

Changes of angle kappa after multifocal intraocular lens implantation

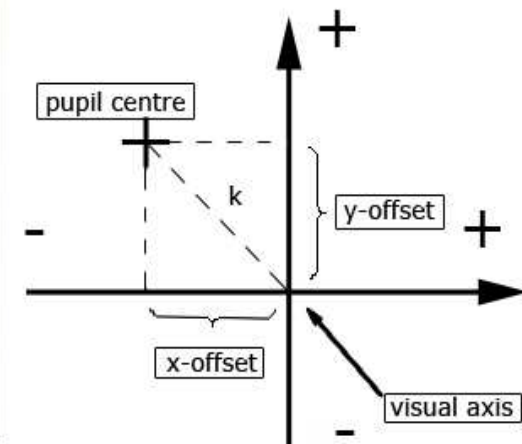
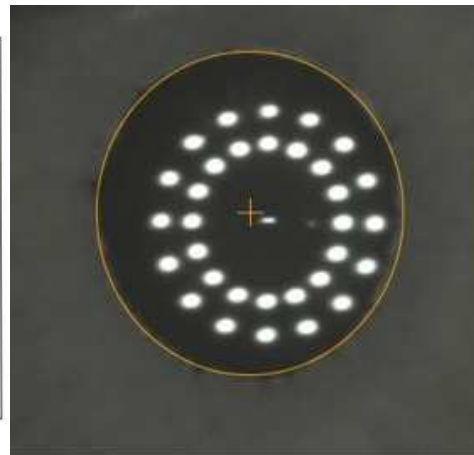
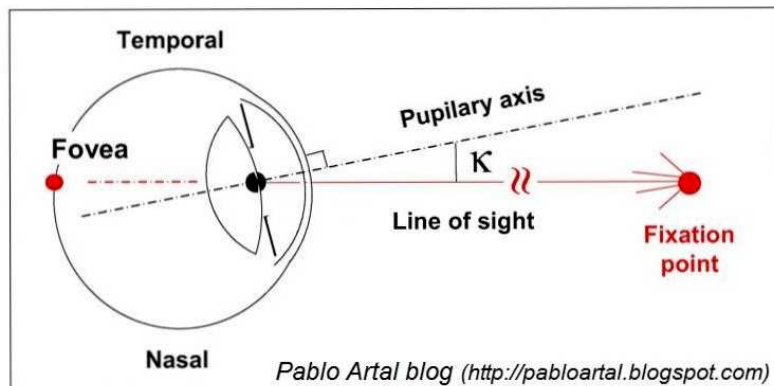
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Angle kappa

- Deviation between the visual and pupillary axis
- Multifocal IOLs: larger values of angle kappa correlate with patient complaints of glare and haloes - *contradictory results*



Purpose

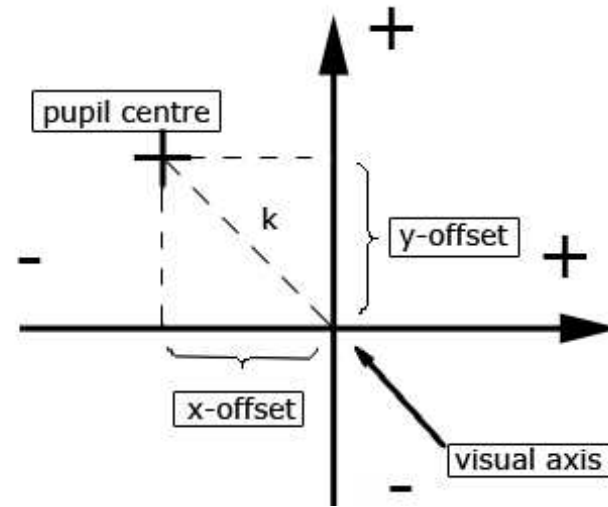
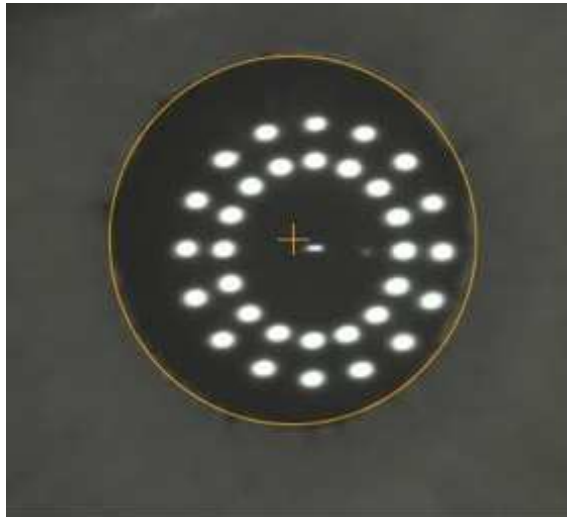
To evaluate changes of angle kappa after multifocal intraocular lens (IOL) implantation.

Patients and methods

Refractive cataract surgery with multifocal IOL implantation

- Medicontur Bi-Flex 677MY IOL: 24 eyes of 12 patients
- Alcon Acrysof Restor SN6AD1 IOL: 36 eyes of 18 patients
- Preoperative examination
 - optical biometry (Lenstar LS 900):
 - angle kappa (d, x- and y-offset)
- Follow up: 3 months:
 - biometry measurements were repeated
 - postoperative IOL position was determined using Scheimpflug imaging (Galilei G4).





Preoperative results

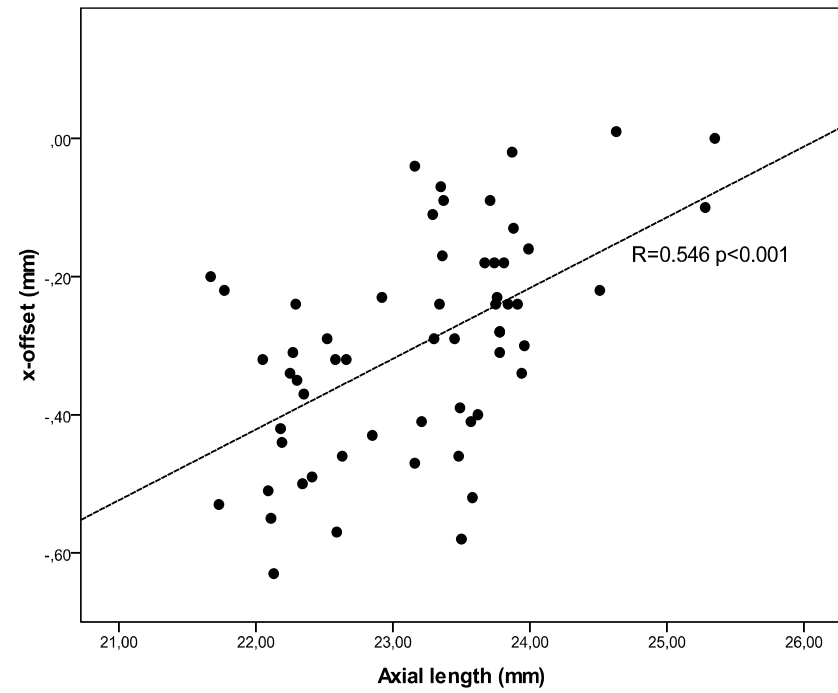
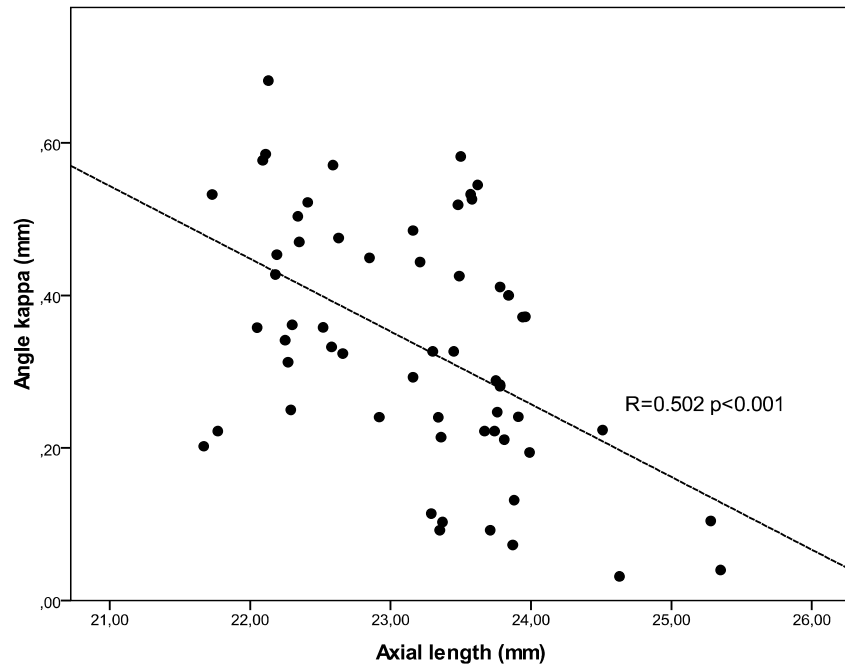
Significant correlation was found

- between axial length and angle kappa

($R=-0.50$; $p<0.001$)

- between axial length and x-offset

($R=0.55$; $p<0.001$)



Preoperative results

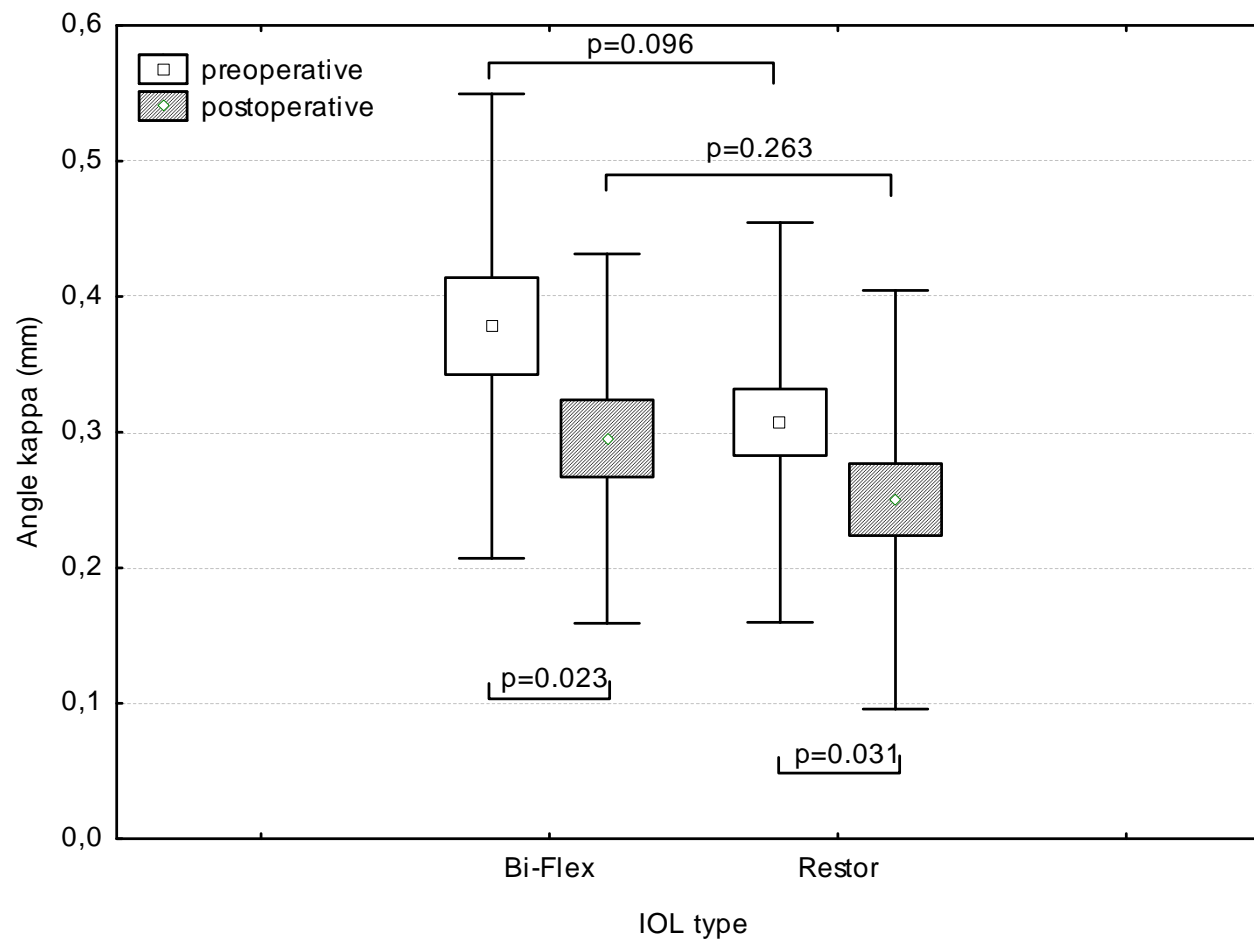
- There was no significant correlation between axial length and y-offset ($p=0.279$).
- Keratometry, lens thickness and anterior chamber depth parameters showed no correlation to angle kappa or to x-offset ($p>0.05$).

Postoperative results

- Values of angle kappa (from 0.34 ± 0.16 to 0.27 ± 0.15 $p=0.0016$) and x-offset (from -0.31 ± 0.16 to -0.19 ± 0.15 $p<0.001$) decreased significantly after surgery
- Y-offset showed no significant changes ($p=0.097$)

Postoperative results

- After adjusting for axial length and preoperative angle kappa values, the type of the implanted IOL was not a significant predictor of postoperative angle kappa values ($p=0.848$) in a multivariable regression model.



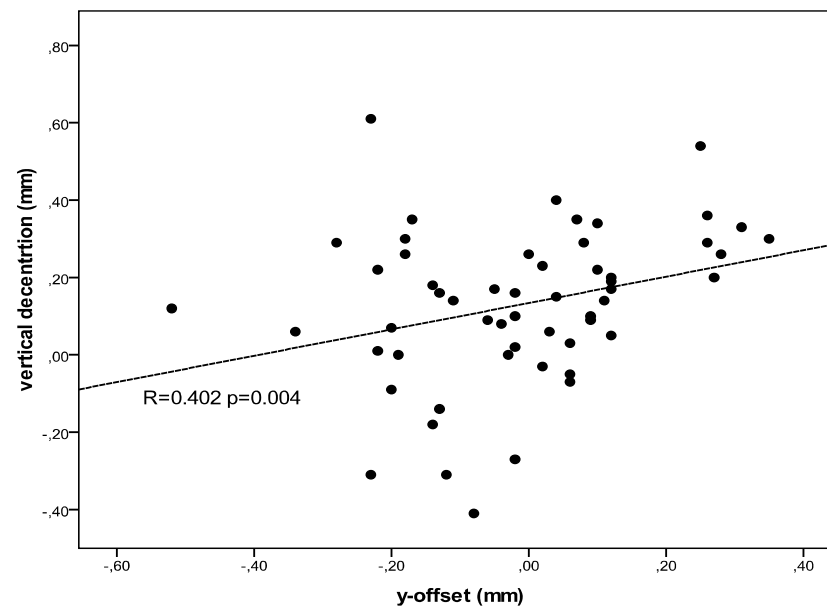
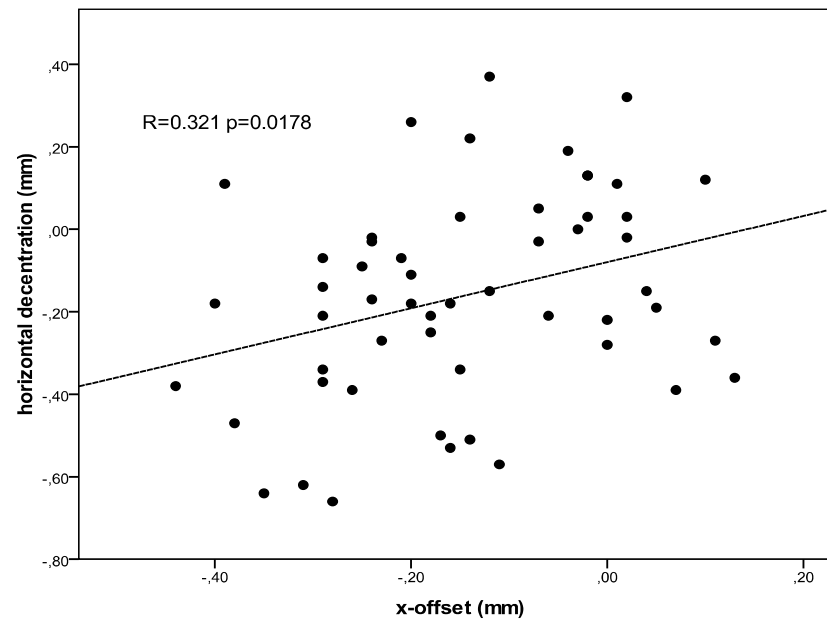
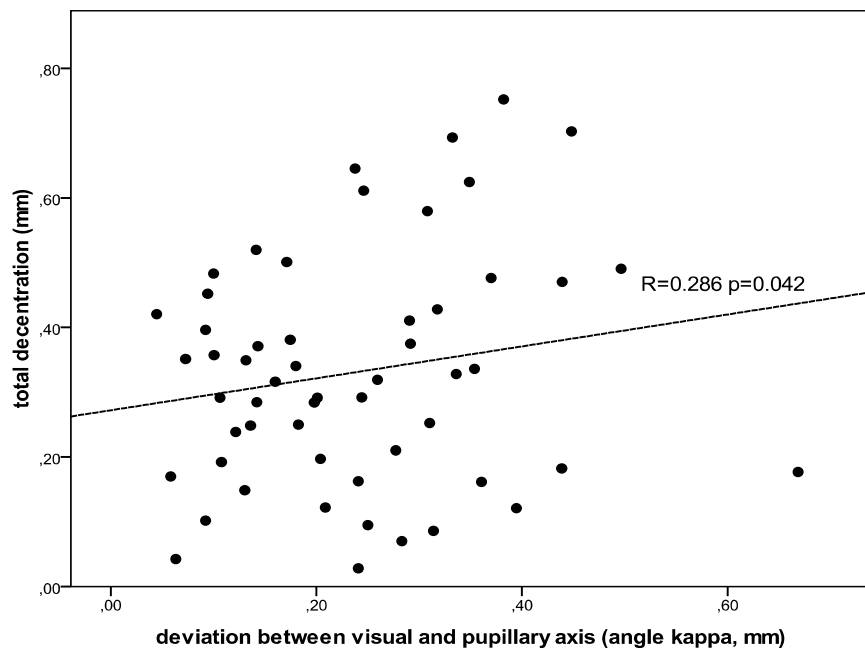
Postoperative results

- IOL decentration showed no significant difference between the two study groups (BiFlex: 0.35 ± 0.23 vs. Restor: 0.33 ± 0.15 $p=0.641$).

	Bi-Flex		Restor		p
	Mean	SD	Mean	SD	
Horizontal decentration (mm)	-0.19	0.30	-0.16	0.21	0.623
Vertical decentration (mm)	-0.09	0.19	-0.13	0.22	0.511
Total decentration (mm)	0.35	0.23	0.33	0.15	0.641

Postoperative results

- IOL decentration and angle kappa showed significant correlation ($R=0.29$ $p=0.042$) postoperatively.
- Significant correlation was found between horizontal decentration and x-offset values and vertical decentration and y-offset values ($R=0.32$ $p=0.0178$ and $R=0.40$ $p=0.0042$, respectively).



Conclusions

- Values of angle kappa decrease significantly after cataract surgery.
- In case of larger preoperative angle kappa values in eyes with short axial length this change can even reach 0.4 mm.
- Type of implanted multifocal IOLs has no influence on postoperative angle kappa values.
- The significant displacement of visual axis after multifocal IOL implantation is related to the position of the IOL centre.
- ? Reconsider strict patient inclusion criteria of multifocal IOL implantation to increase the number of patients who can be involved ?

THANK YOU FOR YOUR
ATTENTION!