Early paradoxical increase in astigmatism after corneal allogeneic intrastromal ring segment implantation: Incidence, predictors, and clinical implications

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Supplementary Tables

Table S1 Univariate linear regression analysis of factors associated with the absolute refractive cylinder at the final postoperative visit (1–36 months) following CAIRS implantation

Explanatory variable	Category Unit	Absolute cylinder at final visit (D), mean (SD), N	Coefficient		P value
			Estimate	95% CI	
Age	per 1 SD increase	2.669 (2.126), 109	0.071	(-0.336, 0.478)	0.731
Diagnosis	[1] KC	2.788 (2.161), 76	Reference	-	0.376
	[2] KC+CXL	2.394 (2.046), 33	-0.394	(-1.274, 0.485)	
Implant thickness (OCT) at BL (µm)	1SD increase	3.094 (2.265), 64	0.212	(-0.361, 0.784)	0.463
Sphere at BL (D)	1SD increase	2.669 (2.126), 109	-0.350	(-0.751, 0.052)	0.087
Cylinder absolute value at BL (D)	1SD increase	2.669 (2.126), 109	0.828	(0.452, 1.203)	< 0.001
CDVA at BL (logMAR)	1SD increase	2.669 (2.126), 109	0.351	(-0.051, 0.753)	0.086
Kmean at BL (D)	1SD increase	2.669 (2.126), 109	0.453	(0.055, 0.851)	0.026

Regression coefficients, 95% confidence intervals (CI), and corresponding p-values are shown for demographic, clinical, and corneal parameters. Continuous variables were standardized and analysed per 1 standard deviation (SD) increase. BL=baseline; CDVA=corrected distance visual acuity; OCT=optical coherence tomography; KC=keratoconus; CXL=corneal cross-linking. Standard deviations (SD): Age=8.4 years, BL=baseline, Implant thickness (OCT) at BL=42.8 µm, Sphere at BL =4.281 D, Absolute cylinder at BL=2.564 D, CDVA at BL=0.421 logMAR, K mean at BL=4.44 D.

Table S2 Univariate logistic regression analysis of factors associated with an increase in the absolute refractive cylinder at 1 month after CAIRS implantation

Explanatory variable	**Category Unit**	**Change in absolute cylinder at 1 month**		**Odds ratio**		**P value**
		N	**Change>0 n (%)**	**Odds ratio**	**95% C.I.**	
Age	1 SD increase	108	35 (32.4%)	1.336	(0.893, 2.022)	0.161
Diagnosis	[1] KC	75	21 (28.0%)	Reference	-	0.145
	[2] KC+CXL	33	14 (42.4%)	1.895	(0.801, 4.468)	
Baseline implant thickness (OCT) (µm)	1 SD increase	64	18 (28.1%)	1.899	(1.053, 3.698)	0.043
Sphere at BL (D)	1 SD increase	108	35 (32.4%)	0.807	(0.536, 1.208)	0.295
Cylinder absolute value at BL (D)	1 SD increase	108	35 (32.4%)	0.484	(0.284, 0.771)	0.004
CDVA at BL (logMAR)	1 SD increase	108	35 (32.4%)	1.056	(0.695, 1.566)	0.790
K mean at BL (D)	1 SD increase	108	35 (32.4%)	0.883	(0.576, 1.325)	0.554

Odds ratios (OR), 95% confidence intervals (CI), and corresponding p-values are presented. An increase in absolute cylinder was defined as a postoperative absolute cylinder value greater than the baseline value. Continuous variables were standardized and analysed per 1 standard deviation (SD) increase. BL=baseline; CDVA=corrected distance visual acuity; OCT=optical coherence tomography; KC=keratoconus; CXL=corneal cross-linking. Standard deviations (SD): Age=8.4 years, BL=baseline, Baseline implant thickness (OCT)=42.8 µm, Sphere at baseline=4.26 D, absolute cylinder at BL=2.57 D, CDVA at BL=0.42 logMAR, K mean at BL=4.44 D.