


Adult Strabismus

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Overview

- Common Types of Strabismus
- Indications for Strabismus Surgery
- Common Procedures
- Psychosocial Benefits



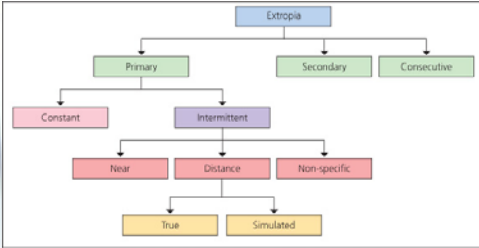


Common Types




Esotropia



Exotropia



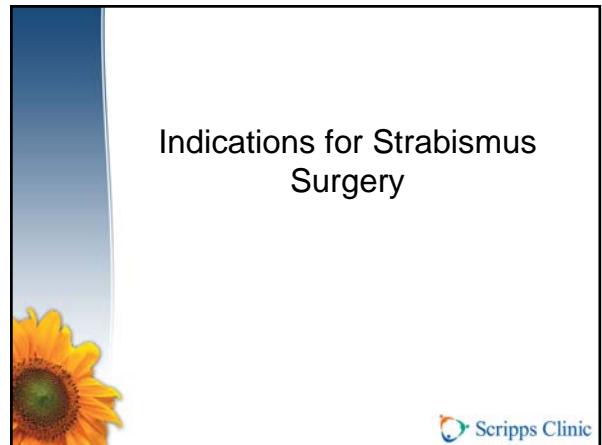
```
graph TD; Exotropia --> Primary; Exotropia --> Secondary; Exotropia --> Consecutive; Primary --> Constant; Primary --> Intermittent; Intermittent --> Near; Intermittent --> Distance; Intermittent --> Non-specific; Distance --> True; Distance --> Simulated;
```



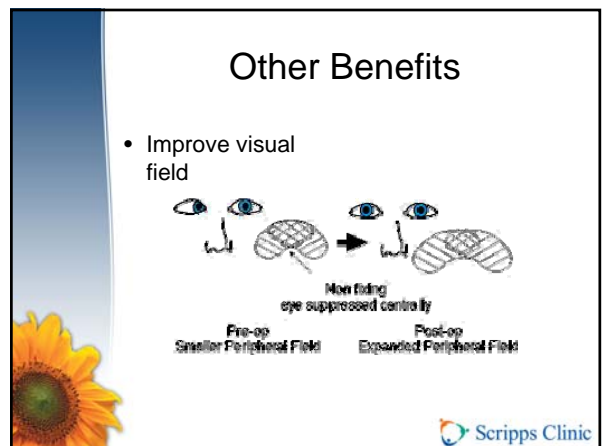


- There are many different presentations of strabismus
 - Most can be corrected surgically
- 

Indications for Strabismus Surgery



- ### Classically Taught Benefits of Strabismus Surgery
- Develop binocular vision
 - Restore binocular vision
 - Eliminate diplopia
 - Eliminate torticollis
- 



Insurance accepted indications for strabismus surgery

- Diplopia
- Asthenopia (eye strain)
- Any misalignment of the eyes that cannot be corrected non-surgically – this is where some prodding is occasionally required




Surgical Procedures

- Weaken (recession)
- Strengthen (resection or tuck)
- Alter vector forces (transposition)








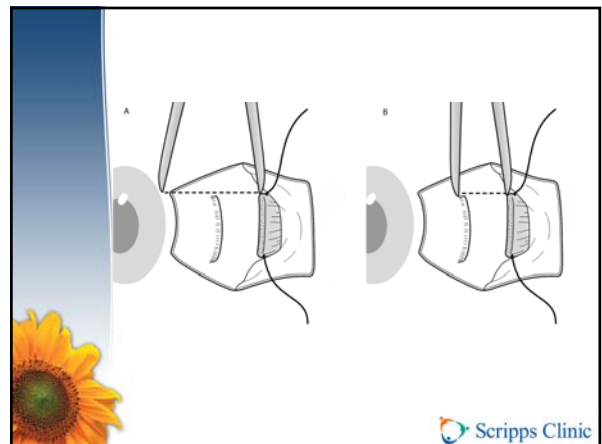
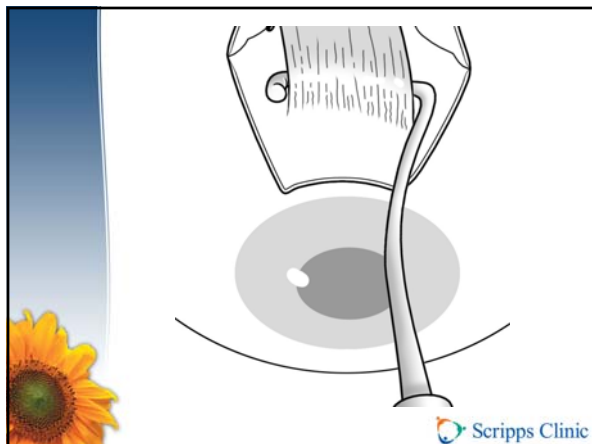
Table 18.1 Actions of the extraocular muscles

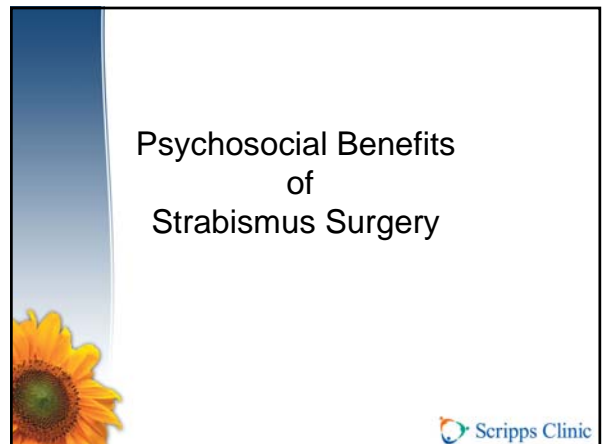
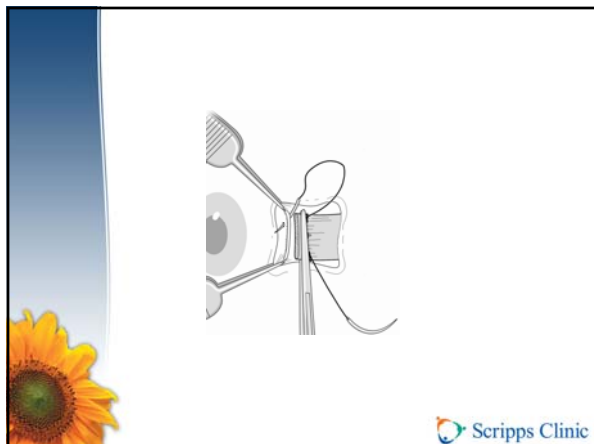
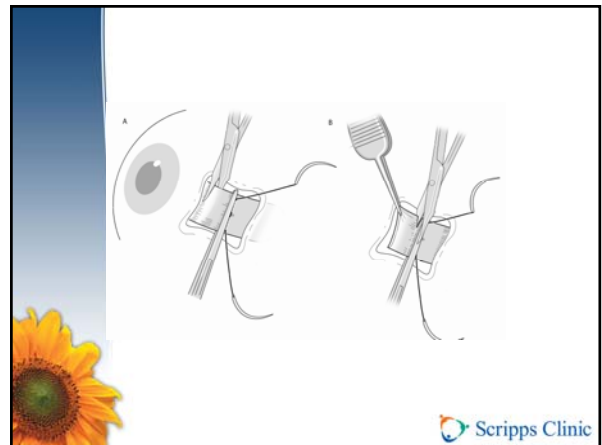
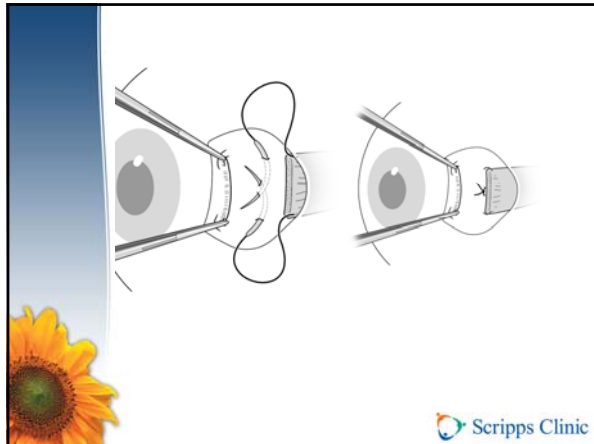
Muscle	Primary action	Secondary action	Tertiary action
Medial rectus	Adduction		
Lateral rectus	Abduction		
Superior rectus	Elevation	Adduction	Intorsion
Inferior rectus	Depression	Adduction	Extorsion
Superior oblique	Depression	Intorsion	Abduction
Inferior oblique	Elevation	Extorsion	Abduction



Recession (weakening)









Patients benefit from strabismus surgery even if there is no hope of providing improved binocular vision or visual field



Psychosocial aspects of strabismus study.

Satterfield D, Keltner JL, Morrison TL
Arch Ophthalmol 1993; 111:1100-5.

CONCLUSIONS: Psychosocial difficulties are a problem for teenagers and adults. Correction of strabismus in the older teenager or adult may offer them improvement in psychosocial functioning.





Strabismus surgery is NEVER “cosmetic”





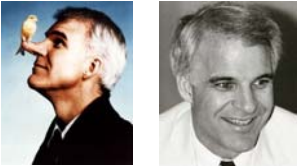
cos-met-ic _ - [Pronunciation Key](#) (k z-m t k)
n.
1. A preparation, such as powder or a skin cream, designed to beautify the body by direct application.

adj.
1. Serving to beautify the body, especially the face and hair.

re-con-struct-ive _ - [Pronunciation Key](#) (r k -str k t v)
adj.
1. Relating to or characterized by reconstruction.
2. Serving to rebuild, restore, or correct the appearance and function of defective, damaged, or misshaped body structures or parts:
reconstructive surgery.





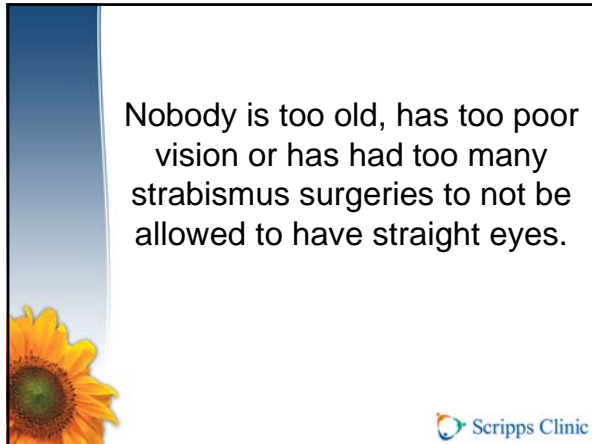
Surgery to provide normal anatomy or physiology is **RECONSTRUCTIVE**.
Cosmetic surgery makes an appearance more “beautiful”




While there are many “normal” appearances for human facial features, body types, etc., there is only one normal alignment status for human eyes

Orthotropia (straight)





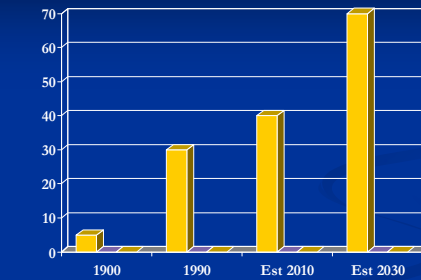
Nobody is too old, has too poor vision or has had too many strabismus surgeries to not be allowed to have straight eyes.



Refractive IOL in Cataract Surgery

Jose Ivan Quiceno
MD
Scripps Clinic Medical Group

US Population age 65 and over



Do not underestimate the importance of
good intermediate vision

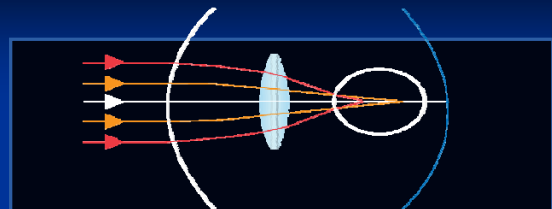


Custom Cataract Surgery

- Aspheric IOL
- Toric IOL
- Multifocal IOL
- Accommodative IOL

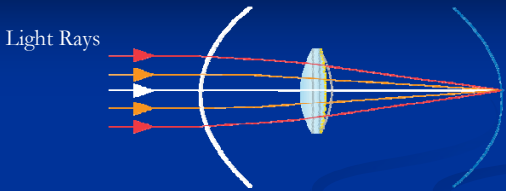
Aspheric IOL

The Problem – Spherical Optics



- Spherical aberration occurs when light rays are over-refracted at the periphery of a lens system, resulting in a region of defocused light which can decrease image quality.

The Solution – Aspheric Optics



Light Rays

- Aspheric optics align the light rays to compensate for positive corneal spherical aberration, resulting in enhanced image quality.

Ocular spherical aberration

- Anterior corneal positive SA is +0.275
- Young (19y/o) crystalline lens has a negative SA -0.275
- Older eyes crystalline lens increases + SA
- Aging (72y/o) SA of the crystalline lens is +0.15

Design Objective

- Design considerations for the IOL:
 - Induce negative Spherical Aberrations with the lens to compensate for positive corneal Spherical Aberrations

Correction of Spherical Aberrations

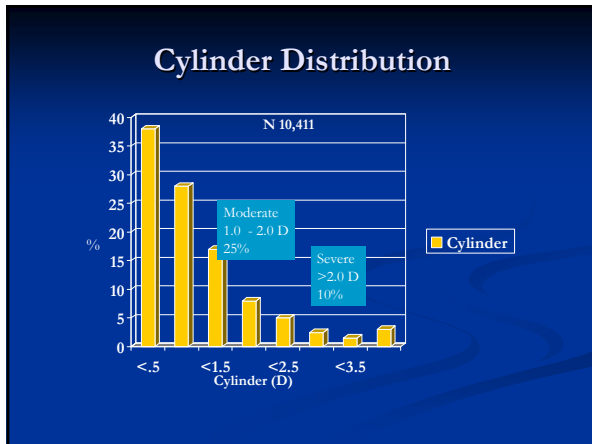
- SN60WF: -0.200 negative spherical aberration
- ZA9003: -0.275 negative spherical aberration
- LI61AO: Zero spherical aberration

Toric IOL

Quality of vision is deteriorated considerably by astigmatism.



- No astigmatism
- 1.0 D astigmatism
- 2.0 D astigmatism



Treatment Options for Astigmatism

- **Glasses or Contacts**
 - Patient dependent
 - Cosmetic / Lifestyle issues
- **Incisions**
 - Lack precision
 - Unpredictable outcomes
 - Increased risk
 - Regression
 - Limited treatment range

Treatment Options for Astigmatism

Ideal Treatment

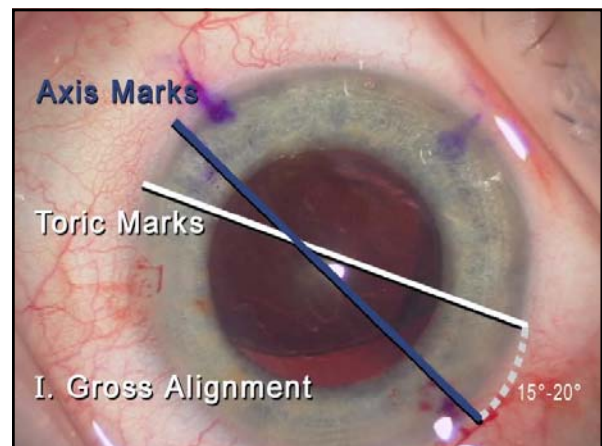
- Precise and Accurate
- Predictable Outcomes
- Permanent
- Safe and Convenient

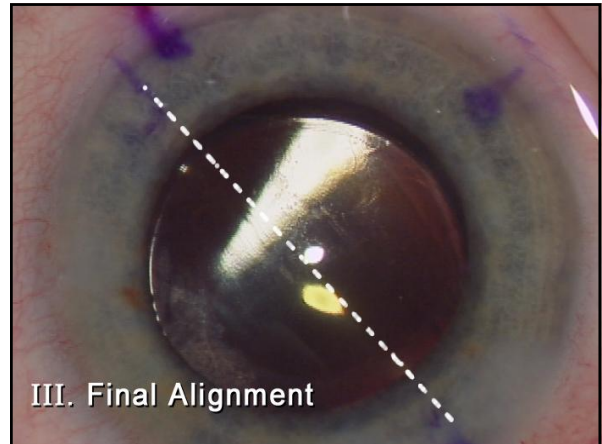
Toric IOL Design Characteristics

- **Design**
 - Posterior toricity
 - Toric axis marks
 - AcrySof® Natural Single-Piece platform
- **Dimensions**
 - Overall length: 13.0 mm
 - Optic diameter: 6.0 mm
- **Delivery**
 - Monarch II or III Injector
 - C Cartridge

Cylinder Powers SN60T3-T5

Toric IOL Model	Cylinder Power IOL plane	Cylinder Power Corneal Plane
SN60T3	1.50	1.03
SN60T4	2.25	1.55
SN60T5	3.00	2.06





IOL Alignment

3 Step Procedure:

- I. Gross alignment
- II. Removal of OVD
- III. Final alignment

Implanted IOL

Intraocular lenses for Presbyopia

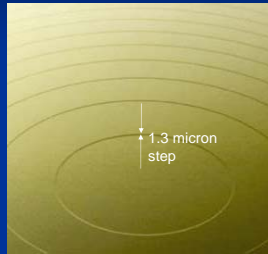
Lens Comparisons

Diffractive apodized IOL

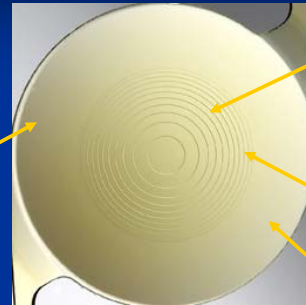
<ul style="list-style-type: none"> ■ SN6AD3 ■ Add Power: +4.0 D ■ Spectacle Plane: +3.2 D ■ Range: +10.0 D to +34.0 D ■ A-Constant: 118.9 	<ul style="list-style-type: none"> ■ SN6AD1 ■ Add Power: +3.0 D ■ Spectacle Plane: +2.5 D ■ Range: +10.0 D to +34.0 D ■ A-Constant: 118.9
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Apodization

- Gradual reduction or blending of the diffractive step heights.
- Optimally manages light energy delivered to the retina as it distributes the appropriate amount of light to near and distant focal points, regardless of the lighting situation.
- Designed to improve image quality

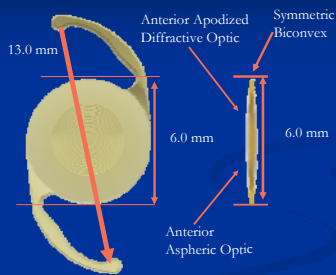


Anatomy of the Apodized Diffractive Technology



Central 3.6 mm apodized diffractive structure
 Step heights decrease peripherally from 1.3 – 0.2 microns
 A +4.0 D at lens plane equaling +3.2 at spectacle plane
 Outer refractive zone

Anatomy of the Apodized Diffractive Technology



SN6AD1 Design Characteristics

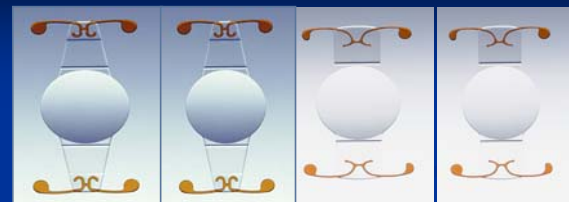
- Utilizes existing IQ ReSTOR® IOL +4.0 D platform with identical asphericity, energy distribution profile, and shape factor
- Modified add power from +4.0 D to +3.0 D
 - 9 diffractive steps vs. 12 diffractive steps
 - Slightly wider step spacing to modify the add power

Accommodative Lens

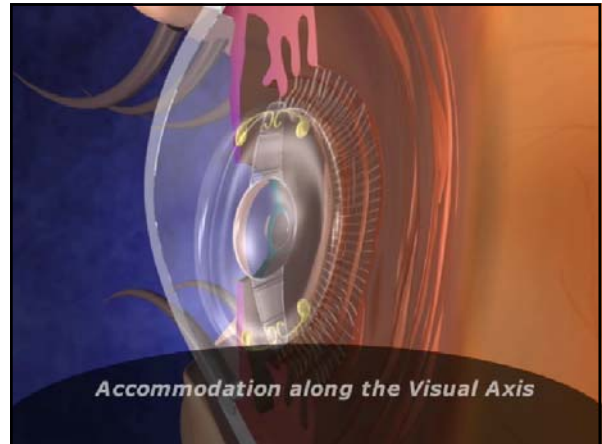
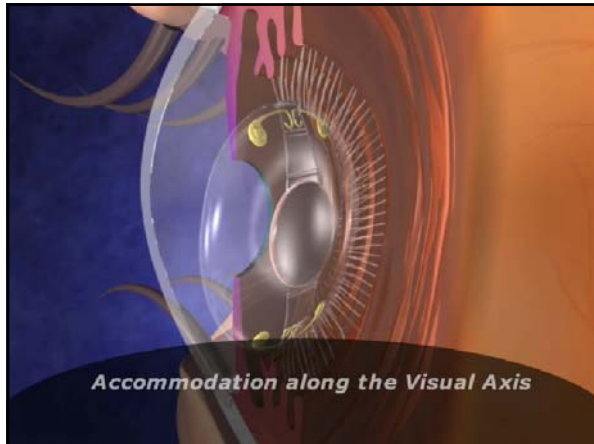
- “accommodative” lens technology proved to be safe & effective by the Food & Drug Administration
- Uses the natural focusing ability of the eye.
- Provides a single focal point throughout a full range of vision from far to near & all images in between.



Four Generations of Accommodative IOL



- | | | | |
|--|---|---|---|
| <ul style="list-style-type: none"> ■ 1st Generation
FDA approved in 2003
■ The AT45 | <ul style="list-style-type: none"> ■ 2nd Generation
Released Aug. 2005
The AT45-SE | <ul style="list-style-type: none"> ■ 3rd Generation
Released Nov. 2006
The AT50-SE | <ul style="list-style-type: none"> ■ 4th Generation
Released July 2008
■ HD 500-SE |
|--|---|---|---|



Treatment of Presbyopia after Cataract Surgery

- Monovision (aspheric IOL)
- Blended vision (aspheric IOL)
- Monovision with Toric IOL
- Diffractive Apodized Multifocal
- Refractive multifocal
- Pseudo accommodative IOL

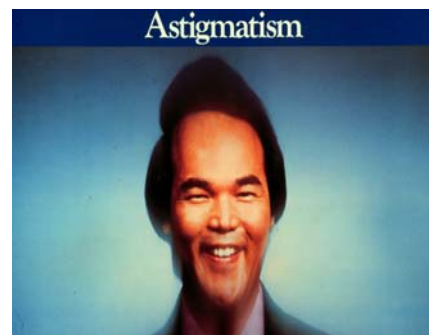
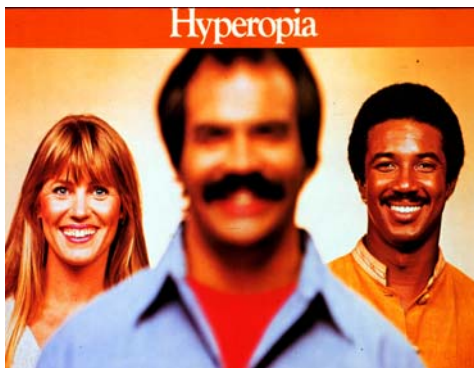
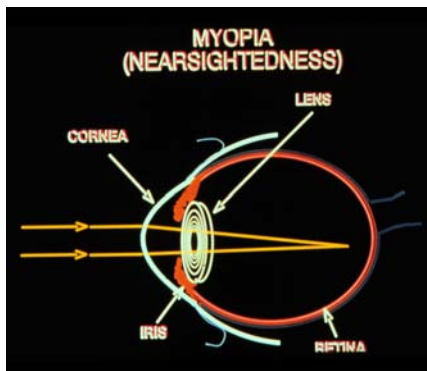
Summary

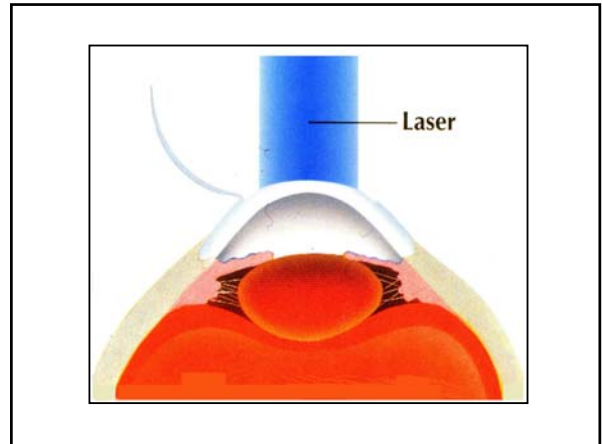
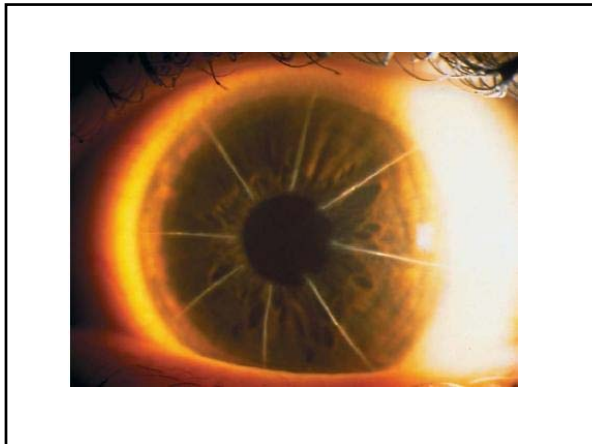
- Refractive intraocular lens is a good option for treatment of presbyopia after cataract surgery.
- Patient selection is key.
- Avoid patients with pre-existing eye disease

Division of Ophthalmology

- Cataract
- Retina
- Cornea
- Oculoplastics
- Pediatric Ophthalmology
- Torrey Pines
- Rancho Bernardo
- Carmel Valley
- Encinitas
- Mission Valley
- Rancho San Diego

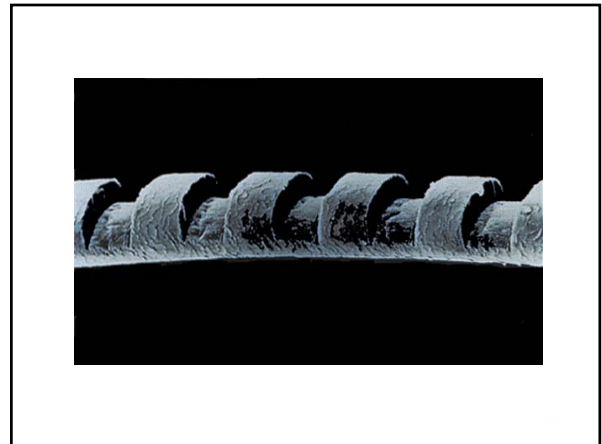
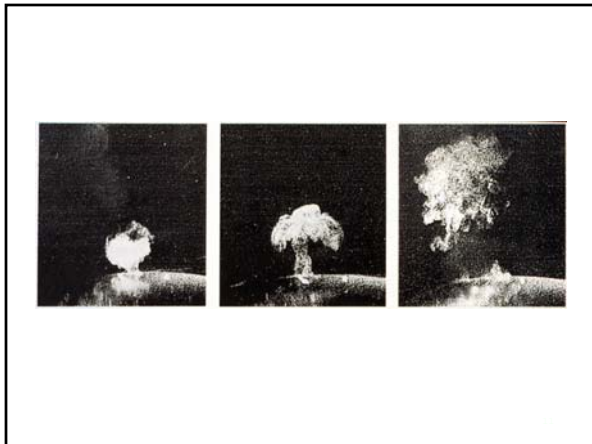
Laser Vision Correction at Scripps Clinic





Excimer Laser Parameters

Gas:	Argon / Fluoride
Wavelength:	193 n
Duration:	18 nsec
Repetition Rate:	10/sec
Ablation Rate:	0.25 μ/pulse





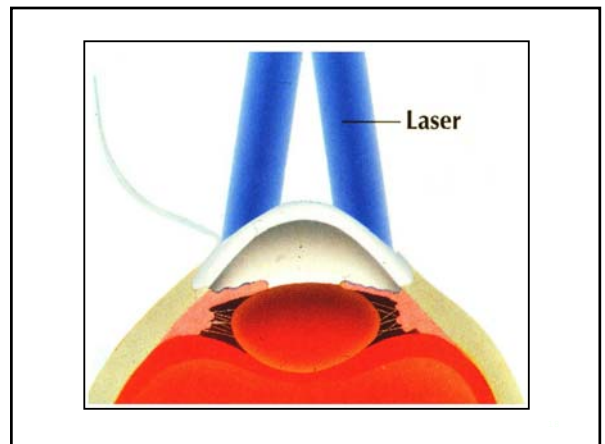
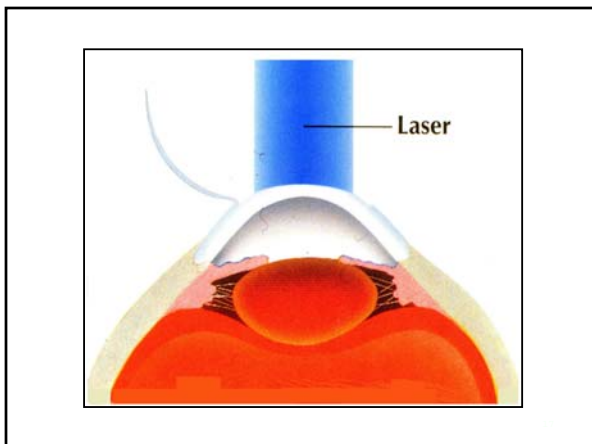
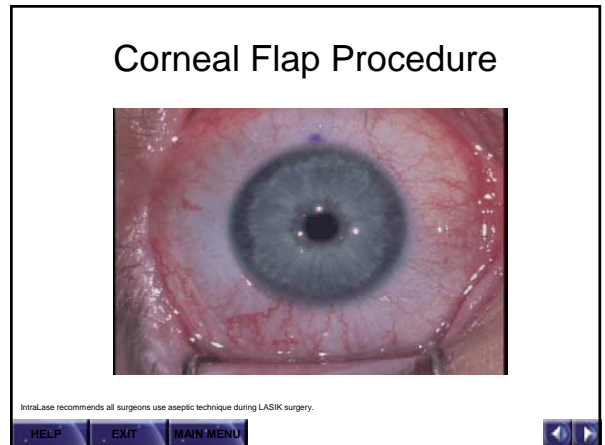
IntraLase

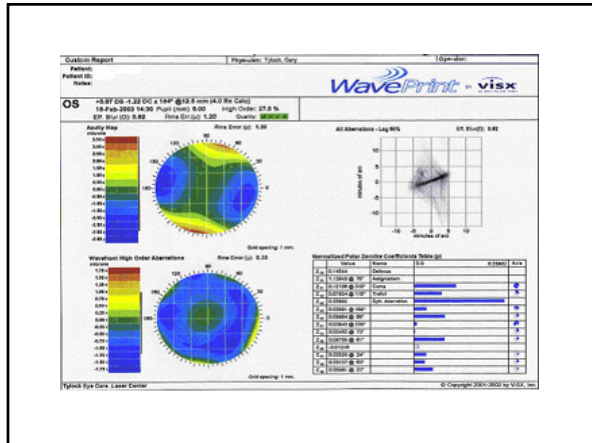
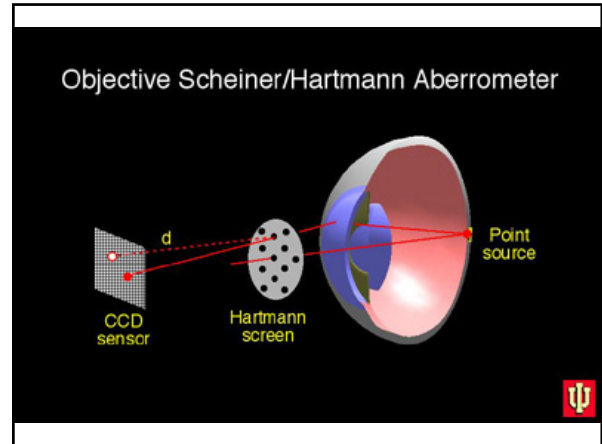
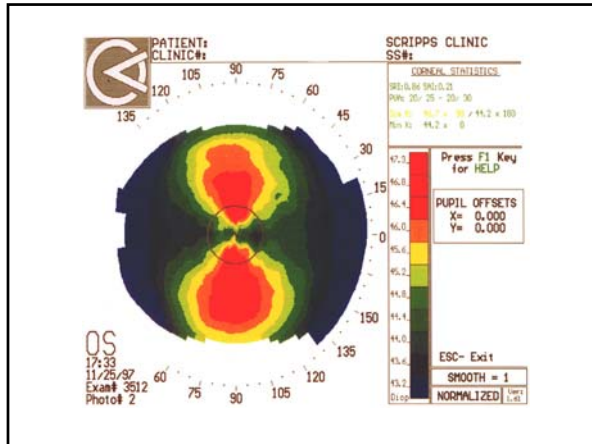
Gas: Neodymium

Wavelength: 1053 nm

Speed: 60 kHz

Duration: 600-800 femtoseconds (10^{-15} sec)





- ### Results
- 5046 cases
 - 43 SCMG doctors
 - 85% 20/20 or better at 1 week
 - 99% 20/40 or better at 1 week
 - Enhancement rate = 8%
 - Complications: dry eye, haloes
 - No infections
 - No loss of best corrected vision

- ### Next Frontier
- Presbyopia
 - Multifocal corrections
 - Keratoconus

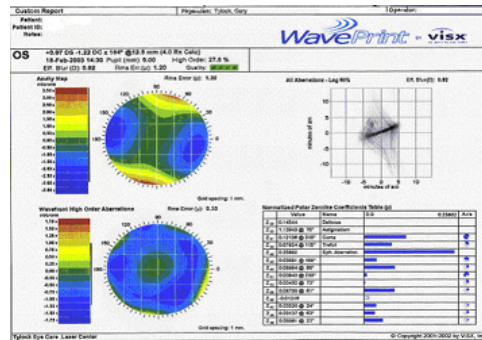
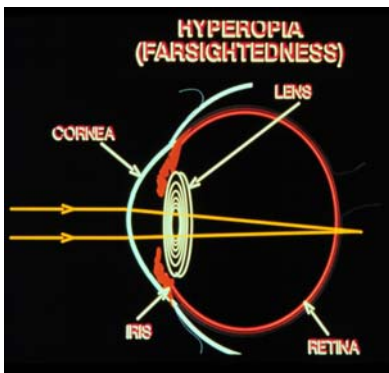
Thank You

Loading Deck

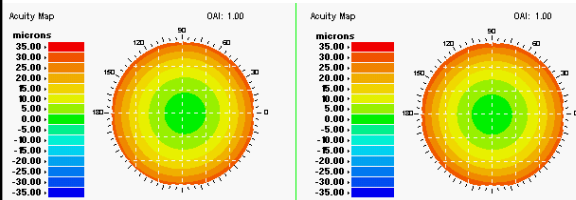
- Mounts & locks the applanation cone to the laser



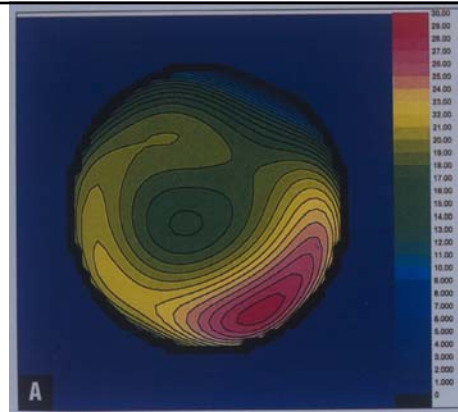
HELP EXIT MAIN MENU

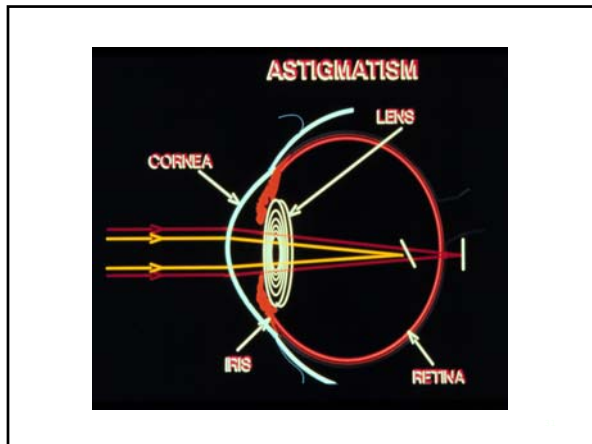


WavePrint™ Acuity Map



Acuity Maps display ALL the optical aberrations of the eye. This describes what happens to light as it travels through the eye.





LESSONS FROM CATARACT SURGERY IN FIJI

K. Victor Zablit M.D.
Scripps Clinic
January 2009



WHY FIJI

- Need
- Contacts
- Interest

Need

- Population of over 1 million people
- One public hospital in the capital provides cataract surgery
- Cost of private institution is prohibitive

Barriers Which Keep Patients from Getting Cataract Surgery in Developing Countries

- Cost of surgery
- Distance to hospital
- Cultural and social constraints
- Awareness of surgery or trust in outcome
- Visual needs differ

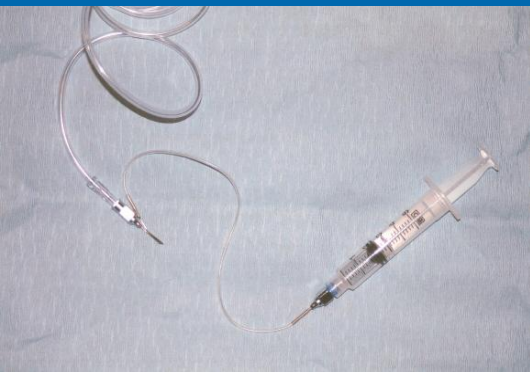
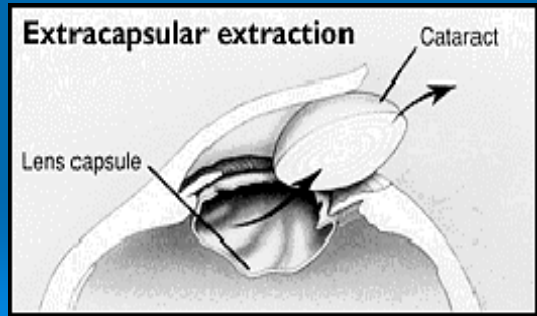
SPONSOR

- Scripps Health-Fiji Alliance Program
- Loloma Foundation

Simcoe Manual I/A

- Same one used for all cases
- K 50 with each case
- One BSS bottle 500cc per day
- Same IV tubing per day

ECCE



Packing

- 22 boxes
- Supplies for Fifty cases
- 50 IOL (5 A/C)
- 24 BSS 500cc bottles
- Equipment

ECCE with IOL

- movie

Change of Plans

- "Worst storm in 50 years", flooded the western area .
- The main hospital on the eastern side offered to host us.



Location

- Colonial War Hospital: 450 bed hospital and the main referral hospital for the country, and the South Pacific.
- Suva: the capital.

CWH



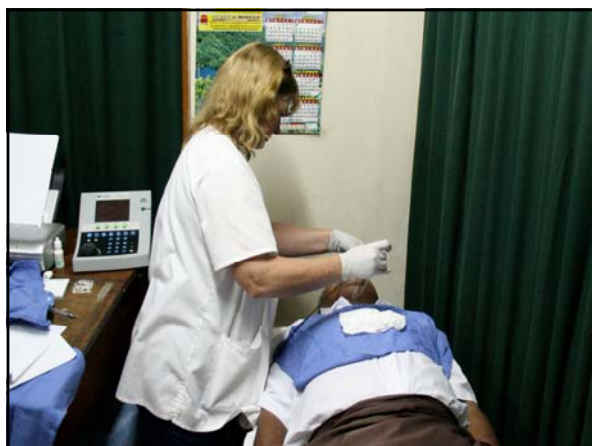
Clinic

- 60 patients seen: most waiting for surgery by local ophthalmologist.
 - Acuity: Light Perception
Hand Motion
- Most patients 50-60 years old



Pre-Op Evaluation

- History
- Blood pressure measurement
- Auscultation of heart and lungs
- Scheduling
- A scan
- Instructions re: surgery



Before Surgery

- Dilated:
 - Neo 2.5
 - Cyclo 1%
 - Quinolone
 - NSAID
- Block:
 - 3.5cc mix Xylocaine 2% epi and Marcaine .75
- Prep:
 - Betadine

Anesthesia

- IV Cath
- Monitors for BP ECG
- Oximeter
- Few: Propofol 40-60mg

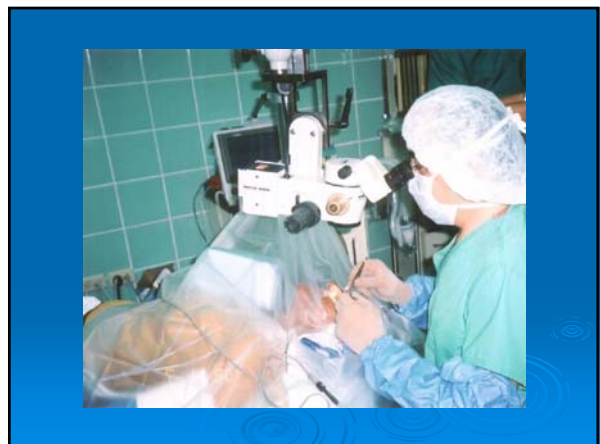
Local Anesthesia

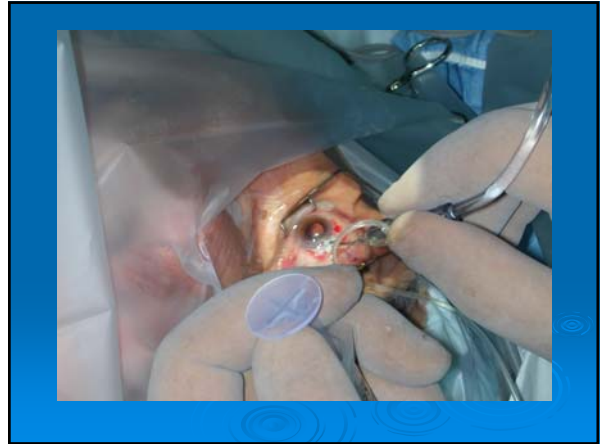
- Retrobulbar Block using 3.5 cc of 50/50 marcaine 0.75% and Lidocaine 2%
- The first day patients had some IV sedation .
- No sedation the following days.

Operations

- Aseptic technique
- Betadine scrub
- Gowns vs. sleeves
- 4-0 silk, 10mm incision, 6mm (<45y),
8-0 vicryl safety suture
- Viscoelastic, 10-0 nylon closure
- Ancef
- Patch with Zymar/Tobradex ointment

Patients



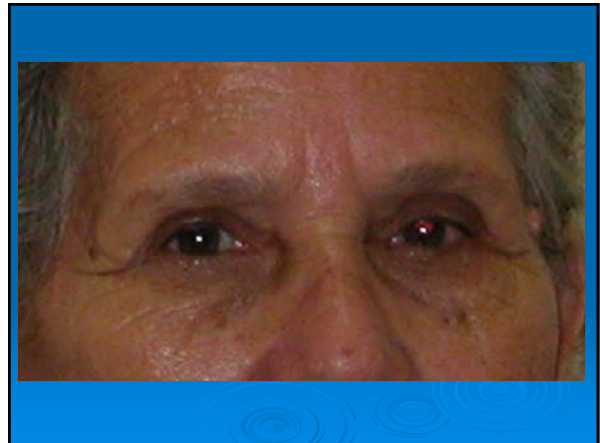


Immediate Post-Op

- Patch 24 hours
- Acetaminophen 500mg four tablets for pain prn
- Diamox 250mg tid for 3 days
- Post-Op instructions in English, Fijian, and Indian
- Appointment next day

First Day Post-Op

- Acuity
- IOP
- SLE exam
- Kit:
 - Quinolone/Prednisolone Acetate qid
 - Shield at night
 - Protective sunglasses
- Reviewed instructions with family
- Follow up one week with eye clinic



Boxes to bring back



Results

- 35 cases done.
- 1 Patient required vitrectomy
- Most in the 20/200 range, first day.
- Best 20/40, Worst CF
- 1 patient LP (retinal detachment)
- 1 Hyphema
- No Endophthalmitis

Lessons

- Profoundly satisfying
- Start working on supplies and donations
 > 4 months prior
- Educating the locals? Residency program at
 South Pacific University
- Review AB use
- ? 2 teams using the equipment : 2 shifts, or
 consecutive trips
- Give more consideration to the weather