### Cataract Surgery Post-Operative Care

Cecelia Koetting, OD FAAO  
Virginia Eye Consultants  
Norfolk, VA

### Disclosures

- Alcon consultant

### Cataract Surgery Background

- History, where did we come from, where are we now
  - Extracapsular vs Intracapsular
  - Phacoemulsification (1967)
  - Laser assisted
  - First IOL (1950)
  - Premium IOLs
    - Multifocal PCIOL
    - Extended depth of focus PCIOL
    - Accommodating PCIOL

### Patient Selection and Consideration

- Patients overall goal decreased dependence on glasses and contacts
- Ocular surface disease
- Macular/posterior segment disease
- Topography measurements
  - Astigmatism
  - Angle Lambda
  - Corneal symmetry and shape
  - Keratoconus
  - Posterior float

### Patient Education

- NO guarantee of 20/20
- Discuss risks, benefits and potential complications
- Understand presbyopia and the need for reading MRs
- Post-op glare, haloes, dryness and vision fluctuations
- Risk of loss of BCVA
- Risk of infection, inflammation, and scarring
- Risk of corneal haze
- Potential need for enhancements

### Medicare Requirements

- BCVA worse than 20/40
- Brightness acuity test (BAT)
  - 2 lines or more decrease in distance vision
- With premium IOL’s not always a factor

### Post-operative and Intraoperative Medication

- Antibiotic

- Used to decrease risk of ocular infection as well as endophthalmitis
- Most commonly used
  - Steroids
  - Moxifloxacin/Vigamox
  - Polymyxin
  - Tobramycin

### Antibiotic

- Besivance
- Moxifloxacin/Vigamox
- Polytrim
- Tobramycin
Antibiotic Prophylaxis Comparison

- Retrospective, > 300,000 cases
- Topical antibiotic (0.7/1000)
  - Gatifloxin = Polymyxin + aminoglycoside [intraocular]
    (0.6-0.72 = 0.73 > 1.53/1000)
- No antibiotic + aminoglycoside
  (1/1000 = 1.53/1000)

Steroid

- Used to decrease inflammation during the healing process
- Decreasing complications
- Most commonly used:
  - Pred Forte
  - Durezol
  - Lotemax

Nonsteroidal Anti-Inflammatory Drug (NSAID)

- Helps to decrease Pain
- Decreases risk of posterior inflammation (cystoid macular edema)
- Most commonly used:
  - Ibuprofen
  - Celebrex
  - Ketorolac


Mainstay Topical Therapy More Advanced

- Newer formulations
- Decreased dosing
- Unique delivery systems – eliminate reliance on shaking
- Difloropred – ointment
- Lotepred – gel
- Bromfenac 0.075% – duraSite
- More potent
- Beniflunixin

Problems with Topical Therapy

- Compliance
- Pharmacy issues
- Genetic variations, dose alterations
- Manual Delivery
- CVA, Alzheimer’s, Parkinson’s, RA, Demecolin
- Ocular surface toxicity
- Penetration into the eye
- Posterior Troughs
- Cost

Compounded Drops

- Decreased cost to the patient
- Each bottle = 1 0Z usually requires 2 bottles per eye
- Increased compliance
- Less confusion over how to use the drops
- Pinnacle compounded drops
- OMNI #1 – Gatifloxin, Lotepred, Prednisolone
  - QID X 2 weeks
- OMNI #2 – Ketorolac, Prednisolone
  - QID X 9 weeks

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Alternative Options to Mainstay Topical Therapy

- Preoperative/Postoperative
- Less Drops (Imprimis), Droplet (Ocular Science) combination compounded topical therapy
- Steroid/NSAID (Combien) – proprietary mixture of prepping regimen with compounded topical therapy
- Manual Delivery
- CVA, Alzheimer’s, Parkinson’s, RA, Demecolin

- Intraperoperative
  - Topical for anterior (PNI)
  - Intracameral antibiotics and/or steroid combination
- Intracameral combination: antibiotics (Gatifloxin)
- Intracameral antibiotic and/or steroid combination
- Intracameral steroid insert (Dextensa)

Intraoperative

- Postoperative Visits

- In a perfect world:
  - 1 day postoperative
    - Check VA, IOP, and anterior segment
  - 7-10 days postoperative
    - Check VA, IOP, MIR, dilate, toric IOL, and anterior segment
  - 3-4 weeks postoperative

- Patients are not generally told to sleep in an eye shield after cataract surgery

Post Operative Care
What to Look for After Cataract Surgery?

- 1 day – High or low IOP
- 3-7 days – Endophthalmitis
- 2-3 weeks – Steroid Responder
- 3-4 weeks – Iritis/Uveitis
- 4-6 weeks – CME
- 2 months – Posterior capsule opacification

Traditional Cataract Surgery: Common Complications

- 10-40% PCO
- 2-12% CME
- 4-10% Kendo
- 1-5% Vitreous prolapse

Post-operative Day #1

- Confirm medications
- Uncorrected vision
- Distance: reason for decreased vision?
- Near: check on SE and EDOF lenses
- IOP
- Slit lamp examination
- Corneal wound secure?
- Cornea clear? Edema?
- AC well formed with about 1-2+ cell
- IOL well centered in pupil, unless dilated

Patient Instructions Day 1

- Review medications
- Bending ok
- Do not get tap water directly in eye
- No pools, hot tubs, or yard work for 1-2 weeks
- No eye makeup for 1 week
- Remind patient that it is normal for vision to be blurry and eyes out of balance

Patient Case #1

- 65 YOA W/M
- 1 day p/o CE w/ standard PCIOL, OD
- VA OD 20/50
- SLE 1+ SPK, Tr MCE
- AC 1+ cell
- IOP 40

What are the Early Complications with Cataract Surgery?

- IOP Spikes
  - Retained viscoelastic
  - Long standing glaucoma
  - Treatment:
    - Topical glaucoma agents
    - Diamox
    - Osmoglyn
    - Just burp it
Decompression: Does it Really Work?

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

Wound Complications

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

Post-operative Week #1

- Confirm medications
- Uncorrected vision
  - Distance: Refraction (reason for decreased vision?)
  - Near and good lighting
- IOP
- Slit lamp examination
  - Dilate to check for correct positioning of Toric implants
  - Check for coma/phakic effect

Cornea Edema

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

Patient Case #2

- 80 YOA W/M
- 1 week p/o CE w/ standard PCIOL, OD
- VA 20/50
- MRX +0.50-1.25 X083 20/50
- K’s 44.25/45.5@173
- SLE 3+ corneal edema
- The patient is scheduled for the 2nd eye in one week

Post-operative Week #1

- Patient instructions:
  - Review medications
  - Review instructions for next surgery
  - Encourage patient
  - Avoid “buyer’s remorse”
  - Advanced Technology IOLs – Bilateral / Haloes / -2.25D Glasses

Patient Case #3

- 74 YOA W/F
- 1 week p/o CE standard PCIOL, OD
- Reports a sudden decrease in vision OS starting yesterday, changing white parts, nucleus large pink iris.
- VA CF @1ft. PFLD (was 20/40 @ day 1 PO)
- VA CF @10. PFLD (was 20/48 @ day 1 PO)
- AC 3+ still and flat, Iris strand adherent to superior wound
- PC-vitrous cells confirmed with B scan

What should you do?

- Review medications
- Review instructions for next surgery
- Encourage patient
  - Avoid “buyer’s remorse”
  - Advanced Technology IOLs – Bilateral / Haloes / -2.25D Glasses

What’s likely going on?
Endophthalmitis
- 3-5 days after surgery
- 4+ cell and hypopyon
- Pain
- Eyelid edema
- Decreased vision
- Must see the patient
- Surgical emergency: hours (not days) make a difference.

Post-Cataract Surgery Endophthalmitis
Endophthalmitis Vitrectomy Study
- 69% of patients with bacterial endophthalmitis were culture-positive

Postoperative 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
- Communication with surgeon / referral center
- Check toric axis at one week

Refraction Surprises
- Greater than 1D from planned refractive goal
- Calculation error
- Post measurements
- Axial length, Keratometry, A-constant, Software program
- Ocular surface disease
- Wrong packaging
- Z syndrome with Trulign and Crystalens
- Toric Rotation
- Must identify problem within the as soon as possible
- Treatment
- IOL exchange

What to Look for After Toric IOL Surgery?
- Crossed Cylinder effect
  - Over corrected amount of cylinder causes an amount of cylinder
  - Measured 90 degrees from where original cylinder was
  - Formula: +100-200 x 130
  - Can dilate in one week if suspicion for toric rotation
  - Increased cylinder found in an oblique axis
  - Consider posterior corneal astigmatism

Dislocated IOL
- Consider in High Risk Patients
- Pseudophakic
- Marfan
- Trauma
- Unrecognized zonular dehiscence
- Unrecognized tear in posterior capsule
- Treatment
- Repositioning or IOL exchange

Post-operative Month #1
- Uncorrected vision
- Distance
- Near with good lighting
- Visual Snellen acuity
- Final refraction
- Visually significant cylinder?
- Disconnection?
- Under correction?
- 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
  - Perform OCT-M if VA uncorrectable to 20/20

- Peripheral retina:
  - 

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
- Neuro adaptation of the brain

Persistent or Re-occurring Inflammation

But why won’t it just go away?

- Persistent mild or unresolved lens or intraocular fluid reaction may require a closer look at a possible systemic cause
- Blood work should be done
  - CBC (WBC)
  - ACE (sarcoidosis)
  - ANA (autoimmune/SLE/JRA)
  - ELISA (Lyme disease)
  - ESR (elevated = inflammatory activity)
  - HLA-B27 (ankylosing spondylitis, Reiters, IBD, psoriatic arthritis, ESR)
  - Consider chest x-ray and PPD (TB)
  - FTA-ABS (syphilis)

Patient Case #4

- 56 YOA W/F with Type II DB
- 1 month p/o CE standard PCIOL, OS
- Reports a gradual decrease in vision over the last week
- VA 20/60 PHNI
- No improvement with MRX
- AC D &Q
- PC slightly raised appearance to macula

What is going on?

Cystoid Macular Edema

- CME is the most frequent cause of visual decline following uncomplicated cataract surgery
- Late onset (4-6 weeks post-operatively)
- Estimated to occur in ~2% of low risk cataract cases
- CME development is due in part to intravitreous/submacular fluid of blood-retinal barrier

CME

- Present or decrease risk with an NSAID
- When does occur treat with steroid and NSAID
- May require intravitreal injections with retina specialist if worsen or persistent

Incidence of PVD After Cataract Surgery

- Purpose: To report the incidence of posterior vitreous detachment after successful main sit of the set small incision phacoemulsification with implantation of a posterior chamber intraocular lens
- 208 eyes of 208 patients

Pre-op:
- 100% had PVD / 0% no PVD

Post-op:
- 90% had PVD in one week
- 95% in one month
- 98% at one year
### Pearl – All visual fluctuations are due to ocular surface disease

### Cataract Surgery and Dry Eye
- Pre-existing vs. Surgically induced
- Studies show between 74-87% of patients suffer from post-operative dry eye.
- Increase in OSDI
- Increase corneal fluorescein staining

**Contributing factors**
- Anesthesia
- Eye drops / BAK
- Light exposure
- Incision


### Posterior Capsule Fibrosis
- Proliferation of equatorial lens epithelium along post capsule
- Incidence 10-25%
- Increased in patients who are s/p retinal surgery and younger
- Occurs anytime after surgery
- Treatment: YAG Posterior Capsulotomy

**Complications**
- Iritis / IOP spikes / RD / CME