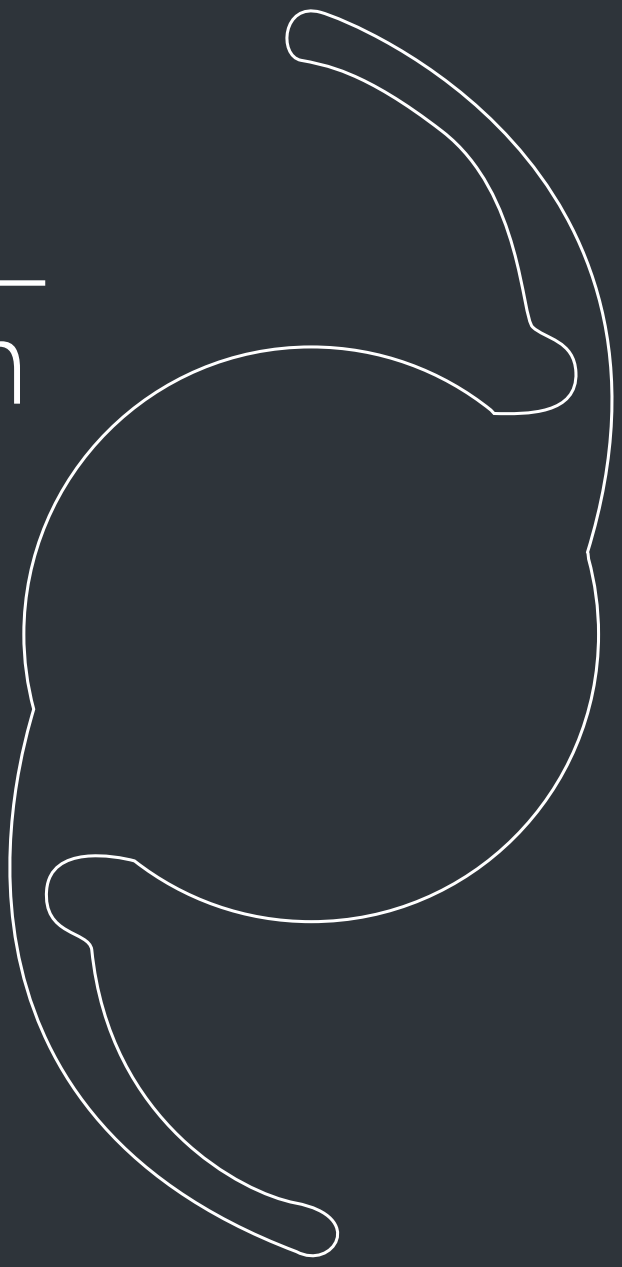
TECNIS Eyhance™ IOL Compendium



TECNIS Eyhance™ IOL

Johnson & Johnson VISION

PREFACE

The TECNIS Eyhance™ IOL is a next-generation intraocular lens that represents a major innovation in the standard treatment of cataracts.[1] Building on the proven TECNIS® IOL platform, the TECNIS Eyhance™ IOL was the first lens designed to extend the depth of focus, as measured by bench testing, as well as provide 20/20 distance vision.[1,3] The lens represents the latest innovation in monofocal IOL technology and also provides the same correction of corneal spherical aberration with comparable distance image quality to the TECNIS® 1-Piece IOL.[1,2,3]

This clinical science compendium provides a consolidated summary of peer reviewed publications and conference presentations that discuss the efficacy and clinical characteristics of the TECNIS Eyhance™ IOL. The research and information presented in this compendium was compiled from published literature across the globe as well as papers and poster presentations from ophthalmology conferences. This compendium is not comprehensive.

The cut-off date for inclusion in this compendium is October 4th, 2022

References:
1. TECNIS Eyhance™ Intraocular Lens Product Monograph, Johnson & Johnson Vision, 2019, REF2018CT4402
2. Data on File, Johnson & Johnson Vision, 2021, DOF2021CT4007
3. Data on File, Johnson & Johnson Vision, 2021, DOF2021CT4006

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PEER REVIEWED PUBLICATIONS

CONFERENCE PRESENTATIONS

THE WINTER EUROPEAN SOCIETY OF CATARACT AND REFRACTIVE SURGEONS (WESCRS) 2019

THE EUROPEAN SOCIETY OF CATARACT AND REFRACTIVE SURGEONS (ESCRS) 2019

THE WINTER EUROPEAN SOCIETY OF CATARACT AND REFRACTIVE SURGEONS (WESCRS) 2020

THE EUROPEAN SOCIETY OF CATARACT AND REFRACTIVE SURGEONS (ESCRS) 2020

THE EUROPEAN SOCIETY OF CATARACT AND REFRACTIVE SURGEONS (ESCRS) 2021

THE EUROPEAN SOCIETY OF CATARACT AND REFRACTIVE SURGEONS (ESCRS) 2022

* ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

THE EUROPEAN SOCIETY OF CATARACT AND REFRACTIVE SURGEONS (ESCRS) 2022

* ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

AMERICAN SOCIETY OF CATARACT AND REFRACTIVE SURGERY (ASCRS) 2022

AMERICAN SOCIETY OF CATARACT AND REFRACTIVE SURGERY (ASCRS) 2022

AMERICAN ACADEMY OF OPHTHALMOLOGY (AAO) 2022

Optical and Clinical Outcomes of an Enhanced Monofocal Intraocular Lens for High Hyperopia

Fernández-Vega-Cueto L, Vega F, Guerra-Velasco R, Millán MS, Madrid-Costa D, Alfonso JF.

J Refract Surg. 2022;38(9):572-579.

OVERVIEW

Study Design

- Optical bench study and retrospective, observational study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 22 patients (44 eyes) with axial length <22.5 mm / 6-month follow-up

Key End Points

- Bench: power mapping, wavefront analysis, through-focus modulation transfer function area (TF-MTFa)
- Clinical: uncorrected (UDVA) and corrected (CDVA) distance visual acuities, binocular defocus curve

KEY TAKEAWAYS

Results

- For all three IOL base powers (10.00, 20.00, and 30.00D), power mapping revealed an increase in positive power from the periphery to the center of the lens, providing an extra positive correction of 0.50 and 1.00D for a 2.5- and 2-mm pupil size, respectively.
- The TF-MTFa curves for all three base powers and three pupil sizes (2-, 3-, and 4.5-mm) showed just one peak of maximum MTFa (best optical quality) at the distance focus.
- As pupil size decreased, there was a focus extension effect, providing an extended depth of focus of up to -1.50D for a 2-mm pupil size.
- There was no significant dependency of the IOL base power on the power profile, wavefront, or optical quality.
- Mean postoperative binocular UDVA and CDVAs were 0.10 ± 0.11 and 0.01 ± 0.03 logMAR, respectively.
- All patients achieved a CDVA of 0.1 logMAR or better (20/25) and 90.9% had a value of 0.0 logMAR (20/20).
- A mean visual acuity better than 0.1 logMAR (20/25) was achieved in the vergence range from +0.50 to -1.50D, and at a defocus of -2.00D, the visual acuity was still 0.11 ± 0.13 logMAR.

Conclusions

The TECNIS Eyhance™ IOL provided good distance optical and visual quality and optimal visual acuity up to an intermediate-near distance between 50 and 40 cm in patients with high hyperopia and a short axial length.

Comparison of Clinical Outcomes of Trifocal Intraocular Lens (AT LISA, Eyecryl SERT Trifocal) versus Extended Depth of Focus Intraocular Lens (Eyhance™, Eyecryl SERT EDOF)

Karuppiah P, Varman NVA, Varman A, Balakumar D.

Indian J Ophthalmol. 2022;70(8):2867-2871.

OVERVIEW

Study Design

- Retrospective, comparative study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 30 eyes / 1-month follow-up
- AT LISA Trifocal 839MP IOL (Carl Zeiss) / 30 eyes / 1-month follow-up
- Eyecryl SERT Trifocal IOL TRHFY600 (Biotech Healthcare Group) / 30 eyes / 1-month follow-up
- Eyecryl SERT EDOF IOL PLHFD6 (Biotech Healthcare Group) / 30 eyes / 1-month follow-up

Key End Points

- Monocular uncorrected (UDVA) and corrected (CDVA) distance visual acuities, uncorrected (UIVA) and distance-corrected (CIVA) intermediate acuities at 60 cm, uncorrected (UNVA) and distance-corrected (CNVA) near visual acuities at 40 cm, defocus curve, contrast sensitivity.

KEY TAKEAWAYS

Results

- There was no statistically significant difference between all four groups for UDVA and CDVA.
- The EDOF group of IOLs (TECNIS Eyhance™ IOL and Eyecryl EDOF) had significantly better UIVA and CIVA than the trifocal IOL group (AT LISA and Eyecryl Trifocal), whereas UNVA and CNVA was significantly worse.
- The EDOF group displayed better contrast sensitivity than the trifocal group.
- The incidence of glare and halos was significantly higher in the trifocal than EDOF group (43% and 47% in AT LISA and Eyecryl Trifocal vs 11% and 9% in TECNIS Eyhance™ IOL and Eyecryl EDOF, respectively).
- All four IOL groups exhibited good range of vision with visual acuity of about 0.4 logMAR or better from 0.0 to -2.5D. However, both AT LISA and Eyecryl Trifocal IOLs showed a drop in intermediate vision while TECNIS Eyhance™ IOL and Eyecryl EDOF IOLs showed smoother defocus curves with a broader intermediate landing zone from 1 m to 50 cm.

Conclusions

All four IOLs displayed good, comparable distance visual acuity. Near vision was better with AT LISA and Eyecryl SERT Trifocal IOLs, while intermediate vision was better with TECNIS Eyhance™ IOL and Eyecryl SERT EDOF IOLs. Contrast sensitivity was better in the EDOF IOLs than the trifocal IOLs.

Through-Focus Response of Extended Depth of Focus Intraocular Lenses

Pieh S, Artmayr C, Pai V, Schartmüller D, Kriechbaum K.

J Refract Surg. 2022;38(8):497-501.

OVERVIEW

Study Design

- Comparative optical bench study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- AcrySof IQ Vivity IOL (Alcon)
- Isopure IOL (PhysIOL)
- Vivinex Impress IOL (Hoya)
- Xact IOL (Santen)

Key End Points

- Through-focus response curves

KEY TAKEAWAYS

Results

- Using green light and pupil aperture of 3-mm, the Isopure and Vivinex Impress IOLs provided the highest light energy for distance, whereas the AcrySof Vivity IOL displayed the highest light energy for the intermediate area.
- With a green light and pupil aperture of 4.5-mm, the TECNIS Eyhance™ IOL showed the highest light intensity for distance, and all four IOLs showed a low light distribution for the intermediate range.
- With a white light and pupil apertures of both 3- and 4.5-mm, the curves became wider and more similar to each other. With a 4.5-mm pupil, the TECNIS Eyhance™ IOL showed the highest peak, whereas the Xact IOL provided the most light energy for the intermediate range.

Conclusions The five EDOF lenses examined differed mainly in terms of light distribution between the far and intermediate ranges.

Visual Outcomes of Non-diffractive Extended-Depth-of-Focus and Enhanced Monofocal Intraocular Lenses: A Case-Control Study

Sabur H, Unsal U.

Eur J Ophthalmol. 2022;11206721221125004. Epub ahead of print

OVERVIEW

Study Design

- Prospective, comparative, case-control study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 18 patients (36 eyes) / 3-month follow-up
- AcrySof IQ Vivity IOL (Alcon) / 20 patients (40 eyes) / 3-month follow-up

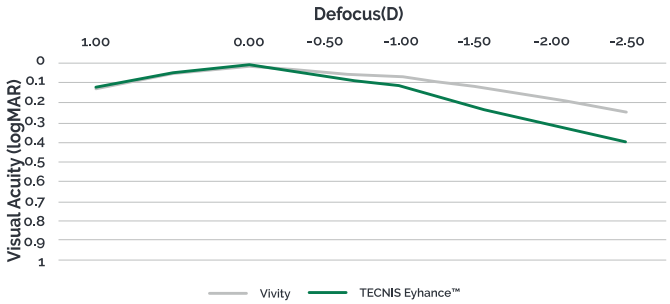
Key End Points

- Objective refraction, monocular uncorrected (UDVA) and corrected (CDVA) distance visual acuities, uncorrected (UIVA) and distance-corrected (DCIVA) intermediate acuities at 66 cm, uncorrected (UNVA) and distance-corrected (DCNVA) near visual acuities at 40 cm, binocular defocus curve, contrast sensitivity, halo and glare perception, spectacle independence.

KEY TAKEAWAYS

Results

- Postoperative spherical equivalent (SE) values were similar in both groups (Vivity IOL: -0.06 ± 0.24D, TECNIS Eyhance™ IOL: -0.06 ± 0.23D).
- While the monocular and binocular UDVA, CDVA, UIVA, and DCIVA were comparable in both groups, the UNVA and DCNVA were significantly better in the Vivity IOL group than the TECNIS Eyhance™ IOL group.
- There was no statistically significant difference regarding photopic and scotopic contrast sensitivities or halo and glare perception between the two IOL groups. More than 80% of patients in both groups reported no photic symptoms.
- Both IOLs showed similar defocus curve profiles at the intermediate range, however Vivity IOL had a larger landing zone, resulting in better vision within the -2.00 to -2.50D range.
- The Vivity IOL group provided higher spectacle independence than the TECNIS Eyhance™ IOL group with 27.5% and 55.3% of patients requiring near vision correction, respectively.



Binocular defocus curves of two groups of intraocular lenses. Data are reported in diopters and logMAR.

Conclusions

Both the AcrySof IQ Vivity IOL and TECNIS Eyhance™ IOL provided excellent distance and intermediate visual acuities, while AcrySof IQ Vivity IOL had more satisfactory near vision outcomes with greater spectacle independence rate. Patient satisfaction and photic disturbances were comparable between the two groups.

Effect of Decentration and Tilt on Four Novel Extended Range of Vision Intraocular Lenses Regarding Far Distance

Schmid R, Luedtke H, Borkenstein AF.

Eur J Ophthalmol. 2022;11206721221128864. Epub ahead of print

OVERVIEW

Study Design

- Comparative optical bench study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- AcrySof IQ Vivity IOL (Alcon)
- LuxSmart Crystal IOL (Bausch & Lomb)
- RayOne EMV IOL (Rayner)

Key End Points

- Modulation transfer function (MTF), Strehl ratio (SR), qualitative analysis of United States Airforce (USAF) test targets

KEY TAKEAWAYS

Results

- Tilt and decentration significantly decreased performance of the TECNIS Eyhance™ IOL but had minor impact on performances of the Vivity and LuxSmart IOLs.
- RayOne EMV IOL was robust towards tilt and decentration for both apertures (3-mm and 4.5-mm) but had considerable deterioration of MTF for the large aperture size.
- For the 4.5-mm aperture, MTF and SR decreased significantly for all IOLs compared to the 3-mm aperture size.
- For both aperture sizes, TECNIS Eyhance™ IOL obtained the best MTF and SR when well-centered.
- For the IOLs well centered with 3-mm aperture, TECNIS Eyhance™ IOL and RayOne EMV IOL showed sharp image quality while Vivity IOL showed a sharp but dimmer image, and LuxSmart IOL showed a bright but somewhat blurred image.

Conclusions

While the TECNIS Eyhance™ IOL performed the best when well-centered, tilt and decentration had a significant impact its performance. With a large aperture, performance of all IOLs significantly decreased. IOL manufacturers' different approaches to increase depth of focus by increasing spherical aberration led to different performance in respect to contrast function and sensitivity to misalignment.

Depth of Focus of Four Novel Extended Range of Vision Intraocular Lenses

Schmid R, Fuchs C, Luedtke H, Borkenstein AF.

Eur J Ophthalmol. 2022;11206721221125081. Epub ahead of print

OVERVIEW

Study Design

- Comparative optical bench study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- AcrySof IQ Vivity IOL (Alcon)
- LuxSmart Crystal IOL (Bausch & Lomb)
- RayOne EMV IOL (Rayner)

Key End Points

- Through focus modulation transfer function (MTF)

KEY TAKEAWAYS

Results

- For the 3-mm aperture, TECNIS Eyhance™ IOL and RayOne EMV IOL showed the most pronounced MTF peak with only some enlarged depth of focus. Vivity IOL and LuxSmart IOL displayed two peaks with about 1.7D and 1.32D depth of focus, respectively, yet an overall reduced MTF.
- The MTF peak at the primary focus of Vivity IOL was much more pronounced than the flattened secondary peak, whereas for LuxSmart IOL, MTF at the secondary focus outperformed the MTF at the primary focus.
- For the 4.5-mm aperture, MTF values of the TECNIS Eyhance™ IOL and RayOne EMV IOL were overall reduced, whereas only the peak of the secondary focus was decreased for Vivity IOL and LuxSmart IOL.

Conclusions AcrySof IQ Vivity IOL and LuxSmart IOL showed a larger depth of focus than the TECNIS Eyhance™ IOL and RayOne EMV IOL, whereas TECNIS Eyhance™ IOL and RayOne EMV IOL displayed significantly superior MTF for the distance focus with a small aperture.

Enhanced Monofocal versus Conventional Monofocal Intraocular Lens in Cataract Surgery: A Meta-analysis

Wan KH, Au ACK, Kua WN, et al.

J Refract Surg. 2022;38(8):538-546.

OVERVIEW

Study Design

- Systematic review and meta-analysis of 3 RCTs and 9 comparative studies (4 prospective, 5 retrospective)

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 680 eyes from 12 studies / range of 2 weeks to 6-month follow-up
- TECNIS® Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 517 eyes from 9 studies / range of 2 weeks to 6-month follow-up
- AcrySof SA60AT IOL (Alcon) / 19 eyes from 1 study / range of 2 weeks to 6-month follow-up
- AcrySof SN60WF IOL (Alcon) / 65 eyes from 1 study / range of 2 weeks to 6-month follow-up
- RayOne IOL (Rayner) / 46 eyes from 1 study / range of 2 weeks to 6-month follow-up

Key End Points

- Monocular and binocular uncorrected (UDVA) and corrected (CDVA) distance visual acuities, monocular and binocular uncorrected (UIVA) and corrected (CIVA) intermediate visual acuities, uncorrected (UNVA) and corrected (CNVA) near visual acuities, spectacle independence at intermediate distance, patient-reported outcomes, halos and glare, optical quality measured at 4-mm pupil using objective scatter index (OSI), modulation transfer function (MTF) cut-off, contrast sensitivity, complications.

KEY TAKEAWAYS

Results

- The TECNIS Eyhance™ IOL achieved significantly better monocular UIVA (mean difference [MD]: -0.11 logMAR), binocular UIVA (MD: -0.17 logMAR), and binocular UNVA (MD: -0.17 logMAR) than the conventional monofocal IOL. The remaining monocular and binocular corrected visual acuities at various distances showed no statistical differences between the two IOL types.
- The TECNIS Eyhance™ IOL was more likely to achieve spectacle independence at an intermediate distance compared to the conventional monofocal IOL.
- Optical quality (OSI, MTF), contrast sensitivity, photic phenomenon (halos and glare), and adverse effects were comparable between the two IOL groups.
- Patient satisfaction scores were comparable between the two IOL groups, but one study reported that TECNIS Eyhance™ IOL provided improvement in near and intermediate vision activities such as reading newspapers, reading prices of goods, and using a computer.

Conclusions

Compared with conventional monofocal IOLs, enhanced monofocal IOLs effectively improved intermediate vision and achieved a higher rate of spectacle independence at intermediate distance without compromising distance vision or increasing risk of contrast reduction, optical degradation, or dysphotopsia profile.

Exploring Vision-Related Quality of Life: A Qualitative Study Comparing Patients' Experience of Cataract Surgery with a Standard Monofocal IOL and an Enhanced Monofocal IOL

Alias SB, Del Campo Carrasco Z, Salvador-Miras I, et al.

Clin Ophthalmol. 2022;16:1641-1652.

OVERVIEW

Study Design

- Qualitative study capturing data through 19 semi-structured interviews conducted with cataract patients who had either not yet undergone surgery or had bilateral cataract surgery with implantation of TECNIS® 3-piece monofocal IOL ZA9003 or TECNIS Eyhance™ IOL ICB00.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 6 patients
- TECNIS® 3-piece Monofocal IOL ZA9003 (Johnson & Johnson Vision) / 6 patients
- Awaiting surgery / 7 patients

Key End Points

- Patient feedback on intermediate vision and quality of life (via questionnaires).

KEY TAKEAWAYS

Results

- Patients on the waiting list for cataract surgery reported difficulty and insecurity in performing daily and meaningful tasks at distance, intermediate, and near.
- Patients after surgery with the TECNIS® 3-piece monofocal IOL reported improvement in performing activities mainly in the distant visual range, but also the need for better communication with clinical staff to adjust their own expectations on the results of the surgery.
- Patients implanted with the TECNIS Eyhance™ IOL reported satisfaction and improved visual function in performing daily activities, especially those related to the intermediate visual range.

Conclusions This exploratory study found that patients after cataract surgery with the TECNIS Eyhance™ IOL reported a better performance in activities that require intermediate vision.

Comparative Analysis of Visual Outcome with 3 Intraocular Lenses: Monofocal, Enhanced Monofocal, and Extended Depth of Focus

Corbelli E, Iuliano L, Bandello F, et al.

J Cataract Refract Surg. 2022;48:67–74.

OVERVIEW

Study Design

- Prospective, non-randomized, comparative case series of patients undergoing consecutive bilateral cataract surgery implanted.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS® Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 50 eyes of 25 patients / 6 month follow up
- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 50 eyes of 25 patients / 6 month follow up
- TECNIS Symfony™ IOL ZXR00 (Johnson & Johnson Vision) / 50 eyes of 25 patients / 6 month follow up

Key End Points

- Monocular and binocular corrected distance (4 m) and uncorrected distance visual acuity (UDVA), corrected distance, intermediate (66 cm), and near (40 cm) visual acuities, uncorrected intermediate (UIVA) and uncorrected near visual acuities (UNVA), photopic contrast sensitivity, binocular defocus curve, halo and glare perception, and spectacle independence

KEY TAKEAWAYS

Results

- Monocular and binocular UDVA was excellent in all 3 groups. TECNIS Eyhance™ IOL achieved binocular UIVA similar to that of TECNIS Symfony™ IOL, the latter showing the highest binocular UNVA.
- The defocus curves at -1.0 D were equivalent for both TECNIS Eyhance™ IOL and TECNIS Symfony™ IOL, whereas contrast sensitivity was similar in all 3 groups.
- The TECNIS Eyhance™ IOL spectacle independence score was comparable with TECNIS Symfony™ IOL for intermediate distance activities, the latter, however, achieved the worst results for halos and glare.

Conclusions The TECNIS Eyhance™ IOL was not inferior to the TECNIS Symfony™ IOL in intermediate distance visual outcome and spectacle independence, and also provided lower subjective perception of halos and glare.

Clinical Outcomes of a New Monofocal Intraocular Lens with Enhanced Intermediate Function Compared with Extended Depth of Focus Intraocular Lenses

Lee JH, Moon SY, Chung HS, Park SY, et al.

J Cataract Refract Surg. 2022;48(1):61-66

OVERVIEW

Study Design

- Nonrandomized prospective comparative case series

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 48 eyes of 24 patients / 3 month follow up
- TECNIS Symfony™ IOL ZXR00 (Johnson & Johnson Vision) / 40 eyes of 20 patients / 3 month follow up

Key End Points

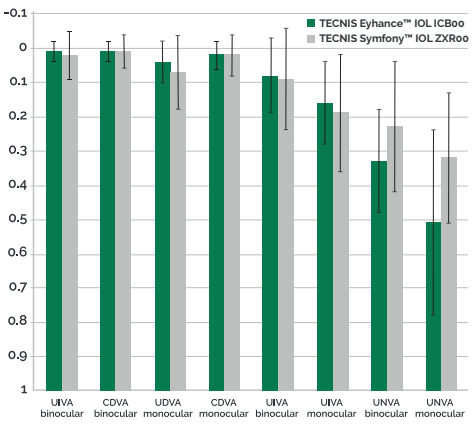
- Uncorrected distance, intermediate, and near visual acuity (UDVA, UIVA, and UNVA), corrected distance visual acuity (CDVA), defocus curves, contrast sensitivity, and patient satisfaction questionnaires.

KEY TAKEAWAYS

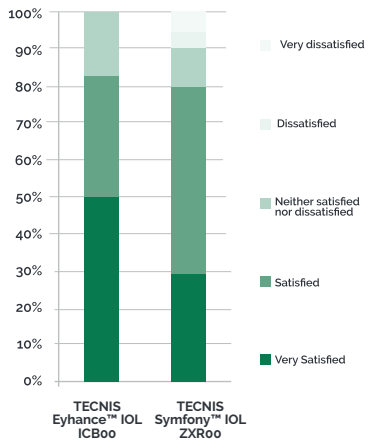
Results

- Monocular and binocular UDVA, UIVA, and CDVA and binocular UNVA were similar between the two groups
- Monocular UNVA and spectacle independence for near distance were better in the TECNIS Symfony™ IOL group
- Contrast sensitivity, glare and halo, satisfaction, and recommendation rates were similar between the two groups
- Some dissatisfaction and severe glare and halo were reported in the TECNIS Symfony™ IOL group, none in the TECNIS Eyhance™ IOL group

Three month postoperative visual outcomes



Patient Satisfaction



Conclusions

Bilateral implantation of the ICB00 IOLs provided comparable clinical performance to bilateral implantation of TECNIS Symfony™ ZXR00 IOLs. Binocular UNVA was similar, although spectacle independence was higher in the TECNIS Symfony™ group, but this was at the expense of more glare and halos.

Comparative Evaluation of Visual Outcomes After Bilateral Implantation of an Advanced or Conventional Monofocal Intraocular Lens

Lopes D, Loureiro T, Carreira R, Barros SR, et al.

Eur J Ophthalmol. 2022;32(1):229-234.

OVERVIEW

Study Design

- Retrospective case-control study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS® Monofocal IOL PCB00 (Johnson & Johnson Vision) / 60 eyes of 30 patients / 3 month follow up
- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 60 eyes of 30 patients / 3 month follow up

Key End Points

- Binocular corrected distance visual acuity (CDVA), monocular and binocular uncorrected distance visual acuity (UDVA), and uncorrected intermediate visual acuity (UIVA), binocular defocus curve, patient questionnaire (Catquest-9SF)

KEY TAKEAWAYS

Results

- The average binocular UDVA was 20/22 in the ICB00 group and 20/20 in the PCB00 group (p=0.62)
- The average monocular UIVA was 20/32 in the ICB00 group and 20/40 in the PCB00 group (p<0.001)
- The average binocular UIVA was 20/30 in the ICB00 group and 20/40 in the PCB00 group (p<0.001)
- Reported dysphotopsia was not significantly different between the two groups (p=0.56)
- The ICB00 group showed less difficulty in activities requiring intermediate vision on the Catquest-9SF (computer use, reading price tags)

Conclusions

The results demonstrate a significant improvement in visual acuity for intermediate distance and greater capability for intermediate distance activities in the ICB00 group compared to the control group (PCB00), with compromising distance visual acuity.

Analysis and Comparison of Monofocal, Extended Depth of Focus and Trifocal Intraocular Lens Profiles

Miret JJ, Camps VJ, García C, et al.

Sci Rep 2022;12:8654

OVERVIEW

Study Design

- Bench study using a profilometer to extract information about IOL surface design

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS® 1-piece Monofocal IOL ZCB00 (Johnson & Johnson Vision)
- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- TECNIS Synergy™ IOL (Johnson & Johnson Vision)
- Miniwell Ready IOL (SIFI)

Key End Points

- IOL surface topography

KEY TAKEAWAYS

Results

- The posterior surface of the TECNIS® 1-piece monofocal IOL was spherical and the anterior surface aspherical
- The posterior surface of the TECNIS Eyhance™ IOL was spherical and the anterior surface was a higher order aspheric surface design
- The anterior surface of the TECNIS Synergy™ IOL was aspherical and the base curve of the diffractive structure fitted well to a spherical surface
- A high order aspherical surface was deduced for the first surface and a best-fit sphere surface was btained for the second surface in the MiniWell Ready IOL

Conclusions Better knowledge of the design of intraocular lens surfaces will contribute to a better understanding of the optical and visual effects they can provide.

Visual Acuity, Wavefront Aberrations, and Defocus Curves With an Enhanced Monofocal and a Monofocal Intraocular Lens: A Prospective, Randomized Study

Nanavaty MA, Ashena Z, Gallagher S, et al.

J Refract Surg. 2022;39(1):10-20.

OVERVIEW

Study Design

- Prospective, randomized, comparative study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 50 eyes of 25 patients / 9 month follow up
- RayOne IOL (Rayner) / 50 eyes of 25 patients / 9 month follow up

Key End Points

- Uncorrected distance (UDVA) and intermediate (UIVA) visual acuity, corrected distance visual acuity (CDVA), distance-corrected intermediate (DCIVA), defocus curves, manifest refraction, and patient questionnaires

KEY TAKEAWAYS

Results

- Monocular UDVA and UIVA, binocular UIVA, and monocular and binocular DCIVA were better with the TECNIS Eyhance™ IOL at 3 and 9 months compared to the RayOne
- The monocular and binocular defocus curves were significantly broader with the TECNIS Eyhance™ IOL between -0.50 and -3.00 diopters compared to the RayOne
- Manifest refraction, glare, and halos were not different between the two groups

Conclusions The TECNIS Eyhance™ IOL provided better DCIVA and broader defocus curves than the RayOne IOL. There was no difference in CDVA or patient-reported outcomes.

Analysis of Higher Order Aberrations in Recently Developed Wavefront-Shaped IOLs

Schmid R, Borkenstein AF.

Graefe's Arch Clin Exp Ophthalmol. 2022;260:609-620.

OVERVIEW

Study Design

- Bench study analyzing higher order aberrations of four IOLs using a Shack-Hartmann sensor in an in-situ model eye

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- RayOne EMV (Rayner)
- AcrySof IQ Vivity IOL DFT015 (Alcon)
- LuxSmart Crystal (Bausch & Lomb)

Key End Points

- Lower and higher order aberrations

KEY TAKEAWAYS

Results

- TECNIS Eyhance™ IOL and Vivity produced a considerable increase of negative Z 4-0.
- RayOne EMV showed a moderate increase in positive Z 4-0.
- LuxSmart produced a combination of Z 4-0 and Z 6-0 with an opposite sign.

Conclusions Spherical aberrations of different orders are the only relevant Zernike polynomials in this new class of wavefront-shaped IOLs.

Benchmarking Visual Performance With Monofocal Intraocular Lenses With and Without Enhanced Optical Properties in a Night Driving Simulator Environment: A Proof-of-Concept Study

Ungewiss J, Röck T, Wörner M, Wetzel D, Bartz-Schmidt KU, Schiefer U.

Klin Monbl Augenheilkd. 2022;239(8):996-1004.

OVERVIEW

Study Design

- Prospective, comparative, randomized study of visual performance during simulated nighttime driving activities between TECNIS Eyhance™ IOL and Clareon.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 10 eyes of 5 patients
- Clareon Monofocal CNA0T0 (Alcon) / 12 eyes of 6 patients

Key End Points

- High and low contrast distance visual acuity (HCVA and LCVA), mesopic contrast sensitivity (CS), halo size measurement

KEY TAKEAWAYS

Results

- Low contrast visual acuity and contrast sensitivity results were comparable for the TECNIS Eyhance™ IOL and Clareon Monofocal
- For intermediate distances, the TECNIS Eyhance™ IOL exceeded the Clareon Monofocal by at least 0.1 log unit (at least 1 line) with regard to media VA and CS values
- Median logMAR HCVA for TECNIS Eyhance™ IOL was 0.11 and compared to 0.0 for Clareon
- Median logMAR LCVA for TECNIS Eyhance™ IOL was 0.78 compared to 0.80 for Clareon
- Halo size was 5.4° for TECNIS Eyhance™ IOL versus 5.88° for Clareon

Conclusions Within a nighttime driving simulator environment, TECNIS Eyhance™ IOL exceeded Clareon in median logMAR (VA) and logCS by 0.1 log unit at intermediate distances (dashboard, navigation screen).

Visual and Optical Quality of Enhanced Intermediate Monofocal Versus Standard Monofocal Intraocular Lens

Garzón N, Poyales F, Albarrán-Diego C, Rico-Del-Viejo L, Pérez-Sanz L, García-Montero M.

Graefes Arch Clin Exp Ophthalmol. 2022;260(11):3617-3625.

OVERVIEW

Study Design

- Prospective, randomized, comparative study of visual performance between TECNIS Eyhance™ IOL and TECNIS® 1-piece monofocal IOL.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 60 eyes of 30 patients / 3 month follow up
- TECNIS® 1-piece Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 60 eyes of 30 patients / 3 month follow up

Key End Points

- Corrected distance visual acuity (CDVA), uncorrected distance visual acuity (UDVA), perceived halo, contrast sensitivity, higher order aberrations

KEY TAKEAWAYS

Results

- No differences were found in CDVA between the two groups
- Significant differences were detected between the two lenses evaluated in both total HOA ($p = 0.028$) and internal HOA ($p = 0.037$).
- Contrast sensitivity and halometry results obtained at 1 month were similar across the two IOL groups.

Conclusions In patients undergoing cataract surgery, TECNIS Eyhance™ IOL offered similar distance performance and contrast sensitivity along with perceived HOA and halos compared with the TECNIS® 1-piece Monofocal IOL.

Vision Outcomes with a New Monofocal IOL

Cinar E, Bolu H, Erbakan G, Yuce B, Aslan F, Fece M, Emre S.

Int Ophthalmol. 2021;41(2):491-498.

OVERVIEW

Study Design

- Retrospective comparative study conducted in Turkey analyzing patient data from Sep 2019 to Jan 2020.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) 62 unilateral eyes, SN60WF IQ Acrysof IOL (monofocal, Alcon) 65 patient's unilateral eyes. 1-4-month average follow-up period.

Key End Points

- Monocular CDVA and UDVA at 4 m, CIVA and UIVA at 60 cm, and CNVA and UNVA at 40 cm
- Rate of patient satisfaction; Surgeon comfort and experience during implantation

KEY TAKEAWAYS

Results

- CDVA, UDVA, CNVA, and UNVA values did not differ significantly between the TECNIS Eyhance™ IOL group and the SN60WF IOL group.
- The TECNIS Eyhance™ IOL group showed significantly better results for CIVA and UIVA.
- Rates of patient satisfaction with spectacle-free distance was 95.2% (TECNIS Eyhance™ IOL) and 95.3% (Acrysof), intermediate was 90.4% (TECNIS Eyhance™ IOL) and 53.8% (Acrysof) and near was 55.5% (TECNIS Eyhance™ IOL)and 41.5% (Acrysof).
- There was no difference in surgeon comfort during all stages of cataract surgery between both IOLs.

Conclusions

The TECNIS Eyhance™ IOL, which features a new optical design based on a continuous power profile, was determined to be superior to the SN60WF IOL for intermediate visual acuity and not inferior for corrected and uncorrected distance and near visual acuity.

Comparison of New Monofocal Innovative and Standard Monofocal Intraocular Lens After Phacoemulsification

Unsal U, Sabur H.

Int Ophthalmol. 2021;41(1):273-282.

OVERVIEW

Study Design

- Retrospective comparative study conducted in Turkey analyzing patient data from May 2019 and October 2019.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) 16 patients bilaterally implanted, TECNIS® IOL ZCB00 (Johnson & Johnson Vision) 16 patients bilaterally implanted. 1-month follow-up

Key End Points

- Manifest refraction; Spherical equivalent (SE) values; Monocular and binocular uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), uncorrected intermediate visual acuity (UCIVA), distance-corrected intermediate visual acuity (DCIVA), and distance-corrected near visual acuity (DCNVA); Binocular defocus curve; Photopic contrast-sensitivity; Spectacle independence; Photic phenomena; Tolerance to residual refractive errors

KEY TAKEAWAYS

Results

- The mean monocular postoperative UDVA, CDVA, DCNVA, spherical equivalent and cylinder values were comparable between each group.
- Monocular and binocular DCIVA and UCIVA were significantly higher in the TECNIS Eyhance™ IOL group compared with the monofocal group.
- No statistically significant difference was detected between groups regarding the photopic contrast sensitivities for any spatial frequency.
- Spectacle independence was significantly higher in the TECNIS Eyhance™ IOL group.
- TECNIS Eyhance™ IOL revealed a good tolerance to unexpected residual refractive errors.

Conclusions TECNIS Eyhance™ IOL appears to be an effective option for both patients and surgeons regarding better intermediate visual acuities and more forgiving for residual refractive errors relative to the standard monofocal intraocular lenses.

Clinical Evaluation of a New Monofocal IOL with Enhanced Intermediate Function in Patients with Cataract

Auffarth G, Gerl M, Tsai L, et al.

J Cataract Refract Surg. 2021;47:184–191.

OVERVIEW

Study Design

- Prospective, bilateral, randomized, comparative/evaluator-masked, controlled study of the TECNIS Eyhance™ IOL and TECNIS® Monofocal IOL ZCB00.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 67 patients / 6 month follow up
- TECNIS® 1-piece Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 72 patients / 6 months follow up

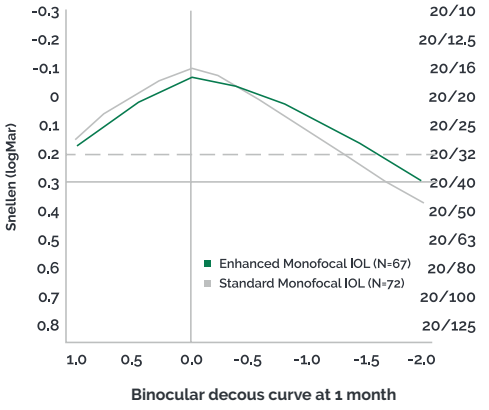
Key End Points

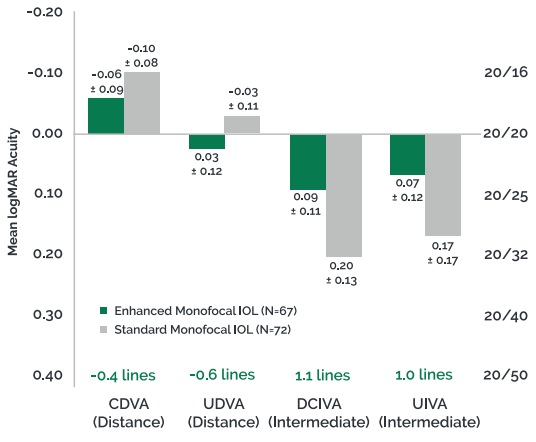
- Monocular and binocular corrected distance visual acuity (CDVA), uncorrected distance visual acuity (UDVA), distance-corrected intermediate visual acuity (DCIVA), uncorrected intermediate visual acuity (UIVA), contrast sensitivity, defocus curve, adverse events, and patient reported outcomes (PRVSQ and Catquest-SF9)

KEY TAKEAWAYS

Results

- The TECNIS Eyhance™ IOL significantly improved mean monocular and binocular DCIVA and UIVA by at least 1-line logMAR compared with the TECNIS® Monofocal IOL (all P ≤ .0001).
- Distance vision for the TECNIS Eyhance™ IOL was 20/20 or better and comparable with that of the TECNIS® Monofocal IOL at 6 months.
- Binocular defocus curves showed that the TECNIS Eyhance™ IOL had better mean visual acuity from -0.5 through -2.0 D when compared with the TECNIS® Monofocal IOL.
- Contrast sensitivity, photic phenomena outcomes, and rates of adverse events were similar between the 2 groups.





Mean ± SD binocular, photopic visual acuity outcomes at 6 months
(CDVA = corrected distance visual acuity; DCIVA = distance-corrected intermediate visual acuity; UDVA = uncorrected distance visual acuity; UIVA = uncorrected intermediate visual acuity).

Conclusions

In patients undergoing cataract surgery, the TECNIS Eyhance™ IOL provided enhanced intermediate vision and similar distance performance and photic phenomena compared with the TECNIS 1-piece Monofocal IOL, along with improved functional performance in daily life.

Visual Performance and Optical Quality after Implantation of a New Generation Monofocal Intraocular Lens

Kang K, Song M, Kim K, et al.

Korean J Ophthalmol. 2021;35(2):112-119.

OVERVIEW

Study Design

- Single-center, retrospective study comparing dominant eye implantation of the TECNIS Eyhance™ IOL ICB00 to the TECNIS® 1-piece Monofocal IOL ZCB00.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 111 eyes of 111 patients / 3 month follow up
- TECNIS® 1-piece Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 86 eyes of 86 patients / 3 month follow up

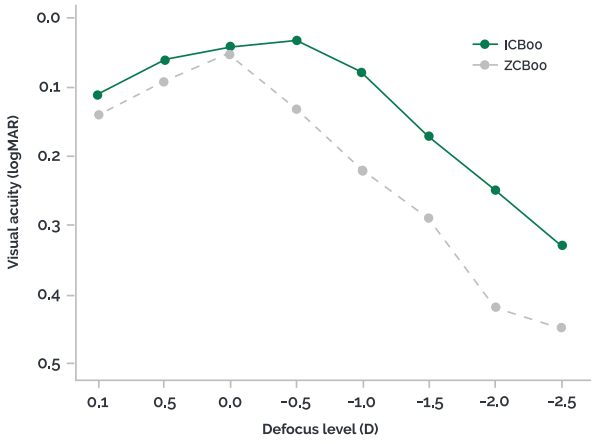
Key End Points

- Uncorrect¬ed near, intermediate, and distance visual acuity (UNVA, UIVA, UDVA), corrected distance visual acuity (CDVA), defocus curve

KEY TAKEAWAYS

Results

- Uncorrected and corrected distance vision were comparable between the two groups at 3 months.
- Compared to the TECNIS® Monofocal IOL group, the TECNIS Eyhance™ IOL group showed significantly higher intermediate visual acuity ($p < 0.001$) and near visual acuity ($p < 0.05$) 3 months post-operatively.
- The TECNIS Eyhance™ IOL showed a smoother defocus curve with a broader landing zone compared to the TECNIS® Monofocal IOL, with ≥ 0.22 logMAR between defocus levels of +1.00 to -1.50 D.



Mean monocular defocus curves obtained in TECNIC Eyhance™ IOL ICB00 and TECNIS® Monofocal IOL ZCB00 groups. logMAR = logarithm of the minimal angle of resolution; D = diopters

Conclusions

The TECNIS Eyhance™ IOL provided superior intermediate vision and comparable distance performance and photic phenomena compared to the TECNIS® 1-piece Monofocal IOL.

Laboratory Investigation of Preclinical Visual-Quality Metrics and Halo-Size in Enhanced Monofocal Intraocular Lenses

Labuz G, Son H-S, Naujokaitis T, et al.

Ophthalmol Ther. 2021;10:1093–1104.

OVERVIEW

Study Design

- Bench study evaluating IOL preclinical visual-quality metrics and halo size; OptiSpheric IOL PRO2 device (Trioptics) used for optical performance measurements.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- TECNIS® Monofocal IOL ZCB00 (Johnson & Johnson Vision)
- AE2UV (Eyebright Medical Technology Inc)/ZOE Primus-HD (OphthalmoPro)
- ISOPURE (PhysIOL)
- RayOne EMV (Rayner)

Key End Points

- IOL optical quality in polychromatic light was assessed. The imaging quality was compared with metrics derived from the optical transfer function. Halo size was estimated from the projection of the point spread function under scotopic pupil.

KEY TAKEAWAYS

Results

- TECNIS® ZCB00 IOL showed the highest image quality at the far focus.
- The performance of TECNIS Eyhance™ IOL ICB00, AE2UV/ZOE, and IsoPure at – 1 D was superior to that of TECNIS® IOL ZCB00 lens.
- The monocular defocus tolerance of the RayOne EMV was comparable with that of TECNIS® IOL ZCB00.
- The RayOne EMV intermediate range was improved in a monovision configuration (- 1 D offset). This approach, however, yielded the largest halo area, i.e., 53% of the TECNIS® IOL ZCB00 halo, compared to 34% for the IsoPure, 14% for the AE2UV/ZOE, and 8% for the TECNIS Eyhance™ IOL ICB00.

Conclusions

The mono-EDoF models have a clear advantage over the TECNIS® IOL ZCB00 lens by expanded imaging capability beyond - 0.5 D. Although the RayOne EMV provided the largest (binocular) visual-range extension, it was at the expense of monocular vision and higher susceptibility to halo. The halo-profiles of the TECNIS Eyhance™ IOL ICB00 and AE2UV/ZOE IOLs were similar to that of the TECNIS® IOL ZCB00, indicating their low potential to induce photic phenomena.

Surface Profiles of New-Generation IOLs with Improved Intermediate Vision

Tognetto D, Cecchini P, Giglio R, Turco G.

J Cataract Refract Surg. 2020;46(6):902-906.

OVERVIEW

Study Design

- Prospective laboratory study evaluating surface profile of different IOLs using contact surface profilometry.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision), TECNIS Symfony™ IOL ZXR00 (Johnson & Johnson Vision), TECNIS® IOL ZCB00 (Johnson & Johnson Vision), Sensar AAB00 (Johnson & Johnson Vision), Mini Well Ready (SIFI Medtech), Mini 4 Ready (SIFI Medtech)

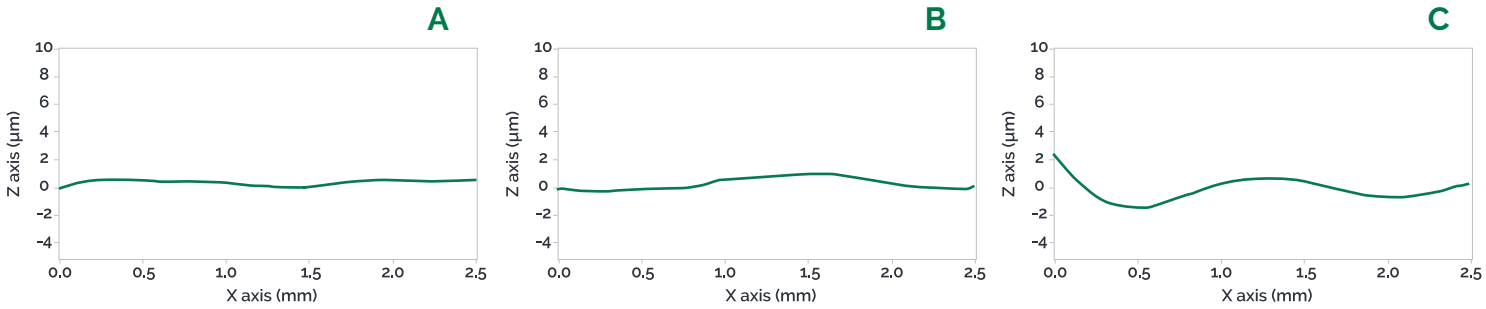
Key End Points

- Raw profile of IOL, difference in best-fit circle of IOL profile

KEY TAKEAWAYS

Results

TECNIS Eyhance™ IOL presented an unusual profile that appeared similar to the conventional monofocal based on the same platform with minimal differences in the central design. TECNIS Symfony™ IOL showed a diffractive design while IOL Mini Well Ready demonstrated a central steepening surrounded by symmetrical lateral change in depths.



Subtraction lines obtained after the removal of the best-fit circle from the raw profiles of AAB00 (A), ZCB00 (B), and ICB00 (C).

Conclusions

Improved intermediate vision can be achieved by means of different optic designs and not just the traditional diffractive design. Profiles of new-generation IOLs are characterized by progressive, smooth changes of the superficial geometry.

Visual Outcome, Optical Quality, and Patient Satisfaction with a New Monofocal IOL, Enhanced for Intermediate Vision Preliminary Results

Mencucci R, Cennamo M, Venturi D, Vignapiano R, Favuzza E.

J Cataract Refract Surg. 2020;3(46):378-387.

OVERVIEW

Study Design

- Prospective case series comparing visual outcomes of patients bilaterally implanted with TECNIS Eyhance™ IOL and patients bilaterally implanted with TECNIS® IOL ZCB00

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) 20 patients, 40 eyes, TECNIS® IOL ZCB00 (Johnson & Johnson Vision) 20 patients, 40 eyes. 6 months post-operative follow up.

Key End Points

- Monocular and binocular UDVA and CDVA (4 m), uncorrected, UIVA, DCIVA, CIVA (66 cm) and UNVA, DCNVA, CNVA (40 cm). Photopic contrast sensitivity, binocular defocus curve, objective scatter index (OSI), Strehl ratio, modulation transfer function (MTF) cutoff, halo and glare perception, and spectacle independence were also evaluated

KEY TAKEAWAYS

Results

- Monocular and binocular, uncorrected and corrected, distance and near visual acuities (UDVA, CDVA, UNVA; DCNVA and CNVA) were similar between groups, however, monocular and binocular uncorrected and corrected intermediate visual acuities (UIVA and DCIVA) were significantly higher in the TECNIS Eyhance™ IOL group.
- The TECNIS Eyhance™ IOL group achieved a smoother profile along the entire defocus curve with a less abrupt decrease in visual acuity, especially within the intermediate defocus range (up to -1.50 D). The TECNIS Eyhance™ IOL group showed significantly better defocus results at -1 D and -1.5 D compared to the TECNIS® IOL ZCB00 group.
- There were no significant differences in photopic contrast sensitivity for any spatial frequency between both IOL groups.
- Optical quality parameters measured by the OQAS system at a 4-mm pupil revealed the ocular scatter index (OSI), MTF cut-off and the Strehl ratio were similar between the two groups.
- With regards to glare and halo perception, no statistically significant difference were noted between the two IOL groups, assessed by the NEI-RQL 42 questionnaire "glare" subscale.
- Patient-Reported Spectacle Independence Questionnaire (PRSIQ) demonstrated that only 20% of patients from the TECNIS Eyhance™ IOL group reported the need for intermediate correction in their everyday life, while 90% of patients in the TECNIS® IOL ZCB00 group needed intermediate-distance glasses.

Conclusions

Patients implanted with TECNIS Eyhance™ IOLs reported better spectacle independence for intermediate visual tasks, comparable incidence of unwanted photic phenomena without any impairment of far vision and visual quality compared to the TECNIS® IOL ZCB00 group.

Comparison of an Aspheric Monofocal Intraocular Lens with the New Generation Monofocal Lens Using Defocus Curve

Yangzes S, Kamble N, Grewal S, Grewal SPS.

Indian J Ophthalmol. 2020;68(12):3025-3029.

OVERVIEW

Study Design

- Observational case series comparing visual outcomes of patients implanted with either TECNIS Eyhance™ IOL or TECNIS® IOL ZCB00 using defocus curve.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00, 71 eyes, TECNIS® IOL ZCB00 (both Johnson & Johnson Vision), 45 eyes. Two weeks post-operative follow up.

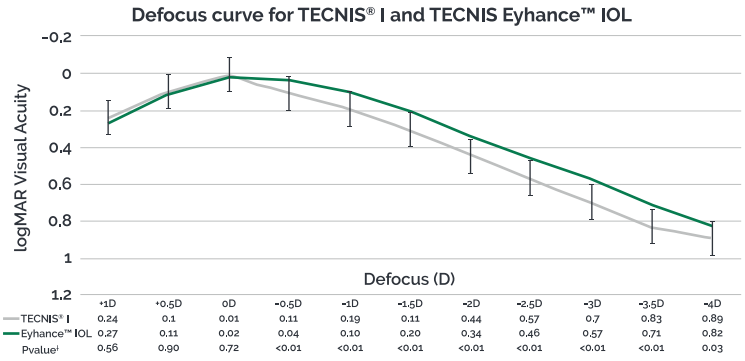
Key End Points

- UDVA & CDVA (6m), UIVA & CIVA (80cm), UNVA & CNVA (40cm), monocular distance-corrected defocus curve

KEY TAKEAWAYS

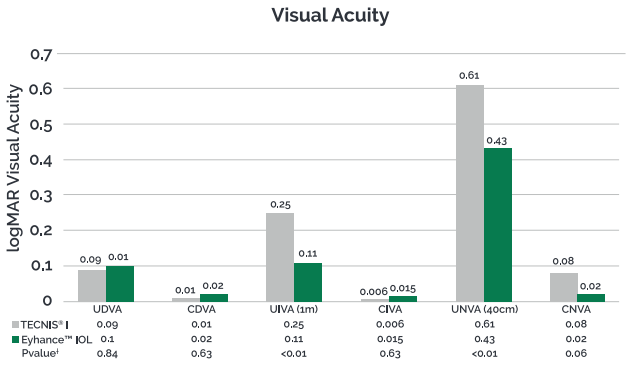
Results

- There was no significant difference in UCDVA and CDVA between both groups. TECNIS Eyhance™ IOL group had significantly better UCIVA compared to the TECNIS® IOL ZCB00 group with similar acuity at distance. The visual acuity at intermediate and near were significantly better in TECNIS Eyhance™ IOL group compared to TECNIS® IOL ZCB00 at two weeks follow up.
- The mean defocus curve in both groups were similar at 0D (corresponding to distance vision) however, the TECNIS Eyhance™ IOL group had significantly better visual acuity at defocus levels ranging from -0.50 to -4.00 D (corresponding to intermediate and near vision).



	+1D	+0.5D	0D	-0.5D	-1D	-1.5D	-2D	-2.5D	-3D	-3.5D	-4D
TECNIS® I	0.24	0.1	0.01	0.11	0.19	0.11	0.44	0.57	0.7	0.83	0.89
Eyhance™ IOL	0.27	0.11	0.02	0.04	0.10	0.20	0.34	0.46	0.57	0.71	0.82
Pvalue‡	0.56	0.90	0.72	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03

Defocus curve of TECNIS I and TECNIS Eyhance™ IOL across defocus levels (+1D to -4D).
‡Mann-Whitney Test



	UDVA	CDVA	UIVA (1m)	CIVA	UNVA (40cm)	CNVA
TECNIS® I	0.09	0.01	0.25	0.006	0.61	0.08
Eyhance™ IOL	0.1	0.02	0.11	0.015	0.43	0.02
Pvalue‡	0.84	0.63	<0.01	0.63	<0.01	0.06

Comparative graph showing post-operative visual acuity at various distances in both groups. (VA- visual acuity, CNVA- corrected near visual acuity, UNVA- uncorrected near visual acuity, CIVA- corrected intermediate visual acuity, UIVA- uncorrected intermediate visual acuity, CDVA- corrected distance visual acuity, UDVA- uncorrected distance visual acuity)
‡Mann-Whitney Test

Conclusions

TECNIS Eyhance™ IOL provides significantly better intermediate and near vision compared to TECNIS® ZCB00.

Differences in Intermediate Vision: Monofocal Intraocular Lenses Vs. Monofocal Extended Depth of Focus Intraocular Lenses

de Luis Eguileor B, Indart L, Alday N, Eguen C, Sanchez C.

Arch Soc Esp Oftalmol (Engl Ed). 2020;95(11):523-527.

OVERVIEW

Study Design

- Randomized, prospective, observational study conducted in Spain.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) 15 patients bilaterally implanted, TECNIS® IOL ZCB00 (Johnson & Johnson Vision) 15 patients, bilaterally implanted. 1-month follow-up

Key End Points

- Corrected intermediate VA (66 cm)
- Defocus curves at the 1-month follow-up
- Correlation of the following: high-order and spherical aberrations with intermediate VA, pupil size with intermediate VA and age with intermediate VA

KEY TAKEAWAYS

Results

- Both groups achieved a distance VA of 0.00 logMAR.
- Intermediate VA (66cm) was statistically significantly better with the TECNIS Eyhance™ IOL compared to the TECNIS® IOL ZCB00.
- Binocular intermediate VA was found to be significantly correlated with corneal (6 mm) RMS high-order aberrations (0.476) and Z40 (0.483) with the TECNIS Eyhance™ IOL.

Conclusions The TECNIS Eyhance™ IOL offers sufficient depth of focus to provide patients with comfortable vision without impairing distance vision.

Enhancing the Intermediate Vision of Monofocal Intraocular Lenses Using a Higher Order Aspheric Optic

Alarcon A, Canovas C, Koopman B, Weeber H, Auffarth G, Piers P.

J Refract Surg. 2020;36(8):520-527.

OVERVIEW

Study Design

- Comparative optical bench study between TECNIS Eyhance™ IOL and TECNIS® IOL ZCB00, conducted in Germany calculating simulated visual acuity from distance to -2.00 diopters (D)

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision), TECNIS® IOL ZCB00 (Johnson & Johnson Vision). No patients were included.

Key End Points

- The effect of corneal higher order aberrations (HOAs) on simulated visual acuity, pupil size, and decentration was assessed using realistic computer eye models. The susceptibility to photic phenomena was evaluated by measuring preclinically the intensity of the light distribution in the retinal plane.

KEY TAKEAWAYS

Results

- Simulated defocus curves showed TECNIS Eyhance™ IOL with increased simulated visual acuity in the intermediate range compared to the TECNIS® IOL ZCB00 with comparable distance vision, independently of the pupil size and corneal HOAs.
- At -1.50 D, the TECNIS Eyhance™ IOL provided a gain of approximately 0.1 logMAR, whereas at distance, the difference was less than 0.05 logMAR.
- The tolerance to decentration was also similar in both designs.
- Experimental results indicated that the susceptibility to photic phenomena with TECNIS Eyhance™ IOL was similar to TECNIS® IOL ZCB00.
- This study contains a detailed and accurate description of the TECNIS Eyhance™ lens design.

Conclusions Preclinical data showed that TECNIS Eyhance™ IOL improves intermediate vision while maintaining comparable distance image quality and keeping the same photic phenomena profile as a standard aspheric monofocal IOL.

Optical and Predicted Visual Performance of the Next Generation TECNIS Monofocal Intraocular Lens

Alarcon A, Koopman B, Canovas C, Domingo J, Auffarth G, Piers P.

Presented at the Winter European Society of Cataract and Refractive Surgeons (WESCRS), Athens, Greece, 2019.

OVERVIEW

Study Design

- Optical bench testing at Groningen, Netherlands, comparing predicted visual performance of different monofocal IOLs

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision), TECNIS® IOL ZCB00 (Johnson & Johnson Vision), AcrysofIQ SN60WF (Alcon), Clareon CNA0T0 (Alcon), Vivinex XY1 (Hoya)

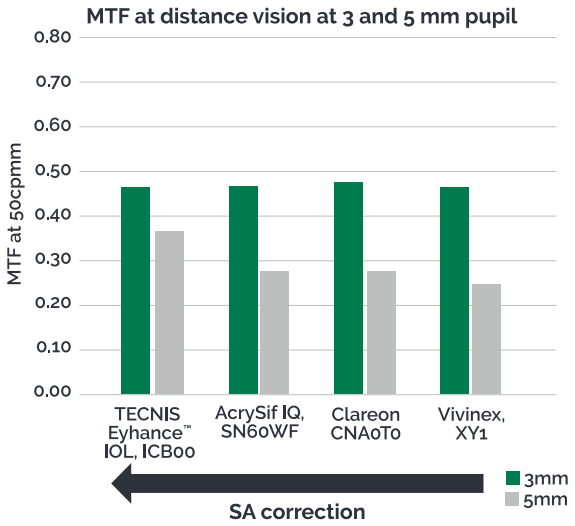
Key End Points

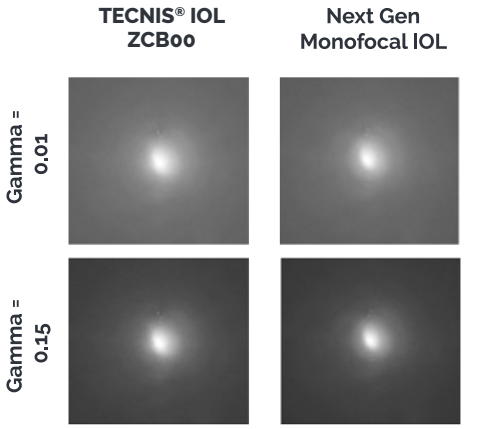
- MTF at 3mm & 5mm, Simulated visual acuity, photic phenomona

KEY TAKEAWAYS

Results

- With 3mm pupil size, TECNIS Eyhance™ IOL provided equivalent MTF at distance compared to other monofocal IOLs. At 5mm pupil size TECNIS Eyhance™ IOL had 31% improved image contrast compared with Clareon IOL and 45% better image contrast compared with Vivinex)
- TECNIS Eyhance™ IOL provided simulated distance visual acuity over 20/20 and improved intermediate visual acuity compared to TECNIS® IOL ZCB00,
- TECNIS Eyhance™ IOL provided similar simulated photic phenomena compared to TECNIS® IOL ZCB00.





Different gamma values to simulate different retinal sensitivities

Conclusions

TECNIS Eyhance™ IOL ICB00 provides better image contrast in mesopic conditions compared to competitor monofocal IOLs. Compared to an aspheric monofocal IOL, TECNIS Eyhance™ IOL provides the same distance image quality, improved intermediate vision, and similar photic phenomena.

Clinical Investigation of an Enhanced Monofocal IOL Model ICB00 Compared to an Aspheric Monofocal IOL Control Model ZCB00

Domingo J, Alarcon A, Jackson B, Auffarth G, Janakiraman D.

Presented at the Winter European Society of Cataract and Refractive Surgeons (WESCRS), Athens, Greece, 2019.

OVERVIEW

Study Design

- Prospective, multicenter (9 sites in EU), bilateral, randomized, 6-month, double-masked trial to evaluate the clinical performance of the TECNIS Eyhance™ IOL.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision), TECNIS® IOL ZCB00 (Johnson & Johnson Vision)/ 67 subjects with bilateral ICB00, 72 subjects with bilateral ZCB00 at 6 months.

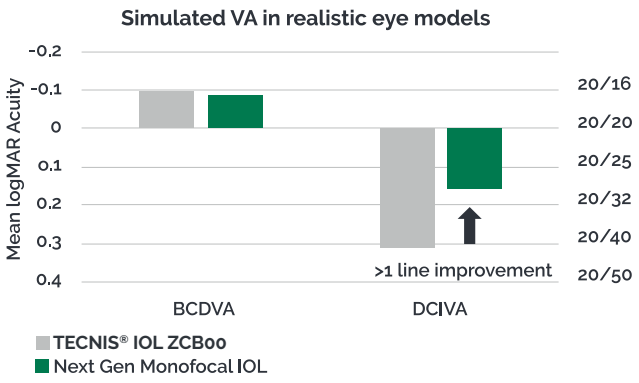
Key End Points

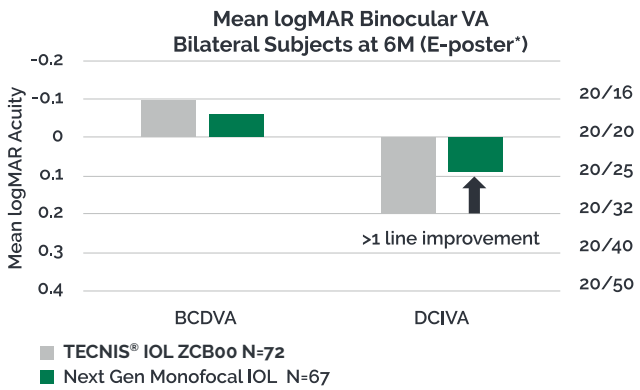
- Distance Corrected Intermediate VA (DCIVA), Best Corrected Distance VA (BCDVA), Uncorrected intermediate VA (UCIVA), Patient Reported Visual Symptoms Questionnaire (PRVSQ)

KEY TAKEAWAYS

Results

- TECNIS Eyhance™ IOL provides statistically significant improvement (greater than 1 line) for both monocular and binocular DCIVA and UCIVA at 66cm compared to a monofocal control.
- TECNIS Eyhance™ IOL provided comparable (non-inferior within 1 line) BCDVA compared to that of the monofocal control (ZCB00).
- Significantly more patients implanted with TECNIS Eyhance™ IOL had no difficulty with seeing to walk on uneven surfaces compared to patients implanted with TECNIS® IOL ZCB00. There was no statistically significant difference in rates of halo, glare, or starburst observed with TECNIS Eyhance™ IOL compared with TECNIS® IOL ZCB00.





Conclusions

TECNIS Eyhance™ IOL when compared with TECNIS® IOL ZCB00 provided improvement in intermediate vision with 20/20 or better distance corrected vision.

More patients had no difficulty with seeing to walk on uneven surfaces with TECNIS Eyhance™ IOL compared to TECNIS® IOL ZCB00 with similar rates of photic phenomena.

New Technology to Enhance Patient Outcomes with a Monofocal IOL

Piers P.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Paris, France, 2019

OVERVIEW

Study Design

- General overview of TECNIS Eyhance™ IOL technology/design with clinical and bench study information incorporated.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision), TECNIS® IOL ZCB00 (Johnson & Johnson Vision), Clareon (Alcon), Vivinex (Hoya)

Key End Points

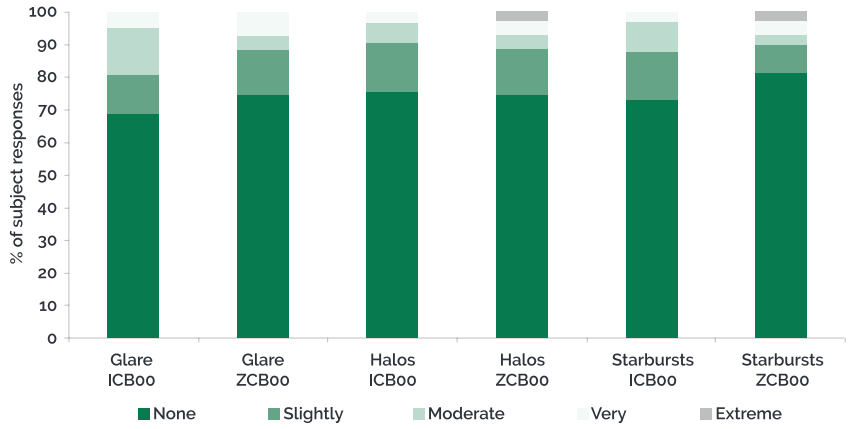
- MTF at 3mm & 5mm, simulated visual acuity, photic phenomena, Distance Corrected Intermediate VA (DCIVA), Uncorrected intermediate VA (UCIVA)

KEY TAKEAWAYS

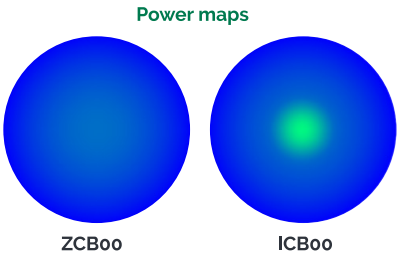
Results

- TECNIS Eyhance™ IOL is a refractive technology IOL (no rings), with the same base geometry, same material (chromatic dispersion), same spherical aberration and A-constant as TECNIS® IOL ZCB00. TECNIS Eyhance™ IOL ICB00 differs from TECNIS® IOL ZCB00 in that it is designed to improve intermediate vision while providing comparable distance vision. The lens features a, progressive increase in power such that the power changes continuously from the center to the periphery of the lens. The power profile of the TECNIS Eyhance™ IOL is created using a higher order asphere with slight change in curvature while its central thickness remains equivalent to that of TECNIS® IOL ZCB00. 85% of the lens surface is indistinguishable from the TECNIS® IOL.
- TECNIS Eyhance™ IOL is expected to be equally tolerant to decentration as the TECNIS® IOL ZCB00 based on simulations performed in the 46 eye models under decentration and 4 mm pupil. Even large amounts of decentration do not decrease the benefit for intermediate vision.

Directed, When asked, "How bothered by the visual symptom were you?", 1st Eyes Only (ICB00, N=67; ZCB00, N=72)



85% of the lens surface indistinguishable from the TECNIS® IOL ZCB00



Conclusions

Compared with the TECNIS® IOL ZCB00, TECNIS Eyhance™ IOL provides distance VA over 20/20 with improved intermediate VA and optical simulation shows it to be equally tolerant to decentration as the TECNIS® IOL ZCB00

Optical and Predicted Visual Performance of TECNIS Intraocular Lenses

Canovas C, Alarcon A, Koopman B, Perez G, Auffarth G, Piers P.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Paris, France, 2019

OVERVIEW

Study Design

- Comparative Optical Bench study using an Eye Model that mimics the average corneal spherical and chromatic aberrations of the human eye. (Groningen, Netherlands)

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision), TECNIS® IOL ZCB00 (Johnson & Johnson Vision)
- TECNIS Synergy™ IOL ZFR00 (Johnson & Johnson Vision), TECNIS® IOL ZLB00 (Johnson & Johnson Vision)
- Acrysof Panoptix (Alcon), AT Lisa (Zeiss), PhysIOL (Fine Vision)

Key End Points

- Intermediate and near optical and predicted visual performance
- Through focus MTF
- Simulated Binocular visual acuity (VA)

KEY TAKEAWAYS

Results

- Simulated VA predicted an improvement in intermediate vision of approximately one line for TECNIS Eyhance™ IOL as compared to the TECNIS® IOL ZCB00.
- TECNIS Eyhance™ IOL provided distance vision comparable to the TECNIS® IOL ZCB00.
- TECNIS Synergy™ IOL provided a range of vision of more than 3D above 0.1 LogMAR, longer than that of other PC IOLs.
- Intermediate and near vision was found to be superior for TECNIS Synergy™ IOL, as compared to any of the other two monofocal IOLs, TECNIS® IOL ZCB00 or TECNIS Eyhance™ IOL.

Conclusions Preclinical data showed that while intermediate vision is better for the TECNIS Eyhance™ IOL (as compared to the TECNIS® IOL ZCB00), both intermediate and near vision are superior for the TECNIS Synergy™ IOL and it delivers a continuous high-contrast vision across the range from distance to near.

TECNIS Eyhance™ IOL in Cataract Surgery: The First Experiences

Barisic A., Dekaris I., Gabric N.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Paris, France, 2019

OVERVIEW

Study Design

- Interventional study conducted in Croatia.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision), TECNIS® IOL ZCB00 (Johnson & Johnson Vision). 23 patients (13 patients bilaterally implanted with the TECNIS Eyhance™ IOL, 10 patients implanted with the TECNIS Eyhance™ IOL in one eye and the TECNIS® ZCB00 IOL in the other eye).

Key End Points

- Monocular UDVA and UNVA (46 eyes)
- Binocular UNVA (13 patients bilateral Eyhance™)
- Binocular UNVA (Eyhance™ / ZCB00 10 patients)
- Subjective reports of halos and glare
- Intermediate VA

KEY TAKEAWAYS

Results

- TECNIS Eyhance™ IOL showed improvement in intermediate VA – Patients did not need glasses for computer use.
- Improvement in near VA with the TECNIS Eyhance™ IOL was noted compared to the TECNIS® ZCB00 IOL.
- Some TECNIS Eyhance™ IOL patients did not need to wear reading glasses.
- Distance vision of the TECNIS Eyhance™ IOL was comparable to the TECNIS® ZCB00 IOL.
- Patients did not report any halos or glare.
- Mean reading distance for the TECNIS Eyhance™ IOL was 56 +5.6 cm

Conclusions Intermediate and near vision was better for the TECNIS Eyhance™ IOL compared with the TECNIS® ZCB00 IOL, while distance vision and reports of halo / glare were comparable between both lenses.

Visual Outcomes After Bilateral TECNIS Eyhance™ IOL Implantation: 6 Months Follow Up

Belovari M, Elabjer B, Grgic D, Saric D.

Presented at the Winter European Society of Cataract and Refractive Surgeons (WESCRS), Marrakech, Morocco, 2020.

OVERVIEW

Study Design

- Prospective study conducted in Croatia.

Study IOL(s)/Number of eyes/patients and Study Duration

- Bilateral implantation of the TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) ,20 patients with 6 months follow-up period.

Key End Points

- Uncorrected Distance Visual Acuity (UCDVA); Uncorrected Intermediate Visual Acuity (UCIVA); Uncorrected Near Visual Acuity (UCNVA)
- Perceived photic phenomena (halo and glare)
- Patient's satisfaction preoperatively and at the 6-month follow up period

KEY TAKEAWAYS

Results

- Uncorrected visual acuity (distance, intermediate and near) significantly improved within a week following the second eye surgery, without significant further changes in the 6-month follow-up period.
- One patient reported negative dysphotopsia in both eyes which resolved after 3 months.
- One patient reported mild positive dysphotopsia (halos / glare) which diminished after 6 months.
- All patients were completely satisfied with the final postoperative outcome and did not report impaired night-driving ability.

Conclusions

TECNIS Eyhance™ IOL showed excellent visual performance at distance and intermediate range of vision, as well as acceptable near vision.

High levels of patient satisfaction were recorded – patients felt 'that they got more than expected'.

Patient Satisfaction and Visual Outcomes of a New Monofocal Lens: Does It Provide Intermediate Vision in Real Life?

Donmez O, Akova YA.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Nonrandomized, retrospective study in Turkey to evaluate quality of life and clinical outcomes following cataract removal and IOL implantation of TECNIS Eyhance™ IOL

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / fifty-two (52) eyes of forty-two (42) patients

Key End Points

- Uncorrected visual acuities at distance (UDVA), intermediate (UIVA), and near (UNVA); corrected visual acuity at distance (CDVA); defocus curve; reports of dysphotopsia; need for spectacles; photopic and mesopic contrast sensitivity (CS); functional impairment caused by cataract

KEY TAKEAWAYS

Results

- UDVA 0.06 +/- 0.07 logMAR; CDVA 0.14 +/- 0.15 logMAR
- UIVA 0.11 +/- 0.13 logMAR
- UNVA 0.29 +/- 0.09 logMAR
- One-hundred percent (100%) of subjects were spectacle independent for intermediate vision
- The Visual Function Index (VF-14), questionnaire designed to measure functional impairment on patients due to cataract, resulted in 92.4 +/- 6 (81.8-100)
- The defocus curve showed two peaks at 0.0 D and -0.50 D
- One-hundred percent (100%) of subjects reported no optical phenomena
- No deviation seen in photopic and mesopic contrast sensitivity (CS)

Conclusions TECNIS Eyhance™ IOL effectively provided distance and intermediate vision with complete spectacle independence while maintaining high patient satisfaction.

Visual Outcomes After Bilateral TECNIS Eyhance™ IOL Implantation: 1 Year Follow-Up

Belovari M, Krolo I, Elabjer BK, Saric D, Grgic D, Drobec F, Jelcic M.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Prospective study at Optical Express (Zagreb, Croatia) to evaluate visual outcomes following bilateral cataract removal and TECNIS Eyhance™ IOL implantation in patients who were contraindicated for multifocal and/or extended depth of focus (EDOF) IOLs.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / eighty-four (84) eyes of forty-two (42) patients / One (1) year follow-up

Key End Points

- Uncorrected distance, intermediate, and near visual acuity; photic phenomena (halo and glare); patient satisfaction; spectacle independence

KEY TAKEAWAYS

Results

- Uncorrected visual acuity (distance, intermediate, and near) significantly improved within a week following the second eye surgery, without significant further change in the twelve month follow-up
- One-hundred percent (100%) of subjects were spectacle independent at distant and intermediate distances with acceptable spectacle independence at near distance.
- 0.07% of subjects reported bilateral negative dysphotopsia which resolved within three (3) months post-operatively
- 0.05% of subjects reported mild positive dysphotopsia (halo/glare) which diminished within six (6) months post-operatively
- One-hundred percent (100%) of subjects were completely satisfied with the final post-operative outcome and reported no impaired night-driving ability

Conclusions TECNIS Eyhance™ IOL provided excellent visual performance at distant and intermediate distances and high levels of patient satisfaction in patients who were not suitable for other types of premium IOLs.

Comparison of Visual Outcomes of a Standard Monofocal and a New Monofocal Intraocular Lens with Modified Optical Profile: A Randomized Controlled Clinical Study

Goslings WRO, Veraart H, vd. Laar-Muskens HL, Pinero DP.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Prospective, comparative, randomized study in Netherlands to evaluate and compare the effectiveness of cataract surgery after bilateral implantation of a monofocal IOL

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / seventy (70) eyes of thirty-five (35) patients / One (1) month follow-up
- Vivinex iSert (Hoya) / seventy (70) eyes of thirty-five (35) patients / One (1) month follow-up

Key End Points

- Monocular and binocular uncorrected and corrected distance visual acuity (UDVA and CDVA); monocular and binocular uncorrected and distance-corrected intermediate visual acuity (UIVA and DCIVA)

KEY TAKEAWAYS

Results

- No statistically significant differences between groups were found in monocular and binocular UDVA and CDVA (p >/- 0.080)
- Significantly better DCIVA was found in the TECNIS Eyhance™ IOL group compared to the Vivinex group (p=0.046)
- 92.9% (TECNIS Eyhance™ IOL) and 85.7% (Vivinex iSert) of eyes had a post-operative spherical equivalent (SEQ) within +/- 0.50 diopter

Conclusions The TECNIS Eyhance™ IOL provided a predictive refraction correction with an improved intermediate visual function in comparison to Vivinex iSert.

Early Clinical Outcomes Audit of a New Enhanced Monofocal Intraocular Lens (IOL)

Hamid A, Siso-Fuentes I, Dermott J, Vaswani S, O'Donnell C.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Observational case series to evaluate clinical outcomes of refractive lens exchange or cataract patients implanted with the TECNIS Eyhance™ IOL.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / three hundred-twelve (312) eyes of one-hundred eighty-seven (187) patients / One (1) and three (3) months

Key End Points

- Monocular uncorrected distance and near visual acuity; refractive accuracy

KEY TAKEAWAYS

Results

- One-hundred percent (100%) of subjects strongly agreed they were satisfied with distance vision while ninety percent (90%) of subjects strongly agreed they were satisfied with mid-range and near vision
- 97% of eyes yielded greater than or equal to 6/12 monocular uncorrected distance visual acuity while 72% of eyes yielded greater than or equal to N14 monocular uncorrected near visual acuity
- Greater than eighty percent (>80%) of patients strongly agreed they were free from glare or halos
- 76% of patients were within +/- 0.50 D of the target refraction and 97% of patients were within +/- 1.0 D of the target refraction

Conclusions

Preliminary results suggested patients implanted with TECNIS Eyhance™ IOL achieved satisfactory clinical and subjective outcomes at distance, whilst providing unaided near vision somewhat better than typically achieved with comparable monofocal IOL designs.

Comparative Analysis of Visual Outcomes of a New Non-Diffractive Extended Vision Intraocular Lens in Indian Population

Kashyap B, Kashyap BP, Kashyap NG, Kashyap B.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Prospective, nonrandomized, comparative study in India to evaluate clinical data after bilateral implantation of a monofocal IOL

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / one-hundred (100) eyes of fifty (50) patients / Three (3) months follow-up
- TECNIS® IOL ZCB00 (Johnson & Johnson Vision) / one-hundred (100) eyes of fifty (50) patients / Three (3) months follow-up

Key End Points

- Uncorrected distance, intermediate, near visual acuities (UCDVA, UCIVA, UCNVA); binocular defocus curve; spectacle independence

KEY TAKEAWAYS

Results

- UCDVA showed similar results in both groups and the difference was non-significant (p=0.13)
- UCIVA at 60 cm was significantly better in the TECNIS Eyhance™ IOL group (p=0.000)
- UCNVA for TECNIS Eyhance™ IOL and TECNIS® IOL ZCB00 was comparable and the difference was non-significant (p=0.60)
- Spectacle independence at 66cm was significantly higher in TECNIS Eyhance™ IOLs
- Binocular defocus curve showed TECNIS Eyhance™ IOL had significantly better vision at vergences of 1.0 D, 1.5 D, 2.0 D, and 2.5 D ($p < 0.5$) and non-significant at 2.5 D ($p = 0.053$)

Conclusions Bilateral implantation of TECNIS Eyhance™ IOL provided an extended range of vision while maintaining low incidence of photic phenomena for the average-height Indian population.

Clinical Outcomes of a New Monofocal Intraocular Lens with Extended Depth of Focus in Emmetropic and Myopic Targets

Lee JH, Tchah H, Chung H, Moon SY, Park SY, Lee H, Kim JY.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Prospective, nonrandomized study in South Korea to evaluate the clinical outcomes after implantation of TECNIS Eyhance™ IOL in two target groups

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / sixty (60) eyes of thirty (30) patients in an emmetropic target group / Three (3) month follow-up
- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / twenty (20) eyes of ten (10) patients in a myopic target group (-1.5 diopter) / Three (3) months follow-up

Key End Points

- Defocus curve; reports of glare and halo; satisfaction score

KEY TAKEAWAYS

Results

- 93.3% spectacle independence (distance and intermediate in emmetropic target group) and 90.0% spectacle independence (intermediate and near in myopic target group)
- Defocus curve in the emmetropic target group showed better than 20/25 binocular vision was maintained through approximately 1.75 D of defocus
- Defocus curve in the myopic target group showed better than 20/25 binocular vision was maintained between approximately 1.25 D and 2.75 D of defocus
- 83.3% subject satisfaction rate (emmetropic target group) and 90.0% subject satisfaction rate (myopic target group)
- 1.55 +/- 1.02 % of subjects reported moderate to severe glare and halo (emmetropic target group) and 1.62 +/- 1.18 % of subjects reported moderate to severe glare and halo (myopic target group)

Conclusions

Due to a relatively wide defocus curve, the TECNIS Eyhance™ IOL is more tolerable to refractive error and while targeting emmetropia yields good distance and intermediate visual acuity, a myopic target yields good results at both intermediate and near.

Comparative Evaluation of Visual Outcomes After Bilateral Implantation of an Advanced Monofocal IOL and a Conventional Monofocal IOL

Lopes D, Loureiro T, Carreira R, Barros S, Machado I, Campos P, Campos N.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Single-site study in Portugal to compare the performance of two monofocal intraocular lenses

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / Sixty (60) eyes of thirty (30) patients / One (1) to Two (2) month follow-up
- TECNIS® IOL PCB00 (Johnson & Johnson Vision) / Sixty (60) eyes of thirty (30) patients / One (1) to Two (2) month follow-up

Key End Points

- Uncorrected intermediate visual acuity (UIVA) at 66cm; defocus curve; reports of dysphotopsia

KEY TAKEAWAYS

Results

- UIVA in the TECNIS Eyhance™ IOL group showed a one (1) line improvement over the TECNIS® IOL PCB00 group, monocularly and binocularly
- Comparable glare and halo rates were observed in both groups
- 87% of TECNIS Eyhance™ IOL versus 90% of TECNIS® IOL PCB00 patients achieved a final spherical equivalent less than or equal to 0.50 D and 97% of TECNIS Eyhance™ IOL and TECNIS® PCB00 patients achieved a final spherical equivalent less than or equal to 1.0 D
- The resulting defocus curve showed the TECNIS Eyhance™ IOL presented a longer plateau with sustained visual acuity greater than 20/40 through greater diopters when compared to TECNIS® IOL PCB00 (range +1.00 to -1.50 D)

Conclusions TECNIS Eyhance™ IOL provides a significant improvement in intermediate visual acuity without compromising distance visual acuity, when compared to TECNIS® IOL PCB00

TECNIS Eyhance™ Intraocular Lens: Our Experience!

Marta A, Abreu AC, Monteiro S, Pinto M, Meneres P.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Nonrandomized, retrospective study in Portugal to evaluate functional outcomes following cataract removal and IOL implantation of TECNIS Eyhance™ IOL

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / eight (8) eyes of four (4) patients / Three (3) month follow-up

Key End Points

- Uncorrected and best corrected distance visual acuity (UDVA and BCDVA); uncorrected intermediate visual acuity (UIVA) at 66cm; uncorrected and best corrected near visual acuity (UNVA and BCNVA); contrast sensitivity (CS)

KEY TAKEAWAYS

Results

- 0.03 +/- 0.3 logMAR mean UDVA, 0.22 +/- 0.09 logMAR mean UIVA, while 100% of subjects yielded greater than or equal to J4 UNVA
- 0.00 +/- 0.00 logMAR mean BCDVA while 100% of subjects yielded greater than or equal to J1 BCNVA
- One-hundred percent (100%) of subjects reported no glare or other dysphotopsia
- No contrast sensitivity (CS) deviation seen in photopic conditions
- Objective scatter index (OSI) was lower after surgery (p=0.028)

Conclusions Subjects who underwent cataract surgery with implantation of TECNIS Eyhance™ IOL had excellent uncorrected distance vision and very good intermediate vision.

Visual, Refractive, and Aberrometric Outcomes Provided by a New IOL Composed by a Continuous and Higher-Order Aspheric Surface: Clinical Characterization and Comparison with Monofocal Lenses

Martinez-Abad A, Mena KJ, Yebana P, Alio JL.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Prospective, longitudinal study in Spain to evaluate the visual, refractive, and aberrometric state in patients implanted with TECNIS Eyhance™ IOL in comparison with a control group conformed by standard monofocal lenses.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / fifteen (15) eyes / six (6) month follow-up
- Acrysof SA60AT (Alcon) / twenty-eight (28) eyes / six (6) month follow-up

Key End Points

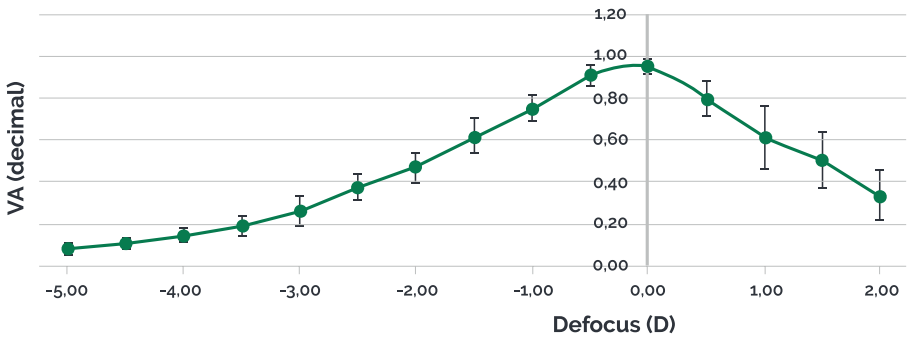
- Uncorrected and corrected visual acuity at distance and near; defocus curve

KEY TAKEAWAYS

Results

- Better UNVA and CDNVA in the TECNIS Eyhance™ IOL group than in the SA60AT group
- Mean ocular higher order aberration (HOA): 0.31 +/- 0.11 um

Defocus Curve



Conclusions

The new intraocular lens composed by a continuous and higher-order aspheric surface, TECNIS Eyhance™ IOL, provided very good quality of vision and better intermediate and near vision when compared to a conventional monofocal IOL (Acrysof SA60AT).

Prospective, Randomised, Comparative Study of Visual and Optical Outcomes After Bilateral Implantation of TECNIS Eyhance™ IOL Vs. Rayner RayOne Aspheric in Patients Undergoing Routine Cataract Surgery

Nanavaty M, Ashena Z, Gallagher S, Borkum S, Betney S, Frattaroli P, Wendam M, Barbon E.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Prospective, randomized study in United Kingdom to compare uncorrected monocular and binocular distance and intermediate vision following cataract surgery

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / twenty-six (26) eyes of thirteen (13) patients / One (1) month follow-up
- RayOne (Rayner) / twenty-eight (28) eyes of fourteen (14) patients / One (1) month follow-up

Key End Points

- Unaided distance and intermediate visual acuity (UCDVA and UIVA); defocus curve

KEY TAKEAWAYS

Results

- Monocular UCDVA was better with TECNIS Eyhance™ IOL
- Monocular and binocular UCIVA was better with RayOne however, was not statistically significant
- BCDVA and DCIVA at 60cm was better with TECNIS Eyhance™ IOL
- Defocus curves were better with TECNIS Eyhance™ IOL and statistically significant monocularly, at intermediate

Conclusions TECNIS Eyhance™ IOL was determined to be superior to RayOne for distance visual acuity and comparable for intermediate visual acuity.

Clinical Outcomes of Cataract Surgery with a New Generation Monofocal Intraocular Lens (IOL)

Ribeiro F, Ferreira T.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Single-site study in Lisbon to evaluate the clinical outcomes of patients who underwent cataract surgery with implantation of a monofocal IOL designed to improve both distance and intermediate vision.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / fifty-four (54) eyes of twenty-seven (27) patients / One (1) month follow-up

Key End Points

- Distance, intermediate, and near visual acuities; defocus curve; contrast sensitivity; reports of photic phenomena

KEY TAKEAWAYS

Results

- Mean UDVA was 0.00 +/- 0.09 logMAR, CDVA was -0.03 +/- 0.09, CIVA was 0.16 +/- 0.12, and DVNVA was 0.41 +/- 0.12 logMAR
- Defocus curve showed visual acuity of 0.1 logMAR or better from 0.5 D to -1.50 D of defocus
- The presence of dysphotopsia was very low with less than 5% of patients reporting halos or glare
- Photopic contrast sensitivity was above age-matched normal value for all spatial frequencies

Conclusions TECNIS Eyhance™ IOL provided excellent outcomes for distance and intermediate vision, while maintaining a low prevalence of photic phenomena.

Initial Outcomes TECNIS Eyhance™ IOL

Teenan D.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Single-site study at OpticalExpress (United Kingdom) to evaluate clinical outcomes following cataract removal and IOL implantation of TECNIS Eyhance™ IOL

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / ninety-four (94) eyes of forty-eight (48) patients / One (1) month follow-up

Key End Points

- Binocular UCDVA, UCIVA, UCNVA; reports of visual disturbance; night-driving; dry eye complaints; spectacle dependence

KEY TAKEAWAYS

Results

Visual Acuity

- 84.4% of subjects achieved 20/20 (6/6) visual acuity with no subjects losing two or more lines of BCDVA.
- 12.5% of subjects achieved 20/40 (N6) or better UCNVA while 43.8% of subjects achieved 20/50 (N8) or better UCNVA.
- 100% spectacle independence at distance and 50% spectacle independence at near
- Subject satisfaction rates were 92.9%

Other Visual Outcomes

- 92.9% of subjects reported no post-operative halos, 78.6% of subjects reported no post-operative starbursts, and 71.4% of subjects reported no post-operative glare
- 100% of subjects denied an increase in night driving difficulty between pre and post-op
- 7.1% of subjects reported moderate to severe post-operative dry eye

Conclusions

Initial outcomes demonstrate TECNIS Eyhance™ IOL is an effective monofocal IOL, while providing intermediate and near vision gain.

Effect of Pupil Size and Light Conditions in Monofocal Intraocular Lenses

Tognetto D, Giglio R, De Giacinto C, Alarcon A, Canovas C, Koopman B, Piers P.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Virtual, 2020.

OVERVIEW

Study Design

- Optical bench data in green and white light conditions were used to evaluate the effect of pupil size in intermediate and distance performance in different monofocal intraocular lens technologies with different levels of spherical and chromatic aberrations using optical bench data in green and white light conditions.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- TECNIS® IOL ZCB00 (Johnson & Johnson Vision)
- Acryof IQ Monofocal (SN60WF) (Alcon)
- Clareon (CNA0T0) (Alcon)
- Sensar 1-Piece AAB00 (Johnson & Johnson Vision)

Key End Points

- Optical image quality; binocular simulated visual acuity (sVA)

KEY TAKEAWAYS

Results

- Distance MTF was mainly reduced for larger pupil sizes in monofocal IOLs that do not fully compensate for corneal spherical aberration
- The effect of the different pupil sizes in distance and intermediate sVA was similar for all aspheric designs, including TECNIS Eyhance™ IOL

Conclusions

The TECNIS Eyhance™ IOL provides an improvement in intermediate sVA and maintained distance image quality when compared to that of an aspherical IOL independently of the pupil size.

Chromatic Aberration and Pupil Dependence of Two Extended Depth of Focus IOLs

Chang D, Weeber H, Piers P.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Amsterdam, The Netherlands, 2021

OVERVIEW

Study Design

- In-vitro testing performed under clinically relevant conditions for two new intraocular lens (IOL) designs to evaluate induced chromatic aberration and pupil dependence. Chromatic aberration was obtained from through focus modulation transfer function (MTF) at 50 c/mm for five different wavelengths from 450nm to 650nm, and at pupil diameters from 1mm to 5mm. Chromatic aberration was expressed as the difference in power between 450nm and 650nm at the spectacle plane.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- Acrysof IQ Vivity IOL DFT015 (Alcon)

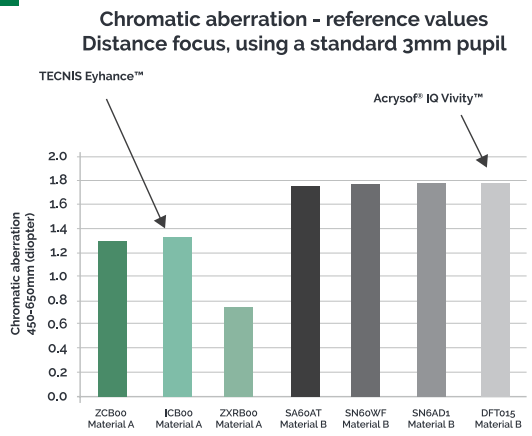
Key End Points

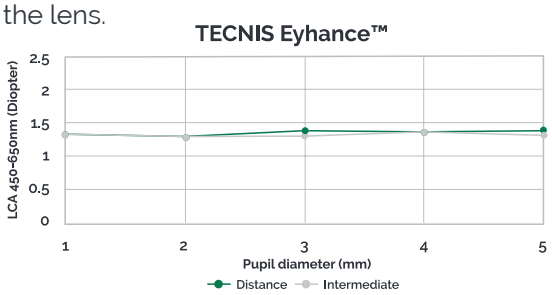
- Chromatic aberration, pupil dependence

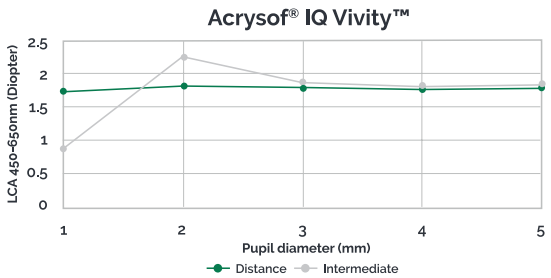
KEY TAKEAWAYS

Results

- For the TECNIS Eyhance™ IOL, the chromatic aberration is independent of pupil size.
- For pupil sizes below 3mm, the distance and intermediate performance merge into one broad focus.
- For the Acrysof IQ Vivity IOL, the chromatic aberration of the intermediate focus varies with pupil size.
- At small pupil, the longitudinal chromatic aberration (LCA) is lower than that expected based on the dispersion of the Acrysof material, suggesting that diffractive efforts contribute to the optical behavior of the lens.







Conclusions

The findings suggest chromatic aberration of the TECNIS Eyhance™ IOL is independent of pupil size, whereas the chromatic aberration of the Acrysof IQ Vivity is higher than that of TECNIS Eyhance™ IOL and pupil size dependent. The data also indicates TECNIS Eyhance™ IOL is a pure refractive lens and Acrysof IQ Vivity is a combination of diffractive and refractive optics

Initial Experience With a New Monofocal Intraocular Lens

Di Simplicio S, Teenan D, Hannan S.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Amsterdam, The Netherlands, 2021

OVERVIEW

Study Design

- Prospective study to evaluate visual outcomes after bilateral monofocal intraocular (IOL) implantation in patients with cataracts at Optical Express, Zagreb, Croatia.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 443 eyes of 240 patients

Key End Points

- Uncorrected distance, intermediate, and near visual acuity (UCDVA, UCIVA, UCNVA), patient-reported satisfaction, patient-reported quality of vision

KEY TAKEAWAYS

Results

- 78.3 % of patients had 20/20 (6/6) or better UCDVA and 99.6% of patients had 20/40 [6/12) or better UCDVA.
- 38.8% of patients had 20/40 (6/12) or better UCIVA and 80.2% of patients had 20/63 (6/19) or better UCIVA.
- 53.0% of patients had N8 or better UCNVA and 70.5% of patients had N10 or better UCNVA.
- The most common complication reported was posterior capsular opacification (4.3%).
- 89.1% of patients reported being very satisfied/satisfied.
- More than 80% of patients reported no difficulty with glare, halo, starburst, or ghosting while less than 3.4% of patients reported severe difficulty with glare, halo, starburst, or ghosting.

Conclusions

Initial outcomes suggest the TECNIS Eyhance™ IOL is a good alternative for patients with ocular pathology where a multifocal IOL might be contraindicated and has shown a low incidence of visual phenomena within the first year. Intermediate and near visual gains are evident from this lens.

Comparative Analysis of the Visual Performance Achieved After Cataract Surgery with Implantation of a Standard Monofocal or a Monofocal Intraocular Lens with Modified Optical Profile: A Randomized Clinical Trial

Goslings O, Veraart H, Laar-Muskens J, Pinero DP.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Amsterdam, The Netherlands, 2021

OVERVIEW

Study Design

- Prospective, comparative, randomized clinical trial to evaluate the effectiveness of cataract surgery with bilateral implantation of a standard monofocal and a new monofocal intraocular lens (IOL) with modified optical profile.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL (Johnson & Johnson Vision) / 70 eyes of 35 patients / 3 month follow-up
- Vivinex iSert IOL (Hoya) / 70 eyes of 35 patients / 3 month follow-up

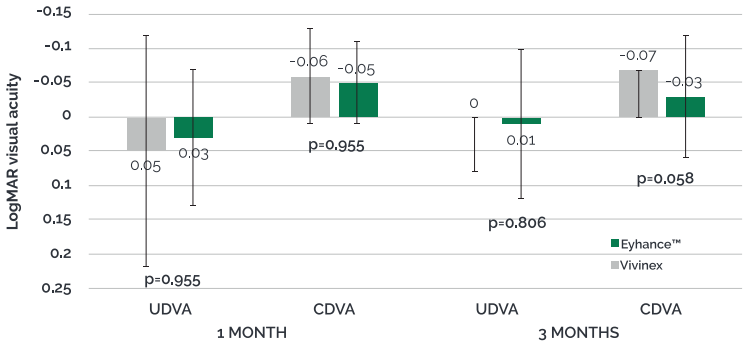
Key End Points

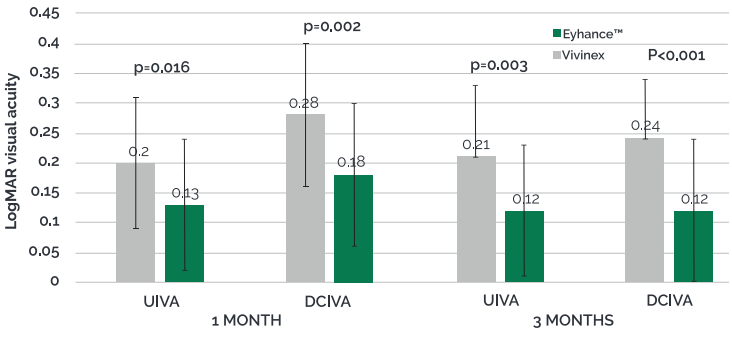
- Monocular and binocular uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), uncorrected intermediate visual acuity (UIVA), distance-corrected intermediate visual acuity (DCIVA), postoperative manifest refraction

KEY TAKEAWAYS

Results

- No statistically significant differences were found between IOL groups in postoperative binocular uncorrected distance visual acuity and corrected distance visual acuity ($p \geq 0.58$).
- Significantly better binocular uncorrected and distance-corrected intermediate visual acuity was found in the TECNIS Eyhance™ IOL group ($p \leq 0.016$).
- 88.9% and 81.8% of eyes had a postoperative spherical equivalent within +/-0.50 D in the TECNIS Eyhance™ IOL and Vivinex IOL groups, respectively.





Conclusions

The TECNIS Eyhance™ IOL provides enhanced intermediate visual function compared to a standard monofocal IOL while maintaining excellent distance vision. In addition, the TECNIS Eyhance™ IOL provides a very predictive refractive correction.

Optical Bench Evaluation of Different New Generation Monofocal IOL Technologies

Pande M, Alarcon A, Franssen L, van der Mooren M, Koopman B, Piers P.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Amsterdam, The Netherlands, 2021

OVERVIEW

Study Design

- Optical bench testing performed in a physical eye model accounting for the average spherical and chromatic aberration of the cornea: 0.27 um and 1.04 um respectively. Measurements were collected in white light for 2, 3, 4, and 5 mm physical pupil sizes in the IOL plane. Distance image quality was evaluated using the modulation transfer function (MTF). Through focus visual quality was simulated from the optical bench estimations and clinical defocus curves.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- IsoPure 123 IOL (BVI Medical)
- TECNIS® 1-piece Monofocal IOL ZCB00 (Johnson & Johnson Vision)
- SENSAR 1-Piece Monofocal IOL AAB00 (Johnson & Johnson Vision)

Key End Points

- Distance image quality, through focus visual quality (sVA)

KEY TAKEAWAYS

Results

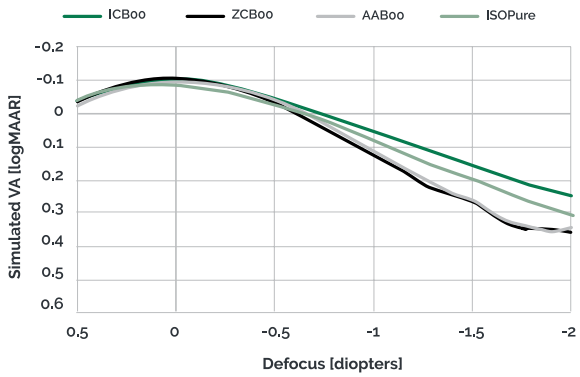
- Both TECNIS Eyhance™ IOL and IsoPure provide an improved range of vision with respect to standard monofocal IOLs.
- TECNIS Eyhance™ IOL provides pupil independent performance for distance and intermediate sVA.
- SENSAR 1-Piece Monofocal IOL (AAB00) and IsoPure show a high pupil dependency, with a deterioration in distance sVA and improvement in intermediate sVA for larger pupil.
- Both the SENSAR 1-Piece Monofocal IOL (AAB00) and IsoPure show a high pupil dependency in distance image quality with more than 40% reduction in MTF at 4 and 5 mm pupils compared to the 3 mm condition.
- TECNIS® 1-piece Monofocal IOL (ZCB00) and TECNIS Eyhance™ IOL (ICB00) provide the lowest MTF variability with the pupil size and the highest MTF values.

Optical Bench Evaluation of Different New Generation Monofocal IOL Technologies

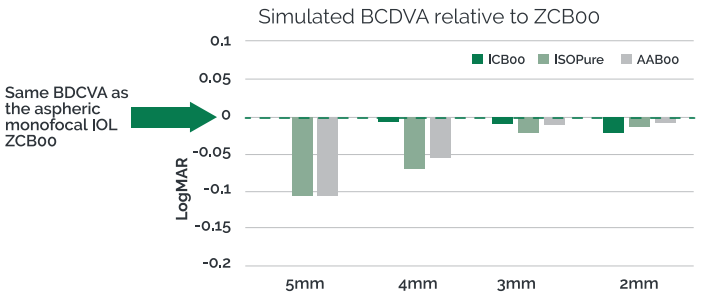
KEY TAKEAWAYS

Results

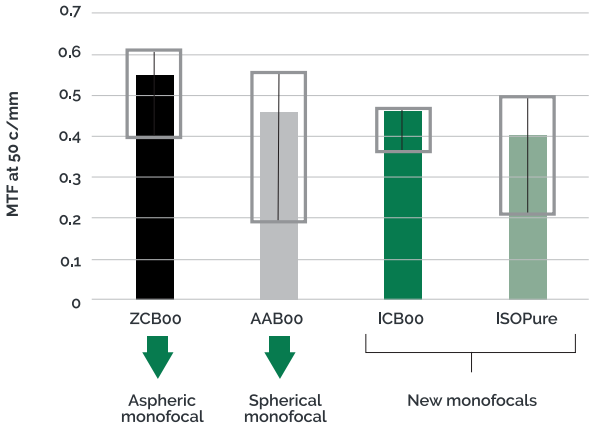
Average through focus sVA for 3-mm pupil

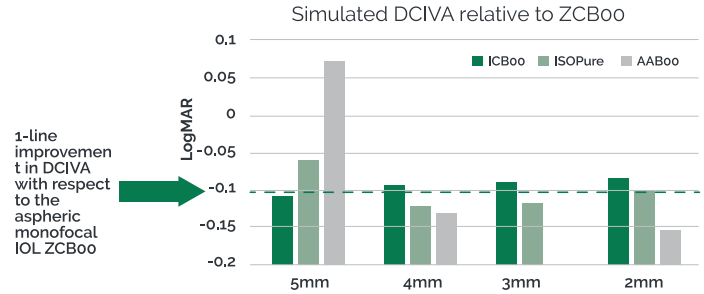


Effect of pupil size on distance and intermediate simulated VA



Min and max MTF betweeen 2 and 5-mm pupils





Conclusions Optical bench data showed that IsoPure provides similar performance to a standard spherical monofocal IOL with a strong pupil dependency for distance and intermediate vision. TECNIS Eyhance™ IOL provides a 1-line improvement in intermediate sVA, and comparable distance image quality to that of an aspheric IOL, independent of pupil size.

Performance Comparative of New Monofocal IOL with Enhanced Features for Intermediate Vision to Current Standard Monofocal Lens

Teenan D, Venter J, Hannan S.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Amsterdam, The Netherlands, 2021

OVERVIEW

Study Design

- Comparative study evaluating visual acuity and patient reported outcomes between two monofocal intraocular lenses (IOLs)

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 279 eyes of 160 patients
- TECNIS® 1-piece Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 1652 eyes of 1038 patients

Key End Points

- Uncorrected distance visual acuity, uncorrected intermediate visual acuity, patient reported satisfaction, patient reported visual disturbances

KEY TAKEAWAYS

Results

- 39.4% of ICB00 patients and 50.9% of ZCB00 patients had 6/5 (20/16) or better UCDVA.
- 76.3% of ICB00 patients and 79.9% of ZCB00 patients had 6/6 (20/20) or better UCDVA.
- 98.8% of ICB00 patients and 97.9% of ZCB00 patients had 6/12 (20/40) or better UCDVA.
- 52.7% of ICB00 patients and 28.1% of ZCB00 patients had 6/12 (20/40) or better UCIVA.
- 85.5% of ICB00 patients and 62.2% of ZCB00 patients had 6/19 (20/63) or better UCIVA.
- 92.4% of ICB00 patients and 78.9% of ICB00 patients had 6/24 (20/80) or better UCIVA.
- 92.0% of ICB00 patients and 89.8% of ZCB00 patients reported being very satisfied/satisfied.
- Greater than 92% of ICB00 patients reported no post-op glare, halo, or starburst.

Conclusions

Compared to a standard monofocal IOL, the performance of TECNIS Eyhance™ IOL is comparable in terms of UCDVA and better in terms of UCIVA. Patient reported satisfaction with the TECNIS Eyhance™ IOL was also high.

Assessment of Intermediate Distance Tasks and Their Impact on Functional Vision After the Bilateral Implantation of Two Monofocal IOLs: A Comparative Study

Tognetto D, Vinciguerra AL, Giglio R.

Presented at the European Society of Cataract and Refractive Surgeons (ESCRS), Amsterdam, The Netherlands, 2021

OVERVIEW

Study Design

- Prospective, randomized, comparative study of patient-reported outcome measures (PROMs) of cataract patients after bilateral implantation of two different monofocal intraocular lenses (IOLs).

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 36 eyes
- TECNIS® 1-piece Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 36 eyes

Key End Points

- Catquest-9SF questionnaire

KEY TAKEAWAYS

Results

- The TECNIS Eyhance™ IOL group had higher average questionnaire scores on intermediate distance vision items as well as a higher overall score compared to the TECNIS® 1-piece monofocal IOL.

Conclusions The quality-of-life related questionnaire showed better results in the TECNIS Eyhance™ IOL group.

Comparison of Visual Outcomes of a Monofocal, Two Enhanced Monofocal and Two Extended Depth-Of-Focus Intraocular Lenses

Ferreira T, Ribeiro F, Pinheiro J, Silva D, Gaspar S, Matos AC, Almeida S.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Prospective, comparative study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 30 patients/ 3-month follow-up
- TECNIS Symfony™ IOL ZXR00 (Johnson & Johnson Vision) / 30 patients/ 3-month follow-up
- TECNIS® Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 30 patients/ 3-month follow-up
- AcrySof IQ Vivity IOL DFT015 (Alcon) / 24 patients/ 3-month follow-up
- RayOne EMV IOL (Rayner) / 15 patients/ 3-month follow-up

Key End Points

- Uncorrected (UDVA) and corrected (CDVA) distance visual acuities, uncorrected (UIVA) and distance-corrected (DCIVA) intermediate visual acuities, uncorrected (UNVA) and distance-corrected (DCNVA) near visual acuities, binocular defocus curve, patient-reported photic symptoms, spectacle independence

KEY TAKEAWAYS

Results

- No significant differences were found in UDVA between the IOL groups, whereas UIVA and UNVA were significantly better in the enhanced monofocal IOL group (ICB00 and RayOne EMV) and EDOF IOL group (ZXR00 and DFT015) compared to the monofocal group (ZCB00).
- Binocular defocus curves showed the largest and comparable ranges for ZXR00, RayOne EMV, and Vivity IOLs, followed by ICB00, and ZCB00 showing the smallest range.
- The prevalence of photic phenomena was higher in the ZXR00 group.
- Spectacle independence was achieved for 3.3% of patients with ZCB00, 26.7% with ICB00, 63.3% with ZXR00, 66.7% with RayOne EMV, and 70.8% with Vivity.

Conclusions

The two enhanced monofocal and two EDOF IOLs provided improved intermediate and near vision, higher spectacle independence, and no increased prevalence of photic phenomena when compared with a standard monofocal IOL.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Laboratory Investigation of Preclinical Visual-Quality Metrics and Halo-Size in Enhanced Monofocal Intraocular Lenses

Auffarth GU, Yan W, Khoramnia R, Labuz G.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Optical bench study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- AE2UV/ZOE IOL (Ophthalmo Pro)
- PhysIOL Isopure IOL (BVI Medical)
- RayOne EMV IOL (Rayner)
- LuxSmart IOL (Bausch & Lomb)
- Xact Mono-EDoF IOL (Santen)
- TECNIS® Monofocal IOL ZCB00 (Johnson & Johnson Vision)

Key End Points

- Depth of focus, halo size and intensity

KEY TAKEAWAYS

Results

- The LuxSmart IOL demonstrated the largest depth of focus but most decreased distance vision, followed by ICB00, then AE2UV/ZOE, and lastly Isopure.
- The ICB00 performed the best in halo size and intensity with the rest of the IOLs are listed in descending order of performance: AE2UV/ZOE, Isopure, LuxSmart.
- The monovision configuration (1D difference between target refraction) for the RayOne EMV leads to an extended depth of focus of 2D but also increased halos.
- While the monofocal ZCB00 IOL demonstrated the best image quality at distance focus, the ICB00, AE2UV/ZOE, Isopure, and LuxSmart IOLs provided superior performance from -1D to -2.5D defocus range.

Conclusions The enhanced monofocal IOLs have a clear advantage over the standard monofocal lens by extending depth of focus without inducing significantly increased photic phenomena.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Clinical Data and Patient Reported Outcome Data of a Monofocal IOL with Enhanced Intermediate Function in Patients with Cataract in the Real World

Fabian E.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Registry study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 128 patients (218 eyes) / 1-month follow-up

Key End Points

- Uncorrected (UDVA) and corrected (CDVA) distance visual acuities, uncorrected intermediate visual acuity (UIVA), uncorrected (UNVA) and corrected (CNVA) near visual acuities, target refraction accuracy, spectacle independence

KEY TAKEAWAYS

Results

- 79% of patients were within ± 0.5D of the target refractive error, 96% were within ± 0.75D, and 100% were within ± 1.00D.
- Mean UDVA was 0.89 Snellen, mean UIVA was 0.65 Snellen, and mean UNVA was 0.65 Snellen.
- For UDVA, 82.58% of patients achieved 0.1 logMAR or better, and 11.61% achieved 0.0 logMAR or better.
- For UIVA, 74.17% of patients achieved 0.2 logMAR or better, 46.36% achieved 0.1 logMAR or better, and 29.80% achieved 0.0 logMAR or better.
- For UNVA, 54.19% achieved 0.2 logMAR or better, 27.74% achieved 0.1 logMAR or better, and 17.42% achieved 0.0 logMAR or better.
- For CDVA, 87.74% achieved 0.1 logMAR or better, and 32.26% achieved 0.0 logMAR or better.
- For CNVA, 96.13% achieved 0.1 logMAR or better, and 88.39% achieved 0.0 logMAR or better.
- Patient questionnaire revealed that 87% never/seldom needed glasses for distance, 43% never/seldom for reading, 49% never/seldom for computer, and 62% never/seldom for smartphone.

Conclusions

In this study representing real world data, The TECNIS Eyhance™ IOL delivered good visual functionality across all viewing ranges and high patient satisfaction.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Performance Comparative of New Monofocal IOL with Enhanced Features for Intermediate Vision to Current Standard Monofocal Lens

Occhipinti I, Hannan S, Teenan D, Venter J.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Retrospective, comparative study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 1013 patients (1780 eyes) / 1-year follow-up
- TECNIS® Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 998 patients (1558 eyes) / 1-year follow-up

Key End Points

- Uncorrected distance visual acuity (UDVA), uncorrected intermediate visual acuity (UIVA), uncorrected near visual acuity (UNVA), target refraction accuracy, patient satisfaction, photic phenomena

KEY TAKEAWAYS

Results

- For UDVA, 72.9% of ICB00 vs 81.2% of ZCB00 patients saw 20/20 or better, and 93.1% of ICB00 vs 93.3% of ZCB00 patients saw 20/25 or better.
- For UIVA, 58.9% of ICB00 vs 28.6% of ZCB00 patients saw 20/25 or better, and 87% of ICB00 vs 62.9% of ZCB00 patients saw 20/40 or better.
- For UNVA, 37.2% of ICB00 vs 19.4% of ZCB00 patients read N8 or better, and 69.5% of ICB00 vs 40.8% of ZCB00 patients read N10 or better.
- Manifest refractive spherical equivalent (MRSE) was within ± 0.5D of the target refractive error for 85.5% of ICB00 vs 72.5% of ZCB00 patients and within ± 1.00D for 97.7% of ICB00 vs 85.1% of ZCB00 patients.
- There was high patient satisfaction for both IOL groups with 89.6% of ICB00 and 92.4% of ZCB00 patients reporting "very satisfied" or "satisfied" with results.
- There were comparable dysphotopsia rates between the two groups with 76.2%, 81.1%, 82.3%, 100% of ICB00 vs 76.3%, 80.3%, 83.0%, 100% of ZCB00 patients reporting no difficulty with glare, halos, starbursts, and ghosting, respectively.

Conclusions

The TECNIS Eyhance™ IOL is a safe and effective IOL option that provides improved intermediate vision compared to the standard monofocal IOL while maintaining excellent distance vision, high patient satisfaction, and comparable dysphotopsia profile.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Clinical Evaluation of Enhanced Intermediate Vision with Monofocal Intraocular Lens Implantation in Retinal Nerve Fiber Layer Defect Patients

Tchah H, Nam S, Lee KE, Jang JH, Lee H, Kim JY.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Retrospective study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 25 eyes with retinal nerve fiber layer (RNFL) defect and 38 eyes without RNFL defect / 3-month follow-up

Key End Points

- Uncorrected (UDVA) and corrected (CDVA) distance visual acuities, uncorrected intermediate acuity (UIVA), uncorrected near visual acuity (UNVA), spectacle independence for near, contrast sensitivity, patient satisfaction, photic phenomena

KEY TAKEAWAYS

Results

- There was no difference in UDVA, CDVA, UIVA, and UNVA between the RNFL defect and no RNFL defect groups.
- There was comparable dependence on reading glasses, contrast sensitivity, patient satisfaction scores, and photic phenomena rates between the two groups.
- The average RNFL thickness was significantly lower in RNFL defect group than control group (79.1 ± 15.2 vs 99.65 ± 10.0 μm).

Conclusions

For patients who underwent bilateral implantation with the TECNIS Eyhance™ IOL, there were no differences in postoperative visual acuities at all distances, contrast sensitivity, patient satisfaction, and photic phenomena between the group with mild RNFL defects and the group without. The TECNIS Eyhance™ IOL could be a good option for patients with mild RNFL defects.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Clinical Outcomes with a New Monofocal Intraocular Lens

Parmar D, Teenan D, Venter J, Hannan S.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Retrospective study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 1089 patients (1963 eyes) / ≤1-year follow-up

Key End Points

- Uncorrected distance visual acuity (UDVA), uncorrected intermediate acuity (UIVA), uncorrected near visual acuity (UNVA), target refraction accuracy, patient satisfaction, photic phenomena, postoperative adverse events

KEY TAKEAWAYS

Results

- The mean UDVA was 0.01 logMAR with a mean gain of 6 lines, mean UIVA was 0.09 logMAR with a mean gain of 6 lines, and UNVA was 0.35 logMAR with a mean gain of 6 lines.
- 85% of patients were within ± 0.5D of the target refractive error, and 97.4% were within ± 1.00D.
- There was a high patient satisfaction rate with 89.4% of patients reporting "very satisfied" or "satisfied" with results.
- 75.9% of patients reported no difficulties with glare, 81.8% no difficulties with halos, 82.9% no difficulties with starbursts, and 86.5% no difficulties with ghosting. Less than 5% of patients experienced severe difficulty with halo, glare, or starburst.
- The rate of postoperative adverse events related to the IOL remained low and comparable to other premium IOLs.

Conclusions

The TECNIS Eyhance™ IOL ICB00 provided excellent distance and intermediate vision with high target refractive error accuracy, high patient satisfaction, and low incidence of photic phenomena.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Clinical Outcomes with the TECNIS Eyhance™ IOL in Patients with Pre-existing Comorbidities

Parmar D, Teenan D, Venter J, Hannan S.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Retrospective study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 57 patients (109 eyes) with pre-existing comorbidities / ≤1-year follow-up

Key End Points

- Uncorrected distance visual acuity (UDVA), uncorrected intermediate acuity (UIVA), uncorrected near visual acuity (UNVA), target refraction accuracy, patient satisfaction, photic phenomena, postoperative complications

KEY TAKEAWAYS

Results

- The mean UDVA was -0.02 ± 0.08 logMAR with 80.7% of patients seeing 20/20 or better and 96.5% seeing 20/25 or better.
- The mean UIVA was 0.18 ± 0.18 logMAR with 38.5% seeing 20/25 or better and 75% seeing 20/40 or better.
- The mean UNVA was 0.42 ± 0.18 logMAR with 55.4% reading N8 or better and 76.8% reading N10 or better.
- 81.3% of patients were within ± 0.5D of the target refractive error, and 94.7% were within ± 1.00D.
- There was a high patient satisfaction rate with 93% of patients reporting "very satisfied" or "satisfied" with results, and 99% of patients would recommend the procedure.
- Majority of patients experienced good quality of vision with no difficulty with glare, halos, starbursts, or ghosting reported by 64.2%, 71.4%, 78.6%, and 85.7% of patients, respectively. Only 7.1% reported severe difficulty with glare.
- The rate of postoperative adverse events related to the IOL remained low and was comparable to that of patients with no pre-existing comorbidities implanted with ICB00.

Conclusions

The TECNIS Eyhance™ IOL ICB00 provided good distance and intermediate vision, high patient satisfaction, good safety profile, and low photic phenomena in patients with pre-existing ocular comorbidities including amblyopia, age-related macular degeneration, glaucoma, keratoconus, and retinal conditions.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Monofocal Lens with Elongated Focus in Lensectomy¥ for High Hyperopia

Fernández-Vega-Cueto L, Alfonso-Bartolozzi B, Fernández-Vega-Cueto A, Madrid-Costa D, Alfonso JF.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Prospective study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 30 patients (60 eyes) with axial length <22.5 mm / 6-month follow-up

Key End Points

- Corrected distance visual acuity (CDVA), target refraction accuracy, defocus curve, patient satisfaction

KEY TAKEAWAYS

Results

- There were no cases with postoperative loss of CDVA lines. 35% of patients saw equal lines pre- and postoperatively, 18% experienced a gain of 1 line, and 46% experienced a gain of ≥2 lines.
- Mean CDVA was 0.92 ± 0.15 (Snellen), and mean binocular CDVA at 66-, 50-, and 40-cm was always greater than 0.6, 0.5, 0.4 (Snellen), respectively.
- 86.4% of patients were within ± 0.5D of the target refractive error, and 100% were within ± 1.00D.
- Compared with other studies that included patients with normal axial lengths, this study showed better defocus curves for patients with short axial lengths (<22.5 mm).
- From the patient questionnaire, 100% of patients were very satisfied or quite satisfied with their vision.

Conclusions

The TECNIS Eyhance™ IOL ICB00 provided functional visual acuity and high patient satisfaction for patients with high hyperopia that underwent refractive lens exchange¥.

¥Refractive lens exchange is not an approved indication for the TECNIS Eyhance™ IOL in the U.S.
*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Comparison of Visual Outcomes with Different Monofocal Intraocular Lenses

Kapitanovaite L, Zaliuniene D, Zemaitiene R.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Prospective study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 20 eyes / 2–6-month follow-up
- TECNIS® Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 20 eyes / 2–6-month follow-up
- Clareon IOL CNA0T0 (Alcon) / 20 eyes / 2–6-month follow-up

Key End Points

- Uncorrected distance visual acuity (UDVA), uncorrected intermediate acuity at 66m (UIVA), uncorrected near visual acuity at 40cm (UNVA), defocus curve, photopic contrast sensitivity, halometry results

KEY TAKEAWAYS

Results

- There were no significant differences in UDVA and UNVA between the three IOL groups, whereas UIVA was significantly better for the TECNIS Eyhance™ IOL (0.13 ± 0.03 logMAR) compared to Clareon IOL (0.29 ± 0.04 logMAR) and TECNIS® Monofocal IOL (0.32 ± 0.03 logMAR).
- Defocus curves showed better optical performance at the intermediate distance for the TECNIS Eyhance™ IOL.
- Contrast sensitivity was significantly better at low spatial frequencies (1.5 and 3.0 c/deg) for the TECNIS Eyhance™ IOL compared to the other two IOLs.
- There was no difference in halometry results between the three IOL groups.

Conclusions

All monofocal IOLs showed good visual performance at distance, good photopic contrast sensitivity, and low incidence of photic phenomena. The TECNIS Eyhance™ IOL ICB00 provided better intermediate vision compared to the TECNIS® Monofocal IOL ZCB00 and Clareon IOL CNA0T0.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Comparison of Clinical Outcomes Between 3 Types of Toric IOLs – Enhanced Intermediate Function Monofocal, Low-Add Segmental, and Conventional Monofocal Lens

Nakano S, Mori R, Lida M, Oshika T.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Prospective study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ Toric II IOL (Johnson & Johnson Vision) / 22 eyes / 3-month follow-up
- TECNIS® Monofocal OptiBlue Toric II IOL (Johnson & Johnson Vision) / 14 eyes / 3-month follow-up
- Lentis Comfort Toric IOL (Teleon Surgical) / 39 eyes / 3-month follow-up

Key End Points

- Uncorrected distance visual acuity (UDVA), uncorrected intermediate acuity at 70 cm (UIVA), uncorrected near visual acuity at 30 cm (UNVA), postoperative axis misalignment, residual cylinder

KEY TAKEAWAYS

Results

- While UDVA was comparable between the three IOLs, the TECNIS Eyhance™ Toric II IOL provided better UIVA than the TECNIS® Monofocal OptiBlue Toric II IOL, although this difference was not statistically significant.
- Lentis Toric IOL provided significantly better UNVA than the other two IOLs while the TECNIS Eyhance™ Toric II IOL and Lentis Comfort Toric IOL provided equivalent UNVA.
- TECNIS Eyhance™ Toric II IOL had a mean postoperative axis misalignment of 1.73˚ that was better than the Lentis Comfort Toric IOL and equivalent to the TECNIS® Monofocal OptiBlue Toric II IOL.
- TECNIS Eyhance™ Toric II IOL had a mean residual cylinder of 0.14D which was comparable to the two other IOLs.

Conclusions

The TECNIS Eyhance™ Toric II IOL provided intermediate vision comparable to the Lentis Comfort Toric IOL and rotational stability comparable to the TECNIS® Monofocal OptiBlue Toric II IOL. Distance vision and astigmatic correction was equivalent between all three lenses.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Initial Experience with a New Toric Intraocular Lens

Occhipinti I, Hannan S, Teenan D, Venter J.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Prospective study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ Toric II IOL (Johnson & Johnson Vision) / 50 patients / 1 month follow-up

Key End Points

- Uncorrected distance visual acuity (UDVA), uncorrected intermediate acuity (UIVA), uncorrected near visual acuity (UNVA), patient-reported outcomes

KEY TAKEAWAYS

Results

- The mean binocular UDVA was 0.10 logMAR (range 0.00 to 0.52) and the mean binocular UNVA was -0.07 logMAR (range -0.22 to 0.18).
- Mean gain in postoperative visual acuity lines was 5 lines for UDVA and 6 lines for UIVA.
- Less than 8% of patients experienced severe difficulty with glare, halo, or starburst.
- Most patients reported being satisfied with the outcomes and would recommend the procedure to family and friends.
- No intraoperative or early postoperative adverse events related to the IOL were reported.

Conclusions The TECNIS Eyhance™ Toric II IOL showed excellent visual performance, low incidence of photic phenomena, and high patient satisfaction.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Refractive Cataract Surgery with a New Toric Intraocular Lens with an Enhanced Optical Profile and Modified Haptics

Goslings O, Reus N.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Retrospective study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ Toric II IOL DIU 150 to 525 (Johnson & Johnson Vision) / 83 eyes / 1–3-month follow-up

Key End Points

- Uncorrected (UDVA) and corrected (CDVA) distance visual acuities, residual refractive cylinder, toric IOL alignment

KEY TAKEAWAYS

Results

- Mean UDVA was 0.10 ± 0.13 logMAR and mean UNVA was 0.01 ± 0.08 logMAR for all DIU groups combined.
- The mean residual refractive cylinder was 0.42 ± 0.39D for all DIU groups combined.
- The mean degree of postoperative IOL misalignment was 1.07 ± 1.83° for all DIU groups combined.

Conclusions The TECNIS Eyhance™ Toric II IOL provided good rotational stability and low residual refractive astigmatism.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Subjective versus Objective Depth of Focus Comparison in an Aspherically Neutral Monofocal Intraocular Lens and Negatively Aspheric Enhanced Monofocal Intraocular Lens

Ramanathan D, Gallagher S, Borkum S, Fratarolli P, Barbon E, Ashena Z, Nanavaty M.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Prospective, randomized, comparative study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL (Johnson & Johnson Vision) / 44 eyes / 3-9-month follow-up
- RayOne EMV IOL (Rayner) / 46 eyes / 3-9-month follow-up

Key End Points

- Uncorrected (UDVA) and corrected (CDVA) distance visual acuities, defocus curves, objective depth of focus (DOF) assessed by iTrace, subjective DOF derived from defocus curve, pupil size, iTrace aberrometric scan size

KEY TAKEAWAYS

Results

- Subjective assessment of DOF for TECNIS Eyhance™ IOL was better at 2.60 ± 0.67D vs RayOne EMV IOL measuring at 2.09 ± 0.45D, whereas objective assessment of DOF by iTrace was comparable between the two groups (TECNIS Eyhance™ IOL: 1.64 ± 0.83D vs RayOne EMV IOL: 1.15 ± 1.37D).
- Subjective DOF derived from the defocus curve was significantly higher than objective DOF assessed by iTrace for both IOL groups.
- Postoperative manifest refraction was 0.28 ± 0.47D for TECNIS Eyhance™ IOL compared to 0.45 ± 0.50D for RayOne EMV IOL.
- iTrace pupil size was 4.34 ± 0.50mm for TECNIS Eyhance™ IOL vs 3.99 ± 0.96mm for RayOne EMV IOL while scan size was 2.79 ± 0.55 for TECNIS Eyhance™ IOL vs 2.69 ± 0.62 for RayOne EMV IOL.

Conclusions

This study demonstrated that there is a significant difference in subjective and objective assessments of depth of focus for the two IOL groups. iTrace appears to underestimate the depth of focus compared to subjective refraction. TECNIS Eyhance™ IOL provided better subjective measurements compared to RayOne EMV IOL with no significant difference in objective measurements.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Classification of the Severity of Visual Symptoms in Patients Implanted with the TECNIS Eyhance™ Intraocular Lens

Black D, Vilupuru V, Vida R, Morlock R.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Prospective, randomized, multi-center (9 sites across Europe) study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 72 patients (144 eyes) / 6-month follow-up
- TECNIS® Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 67 patients (134 eyes) / 6-month follow-up

Key End Points

- Patient Reported Visual Symptoms Questionnaire (PRVSQ) response, dichotomous score (0 or 1) to quantify severity of symptoms, best-corrected distance visual acuity (BCDVA), distance-corrected intermediate visual acuity at 66cm (DCIVA), monocular defocus curve

KEY TAKEAWAYS

Results

- The BCVDA and DCIVA was -0.06 and 0.09 logMAR for ICB00 and -0.10 and 0.20 logMAR for ZCB00, respectively.
- For the reported symptom of halo, 98.5% in the ICB00 group and 95.8% in the ZCB00 scored a 0 (score of 0 = no severe symptoms, score of 1 = severe symptoms).
- For the reported symptom of glare, 95.5% in the ICB00 group and 94.4% in the ZCB00 group scored a 0.
- For the reported symptom of starburst, 98.5% in the ICB00 group and 95.8% in the ZCB00 group scored a 0.

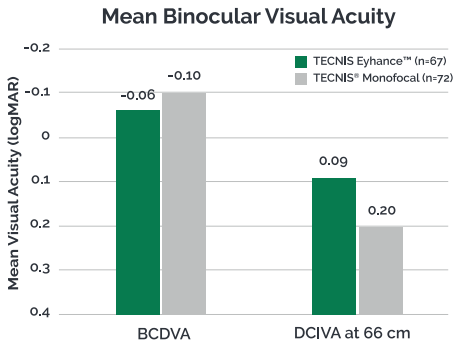
*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

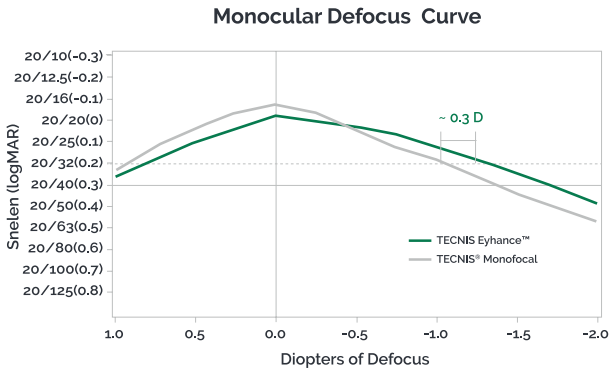
Classification of the Severity of Visual Symptoms in Patients Implanted with the TECNIS Eyhance™ Intraocular Lens

KEY TAKEAWAYS

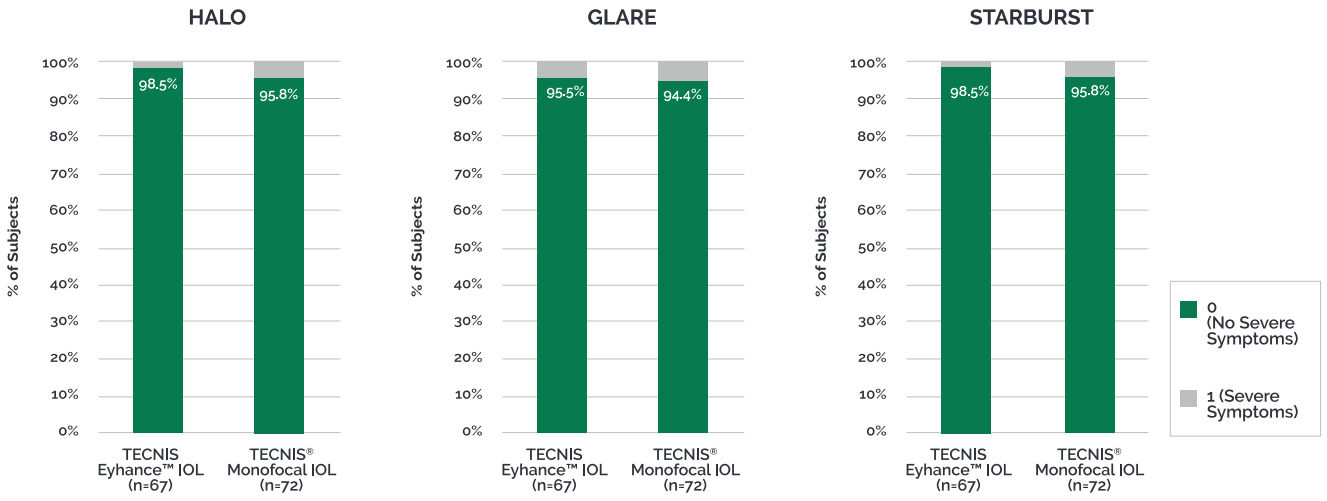
Results

Visual Outcomes





Dichotomous Scoring System - Results



Conclusions Subjects implanted with the enhanced monofocal IOL, TECNIS Eyhance™ IOL ICB00, experienced low rates of severe visual symptoms, comparable to the standard monofocal IOL, TECNIS® Monofocal IOL ZCB00.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Enhanced Monofocal versus Extended Range of Vision Intraocular Lens: Power Profile and Optical Performance

Vega F, Garzon N, Arcalis I, Madrid-Costa D, Millán MS.

Presented at the European Society of Cataract and Refractive Surgeons Annual Meeting (ESCRS), Milan, Italy, 2022

OVERVIEW

Study Design

- Optical bench study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL (Johnson & Johnson Vision)
- LuxSmart IOL (Bausch & Lomb)

Key End Points

- Surface power profile, through-focus modulation transfer function (TF-MTF), area under the MTF (TF-MTFa)

KEY TAKEAWAYS

Results

- For both IOL designs, the power profile measurements revealed an increase of the refractive power from the periphery to the center of the lens, thus providing effective extra positive correction suitable for enhancing intermediate vision for small pupils.
- The TF-MTF and TF-MTFa maxima showed myopic shifts of ~0.5D for the TECNIS Eyhance™ IOL and ~1.0D for the LuxSmart IOL for a 2-mm pupil.
- In contrast to the TECNIS Eyhance™ IOL, the shape of the LuxSmart IOL's TF-MTF and TF-MTFa curves (and thus its optical performance) varies noticeably as a function of pupil size.

Conclusions

Objective assessment of the surface power profile and optical performance of the TECNIS Eyhance™ IOL and LuxSmart IOL showed an increase of the refractive power from the periphery to center of the lens that may benefit intermediate vision. The optical performance of the LuxSmart IOL was more dependent on pupil size than the TECNIS Eyhance™ IOL.

*ESCRS 2022 content is based on third-party vendor coverage summary – information included may be limited.

Visual Outcomes Following Bilateral Implantation of Continuous Power Lenses for Distance and Intermediate Vision Targeting Blended Vision

Qazi S, Liu V, Bsata Y, Sabeti S, Modabber M, Baig K.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Ambispective, non-randomized, multi-center evaluation of clinical outcomes following bilateral implantation of TECNIS Eyhance™ IOL aiming for blended vision with a target of emmetropia in the dominant eye and a target of myopia ranging from -0.50 to -1.25 D in the non-dominant eye.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 74 eyes of 37 patients / 3 months

Key End Points

- Uncorrected distance visual acuity at 6 m (UDVA), uncorrected intermediate visual acuity at 66 cm (UIVA), uncorrected near visual acuity at 40 cm (UNVA), defocus curves, and spectacle independence (NEI-VFQ)

KEY TAKEAWAYS

Results

- Mean binocular UDVA was -0.05 logMAR (20/15), mean binocular UIVA was 0.09 logMAR (20/25), and mean binocular UNVA was 0.2 logMAR (20/32).
- In the prospective cohort, 73% reported never needing glasses for distance, 84% reported never needing glasses for intermediate, and 32% reported never needing glasses for near.
- With -0.75 target, TECNIS Eyhance™ IOL maintained 0.2 LogMAR through -2 D of defocus in the prospective cohort.
- With -1.25 target, TECNIS Eyhance™ IOL maintained 0.2 LogMAR through -3 D of defocus in the prospective cohort.

Conclusions

TECNIS Eyhance™ IOL provides excellent distance and intermediate vision (<0.1 LogMAR) and acceptable near vision (<0.3 LogMAR) when implanted targeting blended vision. Furthermore, blended vision using the TECNIS Eyhance™ IOL can provide reduced spectacle dependence at distance, intermediate, and near.

Descriptive Analysis to Study the Postoperative Outlook of Newer IOL with Extended Depth of Focus

Atheek R, Shaik A, Varman A, Soundarapandian J, Madhivanan Sr. N, Varman A, Hameed S, Nivean P.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Prospective descriptive study of patients who underwent bilateral TECNIS Eyhance™ IOL implantation.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 40 eyes / 1 month follow up

Key End Points

- Distance visual acuity, intermediate visual acuity, near visual acuity, defocus curve, aberrometry, contrast sensitivity

KEY TAKEAWAYS

Results

- At 1 month, all eyes were 20/20 at both distance and near.
- The average reduction in total higher order aberrations was from 340.5 preoperative to 121.4 postoperative.
- Overall high patient satisfaction.

Conclusions The TECNIS Eyhance™ IOL is a good option for patients requiring better intermediate vision without compromising on contrast sensitivity and quality of vision.

Head-to-Head Comparison of Intermediate Vision of Two Monofocal Intraocular Lenses

Micheletti JM.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Non-interventional, single site, multi-surgeon, examiner masked comparative study of post-cataract surgery patients with bilateral implantation of either TECNIS Eyhance™ IOLs or Clareon IOLs.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ Monofocal ICB00 IOL (Johnson & Johnson Vision) / 38 patients
- Clareon Monofocal SY60WF IOL (Alcon) / 37 patients

Key End Points

- Binocular intermediate and distance visual acuities when target-corrected to plano for TECNIS Eyhance™ IOL patients and -0.25 for Clareon patients (TCIVA and TCDVA), and defocus curves.

KEY TAKEAWAYS

Results

- Interim analysis done at 24% enrollment (75/310 patients) showed that binocular best distance corrected defocus curves of the IOLs were not significantly different between plano and -3.00. Clareon outperformed TECNIS Eyhance™ IOL on the defocus curve between plano and +1.00.
- The median TCIVA was identical (0.18) and a 3.5 letter difference (0.07 logMAR) was found in the mean TCIVA.
- Distance visual acuity of Clareon IOLs targeted at -0.25 D was non-inferior to TECNIS Eyhance™ IOLs targeted at plano.

Conclusions

The defocus curves between plano and -3.00 were not significantly between the two IOLs, while Clareon outperformed TECNIS Eyhance™ IOL on the defocus curve between plano and +1.00. Interim data suggests an advantage to targeting -0.25 D for Clareon IOLs, as DVA was non-inferior to TECNIS Eyhance™ IOL while slight gains were made in IVA.

Rotational Stability of a Toric Monofocal Intraocular Lens with an Extended Depth of Focus

Findl O, Ruiss M, Zeilinger J, et al.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Prospective, single-center study to determine absolute rotation up to 3 months postoperative.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ Toric II IOL (Johnson & Johnson Vision) / 43 patients / 3 month follow up

Key End Points

- Rotational stability in degrees, post-operative refractive outcome, uncorrected and corrected distance visual acuity (UCDVA and CDVA), uncorrected and distance corrected intermediate visual acuity (UCIVA and DCIVA)

KEY TAKEAWAYS

Results

- At 1 hour post-op, mean absolute IOL rotation was 1.47° ± 1.28°
- At 3 months post-op, mean absolute IOL rotation was 1.35° ± 2.46°
- Overall, 96% of patients experienced rotation ≤ 5°
- No re-rotations were performed
- Mean post-op spherical equivalent was -0.01 ± 0.5 D
- Mean UCDVA was 0.06 ± 0.15 logMAR; mean CDVA was -0.01 ± 0.13 logMAR
- Mean UCIVA was 0.17 ± 0.20 logMAR; mean DCIVA was 0.23 ± 0.21 logMAR

Conclusions The TECNIS Eyhance™ Toric II IOL showed excellent rotational stability over 3 months, with 96% of patients experiencing ≤ 5° of rotation. 70% of study patients had an intermediate visual acuity of ≤ 0.1 logMAR.

Comparison of a Monofocal Intraocular Lens Designed to Increase Depth of Focus Targeted for Mini-Monovision, Monovision, and Distance

Pophal C, da Costa E, Rocha KM.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Prospective study of adult patients receiving TECNIS Eyhance™ IOL for distance (target ≤ -0.3 D), mini-monovision (target -0.50 to -1.00 D), or monovision (target > -1.25 D).

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ Monofocal DIB00 IOL (Johnson & Johnson Vision) / 44 eyes (24 distance, 8 mini-monovision, 12 monovision) / average 2 months follow up

Key End Points

- Uncorrected visual acuity (UCVA), uncorrected near visual acuity (UCNVA), distance corrected visual acuity (DCVA), manifest refraction compared to automated refraction using dynamic sciascopy (Nidek OPD III).

KEY TAKEAWAYS

Results

- In the distance group, UCVA was 20/25 or better in 70.8% and UCNVA was J3 or better in 68.4% of eyes.
- In the mini-monovision group, UCVA was 20/25 or better in 62.5% and UCNVA was J3 or better in 75% of eyes.
- In the monovision group, UCVA was 20/40 or better in 75% and UCNVA was J3 or better in 100% of eyes.
- Measured postoperative manifest spherical equivalent was more positive than automated refraction.

Conclusions

The enhanced monofocal IOL showed no statistically significant differences in UCVA, DCVA, and UCNVA among the distance and mini-monovision groups and no significant difference in UCNVA among the mini-monovision and monovision groups. Dynamic skiascopy automated refraction appears to result in a more negative spherical equivalent compared to subjective manifest refraction. The monofocal IOL with higher order asphere technology provides an enhanced monovision profile without compromising UCVA in the mini-monovision and monovision groups.

Visual Acuity Outcomes Post-Implantation of a New Monofocal IOL Using Different Target Refractions

Sandoval HP, Potvin RJ, Solomon KD.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Ongoing prospective, randomized, patient-masked study comparing visual outcomes in patients receiving bilateral TECNIS Eyhance™ IOL targeting emmetropia (± 0.25 D) versus mini-monovision (non-dominant eye target -0.75 D).

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ Monofocal ICB00 IOL (Johnson & Johnson Vision) / 52 patients (26 in each group) / 1 month follow up

Key End Points

- Postoperative spherical equivalent, monocular uncorrected distance, intermediate, and near visual acuity.

KEY TAKEAWAYS

Results

- At 1 month, the mini-monovision patients were statistically significantly more myopic than the emmetropia group ($p < 0.01$).
- Monocular uncorrected visual acuity in the monovision patients was statistically significantly better at intermediate and distance compared to plano target eyes ($p < 0.001$).
- Binocular uncorrected visual acuity in the monovision patients was statistically significantly better at intermediate ($p = 0.01$) and near ($p < 0.001$) compared to plano target eyes. Mean difference was 1 line at intermediate and 2 lines at near.

Conclusions In comparison to targeting bilateral emmetropia, targeting one eye for slight monovision with TECNIS Eyhance™ IOL resulted in a two-line improvement in binocular near visual acuity while preserving binocular distance vision.

Spectacle Independence, Patient Satisfaction, and Visual Disturbances with a New Monofocal IOL Using Two Different Target Refractions

Sandoval HP, Potvin RJ, Solomon KD.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Ongoing prospective, randomized, patient-masked study comparing visual outcomes in patients receiving bilateral TECNIS Eyhance™ IOL targeting emmetropia (± 0.25 D) versus mini-monovision (non-dominant eye target -0.75 D).

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ Monofocal IOL ICB00 (Johnson & Johnson Vision) / 52 patients (26 in each group) / 1 month follow up

Key End Points

- Patient satisfaction, spectacle independence, and visual disturbances (via patient questionnaires)

KEY TAKEAWAYS

Results

- The majority of patients in both groups were completely or mostly satisfied with their distance and intermediate vision.
- Significantly more patients in the emmetropia group reported needing to wear glasses for near vision all of the time and being not at all satisfied with their near vision compared to the mini-monovision group ($p = 0.02$).
- There were no statistically significant differences in the frequency of visual disturbances between the two groups.
- Halos were slightly more common in the emmetropia group, while light sensitivity was slightly more common in the monovision group.
- For all visual disturbances, 88% of subjects in both groups were "not at all" or only "slightly" bothered.

Conclusions

Targeting the non-dominant eye for slight myopia when bilaterally implanting the TECNIS Eyhance™ IOL seems to improve near vision and overall patient satisfaction, with only nominal changes to the frequency and/or degree of bother of visual disturbances.

Clinical Outcomes after Pure Monofocal Extended Depth of Focus Intraocular Lens Implantation in Retinal Nerve Fiber Layer Defect Patients

Tchah H, Lee K, Jang JH, et al.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Prospective study of patients implanted bilaterally with TECNIS Eyhance™ IOL and screened for retinal nerve fiber layer (RNFL) defects using spectral-domain optical coherence tomography (SD-OCT).

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 40 eyes of 20 patients with RNFL defect and 40 eyes of 20 patients without RNFL defect / 3 month follow up

Key End Points

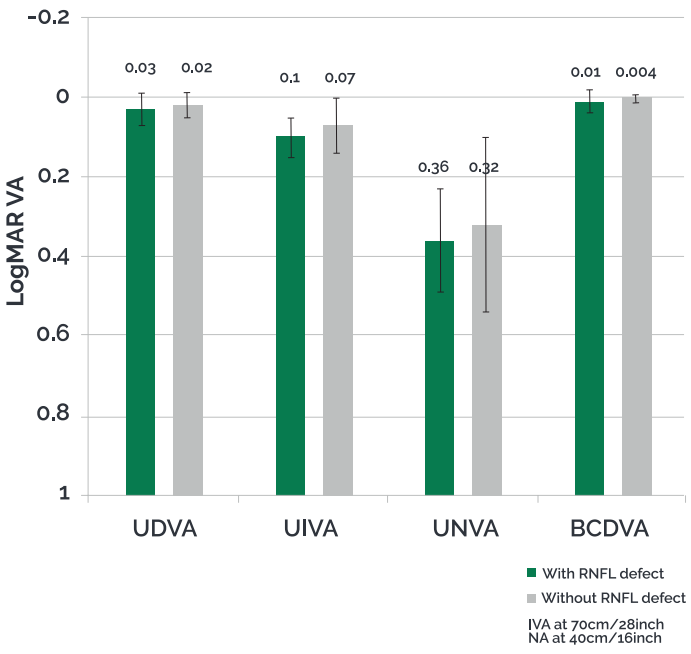
- Average RNFL thickness, binocular best corrected distance visual acuity (BCDVA), uncorrected distance visual acuity (UDVA), uncorrected intermediate visual acuity (UIVA), uncorrected near visual acuity (UNVA), defocus curve, contrast sensitivity, and patient satisfaction scores

KEY TAKEAWAYS

Results

- There was no difference in visual acuity (BCDVA, UDVA, UIVA, and UNVA) between the RNFL defect group and control group
- There was no statistically significant difference between photopic and mesopic contrast sensitivity between the two groups
- Overall patient satisfaction in both groups was similar
- 10-15% of patients in both groups complained of glare and halos
- 60% of patients in both groups reported needing reading glasses "rarely" or "not at all"

3-month Postoperative Bilateral Visual Acuity

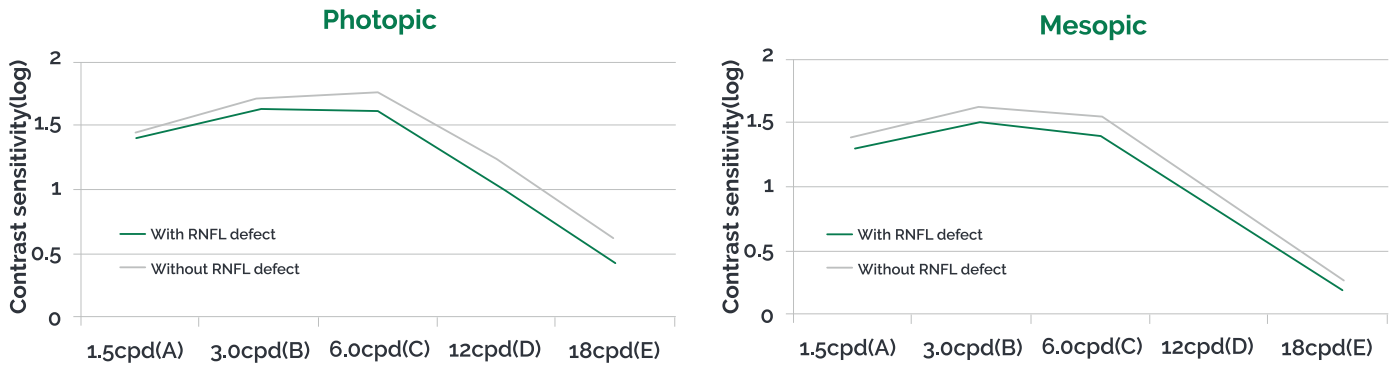


Clinical Outcomes after Pure Monofocal Extended Depth of Focus Intraocular Lens Implantation in Retinal Nerve Fiber Layer Defect Patients

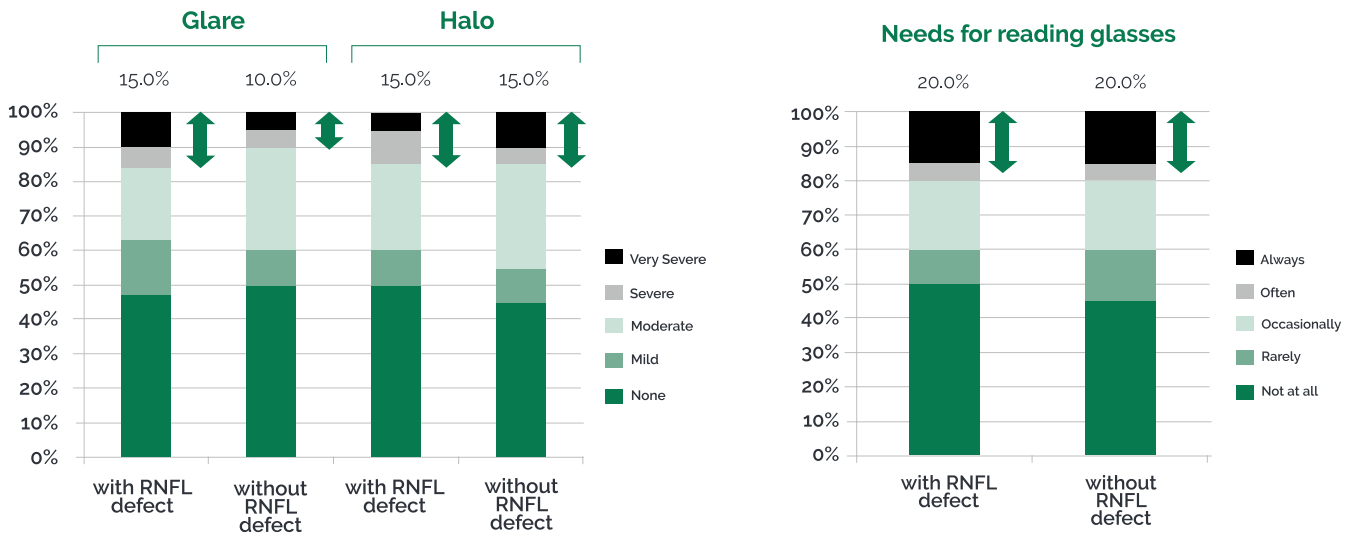
KEY TAKEAWAYS

Results

3-month Postoperative Photopic and Mesopic Contrast Sensitivities



Patient-reported outcomes



Conclusions In patients who underwent bilateral TECNIS Eyhance™ IOL implantation, postoperative visual acuities were similar between the group with retinal nerve fiber layer defects and the control group. Contrast sensitivity grades, satisfaction scores, and photic phenomena were also similar in both groups. For patients RNFL defects, the TECNIS Eyhance™ IOL could be a good option.

Comparison Between an Intraocular Lens with Extended Depth of Focus (TECNIS Symfony™ IOL ZXR00) and a New Monofocal Intraocular Lens with Enhanced Intermediate Vision (TECNIS Eyhance™ IOL ICB00)

Yoon YS, Jeon YJ, Kim T-I, et al.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Single center, retrospective study comparing visual outcomes and optical qualities of the TECNIS Symfony™ IOL and TECNIS Eyhance™ IOL.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ Monofocal IOL ICB00 (Johnson & Johnson Vision) / 72 eyes / 3 month follow up
- TECNIS Symfony™ IOL ZXR00 (Johnson & Johnson Vision) / 102 eyes / 3 month follow up

Key End Points

- Corrected distance visual acuity (CDVA), uncorrected distance visual acuity (UDVA), uncorrected intermediate visual acuity (UIVA), uncorrected near visual acuity (UNVA), defocus curve, optical quality analysis (OQAS).

KEY TAKEAWAYS

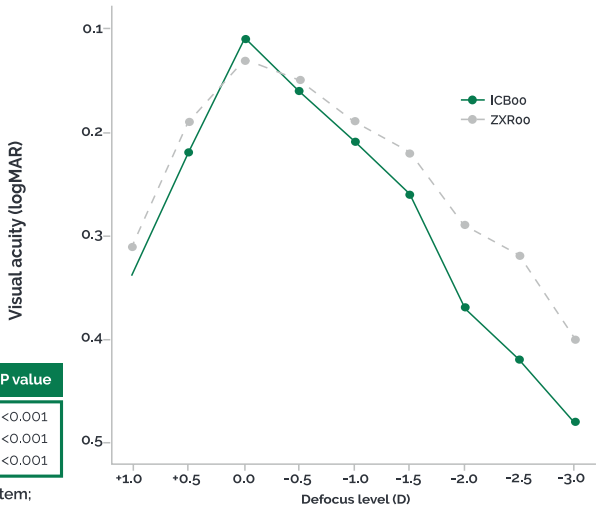
Results

- At 3 months, the TECNIS Symfony™ IOL patients achieved statistically significant better near vision compared to the TECNIS Eyhance™ IOL patients.
- At 3 months, there was no significant difference in UDVA, CDVA, or UIVA between the two groups.
- The defocus curve of TECNIS Symfony™ IOL was smoother and superior to TECNIS Eyhance™ IOL at near.
- TECNIS Eyhance™ IOL outperformed TECNIS Symfony™ IOL on all optical quality parameters (objective scatter index, modulation transfer function cutoff, and Strehl ratio).

Parameter	TECNIS Symfony™ IOL ZXR00	TECNIS Eyhance™ IOL ICB00	P value
OSI	2.08±0.92 (1.00 to 4.30)	1.22±0.37 (0.76 to 2.20)	<0.001
MTF cutoff (c/deg)	24.29±9.08 (11.47 to 46.73)	27.29±4.82 (17.22 to 40.12)	<0.001
Strehl ratio	0.14±0.05 (0.08 to 0.26)	0.18±0.03 (0.11 to 0.23)	<0.001

D indicates diopters; MTF, modulation transfer function; QOAS, optical quality analysis system; OSI, objective scatter index; SD, standard deviation

Mean monocular defocus curves of TECNIS Symfony™ IOL and TECNIS Eyhance™ IOL



- Optical quality parameters assessed by OQAS® with a pupil diameter of 4.0 mm

Conclusions

Both the TECNIS Symfony™ IOL and TECNIS Eyhance™ IOL groups had comparable distance and intermediate vision. The TECNIS Symfony™ IOL provided greater near vision and defocus curve smoothness, while the TECNIS Eyhance™ IOL achieved better optical quality.

Intermediate and Near Visual Acuity with Different Target Refractive Powers of Extended Vision IOL

Goto H, Suzuki H, Igarashi T, et al.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Not specified

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 44 eyes (23 eyes target 0 D, 21 eyes target -1D) / 1 month follow up

Key End Points

- Corrected distance visual acuity (CDVA), uncorrected distance visual acuity (UDVA), and uncorrected visual acuity (UVA) at 100 cm, 70 cm, 50 cm, 40 cm, and 30 cm

KEY TAKEAWAYS

Results

- There was no significant difference in the CDVA between both groups.
- UDVA at 5 m was significantly better with target 0 D.
- UVA at 40 cm and 50 cm was significantly better with target -1.0 D.
- There was no significant difference in UVA at 30 cm, 70 cm, and 100 cm with both targets.
- For target 0 D, UDVA was 0.03 logMAR and patients needed no glasses for distance. UVA is 0.1 logMAR or better at 70 cm.
- For target -1.0 D, UDVA was 0.3 logMAR and patients may need glasses for distance. UVA at 40 cm was 0.2 logMAR or better.

Conclusions

TECNIS Eyhance™ IOL targeting 0 D provides good intermediate vision and targeting -1.0 D provides good near vision. The possibility of using micro-monovision to reduce the dependence on glasses with this IOL is an issue that should be considered.

Objective Metrics for Quantifying Monofocal and Presbyopia-Correcting IOL Contrast Performance

Chang D, Weeber H, Pastuck T, Piers P.

Presented at the American Society of Cataract and Refractive Surgery Annual Meeting (ASCRS), Washington, D.C., 2022.

OVERVIEW

Study Design

- Bench study examining through focus and frequency Modulation transfer function (MTF) measured under clinically relevant conditions at both 3 mm (photopic) and 5 mm (mesopic) pupil diameters.

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Synergy™ IOL ZFR00V (Johnson & Johnson Vision)
- TECNIS® Monofocal IOL ZCB00 (Johnson & Johnson Vision)
- TECNIS® Multifocal IOL ZLB00 (Johnson & Johnson Vision)
- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision)
- TECNIS Symfony™ Optiblue IOL ZXR00V (Johnson & Johnson Vision)
- AcrySof IQ PanOptix Trifocal IOL TFNT00 (Alcon)
- AcrySof IQ Monofocal IOL SN60WF (Alcon)
- AcrySof IQ Vivity IOL DFT015 (Alcon)
- AcrySof IQ ReSTOR IOL SN6AD1 (Alcon)

Key End Points

- Contrast performance, simulated visual acuity, and defocus curves.

KEY TAKEAWAYS

Results

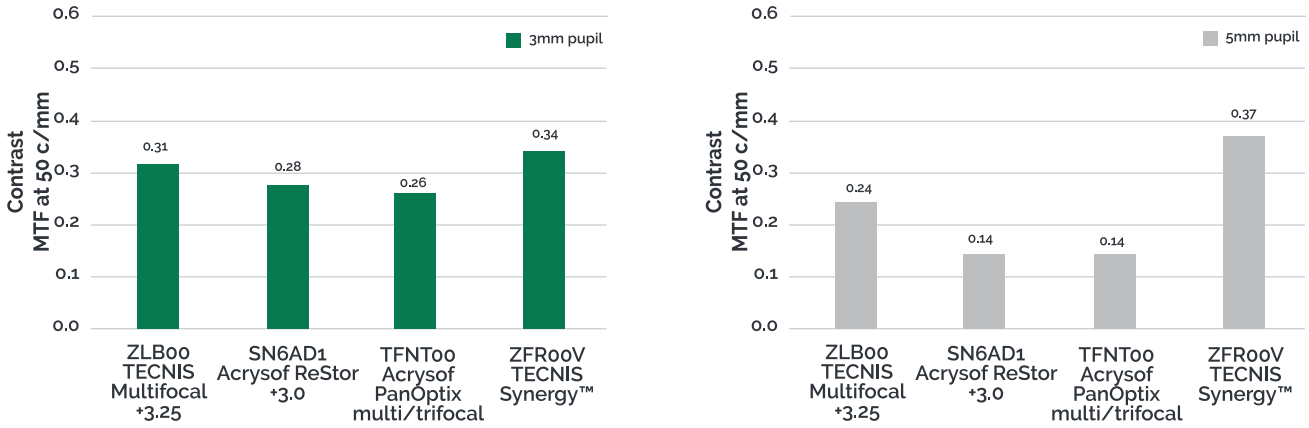
- Simulated visual acuity (sVA) predicted better visual acuities for TECNIS Synergy™ IOL compared to Vivity and PanOptix at all distances, reaching one-half line at near.
- Clinical defocus curves revealed a greater difference between TECNIS Synergy™ IOL and Vivity, with more than half a line improvement at intermediate and one line at near for TECNIS Synergy™ IOL.
- Clinical defocus curves revealed a consistent difference between TECNIS Synergy™ IOL and PanOptix throughout the complete defocus curve, with approximately half a line improvement for TECNIS Synergy™ IOL.

Objective Metrics for Quantifying Monofocal and Presbyopia-Correcting IOL Contrast Performance

KEY TAKEAWAYS

Results

Measured image contrast of PC IOLs



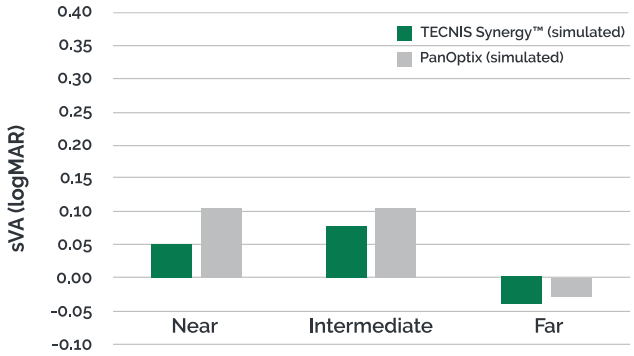
Photopic (small pupil) MTF varies by lens model. Highest and lowest MTF differ by a factor 1.3X.

Mesopic (large pupil) MTF varies greatly by lens model. Highest and lowest MTF differ by a factor 2.7x.

taller bars = better contrast

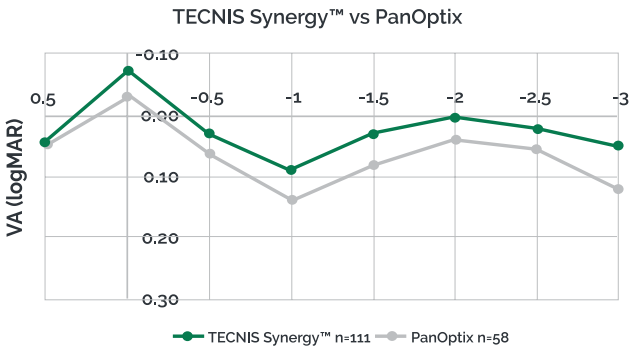
Visual acuity and defocus curves of presbyopia-correcting IOLs covering the full range of vision

Simulated Visual Acuity (sVA)



Simulated visual acuity (sVA) predicted visual acuities better for TECNIS Synergy™ at all distances, reaching one-half line at near demonstrating in a greater range of vision for this IOL.

Clinical Visual Acuity[1]



Clinical defocus curves revealed a consistent difference between both PC IOLs throughout the complete defocus curve, with approximately half a line improvement for TECNIS Synergy™.

More negative bars = better simulated VA

Conclusions MTF varied widely between the different lens models, especially for the larger pupil sizes (mesopic conditions). EDOF IOLs and PCIOLs covering the full range of vision can exhibit differences of up to a line in simulated VA and half a line in clinical defocus curve testing.

Comparison of Visual Outcomes of Cataract Surgery with Monofocal Intraocular Lens versus Extended Vision Monofocal Intraocular Lens Implantation

Donoso R.

Presented at the American Academy of Ophthalmology (AAO), Chicago, Illinois, 2022

OVERVIEW

Study Design

- Prospective, double-blind, randomized controlled trial

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 33 patients / 3-month follow-up
- TECNIS® Monofocal IOL ZCB00 (Johnson & Johnson Vision) / 33 patients / 3-month follow-up

Key End Points

- Monocular and binocular distance-corrected visual acuity (DCVA), monocular and binocular distance-corrected intermediate visual acuity (DCIVA), CatQuest-9SF questionnaire response, quality of vision (QoV)

KEY TAKEAWAYS

Results

- TECNIS Eyhance™ IOL provided significantly better mean monocular and binocular DCIVA (0.20 ± 0.17 and 0.12 ± 0.16 logMAR, respectively) than the TECNIS® Monofocal IOL (0.30 ± 0.15 and 0.25 ± 0.14 logMAR, respectively).
- There was no statistically significant difference in mean monocular and binocular DCVA between the two IOL groups (ICB00: 0.02 ± 0.07 and 0.003 ± 0.06 logMAR, respectively; ZCB00: 0.001 ± 0.06 and -0.001 ± 0.04 logMAR, respectively).
- There was no statistically significant difference in the CatQuest-9SF questionnaire scoring or frequency/severity of bothersome photic phenomena between the two IOL groups.

Conclusions The TECNIS Eyhance™ IOL provided better distance-corrected intermediate vision than the TECNIS® Monofocal IOL without compromising distance vision or increasing photic phenomena.

Pseudophakic Blended Vision: Outcomes of Bilateral Implantation of Novel Monofocal IOL with Enhanced Intermediate Vision

Jain AK.

Presented at the American Academy of Ophthalmology Annual Meeting (AAO), Chicago, Illinois, 2022

OVERVIEW

Study Design

- Prospective, non-randomized, interventional study

Study IOL(s)/Number of eyes/patients and Study Duration

- TECNIS Eyhance™ IOL ICB00 (Johnson & Johnson Vision) / 20 patients (40 eyes): target emmetropia in one eye and myopia of -0.75 to -1.25D in contralateral eye / 3-month follow-up

Key End Points

- Binocular uncorrected distance visual acuity (UDVA), binocular uncorrected (UIVA) and distance-corrected (DCIVA) intermediate acuities at 66 cm, binocular uncorrected (UNVA) and distance-corrected (DCNVA) near visual acuities at 33 cm, spectacle independence, monocular and binocular defocus curves, photic phenomena

KEY TAKEAWAYS

Results

- TECNIS Eyhance™ IOL with mini-monovision provided binocular UDVA of 0.02 ± 0.03, UIVA of 0.01 ± 0.02, and UNVA of 0.28 ± 0.08 logMAR with 100% of patients seeing N8 or better at intermediate distance and 95% seeing N8 or better at near distance.
- Spectacle independence was achieved by 100% of patients for distance vision, 85% of patients for intermediate vision, and 75% for near activities.
- TECNIS Eyhance™ IOL with mini-monovision demonstrated a smoother and wider binocular defocus curve than monocular defocus curves targeting emmetropia or slight myopia. Distance visual acuity was 0.2 logMAR or better from +0.5 to -2.25D.
- Most patients (85%) reported no dysphotopsia symptoms while 15% reported mild to moderate halos or glare. No patients reported severe symptoms.

Conclusions

The TECNIS Eyhance™ IOL is a good choice for patients desiring spectacle independence for intermediate distance without compromising visual quality which, if combined with monovision, can significantly extend the range of vision.

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