



Advances in Cataract Surgery

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Boulder Community Health

Education

Medical School - USC Keck School of Medicine
Los Angeles, CA

Internship – Emanuel Hospital and Health Clinics
Portland, Oregon

Residency – UT Southwestern Medical Center/ Parkland Memorial Hospital
Dallas, TX

Cornea and Refractive Surgery Fellowship – University of Iowa
Iowa City, IA

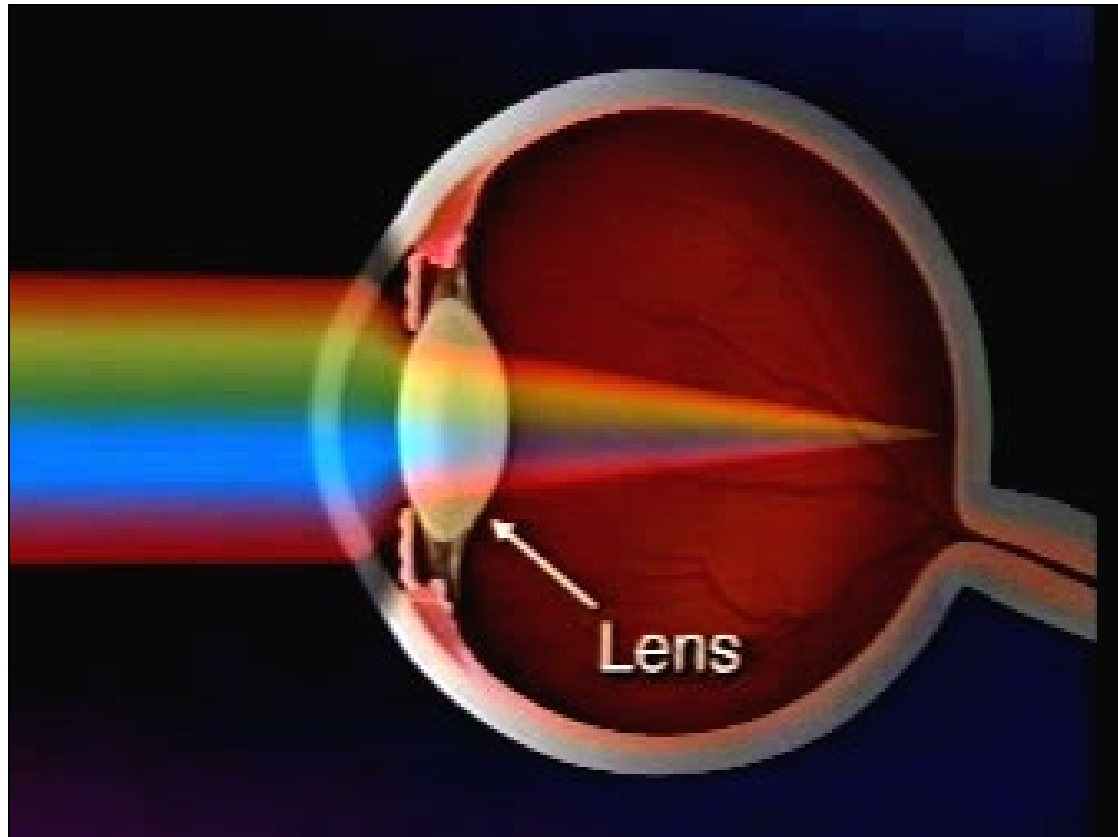


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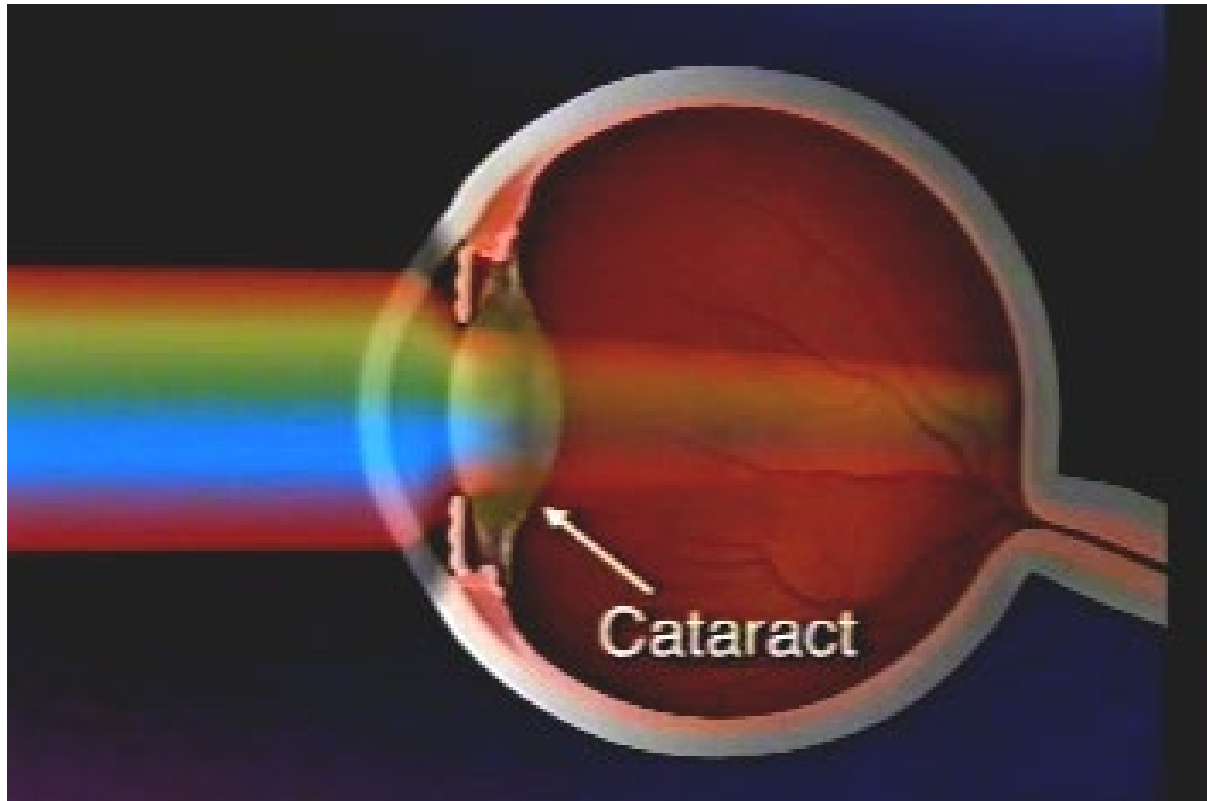
What are Cataracts?

- What is a cataract?
- What is cataract surgery?
- Traditional vs Laser Refractive Cataract Surgery
- Femtosecond Laser Technology
- Review of the LenSx System

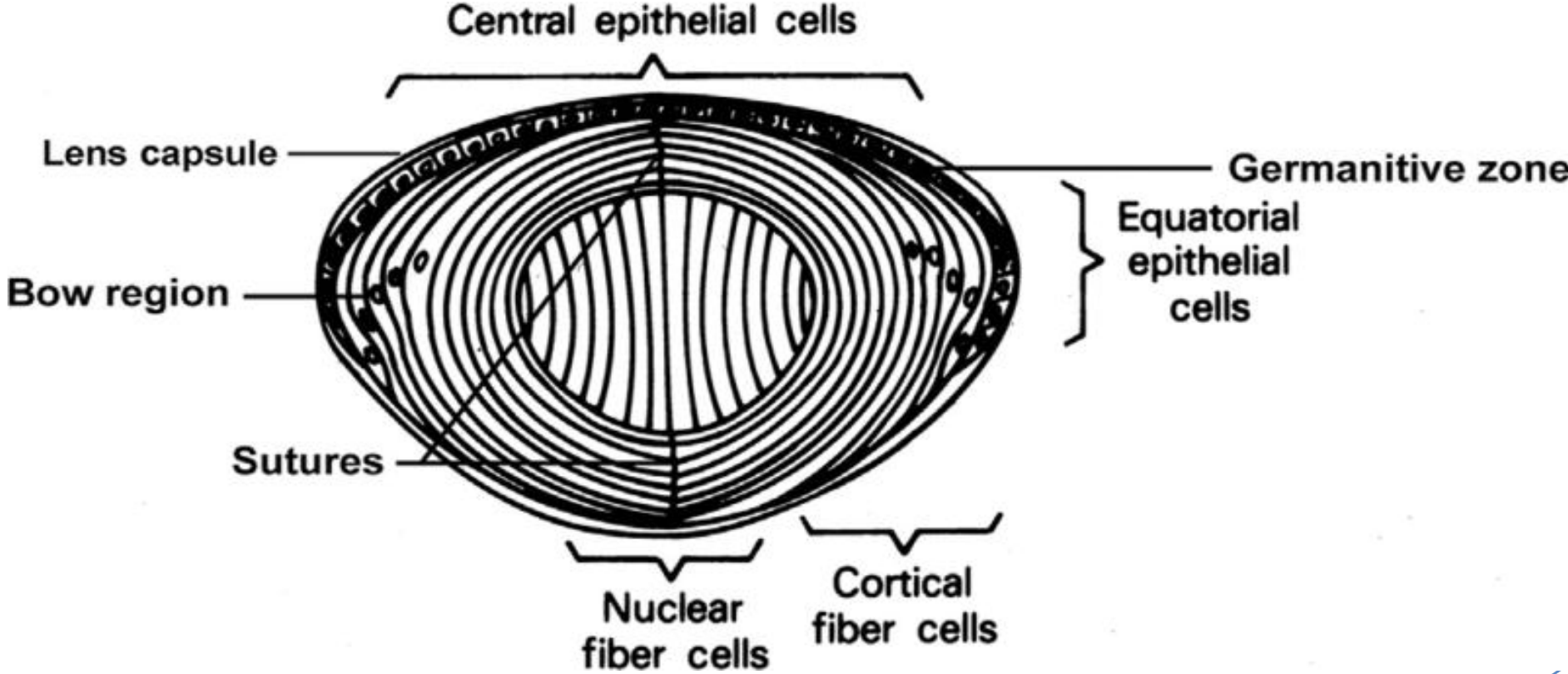
Normal Human Lens



How Cataracts Develop



Lens Anatomy



Who Develops Cataracts?

- Almost everyone will develop cataracts as they grow older.
- Typically, most people in their late 50s and the majority of people over the age of 70 will have some degree of cataract.



Cataract Surgery The Basics

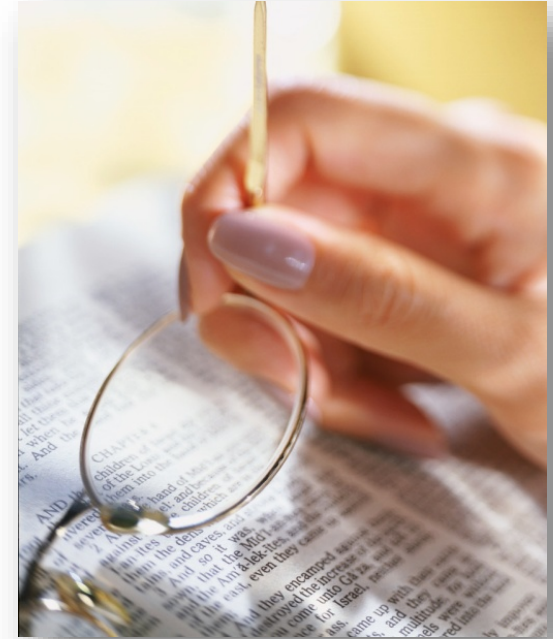
Symptoms of Cataracts

- Bright colors become dull
- Halos around lights
- Difficulty reading in low light
- Blurred or double vision
- Frequent change in glasses prescription
- Increasing nearsightedness



Treatment Options for Cataracts

- Continued observation
- Prescribe stronger glasses
- Cataract extraction with intraocular lens placement



Today's Goals of Cataract Surgery

To improve the QUALITY of LIFE of cataract patients by
INCREASING THE CHANCES OF SPECTACLE FREEDOM with
a QUALITY RANGE of VISION.



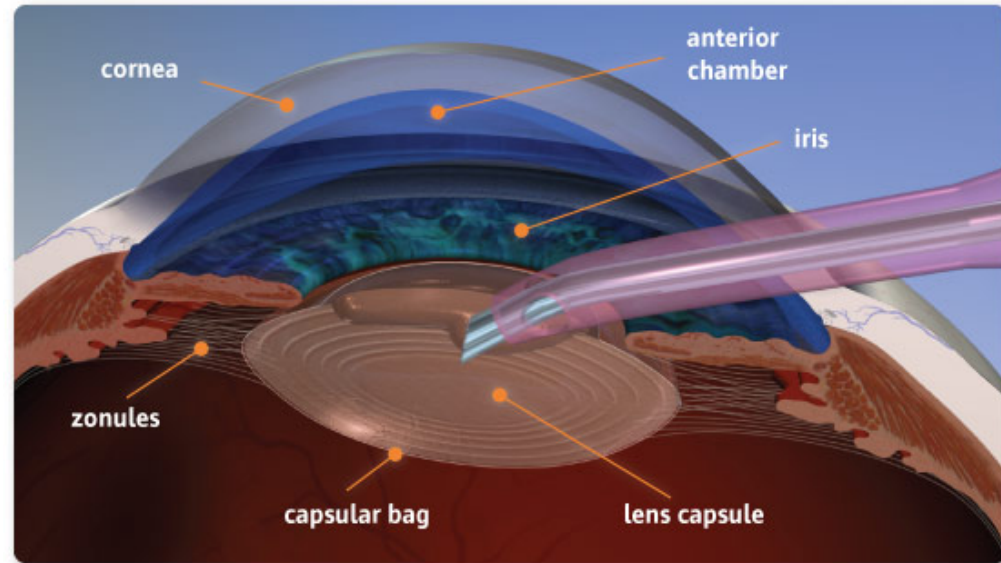
Cataract Basics

Anterior Segment:

- Cornea
- Anterior Chamber
- Iris
- Lens
- Zonules

Lens:

- Anterior and Posterior Capsule
- Cortex
- Nucleus

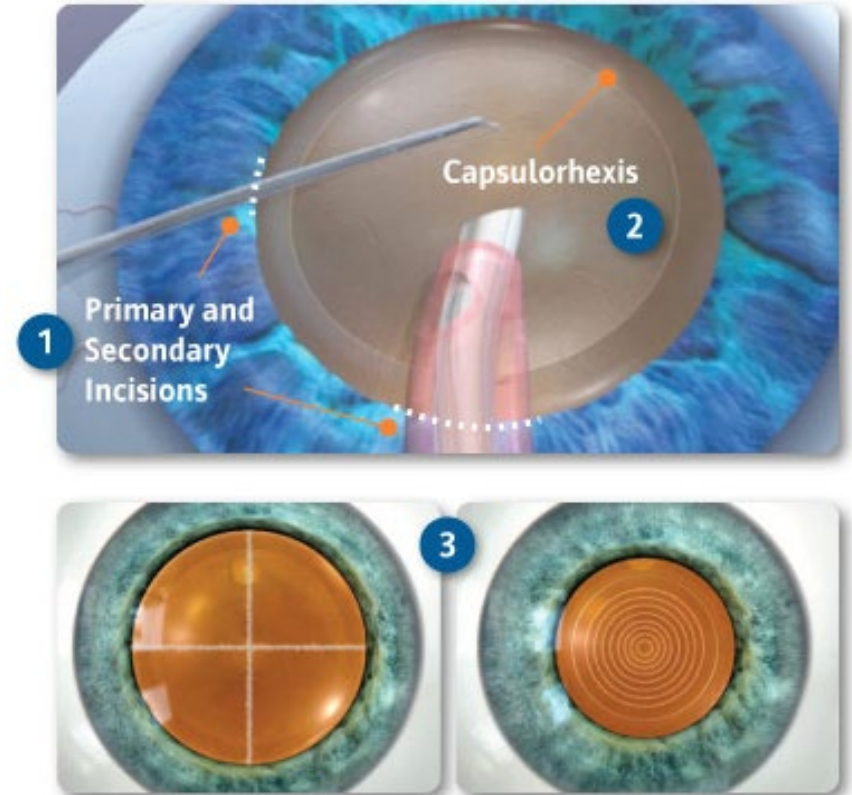


The Role of the Femtosecond Laser

Standard Cataract Surgery

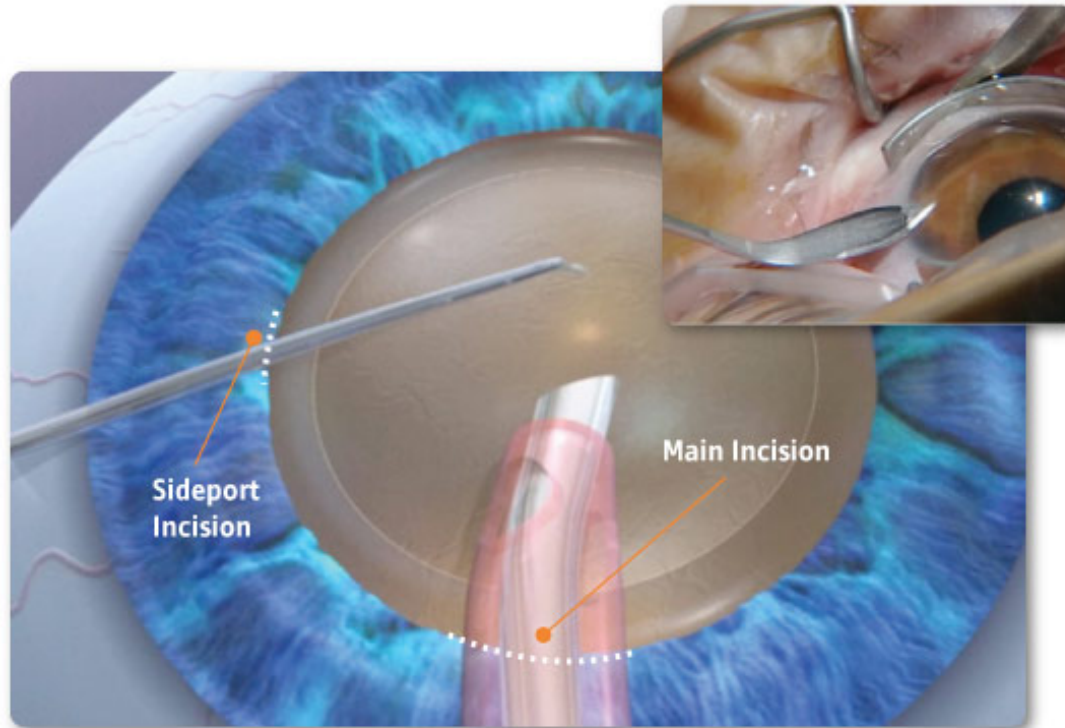
1. Primary and Secondary incisions
2. Capsulorhexis – Circular opening in the anterior capsule
3. Lens fragmentation
4. Phacoemulsification
5. Intraocular lens (IOL) insertion
6. Incision closure

Laser can assist with steps 1-3

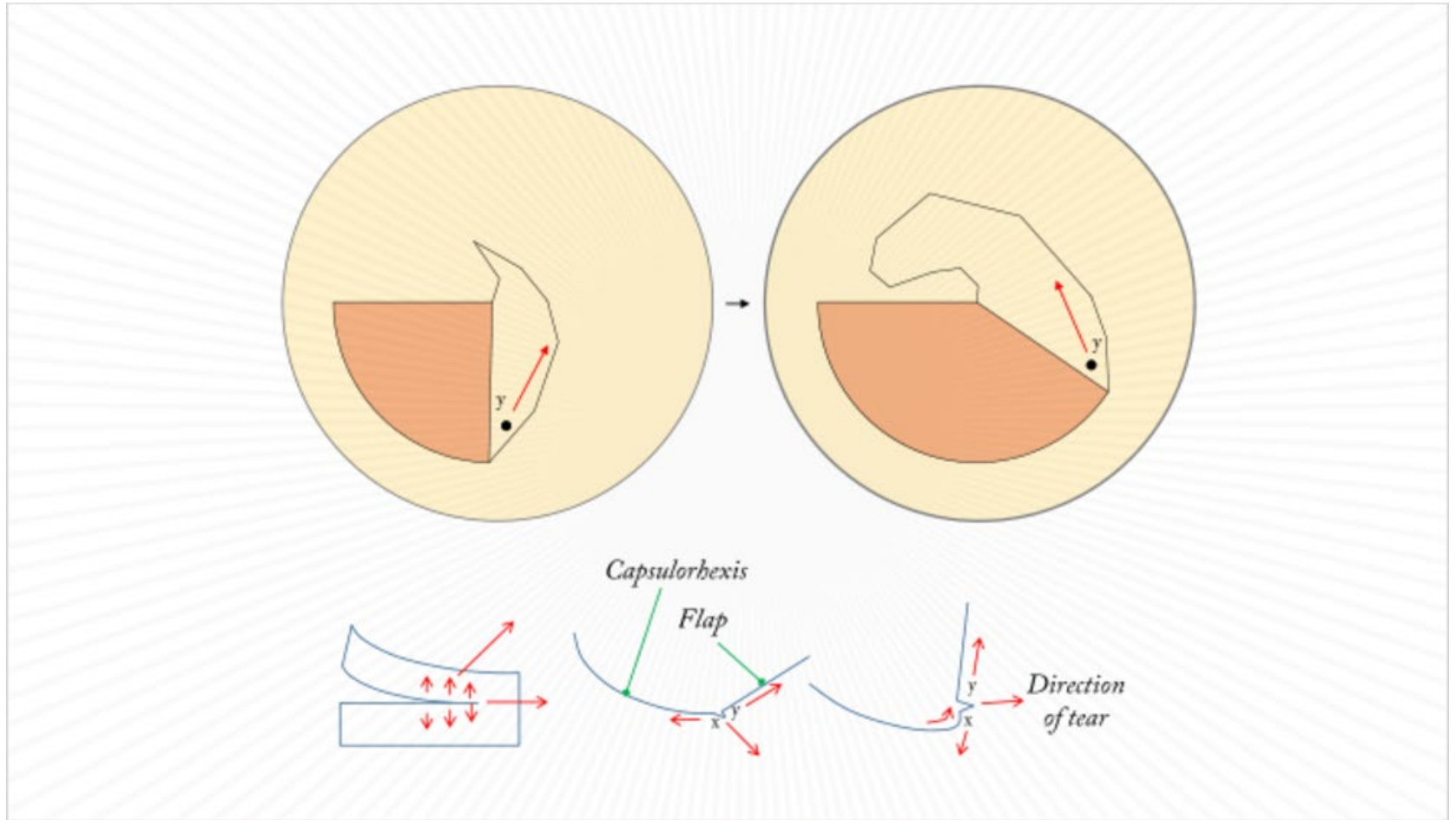


Incision

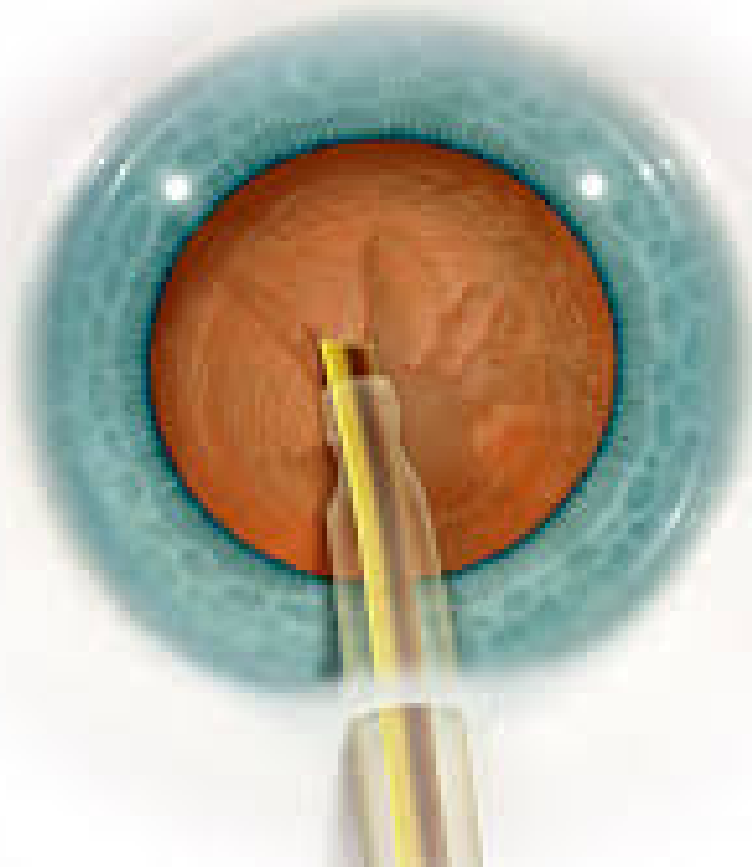
- Accessing the lens nucleus requires incisions in the cornea and anterior capsule
- Phacoemulsification handpiece enters through the main incision
- Secondary instruments enter through side-port incision



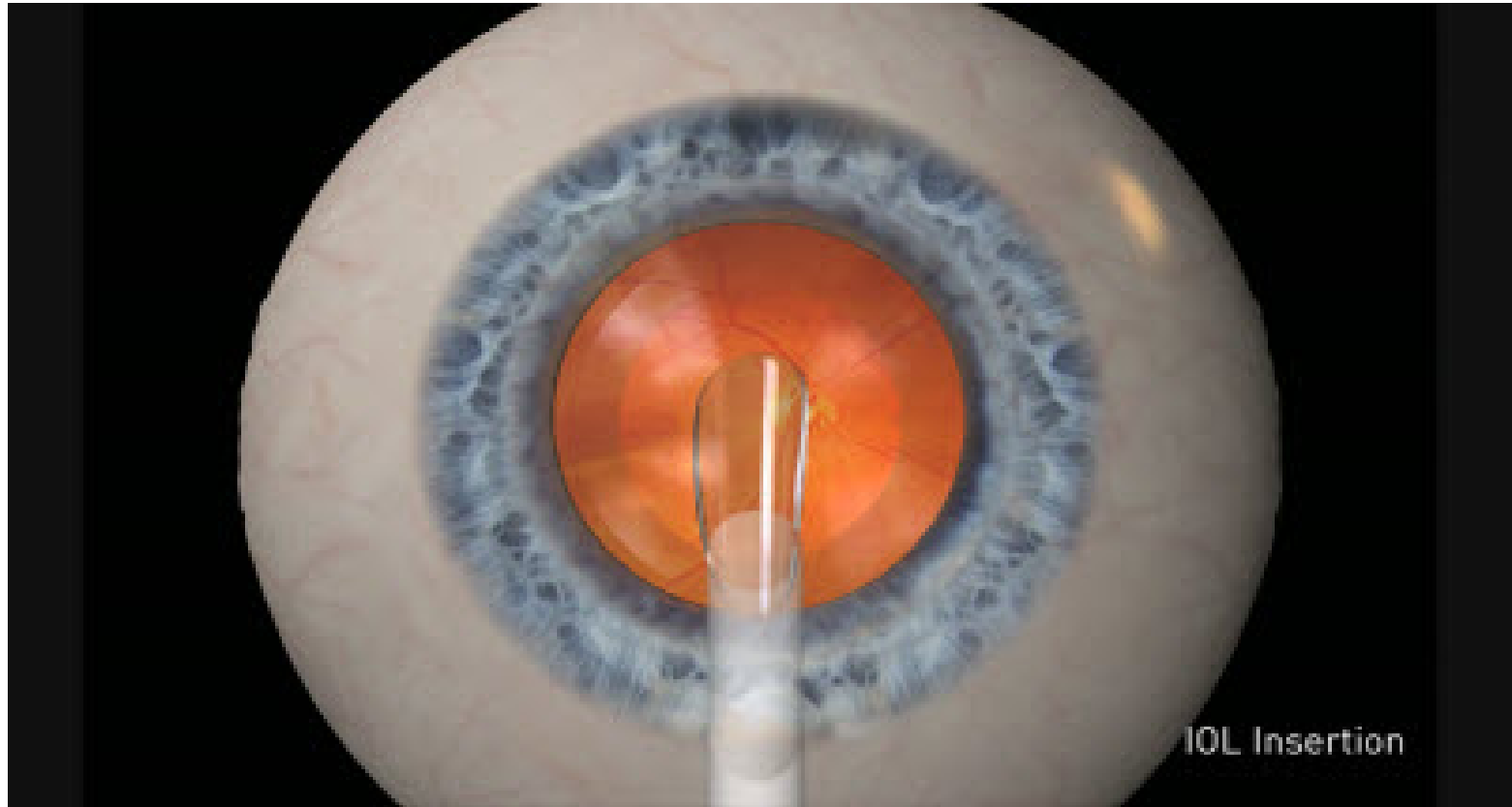
Capsulorhexis



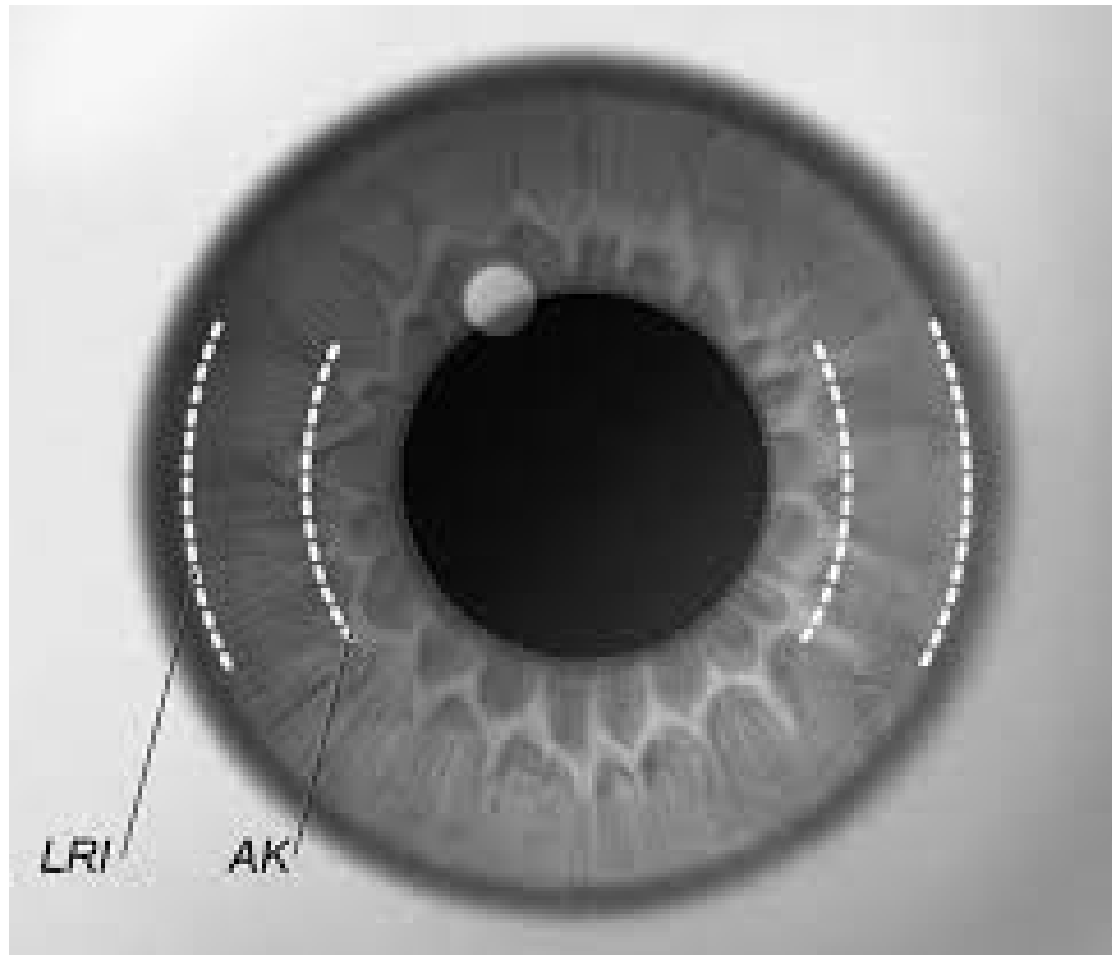
Fragmentation and Removal



Intraocular Lens Insertion



Arcuate Incisions



Femtosecond Laser

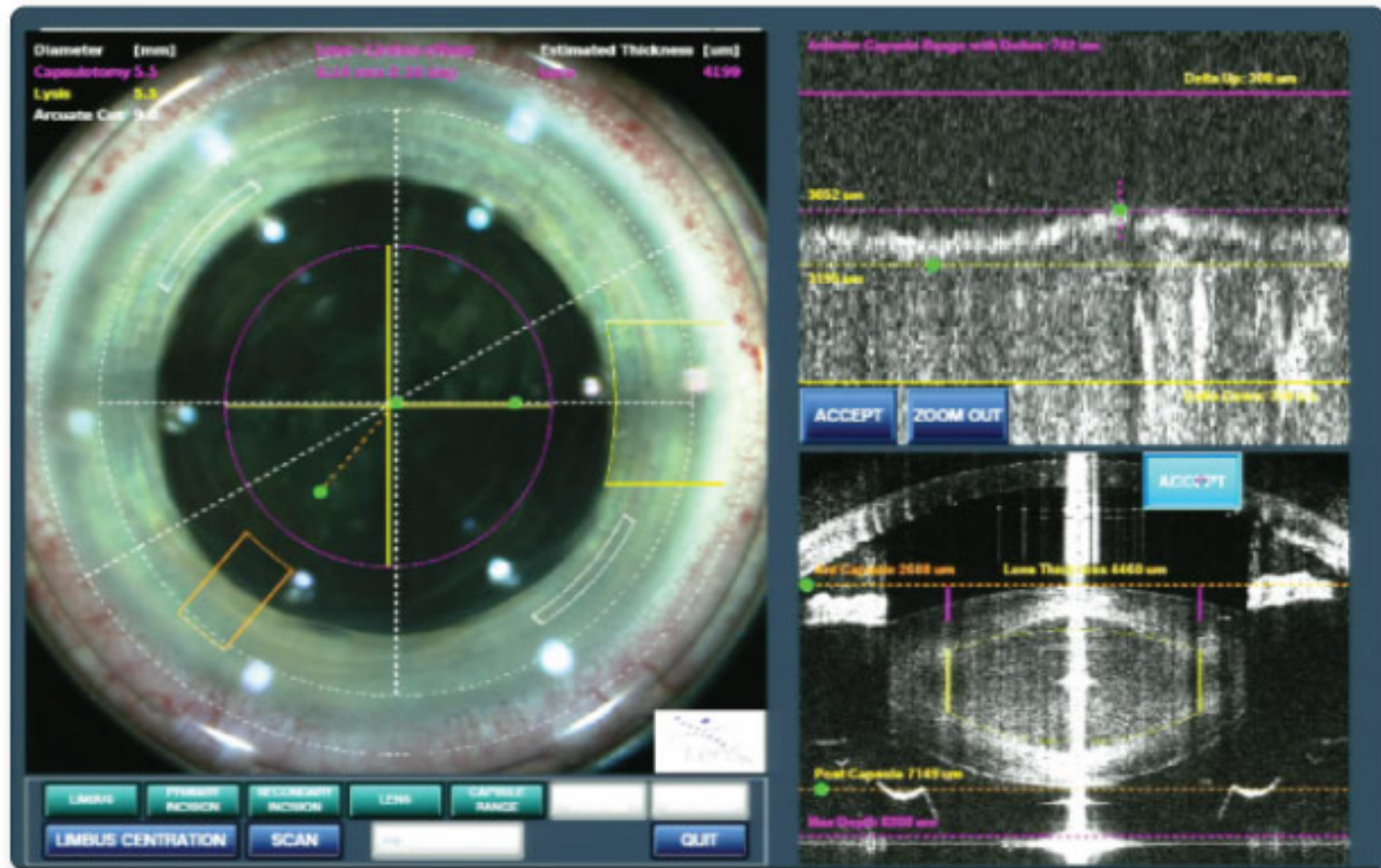
The Basics

- The Femtosecond Laser creates incisions by photodisruption, thousands of very short pulses delivered to a very specific area.
- A computer controlled scanning system delivers each pulse precisely to the correct spot.
- At the laser focus, a phenomenon called Laser-Induced Optical Breakdown (LIOB) forms a plasma bubble.

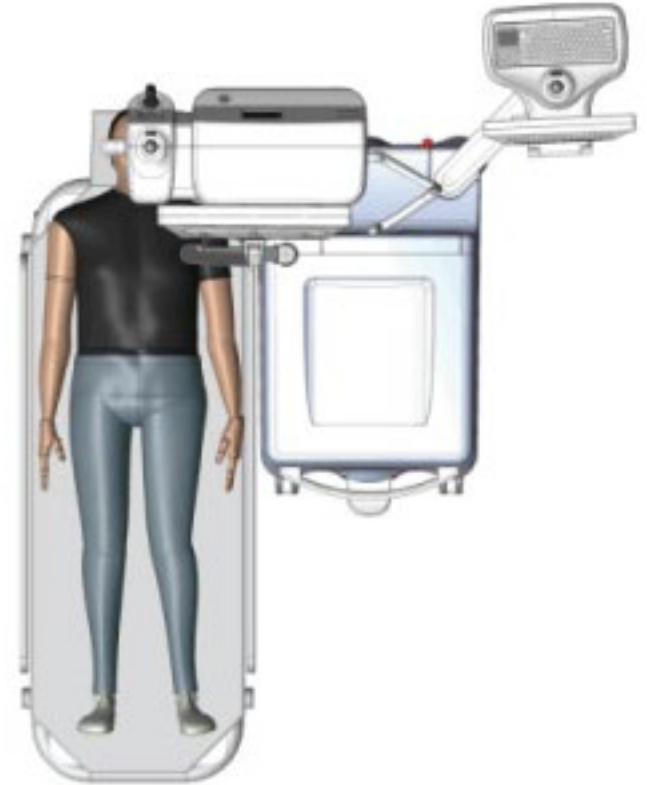
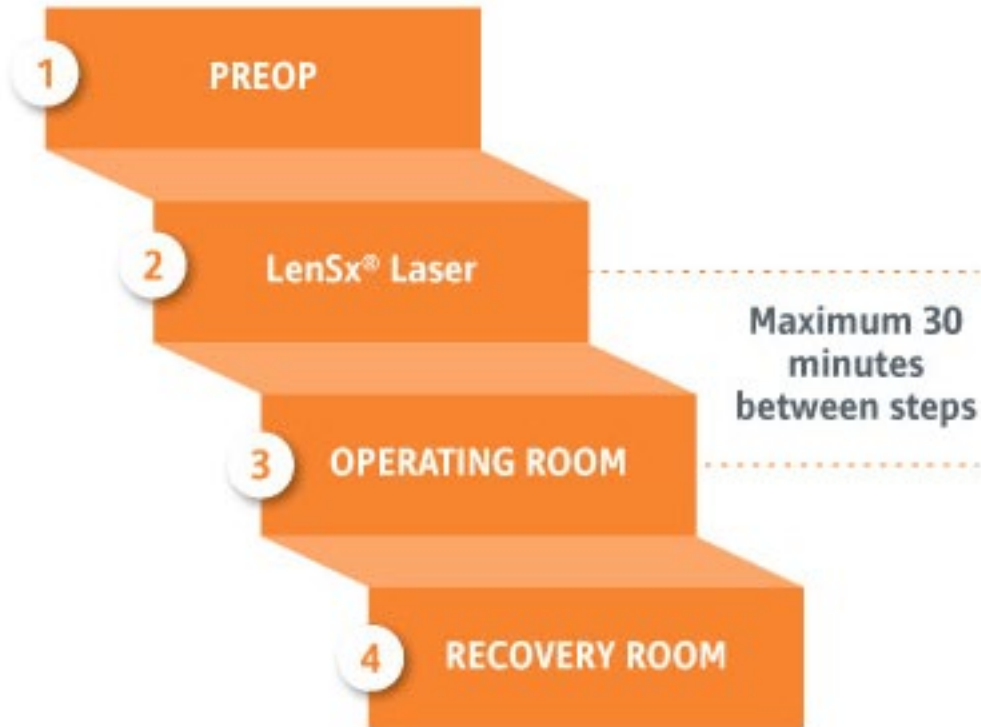
LenSx Laser System



Live Patient Monitor



Typical Patient Flow



The Future is Here

- Laser Refractive Cataract Surgery assists the surgeon in some of the most delicate steps during the cataract procedure.
- Precise mitigation of pre-operative corneal astigmatism is unmatched compared to manual limbal relaxing incisions.



LenSx[®]

LASER

Alcon A Novartis Division © 2016 Novartis 12/16 US-LSX-16-E-3618(1)



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Intraocular Lenses

- Monofocal
- Toric
- Multifocal/EDOF
- “Accommodating”

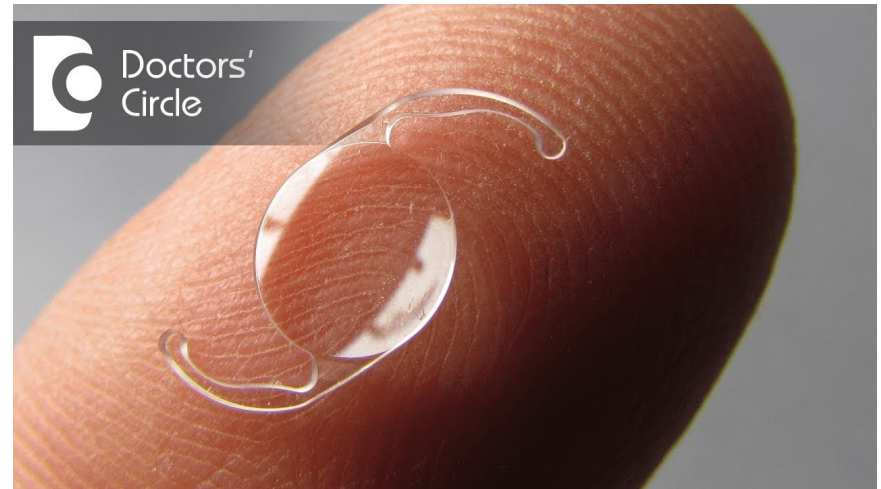


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Intraocular Lenses

Monofocal Lens

- Standard IOL
- Excellent optical clarity
- Refractive options:
 - Distance
 - Near
 - Monovision



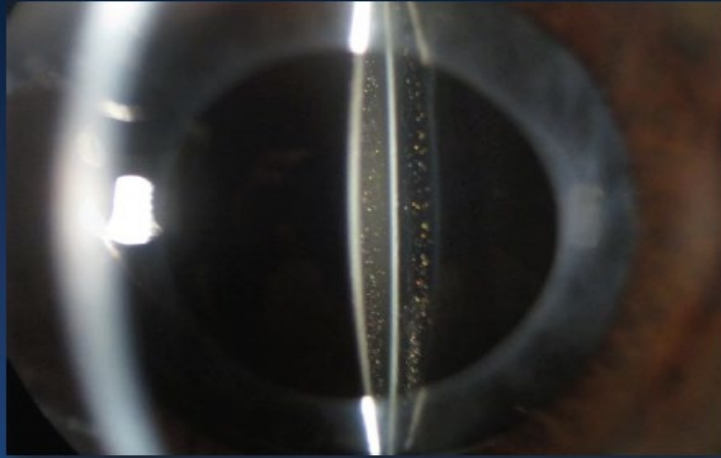
Tecnis IOL

- Low chromatic aberration
- Low surface reflectance
- Full transmission of blue light
- Essentially no “glistenings”



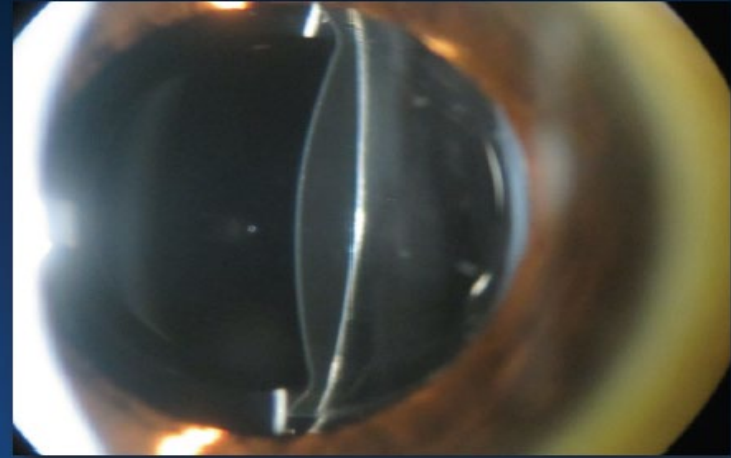
IOL Glistenings

- Surface scatter (roughness) of AcrySof increases with time
 - Surface microglistenings



AcrySof® (SA60AT)

N = 1.55



TECNIS® Acrylic (ZCB00)

N = 1.47



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Toric IOLs

- Correct higher levels of astigmatism
- Excellent rotational stability



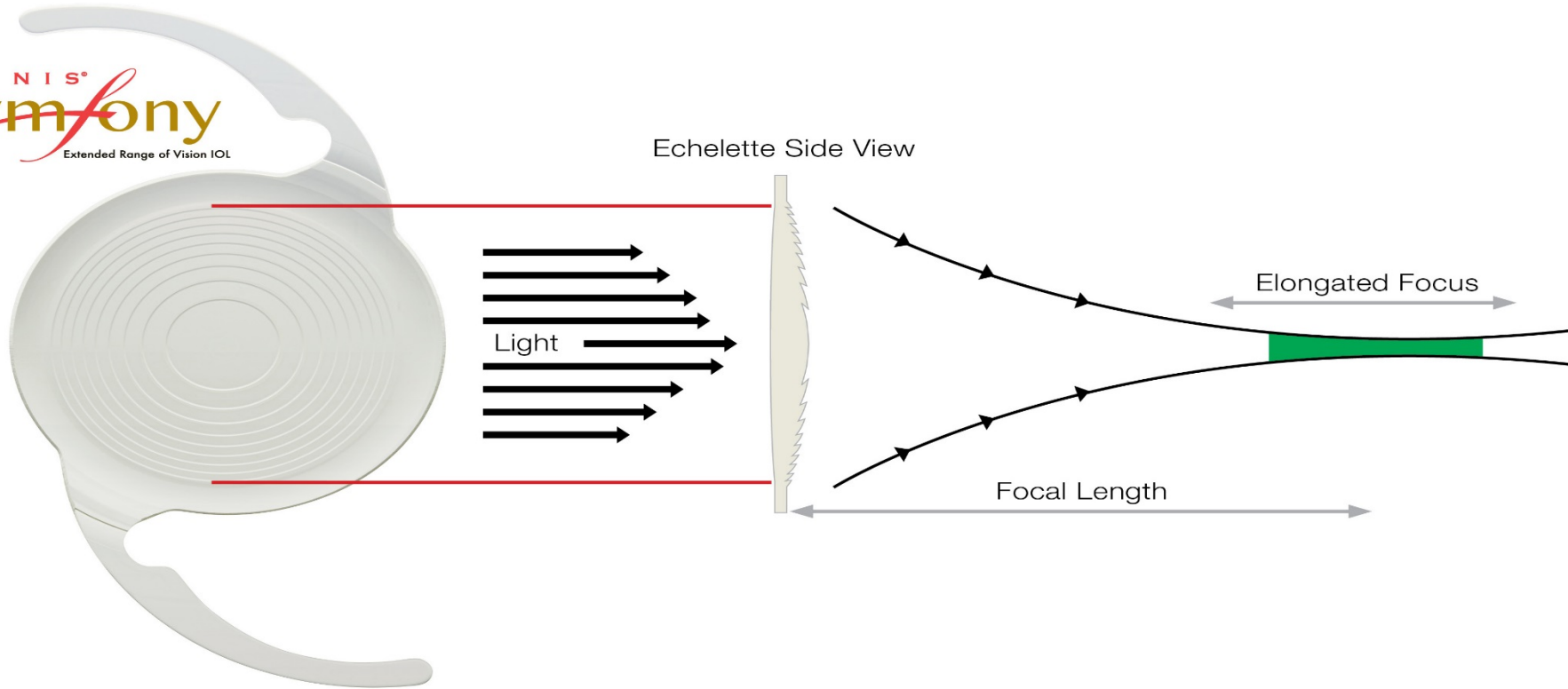
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Multifocal IOLs

- Designed with a series of “visual zones” to provide image quality at all ranges
- Can be associated with halos at night
 - J&J Symphony
 - Alcon ReStor
 - Alcon PanOptix

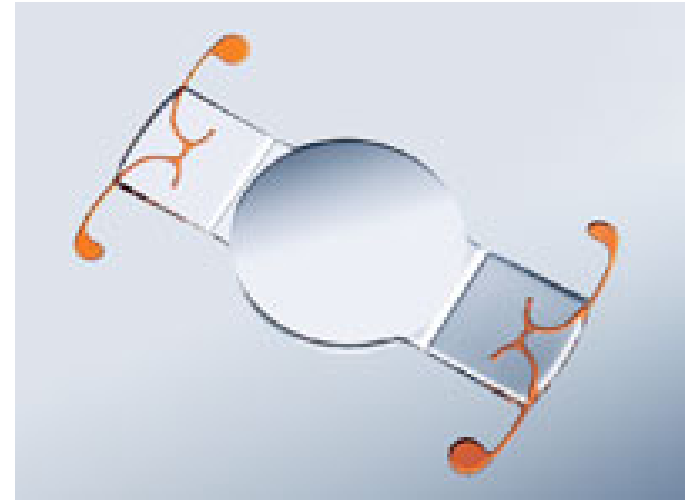
Tecnis Symphony

TECNIS®
Symphony
Extended Range of Vision IOL



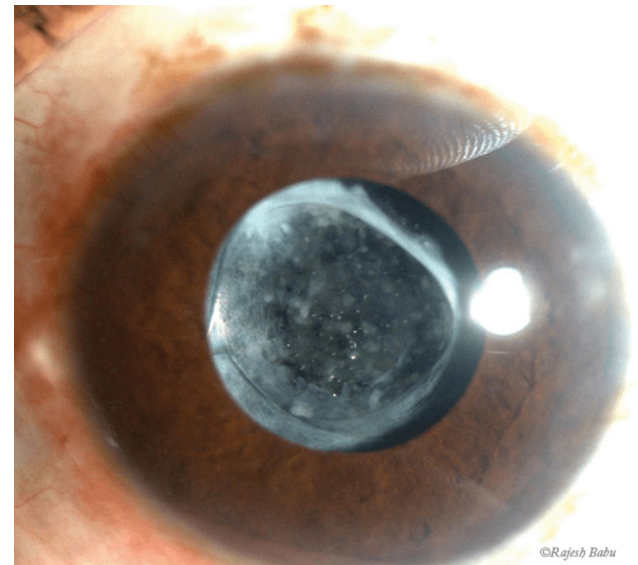
“Accommodating” IOLs

- Bausch & Lomb Crystalens
- Hinged haptic design *may* allow for lens movement when focusing from distance to near
- Provides distance and intermediate vision
- Near vision typically requires reading glasses



Posterior Capsule Opacification

- Fibrosis of the Posterior Capsule
- Caused by Lens Epithelial Cell Migration
- Occurs in 20-25% of patients
- Typically 2 months to 2 years post-op
- Symptoms include blurred vision/glare



Posterior Capsule Opacification

- YAG Laser Capsulotomy
- Safe/effective treatment for PCO
- Covered by Insurance





Thank You!

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