

THE LANDSCAPE OF PRESBYOPIA CORRECTION WITH IOLS - AN UPDATE

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KEY TAKEAWAY POINTS

- Presbyopia represents an increasing medical challenge world-wide
- Utilization rate of presbyopia correcting IOLs (PCIOLs) during cataract surgery remains low
- Current available PCIOLs include the accommodating, multifocal/trifocal, EDOF (diffractive and nondiffractive), and hybrid of EDOF/MF IOLs
- For cataract patients who desire high spectacle independence and are able to tolerate some level of visual disturbances, full range vision IOLs such as PanOptix® trifocal IOL may be considered
- For patients who are concerned about potential visual disturbances, the wavefront-shaping EDOF AcrySof IQ Vivity™ IOLs are an excellent choice, which provides extended range of vision from distance to functional near with a low incidence of visual disturbances.

INTRODUCTION

Presbyopia is an age-related condition in which the crystalline lens gradually loses the natural ability to accommodate to see near objects clearly. Presbyopia represents the same increasing medical challenge in the world due to the increase of aging population¹(Figure 1).

Surgical correction or mitigation of presbyopia during cataract surgery may be achieved with the implantation of presbyopia correcting IOLs (PCIOLs). PCIOL technology has been continuously improving in the past decade to help reduce post-operative spectacle dependence and improve patient satisfaction. However, the use of PCIOLs today is still low world-wide; only about 4.5% of cataract surgeries involved the use of PCIOLs, as reported on the 2021 Marketscope¹. This presents an opportunity to further educate surgeons and patients on the availability and benefits of PCIOLs.

Understanding the different types of PCIOLs and their different mechanisms of action is important to ensure proper patient selection and enhance postoperative patient satisfaction. This white paper provides an overview of the various PCIOL technology options with a focus on currently available technologies in the market.

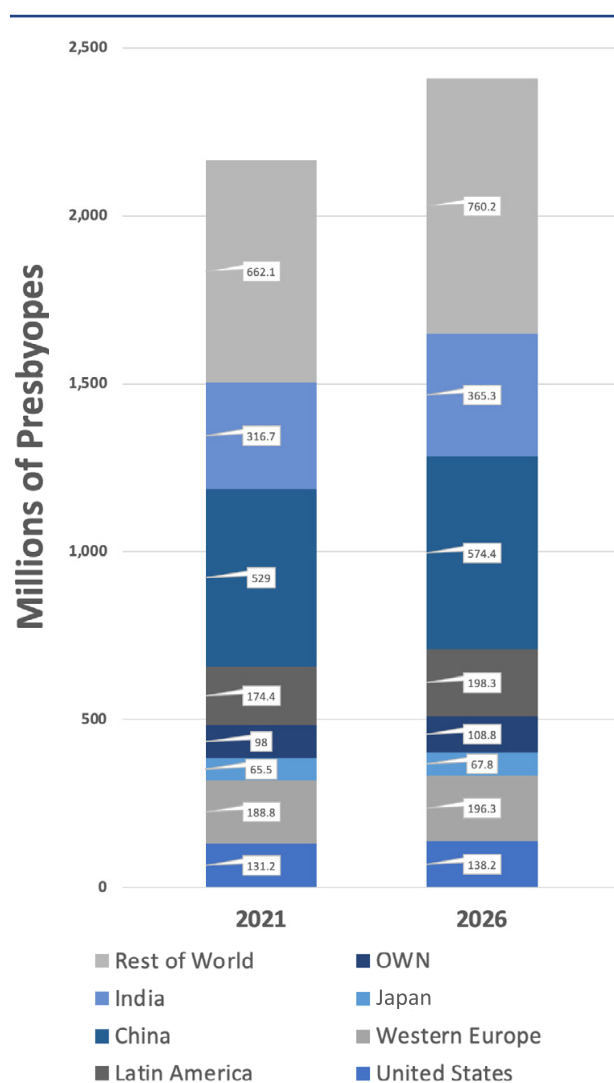


Figure 1: Global forecast for growth of the presbyopic population

PRESBYOPIA CORRECTING IOLS (PCIOLS)

Modern cataract patients have high expectations including a strong desire to reduce the need of spectacle usage, high quality of vision and minimal

visual disturbances after surgery. An array of PCIOLs have been introduced into the market that provide different ranges of vision (Table 1).

The following section is an overview of these lenses with a focus on new and commonly used lenses.

Table 1: PCIOLs in the market

	Name	Design	Material	Peak Vision Performance	Monofocal-like Visual Phenomena
Accommodating	Crystalens*	Accommodating (Positional)	Silicone	Distance to intermediate (unspecified)	NA [#]
Multifocal (Bifocal)	Lentis Comfort*	Rotationally asymmetric refractive	Hydrophilic Acrylic	Distance and near add @ +1.50D	NA [#]
	TECNIS* MF +4.0D	Diffraction (22 steps)	Hydrophobic Acrylic	Distance and near @ 33 cm	No ²
	TECNIS* MF +3.2D	Diffraction (18 steps)	Hydrophobic Acrylic	Distance and near @ 42 cm	No ³
	TECNIS* MF +2.75D	Diffraction (15 steps)	Hydrophobic Acrylic	Distance and near @ 50 cm	No ³
	ReSTOR® +4.0D	Hybrid Diffraction (12 steps) / Refractive Apodized	Hydrophobic Acrylic	Distance and near @ 33 cm	No ⁴
	ReSTOR® +3.0D	Hybrid Diffraction (9 steps) / Refractive Apodized	Hydrophobic Acrylic	Distance and near @ 40 cm	No ⁴
	ReSTOR® +2.5D	Hybrid Diffraction (7 steps) / Refractive Apodized	Hydrophobic Acrylic	Distance and near @ 53 cm	No ⁵
EDOF	TECNIS Symphony*	Diffraction (9 steps) Echelettes	Hydrophobic Acrylic	Distance to intermediate 66 cm	No ⁶
	Vivity®	Non-diffractive Wavefront Shaping (X-Wave™) Technology	Hydrophobic Acrylic	Distance to intermediate 66 cm	Yes ⁷
	ATLara*	Diffraction	Hydrophilic Acrylic	Distance to intermediate 66 cm	No ⁸
	MiniWell*	Refractive Zonal Aspherical	Hydrophilic Acrylic	Distance to intermediate 66 cm	No ⁹
	LuxSmart*	Refractive Zonal Aspherical	Hydrophobic Acrylic	Distance to intermediate 66 cm	Yes ¹⁰
EDOF / Multifocal	TECNIS Synergy*	Diffraction (15 steps) Hybrid Design EDOF / MF +4.0D	Hydrophobic Acrylic	Distance to near focal points undisclosed	No ¹¹
	PhysIOL FineVision Triumf*	Diffraction Hybrid Design EDOF Trifocal	Hydrophobic Acrylic	Distance to near 40 cm, focal points @ distance, 80 cm and 40 cm	NA [^]
Trifocal	PanOptix®	Hybrid Diffraction (15 steps) / Refractive ENLIGHTEN™ Technology	Hydrophobic Acrylic	Distance to near, focal points @ distance, 60 cm (+2.17D) and 40 cm (+3.25D)	No ¹²
	FineVision• (Micro F & POD F)	Diffraction (26 steps) Apodized	Hydrophilic Acrylic	Distance to near, focal points @ distance, ~80 cm (+1.75D) and ~40 cm (+3.50D)	No ¹³
	AT LISA* Tri 839MP	Diffraction (29 steps)	Hydrophilic Acrylic Hydrophobic Surface	Distance to near, focal points @ distance, ~80 cm (+1.66D) and ~40 cm (+3.33D)	No ¹⁴
	RayOne* Trifocal	Hybrid Diffraction (16 steps) / Refractive	Hydrophilic Acrylic	Distance to near, focal points @ distance, ~80 cm (+1.75D) and ~40 cm (+3.50D)	No ¹⁵

*Τα εμπορικά σήματα αποτελούν ιδιοκτησία των αντίστοιχων κατόχων τους

[^]Lack of large prospective randomized comparative clinical study vs a monofocal IOL

[#]Some clinical studies suggested Crystalens* provides lower visual phenomenon than multifocal IOLs¹⁶

[#]Some clinical studies suggested Lentis Comfort* provides lower visual phenomenon than other PCIOLs^{17,18}

Table 2: Summary of end points and effectiveness criteria for EDOF IOLs

Clinical Endpoints	EDOF Effectiveness Criteria
Monocular depth of focus at 0.2 logMAR	At least 0.5 D greater than the monofocal control
Mean monocular photopic DCIVA at 66 cm	Superior to the monofocal control (1 sided test using significance of 0.025)
Monocular photopic DCIVA at 66 cm	Achieving 0.2 logMAR or better in 50% of eyes
Mean monocular photopic BCDVA	Noninferior to the monofocal control with a non-inferiority margin of 0.1 logMAR (1 sided test using significance level of 0.05)

1. ACCOMMODATING IOLS

One of the first accommodating IOL was the single-optic, plate haptic IOL, Crystalens* (Bausch & Lomb). This design of this IOL was hypothesized to allow it to move anteriorly or posteriorly depending on the accommodative forces of the eye, thus providing distance and some intermediate vision¹⁶. The single-optic accommodating IOL potentially has an advantage over other diffractive PCIOLs regarding the visual quality perceived by the patient. However, both near and intermediate vision were limited with this type of lens and this option has not been widely adopted.

2. MULTIFOCAL/BIFOCAL IOLS

Multifocal IOLs provide distance and near vision through splitting light into a distance and near focal points that are simultaneously presented to the retina. Different optical principles can be used to achieve this goal, such as refractive, diffractive, and hybrid of diffractive and refractive. With low add- power, intermediate, instead of near, vision may be improved.

Refractive multifocal designs utilize specific concentric (symmetric) or asymmetric zones for distance and near vision. Transition zones are also required to avoid discontinuities on the optical surface. Nowadays, traditional symmetric refractive multifocal IOLs are rarely used. Rotationally asymmetric multifocal IOLs, such as

Lentis Comfort (Table 1), are still in use in some practices. It is designed to alleviate the occurrence of optical side effects. However, pupil size and centration of the IOL are known to affect patient's objective and subjective visual outcomes after implantation¹⁹. Careful patient selection based on preoperative assessment and intraoperative alignment help improve patient satisfaction.

In the diffractive design, concentric rings with different step heights focus the incoming light into two distinct focal points. In the hybrid diffractive-refractive platform, the lens typically has a diffractive central portion while the periphery is the refractive portion. The central portion may be apodized (i.e., there is a gradual decrease in step height of the concentric rings from the center to the periphery) to redirect more light energy to the distance focus in a large pupil size situation such as in dim light conditions, thereby reducing optical phenomena. The peripheral refractive portion of the lens is intended to improve additional distance vision performance particularly in dim light. These IOLs are available in various add powers (Table 1). Multifocal diffractive IOLs with a higher add can provide clear near and far distance foci, but in doing so, may compromise intermediate vision. On the other hand, multifocal IOLs with lower-add power have fewer diffractive steps and can provide clear intermediate and far foci but may compromise near vision. Lower-add multifocal lenses may also have a lower halo profile than higher-add multifocal lenses as shown in bench testing^{20,21}.

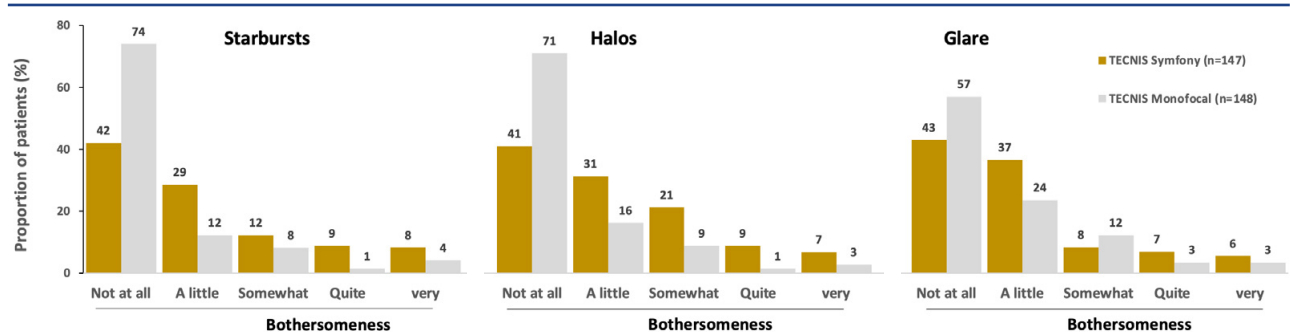


Figure 2: Patient reported visual phenomena with the TECNIS Symphony* as compared to a monofocal IOL at 6 months post-implantation in the US Registration study⁶

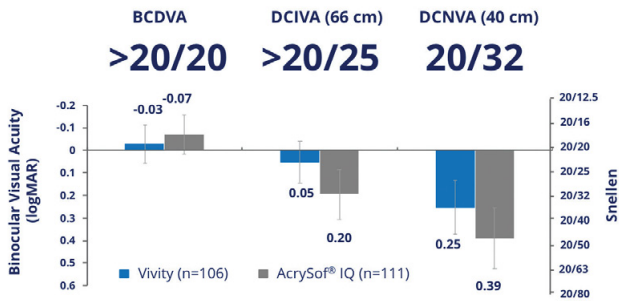


Figure 3: Binocular distance corrected VAs at 6 months post-implantation in the US Vivity Registration study⁷

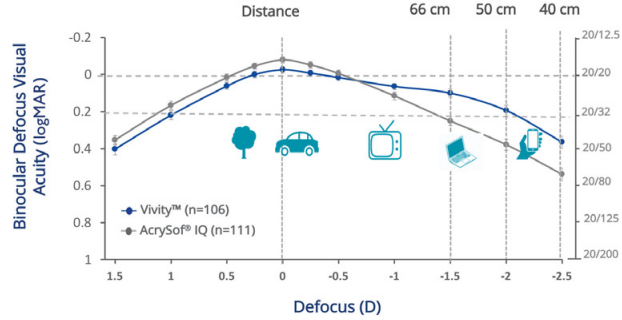


Figure 4: Binocular defocus curve of the AcrySof Vivity versus a monofocal IOL at 6 months post-implantation in the US Vivity Registration study⁷

3. EXTENDED DEPTH OF FOCUS (EDOF) IOLS

Based on the American Academy of Ophthalmology Task Force Consensus Statement,²² Table 2 listed the summary of the clinical endpoints and effectiveness criteria for the IOLs that meet the EDOF lens categorization. Additional details regarding the definitions, requirements, and testing protocols for EDOF lens can be found in ANSI Standard Z80.35-2018.15.²³

In the North America market, the wavefront-shaping AcrySof® IQ Vivity™ and the diffractive TECNIS Symfony* met the EDOF criteria when compared to a monofocal IOL. Although both met the guidelines of the EDOF category, there are no specific criteria for the mechanism of action for achieving these clinical outcomes nor any requirements related to visual disturbance profiles. Outside of the US market, there are many different IOLs referred to as EDOF IOLs by manufacturers or clinicians, but many of these IOLs do not have the adequate clinical evidence comparing their performance to a monofocal IOL to demonstrate if they meet the EDOF criteria defined for example by the FDA.

3.1. DIFFRACTIVE EDOF - TECNIS SYMFONY*

TECNIS Symfony* (Johnson & Johnson Vision) utilizes a diffractive optical design with an echelette feature to split the light and create an elongated focus area to extend the range of vision from distance to intermediate. Subjects of the TECNIS Symfony* in US FDA registration clinical trial reported worse visual disturbance when compared to the monofocal controls (Figure 2).⁶ Post-marketing clinical studies showed similar or slightly worse visual phenomena compared to other diffractive multifocal or trifocal IOLs.^{24,25,26}

3.2. WAVEFRONT-SHAPING EDOF - ACRYSOF IQ VIVITY™

The unique wavefront shaping optical design (X-WAVE™ Technology) of the AcrySof® IQ Vivity™ delivers an extended depth of focus without splitting light into multiple foci and provides a continuous range of vision from distance to functional near for cataract patients.⁷

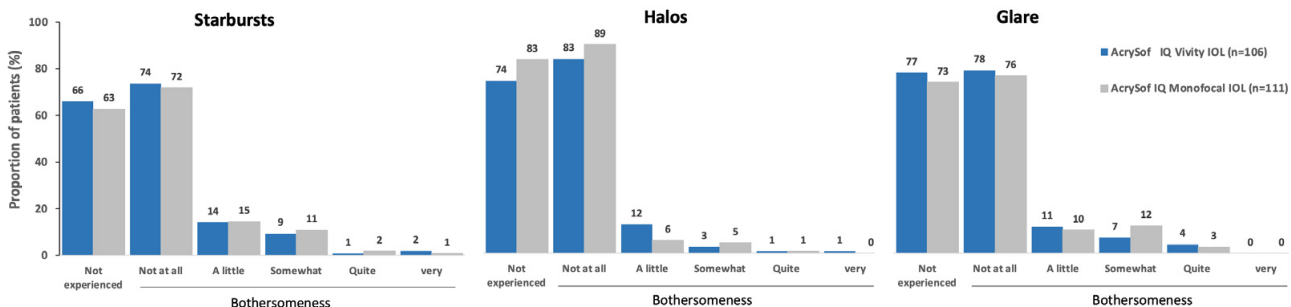


Figure 5: Patient reported visual phenomena with the AcrySof® IQ Vivity™ as compared to the AcrySof® IQ monofocal IOL at 6 months post-implantation in the US Vivity Registration study⁷

CLINICAL PERFORMANCE

Two large-scale prospective, randomized, controlled, assessor and patient masked comparative clinical studies were conducted. Both studies consistently demonstrated that AcrySof® IQ Vivity™ meets all the EDOF requirements based on the ANSI standard as well as providing low incidence of visual disturbances,^{7,27} unlike previous diffractive EDOF IOLs^{6,8,9}.

The US FDA trial compared 107 patients who received bilateral implantation of the AcrySof® IQ Vivity™ to 113 patients who received the AcrySof® IQ monofocal (SN60WF, Alcon).⁷ Binocularly, Vivity achieved better than 20/20 vision at distance, similar to the AcrySof® IQ monofocal IOL, however, Vivity™ provided better vision at both intermediate and near distances (Figure 3). The binocular defocus curve at 6 months post-op showed that Vivity provided a greater than 0.5 D defocus range at 0.2 logMAR compared to the monofocal control group (Figure 4)⁷.

In addition to meeting the visual acuity/range of vision standards set out by the ANSI standard, patients implanted with AcrySof® IQ Vivity™ IOL reported similar rates of visual disturbances compared with the monofocal IOL.⁷ Using a Questionnaire for Visual Disturbance (QUVID) developed and validated by Alcon, patients were asked proactively to rate their experience of visual disturbances subjectively. The QUVID consists of picture-referenced items that ask patients to report their experience of halos, glare, starbursts, hazy vision, blurred vision, double vision, and negative dysphotopsia (dark area) in terms of frequency, severity, and bothersomeness. Following 6 months implantation, similar high percentages of Vivity (>74%) compared to Monofocal (>72%) implanted patients reported

not experiencing or not being bothered by the surveyed visual phenomena. Figure 5 showed detail bothersomeness data on starbursts, halos and glare.

3.3. DIFFRACTIVE EDOF - ATLARA*

ATLara* (Zeiss) IOL technology is based on a 'light bridge' optical design. This diffractive optical design has distance dominant light distribution and two power additions creating an optical bridge effect to extend the range of focus from distance to near.

Reinhard et al.⁸ in a post-market study compared ATLara* and TECNIS Symphony* with a monofocal IOL showing no differences between any group for distance visual acuity. Intermediate and near visual acuity was better with ATLara* and Tecnis Symphony* compared to monofocal IOL. EDOF IOLs showed widest depth of focus at 0.2 logMAR as well as greater percentages of spectacle independence at intermediate and near distances compared to monofocal IOL. The percentage of visual phenomena was worse with ATLara* and Symphony* vs monofocal IOL, more than 50% and 40% of patients experienced glare and halos with ATLara* and symphony IOL* respectively vs less than 20% with monofocal IOL. These outcomes are aligned with a recent publication²⁸ where visual disturbances were objectively and subjectively evaluated in patients implanted with ATLara, Symphony and AcrySof IQ Vivity IOL compared to a monofocal IOL control. They found worse visual disturbances with the diffractive EDOF IOLs compared to AcrySof IQ Vivity which showed no differences to the control monofocal IOL (figure 6)²⁸.

3.4. REFRACTIVE EDOF - MINIWELL*

MiniWell* IOL (SIFI) technology consists of the implementation of positive and negative spherical aberrations in the central part of the optic: the introduction of different and controlled amounts of spherical aberration generates a continuum of foci to increase the depth of focus. It has three different optical zones. The inner zone induces a positive spherical aberration, the intermediate zone induces a negative spherical aberration, and the outer zone has a monofocal aspheric design. Pedrotti et al.⁹ evaluated and compared in a prospective study the MiniWell* IOL and Mini-4-Ready* monofocal IOL. Postoperative uncorrected and corrected monocular and binocular intermediate and near visual acuity was significantly better in the EDOF group with no differences for distance visual acuity. Halometric values were significantly better in the monofocal group.⁹

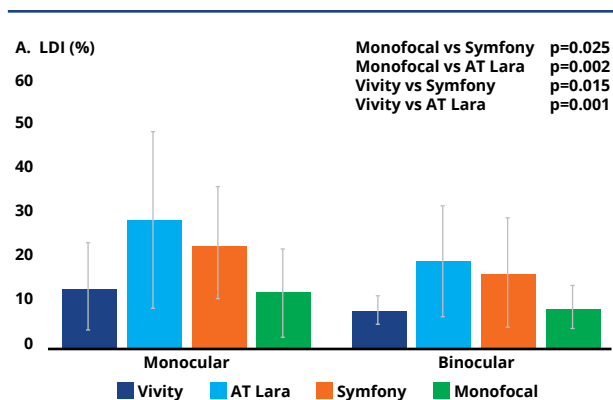


Figure 6: Descriptive and comparative 3-month postoperative results for the variable LDI recorded in each of the IOL groups. The data showed in the upper right corner of the graph indicates the lenses that showed statistically significant differences when compared to each other. LDI: light distortion index.

3.5. REFRACTIVE EDOF - LUXSMART*

LuxSmart* IOL (Baush & Lomb) design creates a small central zone which combines 4th and 6th orders of spherical aberration of opposite signs to increase the subjective depth of focus. Campos et al.¹⁰ compared LuxSmart* IOL versus Akreos monofocal IOL in 24 patients binocularly implanted (12 per group). Distance visual acuity was similar in both groups achieving 20/20 Snellen visual acuity. LuxSmart showed better binocular intermediate (20/32) and near (20/32) compared to Akreos IOL (20/40). There were no differences between groups regarding halos and glare, and 66.7% (8 out of 12) of subjects did not report halos or starbursts after LuxSmart or monofocal IOL implantation.

4. FULL RANGE VISION IOLS

With the increased usage of digital technologies, such as the smartphone and the tablet, modern cataract patients not only require good distance vision, but also good intermediate and near vision. IOLs that utilize diffractive trifocal technology (e.g AcrySof PanOptix®) or hybrid diffractive EDOF and multifocal technology may provide a full range of vision from distance to near and high spectacle independence.^{11,12}

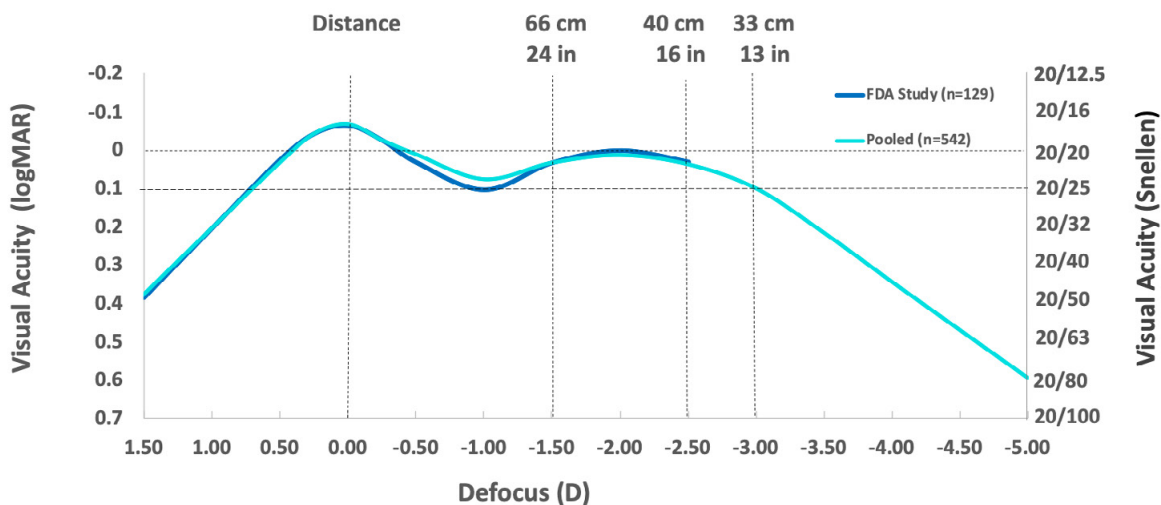
4.1. PANOPTIX® - DIFFRACTIVE TRIFOCAL IOL

The AcrySof PanOptix® trifocal IOL has been widely adopted by surgeons and patients in the global IOL market since 2015. This unique trifocal IOL is now also available on the advanced Clareon® platform.

The PanOptix® Trifocal IOL utilizes the hybrid diffractive-refractive design to create 3 focal points: distance, intermediate at 60 cm and near at 40 cm. The central diffractive portion of the lens splits the light energy entering the eye so that about 50% of the available light is directed to distance, 25% to intermediate and 25% to near. The combination of the 4.5 mm non-apodized diffractive zone and the light energy distribution provides less dependence on pupil size and lighting conditions.¹²

CLINICAL PERFORMANCE WITH ACRYSOF PANOPTIX® TRIFOCAL IOL

A prospective, multicenter (12 sites), bilateral eye study conducted in the US compared the implantation of the AcrySof PanOptix® trifocal IOL in 129 patients to the implantation of an AcrySof® monofocal IOL (SN60AT, Alcon) in 114 patients.²⁹ The defocus curve for the PanOptix® trifocal IOL showed that the lens provided consistently a vision of 0.1 logMAR or better (approximately 20/25 or better) from +0.5D to -2.5D or from distance to near. Additionally, binocular defocus curve data was extracted and pooled from six Alcon sponsored AcrySof PanOptix® clinical trials³⁰ ranging from 3-6 months in a total of 542 patients. The pooled defocus curve showed PanOptix® consistently provided distance corrected visual acuities of 0.1 logMAR (approximately 20/25) or better from +0.5D to -3.0D or from distance to 33cm; more specifically 20/25 or better vision was achieved at distance, intermediate and near focal points of 33cm (Figure 7).



Distance corrected binocular VA data at defocus level (+2.00 D to -5.00 D) was pooled from 6 PanOptix studies in cataract patients (N=254) at 3-6 month. 1.50D n=448; 0.50~1.00D n=449; -2.50D~0.00D n=542; -3.00D ~ -4.50D n=348; -5.00D n=347

Figure 7: Pooled defocus curve of meta-analysis for AcrySof PanOptix® provides an uninterrupted range of vision of 0.1 logMAR (approximately 20/25) or better from distance to 33 cm (13 inch)^{29,30}

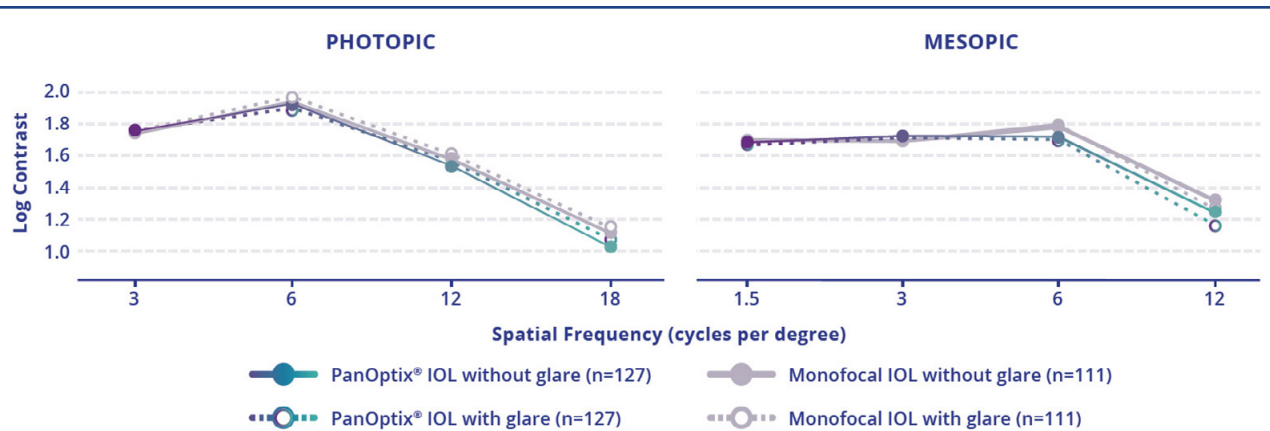


Figure 8: Binocular photopic and mesopic contrast sensitivity with and without glare of the PanOptix® Trifocal IOL as compared to a monofocal IOL at 6 months post-implantation²⁹

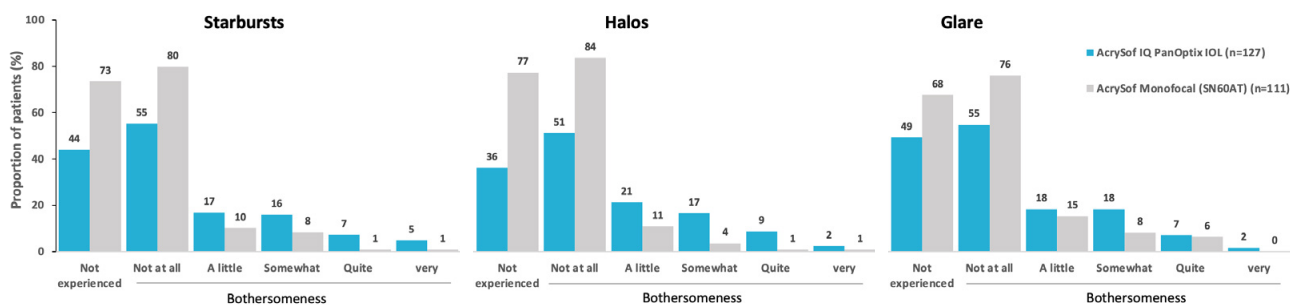


Figure 9: Patient reported visual phenomena with the PanOptix® Trifocal IOL as compared to a monofocal IOL at 6 months post-implantation in the US PanOptix® Trifocal Registration study²⁹

Additionally, the binocular contrast sensitivity assessments under photopic and mesopic conditions described a mean contrast sensitivity that was slightly reduced, but the difference between the PanOptix® Trifocal IOL and monofocal IOL was less than the levels of clinical significance³¹ (Figure 8)²⁹.

The study also evaluated patient reported outcomes with the same validated questionnaires used in the AcrySof® IQ Vivity™ US registration

study. As one would expect when comparing diffractive versus non-diffractive technology, a higher proportion of patients experienced starbursts, halos, and glare with the PanOptix® Trifocal IOL as compared to the monofocal IOL (Figure 9). However, the majority of patients implanted with the PanOptix® Trifocal IOL reported that they were not bothered by each of these symptoms. Additionally, patient satisfaction levels were assessed, and patients implanted with the PanOptix® Trifocal IOL were overwhelmingly very satisfied with their vision (Figure 10).²⁹ Recently, a systemic literature review and meta-analysis on spectacle independence rate in patients with bilateral implantation of PanOptix® trifocal was conducted³². The analysis of 13 unique clinical studies (513 cataract patients) demonstrated that at least 9 out of 10 bilateral PanOptix IOLs implanted patients achieved complete spectacle independence (91.6%, 95% Confidence Interval at 86.8% to 95.9%).

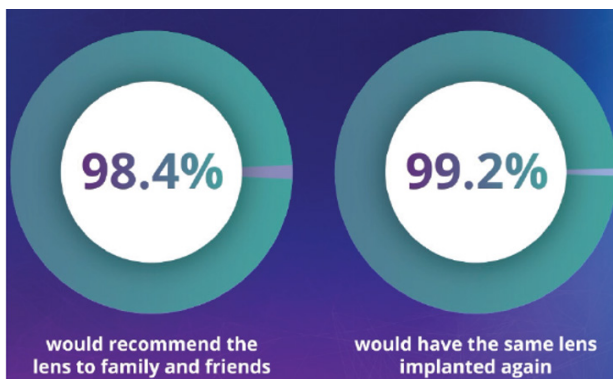


Figure 10: The level of satisfaction in patients implanted with the PanOptix® Trifocal IOL (n=127)²⁷

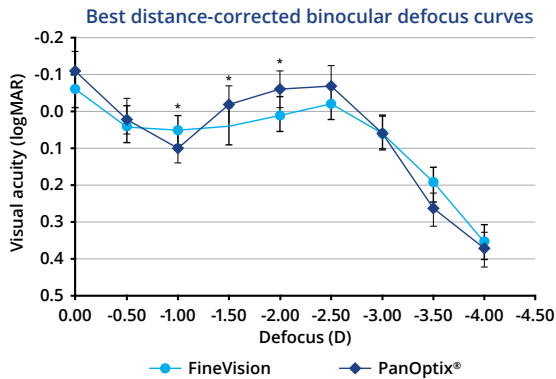


Figure 11: Best distance-corrected binocular defocus curve with FineVision trifocal and AcrySof IQ PanOptix IOLs¹³. *Statistically significant difference ($p < 0.05$)

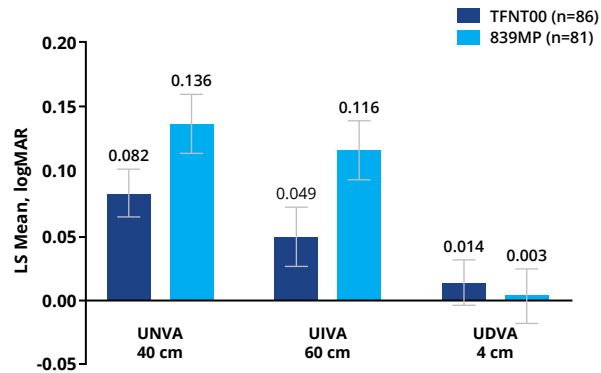


Figure 12: Uncorrected distance, intermediate and near visual acuity for AcrySof IQ PanOptix (TFNT00) and ATLisa Tri (839MP)³⁴

4.2. FINEVISION* - DIFFRACTIVE TRIFOCAL IOL

FineVision* trifocal IOL (PhysIOL) combine two diffractive apodized profiles, one for distance and near and the other for distance and intermediate, to create three focal points at distance, intermediate at 80 cm (+1.75 D) and near at 40 cm (+2.50 D).²¹

Gundersen et al.¹³ showed similar distance and near visual outcomes with FineVision* IOL compared to PanOptix while several measurements indicated that PanOptix IOL provides better intermediate vision at 60 cm and FineVision* at 80 cm (Figure 11).

4.3. ATLISA* - DIFFRACTIVE TRIFOCAL IOL

AT Lisa tri combines a central trifocal diffractive pattern (4.3 mm) and an outer bifocal pattern to provide three focal points at distance, intermediate (+1.66 D) and near (+3.33 D)³³

Lapid et al.³⁴ in a prospective, randomized study showed superior visual outcomes with AcrySof IQ PanOptix IOL compared to ATLisa IOL for uncorrected intermediate at 60 cm and near at 40 cm. No differences were shown at distance visual acuities (Figure 12).

Asena et al.³³ showed higher visual acuity values with PanOptix compared to ATLisa at -1.00, -1.50, -2.00 and -2.50 D. They also reported similar frequency of halos and glare among two IOLs, however the reported severity and bother from halo was significantly lower with PanOptix compared to ATLisa.

4.4 TECNIS SYNERGY* - HYBRID DIFFRACTIVE EDOF AND MULTIFOCAL IOL (+4.0D)

TECNIS Synergy* IOL (Johnson & Johnson Vision) features an aspheric anterior surface, identical to that of its monofocal analog, the TECNIS 1-Piece IOL (ZCB00). The posterior optic design has a diffractive surface derived from a combination of the prior extended depth of focus IOL (Symphony*) and +4.0 D multifocal TECNIS technologies and is designed to correct chromatic aberration.¹¹ The specific focal points of this lens have not been disclosed.

CLINICAL PERFORMANCE WITH TECNIS SYNERGY*

The prospective, randomized, multicenter, evaluator- and subject-masked US registration study compared bilateral implantation of the TECNIS Synergy in 135 patients to the implantation of TECNIS monofocal IOL in 137 patients. The primary and secondary outcomes of this study evaluated monocular and/or binocular distance corrected and uncorrected VAs at distance, intermediate (66cm) and near (40cm as well as 33cm) at 6-month post implantation. The binocular defocus curve of Synergy showed that the lens provided continuous 20/32 or better visual acuity through at least -3.0 D of defocus, which corresponds to distances ranging from approximately 33 cm to infinity (Figure 13)¹¹.

As with other diffractive PCIOLs, although no clinical significance, the contrast sensitivity tests showed a reduction in median monocular and binocular contrast sensitivity at all spatial frequencies and all lighting conditions (mesopic without and with glare, and photopic with glare) for the Synergy group compared to the control group.¹¹

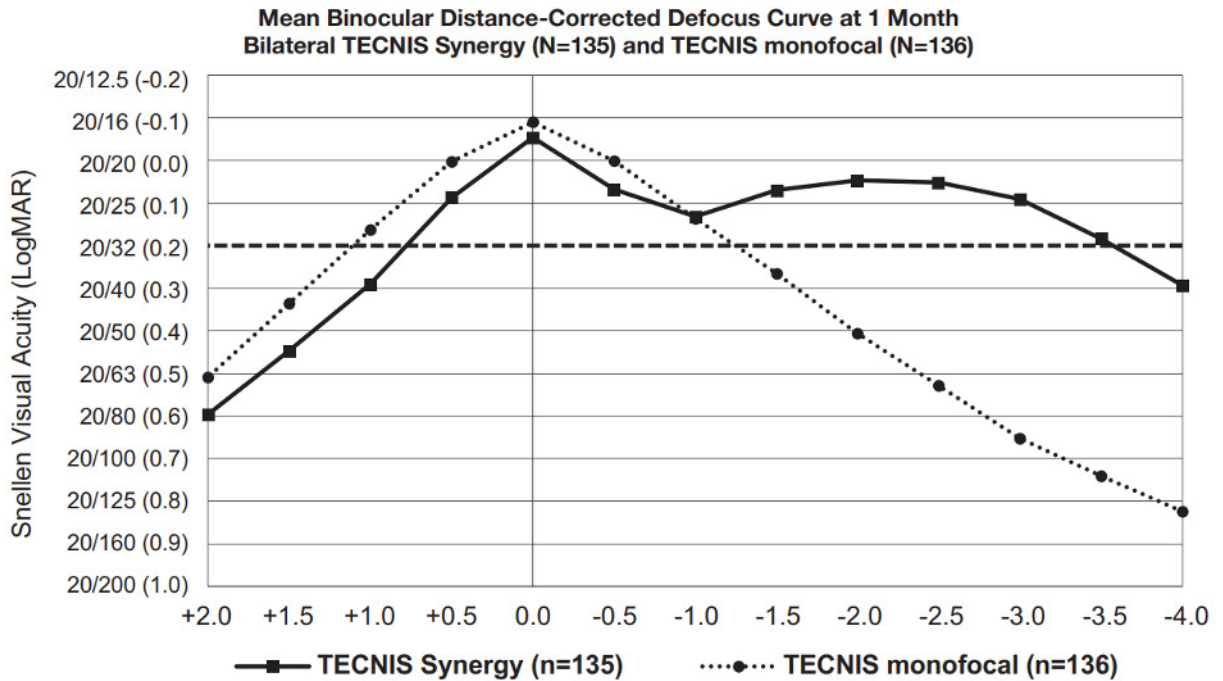


Figure 13: Binocular defocus curve for TECNIS Synergy* at 1 month¹¹

Visual disturbances symptoms were reported by subjects in the registry study. Using both a directed and a non-directed questionnaire, a higher proportion of patients reported experienced and bothered by starbursts, halos, and glare with the Synergy IOL as compared to the monofocal IOL (Figure 14)¹¹. In contrast to the monofocal control, more than half of subjects reported halos and starbursts with the Synergy IOL.¹¹

A clinical trial³⁵ including 78 eyes from 40 patients shows monocular uncorrected distance visual acuity of 20/22 Snellen, monocular uncorrected intermediate and near visual acuities were 20/23 and 20/25, respectively after 6 months postoperatively. The defocus curve shows from distance to near (up to 33 cm) continuous range of vision above 20/25. These outcomes have not been published in a peer-reviewed journal and there are no clinical outcomes published showing visual disturbances with Fine Vision Triumf* at the moment.

4.5. FINEVISION TRIUMF* - HYBRID TRIFOCAL AND EDOF IOL

FineVision Triumf* is designed with two bifocal elements, one for distance and near and one for distance and intermediate. The width of the steps is the same FineVision trifocal IOL, with additions of 3.50 and 1.75 D for near and intermediate vision, respectively, but the step heights between the two elements are higher in the FineVision Triumf.

SUMMARY

In summary, it is an exciting time in refractive cataract care. Patient lifestyles are evolving, visual demands are changing, and IOL technology is adapting to meet those demands.

For cataract patients who desire high spectacle independence and are able to tolerate some

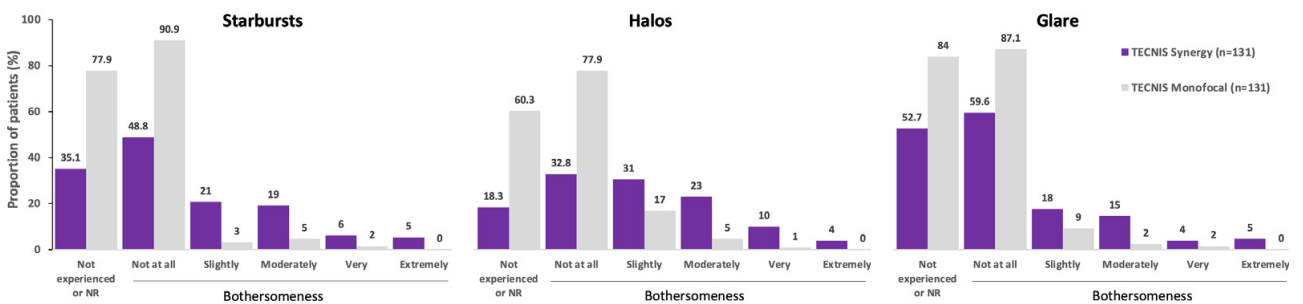


Figure 14: Visual patient reported outcomes for Synergy¹¹

level of visual disturbances, surgeons may consider implanting a full range vision IOL such as the PanOptix® trifocal IOL. However, for those patients who are concerned about potential visual disturbances, the wavefront-shaping EDOF AcrySof IQ Vivity™ IOL would be an excellent choice, which can provide extended range of vision from distance to functional near with a monofocal like visual disturbances profile.

IMPORTANT PRODUCT INFORMATION

The family of AcrySof® single-piece intraocular lenses (IOLs) includes AcrySof® UV-absorbing IOLs ("AcrySof® UV"), AcrySof® IQ, AcrySof® IQ Toric, AcrySof® IQ ReSTOR®, AcrySof® IQ ReSTOR® Toric, AcrySof® IQ PanOptix® and AcrySof® IQ PanOptix® Toric IOLs, AcrySof® IQ Vivity® and AcrySof® IQ Vivity® Toric IOLs.

All these IOLs are intended for use by a trained ophthalmic surgeon for the replacement of the human crystalline lens during cataract surgery. For indications, contraindications and warnings, please refer to the relevant product's directions for use available at ifu.alcon.com.

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