EYECRYL™ PHAKIC IOL RANGE

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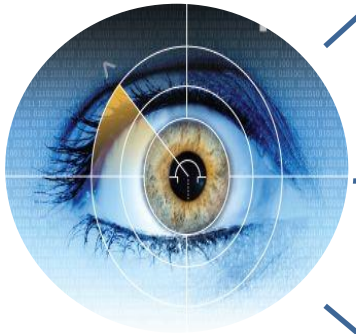
Enhancing Vision, Expanding Horizons

Refractive Surgery

Refractive surgery is the term used to describe surgical procedures that correct common vision problems (nearsightedness, farsightedness, astigmatism and presbyopia) to reduce your dependence on prescription eyeglasses and/or contact lenses.

Spectrum of Refractive Surgery

Refractive Surgery



Cornea Based

- **RK**
- **PRK**
- **LASIK**
- **EpiLASIK**
- **LASEK**
- **Conductive Keratoplasty**
- **Cornea Inlays and Rings**

Lenticular Based

- **Clear Lens Extraction or Refractive lens Exchange**
- **Posterior Chamber Phakic Lens (EYECRYL PHAKIC IOL)**
- **Prelex Clear Lens Extraction with use of Multifocal IOLs**

Combined (bioptics)

- **Combination of the two**

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History of Phakic IOLs

Pioneers of Phakic IOL – Choyce, Strampelli, Barraquer conducted first ever trials using AC refractive lenses to correct high myopia in 1950s.

But due to unacceptable complications such as loss of corneal endothelial cells, iris atrophy, PAS , these especially the angle supported lenses were phased out of the market.

Svyatoslav Fyodorov

Svyatoslav Nikolayevich Fyodorov (born August 8, 1927 – June 2, 2000) was a Russian ophthalmologist, politician, professor, full member of the Russian Academy of Sciences and Russian Academy of Medical Sciences. He is considered to be a pioneer of refractive surgery.

In the 1970s he developed the surgical technique he is most famous for, the radial keratotomy, to change the shape of the cornea and cure myopia.

In 1986, Fyodorov designed the first posterior chamber phakic IOL in the "collar-button" or "mushroom" configuration and manufactured the pIOL from silicone.

In 1980 he became the head of the Moscow Research Institute of Eye Microsurgery. In 1988 he founded the Fyodorov Eye Microsurgery Complex.

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PHAKIC Intra Ocular Lens

A Phakic Intra Ocular Lens is placed inside the eye in front of patient's natural lens

These are available in three types

- **Anterior Chamber Angle Fixated IOLs**

  Nuvita (Bausch & Lomb)

  Kelman Duet

  I care (Corneal)

  Vivarte (Ciba vision)

- **Iris supported phakic IOL**

  Verisyse/ Artisan (AMO/ Ophtec)

- **Plate lens that fits between the iris & the crystalline lens**

  EYECRYL PHAKIC IOL (Biotech Vision Care Pvt. Ltd.)

  Evo Visian ICL (Star Surgicals)

  IPCL (Care Group India)

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Advantages of EYECRYL PHAKIC IOLs

Behind the iris

- Far from the endothelium (ECD)
- Excellent cosmesis (invisible to the eye)
- Close to the Nodal points of the eye
- Gain in retinal size image
- Greater effective Optical Zone (at the corneal plane)

Sulcus located

- Stable location (allows for Toric design with same platform)
- Easy removable /exchangable
- No fixations into tissues (iris)
- Does not alter shape/remove tissue (corneal based procedures)
- Less likely to cause or contribute to dry eye
- Completely reversible procedure
- No loss in patient ability to accomodate

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What is EYE*CRYL*™ PHAKIC …?

- EYE*CRYL* PHAKIC IOL is single piece posterior chamber phakic IOL, which can be inserted into the eye through sub 2.8mm incision.
- The lens is customized according to shape and size of each eye
- Widest power correction range from -3.0D to -23D with cylinder up to 5D
- Made from a Acrylic material to ensure long term performance.

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Indications for EYECRYL PHAKIC IOL

- Age above 21 years
- Stable refraction for one year
- Patients not suitable for LASIK/LASEK due to high powers or thin corneas
- AC depth more than 2.80 mm
- Endothelial count >2000cells/cumm
- No other ocular pathology

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EYECRYL PHAKIC IOL

An Option where LASIK is not Feasible

LASIK IS NOT INDICATED WHEN

- CCT such that minimum safe bed thickness is not left(250-270µ).Post op Corneal thickness should not be <410µ.
- Postop Cornea not too flat or steep.<36D or>49D (Poor Optics).

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EYECRYL PHAKIC IOL Comparison with LASIK and PRK

	EYECRYL PHAKIC	LASIK	PRK
VISION QUALITY			
SHARP & CLEAR VISION	YES	YES	YES
PATIENT EXPERIENCE			
20-30 MIN OUT-PATIENT PROCEDURE	YES	YES	YES
REMOVES CORNEAL TISSUE	NO	YES	YES
CONTRIBUTE TO DRY EYE	NO	Occasional, Upto 20% can experience Dry Eye	Occasional
SAFETY FEATURES			
REMOVABLE OR REVERSIBLE	YES	NO	NO
FLEXIBILITY FOR FUTURE PROCEDURE	YES	Limited treatment if involved the cornea	Limited treatment if involved the cornea
TREATS THIN CORNEAS	YES	LIMITED	LIMITED
UV PROTECTION	YES	NO	NO
ASPHERICITY	YES	LIMITED	LIMITED
BIOCOMPATABLE LENS	YES	NA, LASER BASED	NA, LASER BASED
MATERIAL	HYDROPHILIC ACRYLIC, NO PORCINE COLLAMER	NA, LASER BASED	NA, LASER BASED

EYECRYL PHAKIC IOL Contraindications

- Myopia other than axial myopia
- Progressive refractive error
- Corneal dystrophy/ Endothelial cell count <2000cells/cu mm
- Anterior chamber depth less than 2.8 mm
- History of uveitis
- Presence of anterior/posterior synechiae
- Glaucoma
- Angle pathology
- Evidence of nuclear sclerosis or developing cataract
- Personal or family history of retinal detachment
- Diabetes mellitus

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EYECRYL PHAKIC IOL Pre-op Assessment

- Refraction – Objective & subjective acceptance at 12mm vertex distance**
- Anterior chamber depth (ACD) – from corneal endothelium (2.8 mm to 4.5 mm)
- Anterior & posterior segment examinations
- K-reading & Topography –
- Intra-ocular pressure
- White to white measurement** (10.5 mm to 12.6 mm)
- Specular microscopy (if possible)

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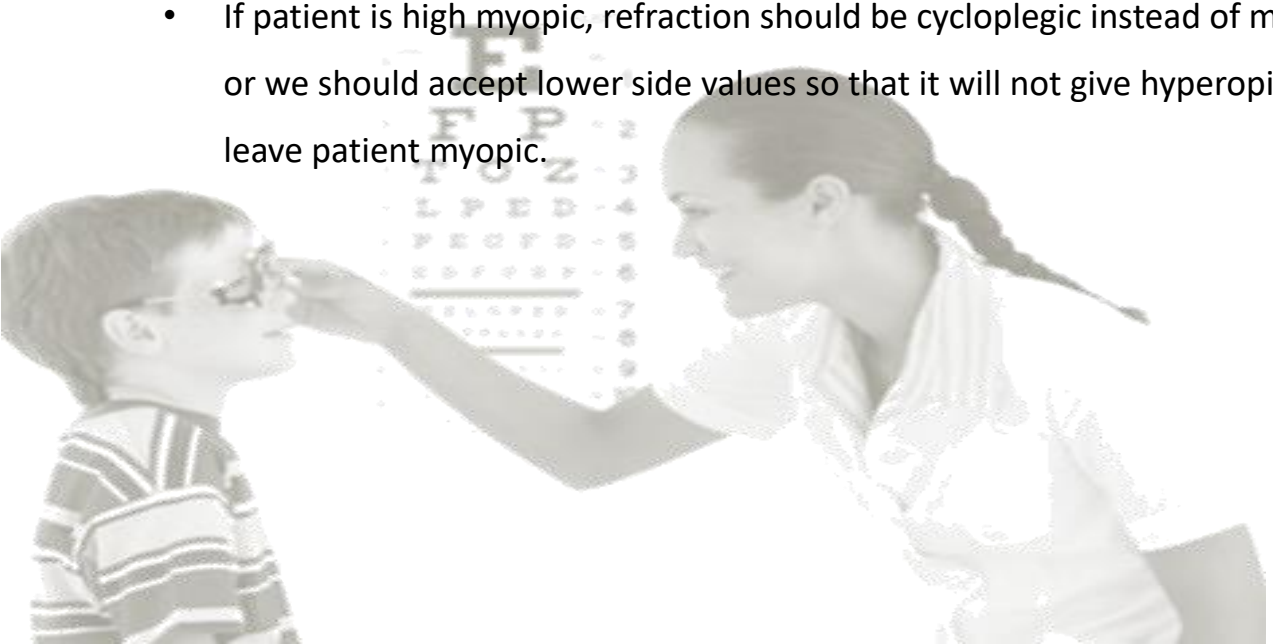
EYECRYL PHAKIC IOL Work Up

- Patient selection
- Phakic IOL selection –
  - Sizing
  - Power selection

EYECRYL PHAKIC IOL Pre-op Assessment

Refraction

- Refraction – Objective & subjective acceptance at 12mm vertex distance
- Refraction should be manual and stable from last 1 year
- If patient is high myopic, refraction should be cycloplegic instead of manifest for accurate acceptance or we should accept lower side values so that it will not give hyperopic shift (+) in any case. Its better to leave patient myopic.



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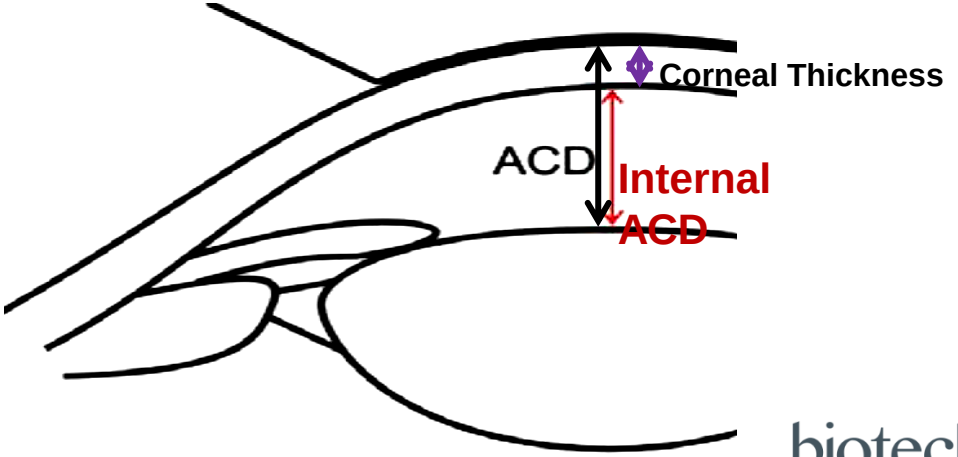
EYECRYL PHAKIC IOL Pre-op Assessment

Anterior Chamber Depth (Internal ACD)

- We need internal ACD for customization of EYECRYL PHAKIC IOL
- If ACD is taken from A-Scan which measure External ACD, we have to deduct pachymetry
- Some equipments like pentacam gives internal ACD
- Internal ACD (ACD from endothelium) should not be less than 2.8 mm



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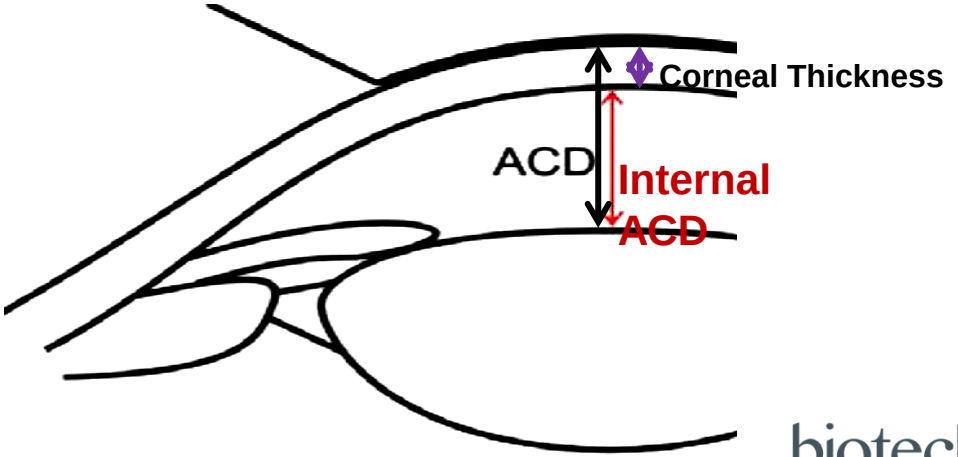
EYECRYL PHAKIC IOL Pre-op Assessment

Anterior Chamber Depth (Internal ACD) *Measurement tools*

- Optical Pachymetry with Pentacam
- Ultrasound Bometry by A Scan (Immersion is preferred)
- Optical Biometry by IOL Master
- Optical Biometry by Lenstar



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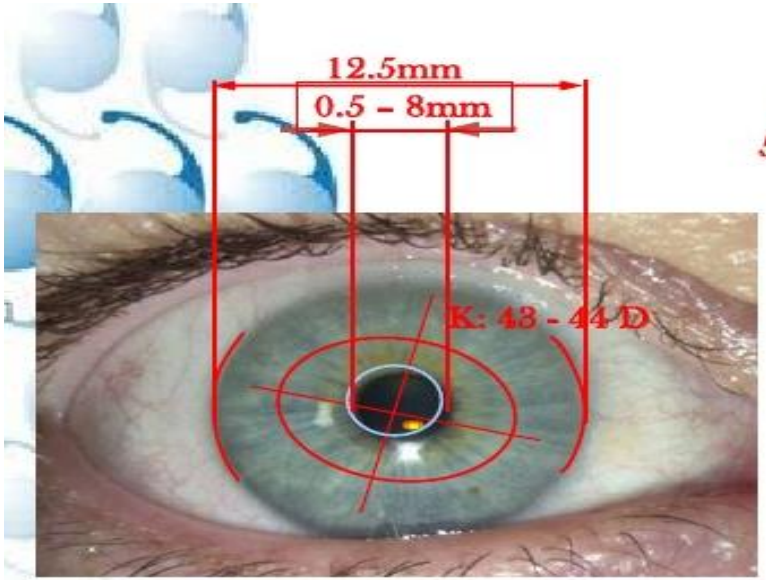
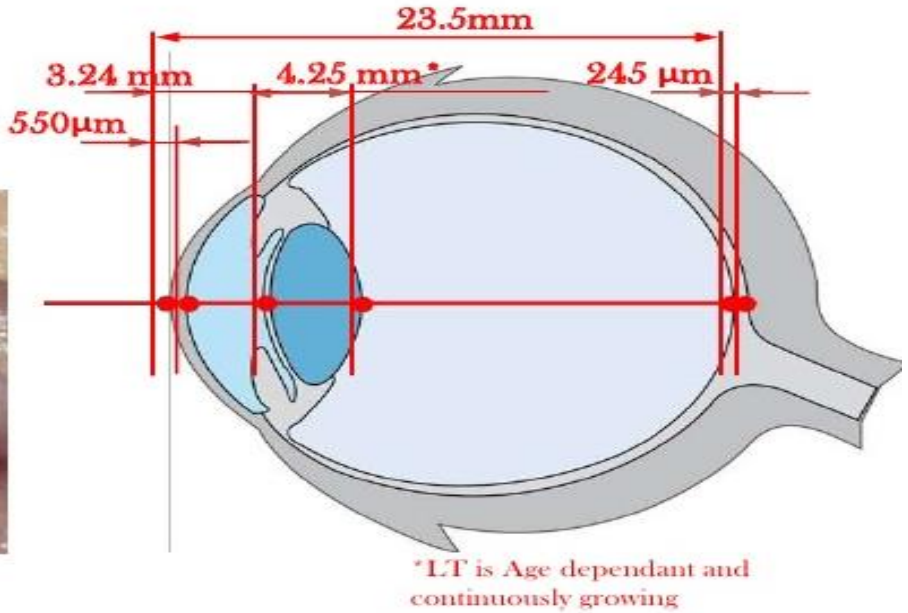
EYECRYL PHAKIC IOL Pre-op Assessment

Anterior Chamber Depth

Optical Biometry Measurements





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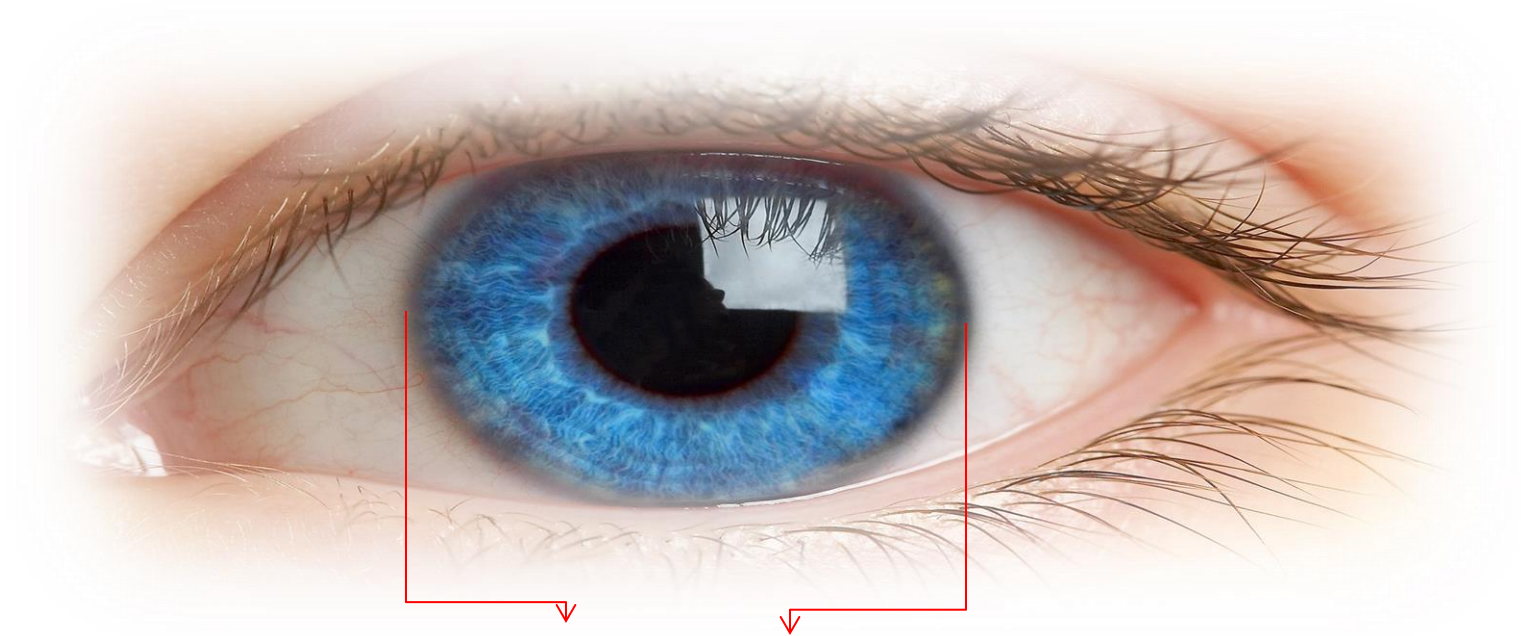
EYECRYL PHAKIC IOL Measurements

White to white measurement



Horizontal White to white from mid limbus to mid limbus

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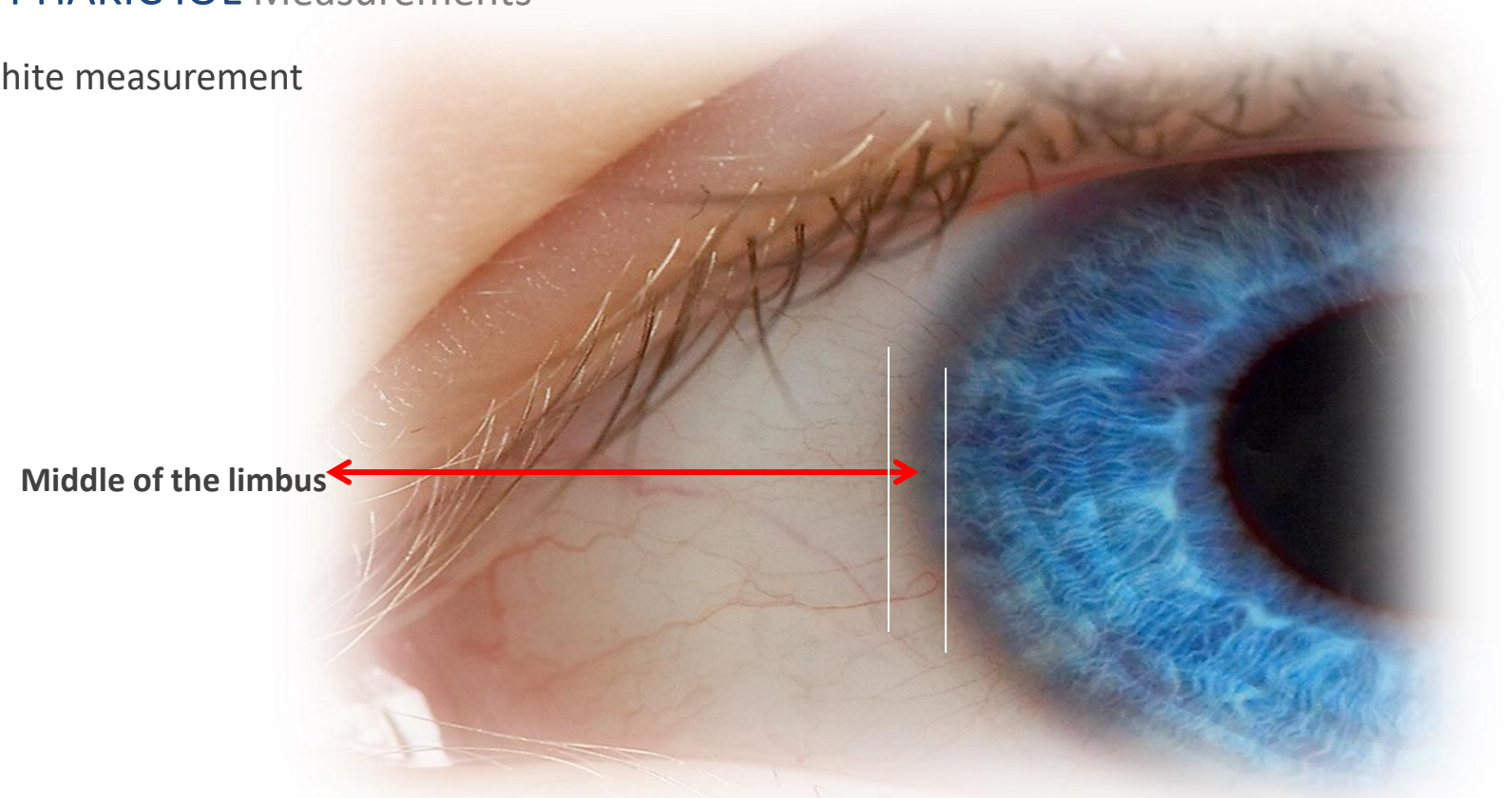
EYECRYL PHAKIC IOL Measurements

White to white measurement



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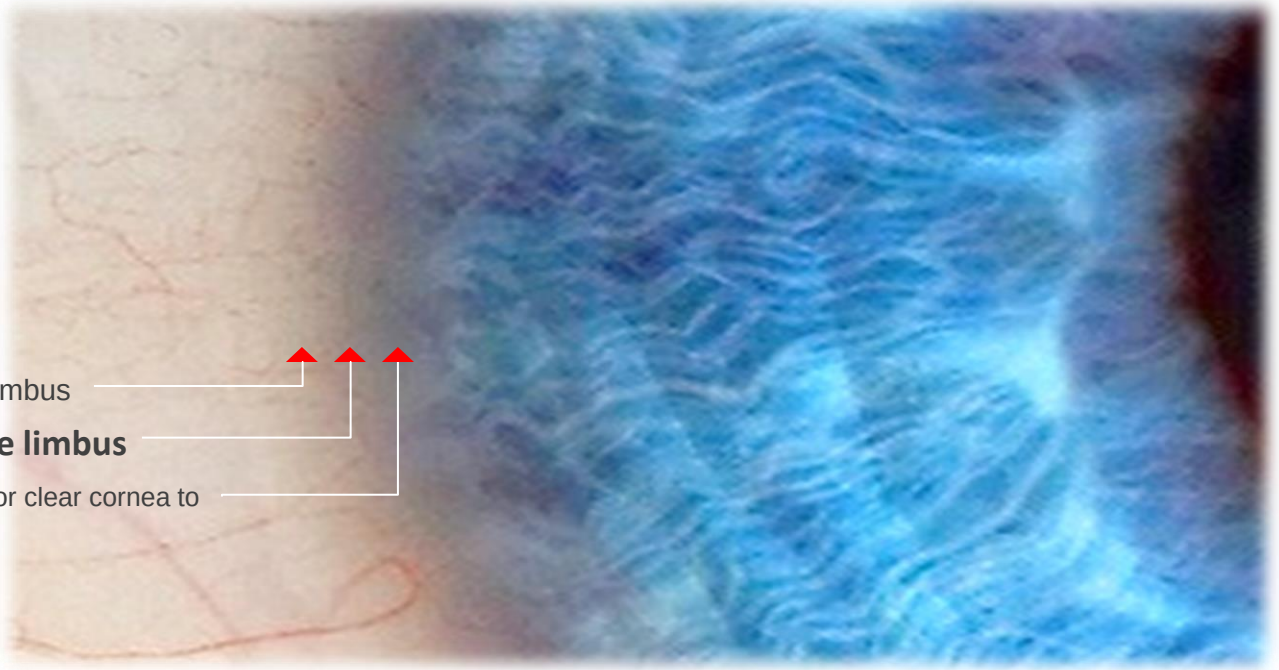
EYECRYL PHAKIC IOL Measurements

White to white measurement



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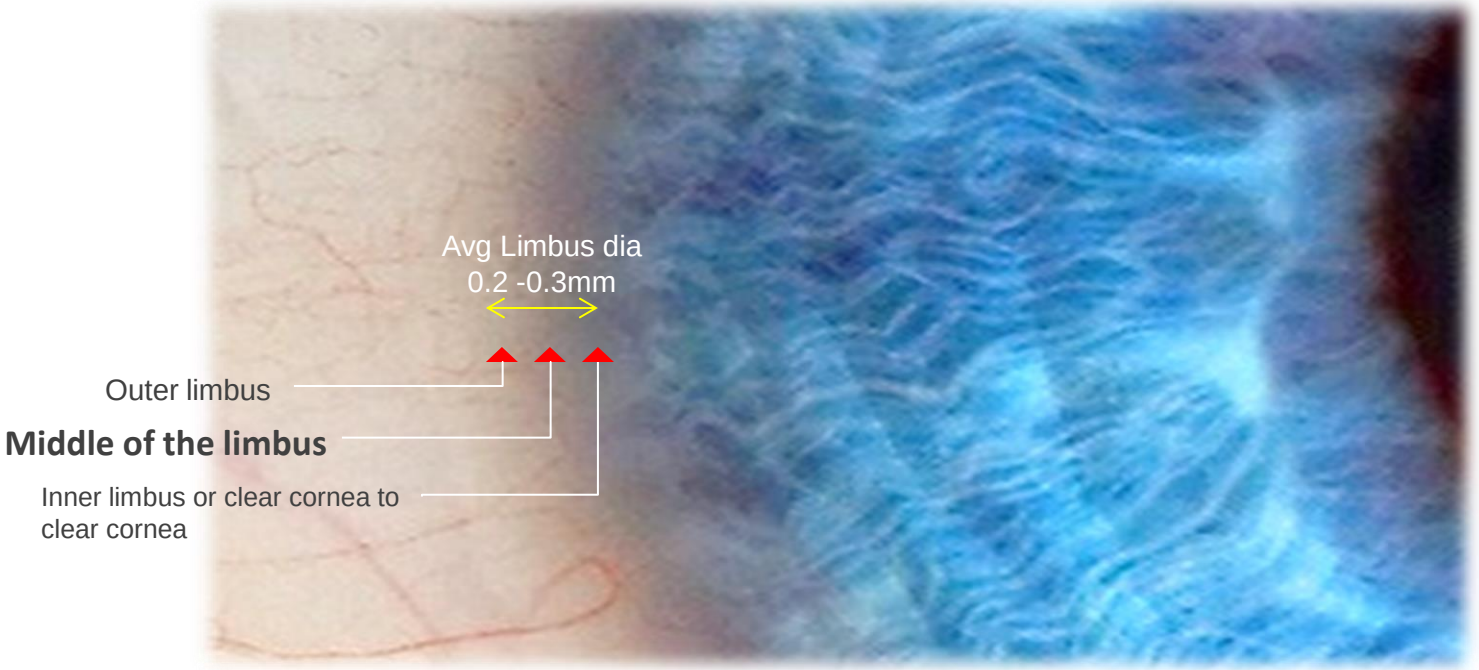
EYECRYL PHAKIC IOL Measurements

White to white measurement



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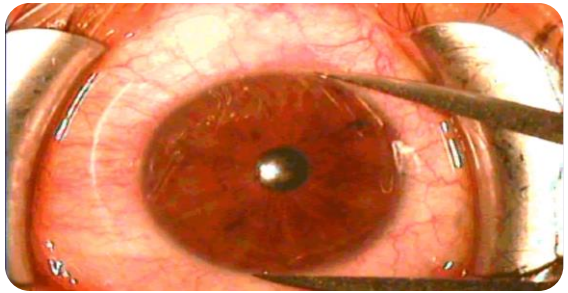
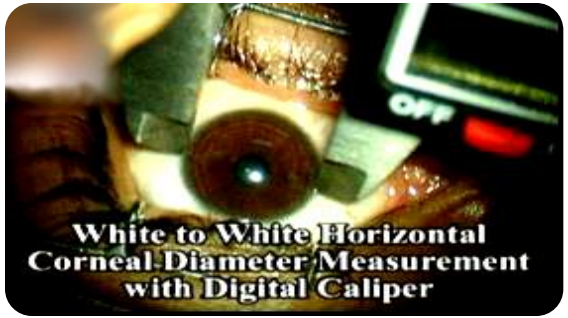
EYECRYL PHAKIC IOL Measurements

White-To-White Measurement Using Calipers (Middle of limbus to Middle of limbus)





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EYECRYL PHAKIC IOL Measurements

White to white measurement using calipers

- Measurements of the White-to-white distance using a caliper has been proven to be a simple but reliable method.

- Please watch the following points:
  - Make sure that the caliper is well calibrated.
  - Pre-treat the eye with anesthetic drops
  - Take the measurement under the microscope with the patient in the supine position
  - Read the caliper measure on a ruler

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EYECRYL PHAKIC IOL Measurements

White to white measurement

- Better way to measure w2w is digital caliper which should be cross verified by ORBScan or other equipment.
- W2w measurement by digital caliper should be done under microscope in high resolution and it should be measured from middle of the limbus to middle of the limbus
- Apart from digital calipers, we can measure w2w from following methods:

    - ORBSCAN
    - PENTACAM* (Corneal Diameter)
    - IOL MASTER*
    - UBM (sulcus to sulcus)
    - Vernier caliper under microscope
    - Some advance autorefractometer

*Reading from IOL master or optical principle based equipment are unpredictable sometimes so we should cross check to ensure proper w2w.

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EYECRYL PHAKIC IOL Measurements

White to white measurement using calipers

- Use Orbscan to validate caliper measurement:
  - Automated & Manual: Eye Metrics Tool
- If you use the IOL-Master or similar make sure you validate the outputs:
  - some reports of IOL-Master's overestimation of the wtw
- Be careful with pterygium, pigmented area around the cornea etc.
- Evaluate discrepancies between measuring devices and between eyes:
- Both eyes should have about the same wtw

EYECRYL PHAKIC IOL Measurements

White to white measurement using calipers

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EYECRYL PHAKIC IOL Measurements

Vault & White to white

If the EYECRYL PHAKIC IOL is properly sized (W2W & ACD are critical), a separation will exist between the posterior surface of the EYECRYL PHAKIC IOL and the anterior surface of the human crystalline lens.

We use the term "Vault" to refer to this space

- Ideal sized EYECRYL PHAKIC IOL will provide a vault (central distance between anterior surface of the crystalline lens and posterior surface of the EYECRYL PHAKIC IOL) within a range of 0.250 to 0.750 mm (½ CT to 1 & ½ CT) .
- An undersized Lens (less than 0.125 mm vault) may increase the risk of anterior sub capsular opacification.
- An oversized Lens (more than 1 mm vault) may push the iris forward and close the angles which could lead to IOP rise and Iris malfunction.

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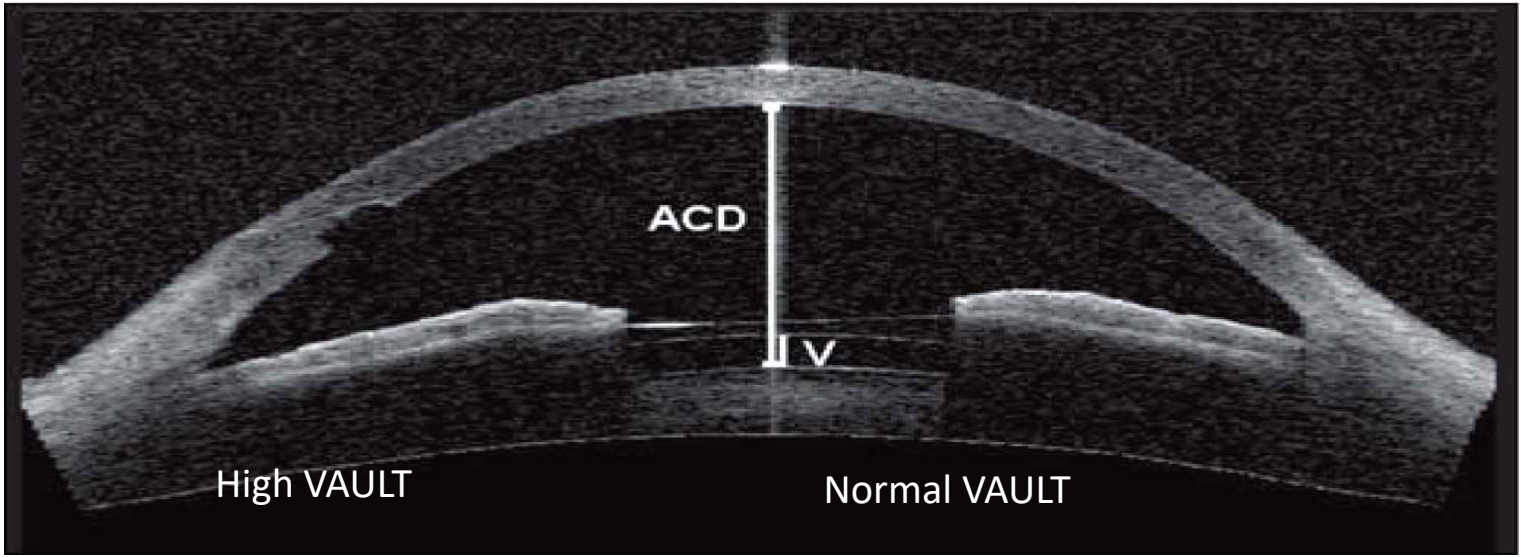
EYECRYL PHAKIC IOL Sizing

Vault

It can be measured by Anterior segment OCT accurately and by slit lamp manually



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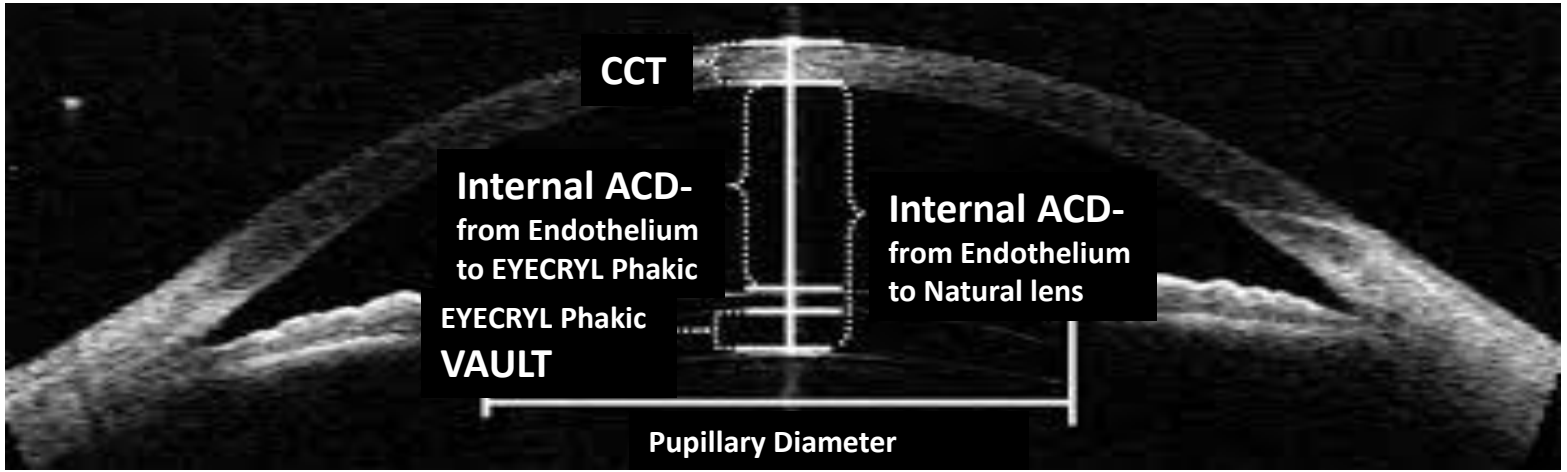
EYECRYL PHAKIC IOL Sizing

Vault

It 2.8 mm ACD is mandatory as it lower down more when we implant phakic lens



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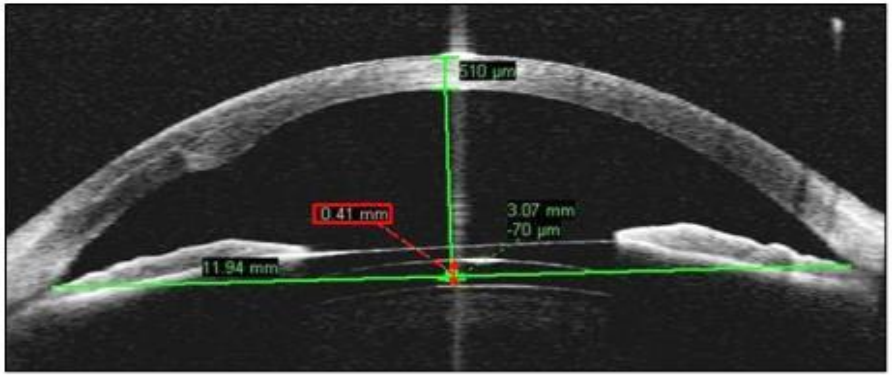
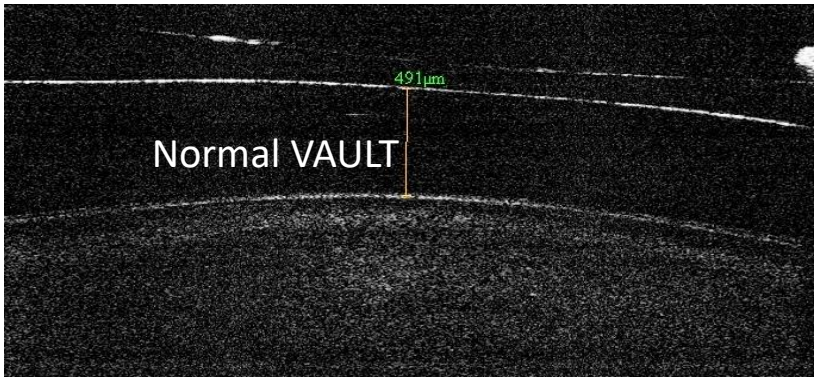
EYECRYL PHAKIC IOL Sizing

Vault

Following anterior segment OCT showing normal vault post operatively





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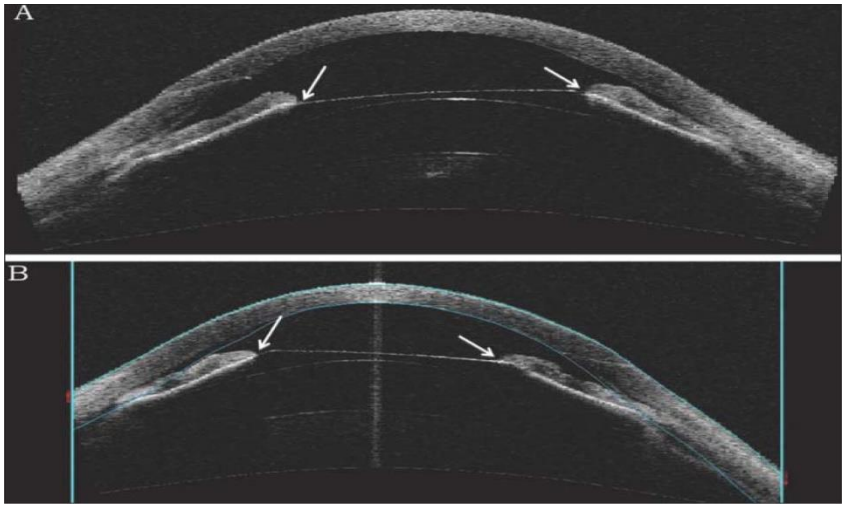
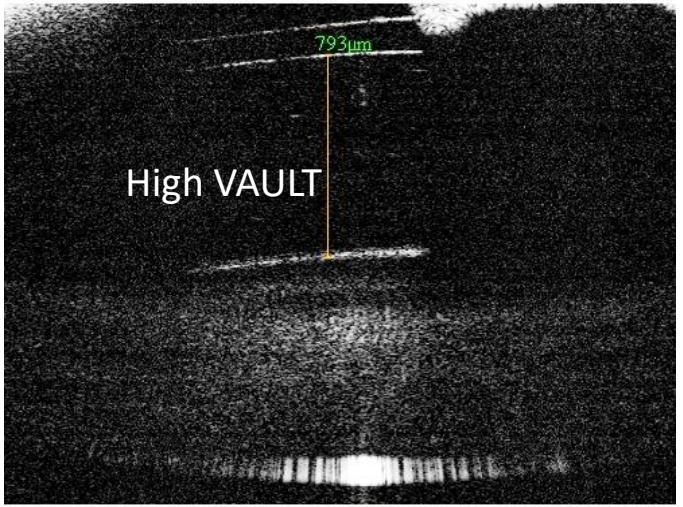
EYECRYL PHAKIC IOL Sizing

Vault

Following anterior segment OCT showing high vault post operatively causing pupillary block and increase risk of angle closure glaucoma





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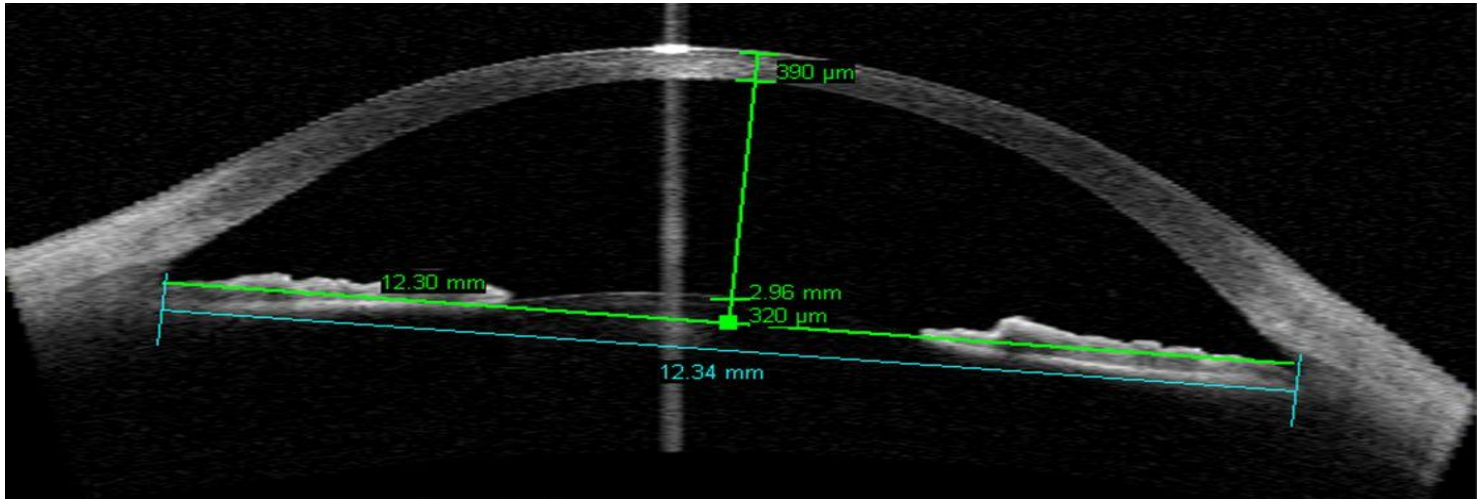
EYECRYL PHAKIC IOL Sizing

Vault

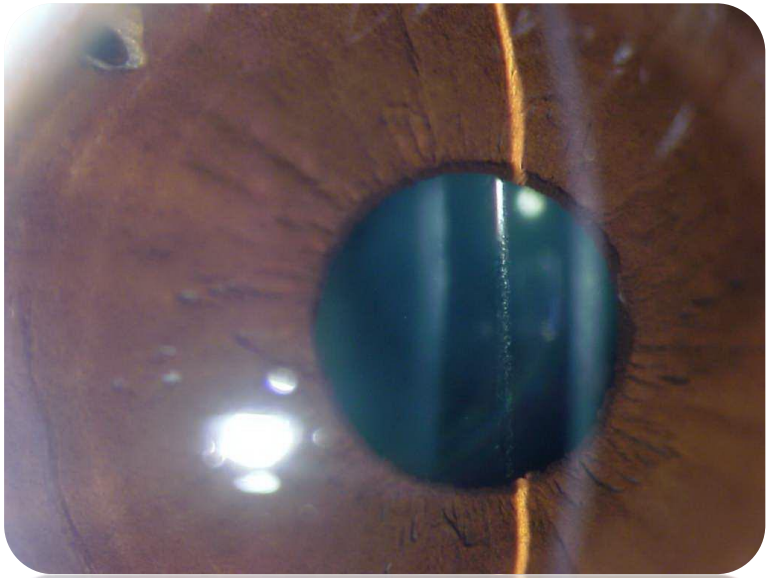
Following anterior segment OCT showing low vault post operatively



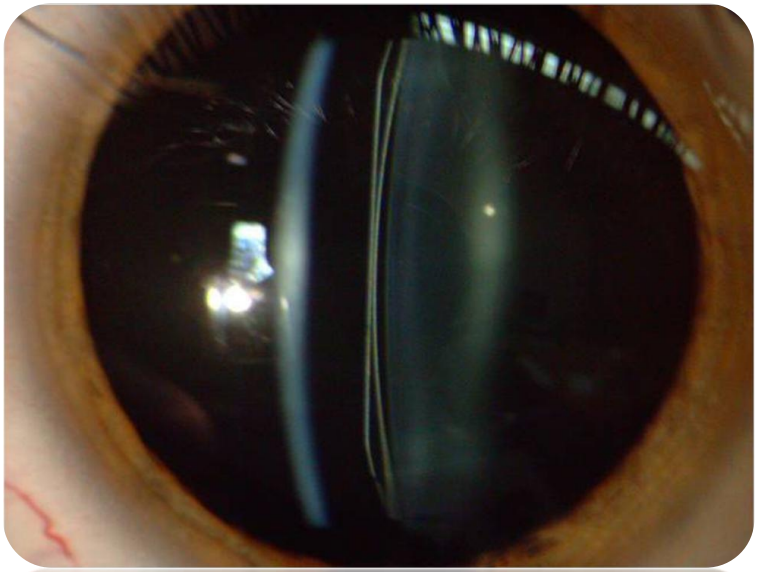
EYECRYL PHAKIC IOL Sizing

Vault in Slit Lamp

Oversized Lens: High Vault



Undersized Lens : Low Vault



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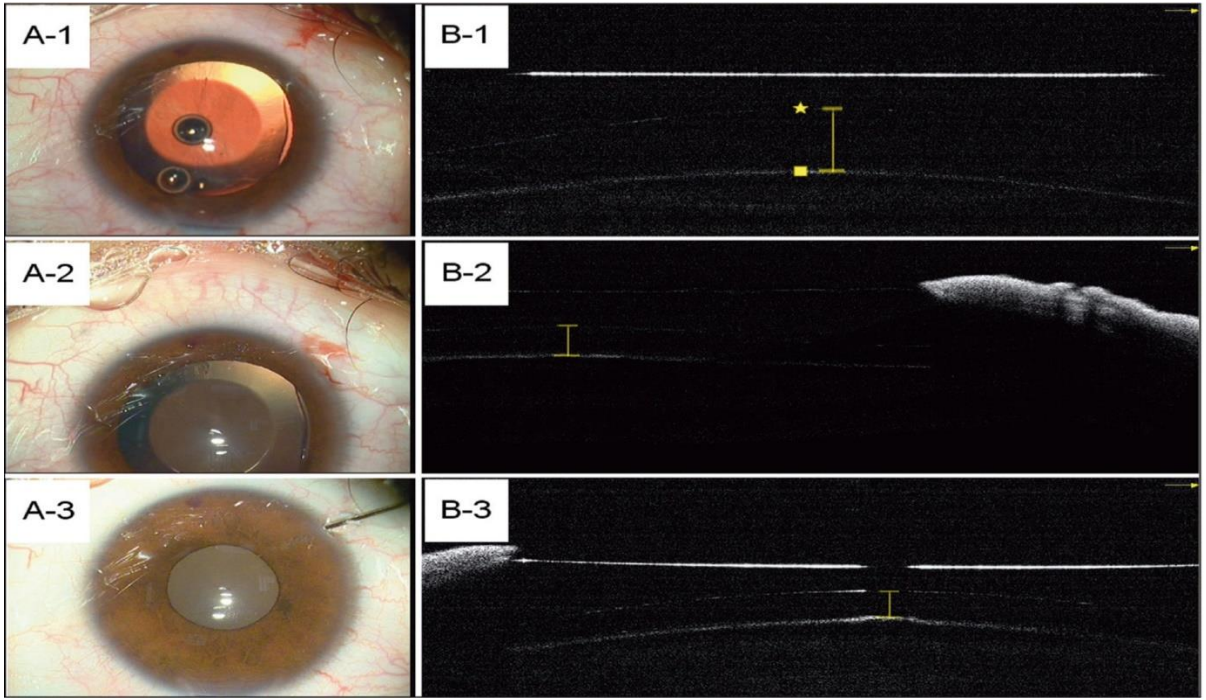
Vault

Fig showing change in Vault while pupil constricting



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EYECRYL PHAKIC IOL Sizing

Journal of Refractive Surgery

REPORT

Intraoperative Optical Coherence Tomography Vault Measurement in Posterior Chamber Phakic Intraocular Lens Implantation

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Journal of Refractive Surgery. 2017;33(4):274-277 https://doi.org/10.3928/1081597X-20170111-05

Posted April 17, 2017

ABSTRACT | FULL TEXT | FIGURES/TABLES | REFERENCES | VIEW PDF

Abstract

PURPOSE:
To describe the use of intraoperative optical coherence tomography (OCT) vault measurement in 5 cases of posterior chamber phakic intraocular lens (IOL) implantation.

METHODS:
This case series included 5 eyes in 3 consecutive patients undergoing phakic IOL implantation. RTVue OCT (Optovue, Inc., Fremont, CA) was used to obtain intraoperative vault measurements after pupil constriction. Visante OCT (Carl Zeiss Meditec, Jena, Germany) was used to obtain postoperative vault measurements.

RESULTS:
Intraoperative vault measurements ranged from 228 to 1,060 μm. There were no postoperative complications. Postoperative OCT vault measurements ranged from 230 to 670 μm.

CONCLUSIONS:
Intraoperative OCT can be a useful tool in phakic IOL implantation to provide real-time intraoperative vault measurements. This may help to confirm appropriate phakic IOL sizing and guide decision-making at the time of surgery.

[*J Refract Surg.* 2017;33(4):274–277.]

Report showing OCT as a best tool for Vault measurement in posterior chamber phakic lens impant

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EYECRYL PHAKIC IOL Sizing

Phakic IOL surgery is one of the simple intraocular surgeries

Phakic IOL surgery, if done well, gives you the happiest patients

Quality of vision is always better than promised

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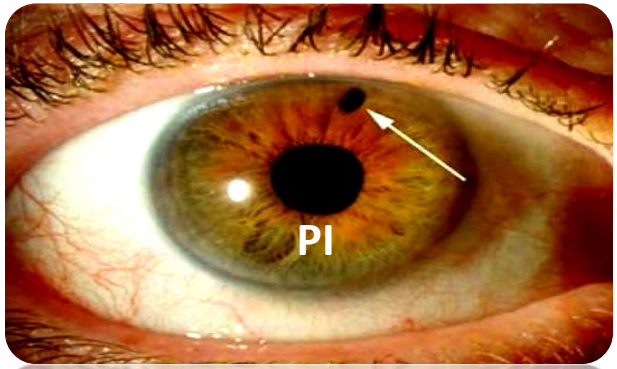
EYECRYL PHAKIC IOL Implantation

Peripheral Iridotomy (PI)

- In any posterior chamber phakic lens implant, Peripheral Iridotomy should be preferred for proper aqueous flow for patient long term safety.
- In PHAKIC IOL without central hole, PI should be done before procedure. In EYECRYL Phakic IOL, central hole gives an ease to surgeon not to do PI.
- Sometimes central hole is potential to create halos and glares as it diffract portion of light enters through hole but in EYECRYL Phakic IOL, interference of hole is very less and it doesn't diffract significant amount of light to create halos.
- PI can be done by YAG Laser pre-op or by surgical technique intra op.



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EYECRYL PHAKIC IOL Implantation

Peripheral Iridotomy (PI)

YAG PI

YAG PI should be done preferably 4 to 6 days before procedure

1 YAG PI on superior position or 2 YAG PI on 11 and 1 position is sufficient

Pigment dispersion may occur due to YAG PI

Intra Operative (Surgical PI)

Surgical PI can be done over the table during procedure

You may find difficulty in surgical PI as chamber is shallow after insertion of lens in post chamber

There is extreme iris manipulation during surgical PI

Size of PI can not be defined. Sometimes it may be too big or too small

If you are implanting EYECRYL Phakic IOL, you do not need to worry about this procedure

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EYECRYL PHAKIC IOL Implantation

If you are implanting EYECRYL Phakic IOL, you do not need to worry about this procedure

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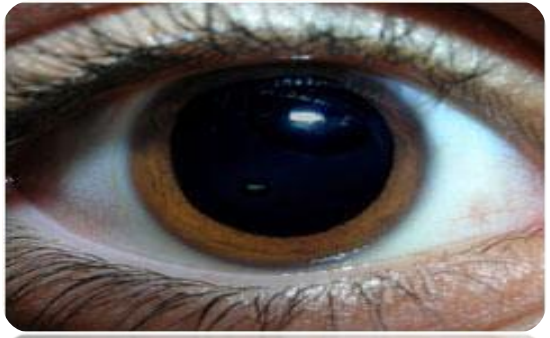
EYECRYL PHAKIC IOL Implantation

Dilatation: Immediate Pre-op

- Minimum 8 mm dilation*.
- Avoid Cyclopentolate (as it raises IOP and contraindicated in Angle Closure Glaucoma patients).
- Pre-treat: Tropicamide, Phenlyephrine and NSAID
- Unlike cyclopentolate, tropicamide is a cycloplegic with rapid onset and short duration of action.

Borderline size



Well dilated pupil

*Borderline dilation may cause trouble while tucking EYECRYL PHAKIC IOL behind IRIS and may cause iris pigmentation

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EYECRYL PHAKIC IOL Implantation

Immediate Pre-op

- Topical Anesthetic-per routine
- IV/PO Sedation-as necessary
- Cataract prep and drape
- Normal sterile technique

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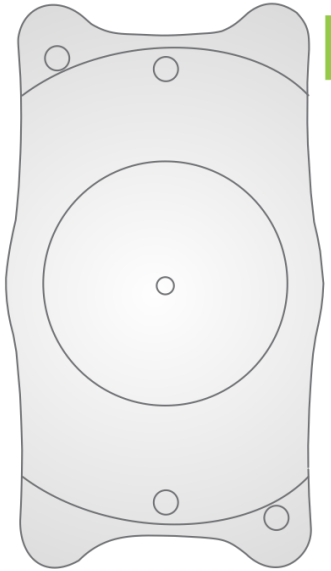
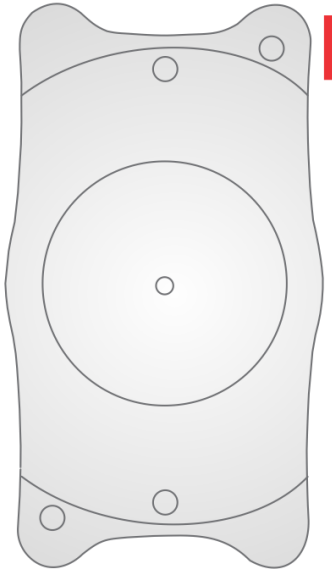
EYECRYL PHAKIC IOL Implantation

Surgical Technique: Steps of Loading of EYECRYL PHAKIC IOL

Correct Position of Orientation Marks

Leading Left...
Trailing Right...





Leading Right...
Trailing Left...

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EYECRYL PHAKIC IOL Implantation

Surgical Technique

- Two Paracentesis
- Viscoelastic injection
- Temporal, clear corneal incision
- Injection of EYECRYL PHAKIC IOL
- Injection of viscoelastic on top of EYECRYL PHAKIC IOL
- Positioning of EYECRYL PHAKIC IOL behind iris
- Irrigation (and aspiration) of viscoelastic
- (Constriction of pupil)
- 2-4 hours post-op check

EYECRYL PHAKIC IOL Implantation

Loading and Implantation of EYECRYL PHAKIC IOL Video

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EYECRYL PHAKIC IOL Implantation

Design Advantage

- Holes are formed in haptic structures such that when the mark is in the upper left corner of haptic structure , the anterior side of the lens is facing upwards
- Four haptic foot plates ensures better stability in ciliary sulcus and ease of insertion and tucking
- Angled optic haptic vault is selected to prevent excessive vaulting. It ensures the minimal friction force between the iris and the anterior surface of lens during iris adaptation to the light conditions.
- The advantage of holes center is that it allows equalizing the pressures between the posterior and anterior chambers.
- All the edges have radius to avoid Constant trauma

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EYECRYL PHAKIC IOL

Design Features: Finding the balance

- The aqueous in a normal, healthy eye is free from particles that do not occlude PI or hole . That is because it is continuously filtered as it passes through the trabecular meshwork and ciliary process.
- R.M. Caronia, American Journal of Ophthalmology, 122, (1996) p53-57.
- The largest (and most likely) particles that can occur in the eye are Iris posterior pigmented epithelium particles. These particles are conic shaped and measure 16-25 µm wide, 36-55 µm long
- The 360 µm optic port in the EYECRYL PHAKIC IOL is 6 to 10 times larger than these epithelium particles. Additionally, because the iris is in front of the EYECRYL PHAKIC IOL, particles would have to fall onto the optic port and accumulate, which is highly unlikely because aqueous is constantly flowing through that port

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EYECRYL PHAKIC IOL

Advantage

- The procedure is reversible unlike LASIK
- The quality of vision is usually better
- It creates a small corneal incision so astigmatism is minimum
- Corneal tissue is not removed ,hence adequate tear layer
- Reduction of risk of optical distortions and higher order aberrations

Complications

- Decentration
- Pupillary block
- Pigment dispersion
- Subcapsular cataract
- Potentially endophthalmitis

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Five Easy Steps of EYECRYL PHAKIC IOL Implantation

- Assessment
- Measurement
- Experience
- Surgical Technique
- Post-operative Observations

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Post-op observations 2 hours

- IOP check
  - use caution if IOP > 24 mmHg or 10 mmHg higher than pre-op
- IOP Elevation
  - Aspirate Viscoelastic completely
- Check EYECRYL PHAKIC IOL vault
  - Low vault is common at 2 and 24 hour check

Power Range & Models for EYE*CRYL* PHAKIC IOL

Model	Indication	Size (mm)	Diopter Range	Optic Diameter (mm)
PKC120NH	Myopia	6.5 X 12.0	0 to -13.0	5.50 mm
			-13.5 to -16.5	5.25 mm
			-17.0 to -23.0	4.65 mm
PKC125NH	Myopia	6.5 X 12.5	0 to -13.0	5.50 mm
			-13.5 to -16.5	5.25 mm
			-17.0 to -23.0	4.65 mm
PKC130NH	Myopia	6.5 X 13.0	0 to -13.0	5.50 mm
			-13.5 to -16.5	5.25 mm
			-17.0 to -23.0	4.65 mm
PKC135NH	Myopia	6.5 X 13.5	0 to -13.0	5.50 mm
			-13.5 to -16.5	5.25 mm
			-17.0 to -23.0	4.65 mm

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Specifications

Material	Hydrophilic
Water Content	26%
Optic Type	Aspheric
Optic Diameter	6.50 mm
Overall Length	12.00/12.5/13.00 /13.50 mm
Sterilization	Steam
Site of Implantation	Sulcus
Delivery System	Disposable (Sub 2.8 mm)
Diopter Range	0 D to -23.0 D

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Advantages of EYECRYL PHAKIC IOL

- Able to correct low to high degrees of Myopia
- Mainly useful in treating Myopia
- Less likely to cause or contribute to dry eyes
- Can be surgically removed
- No loss in the patients ability to accommodate
- Excellent refractive results
- Excellent stability of refraction
- Easy loading of IOL
- Good Post-op lens stability
- No post-op cataract development observed
- Predictable outcomes

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Advantages of EYECRYL PHAKIC IOL

- Fast visual recovery
- Good quality of vision
- Preservation of Accommodation
- Familiar surgical technique for A.S. surgeons
- Reversibility
- Low cost in comparison to LASIK setup

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Features of EYECRYL PHAKIC IOL

- Surgical or YAG Peripheral Iridectomy is not required
- Excellent positional stability
- High patient comfort & satisfaction
- Predictable outcomes
- High order Myopic correction
- Aspheric Optic with zero aberration
- Proven EYECRYL platform

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EYECRYL™ PHAKIC

PHAKIC ASPHERIC IOL

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EYE*CRYL*™ PHAKIC TORIC

PHAKIC ASPHERIC IOL

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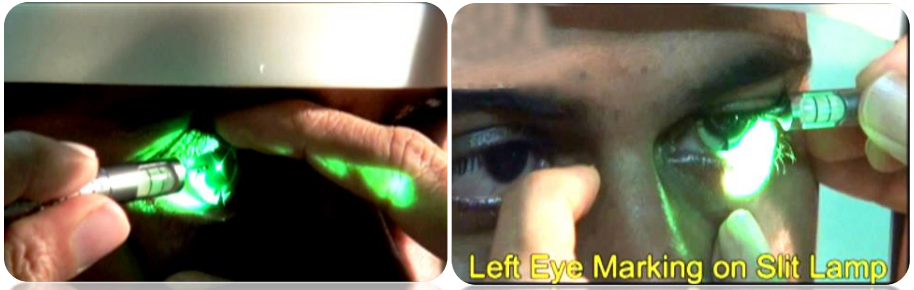
EYECRYL PHAKIC TORIC IOL

Indications

- The EYECRYL PHAKIC TORIC IOLs are indicated in Phakic adults for the treatment of moderate to high Myopia with co-existing astigmatism

EYECRYL PHAKIC TORIC IOL Marking

Reference Marking



Note Marking on cornea

Axis marking as per chart if required

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EYECRYL PHAKIC TORIC IOL

Design Advantage

- Its difficult to align, rotate and manipulate phakic lens inside posterior chamber of Eye
- So we designed a Toric EYECRYL PHAKIC IOL where there is no rotation required
- You have to align the lens horizontally on 0 and 180 axis and toric axis will be aligned automatically as Toric EYECRYL PHAKIC IOL is a fully customized lens with Toric axis incorporated in optic
- Axis has been customized on 0, 30, 60, 90, 120, 150 degree in different variants. So in case of odd axis, sometime you may have to rotate the lens which will not be more than 15 degree

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Power Range & Models for EYE*CRYL* PHAKIC TORIC IOL

MODEL	LENS OVERALL SIZE	DIOPTER RANGE	CYLINDRICAL CORRECTION
PC120T	12.00 mm	0 to -23.0D (in 0.5D step)	0.5D to 5.0D (in 0.5D step)
PC125T	12.50 mm	0 to -23.0D (in 0.5D step)	0.5D to 5.0D (in 0.5D step)
PC130T	13.00 mm	0 to -23.0D (in 0.5D step)	0.5D to 5.0D (in 0.5D step)
PC135T	13.50 mm	0 to -23.0D (in 0.5D step)	0.5D to 5.0D (in 0.5D step)

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Specifications of EYECRYL PHAKIC TORIC IOL

Material	Hydrophilic Acrylic CQ UV
Water Content	26%
Optic Type	Aspheric
Optic Size	4.65 mm to 5.50 mm
Overall Length	12.00 mm to 13.5 mm
Sterlization	Steam
Site of Implantation	Posterior chamber
Delivery System	Disposable (Sub 2.8 mm)
Diopter Range	0 D to -23.0 D(with 0.5D step)
Refractive Index	1.461

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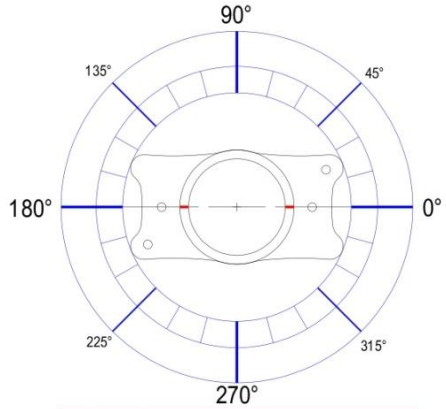
EYECRYL PHAKIC TORIC IOL

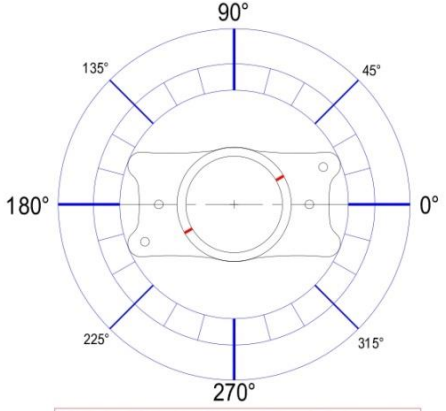
0°



A00 Toric Phakic IOL

\# Measurement from Mark @low: 00°
\# Measurement from Horizontal @Low: 0°

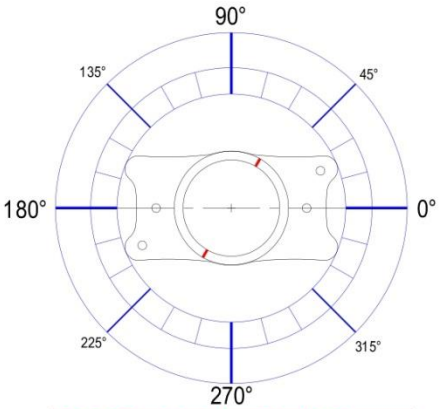
30°



A03 Toric Phakic IOL

\# Measurement from Mark @low : 0°
\# Measurement from Horizontal @low : 30°

60°



A06 Toric Phakic IOL

\# Measurement from Mark@low: 0°
\# Measurement from Horizontal @low: 60°

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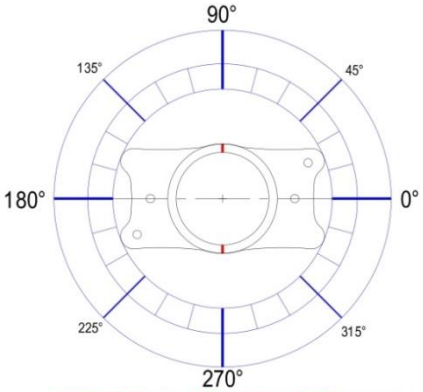
EYECRYL PHAKIC TORIC IOL

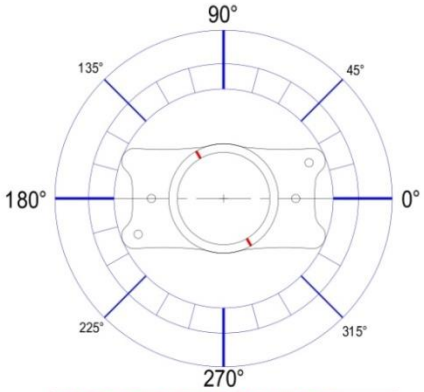
90°



A09 Toric Phakic IOL

Measurement from Mark: 00°
Measurement from Horizontal : 90°

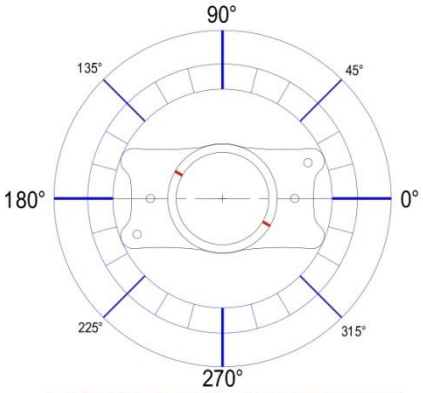
120°



A12 Toric Phakic IOL

Measurement from Mark: 0°
Measurement from Horizontal : 120°

150°



A15 Toric Phakic IOL

Measurement from Mark: 0°
Measurement from Horizontal : 150°

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Comparison of Posterior Chamber PHAKIC Lens Implant and Refractive Lens Exchange

Comparison between EYECRYL PHAKIC and VISIAN ICL

EYECRYL PHAKIC

- ❑ Hydrophilic Acrylic
- ❑ More Firm
- ❑ Rotational stability good
- ❑ Easy injection system
- ❑ 2.8mm incision
- ❑ Less expensive
- ❑ ASPHERIC

STAAR ICL

- ❑ Porcine Collamer
- ❑ Extremely flexible
- ❑ Rotational Stability comparable
- ❑ Complicated loading
- ❑ >3.2mm incision
- ❑ Expensive
- ❑ NON-ASPHERIC (V4C model)

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Comparison of Posterior Chamber PHAKIC Lens Implant and Refractive Lens Exchange

- Refractive lens exchange, also called lens replacement surgery or clear lens extraction.
- RLE may be a better option than LASIK, PRK or Phakic IOL refractive surgery for people with presbyopia and high hyperopia (farsightedness).
- Refractive lens exchange (RLE) replaces your eye's clear natural lens with an artificial intraocular lens (IOL) to correct your refractive error and achieve sharper focus, reducing your need for reading glasses or bifocals.
- While lens replacement surgery technically does not have FDA approval, some eye surgeons will perform the procedure off label in certain circumstances. This is legal and sometimes is the most effective way to correct particular vision problems.

Refractive lens exchange typically is for people with presbyopia or extreme farsightedness, for whom LASIK, PRK or phakic IOL surgery generally are not suitable. If you have both presbyopia and moderate to severe hyperopia, RLE may be the only viable option for clear vision and minimal reliance on glasses after refractive surgery.

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Comparison of Posterior Chamber PHAKIC Lens Implant and Refractive Lens Exchange

- Lens replacement surgery also can correct myopia (nearsightedness), but generally it is not recommended when LASIK, PRK or phakic IOLs are available.
    - Posterior Chamber Phakic Lens implant is always a better option to correct Myopia.

- **People with myopia have a higher risk of retinal detachment during clear lens extraction**, and other refractive surgery options should be explored first. So Phakic lens implant can be a better choice in myopia patient.

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Comparison of Posterior Chamber PHAKIC Lens Implant and Refractive Lens Exchange

Risks and Side-effects of Refractive Lens Exchange

- Retinal detachment, especially in extremely nearsighted people
- Dislocated IOL
- Increased eye pressure (ocular hypertension)
- Infection or bleeding inside the eye
- Droopy eyelid (ptosis)
- Glare, halos and blurry vision from multifocal IOLs

Refractive lens exchange is more invasive surgery with a higher risk of complications, compared with other vision correction procedures.
But the higher risks may be an acceptable trade-off if you have a severe refractive error and a strong desire to be less dependent on eyeglasses, contact lenses and/or reading glasses.

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Comparison of Posterior Chamber PHAKIC Lens Implant and Refractive Lens Exchange

Age

- RLE should not be considered in patients under the age of 50 years, except in high hyperopes (4.00 D and greater), or when the ACD is shallow and thus unsuitable for a phakic IOL.
- In this scenario, an age threshold of 45 years might be considered.
- Myopic patients in their late 40s who are highly motivated to retain their near vision can pose a dilemma, as they will become presbyopic if they receive a phakic IOL.
- Additionally, because of the higher risk of retinal detachment in myopes, RLE should not be considered unless patients are in their mid-50s and have a posterior vitreous detachment.

Comparison of Posterior Chamber PHAKIC Lens Implant and Refractive Lens Exchange

Conclusion

- For patients in whom laser ablative surgery is not possible, RLE and phakic IOL implantation can be considered.
- Phakic IOLs are additive procedures and a safe option in myopic eyes with a sufficiently deep anterior chamber.
- In hyperopic eyes, RLE may be a better option.
- Age, axial length, type and magnitude of refractive error, anterior segment configuration, endothelial cell count, and a patient's desire for correction of presbyopia are relevant factors when selecting the appropriate procedure.
- Most important, providing a patient with valid informed consent detailing the risks, benefits, and alternatives to the procedures, specific to each category and based on current evidence, is vital before proceeding.

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