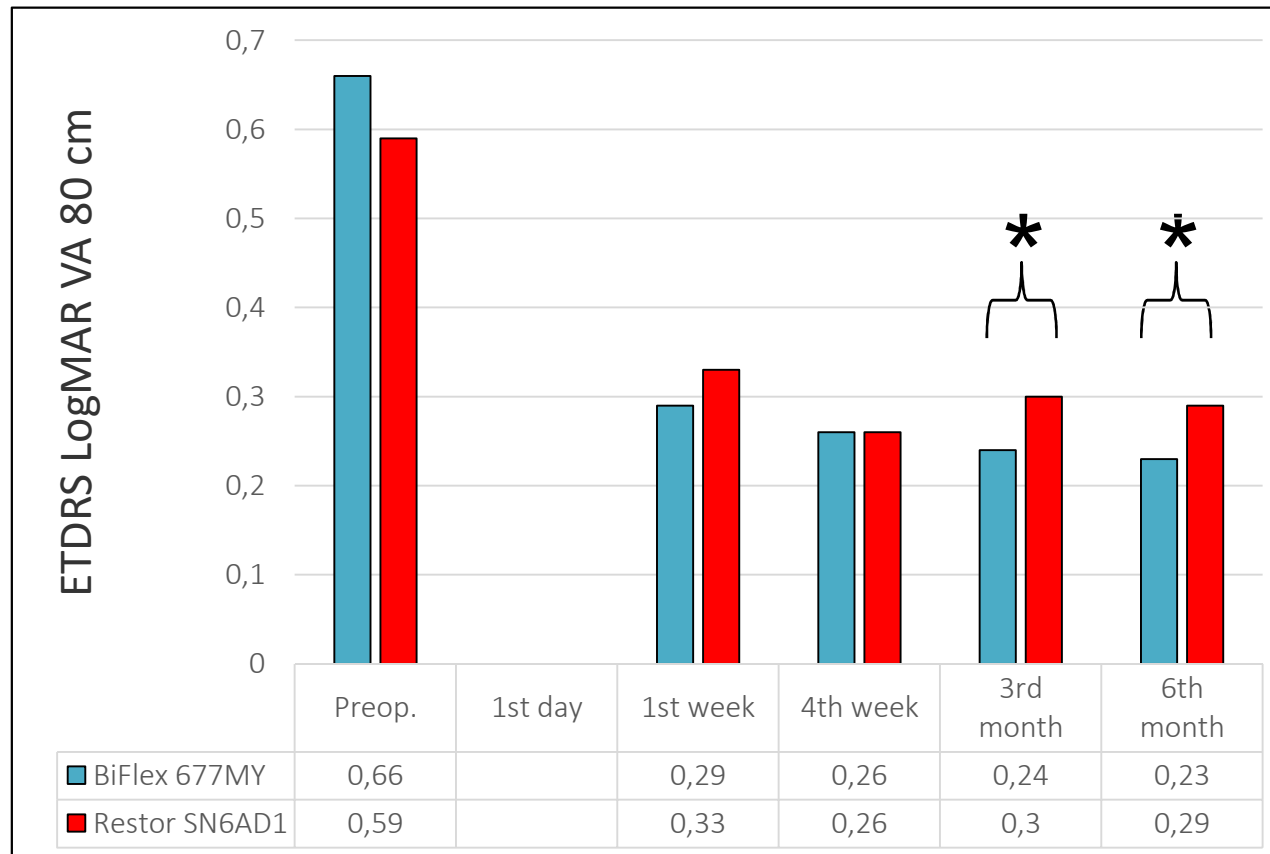
*: Mann-Whitney U test

Non-corrected, monocular far visual acuity (UDVA)



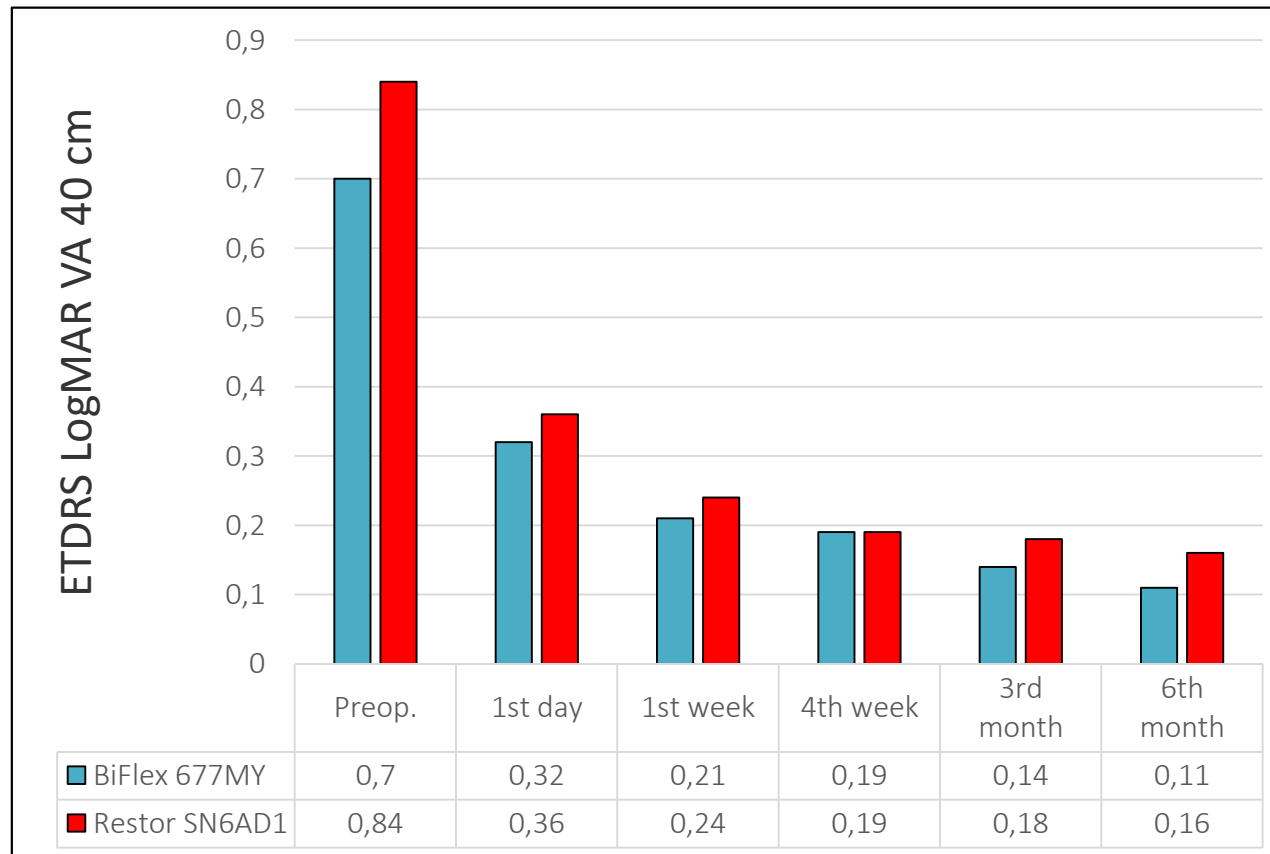
*: Mann-Whitney U test

Non-corrected, monocular intermediate visual acuity (UIVA)



*: Mann-Whitney U test

Non-corrected, monocular near visual acuity (UNVA)

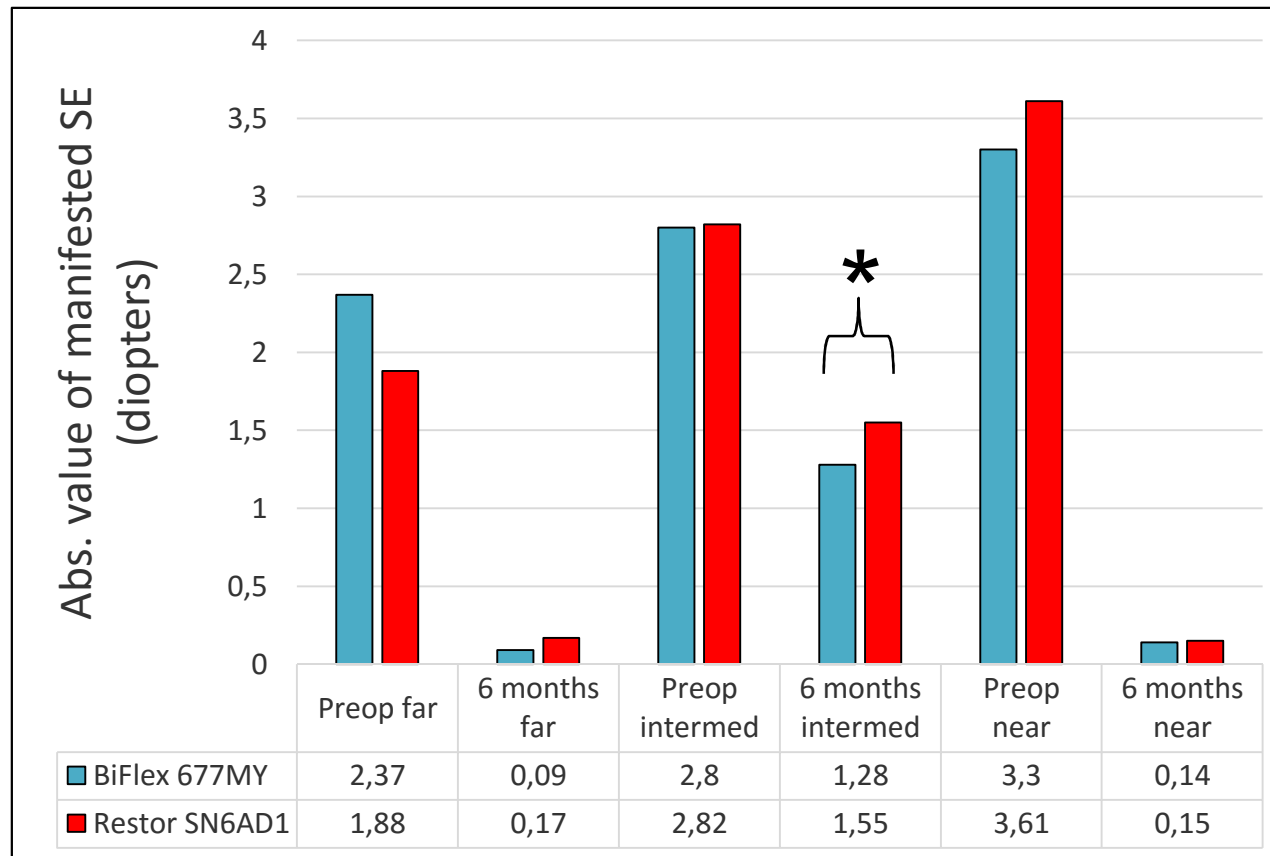


Non-corrected, binocular visual acuity (UVA, LogMAR)

	Group A (BiFlex 677MY)	Group B (Restor SA6AT1)	p*
UDVA (3 months)	-0.08 ± 0.10	0.01 ± 0.05	0.001
UDVA (6 months)	-0.03 ± 0.04	-0.01 ± 0.04	0.217
UIVA (3 months)	0.10 ± 0.11	0.18 ± 0.07	0.026
UIVA (6 months)	0.12 ± 0.12	0.22 ± 0.08	0.011
UNVA (3 months)	0.07 ± 0.06	0.10 ± 0.07	0.305
UNVA (6 months)	0.02 ± 0.12	0.08 ± 0.09	0.217

*: Mann-Whitney U test

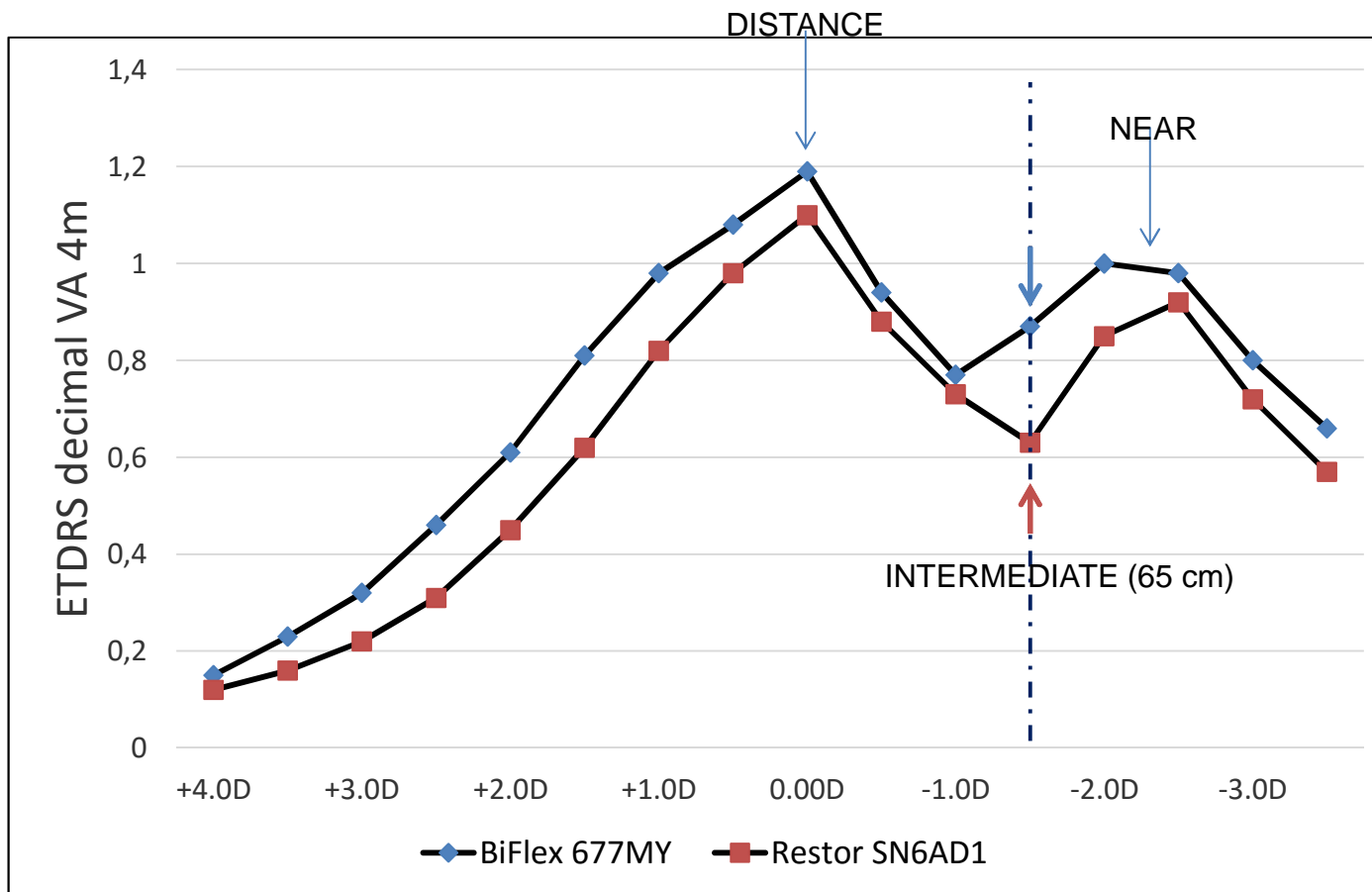
Absolute value of the manifested spherical equivalent (preop vs 6 months)



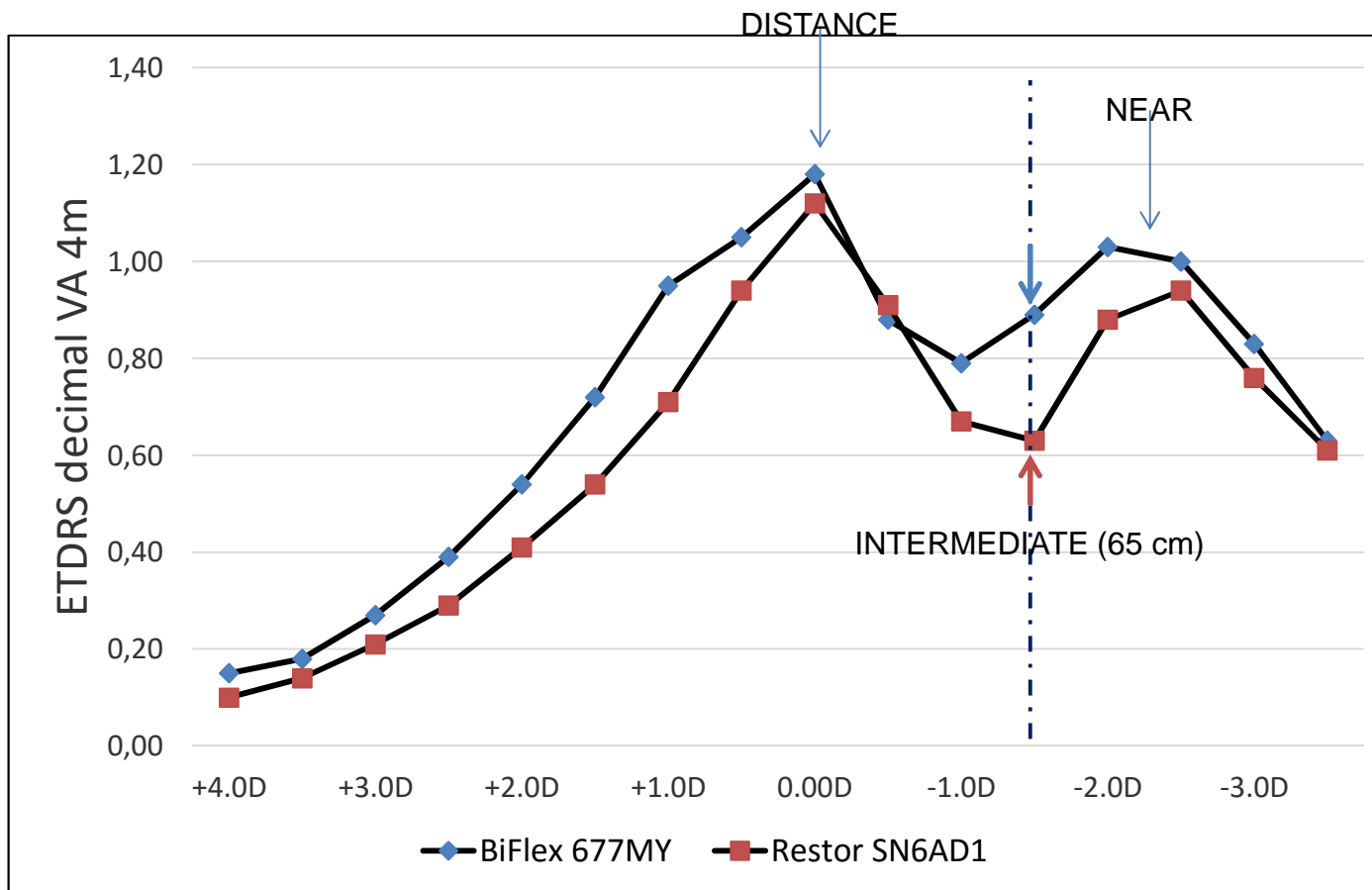
Wilcoxon test: significant change in every distances;

*: Mann-Whitney U test; $p = 0.008$

Defocus curve (bilateral, 3 months)



Defocus curve (bilateral, 6 months)



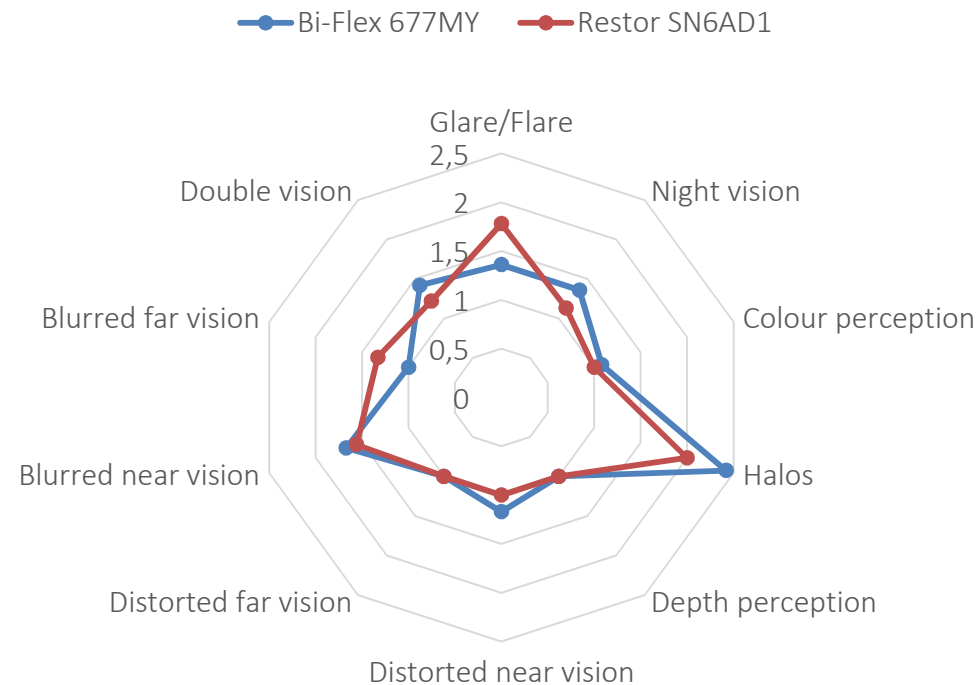
Area under the defocus curve (bilateral, 6 months)

	Group A (BiFlex 677MY)	Group B (Restor SA6AT1)	Difference (%)	P*
AutC (+4.0D; -3.5D) (whole area)	5.51 ± 0.52 D	4.75 ± 0.54 D	16.0%	0.002
AutC (+1.0D; -1.0D) (far vision)	1.99 ± 0.19 D	1.83 ± 0.16 D	8.7%	0.025
AutC (-1.0D; -2.0D) (intermediate vision)	0.90 ± 0.20 D	0.70 ± 0.08 D	28.6%	<0.001
AutC (-2.0D; -3.0D) (near vision)	0.96 ± 0.11 D	0.88 ± 0.11 D	9.1%	0.943

*: Mann-Whitney U test

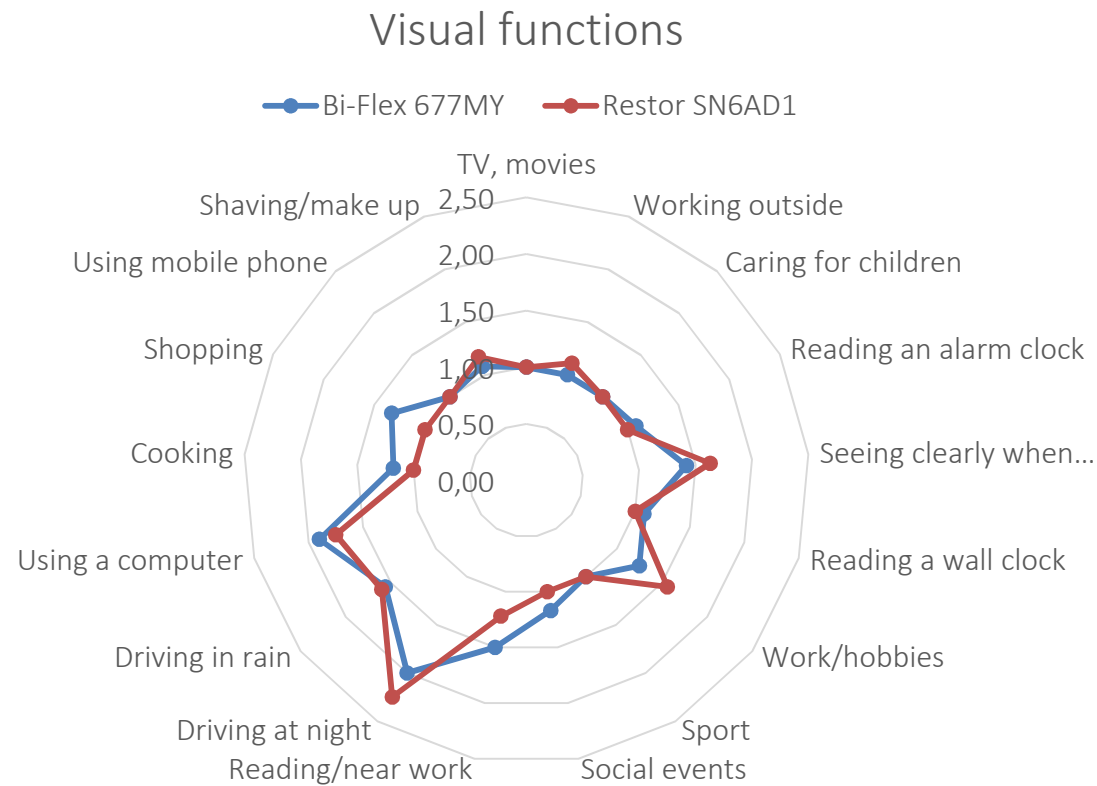
Visual Functioning Questionnaires (VFQ)

Visual complaints



Mann-Whitney U test: no significant difference between the two groups

Visual Functioning Questionnaires (VFQ)



Mann-Whitney U test: no significant difference between the two groups

Conclusion

- Multifocal IOL implantation is a well-calculable and efficient method for the cataract surgery of patients who wish to achieve spectacle independence.
- Similarly good near VA was found during the follow-up of both IOL types.
- In Group A, superior uncorrected far and intermediate vision and better depth of focus was found three and six months after the surgery, compared to the patients in Group B.

Conclusion

- For this reason, the Medicontur 677MY may be recommended for the patients for whom it is important to achieve:
 - Fast visual rehabilitation after the surgery
 - Excellent far and near visual acuity
 - Good intermediate vision for different work distances

**Thanks for your kind
attention!**