# Cataract Surgery Post-Operative Care

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## Disclosures

- None

## Cataract Surgery Background

- History, where did we come from, where are we now  
  - Extracapsular vs intracapsular  
  - Phacoemulsification (1967)  
  - Laser assisted  
  - First IOL’s (1950)  
  - Premium IOL’s  
  - Staarsoft PCOIA  
  - Extended depth of focus PCOIA  
  - Accommodating PCOIA

## Patient Selection and Consideration

- Patients overall goal decreased dependence on glasses and contact lenses  
- 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 MRx  
- Post-op glare, halos, 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  
  - Bimatoprost  
  - Microfluoracetate/Viganox  
  - Polymyxin  
  - Tobramycin
Antibiotic Prophylaxis Comparison

- Retrospective, >300,000 cases
- Topical antibiotic (0.7/1000)
  - Gatifloxin = Polymyxin > aminoglycoside [tobramycin]
    - 0.6 < 0.72 = 0.73 < 1.53/1000
- No antibiotic + aminoglycoside
  - 1/4/1000 = 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
- Decrease risk of posterior inflammation (cystoid macular edema)
- Most commonly used:
  - Ilevro
  - Prolensa
  - Bromsite
  - Ketorolac

Mainstay Topical Therapy More Advanced

- Newer formulations
- Decreased dosing
- Unique delivery systems – eliminate reliance on shaking
- Difluprednate – emulsion
- Loteprednol – gel
- Bromfenac 0.075% – durasite
- More potent
- Beniflunixin

Problems with Topical Therapy

- Compliance
- Pharmacy issues
- Genetic variations, dose alterations
- Manual Dexterity
- CNS, Alzheimer’s, Parkinson’s, OA, Osteoarthritis
- Ocular surface toxicity
- Penetration into the eye
- Posterior Troughs
- Cost $$$
  - Also cost to practice in time with prior authorizations/Call-backs

Compounded Drops

- Decreased cost to the patient
- Each bottle is 4X usually requires 2 bottles per eye
- Increased compliance
- Less confusion over how to use the drops
- Pinnacle compounded drops
- OMNI #1 – Gatifloxacin, Ketorolac, Prednisolone
  - QID x 9 doses
- OMNI #2 – Ketorolac, Prednisolone
  - QID x 9 doses

Alternative Options to Mainstay Topical Therapy

- Preoperative/Postoperative
  - Less drops (Imprimis), Droplet (Ocular Science) combination/treatment

- Postoperative
  - Iontophoresis (EyeGate Pharmaceuticals) – noninvasive method of propelling charged active compounds into ocular tissue

- Intraoperative
  - Topical Forzane Iodine (1%)
  - Intracameral antibiotic and/or steroid combination
  - Intracameral antibiotic and/or steroid combination

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  - Intracamellar (for laser surgery)

Postoperative Visits

- In a perfect world:
  - 1 day postoperative
  - Check VA, IOP, and anterior segment
  - 7-10 days postoperative
  - Check VA, IOP, MRX, 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

Post-operative Day #1

- Confirm medications
- Uncorrected vision
- Distance: reasons for decreased vision?
- Near: check on MP 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

Post-operative Day #1

- 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
- Reading 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 should you do?

What are the Early Complications with Cataract Surgery?

- IOP Spikes
- Retained viscoelastic
- Long standing glaucoma
- Treatment:
  - Topical glaucoma agents
  - Diuretics
  - Osmotic therapy
  - Just wait

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
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
- Bandage contact lens
- Antibiotics – QID
- Follow up q24h

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

Post-operative Week #1
• Confirm medications
• Un(corrected vision
- Distance: Refraction (reasons for decreased visual?)
- Near with good lighting
• IOP
• Slit lamp examination
• Dilate to check for correct positioning of Toric implants
• Check for cross cylinder affect

Post-operative Week #1
• Patient instructions:
- Review medications
- Review instructions for next surgery
- Encourage patient
- Accurate “no stress” source
- Advanced Technology XLE – Balanced / Holos / -2.25D Glasses

Patient Case #2
• 88 YOA W/M
• 1 week p/o CE w/ standard PCIOL, OD
• VA 20/50
• 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

Patient Case #3
• 74 YOA W/F
• 1 week p/o CE standard PCIOL, OS
• Reports a sudden decrease in vision OS starting yesterday, changing within hours, severe light dark feature and can only see shapes. Pt denotes pain
• VA CF w/1.00 PHNI (was 20/40 day 1 PO)
• VA CF 2+ PHTN (was 20/40 day 1 PO)
• AC 3+ cell and flare, (from strand adherence to supravitreous vitreous)
• PC vitreous cells confirmed with B scan

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

What's likely going on?

What should you do?
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 errors
- Poor 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 first week
- Treatment
  - IOL exchange

What to Look for After Toric IOL Surgery?

- Crossed Cylinder effect
- Over corrected amount of cylinder causes an amount of cylinder
  - 360-90 degrees from where original cylinder was
  - ± sph - double the astigmatism
  - +100-200x130
- Can dilate in one week if suspicious for toric rotation
- Increased cylinder found in an oblique axis
- Consider posterior corneal astigmatism

Dislocated IOL

- Consider in High Risk Patients
  - Pseudoxfoliation
  - Marfans
  - 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
- 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?
  - Treating surface disease?
  - Yag capsulotomy?
  - Laser vision correction?

- It may take several more months to obtain your very best vision
- Neuroadaptation of the brain

But why won't it just go away?

- Persistent or re-occurring inflammation requiring a closer look at possible systemic issues
- 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, RA)
  - Consider chest x-ray and PPD (TB)
  - FTA-ABS (syphilis)

Patient Case #4

- 70 YOA W/F with Type II DM
- 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 (7 to 9 weeks post-operatively?)
- Estimated to occur in 2-7% of low risk cataract cases
- CME development is due to intraretinal leakage that makes the retina swell

CME

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

Incidence of PVD After Cataract Surgery

- Purpose: To report the incidence of posterior vitreous detachment after successful state-of-the-art small-incision phacoemulsification with implantation of a posterior chamber intraocular lens
- 188 eyes of 188 patients
  - Pre-op:
    - 69.1% had PVD / 30.9% no PVD
  - Post-op:
    - 20.7% developed in one week
    - 31% at one month
    - 6.9% at one year
    - 41.4% no PVD
Cataract Surgery and Dry Eye

- Pre-existing vs. Surgically induced
- Studies show between 74-87% of patients suffer from post-operative dry eye.\(^1\)\(^2\)
- Increase in OSDI
- Increase corneal fluorescein staining
- Contributing factors
  - Anesthesia
  - Eye drops / BAK
  - Light exposure
  - Incision


Questions?

Posterior Capsule Fibrosis

- Proliferation of equatorial lens epithelium along post capsule
- Incidence 10-25%
- Increased in patients who have cataract surgery and younger patients
- Occurs anytime after surgery
- Treatment: YAG Posterior Capsulotomy
- Complications: Intra / IOP spikes, RD / CME


Thank you!