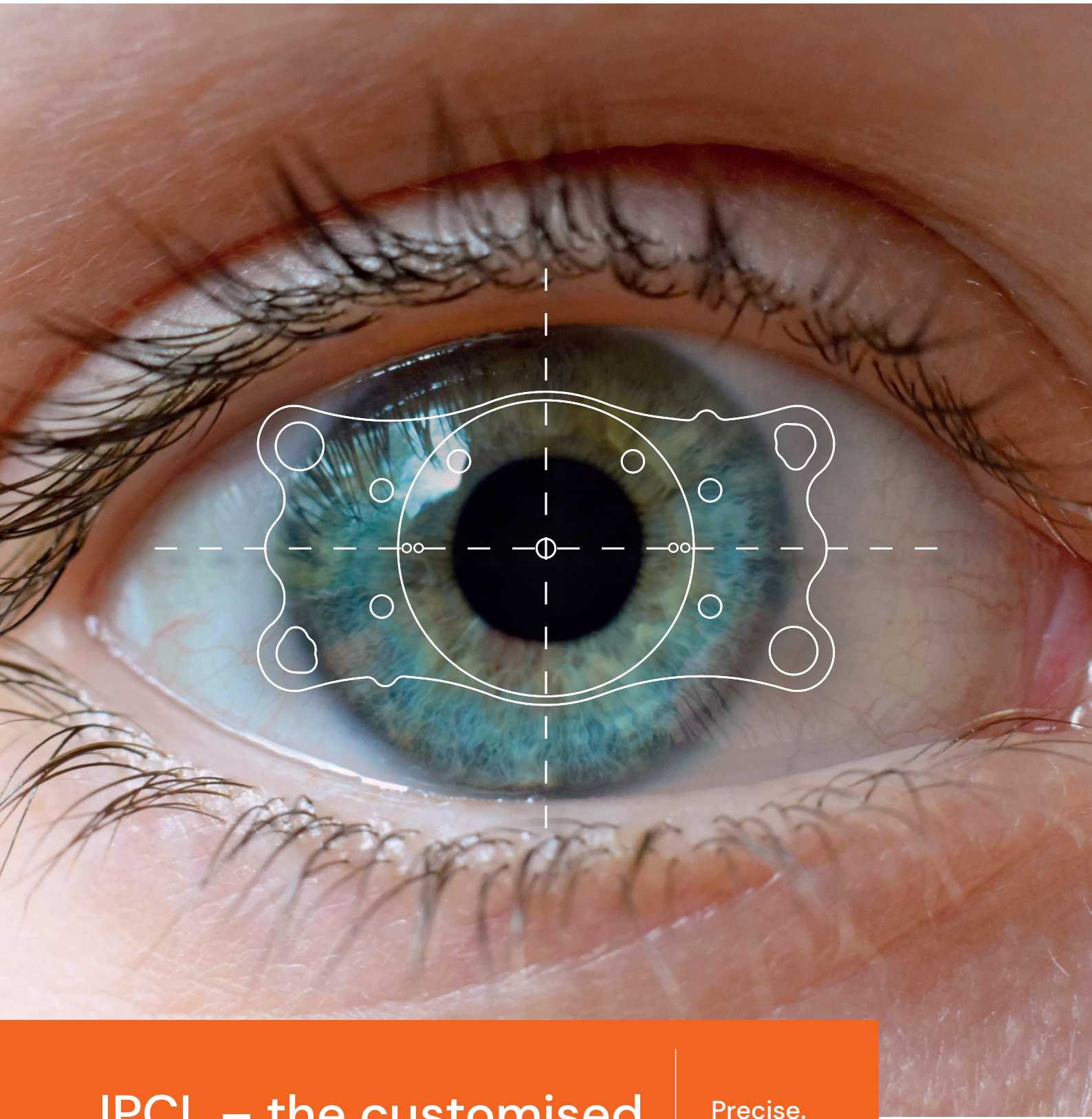
Spectrum



IPCL – the customised refractive solution

Precise.
Safe.
Reversible.

The Implantable Phakic Contact Lens

Our experience advancing technology, creates new clinical opportunities.

The concept of the phakic posterior chamber lens dates back to 1986 when Svyatoslav N. Fyodorov implanted the first phakic IOL in the posterior chamber. In 2007, AddVision introduced the first lens of this principle and has since witnessed and helped shape the development of this concept.

Wide ranging benefits:

- Excellent optical quality
- High refractive stability
- Independent from the cornea
- Superior range of correction
- Posterior chamber positioning
- Reversible procedure

These features make phakic posterior chamber lenses a key component in the portfolio of modern refractive centres.

Customised solutions

Have confidence that you are providing your patient with a phakic lens designed specifically for them and their needs. Whether to correct high refractive errors, astigmatism or in addition presbyopia, we have a solution for you and your patients.

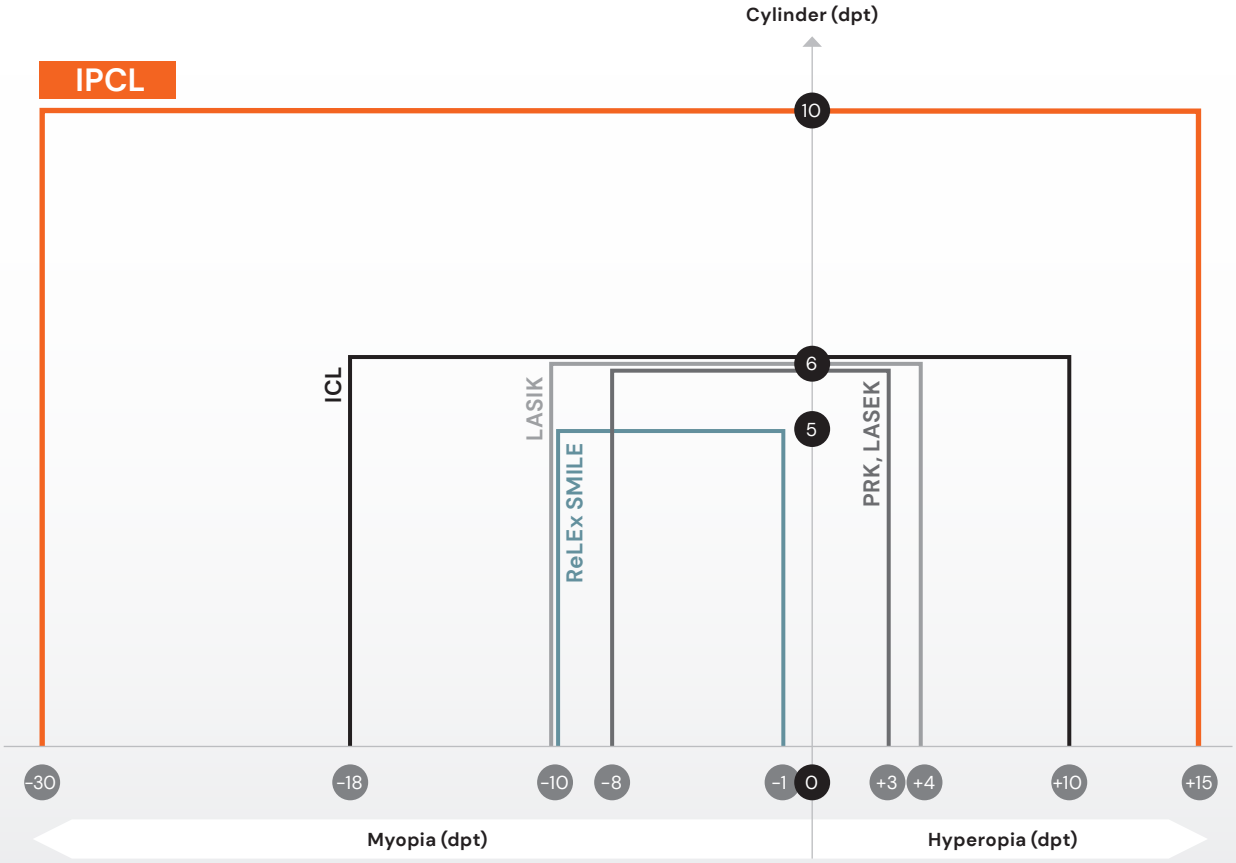
- **Extensive diopter range +15.0 D to -30.0 D**
- **The IPCL is available in 13 sizes from 11.00mm to 14.00mm**
- **Improved lens design to enhance safety, vault and stability**
- **Simplified loading and insertion of IPCL**
- **Improved service and faster delivery**
- **A completely new treatment option with IPCL Presbyopic to close an important gap in refractive care**

On the following pages, you will find out what an innovative leap the IPCL represents and, above all, what benefits you and your patients will gain from the IPCL.

Diopter Range

As a refractive procedure, phakic posterior chamber lenses are mainly used when cornea-based laser procedures reach their limits. In such cases of high refractive error, the visual quality provided by phakic IOLs versus LASIK has been frequently proven.

The IPCL maximises this benefit of providing a solution for virtually any refractive correction need. The IPCL's standard diopter range is: spherical correction +15.0 to -30.0 D and 0.5D to 10.0 D cylindrical correction in 0.5D steps respectively. In addition, a custom-made option outside of this range is possible.



Fields of application of different refractive procedures.[1]

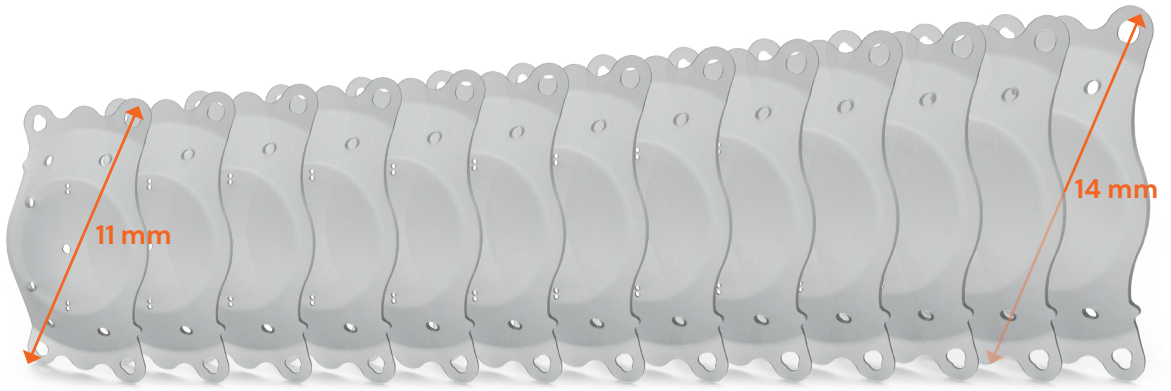
With the IPCL you have the solution not only to correct most ametropia with refractive surgery - but virtually all.

THAT ALONE MAKES THE IPCL UNIQUE.

Sizes

One of the most important prerequisites for a complication-free life with a phakic posterior chamber lens is the so-called “sizing“, i.e. selecting the lens diameter that fits the horizontal sulcus width of the eye in such a way that the desired distance (“vault“) between the artificial and the natural lens is created. In this safety critical area, the available lens sizes won’t force you to compromise.

The IPCL is available from 11.00 mm to 14.00 mm diameter - and in 250 µm increments!



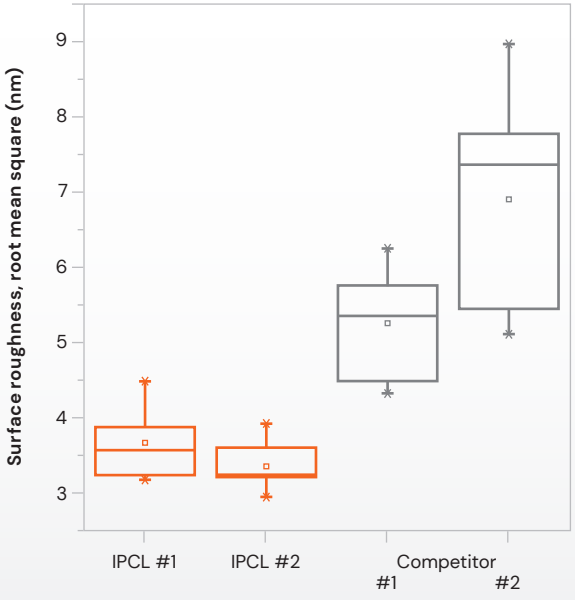
With the IPCL, you have the optimum size for every eye. Accurate sizing - one of the most important prerequisites for a carefree life for your patients with the IPCL.

THAT ALONE MAKES THE IPCL UNIQUE.

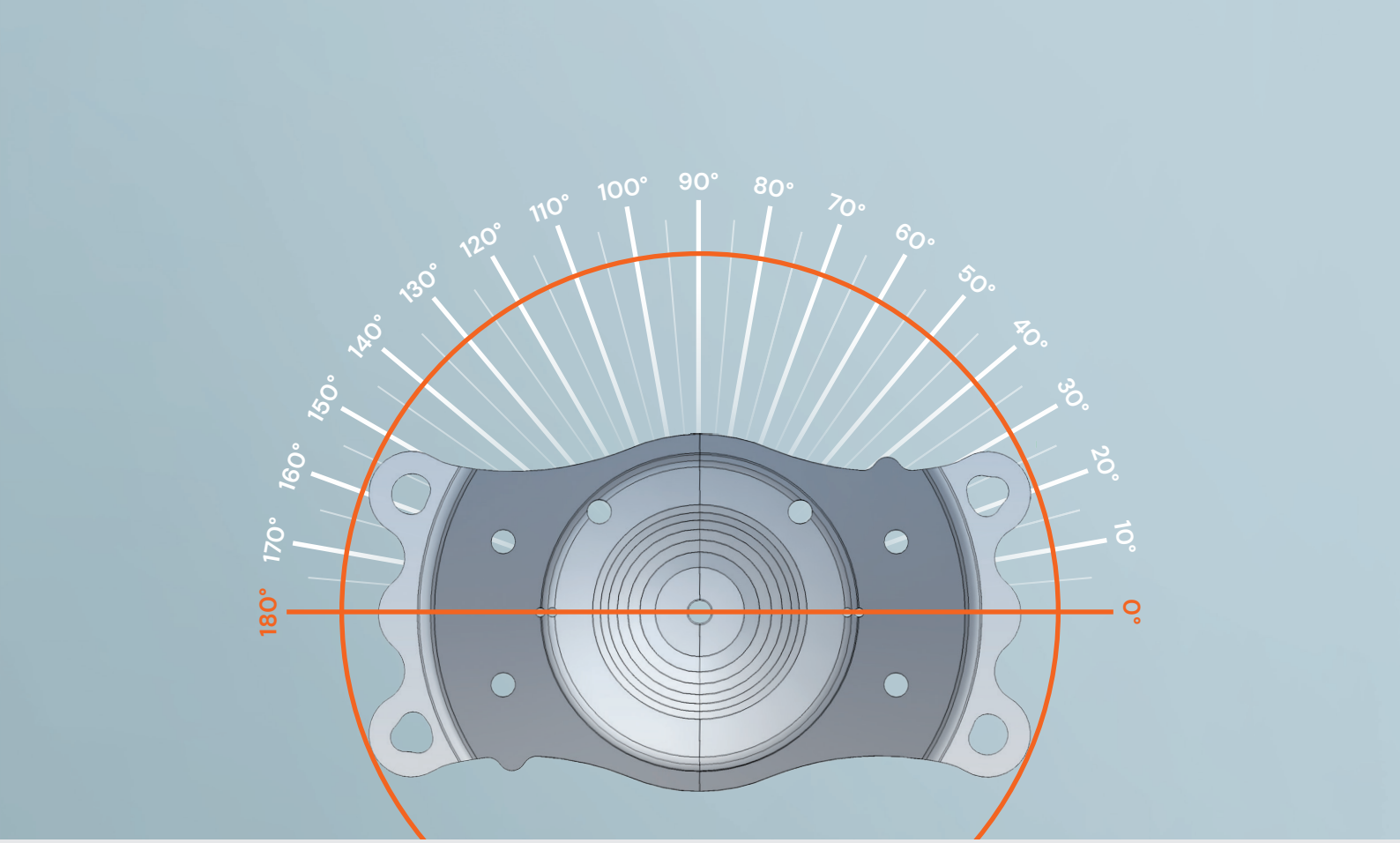
Material

The highest biocompatibility, long-term data and size stability are almost a matter of course for IOLs. Thanks to the combination of two acrylates, which have been tried and tested millions of times, with a water content of 26%, the IPCL is also around 30% thinner than its competitor. Its modern material does not require any additives to remain stable in size - even in the eye. The IPCL therefore also meets the requirements of patients who do not accept components of animal origin.

The refractive index of 1.465, the exceptionally high Abbe number of 60 and the superior surface quality [2] are also the basis for best optical performance. The particularly smooth surface [8] is also designed to minimise friction between the iris pigment and the lens.



Result of the scanning electron microscope. Measurement of surface roughness at seven points of two IPCL and two competitor lenses. [2]



The cylinder of each toric IPCL is individually positioned so that the lens is always aligned horizontally.

Smart Toric

A refractive solution is only complete if it can also compensate for astigmatism. Toric IOLs, however, make the procedure much more demanding and increase the risk of error.

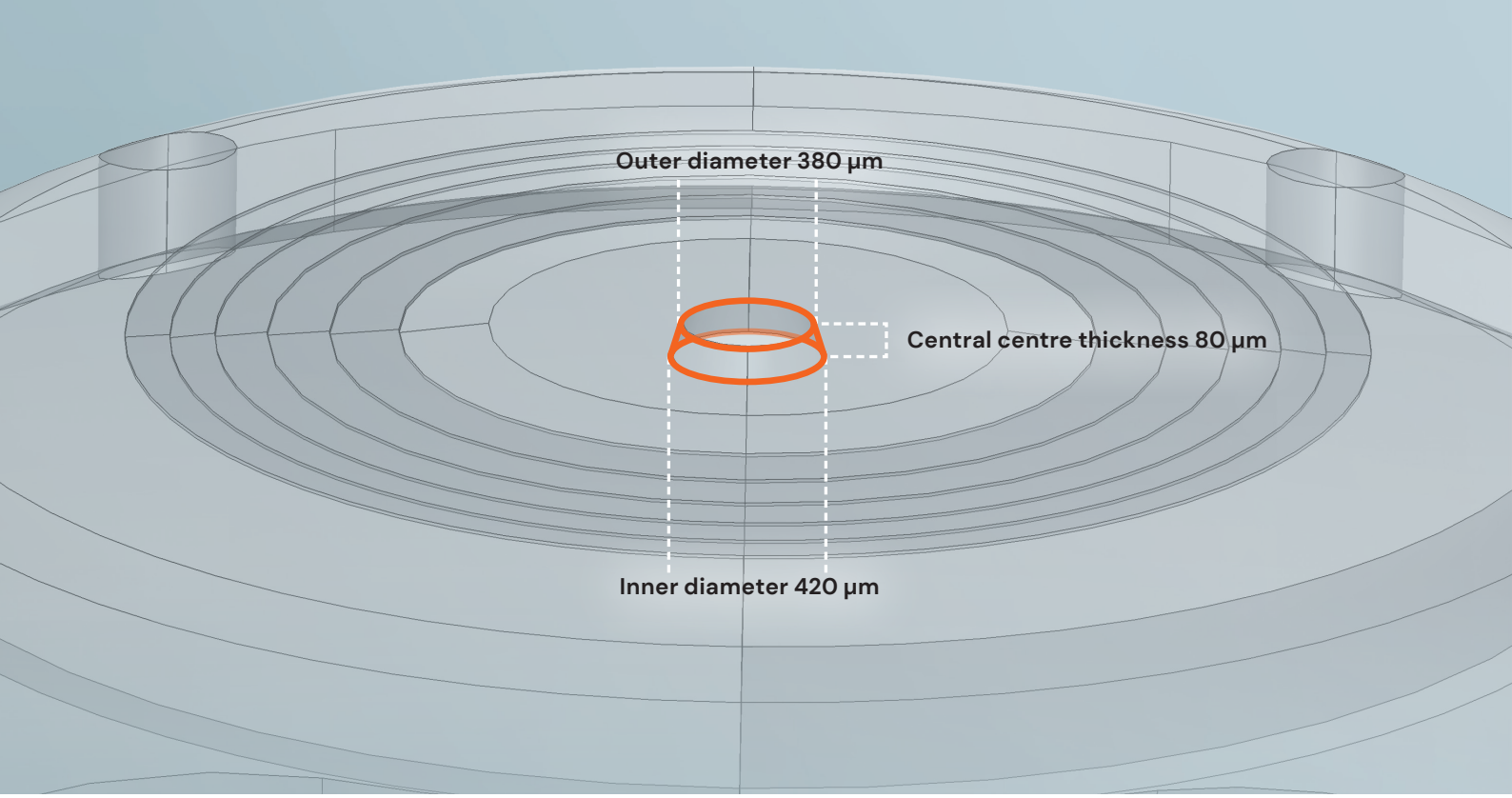
IPCL benefits from 'Smart Toric' which has been designed to avoid the problems often associated with conventional toric IOLs; two-step axis marking and alignment.

Toric IPCLs are individually manufactured with the axial position of the cylinder of the IPCL adapted to the torus of the cornea. Therefore, IPCL is implanted on 0-180° axis to avoid the need of rotation, reducing the risk of error as only the 0-180° axis marking is required.

Toric IPCL are always positioned horizontally (0-180° axis).

→ **With the IPCL, implanting toric phakic posterior chamber lenses is easier and safer than ever before. We call it: Smart Toric!**

THAT ALONE MAKES THE IPCL UNIQUE.



The evolution of the hole in the optic

The introduction of a hole in the centre of the optic was a revolution in phakic posterior chamber lenses 10 years ago. The benefit of making the otherwise obligatory peripheral iridectomies unnecessary quickly convinced critics, especially since the concern of optical side effects proved to be insignificant.

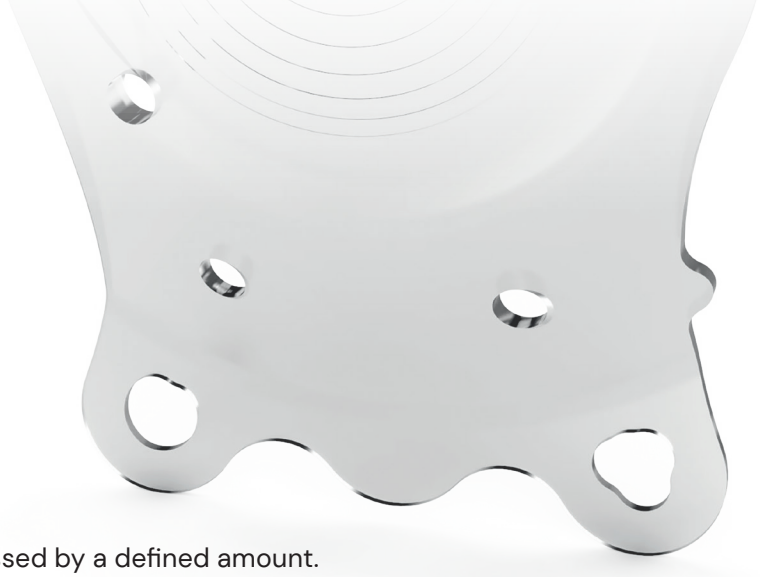
The IPCL shows that even a revolution can undergo an evolution. The **central thickness of the myopic IPCL is less than 80 µm**, which reduces edge effects.

In addition, the **central opening in the IPCL is conically shaped**, with an inner diameter of 420 µm and an outer diameter of 380 µm. This not only results in a funnel effect for aqueous humour flow, it also reduces edge reflections from obliquely incident light.

→ **The greatest benefit for you and your patients is that these measures make it possible to offer the central opening even in hyperopic IPCL models – up to +3.5 D.**

In addition, to further improve the aqueous humour flow, the IPCL has two more openings at the superior optic edge and four holes at the optic-haptic transition.

THAT ALONE MAKES THE IPCL UNIQUE.

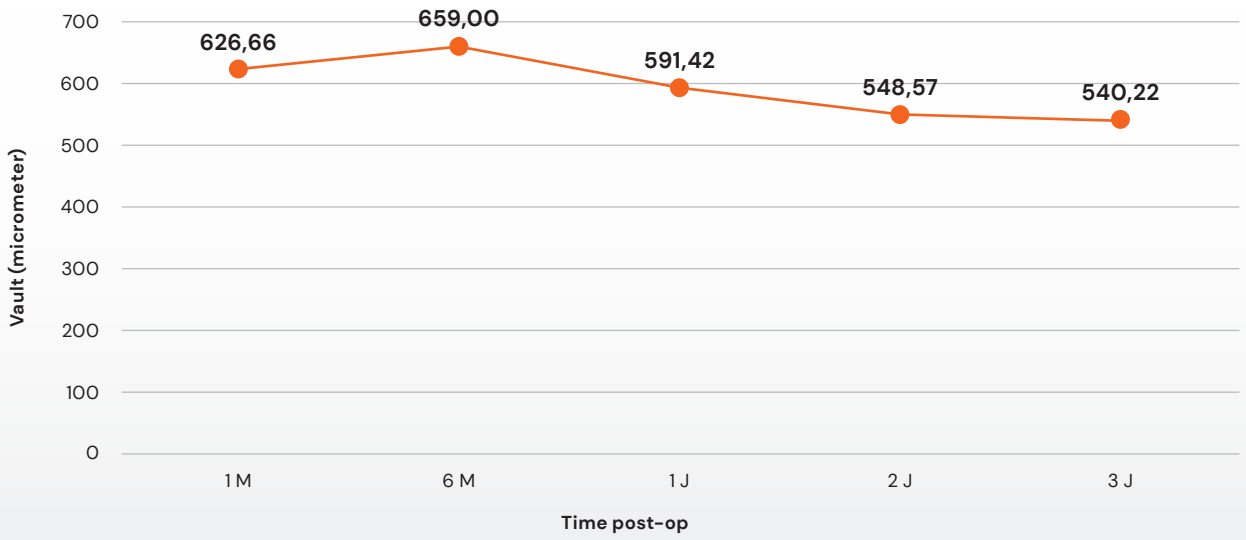


The haptics

The haptic design gives the lens stability with six contact points to the sulcus, they also support ideal vaulting.

The large openings in the four peripheral haptic ends create a spring effect.

If the sizing is correct, the ends are compressed by a defined amount. If the sulcus is smaller than expected, the force on the haptic ends increases and they continue to depress and do not immediately raise the vault. If the sulcus is larger than calculated, the pressure on the haptic ends is less, so they depress less and the vault is held in the desired range for longer. This mechanism has the potential to compensate for sulcus size deviations of up to 0.25 mm.



Average vault of the IPCL over a period of 3 years at 30 eyes. [3]

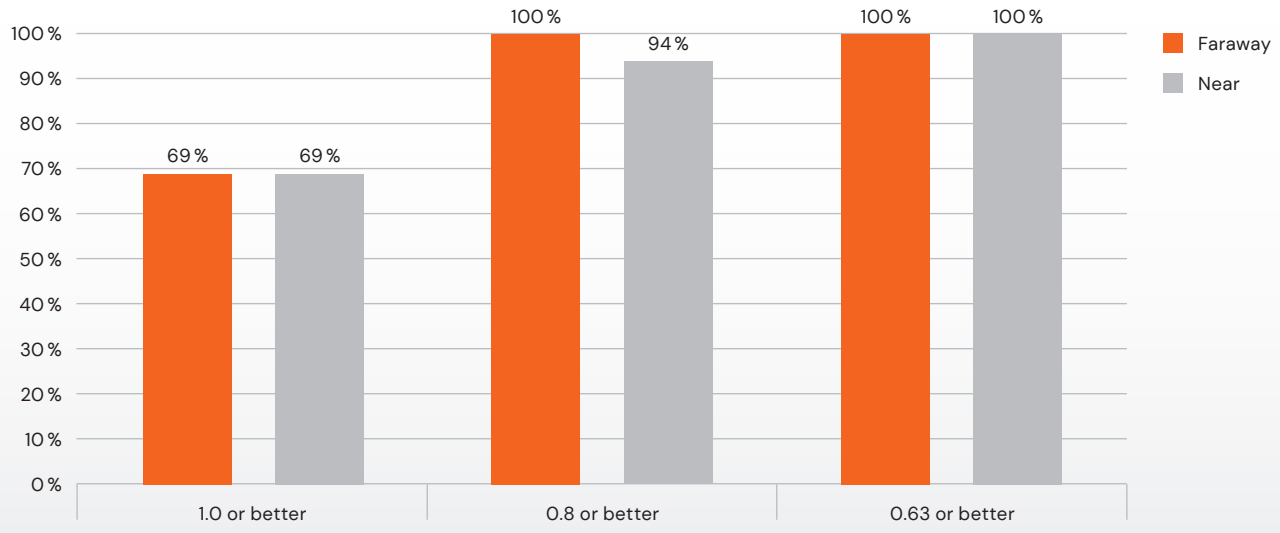
→ The quest for the ideal vault drives the IPCL to the extreme - the haptics.

THAT ALONE MAKES THE IPCL UNIQUE.

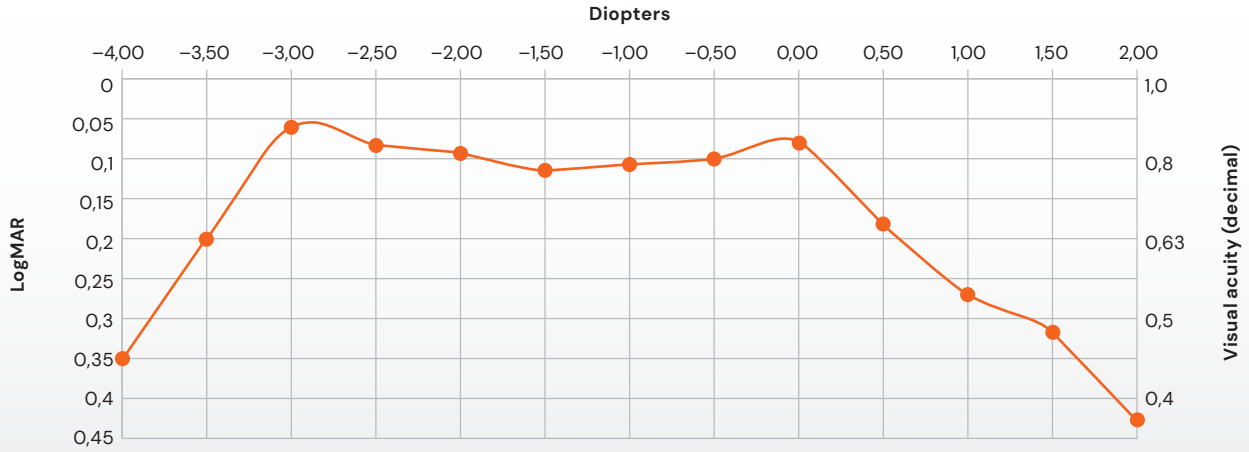
IPCL Presbyopia

What can you offer Sarah?

Around 11 million people in the UK and Ireland are aged between 40 and 60 years old. Approximately 95 % of them are presbyopic! [4] The increasing demand for good vision independent of glasses and contact lenses has brought refractive surgery to its current level with a wide variety of procedures. In the most populous age group between 40 and 60 years, there has been a large gap between expectations and refractive possibilities until now.



Cumulative uncorrected monocular distance and near visual acuity (40 cm), four weeks postoperatively in 16 eyes. [5]



Binocular defocus curve of IPCL presbyopic of 27 patients, 6 months postoperatively [6]

Modern and sophisticated

Patented diffractive-refractive technology

- The patented technology includes a "Dynamic Energy Transfer" (DET). Here, the energy distribution is optimised for all three focal points in different lighting conditions, providing good vision without glasses at different distances.
- The angle of the diffractive steps starts at 6° in the centre and increases to 65° at the edges. This results in less light scattering and fewer halos.
- The unique **angled stepped** optic reduces light loss up to 8%. A huge improvement on other diffractive optics which have a light loss of up to 18%.
- The height of the steps decreases from 1.8 microns at the centre to 90 nanometers in the periphery (apodization). This ensures greater light distribution for distance vision.
- The IPCL is available in near additions from 1.5 D to 4.0 D in 0.5 D increments.

The patented IPCL Presbyopic opens up a completely new treatment option that supports any refractive portfolio. We have been offering IPCL since 2017.

Is now the right time for you to close this gap for patients?

"Two-year results show high quality uncorrected distance and near visual acuity after implantation of a presbyopic phakic lens." [7]

→ **The IPCL Presbyopic offers you the solution to maintain the integrity of the cornea and to preserve the natural lens for as long as it makes sense. Your patient can also benefit in the future from the latest IOL technology when the time comes.**

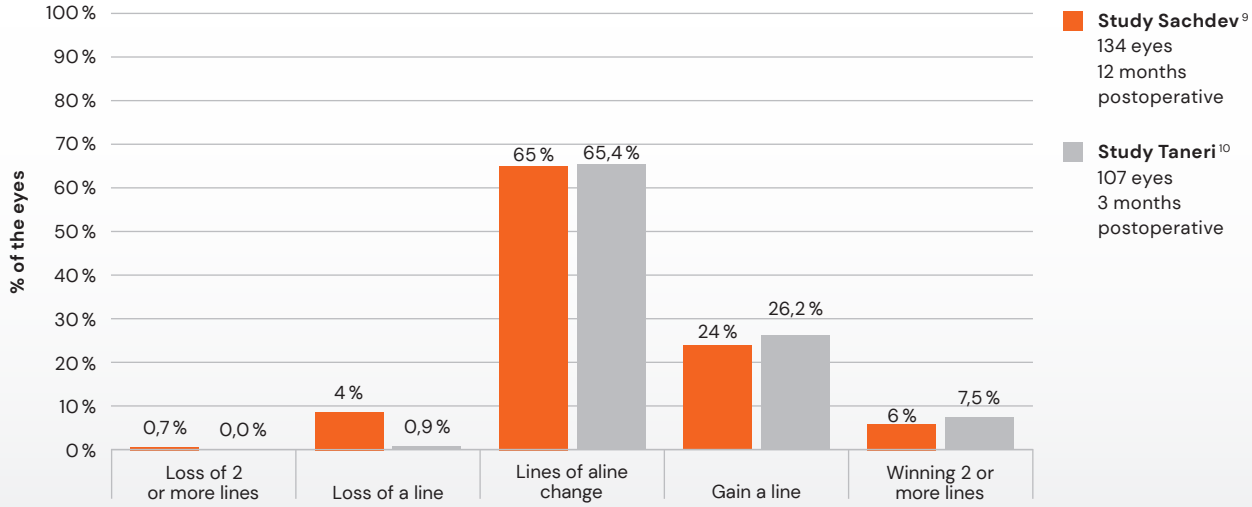
The IPCL Presbyopic offers the same advantages and options as the monofocal versions and, in addition, a trifocal, diffractive optic whose near addition can be individually selected between 1.5 and 4.0 D - expect no compromise with IPCL!

BUT NOT ONLY THAT MAKES THE IPCL UNIQUE!

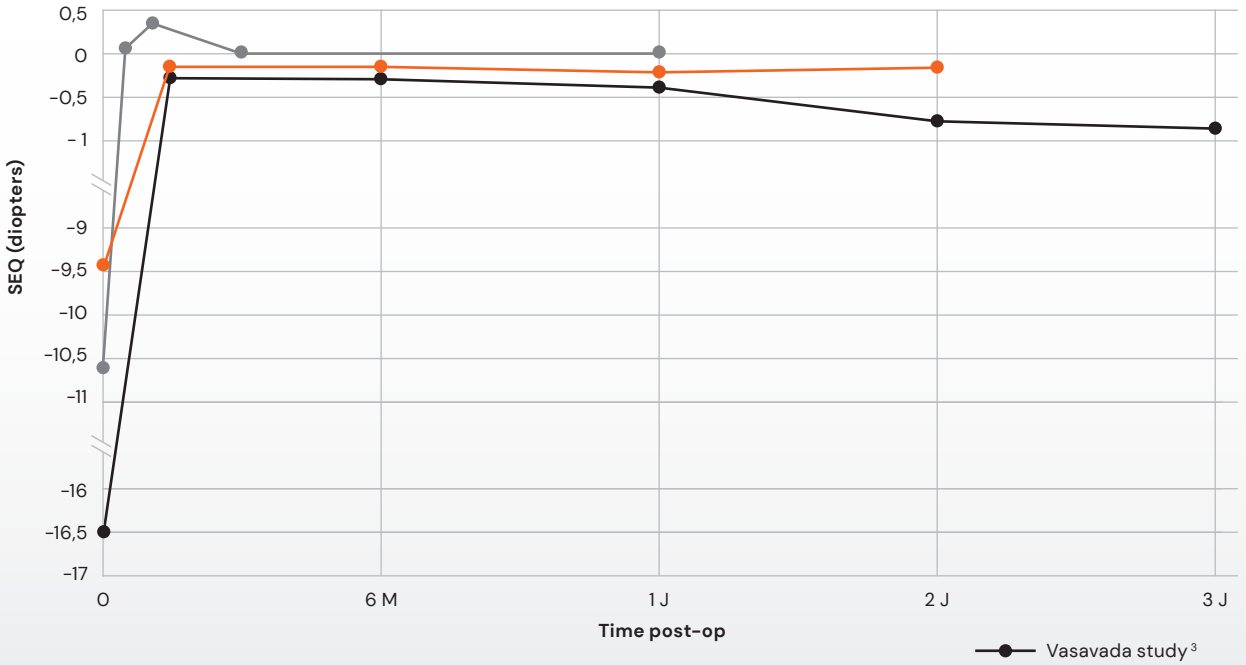
Innovative yet proven

The IPCL is the most modern and innovative phakic posterior chamber lens on the market. The first version was introduced in 2013, with the IPCL Presbyopic following just one year later.

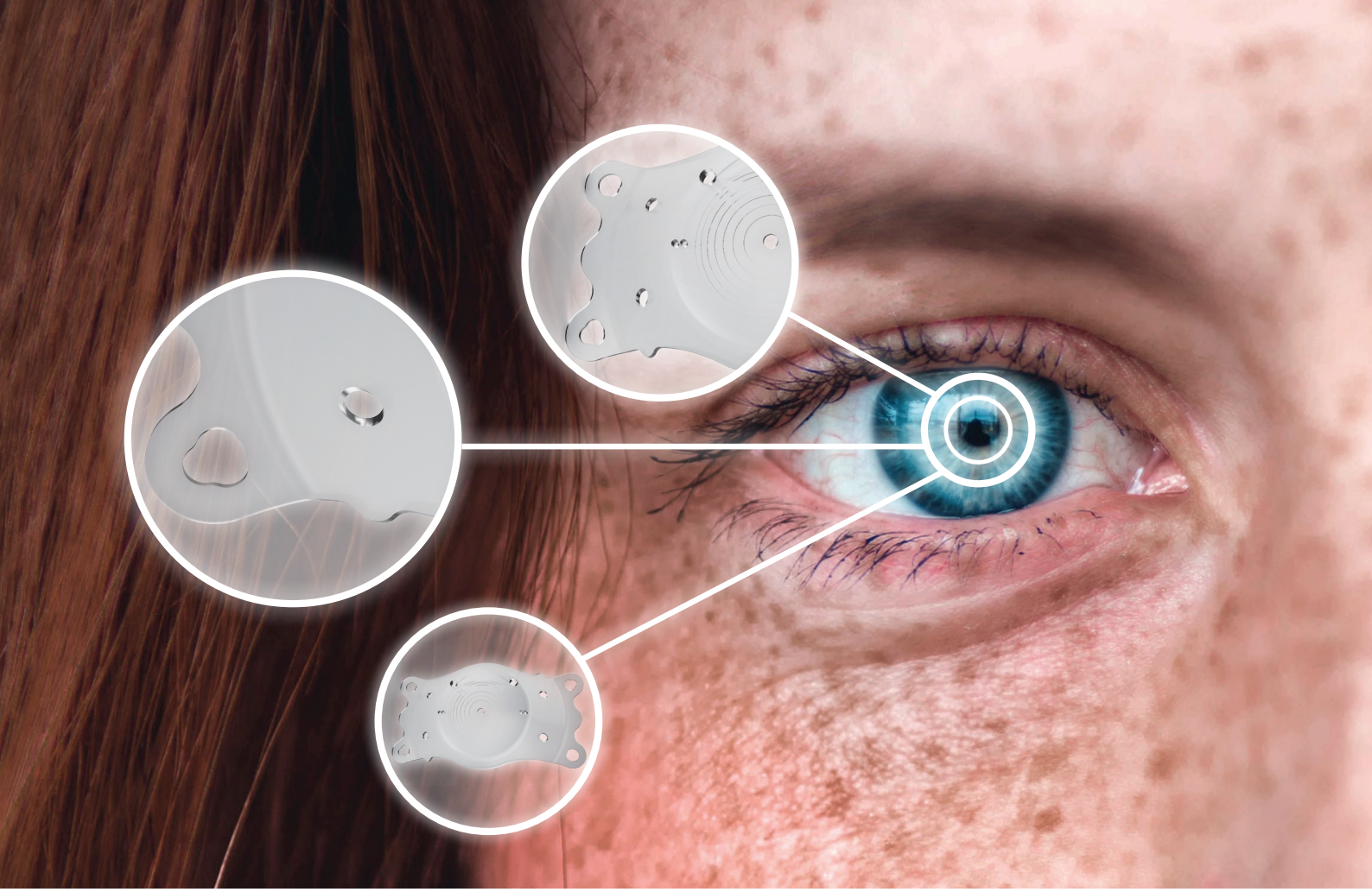
Since then, more than 130,000 IPCLs have been implanted by over 1,500 surgeons in around 25 countries and the **IPCL has proven its safety and long-term quality many times over.** [3, 5, 6–14]



Difference between uncorrected distance visual acuity (UDVA) postoperatively and the preoperative best-corrected distance visual acuity (CDVA) [9, 10]



Average SEQ before and up to three years after IPCL implantation study from three different studies in myopic and highly myopic eyes [3, 9, 10]



The IPCL offers more than a lens

You have already seen how the IPCL "Smart Toric" with its innovations can improve outcomes with the 'one step' marking technique. The simple insertion into a hinged cartridge (similar to capsular bag IOLs and without special instruments) and the implantation through a **2.8 mm incision** are also appreciated by the users.

Our service extends beyond our experienced and passionate IPCL team to:

- guidance on patient selection
- calculation
- advice on selecting the right IPCL
- management of your order
- training prior to implantation
- marketing support

... and so much more

We are always there for you.

Whether your need is surgical or post-operative, we have specialists to guide you through everything IPCL and make you the next expert. What else do you need? How about a **free back-up IPCL**? Absolutely, why wouldn't we!

→ **IPCL the true end-to-end solution for refractive challenges and happy patients.**

What users say

"I consider the IPCL to be a necessary arrow in the quiver of refractive surgery due to its wide range of applications and possible diffractive multifocality."

Dr. med. D. R. H. Breyer, Düsseldorf

"Combining the widest customisable power range and optic styles with a simple and elegant loading mechanism, making it a very easy decision to have IPCL as my preferred lens choice for phakic lens surgery."

Mr Rakesh Jayaswal,
Consultant Refractive Surgeon, LaserVision UK

"I have a very high success rate post op vault with IPCL due to the extensive sizing available, 13 sizes from 11 to 14mm in steps of 0.25mm. Also, 6 years of follow up assures me of the biocompatibility of the material, without causing inflammation or cataracts. This is why IPCL is my phakic lens of choice."

Dr. Germán Bianchi, Consultant in Ophthalmology, Clinica de Ojos Dr. Nano

"IPCL is my phakic lens of choice as it is implantable through 2mm incision across the entire wide optical power range. I like the handling of this lens and the long-term results. Patients like the fast visual rehabilitation and high quality of vision after IPCL implantation."

Dr. Pavel Stodůlka, Chief Surgeon, Gemini Eye Clinics, Czech Republic and Austria and AECOS European President

"I have found IPCL to be a very effective option for refractive correction with a wide range of sizes to suit many, including those with large spherical and astigmatic errors. The customer service is excellent with support for the surgeon and excellent outcomes as a result."

Mr Ankur Barua, Consultant Ophthalmic Surgeon, Midlands Eye Private Clinic

"I appreciate the IPCL's huge delivery range from +15 to -30 D spherical and cylindrical up to 10 D. Other advantages of the IPCL include easy insertion into the cartridge and the standby lens."

PD Dr. med. S. Taneri, Münster

"I use IPCL because they are custom made for my patients."

Dr. med. M. Winter, Bremen

"I performed the initial implantation of the Presbyopic IPCL in Germany, April 2017 because this segment had been missing from the refractive portfolio until then."

Dr. med. R. Schmid, Ulm

"We use the IPCL very often because it delivers excellent surgical results, especially in difficult situations, e.g. with corneal defects or extremely severe myopia. In addition it is, in our opinion, currently the best procedure for the correction of presbyopia."

Dr. med. H. Kaschube, Lüdenscheidt

Only IPCL offer this...

Smart Toric

Cylinder range: 0.5 D to 10 D. The axis position is always individually designed

- → IPCL is always positioned 0–180°
- → No rotation is required

The **central opening** is conical on all IPCL models: (Hyperopic only up to +3.5 D SE) the diameter on the posterior surface is larger than on the anterior surface. This reduces light reflections and optimises the aqueous humor flow.

Diffractive-refractive trifocal optic

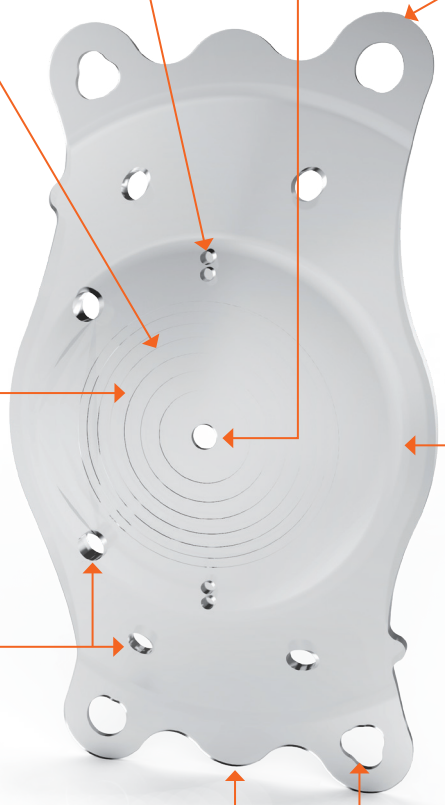
Choice of near vision additions +1.5 D to +3.5 D in 0.5 D steps

An extensive range of sizes:

11.00mm	12.75mm
11.25mm	13.00mm
11.50mm	13.25mm
11.75mm	13.50mm
12.00mm	13.75mm
12.25mm	14.00mm
12.50mm	

Diopter range
+15.0 D

-30.0 D
Cylinder: 0.5 D to 10 D



Individually **adjustable optic diameters** between 6.6mm and 7.25mm

Openings at the upper optic rim and the haptic base for even better aqueous humor flow

Back up lens
Always provided for you!

Six haptics provide rotational stability

Easy loading, implantable through 2.8mm

Specially **engineered spring haptics** provide flexibility and reduce vaulting in case of excessive tension in the sulcus.

Technical specifications of the IPCL family

Diopter range sphere	-30.0 D to +15.0 D (in 0.5 D steps)
Diopter range cylinder	+0.5 D to +10.0 D (in 0.5 D steps)
Diopter range near addition	+1.5 D to +3.5 D (in 0.5 D steps)
Overall diameter	11.00 mm to 14.00 mm, in 0.25 mm steps
Optical diameter	Standard optics: 5.80 mm (effective*: approx. 7.3 mm) Individual optics: up to 6.40 mm (effective*: approx. 8.0 mm)
Incision size	2.8 mm
Material	Hydrophilic hybrid acrylate
UV filter	420 nm
Refractive index	1.465
Abbe number	60
Distance optics/haptic plane	1.20 mm to 1.70 mm

*Taking into account the corneal enlargement

Bibliography

1. Evaluation and quality assurance of refractive surgery by the DOG and the BVA - KRC recommendations as of February 2019.
2. Gros-Otero et al. (2021): Atomic force microscopy comparative analysis of the surface roughness of two posterior chamber phakic intraocular lens models: ICL versus IPCL. BMC Ophthalmol. Jul 14; 21(1): 280.
3. Vasavada et al. (2018): Safety and Efficacy of a New Phakic Posterior Chamber IOL for Correction of Myopia: 3 Years of Follow-up. Journal of Refractive Surgery, Vol. 34, No. 12.
4. Clinical Ophthalmology; 14 2011-2019 and www.sciencedirect.com/science/article/pii/S0161642017337971.
5. Schmid, Luedtke (2020): A Novel Concept of Correcting Presbyopia: First Clinical Results with a Phakic Diffractive Intraocular Lens.
6. Bianchi (2020): Presbyopia Management with Diffractive Phakic Posterior Chamber IOL. Čes. a slov. Oftal. , 76, No. 5, p. 211-219.
7. Stodulka et al. (2020): Posterior chamber phakic intraocular lens for the correction of presbyopia in highly myopic patients.
8. J Cataract Refract Surg. 46(1): 40-44.
9. Sachdev, Ramamurthy (2019): Long-term safety of posterior chamber implantable phakic contact lens for the correction of myopia. Clinical Ophthalmology; 13, 137-142.
10. Taneri, Dick (2022): Initial clinical outcomes of two different phakic posterior chamber IOLs for the correction of myopia and myopic astigmatism. Graefes Arch Clin Exp Ophthalmol. 260(5): 1763-1772.
11. Sachdev et al. (2019): Comparative analysis of clinical outcomes between two types of posterior chamber phakic intraocular lenses for correction of myopia and myopic astigmatism. Indian Journal of Ophthalmology; 67(7): 1061-1065.
12. Subudi et al. (2019): Refractive outcomes of implantation of an implantable phakic copolymer lens with peripheral holes in the intraocular posterior chamber in moderate to high myopia patients: a single-surgeon series. Clin Ophthalmol; 13: 1887-1894.
13. Bianchi (2019): Initial Results From a New Model of Posterior Chamber Implantable Phakic Contact Lens: IPCL V2.0. Med Hypothesis Discov Innov Ophthalmol. Summer; 8(2): 57-63.
14. Bianchi (2021): Preliminary results of an IPCL phakic lens vault pilot study under different lighting conditions. Oftalmol Clin Exp (ISSN 1851-2658); 14(1): 1-13.

Spectrum

The IPCL is ESTABLISHED in **24 countries**

implanted **more than 130,000 TIMES**

– including over 2,000 IPCL Presbyopic by approximately **1,500 USERS**

Since 2017, it has been available in the **UK**, **Ireland**, **Germany**, **Sweden**, **Poland** and **Switzerland** within the **AddVision network**

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