The Rapidity of Glaucomatous Damage in Pseudophakic Secondary Pupillary Block

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INTRODUCTION

Pupillary block is a rare complication of cataract extraction with posterior chamber intraocular lens implantation and can occur as late as five years following surgery. A common mechanism that leads to acute angle-closure glaucoma, pupillary block occurs when aqueous humor flow from the posterior chamber to the anterior chamber is obstructed by a functional block between the pupillary portion of the iris and the lens. This patient underwent successful cataract extraction with Nd:YAG and experienced elevated intraocular pressure and pupillary block secondary to an anteriorly displaced intraocular lens implant.

CLINICAL FINDINGS

An 81-year-old African American female presented complaining of constantly dim vision OD over 5 weeks. She had a history of uncomplicated cataract extraction two years prior with successful Nd:YAG laser capsulotomy in that eye the previous year.

Clinical Exam:

BCVA: 20/100 PHNI OD
Pupil Testing: PERRL 1+APD OD
Slit Lamp: Van Herick grade 1 angle N/T OD
Intraocular Pressure: 28 mmHg (elevated)
All findings OS were unremarkable

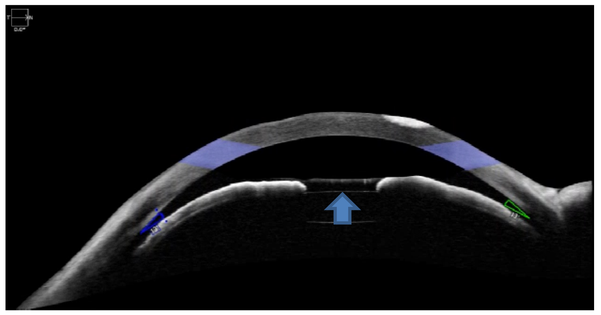
Anterior segment optical coherence tomography (AS-OCT) noted an anteriorly displaced intraocular lens with pupillary block and acutely shallow anterior chamber depth (13º nasal and temporal); see Figure 1.

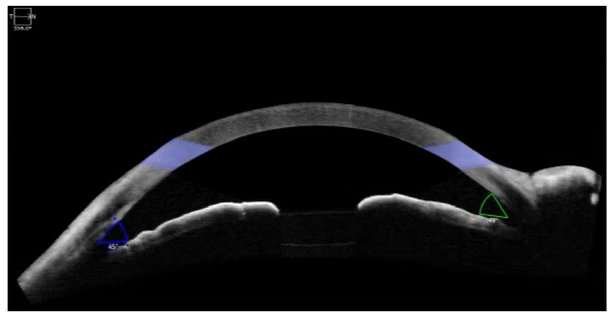
The patient was referred to an ophthalmologist who treated her with Nd:YAG laser peripheral iridotomy and topical Alphagan P® 0.1% BID OD. At follow-up one week later, visual acuity was further reduced and the APD worsened in the right eye, but intraocular pressure improved to 12mmHg with a patent LPI noted. Updated AS-OCT was remarkable for pupillary block and much deeper anterior chamber (49º nasal, 45º temporal); see Figure 2. Optic nerve assessment showed glaucomatous cupping progressed from the previous year with chronic severe angle closure glaucoma; see Figures 3 and 4.

Humphrey Visual Field testing showed significant constriction OD with both 24-2 SITA FAST (see Figure 5) and 10-2 SITA FAST (see Figure 6), demonstrating severe glaucomatous vision loss.

FIGURES 1 AND 2

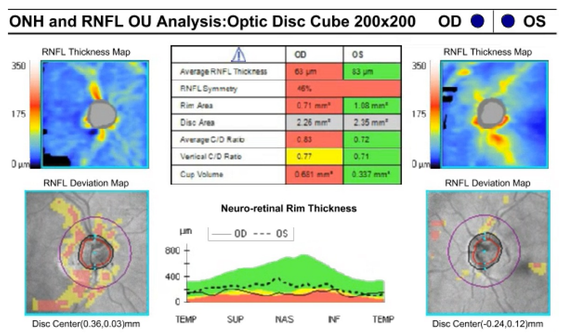
LEFT: Anterior segment optical coherence tomography (AS-OCT) at initial visit noted an anteriorly displaced intraocular lens (blue arrow) with pupillary block and acutely shallow anterior chamber depth of 13° nasally and temporally. RIGHT: AS-OCT one week following Nd:YAG laser peripheral iridotomy noted a deeper anterior chamber depth 49° nasally, 45° temporally.

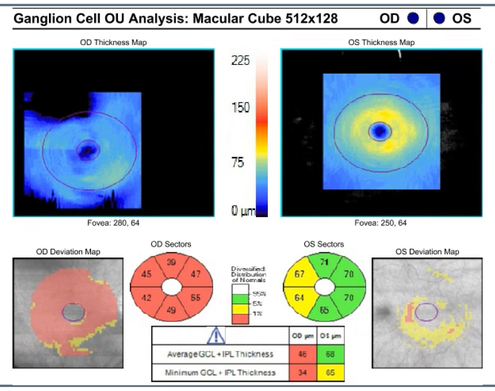


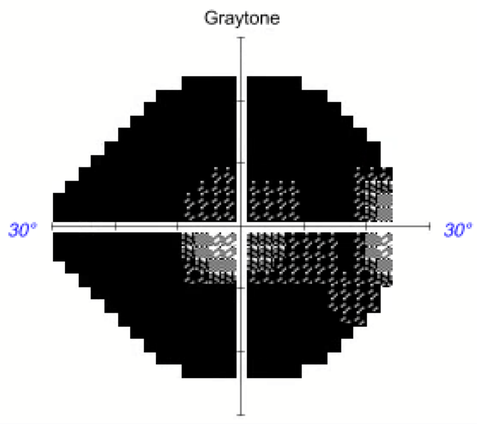


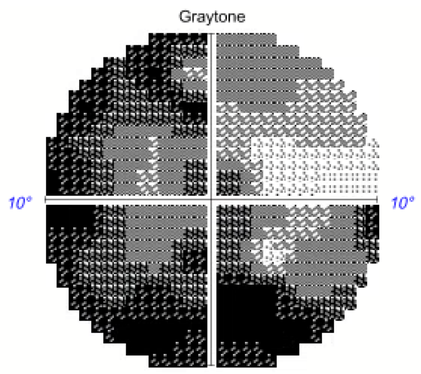
FIGURES 3 - 6

ABOVE: Cirrus ONH and RNFL Analysis, and Ganglion Cell Analysis at the time of diagnosis. Glaucomatous cupping with diffuse RNFL loss and diffuse GCA loss was noted in the right eye, with mild suspicion for glaucoma in the left eye. BELOW: HVF 24-2 and 10-2 SITA FAST show significant visual field loss in the affected eye.









DIAGNOSIS AND DISCUSSION

Pupillary block occurs when aqueous flow from the posterior chamber and the irido-corneal angle is blocked by the strong apposition of the pupillary margin with adjacent structures. It may be caused by excessive postoperative inflammation, aqueous accumulation between the posterior capsule and the anterior face of the vitreous, changes in the anatomy of the anterior chamber angle, or incorrect apposition of the IOL. Peripheral Nd:YAG laser iridotomy is a commonly reported procedure to treat pseudophakic pupillary block. Iridotomies may need to be repeated due to a tendency for occlusion, specifically in individuals with darker irises.

Persistent elevation of IOP after Nd:YAG laser posterior capsulotomy can occur up to several years following the procedure; glaucoma patients are more likely to require initial or added glaucoma mediations for IOP control after capsulotomy.

CONCLUSION

Pupillary block should be included as a differential diagnosis in cases of acutely elevated intraocular pressure following cataract extraction and treated with peripheral Nd:YAG laser iridotomy to relieve the block. It is important to observe patients with short-term increase in IOP more closely for longer periods of time to prevent optic nerve damage from persistent IOP elevation. While pupillary block following cataract extraction is a rare occurrence, eye care providers should be aware of the risk of acute angle closure that remains after cataract surgery.

REFERENCES

Available upon request.

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