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
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

<table>
<thead>
<tr>
<th>Number of Ophthalmologists</th>
<th>2008</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>15,000</td>
<td>15,101</td>
</tr>
<tr>
<td>Completing Residency</td>
<td>420</td>
<td>482</td>
</tr>
<tr>
<td>Retirements (avg. age 69.4)</td>
<td>320</td>
<td>425</td>
</tr>
<tr>
<td>Ending</td>
<td>15,100</td>
<td>15,158</td>
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**Aging Population**

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

![Growth Projection for 60+ Population](chart)

**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?

Co-Management Opportunities

- Can Optometrist Receive Payment for Increase in Lens Fee?  YES
- Can Non-Covered Services Be Co-Managed?  NO
- Advance Beneficiary Notice
- How is Fee Determined?

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


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)
Young Lens

Aberration in the Young Lens

Youthful Functional Vision

Aging Lens

Aberration in the Aging Lens

Reduced Functional Vision
Spherical IOL’s

Aberration in Traditional Spherical IOLs

Reduced Functional Vision

Tecnis IOL

TECNIS Optic Technology
modified prolate anterior surface

Improved Functional Vision
Available Aspheric IOL’s

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

Toric IOLs
Prevalence of Astigmatism

CORNEAL CYLINDER (D)

Correction of Astigmatism During Cataract Surgery

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

AcrySof® Toric
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
  - $10^\circ$ results in cylinder reduction of $\frac{2}{3}$
  - $20^\circ$ results in cylinder reduction of $\frac{1}{3}$
  - Partial reduction with up to $30^\circ$ misalignment

Toric IOL Rotation

<table>
<thead>
<tr>
<th>STAAR</th>
<th>ACRYSOF IQ</th>
<th>TECNIS</th>
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<tr>
<td>$37% &lt; 5 \text{ deg.}$</td>
<td>$73% &lt; 5 \text{ deg.}$</td>
<td>$94% &lt; 5 \text{ deg.}$</td>
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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

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

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<td>24</td>
<td>20</td>
<td>17</td>
<td>14</td>
<td>11</td>
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<tr>
<td>Accommodation per 1.0 mm forward IOL movement (D)</td>
<td>1.9</td>
<td>1.6</td>
<td>1.3</td>
<td>1.1</td>
<td>0.9</td>
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## Z-Syndrome / CCS

![Z-Syndrome Diagram]
Synchrony IOL and Preloaded Injector

Multi-Focal IOL’s
- Alcon Acrysof IQ ReSTOR
- AMO TECNIS Multi-focal
- AMO TECNIS Symfony Multi-focal
TECNIS® Multifocal Acrylic IOL

- 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
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

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
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

3.6 mm

TECNIS Symfony

- Extended depth of focus
- Diminished chromatic aberrations
**Patient Selection**

*Pre-operative Considerations*

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

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**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
Anterior Membrane Dystrophy
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!!**)


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
Cataract Surgery Post-Operative Management

- 1 Week
- VA
- Wound
- IOP
- Anterior Chamber
- IOL Placement
- Manifest Refraction

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)
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
Hypermature 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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