



Matthew Swanic, MD,
Las Vegas Eye Institute,
Las Vegas, NV

Cassini Case Example: Avoiding a refractive surprise by measuring Total Corneal Astigmatism with Cassini TCA

This case-example demonstrates why measuring the Total Corneal Astigmatism pre-operatively with Cassini TCA can make a clinical difference for patient outcomes compared to relying on population averages

Case description:

A 68 year old woman with bilateral cataract presented for consultation. After a careful ocular examination and assessment of patient needs, a Symphony IOL (Abbott Medical Optics, Inc.; IOL spherical power 24.0D) implantation was planned for both eyes with extended depth of focus.

To decide whether a toric or non-toric IOL would be needed, astigmatism measurements were performed on both eyes using three instruments: Cassini TCA, Lenstar and OPD Scan II.

Corneal astigmatism with different equipment		OD (right eye)						OS (left eye)					
		Preop astigmatism			Postop MRx			Preop astigmatism			Postop MRx		
		Mag	Axis	Orientation	Sph	Cyl	Axis	Mag	Axis	Orientation	Sph	Cyl	Axis
Cassini	Keratometric Sim K	0.85	8	ATR				0.82	159	ATR			
	PCA	-0.35	103	WTR				-0.5	86	WTR			
	TCA	1.29	9	ATR	-0.25	-	-	1.35	165	ATR	0.5	-0.75	90
Lenstar	Astigmatism	0.97	10	ATR				0.56	158	ATR			
Nidek	Astigmatism	0.44	12	ATR				0.63	163	ATR			

PCA = Posterior corneal astigmatism, TCA = Total Corneal Astigmatism, ATR = Against the Rule, WTR = With the rule, Mag = Magnitude, Sph = Sphere, Cyl = Cylinder, Magnitude (Unit) = Diopters, Axis (Unit) = Degrees

Table 1: Preoperative corneal astigmatism (OD/OS) with Cassini, Lenstar and Nidek; and postoperative refraction (OD/OS)

For the right eye, a Symphony toric IOL (ZXT 150) implantation was planned based on Cassini TCA and Lenstar information. For the left eye, Cassini TCA suggested a toric IOL in order to correct 1.35D astigmatism at the corneal plane. However, as both Lenstar and OPD Scan II suggested that the astigmatism was not high enough (0.56D and 0.63D respectively) to warrant a toric IOL, a non-toric IOL was selected.

Postop refraction for the right eye was -0.25 sphere. Postop refraction for the left eye was +0.50 -0.75 x 90, revealing that a toric IOL should have been selected in the left eye as well, as suggested by Cassini TCA. Had the toric component of the IOL for the left eye been selected based on Cassini TCA, the patient would have been left with virtually no residual refractive cylinder.

This case highlights the importance of measuring the Total Corneal Astigmatism individually for each eye in order to correctly identify the required toric power for patients undergoing cataract surgery.