

Challenges in Cataract Surgery Co-Management

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Disclosures

- **Speaker / Consultant: Allergan Pharmaceuticals**
- **Speaker: Bausch & Lomb Pharmaceuticals**
- **Speaker: Shire Pharmaceuticals**

Today

- **Technological Advances in IOL's**
- **Co-Management by Optometry**
- **Intra-Operative Challenges**

Opportunities

- **78 Million Americans (babyboomers) Started Enrolling in Medicare Beginning in 2011**
- **Technology Adopters**
- **Care is Provided in Our Practices**
- **Our Role is to Educate and Guide**

Growing Demographics

- 1.8M cataract surgeries performed yearly
- >60 y.o. growing 3.4% per year
- By 2020: 15% of 60-64 y.o. will need cataract sx
- By 2020: 75% >80 y.o. will need cataract sx
- By 2020: 30.1M Americans will have cataracts

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Ophthalmology Projections

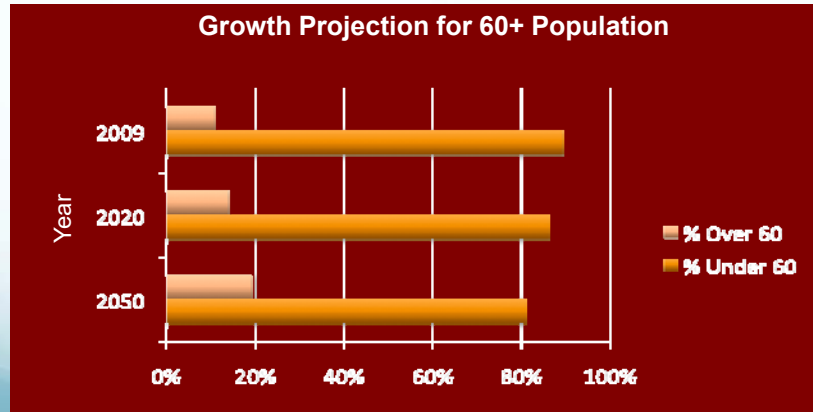
- Next to geriatrics, highest percentage of patients in Medicare age group
- Largest provider shortage of any surgical subspecialty by 2020
- **Need** for ophthalmologists has increased by 18.1% from '08
- **Actual** number of ophthalmologists has grown by only 0.67%.

Number of Ophthalmologists by Year

Number of Ophthalmologists	2008	2015
Beginning	15,000	15,101
Completing Residency	420	482
Retirements (avg. age 69.4)	320	425
Ending	15,100	15,158

*Aging Population**

- Average annual increase in 60 year old or older population is 3.4%



* Marketscope, *The Global IOL Market*, June 2014

Why Become Involved?

- 1.8 to 2.7 Million Cataract Surgeries Year
- HCFA Allowing Surgeons to Bill for Non-Covered Services
- Progressive vs Bifocal
- Increased Fees Possible for Co-Management of Non-Covered Procedures
- Intellectual Integrity

Safe Harbors and Optometry

- **OIG 1999 Ruling**
- **Declined to grant Safe Harbor**
- **Global Fee – Essentially Fee Splitting**
- **OIG Evaluate on Case by Case Basis**
- **Spawned Joint Position Paper**

Joint Position Paper

2000

- **American Academy of Ophthalmology**
- **American Society of Cataract & Refractive Surgeons**

Joint Position Paper

- **Co-Management is Illegal and Unethical in Most Cases**
- **May Not be Routine**
- **May Not be Coerced or Induced**

What's It All About

- **Cataract/Refractive Surgery Boom**
- **Increasing Amount of Premium IOL Surgery**
- **Increasing Amount of Co-Management**

Office of Inspector General Guidelines

- **Patient' s Choice – Informed Consent**
- **Medically Appropriate**
- **Case by Case Determination**
- **Documentation of Transfer**
- **Agreement to Return if Necessary**
- **Proper Billing**
 - **66984-55 + number of days p.o. care was given**

Informed Consent

- **Names and Locations of Providers**
- **Training of Providers**
- **Regulatory Agencies**

Informed Consent

- **Define Post-Op Period**
- **Financial Arrangements**
- **Agreement to Return if Problems**
- **Signatures of Providers and Patient**

Transfer of Care

- **Written Transfer of Care**
- **Takes Place on Date of First Visit**
- **Not Date of Last Visit**

Transfer of Care

- **Co-Management**
- **Written Follow-Up Reports**
- **Complete Files in Both Locations**

Keeping Co-Management Legal

- **Case by Case Basis**
- **Patient Safety**
- **Medically Appropriate**
- **Document Thoroughly**
- **Bill Appropriately**

Making it Work

- **Communicate With Patient**
- **Create Value**
- **Communicate With Surgeon**
- **All About the Patient**
- **Future Co-Management Potential**

Co-Management Opportunities

- **Can Optometrist Receive Payment for Increase in Lens Fee?**
- **Can Non-Covered Services Be Co-Managed?**
- **Advance Beneficiary Notice**
- **How is Fee Determined?**

<https://oig.hhs.gov/fraud/docs/advisoryopinions/2011/AdvOpn11-14.pdf>
http://www.cms.gov/Outreach-and-Education/Medicare-Learning-NetworkMLN/MLNProducts/downloads/abn_booklet_icn00626oig.hhs.gov/6.pdf

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Non-Covered Services

- **Refraction**
- Contact Lens Trial
- Wave-front Testing
- Topography
- Pachymetry
- Keratoplasty for Enhancement
- IOL Exchange

Non-Covered Services Payment

- Payment for non-covered services must be in 3 separate checks
 - ASC
 - Surgeon
 - Optometrist

Non-Covered Services Payment

- **Notice of Exclusion from Medicare Benefit (NEMB)**
- **Both Surgeon and Optometrist Should Obtain**

<http://www.corcoranccg.com/wp-content/uploads/2013/02/NEMB-010108.pdf>

Non-Covered Services Payment

- **Determine What You Will Provide**
- **Avoid Direct Payment From Surgeon**

Non-Covered Services Payment

- **Toric Packages**
 - LRI
 - Toric IOL
 - LVC

IOL Technology

- **Wave-front**
- **Accommodating**
- **Multi-Focal**
- **Toric**

Refractive Cataract Surgery

- Technological Generation
- Expectation is Plano Sphere
- Distance and Near Desired

What is 20/20?

- All of the following represent 20/20 vision (Spherical Aberration)

20/20

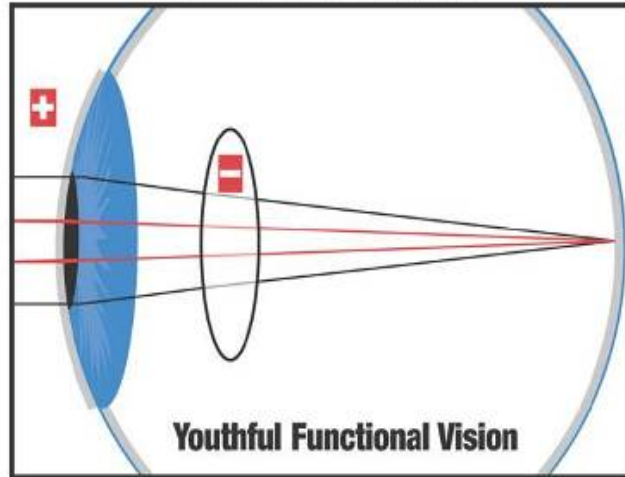
20/20

20/20

20/20

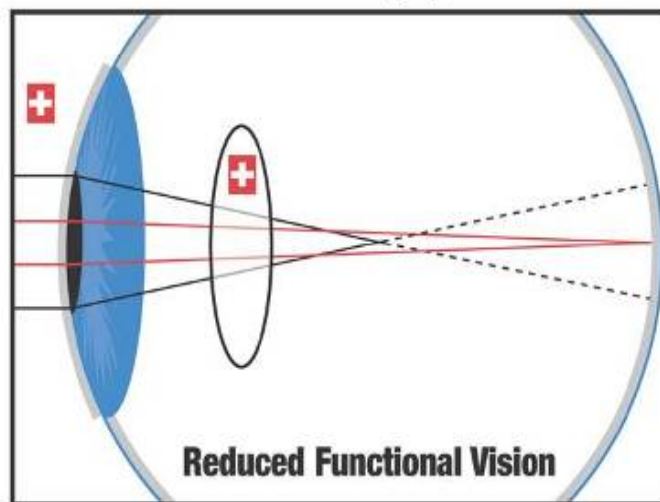
Young Lens

Aberration in the Young Lens



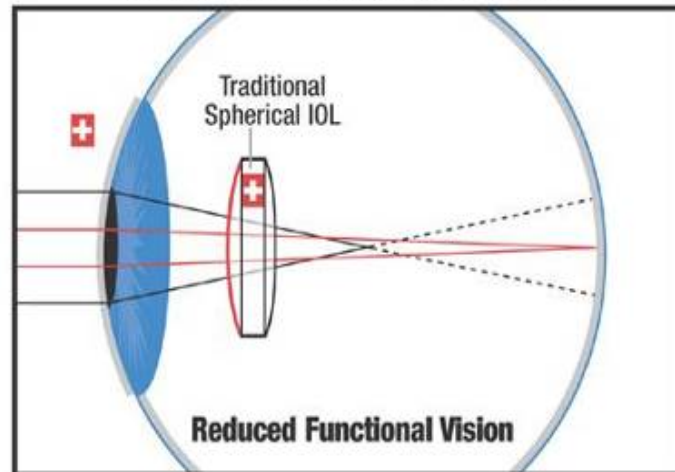
Ageing Lens

Aberration in the Ageing Lens

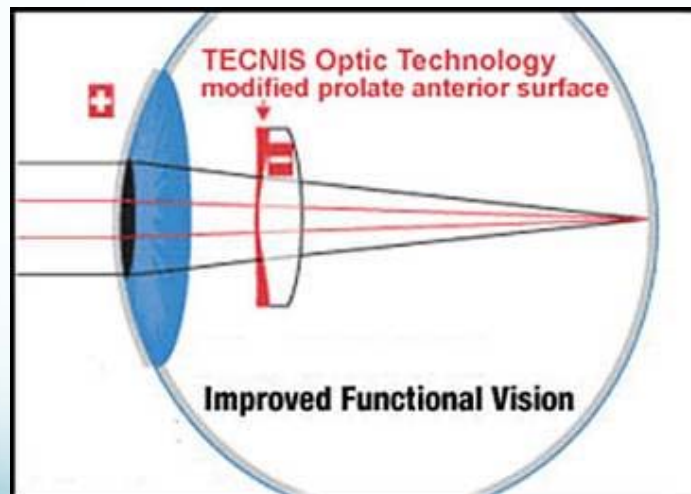


Spherical IOL's

Aberration in Traditional Spherical IOLs



Tecnis IOL

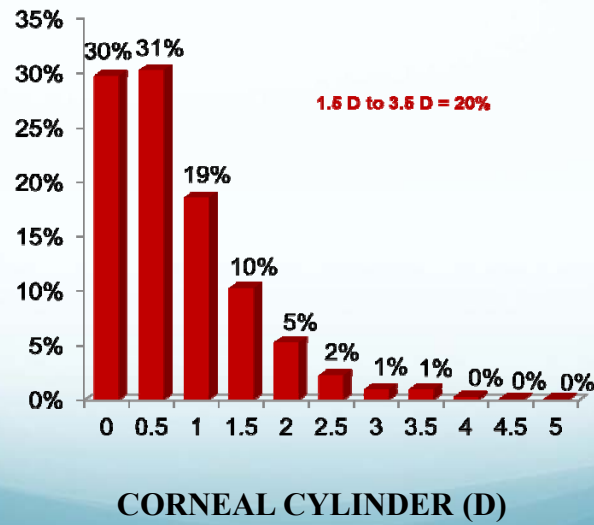


Available Aspheric IOL's

- **AMO Tecnis**
- **Alcon AcrySof**
- **B & L Aspheric**
- **SofTec HD Aspheric**

Toric IOLs

Prevalence of Astigmatism



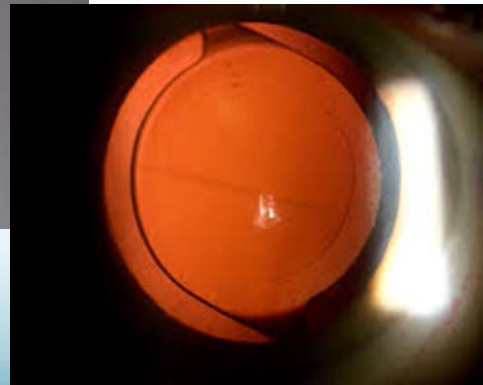
Correction of Astigmatism During Cataract Surgery

- ***Toric IOL***
- ***Limbal Relaxing Incisions - LRI***
- ***LVC***

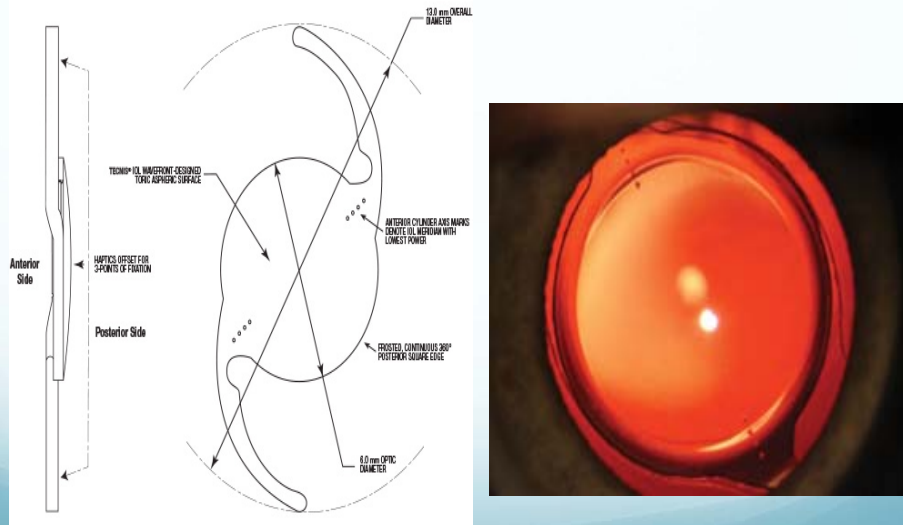
STAAR Toric IOL



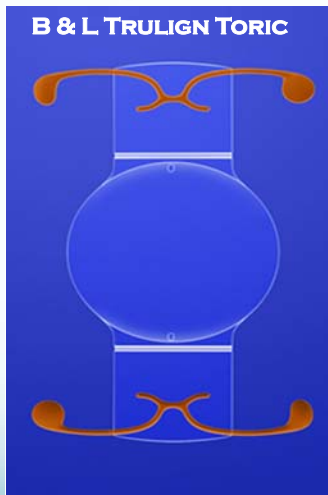
AcrySof® Toric



TECNIS Toric



Multifocal/Accommodating Torics



TECNIS[®]
Symphony
TORIC
Extended Range of Vision IOL



Role of Optometry Post-Op

- Visual Acuity
- Refraction (1 week)
 - Looking for Residual Cylinder and Axis
- Dilation – Verification of Axis Location
 - Obliquely Crossed Cylinder

Toric Rotation

IOL within 15° of intended meridian?

YES No action necessary

NO Consider reposition if the patient is symptomatic.

Targeting Zero Residual Cylinder

- ❖ Toric IOL is tolerant of axis deviations
 - ❖ **10°** results in cylinder reduction of **2/3**
 - ❖ **20°** results in cylinder reduction of **1/3**
 - ❖ Partial reduction with up to **30°** misalignment

Toric IOL Rotation

STAAR



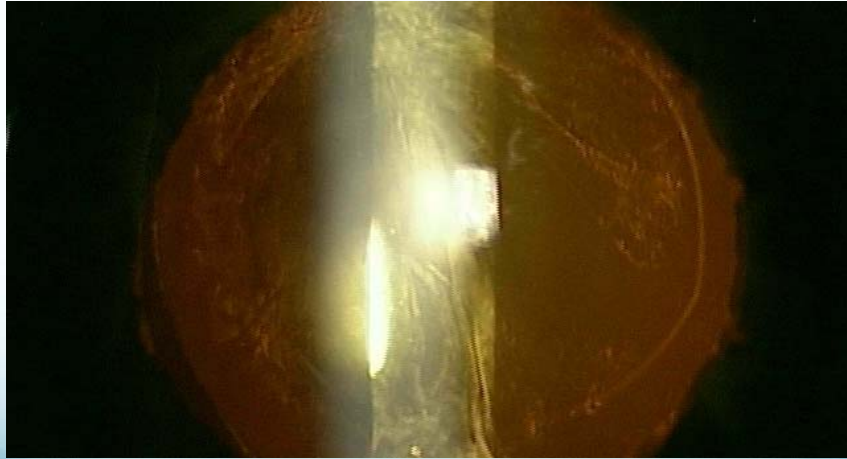
ACRYSOF IQ



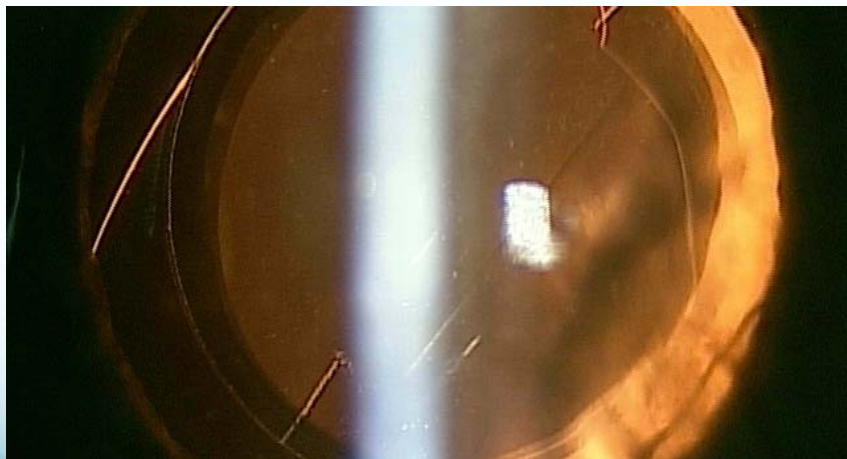
TECNIS

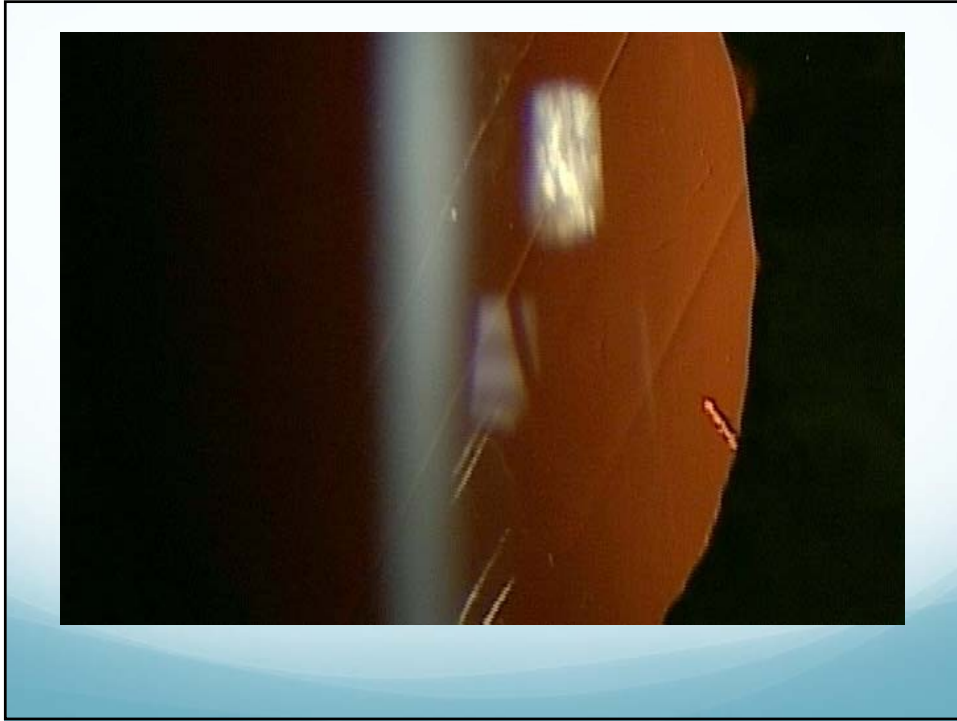


Capsule Immediate Post-Op



On Axis





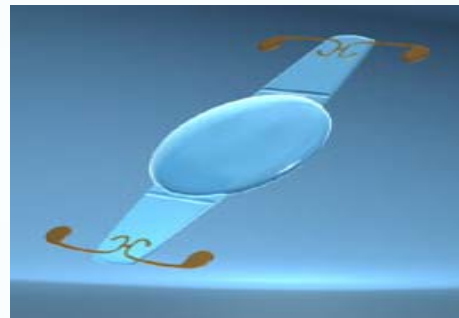
Accommodating IOL

Crystalens

FDA device description. “The crystalens is a modified plate haptic lens with hinges across the plates adjacent to the optic.”

Crystalens HD

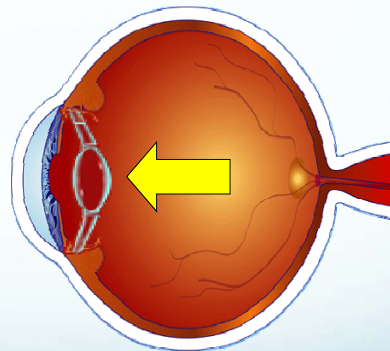
Crystalens Trulign

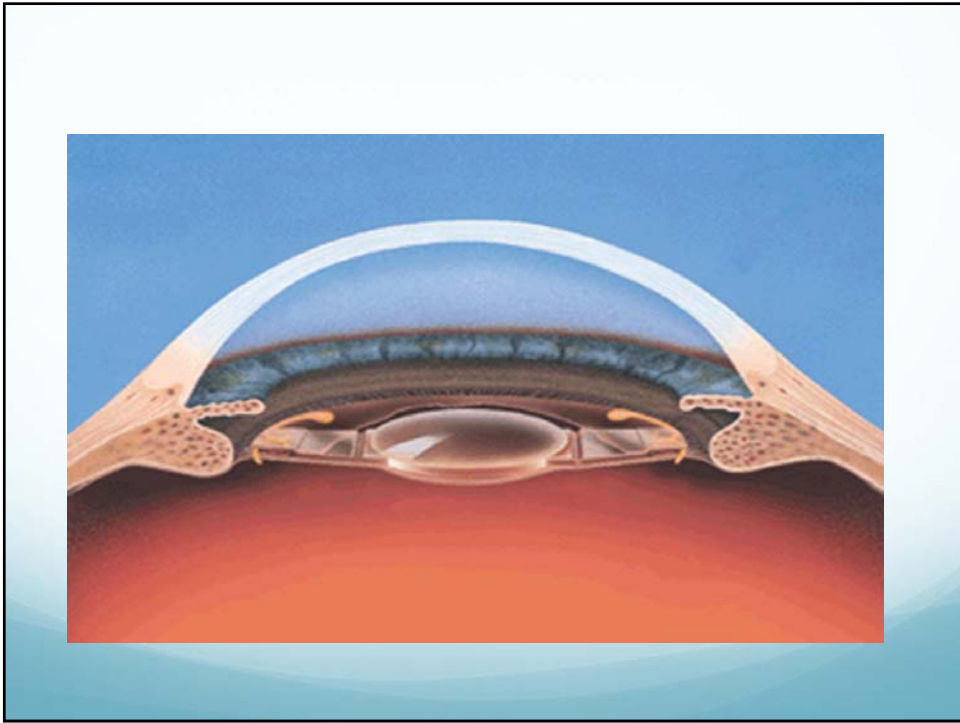


TRULIGN[™]
TORIC

How is Accommodation Achieved?

1. Ciliary muscle contraction
2. Ciliary body shifts forward
3. Pressure change in vitreous
4. Displaces posterior capsule
5. Crystalens moves forward





IOL Power and Accommodation

	Axial Length (mm)					
	22	23	24	25	26	27
IOL Power (D)	27	24	20	17	14	11
Accommodation per 1.0 mm forward IOL movement (D)	1.9	1.6	1.3	1.1	0.9	0.8

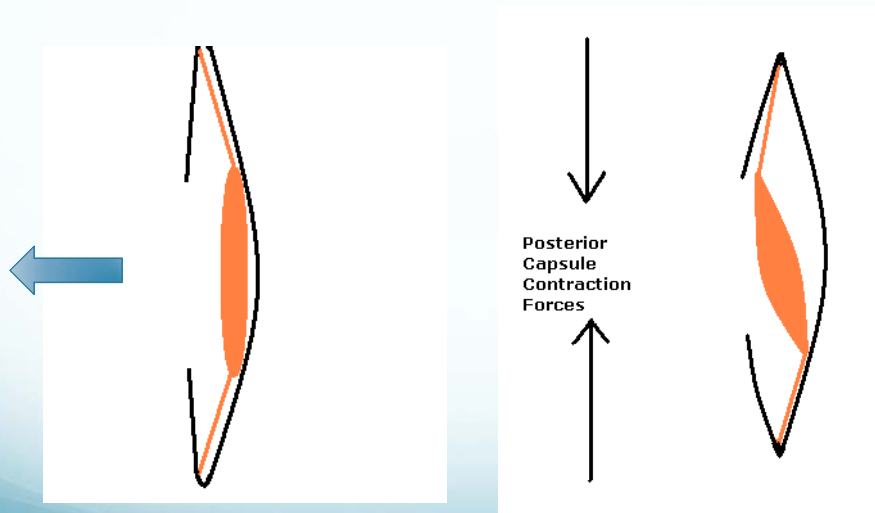
- Journal of Cataract and Refractive Surgery. Vol. 29, #11 p. 2069-2072

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Z-Syndrome / CCS



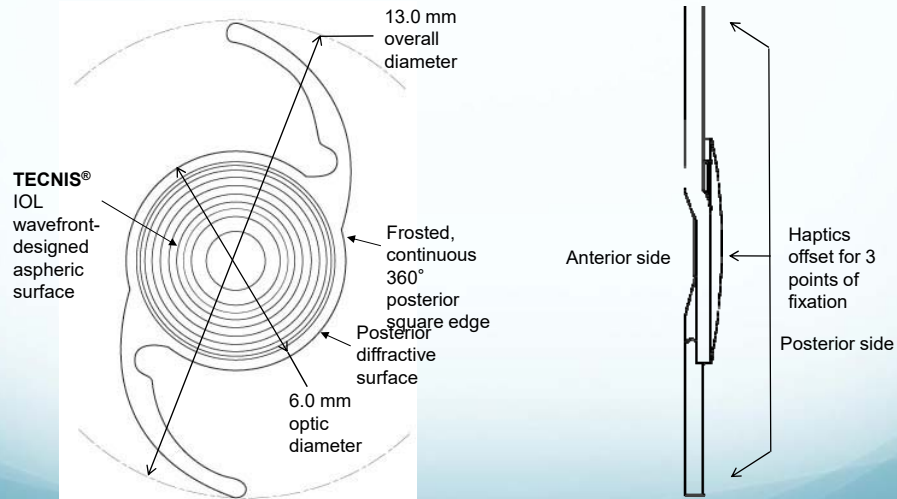
Synchrony IOL and Preloaded Injector



Multi-Focal IOL's

- Alcon Acrysof IQ ReSTOR
- AMO TECNIS Multi-focal
- AMO TECNIS Symphony Multi-focal

TECNIS® Multifocal Acrylic IOL



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TECNIS® Multifocal 1-Piece IOL Specifications

- Full diffractive posterior surface
 - Pupil-independent
- Wavefront-designed aspheric anterior surface
- Light distribution 50/50
- +5.0 D to +34.0 D in 0.5 D increments
- Optical power add +4.0 D
 - To optimize acuity at preferred reading distance of 33 cm
- Model number: ZMB00

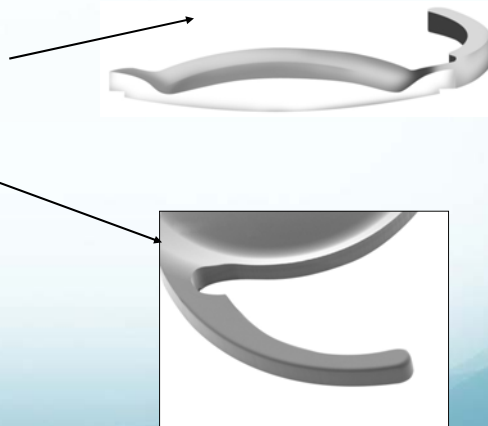


62

TECNIS® Multifocal Design Benefits

Ease of implantation

- The next-generation design
- Bag-friendly coplanar delivery
- Reduced center thickness for a slim lens profile additionally facilitates implantation
- Polished haptic loops reduce friction and enable controlled, gentle unfolding of the lens in the capsular bag



63

AcrySof® ReSTOR® Aspheric IOL Design

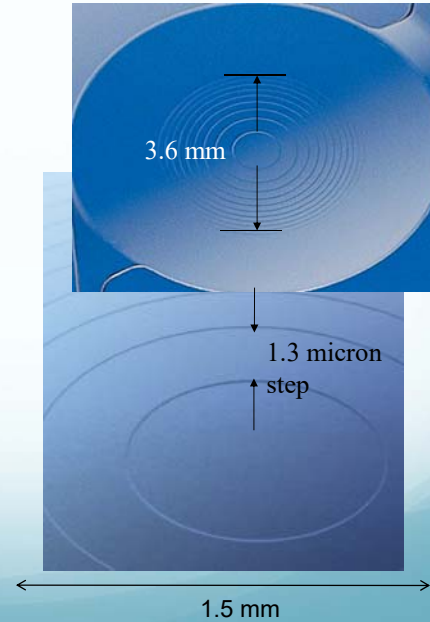
- The AcrySof® ReSTOR® Aspheric IOL model SN6AD3 is designed with negative spherical aberration.
- +2.5D and +3.0D



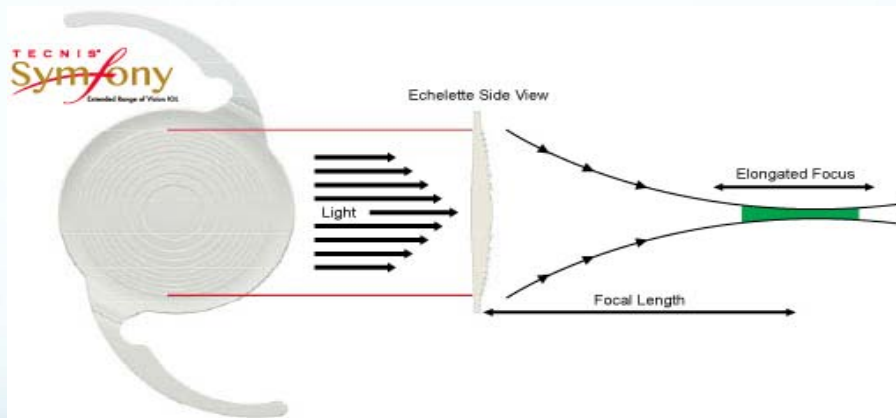
Source: SN6AD3 Package Insert RES717

Apodized Diffractive Optic

- Apodized diffractive structure blends into peripheral refractive region
- Gradually emphasizes energy going to distance vision with larger pupil sizes
- Night-time visual disturbances minimized by directing more light to distance when pupils are larger



TECNIS Symphony



- Extended depth of focus
- Diminished chromatic aberrations

Patient Selection Pre-operative Considerations

- Patients' visual demands
- Occupational needs
- Realistic expectations
- **Avoid in hypercritical patients**

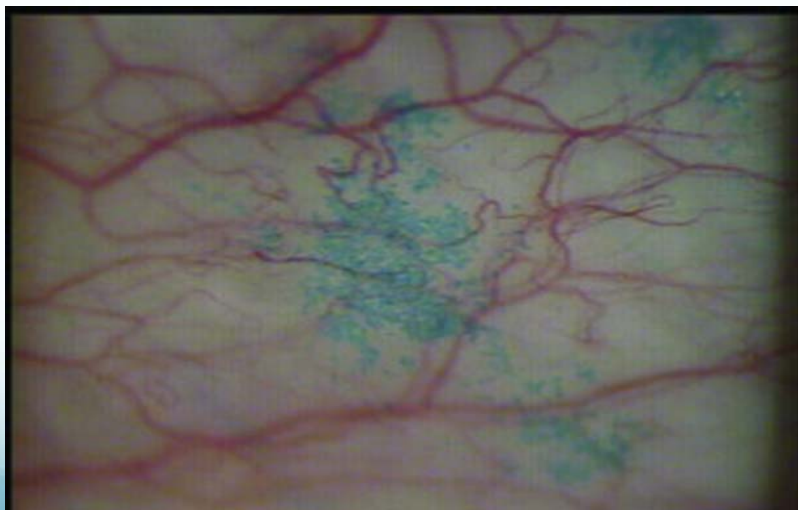
Prior to Premium IOL

- Perform Evaluation for Dry Eye Disease
- Treat Dry Eye & Blepharitis in Advance

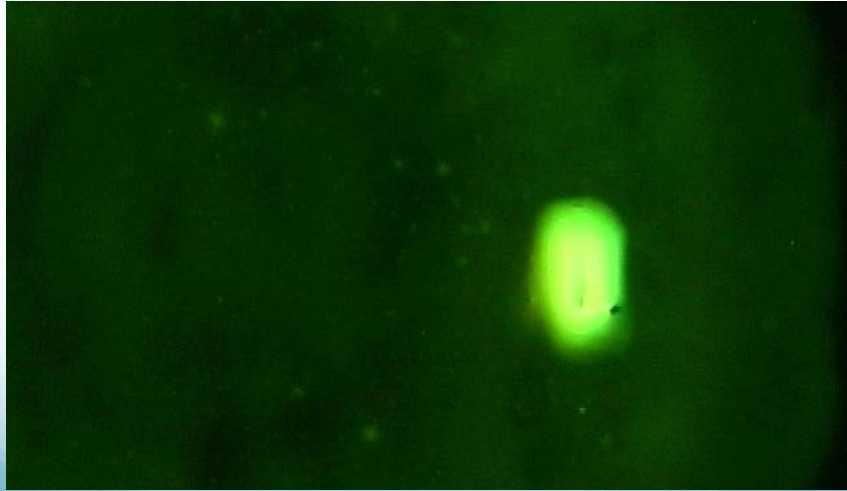
Role Of Ocular Surface Disease and Premium IOLs

- **Disruption of Light Prior to
Diffraction of Light in Multi-focal
IOL**

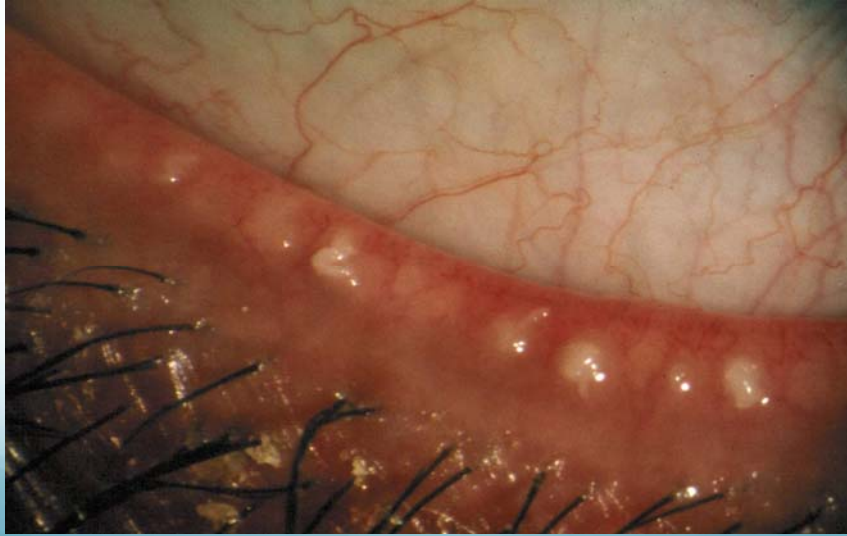
Lissamine Green Conj. Staining



Punctate Epithelial Defects



Blepharitis



Co-management is in the Patient's Best Interest

- OD's who have seen the patient for years have a greater insight into their particular interests, hobbies and visual demands
- Co-management should extend beyond cataract and refractive surgery i.e. ophthalmology
- Endocrinology, Rheumatology, Neurology
- Pain and headache centers

Patient Selection: The Ideal Candidate's Physical Attributes

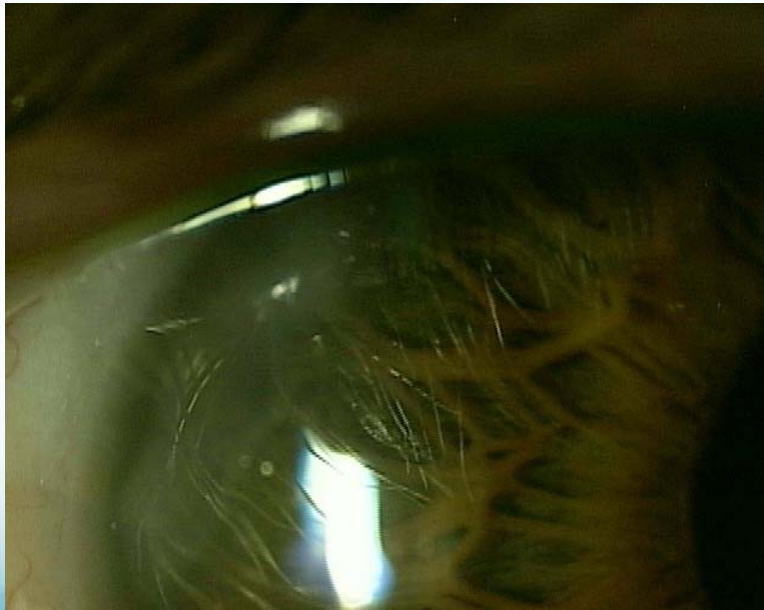
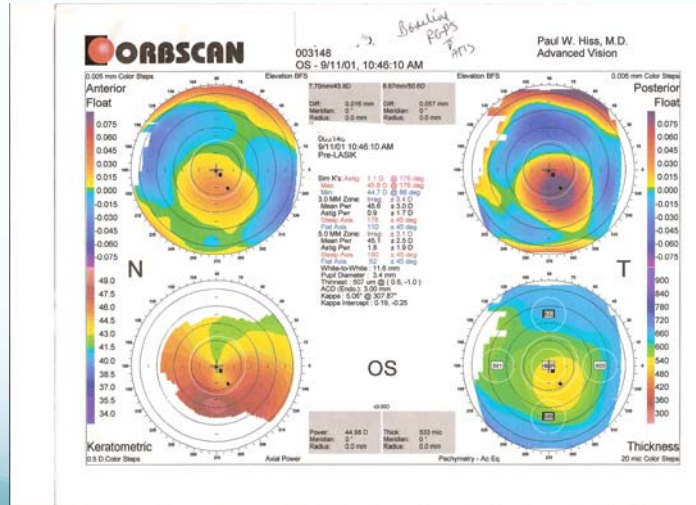
- **Candidate for bilateral implantation**
- **Good ocular health**
- **Potential for good visual acuity in each eye**
 - **Good binocularity**
- **Corneal astigmatism?**
 - **Plan for treatment if over 0.75 D**

Assessing Ocular Health

- **Dry Eye or KCS**
- **Blepharitis**
- **Fuchs' Dystrophy**
- **EBMD, Salzmann's, or any other irregular cornea disorder**
- **Previous Hx of HSV**
- **Ectatic Disorders**

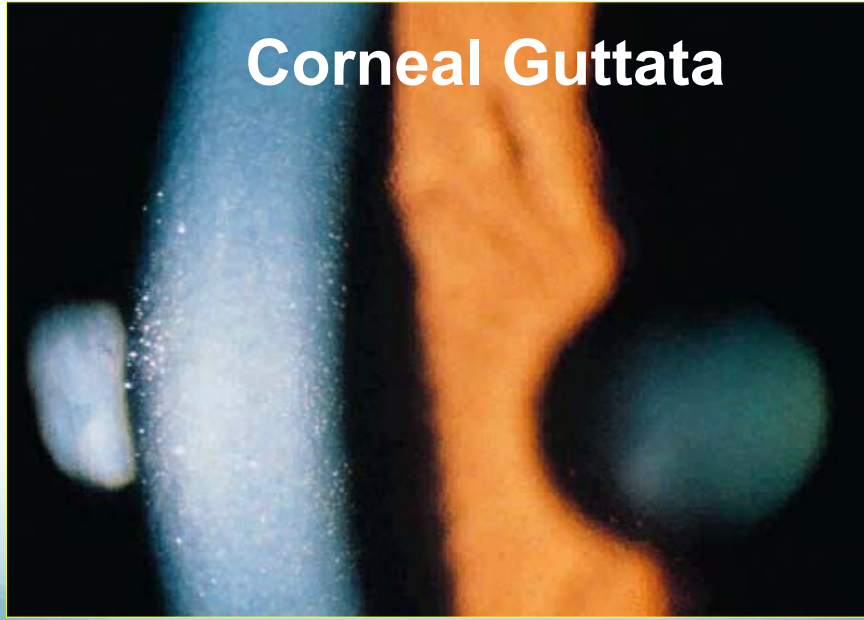
Patient LM

- ORB OS





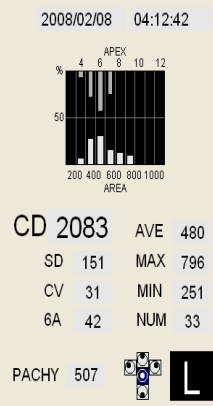
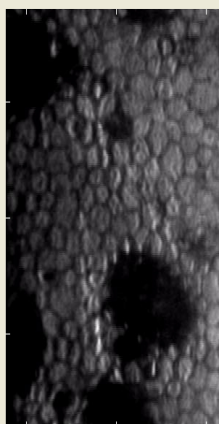
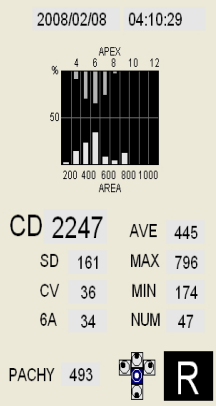
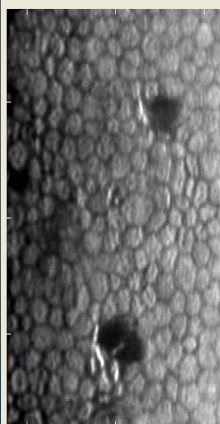
Corneal Guttata



Corneal Guttata

Discrete Guttata

Moderate Guttata



Consistent Topography: Tear Stability

Posterior Blepharitis



Patient Selection The Ideal Candidate Psychological Attributes

- **Not Type A-**
- **Realistic expectations**
- **Psychologically stable**

Assessing Ocular Health

- **Previous ocular trauma**
- **Chronic uveitis**
- **Glaucoma or AMD**
- **Diabetic retinopathy**
- **Key Systemic diseases with ocular manifestations: e.g. Rheumatoid arthritis**

Cataract Surgery Post-Operative Management

- Medications
 - 4th Generation Antibiotic x 9d
 - Moshifar Study, EVS
 - Steroid for at least 4 weeks
 - NSAID for at least 4 weeks
 - Tears (**NO GENERICS!!**)

Moshirfar, M., Feiz, V., et. al. Endophthalmitis after Uncomplicated Cataract Surgery with the Use of Fourth-Generation Fluoroquinolones. Ophthalmology. 2007 Apr;114(4):686-91.
Endophthalmitis Vitrectomy Study Group (1995) Results of the endophthalmitis vitrectomy study. Arch Ophthalmol 113:1479-1496

Cataract Surgery Post-Operative Management

- 1 Day
 - VA
 - Wound
 - IOP
 - Anterior Chamber
 - IOL Placement
 - Manifest Refraction or Pinhole if needed
 - If Dilated Look at Retina

Cataract Surgery Post-Operative Management

- **1 Day Complications**
 - **Increased IOP**
 - **Reduced Visual Acuity**
 - **Wound Leak**
 - **Chroidals**
 - **Displaced IOL**

High IOP

- **Determination Based on Patient**
- **Glaucoma Meds**
- **Referral**
- **Relieve Pressure Through Wound**

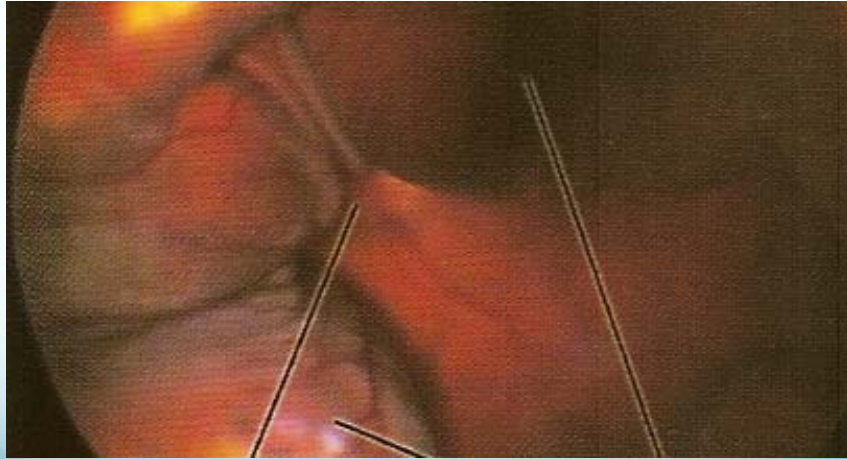
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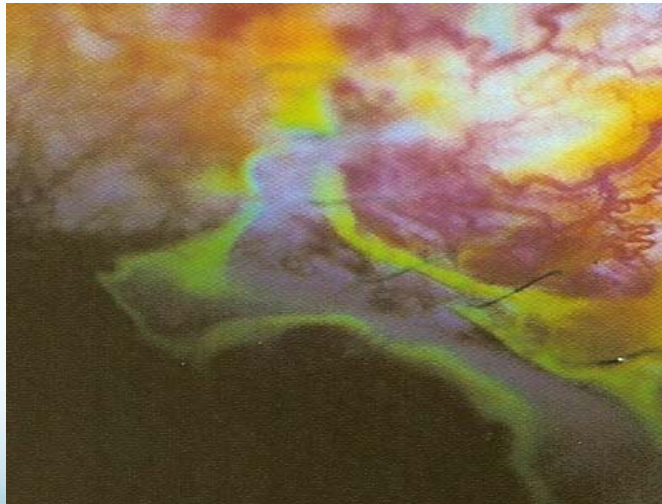
Cataract Surgery Post-Operative Management

- 1 Week
 - Dilation?
 - Typically dc Antibiotic
 - Reduce Steroid if A/C Reaction has decreased to bid

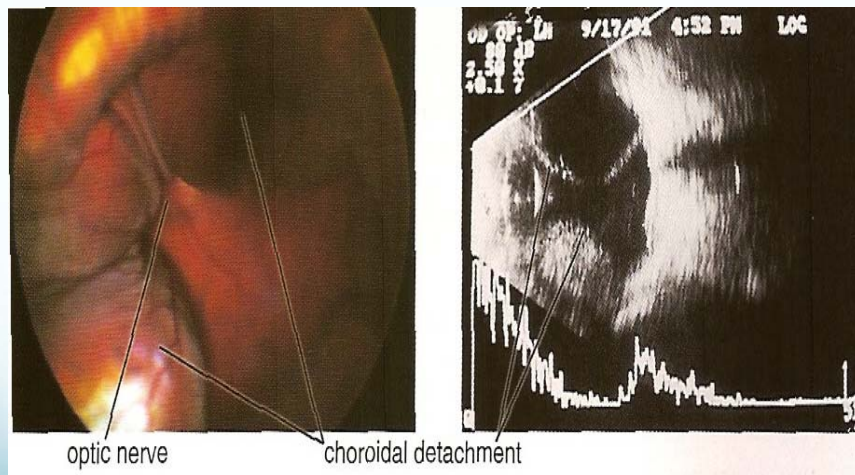
Supra-choroidal Hemorrhage



Wound Leak



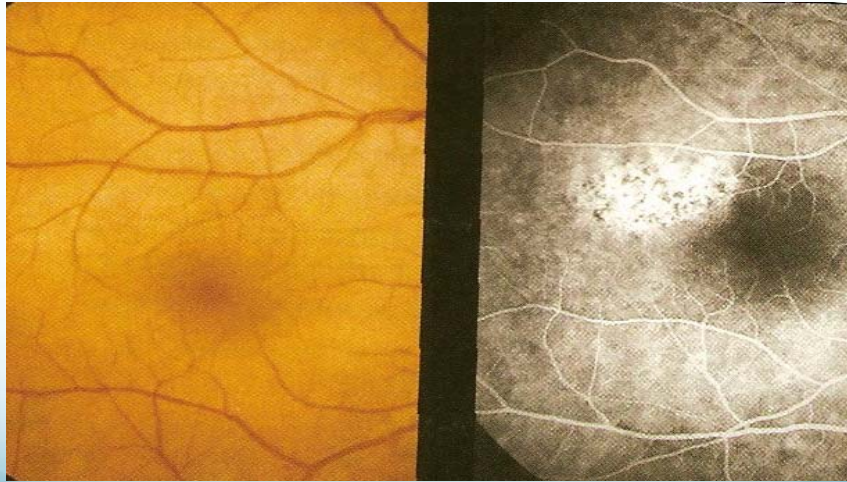
Suprachoroidal Hemorrhage



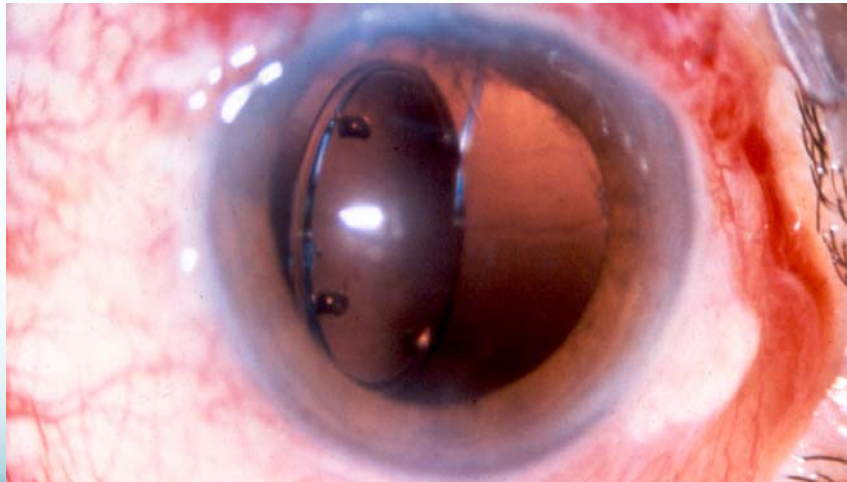
Retained Lens Material



Microscope Photo-toxicity



Displaced IOL



Endophthalmitis



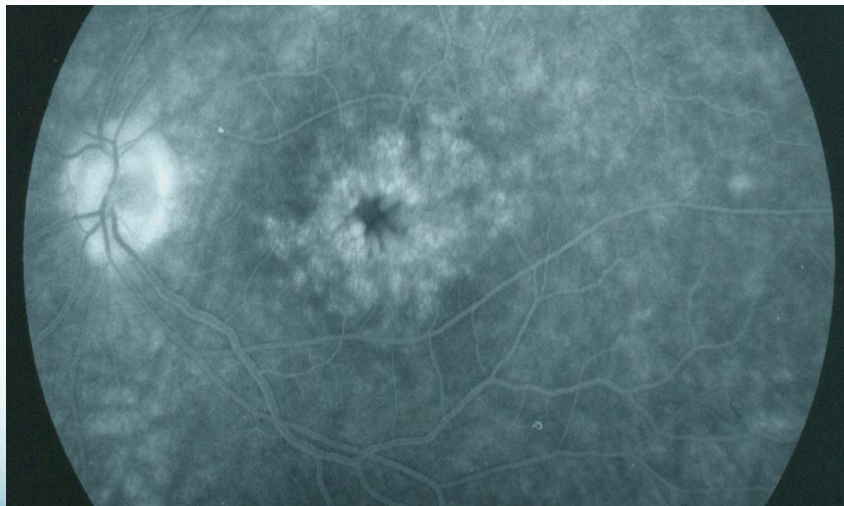
Cataract Surgery Post-Operative Management

- 1 Month
 - Anterior Segment Evaluation
 - IOP
 - Typically dc Pred Forte
 - Manifest Refraction
 - Evaluate if Decreased VA

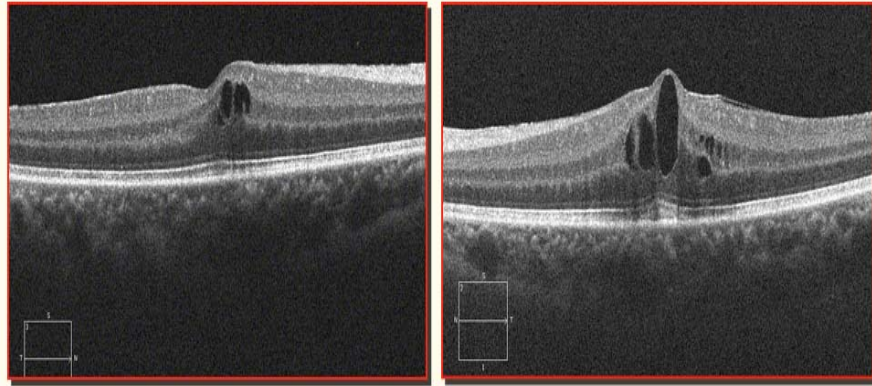
Cataract Surgery Post-Operative Management

- Possible Complications
 - Cystoid Macular Edema
 - Latent Inflammation
 - Lens Precipitates
 - Retinal Detachment

Cystoid Macular Edema (CME)



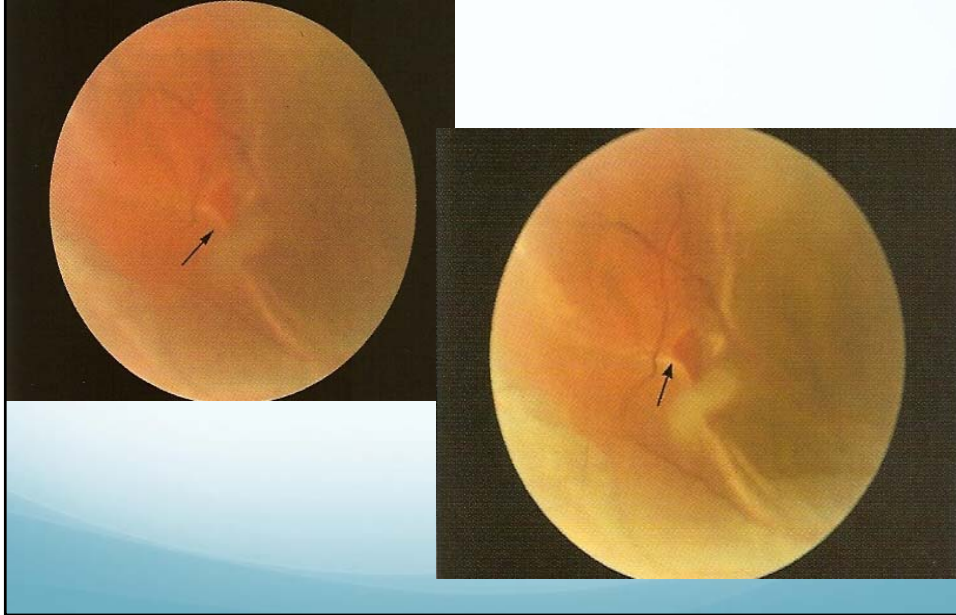
OCT



Lens Precipitates



Retinal Detachment

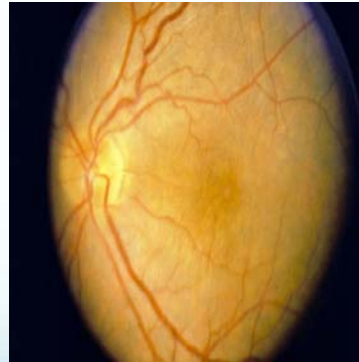


Cataract Surgery Post-Operative Management

- 3 Month
 - Anterior Segment Evaluation
 - Posterior Segment Evaluation
 - IOP
 - Manifest Refraction if necessary
 - Evaluate if Decreased VA

Problem Solving if Not Happy

- Residual Refractive Error
- Topographic abnormality
- Surface problems
 - Dry eye
 - MGD
 - EBMD
- Retina problems
 - CME
 - Hole
- Capsular fibrosis
- Realistic Expectations



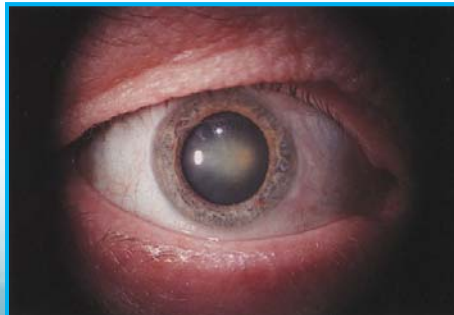
Preoperative Macular Conditions

- CME risk is increased in:
 - Epiretinal Membranes
 - DM
 - Chronic uveitis

Intraoperative Cataract Complications

Mature Cataract

- Dense, brunescent reddish-brown to black
- Shallow AC, narrow angles, anterior bowing of the front surface of lens
- Zonular laxity lets lens shift forward
- Advanced age, smoking, poor nutrition



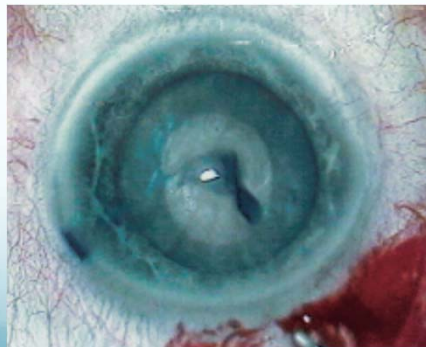
Hypermaturation Cataract

- White
- No red reflex
- Capsulorrhexis difficult to control
- Increased intracapsular/intralenticular pressure



Capsular Staining

- Trypan blue – Vision Blue
- Capsulorrhexis visualization enhanced
- Dye injected over capsule under air bubble



Pre-Op Evaluation

- Zonular instability – PXE
- Corneal endothelium – Fuch's Dystrophy, guttata
- Narrow angles – gonioscopy
- Check for RAPD if unable to measure VA
- B-scan ultrasound if unable to visualize retina



Zonular Weakness - PXE

- Poor pupil dilation
- Dandruff-like flakes
- Phacodonesis – 25% of zonules weak
- Capsular tears
- Vitreous loss
- Post-op inflammation
- Capsular phimosis
- Scandinavians up to 20%

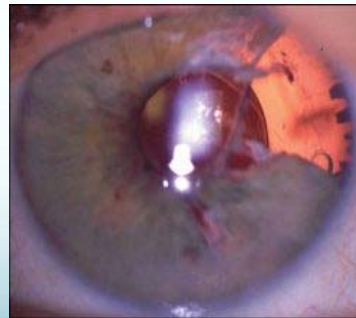
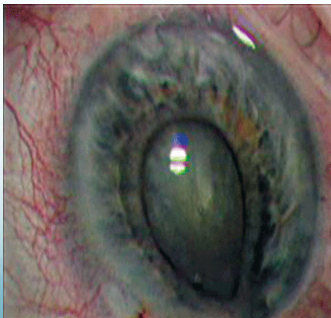
Capsular Tension Rings

- Stabilize lens-zonule complex
- Circumferential expansile force to capsular equator
- Forces equally distributed
- Can be left in place
- Prevents capsular phimosis



Intraoperative Floppy Iris Syndrome

- Iris billowing and floppiness
- Iris prolapse thru incisions
- Progressive miosis during surgery



Flomax - Tamsulosin

- Selective alpha-1A receptor subtype-blocker
- Treats benign prostatic hypertrophy
- Loss of iris dilator smooth muscle tone-permanent
- Relaxes smooth muscle of bladder neck/prostate
- Treats urinary retention in women

Intraoperative Floppy Iris Syndrome

Selective alpha-1A receptor subtype blocker

- Rapaflo – silodosin

Non-subtype selective alpha receptor blocker

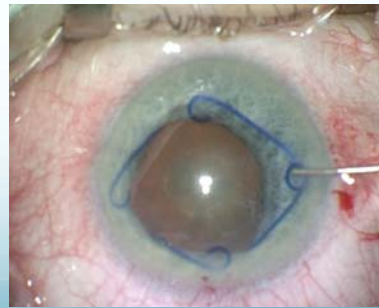
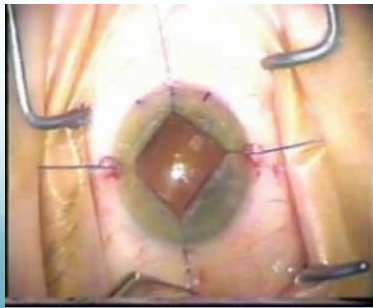
- Hytrin – terazosin
- Cardura – doxazosin
- Uroxatral – alfuzosin

Nutraceutical

- Saw palmetto

IFIS Strategies

- Pre-op atropine
- Intra-cameral epinephrine
- Visco-mydriasis
- Flexible iris retractors
- Malyugin expansion ring



Thank You

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