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
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

- Central epithelial cells
- Lens capsule
- Bow region
- Sutures
- Nuclear fiber cells
- Cortical fiber cells
- Germanitive zone
  - Equatorial epithelial cells
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.
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

1. PREOP
2. LenSx® Laser
3. OPERATING ROOM
4. RECOVERY ROOM

Maximum 30 minutes between steps
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.
Intraocular Lenses

• Monofocal
• Toric
• Multifocal/EDOF
• “Accommodating”
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
Toric IOLs

• Correct higher levels of astigmatism

• Excellent rotational stability
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 Symfony
  - Alcon ReStor
  - Alcon PanOptix
Tecnis Symfony
“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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