

Amico Yasna Pars

Ophthalmology Newsletter / No.14

Spring / 2025

“Any sufficiently advanced technology is indistinguishable from magic.”

-Arthur C. Clarke

Dear Valued Partners,

We live in a world where technology evolves at an incredible pace. To keep up, we must continuously increase our efforts, especially in the ever advancing field of ophthalmology. Embracing new technologies is not just a choice; it is a necessity. Without them, we risk missing out on opportunities that can redefine outcomes and elevate standards of care.

Imagine ophthalmology fifteen years ago how limited the possibilities were compared to today. The progress we've made has transformed what once seemed impossible into everyday practice. What you do now may have once seemed like magic and it is technology that made it real.

At **AMICO YASNA PARS**, as a long time partner of the Iranian ophthalmology community, we are proud to continuously provide cutting edge products from the world's most respected manufacturers, supporting Iranian ophthalmologists who are internationally recognized for their commitment to adopting the latest technologies.

We are honored to announce our latest offering in the field of refractive surgery and the KLEx procedure: The **ELITA Femtosecond Laser**, from **Johnson & Johnson Vision**, a true breakthrough in precision and performance. Please take a moment to know more about this remarkable device in our newsletter.

Warm regards

Smooth Incision Lenticular Keratomileusis

(SILK™)

The groundbreaking invention of the lasers in the 1960s opened a new paradigm for vision correction. In the early 1990s the laser-assisted in situ keratomileusis (LASIK) procedure was developed and gradually became a major procedure for laser vision correction. The modern LASIK procedure takes two major steps, each of which is performed with a different laser system. First, a femtosecond laser is used to cut a flap on the cornea; second, the exposed corneal stroma is ablated with an excimer laser, followed by repositioning of the flap to cover the ablated area. Excimer laser ablation modifies the radius of curvature of the cornea and corrects the refractive error. Nearly 40 million eyes have undergone this procedure across the world. The advantage of LASIK is that most patients gain a sharp vision shortly after the surgery.

In 2009, Zeiss launched a small incision lenticule extraction (SMILE) procedure. It uses a femtosecond laser to cut a lenticule in the cornea, followed by a 3-mm-long cap opening incision for lenticule extraction.[1,2] This incision is much shorter than the arc length of the LASIK flap side cut. Advantages of lenticule surgery over LASIK include better preservation of corneal biomechanical stability and corneal nerves. This results in reduced risk of corneal ectasia and dry eye. So far, over 10 million eyes have undergone this procedure.

In SMILE, the corneal lenticule needs to be separated from the surrounding cornea with the help of a blunt spatula before it can be extracted. This manipulation can compromise the quality of the tissue interface, resulting in delayed visual recovery.

Today, four companies have developed femtosecond lasers for performing corneal lenticule extraction procedures and each has a specific name for the procedure. The refractive surgery community tends to agree to call the Kerato-refractive Lenticule Extraction (KLEX) procedure. Fig. 1 illustrates the LASIK procedure and the KLEX procedure.

The ELITA femtosecond laser system is an innovative corneal refractive surgical system developed by Johnson & Johnson. Its smooth incision lenticular keratomileusis (SILK™) is J&J KLEX procedure for refractive vision correction. The ELITA technology is aimed to provide easier lenticule removal and superior visual outcomes based on the femtosecond laser-tissue interaction physics.

The ELITA femtosecond laser is intended to provide the combined advantages of LASIK and KLEX, i.e., superior visual outcome and better corneal biomechanics. To achieve this goal, the ELITA is designed to use the lowest pulse energy, contiguous laser cut pattern and submicron precision for the control of the cutting trajectory [Fig. 2].

Table 1 shows a comparison of the key parameters for the current on-market KLEX femtosecond laser systems

ELITA SILK procedure introduces for the first time in the industry the biconvex lenticule shape [Fig. 3]. Although the plano-convex lenticule cuts may be implemented differently, the common feature is that it has a uniform anterior depth, such as the flap depth for the LASIK flap and the cap depth for KLEX. Both biconvex and plano-convex lenticule shapes follow the same Munnerlyn formula for refractive vision correction, and they remove the same amount of tissue for a given refractive correction.[4] ELITA chooses the biconvex lenticule shape because of two major reasons. First, it provides mirror symmetric posterior and anterior lenticular surfaces that are expected to match perfectly after lenticule removal, leading to fewer wrinkles in Bowman's membrane, therefore less light scattering and better visual contrast sensitivity. Second, since the corneal stiffness, collagen fiber density and nerve density decrease from anterior to posterior, the biconvex shape is expected to better preserve corneal strength, leading to fast regeneration of corneal nerves.

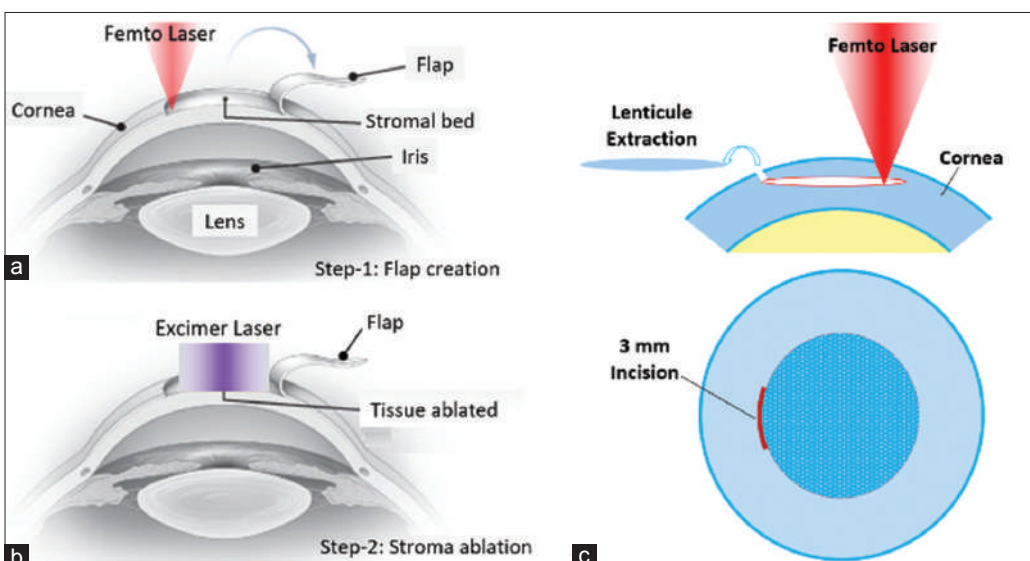


Figure 1:
Illustration of (a and b)
LASIK procedure;
(c) Kerato-lenticular extraction
(KLEX) procedure

To evaluate the visual outcomes following SILKTM procedure for correction of myopic refractive errors with and without astigmatism, using the ELITATM femtosecond laser system, a total of 170 eyes of 85 patients underwent SILK procedure.[6] Preoperative mean refractive spherical equivalent(MRSE) was $-4.14 \text{ D} \pm 1.32 \text{ D}$ (range -1.38 D to -8.88 D) and the mean cylinder was $-0.77 \text{ D} \pm 0.62 \text{ D}$. Intraoperative surgeon ease of lenticule dissection was rated as grade 0 or 1 in 85.3% of eyes (no/only mild dissection needed) [Fig. 4]. Uncorrected distance visual acuity (UDVA) at 1 day, 1 week, 1 month, and 6 months was 20/20 or better in 65.9%, 85.4%, 91.5%, and 96% of eyes, respectively. No eyes lost any lines of CDVA at 6 months [Fig. 5]. The postoperative MRSE was stable over time, ranging from $-0.34 \text{ D} \pm 0.24 \text{ D}$ at 1 month to $-0.33 \text{ D} \pm 0.23 \text{ D}$ at 6 months. MRSE predictability ($\pm 0.50 \text{ D}$) was 93.5% (129/138) at 3 months and 91.1% (113/124) at 6 months. No serious adverse events were noted.

The mean logMAR UDVA was 1.02 ± 0.11 at baseline, which improved to -0.07 ± 0.07 at the 6-month postoperative visit ($P < 0.0001$). Monocular UDVA was 20/40 or better in 100% of eyes at the 1-week, 1-, 3-, and 6-month study visits, exceeding the primary effectiveness endpoint target of 85% at 1 month. Similar results were observed for binocular UDVA over time, with 100% of eyes achieving 20/40 or better from the 1-week postoperative visit onwards. At postoperative day 1, 65.9% of eyes achieved 20/20 or better monocular UDVA, which increased to 85.4% at 1 week, 91.5% at 1 month, and 96% at 3 and 6 months.

The ELITA laser system was designed to deliver lower energy per pulse compared to other laser systems on the market [Table 1] and to produce continuous tissue-bridge-free corneal lenticules that are easy to remove to enable faster visual recovery. Another unique feature of the ELITA system is the biconvex lenticule shape that creates identical surfaces and tissue matching following lenticule removal. The biconvex shape is expected to cut fewer collagen fibers in the peripheral cornea by cutting deeper into the stroma, thereby potentially producing less opaque-bubble-layer and better preservation of corneal biomechanical strength. Additionally, the biconvex lenticule shape is expected to better preserve corneal nerves (clinical results will be published soon). Due to the use of high-precision digital encoder-guided scanning and the minimal mechanical dissection involved in lenticule removal, the ELITA SILK procedure introduces minimal high-order aberrations compared with LASIK and other KLEX procedures, which is expected to benefit the quality of vision, such as the depth of focus.

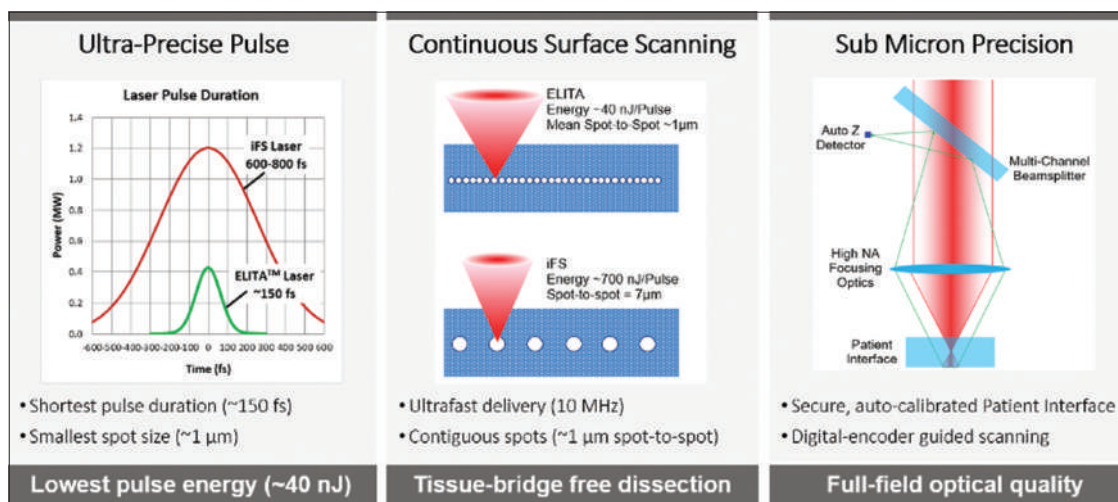


Figure 2: Illustration of the key ELITA technologies

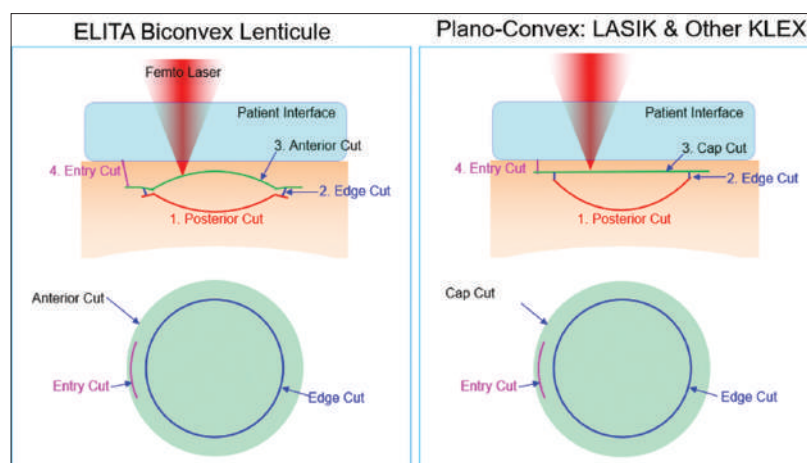


Figure 3: Illustration of ELITA biconvex lenticule shape (left) and the conventional plano-convex shape that is used by LASIK and all other KLEX shapes

Johnson & Johnson started commercializing ELITA for SILK and LASIK flap procedures in January 2023 in selected markets across Asia and Europe. The early outcomes obtained with ELITA are aligned with the multicenter clinical data that were published, and with our overall experience with the device.[6] In our hands, ELITA continues to deliver a fast and easy (almost no dissection) lenticule removal procedure, with an extremely low rate of suction loss, a short learning curve and fast visual recovery. Further developments in software and technology will continue to optimize our refractive outcomes, with the goal to achieve LASIK-like postop day 1 visual outcomes, provide faster nerve regeneration than LASIK and other KLEX procedures, and provide equal or better corneal biomechanics than LASIK and other KLEX procedures.

I feel, SILK™ lives up to its name by delivering smooth incisions with minor or no tissue adhesions. Every case has a complete lenticule removal without encountering cold spots, uncut areas, or bridges, and entry cuts pose no difficulty. Plane identification is relatively easy, and corneal biomicroscopy remains unremarkable during Day-1 and Week-1 postoperative visits. Patients experience fast visual recovery and receive accurate refractive correction, with tight outcomes and standard deviations for sphere and cylinder. Overall, SILK™ achieves great patient satisfaction.

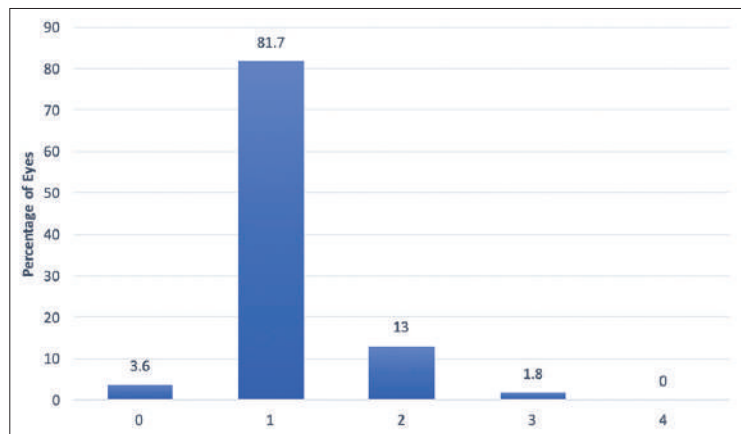


Figure 4: Ease of lenticule removal surgeon ratings ($n = 169$), where 0 = no dissection needed, 1 = mild dissection required (<50% of lenticule), 2 = moderate dissection needed (50–75% of lenticule), 3 = significant dissection needed (76–100% of lenticule), and 4 = unable to dissect

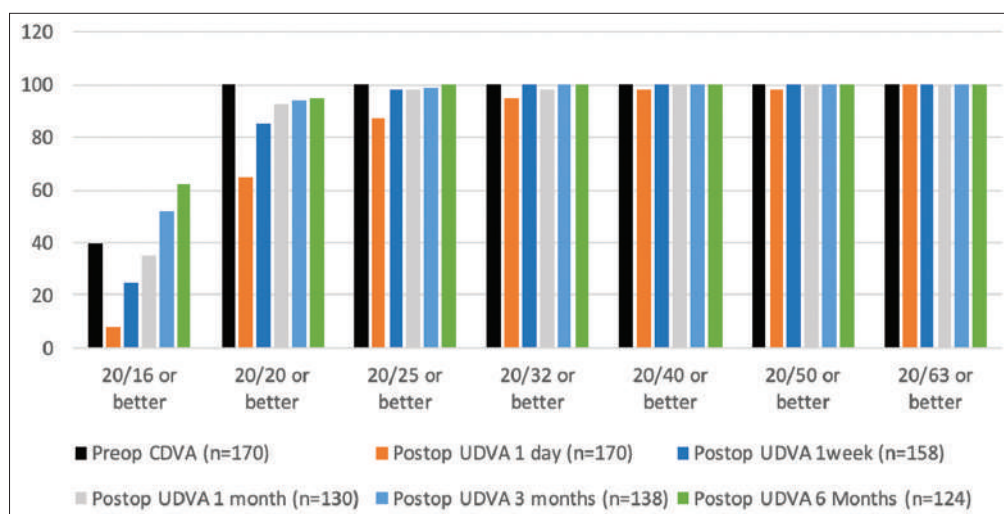


Figure 5: Cumulative Snellen visual acuity (20/x or better) comparing postoperative (postop) uncorrected distance visual acuity (UDVA) with preoperative (preop) corrective distance visual acuity (CDVA) at each time point

Table 1: Comparison of KLEX femtosecond laser systems on the market

Company	Johnson-Johnson	Zeiss	Zeiss	Ziemer	Schwind
System	ELITA	VisuMax 500	VisuMax 800	Femto LDV Z8	ATOS
KLEX	SILK	SMILE	SMILE	CLEAR	SmartSight
Laser pulse duration	~150 fs	220–580 fs	220–580 fs	200–500 fs	<295 fs
Pulse repetition rate	10 MHz	0.5 MHz	2 MHz	<10 MHz	Up to 4 MHz
Pulse energy	40–50 nJ	125–170 nJ	125–170 nJ	<100 nJ	80–125 nJ
Spot separation	~1 µm	3–4.5 µm	3–4.5 µm	No data	3–4.5 µm
Laser cut time	~16 s	~30 s	~10 s	~30 s	~30 s
Patient interface	Flat	Curved	Curved	Flat	Curved
Postdocking centration	Allowed	No	No	Allowed	No
Postdocking cyclotorsion	Allowed	No	Allowed	Allowed	Allowed
Lenticule shape	Biconvex	Plano-convex	Plano-convex	Plano-convex	Plano-convex

elita

Femtosecond Laser



Introducing ELITA™,
next-generation
corneal refractive
technology

Johnson & Johnson

Optical Coherence Tomography

with Fundus Camera, Angiography, Biometry and Topography

HOCT-1/1F

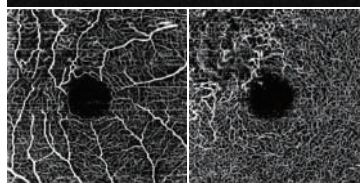
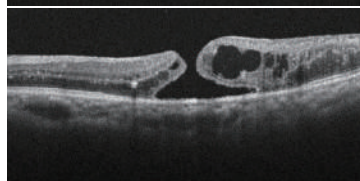
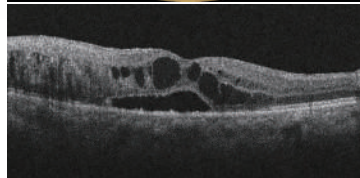
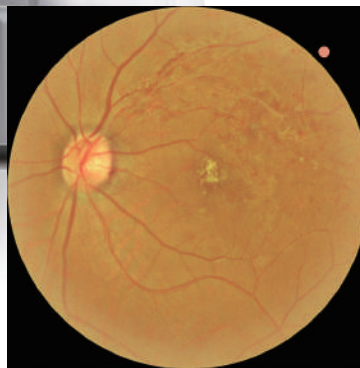


Clinic Exams

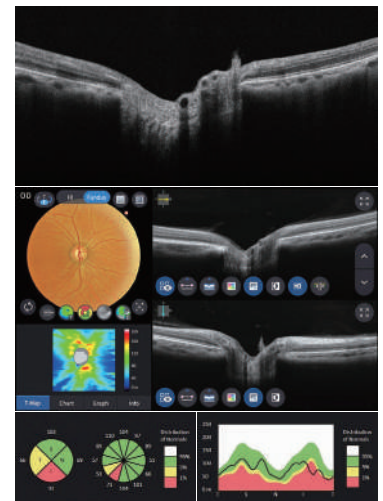
High-quality, high-resolution OCT and color fundus images from HOCT are extremely useful for analysis and clinical diagnosis as the pathologic structure and status of each layer are accurately observed and recorded.

Web Browsing System to view data anytime, anywhere

Patient's test data can be analyzed anywhere on the Internet. You can check and analyze all data of HOCT through Web Browser such as Internet Explorer, Safari, Chrome without installing special software separately.

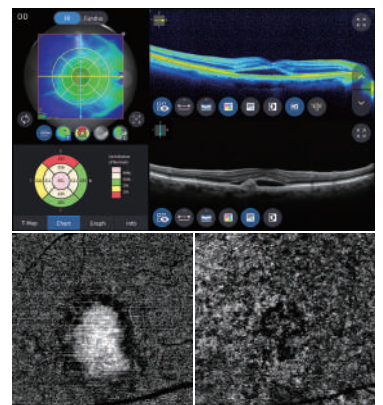


Macular Hole (MH), RVO (Retinal Vein Occlusion)
A macular hole is a retinal break commonly involving the fovea. Severe stage of RVO progressed to a macular hole.



Glaucoma

Glaucoma is a disease that damages your eye's optic nerve. The same symptoms are found at Thickness map, Fundus, TSNIT chart, Clock chart.



Macular Degeneration (MD)

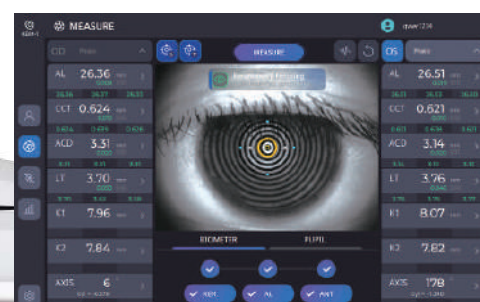
Age-related macular degeneration is a disease that blurs the sharp, central vision you need for straight-ahead activities.

Optical **Biometry** with Full Corneal Topography System

HBM-1



Huvitz
Re:define, Re⁺create



10 Examinations to Measure the Data

Superior Optical Biometer 'HBM-1'

The HBM-1 is completely integrated with Biometry and Topography allowing the user to calculate IOL power in cataract surgery patients. A variety of formulas, DCM (Dense Cataract Mode) and Placido disc analytics technologies provide more reliable results, while measuring 10 clinical parameters faster and more accurately. The HBM-1 is the perfect combination for cataract surgery.

10 methods data measurement :
Axial Length(AL),
Anterior Chamber Depth(ACD),
Central Corneal Thickness(CCT),
Lens Thickness(LT),
Keratometry, Topography, Keratoconus,
Zernike Coefficients, Pupillometry,
White to white



Toric IOL Prescription

Installed Formula :
Barrett (Universal II, Universal II Toric,
True-K, True-K Toric, Rx), Holladay, SRK2,
SRK/T, HofferQ, Haigis, Camellin Calossi,
Shammas No History

TECNIS Synergy™ IOL

■ FRANK T. KERKHOFF, MD, PHD

The EDOF addition improves near vision without sacrificing distance vision.

The Tecnis Synergy IOL (Johnson & Johnson Vision) was introduced in Europe last year, and since that time I have successfully implanted about 300 of them. Two of my senior optometrists, who have decades of experience and have been involved with more than 10,000 presbyopia-correcting IOL cases each, have chosen bilateral Tecnis Synergy lenses for their own eyes, which I think is a testament to the excellence of this lens.

The Synergy combines diffractive multifocal optics with an EDOF addition at near. It also filters ultraviolet and violet light, but it does not filter blue light. I consider it to be most similar to a trifocal lens. Compared with trifocal lenses, the Tecnis Synergy has a more natural range of near to intermediate vision and better mesopic near vision (Figure 18).

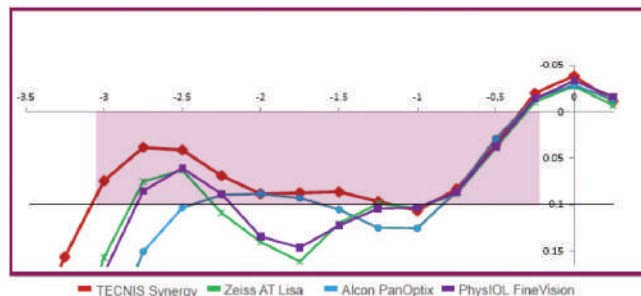


Figure 18. The Tecnis Synergy IOL offers a natural, continuous range of vision from near through intermediate, as well as high-quality distance vision (data on file with Johnson & Johnson Vision).

NEAR GAINS

The near point of the Synergy is a little closer than the near point of trifocal IOLs, at about 35 cm. From the near point through about 70 cm, the lens' diffractive echelette optics provide a continuous range of near to intermediate vision that patients say feels natural. A range like this is ideal for working-age patients who wish to be able to look from their desk to their computer to a colleague a few feet away, or for those who are shopping and cooking and need to be able to see items on the grocery shelf or in their kitchen without constantly adjusting how far away they are from the objects.

The Synergy is relatively pupil independent, and, in my experience, patients report that they can still read in dim light. In fact, I have heard no complaints about near vision at all.

DISTANCE AND NIGHT VISION

The near-vision gains associated with the Synergy IOL have been achieved without sacrificing the excellent quality of distance vision that we have come to expect from the Tecnis

platform. Like the other lenses in this IOL family, the material induces minimal chromatic aberration, and this is further reduced by the optic design, especially in dim light. When the pupil expands, the diffractive pattern corrects even more chromatic aberration, which explains the high-quality vision patients report in low light situations. I have also found that the lens reduces spherical aberration to near zero in most eyes.

Of course, because it has diffractive optics, the Synergy still has some issues with glare and halos at night, but these photic phenomena are generally well tolerated. My patients report that they are an acceptable trade-off for the quality and range of vision.

Johnson & Johnson

Amico Yasna Pars (Pr.J.S.Co) Ophthalmology Newsletter



Tel: +9821-71137000

Fax: +9821-71137300

2nd Floor, No. 1698, Shariati Ave., Tehran, Iran

www.aypmedical.com info@aypmedical.com

Postal Code: 1914744755