PHAKIC LENS IMPLANTATION IN PATIENT WITH STRABISMUS AND REFRACTIVE ERROR

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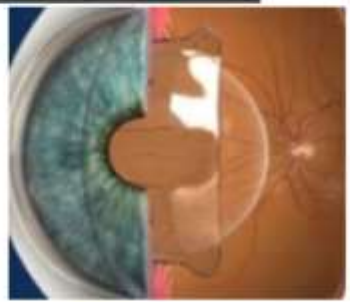
IMPLANTABLE PHAKIC CONTACT LENS (IPCL)

- Implantable phakic contact lens refers to the lens implanted into the eye without removing the normal crystalline lens of the eye
- Phakic lenses are used to correct refractive errors
- IPCL Lenses are made up of acrylic
- It is a small, soft, single piece, foldable posterior chamber IOL
- IPCL is inserted into eye through sub 3.2mm incision and placed just behind the iris
- Permanently reduces person's need for glasses or contact lenses



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EXOTROPIA

- Is a type of eye misalignment , Outward deviation of eyes
- Risk factors- neurological disorders, prematurity, uncorrected refractive errors, family history of strabismus
- Congenital / infantile exotropia- onset is during the first 6 months of life, large angle and does not resolve spontaneously
- Surgical management- lateral rectus recession and medial rectus resection

PATIENT PROFILE

- 39 year old male
- Tailor
- Residing at Nigdi, Pune

CHIEF COMPLAINT

- (RE) Outward deviation since the age of 6 months
- (RE) Diminution of vision since childhood

HISTORY OF PRESENTING ILLNESS

- Patient was apparently alright till the age of 6 months after which his mother noticed outward deviation of right eye.
- H/o (RE) DOV since childhood which was gradual & progressive in nature
- H/o spectacle use for the past 8 years
- No h/o double vision
- No h/o ocular trauma or surgery

- PAST HISTORY: No known systemic illness
- BIRTH HISTORY: FTND

  No history of NICU stay

  Birth weight: 2.7 kg

  Cried immediately after birth
- PERSONAL AND MEDICAL HISTORY : Not significant
- FAMILY HISTORY: No h/o similar complaints
- GENERAL AND SYSTEMIC EXAMINATION: WNL

OCULAR EXAMINATION

	RIGHT EYE	LEFT EYE
Distance Vision	1/60 —>6/9p (-11, -1.75x65)	6/60 —>6/6 (-2, -0.50x80)
Near vision Colour vision	N8 Intact	N6 Intact
Head posture	Central	
Eyebrows	Normal	Normal
Eyelids	Normal	Normal
Eyelashes	Normal	Normal
Orbital margins	Continuous and non tender	Continuous and non tender

EXTRA-OCULAR MOVEMENTS

SQUINT EXAMINATION

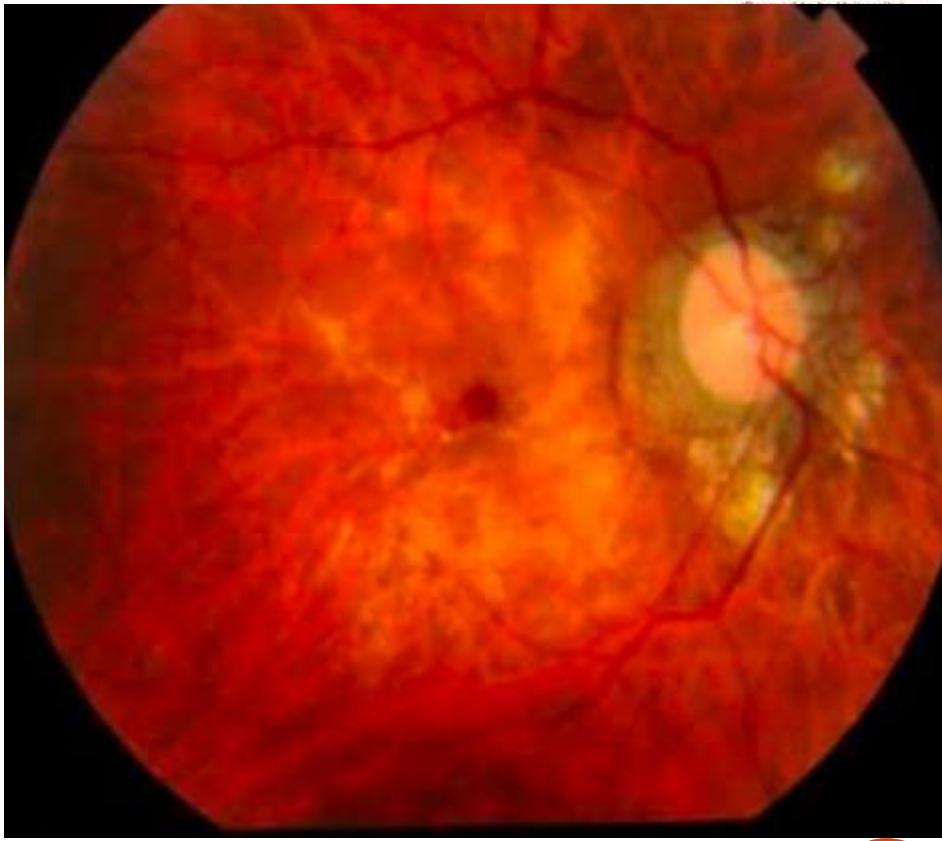
On Prism Bar cover test (RE) shows 60 degrees exotropia with hypertropia for distant and near with (RE) suppression.
On Worth Four Dot test – (RE) Suppression

ANTERIOR SEGMENT EXAMINATION

	RIGHT EYE	LEFT EYE
CONJUNCTIVA	Normal	Normal
CORNEA	Clear	Clear
ANTERIOR CHAMBER	Normal depth	Normal depth
IRIS	Normal pattern	Normal pattern
PUPIL	C/C/RTL	C/C/RTL
LENS	Clear	Clear

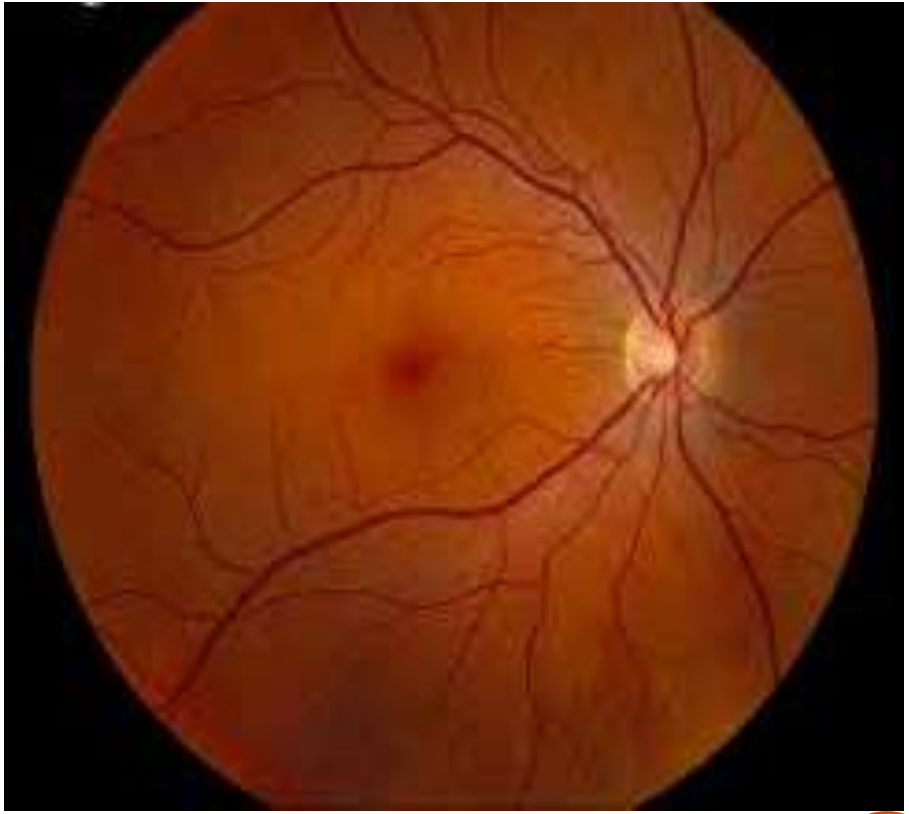
FUNDUS EXAMINATION

	RIGHT EYE
MEDIA	Clear
OPTIC DISC	Peri papillary atrophy + Posterior staphyloma
C:D ratio	0.6 with annular crescent
Neuroretinal rim	Healthy
Foveal reflex	Absent with pigmentary changes
General fundus	Tessellations present



FUNDUS EXAMINATION

	LEFT
MEDIA	Clear
OPTIC DISC	WNL
C:D ratio	0.3
Neuroretinal rim	Healthy
Foveal reflex	Present
General fundus	Tessellations present



Intraocular pressure(GAT) 11:30 am

(RE) 20 mmHg

(LE) 20mmHg

Axial length – (Normal - 22-24mm)

(RE) 28.02 mm

(LE) 24.42 mm

DIAGNOSIS

(RE) Pathological Myopia with

Posterior Staphyloma with

60 degree Constant Exotropia with

hypertropia

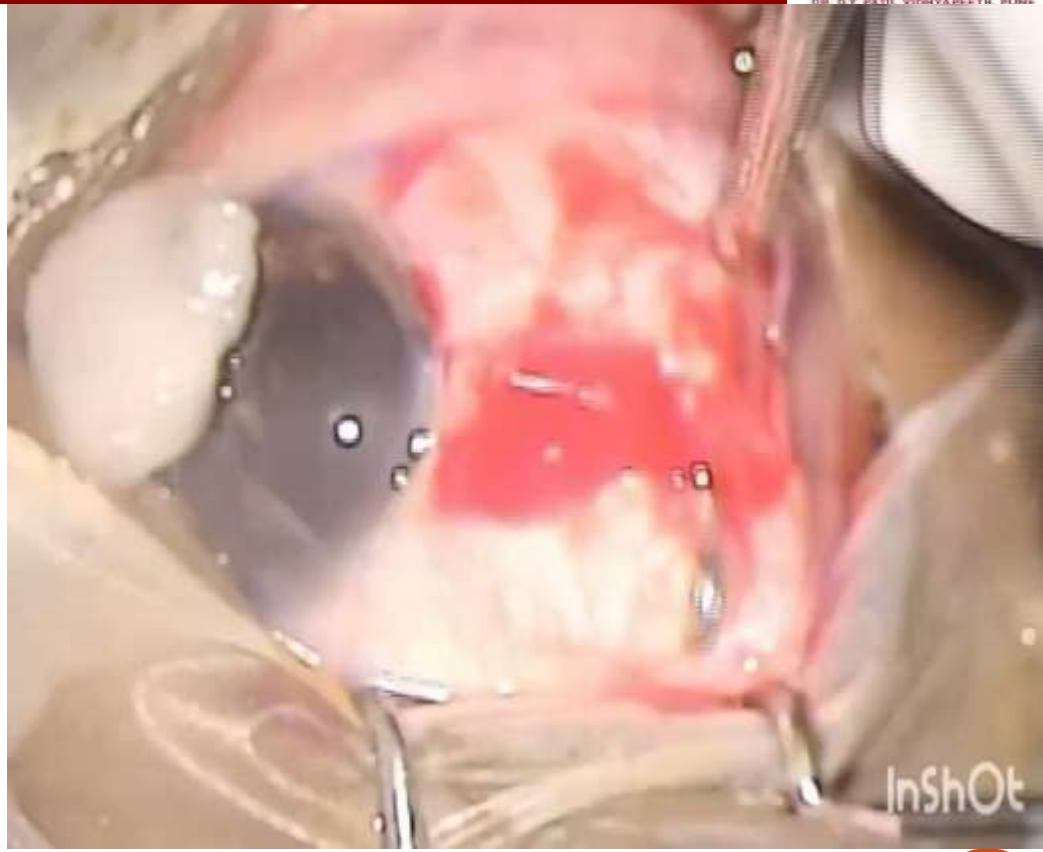
(LE) WNL

PLAN OF MANAGEMENT

(RE) Lateral rectus recess 9 mm, Medial rectus resect 4 mm with Implantable Phakic Contact Lens under LA

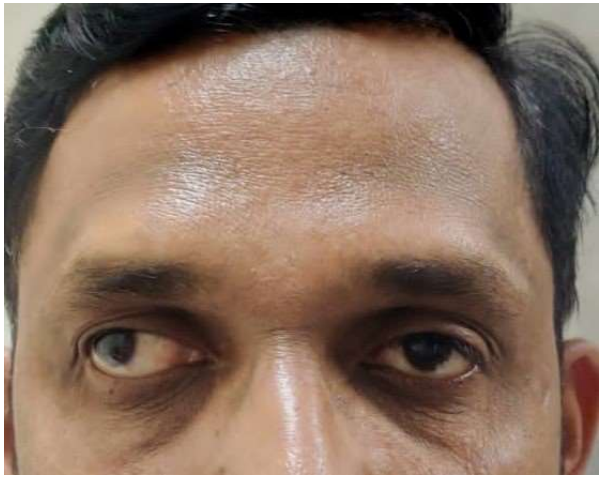
Muscle resection (strenghthening a muscle) – a segment of muscle is removed to make it shorter)

Muscle recession (weaken a muscle) – muscle is disinserted from the original insertion site and inserted to a point posterior to original insertion site



PRE - OPERATIVE

POST OPERATIVE DAY 1



Vn 1/60 —>6/9 (-11, -1.75x65)

6/9

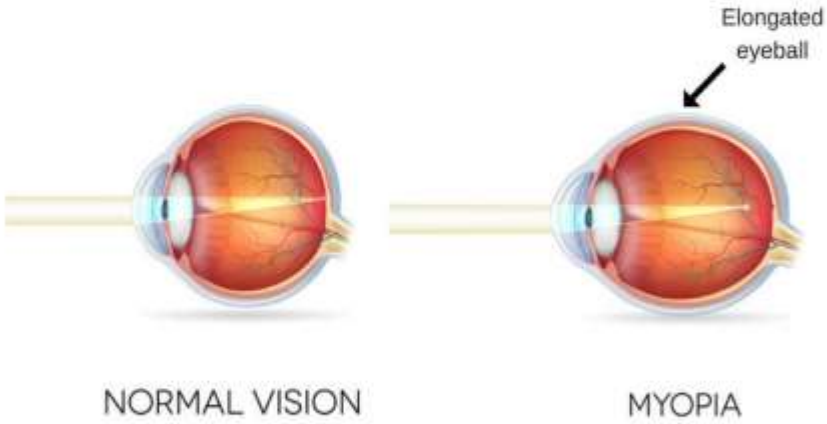
60 degrees of exotropia with hypertropia

MYOPIA

- Is a type of refractive error in which parallel rays of light coming from infinity are focused in front of the retina when accommodation is at rest

- **Grading of myopia**

1. Low myopia - under (-) 3 diopters
2. Moderate myopia - from (-) 3.0 to (-) 6.0 diopters
3. High myopia - More than (-) 6.0 diopters



- **Indications of implantable phakic IOL :-**

1. High myopia >-8 D to - 10 D
2. Unfit for conventional laser treatment (LASIK,PRK)
3. Stable refractive power for 1 year
4. Age 21 years and above

- **Advantages** -

1. Reversible procedure and can be surgically removed
2. Quicker recovery

Colin J, Robinet A. Clear lensectomy and implantation of low-power posterior chamber intraocular lens for the correction of high myopia. Ophthalmology. 1994 Jan;101(1):107-12. doi: 10.1016/s0161-6420(94)31379-0. PMID: 8302541.

- **Contraindications of implantable phakic IOL :-**

1. Patients who do not have stable refraction for 1 year
2. Shallow anterior chamber depth
3. Pregnancy and lactation

- **Disadvantages :-**

1. Risk of infection
2. Distortion of the pupil
3. Risk of damage to lens, iris, trabecular mesh work giving potential complications of cataract, iritis
4. Retinal complications- cystoid macular edema, retinal detachment

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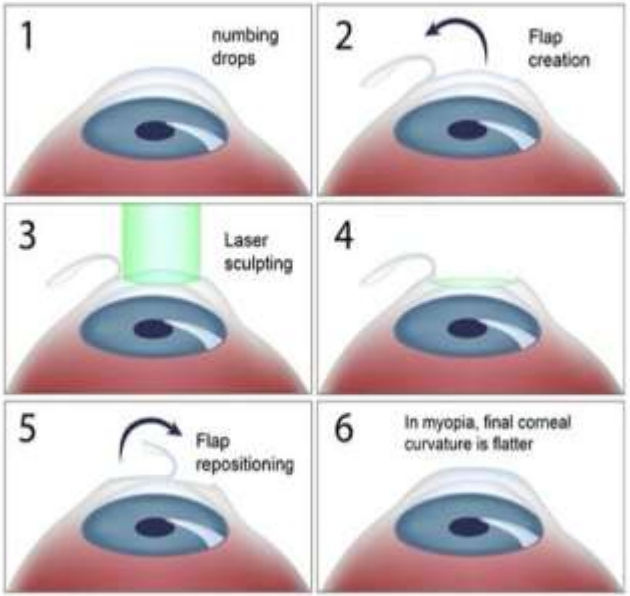
LASER ASSISTED IN-SITU KERATOMILEUSIS (LASIK)

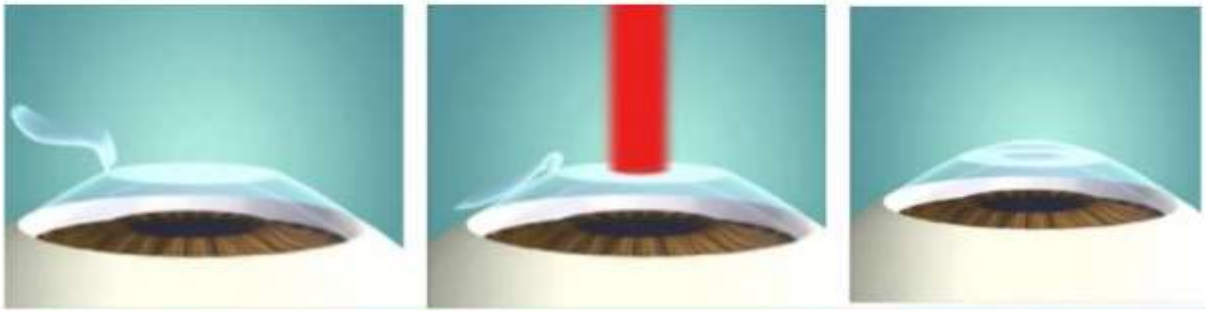
- Refractive surgery of choice for myopia of up to -8 to -10 D
- Flap of 130-160 micron thickness of anterior corneal tissue is raised
- Midstromal tissue is ablated directly with an excimer laser beam
- Ultimate flattening the cornea



Ting DSJ, Srinivasan S, Danjoux JP. Epithelial ingrowth following laser in situ keratomileusis (LASIK): prevalence, risk factors, management and visual outcomes. BMJ Open Ophthalmol. 2018 Mar 29;3(1):e000133. doi: 10.1136/bmjophth-2017-000133. PMID: 29657982; PMCID: PMC5895975.

FEMTO-LASIK

- Traditional LASIK uses a microsurgical instrument called microkeratome to create the flap in the cornea
- Femto-LASIK uses a specific type of laser, called a femtosecond laser, to create the corneal flap



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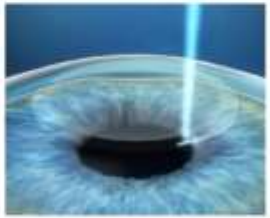
SMALL INCISION LENTICULAR EXTRACTION (SMILE)

- The procedure involves using a femtosecond laser to create a corneal lenticule which is extracted whole through a small incision without the use of an excimer laser

- SMILE is a better procedure because the integrity of cornea is maintained and there is less chance of ectasia



A refractive lenticule and small incision are created inside the intact cornea – all in one step.

The lenticule is subsequently removed through this small incision, leaving the remainder of the superficial cornea intact.

Removing the lenticule changes the shape of the cornea, thereby achieving the desired refractive correction.

Shah R. History and Results; Indications and Contraindications of SMILE . Asia Pac J Ophthalmol (Phila). 2019 Sep-Oct;8(5):371-376. doi: 10.1097/01.APO.0000580132.98159.fa. PMID: 31567264; PMCID: PMC6784775.

EXTRACTION OF CLEAR CRYSTALLINE LENS

- Fukala operation
- Clear lens extraction with intraocular lens implantation of appropriate power is the refractive surgery for myopia of -16D to -18 D.

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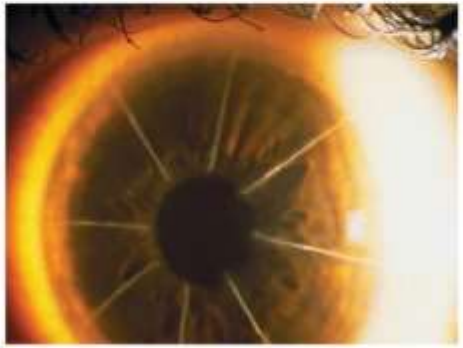
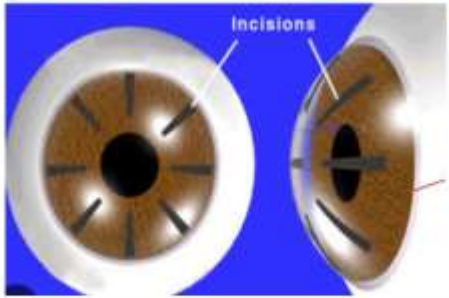
RADIAL KERATOTOMY

- Deep radial incisions in peripheral part of cornea leaving the central 4 mm optical zone
- These incisions on healing- flatten the central cornea thereby reducing its refractive power
- Corrects low to moderate myopia (2-6D)
- It's a historical surgery , not performed nowadays

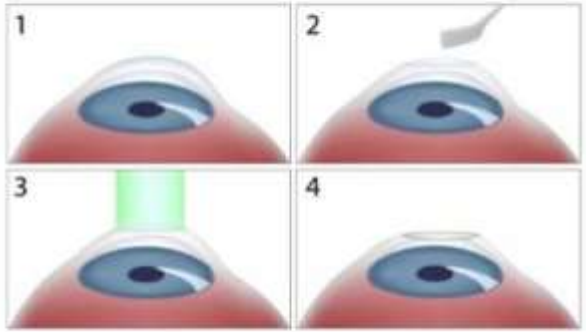




Rowsey JJ, Morley WA. Surgical correction of moderate myopia: which method should you choose? I. Radial keratotomy will always have a place. Surv Ophthalmol. 1998 Sep-Oct;43(2):147-56. doi: 10.1016/s0039-6257(98)00024-1. PMID: 9763139.

PHOTO REFRACTIVE KERATECTOMY (PRK)

- Central optical zone of anterior corneal stroma is photoablated using excimer laser(193nm uv flash) to cause flattening of central cornea
- Correction for -2 to -6D of myopia



Photorefractive Keratectomy (PRK)

Kim TI, Alió Del Barrio JL, Wilkins M, Cochener B, Ang M. Refractive surgery. Lancet. 2019 May 18;393(10185):2085-2098. doi: 10.1016/S0140-6736(18)33209-4. PMID: 31106754.

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THANK YOU