Challenges in Cataract Surgery Co-Management

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Disclosures
- Consultant: Allergan Pharmaceuticals
- Speaker: Allergan Pharmaceuticals

Today
- Technological Advances in IOL’s
- Co-Management by Optometry
- Intra-Operative Challenges

Opportunities
- 78 Million Americans (baby boomers) Started Enrolling in Medicare Beginning in 2011
- Technology Adopters
- Care is Provided in Your Practice
- Our Role 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></th>
<th>2008</th>
<th>2015</th>
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<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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</tbody>
</table>

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

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
- Removed Surgical Co-Management
- Global Fee – Essentially Fee Splitting
- OIG Evaluate on Case by Case Basis
- Spawned Joint Position Paper

What’s It All About
- Cataract/Refractive Surgery Boom
- Increasing Amount of Premium IOL Surgery
- Increasing Amount of Co-Management

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

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 Properly

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?
- Advance Beneficiary Notice
- Can Non-Covered Services Be Co-Managed?
- How is Fee Determined?

Non-Covered Services
- Refraction
- Contact Lens Trial
- Wave-front Testing
- Topography
- Pachymetry
- Routine Care
- Keratoplasty for Enhancement
- IOL Exchange

Non-Covered Services Payment
- If Surgeon Collects Full Payment it 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

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

Young Lens
Aging Lens

Spherical IOL’s

Toric IOLs

Available Aspheric IOL’s
- AMO Tecnis
- Alcon AcrySof
- B & L Aspheric
- SofTec HD Aspheric

Prevalence of Astigmatism

CORNEAL CYLINDER (D)
Correction of Astigmatism During Cataract Surgery

- Toric IOL
- Limbal Relaxing Incisions

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° results in cylinder reduction of $\frac{2}{3}$
  - 20° results in cylinder reduction of $\frac{1}{3}$
- Partial reduction with up to 30° misalignment
Staar vs Acrysof Rotation

```
37% < 5 deg.
73% < 5 deg.
```

Capsule Immediate Post-Op

```
On Axis
```

```
Oblique to Stria
```

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

<table>
<thead>
<tr>
<th>Axial Length (mm)</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
<th>26</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOL Power (D)</td>
<td>27</td>
<td>24</td>
<td>20</td>
<td>17</td>
<td>14</td>
<td>11</td>
</tr>
<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>
<td>0.8</td>
</tr>
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Z-Syndrome / CCS

Synchrony IOL and Preloaded Injector

Multi-Focal IOL’s
- AMO Array (first generation)
- AMO ReZoom
- Alcon ReSTOR
- Alcon Aspheric ReSTOR (yellow)
- Alcon ReSTOR 3.0
- AMO Tecnis Multi-focal

TECNIS® Multifocal Acrylic IOL
### 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

### 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.

### 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

### 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
Clinical Management

Patient Selection, Pre-op, Surgical, Post-op

Peri-operative Care

Ocular Surface Disease Management

Key Ocular Disease Findings

Co-management Pearls

Patient Selection
The Ideal Candidate
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 or Salzmann’s of any other irregular cornea disorder
- Previous Hx of HSV
- Ectatic Disorders

Patient LM

- ORB OS
Corneal Guttata

Posterior Blepharitis

Patient Selection
The Ideal Candidate
Psychological Attributes

- Not Type A-
- Realistic expectations
- Psychologically stable
Consistent Topography: Tear Stability

Osmolarity Testing

Comparison of TearLab™ & Laboratory Osmometers

<table>
<thead>
<tr>
<th></th>
<th>TearLab™</th>
<th>Laboratory</th>
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</thead>
<tbody>
<tr>
<td>Specificity</td>
<td>90%</td>
<td>92%</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>73%</td>
<td>69%</td>
</tr>
<tr>
<td>PPV</td>
<td>85%</td>
<td>87%</td>
</tr>
<tr>
<td>DED Subjects</td>
<td>321 ± 16.5</td>
<td>326 ± 22.1</td>
</tr>
<tr>
<td>Normal Subjects</td>
<td>308 ± 6.2</td>
<td>302 ± 9.7</td>
</tr>
</tbody>
</table>

Alan Tomlinson - Glasgow Caledonian new University, UK

The instrument has the potential to provide clinicians with a readily available, clinically applicable measure, which could become the "gold-standard" in DED.

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
  - Typically 4th Generation Antiobiotic 9d
  - 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 Pred Forte if AC Reaction has decreased to bid

Suprachoroidal Hemorrhage
Suprachoroidal Hemorrhage
Wound Leak
Retained Lens Material
Microscope Phototoxicity
Displaced IOL
Endophthalmitis
Cataract Surgery Post-Operative Management

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

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

Cystoid Macular Edema (CME)

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

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 – Fuchs’ 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
charficco@gmail.com