Make a difference

The Precizon Toric IOL differentiates from other toric IOLs because of the unique Transitional Conic Toric Surface of the lens. This unique surface, developed by OPHTEC, allows more tolerance when the lens is slightly misaligned. Rotation of Toric IOLs has been well documented. It has been shown that for every degree of rotation off intended axis, 3% of effect is loss. That is why the Precizon toric with its new surface makes a difference for the patient and the surgeon.

More information on the Precizon IOL:

Studies:

1. Visual and optical outcomes of a new monofocal toric intraocular lens.
By: Tiago B. Ferreira, MD; ESCRS 2015

2. Evaluation of optical performance of 4 aspheric toric intraocular lenses using an optical bench system: Influence of pupil size, decentration, and rotation.
By: Kim MJ, Yoo YS, Joo CK, Yoon G; Cataract Refract Surg. 2015 Oct;41(10):2274-82. doi: 10.1016/j.jcrs.2015.10.059

3. Evaluation of a new toric IOL optic by means of intraoperative wavefront aberrometry (ORA system): the effect of IOL misalignment on cylinder reduction.
By: Erik Mertens; ESCRS 2014

4. Astigmatism management in cataract surgery with Precizon toric intraocular lens: a prospective study.
By: Vale C, Menezes C, Firmino-Machado J, Rodrigues P, Lume M, Tenedório P, Menéres P, Brochado MC; Clinical Ophthalmology 19, January 2016

// Precizon Toric online presentations:

Prof. George Beiko, Canada
Initial experience with toric lens tolerant of misalignment.

Dr Tiago Ferreira, Portugal
How to improve results with the Precizon Toric by evaluating astigmatism with a new color-LED topographer.

Dr Eunice Guerra, Portugal
Visual Performance and Stability of a Monofocal Toric IOL - Precizon by Ophtec.

Prof. Dr Mike Holzer, Germany
Diagnostic and surgical specifications for toric IOL implantation and experiences with the Precizon toric IOL.

Prof. Tae-Im Kim, Korea
Korean experience of Precizon Toric IOL.

Dr Mercè Morral, Spain
Astigmatism Management in Cataract Surgery with a New Aspheric Toric Intraocular Lens.

Dr João Paulo Cunha, Portugal
Evaluation of a Precizon Toric Intraocular lens. Stability and Aberrometry.

Dr Emilio Segovia, Spain
12 months experience with the Precizon Toric intraocular lens.

Dr Carolina Vale, Portugal
Astigmatism management in cataract surgery with Precizon Toric IOL: Prospective study.

See: **www.youtube.com/ophtecbv**
playlist: Precizon Toric

OPHTEC BV
P.O. Box 398
9700 AJ Groningen
Schweitzerlaan 15
9728 NR Groningen
The Netherlands

T: +31 50 525 1944
F: +31 50 525 4386
E: info@ophtec.com

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PRECIZON™
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1 line better than competitive toric IOLs

Precizon Toric results published 2014/2015/2016.

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OPHTEC BV P.O. Box 398 | 9700 AJ Groningen | Schweitzerlaan 15 | 9728 NR Groningen | The Netherlands | T: +31 50 5251944 | F: +31 50 5254386
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// Studies

1. Visual and optical outcomes of a new monofocal toric intraocular lens

by: Tiago B. Ferreira, MD; "ESCRS 2015

Purpose:
To evaluate the visual and wavefront outcomes of patients who underwent cataract surgery with the implantation of a new transitional toric monofocal intraocular lens (IOL) - Precizon Toric IOL (model 565, Ophtec BV).

Methods:
This prospective case series included 50 eyes with cataract and regular corneal astigmatism between 1.00 and 4.00 diopters (D) submitted to phacoemulsification with implantation of a Precizon Toric IOL. Over a 4-month follow-up period, the main outcome measures were uncorrected and corrected distance visual acuities (UDVA and CDVA, respectively), spherical equivalent (SE) refraction, residual astigmatism, rotational stability of the IOL (OPD-Scan III, Nidek) and higher order aberrations (HOA) (OPD-Scan).

Results:
Mean UDVA was 0.05 ± 0.09 (0.3 to -0.15) LogMAR (P<.001) and mean CDVA was -0.02 ± 0.08 (0.05 to -0.15) (P<.001). UDVA was 0.3 logMAR or better in 49 (98%) eyes and 0.1 LogMAR or better in 43 (86%) eyes. Mean SE refraction was -0.18 ± 0.39 D (-1.12 to +0.50), with 47 (94%) eyes within ±0.50 D of the attempted spherical correction. Mean refractive cylinder was -0.34 ± 0.46 D (-1.00 to 0). Mean toric IOL axis rotation was 1.59 ± 2.15° (0 to 7°).
Ocular aberrometry improved after surgery (for HOA RMS p=.002).

Conclusions:
The implantation of the Precizon toric IOL in patients with cataract and corneal astigmatism provided excellent visual outcomes, predictability of refractive results, rotational stability and good optical performance.

2. Evaluation of optical performance of 4 aspheric toric intraocular lenses using an optical bench system: Influence of pupil size, decentration, and rotation.

By: Kim MJ, Yoo YS, Joo CK, Yoon G. Cataract Refract Surg. 2015 Oct;41(10):2274-82. doi: 10.1016/j.jcrs.2015.10.059

Purpose:
To evaluate the effect of pupil size, degree of intraocular lens (IOL) decentration, and rotation of 4 aspheric toric IOLs on the image quality.

Methods:
Four aspheric toric intraocular lenses (IOLs)-the Precizon (transitional conic toric IOL), AT Torbi 709M (bitoric IOL), SN6AT4 (posterior toric surface IOL), and ZCT225 (anterior toric surface IOL)-were evaluated using the optical bench metrology system. Measurements included changes in spherical aberrations, relative spherical equivalent (SE), and image quality at different pupil diameters and image quality degradation due to decentration and rotation of the IOLs.

Results:
Change in relative SE with pupil size in aberration-free toric IOLs (transitional conic toric and bitoric IOLs) was greater than in negatively aspheric toric IOLs (posterior toric surface and anterior toric surface IOLs). In contrast, the aberration-free IOLs showed higher contrast than the negatively aspheric IOLs. When IOLs were decentered by 1.0 mm, the contrast reduction rates at 17.6 cycles per degree for the transitional conic toric IOL, bitoric IOL, posterior toric surface IOL, and anterior toric surface IOL were 5.1%, 3.1%, 12.2%, and 15.8%, respectively.
Rotation-induced deterioration of contrast to 0.5 required a much higher rotation for the transitional conic toric IOL than for the other 3 IOLs.

Conclusions:
The transitional conic toric IOL and bitoric IOL provided superior image quality despite pupil size changes and the presence of decentration. The transitional conic toric IOL demonstrated maximum rotation tolerance compared with the other IOLs.

3. Evaluation of a new toric IOL optic by means of intraoperative wavefront aberrometry (ORA system): the effect of IOL misalignment on cylinder reduction.

By: Erik Mertens ESCRS 2014,

Purpose:
To intraoperatively compare the effect of misalignment of the Precizon™ and Lentis toric (Oculentis GmbH Berlin Germany) intraocular lenses (IOLs) on refraction by means of the ORA system and to compare postoperative outcomes.

Methods:
Prospective, randomized, comparative study in which patients with cataract and pre-existing corneal astigmatism underwent routine cataract surgery with bilateral implantation of a toric IOL model. Intraoperative wavefront aberrometry (ORA system) was used to assess the effect f IOL misalignment on cylinder reduction after which the lenses were rotated to the intended axis and surgery was completed.

Analysis:
Toric IOL implantation in 10 eyes in each subgroup resulted in an average of 1,6° rotation with the Precizon IOL and an average of 2,2° with the Lentis Toric IOL.For every degree of error in a toric IOLs rotational misalignment, there is a 3.3 percent decrease in the correction of astigmatism. If a toric IOL is misaligned by 10 degrees, the astigmatism will be 33 percent under-corrected. If the toric IOL is misaligned by 30 degrees, there will be no astigmatism correction.
As indicated in previously published papers, we found the same under correction with misalignment with the Lentis Toric IOL by deliberately misaligning 10° and 5°.

Conclusion:
The new toric optic IOL Precizon™ gave similar results in terms of rotation one month postoperatively but performed significantly better in astigmatism correction and was less sensitive to misalignment in respect to the Lentis Toric IOL.

4. Astigmatism management in cataract surgery with Precizon toric intraocular lens: a prospective study

By: Vale C, Menezes C, Firmino-Machado J, Rodrigues P, Lume M, Tenedório P, Menéres P, Brochado MC Clinical Ophthalmology 19, January 2016

Purpose:
The purpose of this study was to evaluate the visual and refractive outcomes and rotational stability of the new aspheric Precizon® toric intraocular lens (IOL) for the correction of corneal astigmatism in cataract surgery.

Patients and methods:
A total of 40 eyes of 27 patients with corneal astigmatism greater than 1.0 diopter (D) underwent cataract surgery with implantation of Precizon® toric IOL. IOL power calculation was performed using optical coherence biometry (IOLMaster®). Outcomes of uncorrected (UDVA) and best-spectacle corrected distance visual acuities (BCDVA), refraction, and IOL rotation were analyzed at the 1st week, 1st, 3rd, and 6th month's evaluations.

Results:
•The median postoperative UDVA was better than preoperative best-spectacle corrected distance visual acuity (0.02 [0.06] logMAR vs 0.19 [0.20] logMAR, P<0.001).
•At 6 months, postoperative UDVA was 0.1 logMAR or better in 95% of the eyes.
•At last follow-up, the mean spherical equivalent was reduced from -3.35±3.10 D to -0.02±0.30 D (P<0.001) with 97.5% of the eyes within ±0.50 D of emmetropia.
•The mean preoperative keratometric cylinder was 2.34±0.95 D and the mean postoperative refractive cylinder was 0.24±0.27 D (P<0.001). The mean IOL rotation was 2.43°±1.55°. None of the IOLs required realignment.

Conclusion:
Precizon® toric IOL revealed very good rotational stability and performance regarding predictability, efficacy, and safety in the correction of preexisting regular corneal astigmatism associated with cataract surgery.

What these studies tell us:

// Study 1*

>> Precizon Toric IOL provides at least 1 additional line of uncorrected vision compared to leading toric IOL brands*.

Vision without glasses

LogMAR	Snellen (metric)	Snellen (Imperial)	Decimal
-0.30	6/3	20/10	2.00
-0.20	6/3.8	20/12.5	1.60
-0.10	6/4.8	20/16	1.25
Precizon Toric >	**0.00**	**6/6**	**20/20**	**1.00**
Leading Brand1 >	**0.10**	**6/7.5**	**20/25**	**0.80**
0.20	6/9.5	20/32	0.63
0.30	6/12	20/40	0.50
0.40	6/15	20/50	0.40
0.50	6/19	20/63	0.32

Type	Tecnis	Acrysof	Precizon Toric
Rotation (2-4 mo.)	3.5° ± 2.62° (range 0 to 10°)	3.25° ± 2.04° (range 0 to 8°)	1.59 ± 2.15° (range 0 to 7°)
UDVA	0.12 ± 0.06 (0 to 0.2)	0.13 ± 0.10 (0 to 0.4)	**0.05 ± 0.09 (0.3 to -0.15)**
Snellen (US)	20/25 - (20/20 to 20/32)	20/25 - (20/20 to 20/50)	**20/20 - (20/15 to 20/50)**
CDVA	0.02 ± 0.04 (0 to 0.1)	0.04 ± 0.05 (0 to 0.05)	-0.02 ± 0.08 (0.05 to -0.15)
Sphere (D)	0.11 ± 0.72 (-1.25 to +1.00)	0.06 ± 0.64 (-1.25 to +0.75)	-0.02 ± 0.40 (0.75 to + 100)
Cylinder (D)	- 0.56 ± 0.35 (-1.00 to 0)	- 0.41 ± 0.32 (-1.25 to 0)	-0.34 ± 0.46 (-1.00 to 0)
SE (D)	- 0.19 ± 0.74 (-1.38 to 0.88)	-0.14 ± 0.64 (-1.62 to +1.50)	-0.18 ± 0.39 (-1.12 to +0.50)

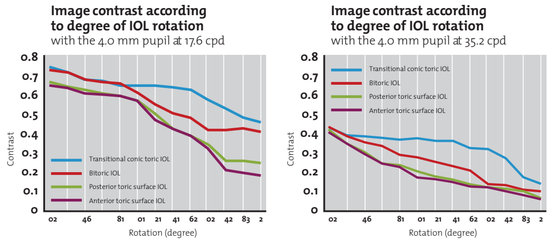
** The data from study 1 combined with other study data from the same surgeon (using same pre-op equipment, same technicians doing refraction, etc.) ('Comparison of the Visual Outcomes and OPD-Scan Results of AMO Tecnis Toric and Alcon Acrysof IQ Toric Intraocular Lenses') Tiago B. Ferreira, MD; Ana Almeida, MD.*

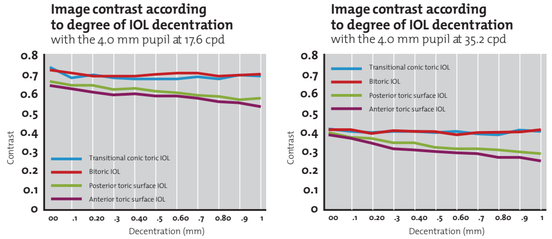
// Study 2

>> Image contrast with aberration free IOLs was better than those with negatively aspheric IOLs.

>> Aberration-free toric IOLs had better tolerability to decentration than negatively aspheric ones.

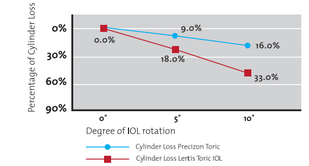
>> The aspheric transitional conic toric IOL showed better rotation tolerance than the other 3 aspheric toric IOLs; this is attributed to its optical design involving the transitional conic toric surface.

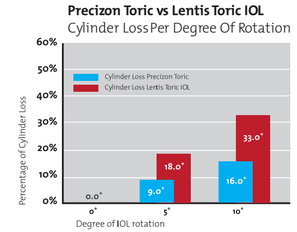


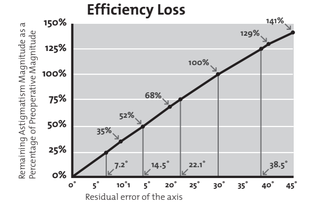


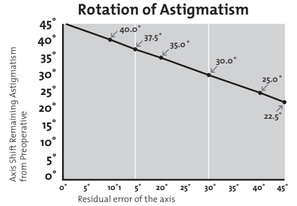
// Study 3

>> Transitional conic surface provides a greater tolerance for misalignment and improved outcomes.









// Study 4:

>> UDVA was equal or better than preoperative BDCVA in all eyes.

>> SE remained stable after one week.

>> The refractive astigmatism remained stable after one week.

Visual outcomes and refraction

UDVA	
0.1 LogMAR or better	95 %
0.0 LogMAR or better	42.5 %

UDVA was equal or better than preoperative BCDVA in all eyes.

Spherical equivalent	
Within ± 0.50 D from emmetropia	97.5 %
Within ± 0.75 D from emmetropia	100 %

SE remained stable after 1 week.

Refractive astigmatism	
≤ 0.50 D	95 %
≤ 1.00 D	100 %

The refractive astigmatism remained stable after 1 week.

Mean IOL rotation
2.43° ± 1.55°

None of the IOLs required realignment.