

Co-Managing Advanced Technology IOLs

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Professional Disclosures

- Alcon: Advisory Board, Research, Speaker
- Allergan: Research, Speaker
- Bausch & Lomb: Speaker
- Inspire: Allergy Advisory Board, Research, Speaker
- Ista Pharmaceuticals: Research
- Pacific University: Adjunct Assistant Clinical Professor
- Pennsylvania College of Optometry: Externship Coordinator
- Science Based Health: Research
- Southern California College of Optometry: Externship Coordinator
- Vistakon: Speaker

Today's Optometrists

“To be on the cutting edge of optometry, you need to be on the cutting edge of science and technology.”

- Christine Sindt, OD

Co-managing Advanced Technology IOLs

- *This is your new refractive surgery patient!!!*
- Advanced technology
- Successful outcomes
- OD Co-management



Pearls on Optometric Comanagement

- Get to know your surgeon
- Convey patient preferences, observations and conditions to your surgeon
- Inform your patients on your role in peri-operative care
- ***Successful co-management is the result of continuous communication***

Why Become Involved?

- 3 million cataract surgeries each year¹
- By 2020 the U.S. population over 65 will double from current levels – 12.9% of total population
- HCFA allowing surgeons to bill for non-covered services
- Tangible vs. Intangible benefits

1. <http://www.allaboutvision.com/conditions/cataracts.htm>

Basic Marketing Concepts

- Needs / Wants / Demands are underlying concepts of marketing
 - Needs are basic requirements of human beings
 - Wants are the form human needs take as they are shaped by culture and individual personality
 - Demand is want backed by buying power
- ***Patients need to see, want freedom from glasses, and have the means to invest in technology***

The Baby Boomers

- Baby Boomers represent the generation with the greatest buying power in the history of our country
- Account for a dramatic 40% of total consumer demand – even in a recession
- ***Find a way to appeal to us through our desire to stay young, act young, think young and feel young***
- Have more discretionary income than any other age group
- Watch TV / read newspapers more than any other age group

Burns, D. Baby Boomers are STILL the Largest Consumer Group in America - Even in a Recession
By Dean Burns. Retrieved from <http://www.babyboomer-magazine.com/news/165/ARTICLE/12172009-12-22.html>.

Optometric Opportunity

- Maintain a refractive mindset
- Direct to consumer advertising is coming
- Who better to hear about these options from than their own optometrist?

The Cost of Lifestyle IOLs

- People want food, they buy it
- They want a house, they pay a mortgage
- No matter where they go, people pay for the products they receive
- Price should be transparent
- Must show them value

Prescribing From Your Chair

- We do it for optical goods
- Know the products thoroughly
 - Advantages / Disadvantages
- Know our patients
 - Listens, ask questions, understand needs
- Believe in the technology
 - Delivers outstanding results to patients

Advanced Technology IOLs: The Optometrist's Role to Success

- We understand our patient's needs
- We know the differences in premium IOLs
- Patient education is the crucial
- Communication is the key to successful co-management

Understanding Patient Needs

- What area of vision is most important to you?
 - Distance
 - Intermediate
 - Near

Vision After Cataract or Refractive Surgery in the Presbyopic Patient

- Improve the **quality of life** of our cataract patients by increasing their spectacle freedom through providing a quality range of vision
 1. Monofocal at distance (near glasses)
 2. Monofocal at near (distance glasses)
 3. Monovision (successful with contacts)
 4. Toric (monofocal)
 5. Multifocal

Who Are Good Multifocal Candidates?

- Visual and functional need for cataract surgery
- Motivated not to wear glasses
- Younger or *Young at Heart* patients*
- Active lifestyle
- Qualify for bilateral implants
- Realistic expectations

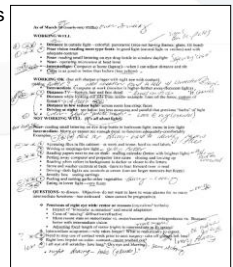
Realistic Expectations

Who Are Good Multifocal Candidates? Careful Consideration

- Previous refractive surgery*
- Previous cataract surgery with a monofocal IOL*
- Patients with $>2.00D$ of astigmatism*

Who Are *NOT* Good Candidates for Multifocal IOLs?

- Those who want to wear glasses
- Poor "general alertness"
- Occupational night drivers
- High astigmatism*
- Poor candidates for refinement
- Unrealistic expectations
- Ocular pathology



* *Relative Contraindications*

Patient Selection is Key

Patient Selection Pearls

- Realistic expectations
- If you suggest a multifocal for a perfectionist don't be surprised when they demand perfection
- Multifocals do not fix crazy patients

Patient Questionnaire

Date: _____ Name: _____

Contact and Refractive Lens Exchange Questionnaire

The word "contact" refers to a device you would use for eye. When a contact is removed, an artificial lens is placed inside the eye to take the place of the natural lens that has become the contact. Occasionally, cataracts form and have not yet developed contacts are also removed to reduce or eliminate the need for glasses or contacts. If it is determined that surgery is appropriate for you, this questionnaire will help to provide the best treatment for your visual needs. It is important that you understand that every patient will need to wear glasses for some activities after surgery. Please fill this form out completely and give it to the doctor. If you have questions, please let us know and we will assist you with this form.

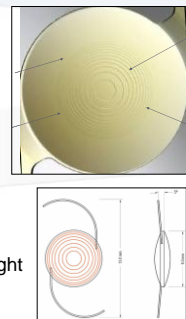
1. After surgery, would you be interested in seeing well without glasses in the following situations?
 - Distance vision** (driving, golf, tennis, other sports, watching TV)
 - _____ I would like to see without glasses.
 - _____ I would like to see without glasses.
 - Mid-range vision** (computer, movies, price tags, cooking, board games, items on a shelf)
 - _____ I would like to see without glasses.
 - _____ I would like to see without glasses.
 - Near vision** (reading books, newspapers, magazines, detailed handwork)
 - _____ I would like to see without glasses.
 - _____ I would like to see without glasses.
2. Please check the single statement that best describes you in terms of **glare/halos**.
 - _____ a. Night vision is extremely important to me, and I require the best possible quality night vision.
 - _____ b. I want to be able to drive comfortably at night, but I would tolerate some light imperfections.
 - _____ c. Night vision is not particularly important to me.
3. If you had to wear glasses after surgery for one activity, for which activity would you be most willing to use glasses?
 - _____ Distance Vision _____ Mid-range Vision _____ Near Vision
4. If you could have good Distance Vision during the day without glasses, and good Near Vision for reading without glasses, but the compromise was that you might see some halos or rings around lights at night, would you like that option?
 - _____ Yes _____ No
5. If you could have good Distance vision during the day and night without glasses, and good Mid-range Vision without glasses, but the compromise was that you might need glasses for reading the finest print or text, would you like that option?
 - _____ Yes _____ No
6. Surgery to reduce or eliminate one dependence upon glasses for Distance, Mid-range and Near Vision may be partially covered by insurance if you have a contact that is covered by insurance. Would you be interested in learning more about this option?
 - _____ Yes _____ No _____ Maybe, it depends on how much is covered by insurance.
7. Please place an "X" on the following code to describe your personality as best you can:

_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Easy going									Perfectionist

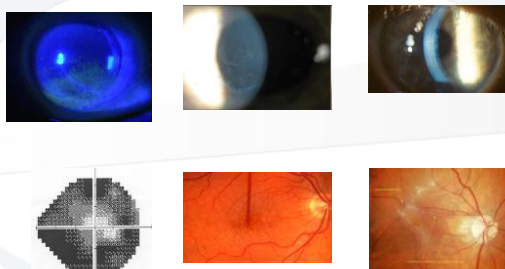
Please Sign Here _____

Pupil Considerations

- **Small**
 - ReSTOR
 - Rezoom
- **Medium**
 - Most IOLs fine
- **Large**
 - ReZoom– greater halos
 - ReSTOR– minimizes halos at night
- **Pupil Independent**
 - Tecnis MF and Crystalens



Ocular Pathology



What About Astigmatism?

- Quality of vision
- Pre-surgical aberrations tolerated
- More adapting issues post-surgical



No Astigmatism 1.0 D Astigmatism 2.0 D Astigmatism

Addressing Astigmatism

- Patient's understand astigmatism
- Know the importance of treating their "stigma"
- This "stigma" gives them problems with their glasses or contacts



Setting Expectations

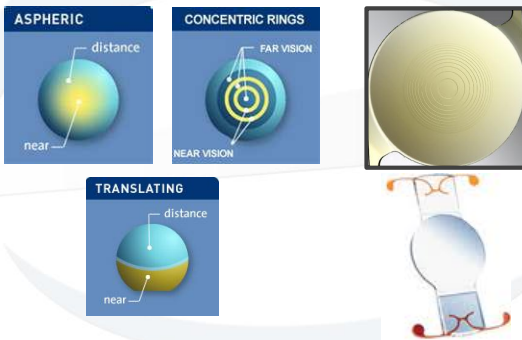
- Individual patient perceptions vary
- Best vision after bilateral implantation
- Glare/Halos
- Lighting considerations
- Possibility of refinement

Under Promise.... Over Deliver

- Tell the patient that they are *still* going to have to wear glasses with *any* IOL option
- Tell patients that they *will* see rings around lights with a multifocal IOL

Differences in IOLs Technology

How Do These Compare?



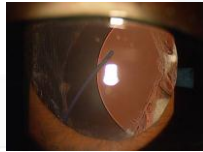
IOL Materials

	Advantages	Disadvantages
PMMA - 10%	LT experience Good biocompatibility Cheap	Large incision Pits with laser High incidence of PCO
Silicone - 30%	Foldable – small incision Fairly low incidence of PCO	Pits with YAG laser Rapid unfolding Dislocation after YAG More decentration Anterior capsule contraction Slippery when wet Cannot use with silicone oil
Acrylic - 60%	Foldable – small incision Fairly low incidence of PCO High refractive index LEC regression Biocompatible Fewer pits with laser Slow controlled folding	Tacky surface Difficult to unfold Glistening Glare

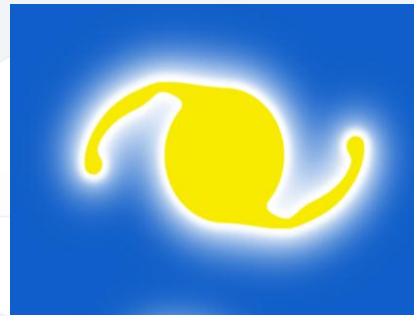
Taken from <http://www.optometry.co.uk/articles/docs.cdf?abed9535b595ca793073458ba8e7c> hvllck20011102.pdf on October 10, 2009

Single-Piece vs. 3-Piece IOL

- *Stableforce haptic* is stronger...500% more tensile strength than PMMA
- A 3-piece IOL loses its decompressive force with time...optic may vault forward
- Stability...maintains positioning in the bag

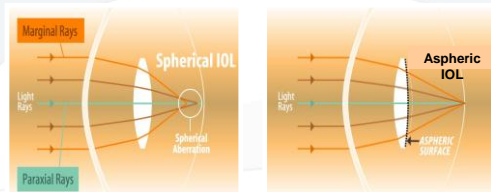


Why ACRYSOF® Natural?



- Why filter 400-500 nm light?

Spherical Aberration



- Spherical aberration occurs when marginal rays are over-refracted, resulting in a region of defocused light which can decrease image quality.

*Smith, G. Atchinson D.A., (1997) The Eye and Visual Optical Instruments, Cambridge University Press, Cambridge, United Kingdom, pp. 667. RES717

Quality of Vision

Spherical Aberration



Aspheric Correction



AcrySof® IQ Platform

- Acrylic
- Single piece
- Blue light filter
- Aspheric design
- The IOL used routinely at the Virginia Surgery Center for monofocal correction

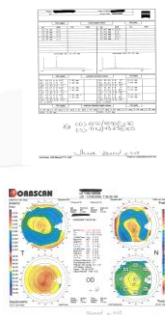


Advanced Technology: The Players



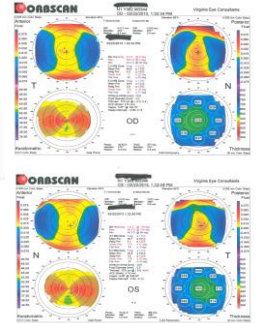
Toric IOLs

- Differentiate corneal cylinder from refractive cylinder
 - Corneal
 - Lenticular
 - Mixed
- Accurate / consistent measurements
 - Manual keratometry
 - Corneal topography
 - IOL Master



Case Example

- 62 year old white male
- MRx
 - -5.75+5.25X177 20/20
 - -5.25+5.25X165 20/20
- Ks
 - 43.25/46.25@003
 - 43.00/45.75@176
- Pachy
 - 604um
 - 593um
- SLE: 2+ NS OU



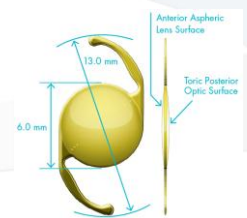
STAAR TORIC™ IOL

- Single piece, Silicone
- Pre-existing astigmatism
 - 2.0 D Toric IOL
Neutralizes 1.5 D K cylinder
 - 3.5 D Toric IOL
Neutralizes 2.25 D K cylinder
- Frosted plate haptics
- Large fenestrations
- Models
 - TF (10.8mm)
 - TL (11.2mm)

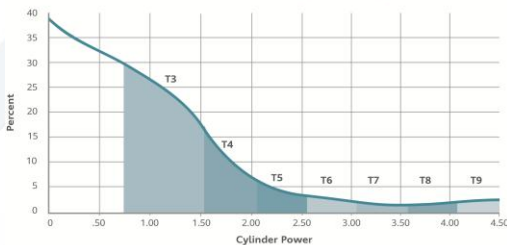


AcrySoft® IQ Toric IOL

- Design
 - Acrylic
 - Single piece
 - Posterior toricity
 - Toric axis markers
- Toric aspheric
 - Approved Feb. 2009



Estimated Distribution of Preoperative Cylinder¹

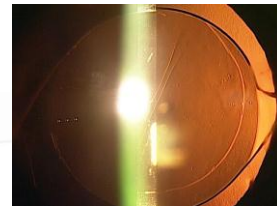


ALCON LENS MODEL		SNGAT3	SNGAT4	SNGAT5	SNGAT6	SNGAT7	SNGAT8	SNGAT9
Cylinder Power	IOL Plane	1.50 D	2.25 D	3.00 D	3.75 D	4.50 D	5.25 D	6.00 D
	Corneal Plane*	1.03 D	1.55 D	2.06 D	2.57 D	3.08 D	3.60 D	4.11 D
Recommended Corneal Astigmatism Correction Range		0.75 D to 1.54 D	1.55 D to 2.05 D	2.06 D to 2.56 D	2.57 D to 3.07 D	3.08 D to 3.59 D	3.60 D to 4.10 D	4.11 D and up

*Based on average pseudophakic human eye.

— Estimated Percent of Cataract Patients with Astigmatism

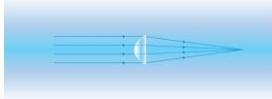
Acrysof Toric IQ Axis Markers



Refraction vs. Diffraction

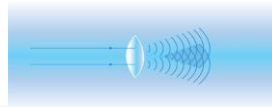
- **Refraction:** An optic with a smooth, continuous surface that bends light rays, focusing them into a single image

ReZoom
Crystalens



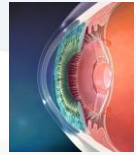
- **Diffraction:** An optic surface that contains physical steps, that divides light waves into wavelets that form the near and distant images on the retina

ReSTOR
Tecnis Multifocal



Crystalens

- Crystalens Five-0
- Crystalens HD
- No UV protection
- Induces positive SA
- Dominant eye: plano
- Non-dominant eye: -0.50D
- Patient must understand that they will need reading glasses for near



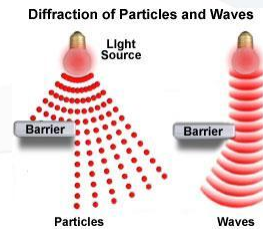
ReZoom™ IOL Product Specifications

- Hydrophobic Vacuole Free acrylic material
- Balanced View Optics™ Technology
- Patented OptiEdge™ triple edge PC IOL design
- Three-piece design
- PMMA capsule fit haptics
- 6.0 mm optic, 13 mm overall length



Diffraction

- The spreading of light
- Occurs when light passes through discontinuities (i.e. steps or edges)
- In an optical system, light can be diffracted to form multiple focal points or images



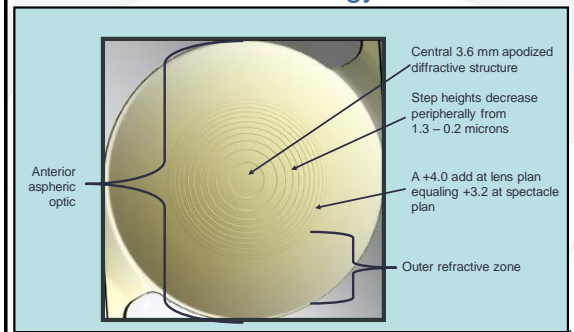
- AMO Tecnis Multifocal
- AcrySof® ReSTOR®

TECNIS® Multifocal Acrylic IOL Model ZMA00 Specifications

- Full diffractive posterior surface
 - Pupil-independent
- Wavefront-designed aspheric anterior surface
- Light distribution 50/50
 - Not apodized
- Optical power add +4.0D

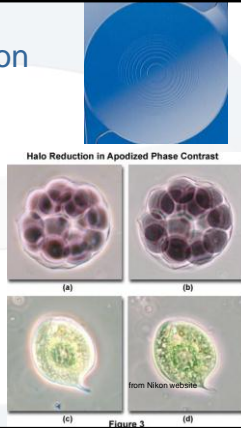


Anatomy of the Apodized Diffractive Technology

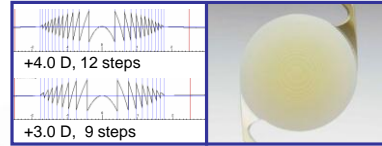


Apodization

- Definition: A gradual modification in the optical properties of a lens from its center to its edge.
- Apodization is used in microscopy and astronomy to improve image quality.
- The ReSTOR apodized diffractive design controls both image quality and energy balance



Physical Comparison



- Both +4.0 D and +3.0 D have 3.6 mm Apodized Diffractive region
- +4.0 D central zone diameter = 0.74 mm
- +3.0 D central zone diameter = 0.86 mm

50

True Performance at All Distances

AcrySof® IQ ReSTOR® +3.0 D IOL was specifically designed to:

- Maintain existing optical design characteristics and manufacturing processes
- Move near vision distance out 6-7 cm
- Improve intermediate vision without sacrificing distance and near¹

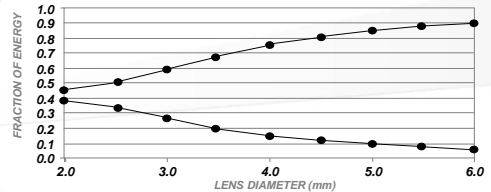


Source: AcrySof® IQ ReSTOR® IOL Package Insert.
 1. Maxwell A, et al. Functional Outcomes After Bilateral Implantation of Apodized Diffractive Aspheric Acrylic Intraocular Lenses with a +3.0 or +4.0 Diopter Addition Power. *J Cataract Refractive Surg.* Vol. 35, December 2009.

APP112850X

Physical Comparison

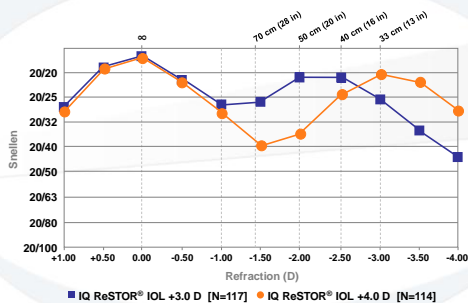
ReSTOR® IOL Energy Balance
 +4.0 D and +3.0 D



- Diffractive step height profile and energy distribution are identical for +4.0 D and +3.0 D IQ ReSTOR® IOLs

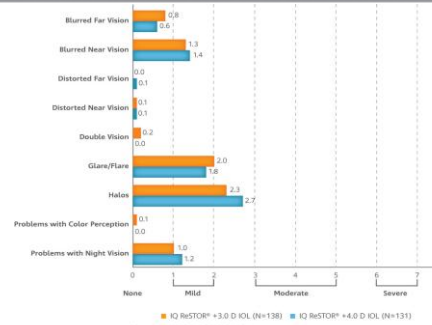
52

Binocular Defocus Curve



53

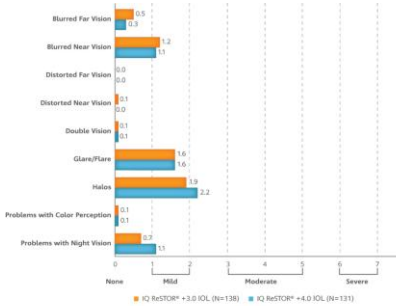
Minimized Visual Disturbances at 3 Months



Source: AcrySof® IQ ReSTOR® IOL Package Insert.

APP112850X

Minimized Visual Disturbances at 6 Months

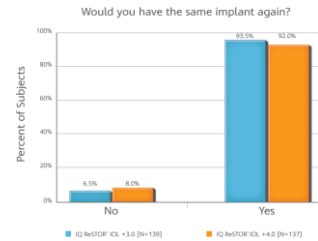


Source: AcrySof® IQ ReSTOR® IOL Package Insert.

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Exceptional Patient Satisfaction

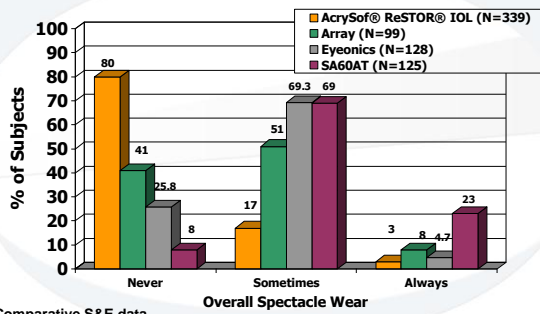
Over 93% of IQ ReSTOR® +3.0 D IOL patients would have the same implant again



Source: AcrySof® IQ ReSTOR® IOL Package Insert.

APP11280X

Spectacle Freedom Overall Vision



Comparative S&E data

Future IOL Technology

- Akkommodative 1CU (Human Optics)
- Tetraflex IOL (Lenstec)
- Sarfarazi Elliptical IOL (B&L)
- Synchrony (Visiogen)
- FlexOptic Lens (Quest Vision Technologies)
- NuLens (NuLens)
- FluidVision IOL (PowerVision)
- LiquiLens (Vision Solutions)
- Smart IOL (Medenium)
- Light Adjustable Lens (Calhoun Vision)

Taken from <http://www.opthalmologyweb.com/FeaturedArticle.aspx?psid=23&aid=340> on 10/07/09

Patient Education is the Key to Success

What is your patient's reaction when you give them the diagnosis of cataracts?

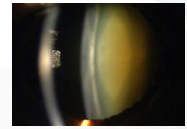
- Anxiety
- Uncertainty
- Confusion

Risk Factors for Cataract Formation

- Genetic factors
- Sex
- UV radiation
- Smoking
- Alcohol consumption
- Diabetes
- Use of steroids
- Socioeconomic status
- Chronic dehydration, diarrhea, malnutrition

What Do Our Patients Know About Cataracts?

- What is a cataract?
- When do I need cataract surgery?
- How is the surgery done?
- Who do I go to?
- What are my options?
- Will I need glasses?
- Will I still see you after the surgery?



Education Starts with the Referring Optometrist

- Attend courses on ATIOLs
- OD's role
 - Patient education
 - Identify patient visual needs / tasks
 - Recommendation
 - Need for surgery
 - IOL
 - Surgeon
 - Provide ATIOL information packet

Education is a Continuous Process

- Technician's role
 - Astigmatism
 - Glasses Haters
- Cataract / ATIOL video
- Refractive Surgery Coordinator
 - Helps guide decision
 - Discusses financing options
- Doctor helps make the final determination

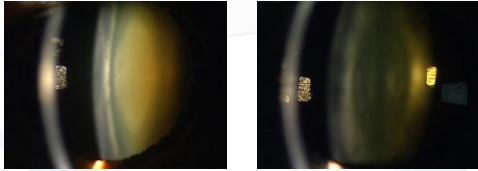
Advanced Technology IOL Discussion

- Example: Alcon Acrysof Restor
- Great distance, intermediate and near vision
- Near is at 16 inches with good light
- 5% glare/haloes at night
- 15% Need for Refinement
- Best vision is after surgery in *both* eyes

Cataract Evaluation

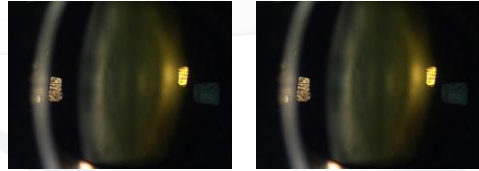
Case One

- CC: 77 YOWF, blurred VA OD>OS
- BCVA:
 - OD -5.50+1.25X015 20/50
 - OS -1.25+1.50X180 20/20-1



Case One

- BCVA:
 - OD -5.50+1.25X015 20/50
 - OS -1.25+1.50X180 20/20-1



Which Comes First, The Chicken or the Egg?

- Glaucoma Evaluation First
 - Permanent loss of vision if not controlled
- Cataract Evaluation Second
 - Cataract surgery is an elective procedure and can wait

IOL Choices in Glaucoma

“Yes – I would like to be free from glasses!”

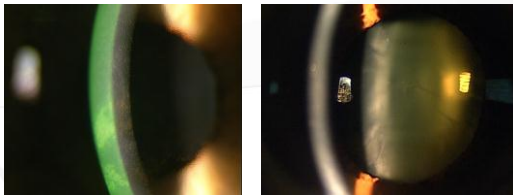
STANDARD

TORIC

MULTIFOCAL

Case Example

- 65 YOWF Referred for Cataract Sx
 - Blurred VA X 6 months Dist / Near

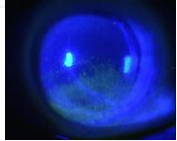


Stand-Alone vs. Combined Procedures

- Significance of the cataract
- Does the cornea need surgical intervention?
- Sequential versus triple procedure
- Convenience, cost, visual recovery

Preparation for Ocular Surgery

- Optimize the Ocular Surface
- Normalize the Lids
- Prepare the Cornea
- Eliminate Intra-ocular Inflammation
- Control Glaucoma
- Satisfy the Macula
- Evaluate the Retinal Periphery
- **Patient Education**



Pre-operative Testing

- Consider OCT imaging on all patients
- Conditions that may affect visual outcome
- Retina consult when in question

Scheduling Appointments

- Your office staff should schedule the appointment
- Clearly indicate that YOU are the referring doctor
 - Which office?
- Fax to Surgeon
 - Referral request form
 - Pertinent patient notes
 - Consent for co-management**



Cataract Surgical Evaluation

- Who is the referring doctor?
- What is the doctor's diagnosis and recommendation?
- Review doctor's evaluation
- If cataract surgery is recommended, what IOL is recommended?
- Complete eye exam to confirm diagnosis and final recommendation
- Do you wish to comanage?

Optimizing Refractive Outcomes

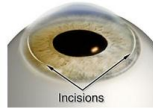
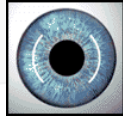
- Accurate pre-operative refraction, keratometry & biometry
- Consistent surgical technique
- Ongoing evaluation of surgical outcomes
- Modification of clinical/surgical protocols based on outcomes

Preparing Patients for Lasik or PRK

- Up to 15% may need refinement:
 - Overcorrection
 - Undercorrection
 - Astigmatism
- Topography
- Pachymetry
- Are they a candidate?

Consider AK/LRI in Patients with Astigmatism

- Pros
 - Easy to learn
 - Less time
 - Correct at source
 - Predictable for low cylinder
 - Can't rotate
- Cons
 - Longer incision / less predictable
 - More irritating
 - Can't be used in keratoconus



Peri-Operative Management

Surgical Prophylaxis

- Antibiotics
 - One day prior to surgery
 - Fluoroquinolones - gatifloxacin, moxifloxacin, levofloxacin, besifloxacin
- NSAIDs
 - One day prior to surgery
 - In high risk patients, 1 week prior to surgery
 - Ketorolac, nepafenac, diclofenac, bromfenac
- 5% Povidone-Iodine



Cataract /Refractive Surgery Complications

- Operative Complications
 - Surgeon makes the call
- Post-operative Complications
 - Co-managing doctor makes the call
- **Successful co-management is the result of continuous communication!!**

Operative Complications

- Inadequate pupil size
 - IFIS
- Iris prolapse
 - Poor wound construction
 - Posterior vitreous pressure
 - Hyperopic eyes
- Zonular dehiscence
 - Trauma
 - Pseudoexfoliation
- Dropped nucleus
- Capsular tear



http://www.esrs.org/eurotimes/january2004/images/fachel_



www.cajournal.org/beta/b02_c05.html

Flomax (tamsulosin)

- Indication for the treatment of benign prostatic hyperplasia
- Alpha-1 blocker
- Intraoperative floppy iris syndrome
- Importance to communicate prior to cataract surgery

Post-operative Complications

Post-operative Day #1

- Confirm medications
- Uncorrected vision
 - Distance: reason for decreased vision?
 - **Near: do not check**
- IOP
- Slit lamp examination
 - Corneal wound secure?
 - Cornea clear? Edema?
 - AC well formed with about 2+ cell
 - IOL well centered in pupil

Patient Instructions

- Review medications
- No restrictions on physical activity
- *Remind patient that it is normal for vision to be blurry and eyes out of balance*
- **Fax results to surgeon**

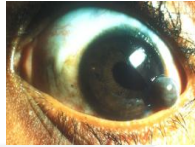
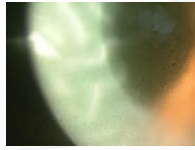
Post-operative Pearls for Advanced Technology IOLs

- Remind patient that it is normal for vision to be blurry and eyes out of balance
- Avoid “*buyer’s remorse*”
- 5% of patients experience halos
- Bilateral implants
- Use -2.25D Glasses to reassure decision
- Communication with surgeon / referral center
- Check toric axis at one week

What are the Early Complications with Cataract Surgery?

Early Complications

- Cornea edema
- IOP spikes
- Wound complications
- Endophthalmitis
- IOL Surprises



www.cehjournal.org/images/ts020005.jpg

Cornea Edema

- Temporary – endothelial shock
 - Prolonged phaco time
 - Dense nucleus
 - Endothelial health - >650 microns, Fuch's
- Appearance
 - Microcystic edema
 - Stromal folds and haze



IOP Spikes

- Retained viscoelastics
- Long standing glaucoma
- Treatment:
 - Topical glaucoma agents
 - Diamox
 - Osmoglyn
 - Open incision at the slit lamp

Decompression: Does it Really Work?

- IOP rise occurs 5 to 7 hours after surgery
- Causes ocular pain
- Causes sight –threatening complications
 - Retinal vascular occlusion
 - Progressive VF loss in advanced glaucoma
 - AION
- Controls IOP typically for 1 hour
- Additional treatment needed to protect vulnerable eyes

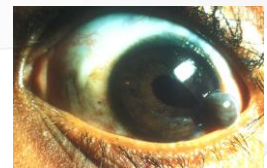
Hildebrand et al. Efficacy of anterior chamber decompression in controlling early intraocular pressure spikes after uneventful phacoemulsification. J Cataract Refract Surg 2003; 29:1087-1092.

Wound Complications

- Potential for post-operative endophthalmitis
- Shallow A/C
- Low IOP
- Perform seidel test
- If A/C formed and no secondary complication from hypotony, treat conservatively
 - Bandage contact lens
 - Antibiotics – QID
 - Follow up q24h

Wound Complications

- Uveal incarceration
 - External pressure / eye rubbing
 - Iris prolapse
 - IOP normal
 - Look for leaks
 - Rigid shield on eye
 - Refer to surgeon



www.cehjournal.org/images/ts020005.jpg

What are We Looking for at Week #1?

Post-operative Week #1

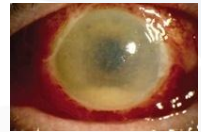
- Confirm medications
- Uncorrected vision
 - Distance: Refraction (reason for decreased vision?)
 - *Near with good lighting*
- IOP
- Slit lamp examination

Post-operative Week #1

- Patient instructions:
 - Review medications
 - Review instructions for next surgery
 - Complete QOL questionnaire for 2nd eye
- Encourage patient
 - Avoid “buyer’s remorse”
 - Premium IOLs – Bilateral / Haloes / -2.50D Glasses
- **FAX results to surgeon**

Endophthalmitis

- 3-5 days after surgery
- 4+ cell and hypopyon
- Pain
- Eyelid edema
- Decreased vision
- If patient calls with symptoms during the first week: the doctor *must* see the patient
- **Surgical emergency:** hours (not days) make a difference



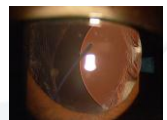
Taken from <http://www.retinalphysician.com/article.aspx?article=100059>

IOL Surprises

- Greater than 1D from planned refractive result
- Poor measurements - Axial length, Keratometry, A-constant, Software program
- Mistake in the OR
- Wrong packaging
- Must identify problem within the **first week***
- Treatment
 - IOL exchange

Dislocated IOL

- Consider in High Risk Patients
 - Pseudoexfoliation
 - Marfans
 - Trauma
- Unrecognized zonular dehiscence
- Unrecognized tear in posterior capsule
- Treatment
 - Repositioning or IOL exchange



Month #1 Considerations

Post-operative Month #1

- Uncorrected vision
 - Distance
 - Near with *good lighting*
- Final refraction
 - Visually significant cylinder?
 - Overcorrection?
 - Undercorrection?
- IOP

Post-operative Month #1

- Slit lamp exam:
 - Cornea: clear? edema?
 - Look for surface disease: dry eye? SPK?
 - AC well formed with *no cell*
 - IOL well centered in pupil
 - Evaluate posterior capsule
- Fundus exam
 - Confirm that there is *no CME*
 - Peripheral retina

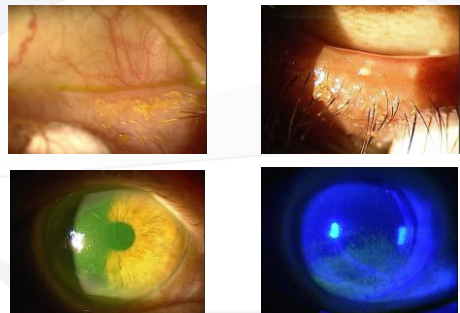
Post-operative Month #1

- Patient recommendations:
 - Post-operative spectacles?
 - Treat surface disease?
 - Yag capsulotomy?
 - Laser vision correction?
- It may take several more months to obtain your very best vision
- **Fax results to surgeon**

Later Post-operative Complications

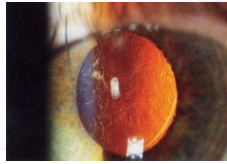
- Ocular surface disease
- Posterior capsular opacification
- Cystoid macula edema
- Rebound inflammation
- Retinal detachment
- IOL surprises
- Dislocated IOLs

Pearl – All *visual fluctuation* is due to ocular surface disease



Posterior Capsule Fibrosis

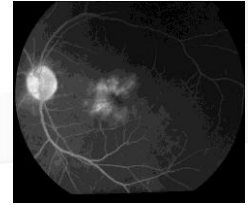
- Proliferation of equatorial lens epithelium along post capsule
- Incidence 10-25%
- Treatment- YLC
 - Complications – Iritis / IOP spikes / RD / CME



SCHAUMBERG D. A. et. al. A systematic overview of the incidence of posterior capsule opacification. *Ophthalmology* (Rochester, MN) Y. 1998, vol. 105, No. 7, pages 1213-1221

Cystoid Macular Edema

- CME is the most frequent cause of visual decline following *uncomplicated* cataract surgery
- Late on-set (4 to 6 weeks post-operatively) ¹
- Estimated to occur in 12% of low-risk cataract cases²
- CME development is due in part to prostaglandin-mediated breach of blood-retinal barrier³



1. Samiy N, Foster GS. The role of nonsteroidal antiinflammatory drugs in ocular inflammation. *Int Ophthalmol Clin.* 1996;36(1):195-206. 2. McColgin AZ, Raizman MB. Efficacy of topical Voltaren in reducing the incidence of post operative cystoid macular edema. *Invest Ophthalmol Vis Sci.* 1999; 40 S289. 3. Mishima H, Masuda K, et al. The putative role of prostaglandins in cystoid macular edema. *Prog Clin Res* 1989;31:251-264.

Multifocal Pearls

- Treat residual refractive errors
- Early yag capsulotomy
- Aggressively treat ocular surface disease
- Look for cystoid macular edema (CME)

My Experience with ATIOLS

- 99% 20/Happy patients
- Most problematic patients have ocular surface disease
 - “I never had dry eye before”
 - Importance of Dx/Tx pre-operatively

Future Considerations

- Femtosecond technology
- Sophisticated implantation methods
- Intraoperative measurement
- Emerging IOL technology
- Iris fingerprinting

Femtosecond Lasers in Ophthalmology

- Cornea
 - Flaps for LASIK
 - Transplant Procedures
 - Intrastromal and Lenticule Refractive Procedures
- Scleral
 - Glaucoma Treatments
 - Presbyopia Procedures
- Crystalline Lens
 - Presbyopia Reversal/Delay
 - Cataract Surgery
- Vitreous/Retina
 - Vitreous cutting
 - Retinal imaging/treatment

The LenSx® Laser

A dynamic platform technology that will:

- Deliver true refractive cataract surgery with the precision of a femtosecond laser
- Establish **Laser Refractive Cataract Surgery** — a viable new advanced technology category
- Rapidly advance the evolution of true image-guided intraocular surgery
- Advance the development of a more digitized, predictable approach to lens replacement surgery



LenSx® Laser Integrated OCT

Image-guided Laser Refractive Cataract Surgery

- Intuitive touch screen Graphic User Interface
 - for easy customization of all surgical parameters
- Real-time video imaging for 3D visualization
 - guides the surgeon while docking
 - for optimal surgeon control
- True image-guided surgical planning
 - enables the surgeon to precisely program size, shape, location of each incision

Traditional Cataract Surgery: Common Complications

- 10-40% Posterior capsule opacification
- 2-12% Transient cystoid macular edema
- 1-5% Vitreous prolapse or loss
- 4-10% Corneal endothelial cell loss

Traditional Cataract Surgery: Vision Threatening Complications

- 0.6-2% Retinal detachment
- 1-2% Persistent cystoid macular edema
- 0.3% IOL Malposition
- 0.3% Consecutive corneal transplantation
- 0.1% Endophthalmitis

Quality = Safety

- Fewer Wound Leaks: Multiplanar Incisions
- Lower Endophthalmitis Rates
- Fewer Corneal Abrasions, Less PO Pain
- More Predictable PO Astigmatism
- LRIs arcuate & without induced Dry Eye
- Less IOL Decentration & IOL Tilt
- Fewer YAG Capsulotomies
- Less Phaco Time
- Fewer Ruptured Posterior Capsules
- Lower Endothelial Cell Loss

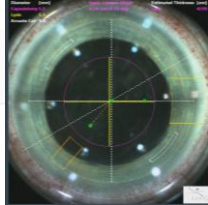
Femtosecond Cataract Surgery: FDA Approved

- LenSx: Capsulotomy, Incision, Fragmentation
- LensAR: Fragmentation, Capsulotomy
- Optimedica: pending
- Technolas: pending
- Nidek: pending

LenSx® Laser Arcuate Incisions

Image-guided surgical planning with 3D visualization

- Real time corneal thickness
- Computer programmed incisions
 - % depth
 - incision length and position
 - 3D visualization of incision placement
- Predictable incision width, tunnel length
- Titratable incisions
 - adjustable during surgical procedure
 - adjustable post-op at slit lamp



Laser Refractive Cataract Surgery



Microincision Cataract Surgery

- Why?
 - Quicker recovery
 - Better wound strength
 - Lower complication rates
 - Better outcomes
- Emergence to sub-2.0mm incision
- B & L Stellaris - 1.8mm
- Alcon Infiniti – 2.2mm



ORange™ Technology

- Intraoperative wavefront aberrometer
- Talbot-Moire' interferometry
- Improved outcomes w/ LRIs
- Toric lens positioning
- Reduce LASIK enhancements



AT LISA (Carl Zeiss Meditec)

- Light distributed asymmetrically
- Independence from pupil size
- SM² technology
- Aberration correcting aspheric optic
- Fits through 1.5mm incision
- Aspheric toric anterior surface
- Aspheric multifocal posterior surface
- +3.75 Add at IOL plane



Rayner Premium IOLs

- Rayner T-*flex*®
 - Spheres: +6.0D to +30.0D in 0.5D increments
 - Cylinders: +1.0D to +6.0D in 1.0D increments
- Rayner M-*flex*® T
 - Refractive, aspheric optics
 - Spherical equivalent: +14.0D to +32.0D in 0.5D increments
 - Cylinder: 2.0D
 - Addition: +3.0D or +4.0D
- Sulcoflex Toric
 - Supplementary IOL
 - Post-surgical / residual ametropia



Comanagement Pearls

- Identify potential causes of surgical complications
- Educate your patients your role within medical eye care
- *We are all judged by the visual outcomes our patients. Comfort and quality of vision is the key!*

Make this an *exciting* opportunity for your patients

- This is a great time to have cataract surgery as we can offer you so much more than several years ago
- This is your *one* opportunity to select your intraocular lens
- We will give you the information you need and help you make this important decision

Make this an *exciting* opportunity for your patients

- As your primary care Eye Doctor, I will make a *recommendation* and help you make this important decision

Thank You !!!!



Virginia Eye Consultants

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