

Jane Doe – Medical Opinion

DOB: MM/DD/1953

Case Overview:

Ms. Jane Doe is a YY-year-old female with past medical history of Appendectomy, ovarian cyst removed, tonsillectomy, and status post LASIK.

Medical Opinion:

1. Who had the duty of care?

Dr. Paul XX, M.D, Ophthalmology, XXXX

2. Was there any deviation from the standard of care during the cataract surgery performed in the right and the left eye?

No.

On **MM/DD/2021**, Dr. Paul XX, M.D., performed cataract surgery in the right eye for age-related cataract of the patient. The procedure was performed under retrobulbar anesthesia. The operative eye was prepped in the usual sterile ophthalmic manner. The AC was filled with Healon. A CCC capsulotomy was performed. The lens nucleus was removed with phacoemulsification. Healon was used to fill the anterior chamber to aid IOL placement. The IOL was placed in the capsular bag. The toric was aligned at 079 degrees. Viscoelastic was irrigated and aspirated from the AC. Significant Chemosis from block. The patient tolerated the procedure well and was sent to TLC in satisfactory condition. The patient was discharged on the same day.

On **MM/DD/2021**, the patient was reviewed. **Marked lid edema on upper and lower lid.** IOL in good position, posterior capsule intact and clear. **Significant chemosis was secondary to retrobulbar block.** Reassured patient that everything appears Within Normal Limits (WNL).

On **MM/DD/2022**, XX returned Dr. XXX's phone call. Patient is doing better with **resolving chemosis and lid edema secondary to retrobulbar block.** Patient still has some resolving SCH. Dr. XXX indicates that patient will ultimately do well. Evidently, she was under the impression that XXX had documented a reaction or allergic response to RBB. XX reviewed chart note, op note and post op with Dr. XXX. No record of an allergic response. **Her post op**

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findings were secondary to the retrobulbar block delivery and will resolve sans treatment.

There is no indication that she experienced an allergic reaction and there is no documentation in XXX record. Based on clinical examination at 1 day post op and typical course of resolution patient is experiencing, there is no need for her to be concerned about an allergic response with any future utilization of RBB. Reviewed that her outcome/experience is uncommon but is a possible risk with RBB. Dr. XXX will relay this to the patient.

On **MM/DD/2022**, Dr. XXX reviewed the patient. The patient has difficulty driving and difficulty reading Since the last visit, the patient's condition is worse. Can't do work, can't read, very unhappy with the results of the surgery and the experience at the clinic she was referred to. Eye was completely swollen shut after surgery. Slit lamp examination of lens showed Pseudophakia with PCIOL centered in bag perfect axle. Vitreous clear without hemorrhage, cells or pigment. Dr XXX finally got her settled down and she is now 20/20 - in her right eye with the refractive outcome at -100 SPH just as we targeted, she still has some hyperemia, claims XXX did not give her more post op drops or call her back so I put her on a course of pred acetate 1% to whiten her eye and calm her down. Plus bland ointment at night. She also claims her right lid droops more now since the surgery and was reassured on that.

On **MM/DD/2022**, Reviewed increased potential of PCO and future need for YAG capsulotomy secondary to nature of cataract. Patient wishes to proceed with surgery.

On **MM/DD/2022**, the patient presented to XXXX. The IOL was in place. The patient was diagnosed with PCO right. YAG done was done on the right eye. Her visual acuity improved after YAG OD.

On **MM/DD/2022**, the patient underwent Phacoemulsification with posterior chamber intraocular lens placement of her left eye. Walter XX, M.D., at XXXX, performed the procedure.

On **MM/DD/2022**, Walter XX, M.D., reviewed the patient. Corneas were clear in both eyes. Some PCO left, making things cloudy for patient – YAG at 90 days. On MM/DD/2022, Walter XX, M.D., performed YAG left eye.

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To summarize, the review of the medical records shows that the patient underwent Phacoemulsification with posterior chamber intraocular lens placement of her right eye on MM/DD/2021. The procedure was performed under retrobulbar block. The patient developed chemosis during the procedure, which persisted in the postoperative period. The conjunctival edema slowly settled after a course of conservative treatment.

Conjunctival edema (chemosis) is undesirable in cornea and glaucoma surgery as it distorts the surgical field [#Ref3](#). It occurs more often after peribulbar block than retrobulbar block. The commonly accepted pathogenesis is that local anesthetic flows anteriorly along the rectus muscles traversing through the insertion points between the sheaths and the conjunctiva/sclera [#Ref3](#).

In this case, the development of chemosis after retrobulbar block was not due to deviations from the standard of care during the procedure. It is one of the recognized side effects of retrobulbar anesthesia due to accidental traversing of the local anesthetic to the subconjunctival location. It is usually managed conservatively. Hence, we conclude that postoperative chemosis after right cataract surgery was not due to deviations from the standard of care.

Three months after right cataract surgery, on MM/DD/2022, the patient presented to XXXX. She was diagnosed with Posterior Capsule Opacification (PCO) right eye. YAG done was and her visual acuity improved. The patient was warned of her increased tendency for development of PCO after cataract surgery of left eye. She underwent Phacoemulsification with posterior chamber intraocular lens placement of left eye on MM/DD/2022. She developed PCO in left eye after three months and underwent YAG left eye on MM/DD/2022.

Posterior capsular opacification (PCO), referred to as 'secondary cataract' or 'after cataract', develops over the clear posterior capsule a few months to a few years after an uneventful cataract surgery [#Ref2](#). PCO is the most common complication arising from surgery to treat cataracts. The extent of lens epithelial cells (LEC) removal influences the propensity towards PCO development [#Ref1](#). There are several risk factors that can make patients more susceptible to developing PCO. These are patient-associated risk, surgical-associated risk, and IOL-associated risk [#Ref1](#). Post-operative capsular opacification is a multifactorial physiological consequence of cataract surgery [#Ref2](#). The removal of LECs is fundamental in preventing PCO. However, this is a difficult achievement and any number of residual LECs

can mount a full PCO response [#Ref1](#). PCO is managed with Nd:YAG laser capsulotomy [#Ref1](#).

In this case, the patient was diagnosed with Posterior capsular opacification three months after the right eye cataract surgery. As explained, there are patient-related factors including diabetes, dry-eye disease, and uveitis that could increase the risk of development of PCO. The surgery related causes are variability in the removal of LEC during the cataract surgery. However, studies show that any number of residual LEC can result in PCO formation, and hence, development of PCO could not be considered to be due to deviations from the standard of care during the cataract surgery. Before the left eye cataract surgery, the patient was explained about the possibility of development of PCO after the procedure due to increased susceptibility. The patient developed PCO again in the left eye three months postoperatively and underwent YAG laser capsulotomy for the same. The fact that the patient developed PCO after right eye surgery performed at XXXX and left eye surgery at XXXX, shows that the cataract surgery was not the reason for the development of PCO but increased risk of the patient to develop PCO was probably the cause.

Hence, we conclude that the development of PCO postoperatively in both eyes was not due to deviations from the standard of care during cataract surgeries.

References:

Ref 1: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8230425/>

Factors Affecting Posterior Capsule Opacification in the Development of Intraocular Lens Materials

Posterior Capsule Opacification PCO is the most common complication arising from corrective surgery to treat cataracts.

PCO presents as a secondary cataract, an agglomeration of cells over the visual axis causing a loss of acuity. During surgery, the surgeon will create an opening in the capsular bag, known as capsulorhexis, and use phacoemulsification to remove the diseased, opaque lens and lens epithelial cells (LEC) from the capsular bag before implanting an artificial intraocular lens (IOL) [12,13]. The extent of LEC removal influences the propensity towards PCO development [14,15]. The initial inflammation caused by the surgical trauma may incite the hyper-proliferation, transdifferentiation, and migration of residual LECs [16]. The transformed LECs migrate along the posterior capsule towards the anterior chamber to accumulate over the visual axis, forming a secondary cataract.

The wound healing response of LECs post-cataract surgery is believed to be the first key developmental stage of PCO. Ocular inflammation is triggered as a result of the opening incision and subsequent lens cell removal. PCO typically develops in the first 2–5 years post-surgery. There are several risk factors that can make patients more susceptible to developing PCO. These are patient-associated risk, surgical-associated risk, and IOL-associated risk, as discussed.

Patient-Associated Risk Factors

Studies show that patient age alters the propensity of the LECs to proliferate. ECs in patients less than 40 years of age grow three times quicker than in patients less than 60 years of age. Patients with diabetes have shown significant PCO development after a year follow-up. However, the severity does not differ between diabetic and non-diabetic patients over a long-term duration, suggesting that diabetes may only increase the rate of PCO development due to the initial protein-rich and inflamed tissue. Pre-existing ocular diseases in patients such as dry-eye disease and uveitis can lead to an increased rate of PCO development and a greater likelihood of experiencing vision-threatening PCO.

Surgical-Associated Risk Factors

The outcome of cataract surgery can influence the propensity towards PCO development. The removal of LECs is fundamental in preventing PCO. However, this is a difficult achievement and any number of residual LECs can mount a full PCO response. Although surgical technique alone is not enough to prevent PCO, the surgeon's skill and commitment to removal of LECs via phacoemulsification can influence severity and rate of onset.

Intraocular Lens-Associated Risk Factors

The process of selecting the appropriate IOL is patient-specific. The choice of material, design, and function of the IOL can greatly impact risk of developing PCO.

Therapeutic Interventions for Posterior Capsule Opacification

PCO is managed with Nd:YAG laser capsulotomy. The agglomerated cells are targeted, creating an opening which restores visual acuity.

Ref 2:

Posterior Capsular Opacification (PCO)

Posterior capsular opacification, referred to as 'secondary cataract' or 'after cataract', develops over the clear posterior capsule a few months to a few years after an uneventful cataract surgery

Post-operative capsular opacification is a multifactorial physiological consequence of cataract surgery. Opacification involving the central posterior capsule has a significant impact on high and low contrast acuity and low contrast sensitivity.

The PCO has two forms, fibrous and pearl. Sometimes a combination of both is also found

The incidence of PCO is known to range from as high as 50% to as low as <5% in eyes undergoing cataract surgery for uncomplicated senile cataracts. CO reduces visual acuity when the central area (inside the pupillary aperture) is involved (25). PCO within the central 3 mm zone of the posterior capsule affects high contrast sensitivity, low contrast acuity, and sensitivity psychophysical test results with differing degrees of sensitivity. Forward light-scatter is the most sensitive, followed by contrast sensitivity and visual acuity.

RISK FACTORS

Several systemic and ocular associations have been cited for influencing the development of PCO.

At the one- year follow-up, diabetic patients had significantly severe PCO after cataract surgery when compared with non-diabetic patients.

The incidence of PCO is also high in eyes with uveitis. In these eyes, hydrophobic acrylic IOLs have shown to provide a better visual outcome and lower incidence of PCO than silicone, PMMA, or heparin-surface-modified PMMA IOLs

PREVENTION

Surgical Techniques

- Continuous Curvilinear Capsulorhexis.
- Cortical Cleaving Hydrodissection.
- Hydrodissection Combined with Rotation.
- Cortical Clean-up.
- In-the-bag IOL Fixation.
- Anterior Capsule Overlap of IOL Optic.
- Buttonholing of PC.
- Bag-in-the-lens implantation.
- Polishing (scraping) the Anterior Capsule.

TREATMENT

Central PCO obscuring the visual axis can be treated with either surgical intervention such as posterior capsule scraping or with a non-surgical neodymium:YAG (Nd: YAG) laser capsulotomy.

Ref 3:

<https://pubs.asahq.org/anesthesiology/article/121/4/877/12135/Chemosis-Secondary-to-Anterograde-Episcleral-Sub>

Chemosis Secondary to Anterograde Episcleral (Sub-Tenon) Spread of Local Anesthetic during Retrobulbar Eye Block

Conjunctival edema (chemosis) is undesirable in cornea and glaucoma surgery as it distorts the surgical field. It occurs more often after peribulbar block than retrobulbar block. The commonly accepted pathogenesis is that local anesthetic flows anteriorly along the rectus muscles traversing through the insertion points between the sheaths and the conjunctiva/sclera.² In sharp contrast, these ultrasound images reveal an alternative mechanism for the deeper placed retrobulbar block. They illustrate that local anesthetic injected at the posterior pole of the globe distends the episcleral (sub-Tenon's) space near the optic nerve root (fig. A), dissecting this plane open as it tracks forward to produce conjunctival edema at the globe's anterior surface

TRIVENTILE