Presbyopic Implant in Eye (PIE)

Liberate your vision

Presenter: Dr. Rajesh Khanna
Khanna Vision Institute
Dr. Rajesh Khanna is a renowned Eye surgeon in California. He has performed over ten thousand vision correction surgeries over his career. He has been recognized as one of the top LASIK and prelex surgeons in USA. He has been the eye surgeon of choice for Doctors, Nurses and celebrities.

Dr. Khanna is certified by the American Board of Ophthalmology. He has Advanced Fellowship Training in LASIK and Refractive Cataract Surgery. He is the founder and Director of Khanna Vision Institute.

Dr. Khanna volunteers at UCLA Jules Stein Eye Institute. He devotes his time in charitable activities. He enjoys playing tennis and field hockey.
REJUVENATE AGING EYES

Imagine having the vision of your younger self. Imagine throwing away your contacts, progressives, and readers because you now have 20/20 vision that even continues to improve through the years. To have a reversal of the aging process and even preventing cataracts from ever hindering your new vision. This ground-breaking advancement is called Presbyopic Implant in the Eye (PIE).

Dr. Khanna has not only coined the term PIE but has been a pioneer in the industry. He has conducted numerous lectures on the topic, provided personal coaching to upcoming surgeons and is the founding Medical Director of Khanna Vision Institute. He has authored numerous educational books which have aided in the popularity of this life-changing procedure.

Dr. Khanna takes great pride in educating the medical community as well as anyone that suffers daily with diminishing vision. His goal is simply to bring awareness to the world through written word, video lectures, live seminars, educational and medical apps, as well as educating and connecting with his current surgical case load. As an active PIE surgeon, he has performed thousands of procedures on patients extending throughout the globe.

https://www.amazon.com/dp/B08BG74NS2
Important Links:

- Book – Rejuvenate Aging Eye: https://www.amazon.com/dp/B08BG74NS2

- Khanna Vision Institute https://khannainstitute.com/

- Recording of this Lecture: https://ieeemeetings.webex.com/webappng/sites/ieeemeetings/recording/play/0348181739094baf95d7e60751f11742
Structure of Eye
Understanding Vision
VISION DISORDERS

- Normal vision
- Myopia
- Hyperopia
- Astigmatism
Zones of Vision

- Near
- Middle
- Far
Lasik Eye Surgery

- Lasik is a type of eye surgery in which an extremely precise computer controlled laser is used to reshape the corneal surface so as to fix irregularities that have impaired your vision. The cornea is the clear front part of the eyeball. Lasik eye surgery corrects: Nearsightedness (myopia), Farsightedness (hyperopia) and Astigmatism. It does not correct presbyopia.
Lower and higher order aberration elevations of the cornea is measured in over a thousand zones.
Calculate Treatment

- Amount of tissue removed
- Remaining tissue
- Edge of pupil and limbus
Treatment profile
Laser beam reshaping the cornea.

- Myopic astigmatic lasik
  Central 6.5 mm optic zone
  1.5 mm blend zone

- Hyperopic Lasik till 9mm groove to allow cornea to bulge forward
PIE - Cure Presbyopia Permanently

- The expanded form of PIE is “Presbyopic Implant in Eye”
- Presbyopia is a natural change beginning in the forties
- Presbyopic, in the term means that it cures presbyopia
- The implant is a newer synthetic biocompatible lens placed in the space of the remaining natural lens.
Quality of Vision Questionnaire

Name: ___________________________ Date: ___________________________

The Questionnaire assists us in providing the best biocompatible lens for your PIE (Phakolyopia Implant in Eye) surgery. Please understand, though PIE allows freedom from glasses, some patients may require glasses in certain conditions. Please circle all that apply

Do you suffer from any of the following conditions? Diabetes mellitus, Macular degeneration, Glaucoma. Any other? ___________________________

Symptoms: Have you had difficulty with: Reading medication instructions newspaper or food labels, fill out forms, watch TV, work, sewing, needlework, crafts, playing golf, tennis, cards, swimming & games. Y N

Have you been bothered by: Poor night vision seeing rings around lights, glare, seeing in poor/dim light, blurry vision, driving at night, have you had any driving accidents? Y N

Are you responsible for the care of others at home? Y N Do you work at night? Y N Do you play contact sports? Y N

How is your vision without your glasses or contacts now? Very Bad, Bad, Good

<table>
<thead>
<tr>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>Computers</td>
<td>Dividing</td>
</tr>
<tr>
<td>Sewing</td>
<td>Smartphone</td>
<td>Golfing</td>
</tr>
<tr>
<td>Applying make-up</td>
<td>Cooking</td>
<td>Cycling</td>
</tr>
<tr>
<td>Crossword puzzles</td>
<td>Reading labels on shelf</td>
<td>Watching movies/TV</td>
</tr>
</tbody>
</table>

Which zone of vision is most important to you? Please choose only one

Zone 1 Zone 2 Zone 3

If required for which zone would you be willing to wear glasses?

Zone 1 Zone 2 Zone 3

How important would it be for you to be free from glasses for your daily activities?

Very Important Moderately Important Not Important

Please place an "X" on the following scale to describe your personality as best as you can:

Easy going Perfectionist

How do you expect PIE procedure to improve your quality of life?

__________________________________________

Patient Signature: ___________________________
### PIE

<table>
<thead>
<tr>
<th>Distance, middle &amp; near vision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanently glasses free</td>
</tr>
<tr>
<td>Binocular vision at all distances</td>
</tr>
<tr>
<td>Thin, thick or keratoconus cornea</td>
</tr>
<tr>
<td>Avoids dry eyes</td>
</tr>
<tr>
<td>Can be performed in extreme nearsighted eyes</td>
</tr>
<tr>
<td>Can be performed in high hyperopes or farsighted eyes</td>
</tr>
<tr>
<td>Can be performed over previous Lasik, RK, PRK</td>
</tr>
<tr>
<td>Prevents future cataracts</td>
</tr>
</tbody>
</table>

### Lasik

<table>
<thead>
<tr>
<th>Distance, middle or near vision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for glasses by age 45</td>
</tr>
<tr>
<td>Not above age 45</td>
</tr>
<tr>
<td>Contraindicated</td>
</tr>
<tr>
<td>Causes dry eyes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Avoided</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>
Advantages of PIE

- Permanent
- Reversible
- See at all distances in each eye
- Neuroadaptation allows vision to improve for many years
- Can be performed after Lasik, RK and previous surgeries
- Can Cure Amblyopia
Summary of a good PIE consultation

- Review of medical and visual history
- Check vision, refraction, and auto refraction
- OCT of macula and nerve
- Corneal topography to analyze shape of the eye
- Pachymetry to measure the thickness of the cornea
- Slit lamp: to observe tear film, cornea, and lens
- Intraocular pressure to rule out glaucoma
- Dilated exam to rule out pathologies like diabetes, hypertension, glaucoma, and macular degeneration
- Axial length measurement of the eye
- Explanation on eye model, visual charts
- Get a chance to talk to the surgeon
- Patient testimonials are important to read and will verify the doctor’s intelligence and proficiency
- Optional tests like visual field
PIE Procedure
Choosing the Best Presbyopic Implant
Accommodative crystalens

bowed posteriorly

normal position

bowed anteriorly
Neuroadaptation & Fine-Tuning

- Left side focused on distance makes the thumb blurry.
- Right side focus shifted to the thumb to make it clear causes distance details to become blurry.
Astigmatism Management

- iDesign Lasik cures it
- Toric PIE Implants
- Incisional surgery derived from RK less reliable
Tears

- Produced in lacrimal gland
- Float across the eye by action of lid blink
- Enter the punctum
- Flow into the nasolacrimal duct and finally the nose
## Managing Dry Eyes

<table>
<thead>
<tr>
<th>Type</th>
<th>Temporary</th>
<th>Intermediate</th>
<th>Permanent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Collagen</td>
<td>Synthetic Polymer</td>
<td>Silicone or Acrylic</td>
</tr>
<tr>
<td>Duration</td>
<td>2-4 weeks</td>
<td>3 - 6 months</td>
<td>Lasts for years</td>
</tr>
<tr>
<td>Usage</td>
<td>Diagnostic</td>
<td>Lasik/Therapeutic</td>
<td>Therapeutic</td>
</tr>
<tr>
<td>Dissolution</td>
<td>Dissolves in few weeks</td>
<td>Slowly dissolves over months</td>
<td>Inert</td>
</tr>
</tbody>
</table>
## Treatment of Dry Eye

<table>
<thead>
<tr>
<th>Increase Production</th>
<th>Addition</th>
<th>Prevent Evaporation</th>
<th>Decreased Drainage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral vitamins</td>
<td>Artificial tears</td>
<td>Sunglasses</td>
<td>Temporary Punctal occluders</td>
</tr>
<tr>
<td>Warm compresses</td>
<td>Lubricating eye ointment</td>
<td>Wide brim hats</td>
<td>Permanant Punctal occluders</td>
</tr>
<tr>
<td>Lid scrubs</td>
<td>Humidifiers</td>
<td>Sleeping eye covers</td>
<td>Cautery closure of punctum</td>
</tr>
<tr>
<td>Drink flax seed oil</td>
<td>Drink water</td>
<td></td>
<td>Surgical closure of punctum</td>
</tr>
<tr>
<td>Restasis or Xiidra</td>
<td>Moisture glasses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doxycycline</td>
<td>Scleral contact lens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autologous serum</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Risks and Complications

- Commonly: residual refractive power
- Inflammation
- CME
- Infection is extremely rare under ASC settings
CME or cystoid macular edema

- Rare
- Clinical suspicion
- Treatment with steroids
Glare and Haloes

- Design of lens
- Crystalens least
- Avoid diamond lanes
- Yellow tint glassesd