AcrySof IQ Vivity®, the First of its kind presbyopia correcting IOL with X-WAVE™ Technology – X-EDoF

Real-world clinical experiences sharing from APAC Vivity® User Meeting

Moderated By:

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AcrySof IQ Vivity® is the First of its kind presbyopia correcting IOL with X-WAVE™ wavefront shaping technology[1,2]. This cutting-edge technology provides patients with a continuous extended range of vision from distance to functional near (Fig.1), stretching and shifting the wavefront rather than splitting it[2].
X-WAVE™provides a smooth and clear EDOF channel without the low contrast sensitivity of a pinhole lens and the visual disturbances caused by loss of light typical of the diffractive lens[3]. By shaping the wavefront, Vivity® X-EDOF utilises almost all of the light[2], thereby reducing the patient's need for spectacles, increasing visual acuity in dim light, and leading to a remarkably lower rate of visual disturbances as compared with classic EDOF lenses[4-8]. During the APAC Vivity® User Meeting, held online in October 2021 by Alcon, key opinion leaders shared their experience with this novel IOL option recently introduced in the Asia-Pacific region.

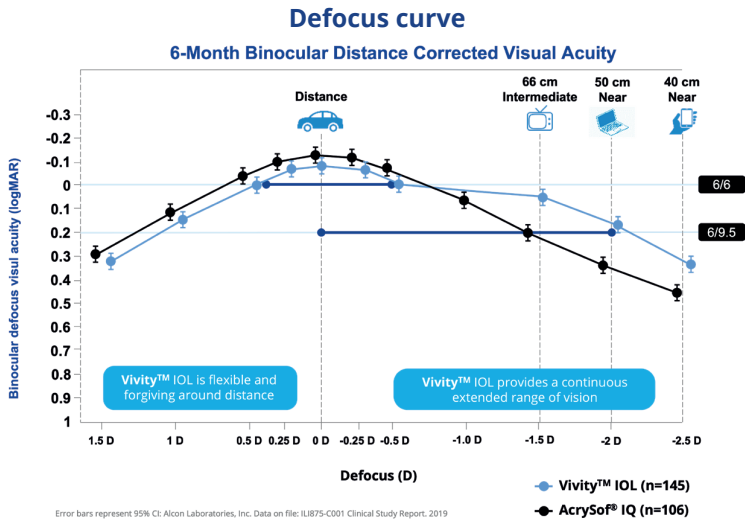
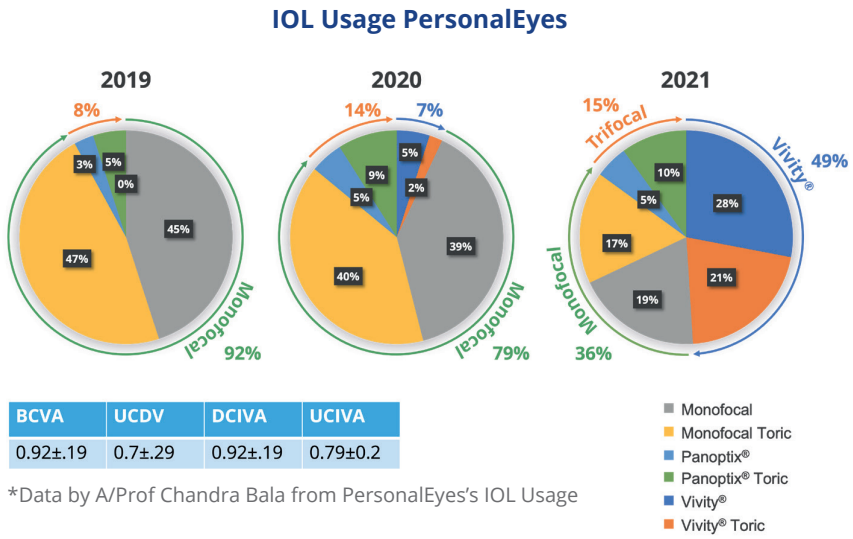


Fig.1 - The defocus curve shows a continuum of vision from distance to functional near, with a plateau-like horizontal profile between 0.5D and -0.5D, resulting in extended focal range[9]

AcrySof IQ Vivity®, for better or for worse

Twenty-twenty vision and N8 at 50 cm are the standard expectations after cataract surgery with implantation of a AcrySoft IQ Vivity® IOL, according to A/Prof Chandra Bala. In his personal experience, **Vivity® shows optimal outcomes both in pristine and non-pristine eyes, with high levels of satisfaction even in his most demanding patients**. He reported the case of a patient who is also his colleague, a medical retina specialist who presented with posterior subcapsular cataract, preoperatively -0.62D in the right eye and -1.38D in the left eye. She was completely against the idea of being implanted with trifocal IOLs due to the potential visual disturbances and agreed to implant Vivity® in the right eye. Outcomes were so good that she asked to have the same lens implanted in the left eye, aiming for a plano target. Excellent distance, intermediate and near vision were achieved, with 20/12 UCVA, N4 at 40 cm and N5 at 60 cm in both eyes at 6 months.
This case inspired ten surgeons in his practice, who had never implanted a presbyopia correcting lens before, to use Vivity® for their patients (Fig.2). More difficult cases of non-pristine eyes were managed equally well. His patients with a mild glaucoma or a history of uveitis were in fact all very happy with the outcomes, achieving good distance, near and intermediate vision. Two other challenging cases, an 83-year old patient with dry AMD and a very large subfoveal drusen, and a 62-year old patient with previous hyperopic LASIK correction, both achieved optimal results, with respectively 20/30 distance and N8 near acuity at one month post op, and 20/20 and N10 OD, 20/25 and N8 OS.



BCVA	UCDV	DCIVA	UCIVA
0.92±.19	0.7±.29	0.92±.19	0.79±0.2

*Data by A/Prof Chandra Bala from PersonalEyes's IOL Usage

Fig.2 - AcrySof IQ Vivity® is increasingly becoming a standard of choice for presbyopia correction - commented by A/Prof Chandra Bala

"AcrySof IQ Vivity® IOL is also suitable for patients with non-pristine eyes and retinal conditions, with encouraging postoperative results".

A/Prof Chandra Bala, personalEYES, NSW, Australia

Key highlights from surgeons' clinical sharing in the User Meeting:

- AcrySof IQ Vivity® shows optimal outcomes in pristine and non-pristine eyes
- AcrySof IQ Vivity® leads to high levels of satisfaction even in the most demanding patients

AcrySof IQ Vivity® or AcrySof IQ PanOptix®?

The AcrySof IQ PanOptix® diffractive trifocal IOL is well-known to provide excellent vision performances[10,11]. However, PanOptix® needs normally healthy eyes, except for cataract, and accurate biometrics to ensure a highly optimised outcome, according to Prof. Soon-Phaik Chee. All toricity should be corrected, since residual refractive error is a major cause of dissatisfaction in patients implanted with PanOptix® [12], along with halos and glare[13]. Vivity® instead does not split the light, providing a continuous range of vision from distance to intermediate and functional near[9], with visual disturbances comparable to a monofocal[14]. Prof. Chee pointed out that Vivity® and PanOptix® can be seen as complementary, both providing excellent distance and intermediate vision, with PanOptix® winning on near acuity and Vivity® on the low rates of visual disturbances. She presented the case of a retiree with bilateral mild nonproliferative diabetic retinopathy (NPDR), irregular astigmatism resulting from previous pterygium surgery, epiretinal membrane in the right eye and mild normal-tension glaucoma in the left eye. Bilateral implantation of Vivity® gave her 20/25 bilaterally, N8 at 60 cm and N5 at 40 cm in the right eye, and N5 at 60 and 40 cm in the left eye. As a non-reader, the patient was spectacle-independent and very happy.

"In my practice AcrySof IQ Vivity® has become a really superior alternative to a monofocal IOL, ensuring both patient and surgeon satisfaction"

Prof Soon-Phaik Chee, Singapore National Eye Centre

Good, predictable, consistent, meeting patients' needs

Though multifocal technology has greatly improved in recent years, not all patients are good candidates for this type of IOLs. On the other hand, less than 30% of patients tolerate monovision, due to loss of stereopsis and failure to ignore blurry images from one half of the binocular field. Prof. Smita Agarwal had for long been looking for **a lens capable of providing better predictable and consistent results**, and AcrySof IQ Vivity® was the answer. Vivity® has become the standard of choice in her clinical practice, filling a gap for patients who do not want a monofocal but are not eligible for a trifocal lens. In her case series of 51 eyes at 6 weeks post-op, most patients achieved UDVA of 20/25 and intermediate vision of N4. Near vision was around N8 or N10, but only 8% of patients needed reading glasses for very close up activities. She found Vivity® to be a helpful and forgiving lens that **allows for easy management and saves time** as compared with other premium IOLs, a significant advantage for a busy clinical practice.

"Happiness is the key to success. Behind any successful ophthalmologist, besides good surgery, a reliable predictable lens (AcrySof IQ Vivity®) ensures the Wow factor!

Prof. Smita Agarwal, Wollongong Eye Specialists, NSW, Australia

AcrySof IQ Vivity® in patients with epiretinal membrane

Even a very low grade epiretinal membrane (ERM) may negatively affect the visual performances of a multifocal lens. AcrySof IQ Vivity®, however, can be an option in these cases, according to Dr. Sohee Jeon. She reported the case of a 70-year old male, with low-grade ERM which did not distort the outer retinal structure in his right eye, and low corneal astigmatism in the left eye.
Jeon implanted Vivity® bilaterally to achieve some degree of spectacle independence and avoid severe dysphotopsia. Refractive and visual outcomes were positive and OPD-scan results suggested that Vivity® was well tolerated (Fig.3). In her second case the ERM had started to distort the outer retinal structure in the left eye. After removing the ERM, Jeon implanted Vivity® in both eyes. At 3 months, refractive and visual outcomes were very good.
The patient said that she would choose Vivity® again, and even recommended it to family and friends.

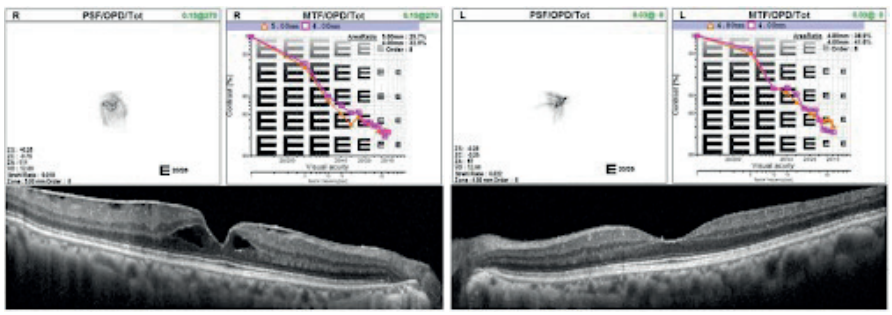


Fig.3 - OPD scans show a similar PSF in the right and left eye

"AcrySof IQ Vivity® is suitable for patients with suboptimal vitreoretinal status with no glare or starbursts and only negligible halos"

Dr. Sohee Jeon, Keye Eye Center, South Korea

Key highlights from surgeons' clinical sharing in the User Meeting:

- AcrySof IQ PanOptix® and AcrySof IQ Vivity® can be seen as complementary
- AcrySof IQ Vivity® is comparable to a monofocal in terms of visual disturbances
- AcrySof IQ Vivity® provides predictable and consistent results
- A time-saving option, and a significant advantage for busy practices
- Suitable for patients with suboptimal vitreoretinal status

AcrySof IQ Vivity® in patients with AMD and Glaucoma

AcrySof IQ Vivity® can provide very good far, near, and intermediate visual acuity in complicated cases, such as Glaucoma and mild AMD, according to Dr. Bryan Hung Yuan Lin. He implanted Vivity® in a 70-year old woman with PACG suspect. Preoperative BCVA was 20/63 in both eyes, no damage to the retinal nerve fibre layers was observed and post-op results showed very good vision at all distances, UCVA 1.0, J3/J5 for 60cm and 80cm. His second case was a 63-year old woman with mild age-related retinal disease: OCT showed mild ERM in the right eye, but an otherwise healthy macula. Pre-op BCVA was 20/63 in the right eye and 20/40 in the left eye. Result showed good vision, UCVA 1.0, J3/J7 for 60cm, 80cm. These patients are very satisfied after Vivity® implantation.
With Vivity®, visual acuity improved significantly.

"With very good far, intermediate and near vision results, till now all my patients are very satisfied using Vivity® IOLs"

Dr. Bryan Hung Yuan Lin, Zhong-Li Universal Eye Center, Taiwan

Is decentration a real issue?

In terms of decentration, AcrySof IQ Vivity® is a more forgiving lens as compared to other presbyopia correcting IOLs, according to Dr. Lee Hung Ming. He presented the case of a 50-year old gentleman with high hyperopia of +3.5 in the right and +3.75 in the left eye, and 1D of cylinder in both eyes. Pentacam examination gave normal results and cylinder power was calculated using a Barret formula for toric calculation. Vivity® was implanted bilaterally at an interval of two days in between eyes. Postoperatively, Dr. Lee noticed that the lens was decentred by 1 mm in the right eye. Visual outcomes, however, were minimally affected. In both eyes, 20/20 distance vision and 20/40 reading vision were achieved. Intermediate vision in the right eye, where the IOL was decentred, was 20/40, as compared to 20/25 in the well-centred eye. The patient reported no difference between the right and the left eye in terms of glare, halos, starbursts or night vision, and said to be very satisfied.

"Decentration of a multifocal IOL can affect not only the photic phenomenon, but also the patient's distance, intermediate and near vision. This does not happen with AcrySof IQ Vivity®, definitely a more forgiving lens in terms of decentration"

Dr. Lee Hung Ming, Asia Pacific Eye Centre, Gleneagles Hospital, Singapore

AcrySof IQ Vivity® and Monofocal

AcrySof IQ Vivity® can be effectively combined with a monofocal lens in the contralateral eye, according to Dr. Godfrey Lam. He implanted Vivity® in the left eye of a patient previously implanted with a Clareon monofocal in the right eye. He was a carpenter and he needed good intermediate vision for his work. Eventually, this patient was able to see 20/20 at distance, 20/50 at intermediate and near, and to work without spectacles. Equally good results were obtained in a lorry driver previously implanted with a Clareon in the left eye. This patient wanted to see intermediate and maintain long-distance vision in the left eye for driving as well. Dr. Lam's first choice was a Vivity® +15.5D for the right eye. A decision that led to a positive outcome, with 20/20 distance and very good intermediate vision, a slightly underperforming near vision but, most importantly, no visual disturbances during night driving.

"The good thing about AcrySof IQ Vivity® is that I do not worry about the lens, because I know it will function well, just like a monofocal, and I am sure I will have nothing to worry about in terms of visual disturbances"

Dr. Godfrey Lam, I Centre, Hong Kong

Angle Alpha

As part of his early experience with AcrySof IQ Vivity®, Dr. Chandrasekar Wavikar asked detailed feedback from his patients, and the response was overall very positive. For reasons that are still unclear, some of his patients had better near outcomes than others, but after prolonged reading time they tended to develop eyestrain-related symptoms. A case reported during the meeting was that of a 48-year old patient with posterior subcapsular cataract in both eyes, and an abnormal angle alpha of 0.78. Dr. Wavikar said that he was initially sceptical about using Vivity® in this patient, despite being told that the lens technology is expected to be less dependent on angle alpha than diffractive IOLs. However, results after the first implant were extremely encouraging, and Vivity® was therefore implanted also in the second eye. The patient achieved 20/13 UCVA in both eyes individually, N8 uncorrected intermediate and N5 near vision, he reported.

"Patient was so happy with the first eye that she immediately opted for AcrySof IQ Vivity® in the second eye"

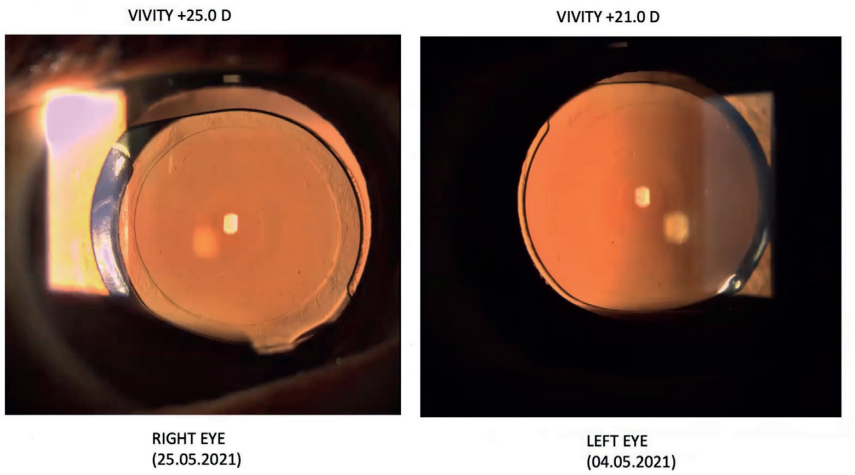
Dr. Chandrashekar Wavikar, Wavikar Eye Institute, Thane, Maharashtra, India

Key highlights from surgeons' clinical sharing in the User Meeting:

- AcrySof IQ Vivity®'s forgiving quality makes it eligible for patients with mild retinal diseases
- AcrySof IQ Vivity® can also be used in glaucoma patients, with good visual outcomes
- AcrySof IQ Vivity® performs well even in eyes with medium-high angle alpha
- AcrySof IQ Vivity® visual outcomes are minimally affected by potential lens decentration minimally affected by lens decentration, if it happens

From amblyopia to happiness

Thanks to AcrySof IQ Vivity®, Dr. Sandeep Nagvekar was able to lead a challenging case to a happy ending. The patient was a 65-year old very eminent lawyer with an amblyopic eye since his early childhood due to monocular hyperopia of about +3.75D. He was an avid tennis player, and he enjoyed driving on weekends. After a life spent wearing glasses, the patient was not keen on being implanted with a monofocal, but Dr. Nagvekar was hesitant to offer him a trifocal in order to promote his passion for driving.



Eventually, he opted for an AcrySof IQ Vivity® in both eyes (Fig.4), and results were outstanding. At 3 months, the patient was 20/30 uncorrected in the right eye, intermediate vision was 20/20 binocularly and near vision was 20/32 as expected. According to Dr. Nagvekar, the patient gladly accepted an addition of +1.25 for near, and still is absolutely delighted with the results. Vivity® was a life-changer: before the operation, his colleagues used to do most of the reading and briefing for him.

"In all the 12 years that I knew him, his vision with glasses, even before the cataract onset, had never been more than 20/40. It astounded me."

Dr. Sandeep Nagvekar, Nagvekar Eye Clinic, India

Fig.4 - Vivity® implanted bilaterally in a difficult case of amblyopia

A new standard - discussion and conclusions

AcrySof IQ Vivity® is a novel breakthrough option in cataract refractive surgery, a promising addition to the presbyopia-correction category of IOLs. It is an easy entry into presbyopia correction for every general cataract surgeon, with the same intermediate vision capability of multifocal lenses, but without the downside of visual symptoms. It is a suitable choice also for patients with mild vitreoretinal conditions. According to the participants' personal experience and knowledge, AcrySof IQ Vivity® is already winning over the monofocal market, and the number of doctors switching to this lens has skyrocketed in different subspecialties. They all agreed that the innovative X-WAVE™ technology may open a brand-new generation of IOLs, an entirely new IOL category overcoming the concept of EDOF.

"AcrySof IQ Vivity® could become the new standard of care, efficiently addressing a gap in the correction of presbyopia" *- A/Prof. Chandra Bala, Australia*

"AcrySof IQ Vivity® is a lens for patients who understand the value of intermediate vision" *- Dr. Abhay R. Vasavada, India*

"Most multifocality issues I experienced with other IOLs are all addressed and solved by AcrySof IQ Vivity®" *- A/Prof. Khairidzan Mohd Kamal, Malaysia*

"I don't think there should be any concern about the angle alpha unless this is really, really huge" *- Dr. Lee Hung Ming, Singapore*

"It is a wonderfully forgiving lens, especially in case of decentration. We should classify it as a new type of lens" *- Dr. Jony Chang, Taiwan*

"This is something that will upgrade my clinical experience. I am probably going to use more AcrySof IQ Vivity® in the future" *- Dr. Fook Meng Cheong, Malaysia*

"Despite all the lenses we have at our disposal, Vivity® really introduces a new element into our practice. These are very exciting times we live in!" *- Dr. Ronald Yeoh, Singapore*

Based on the surgeons' panel experience, AcrySof IQ Vivity® is:

- Forgiving with difficult cases, helping the surgeon to hit the desired refractive target.
- Predictable, providing reproducible, consistent outcomes.
- With a low rate of halos and glare, comparable to a monofocal.
- Complementary with other multifocal lenses such as AcrySof IQ PanOptix®.
- Effective with monovision.
- Well tolerated in patients with mild retinal disease and glaucoma.

Disclaimer: Above presented are clinical experience from respective surgeon, although preliminary clinical experiences are favorable in various scenarios but more data will be needed to confirm these in larger population. The safety and effectiveness of Vivity has not been substantiated in clinical trials in patients with certain pre-existing conditions and/ or intraoperative conditions, including uncontrolled glaucoma, amblyopia or previous refractive surgery etc, as these patients were excluded from the pivotal clinical studies.[15,16]

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