

A CASE OF MALIGNANT GLAUCOMA AFTER IMMEDIATE CATARACT SURGERY (SICS) FOR MATURE CATARACT

Ophthalmology

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ABSTRACT

Malignant glaucoma is characterized by ciliary block or aqueous misdirection, shallowing of the anterior chamber with elevated intraocular pressure (IOP), resistance to treatment, and rapid progression to blindness. However, the exact pathogenic mechanism is yet to be established. Here, we report a case of malignant glaucoma caused by immediate primary Small Incision Cataract Surgery (SICS) for Senile Mature Cataract (SMC). A 63-year-old man, who had experienced blurred vision in both eyes (right more than left), had cataracts in both eyes. The right eye IOP was 15 mmHg, preoperative anterior chamber depth was 3.00 mm, and the axial length was 22.56 mm. We diagnosed SMC in the right eye and performed Small Incision Cataract Surgery (SICS). On postoperative day one, the IOP increased to 52 mmHg, the anterior chamber was shallow, and the angle was closed. After examining the patient, we diagnosed the patient with malignant glaucoma, performed hyaloid-zonulo-iridectomy, and administered mydriatics and steroid eye drops postoperatively. As a result, the IOP was limited to a 15-mmHg range with an open angle and deep anterior chamber. Malignant glaucoma can be caused by immediate primary Small Incision Cataract Surgery (SICS) for Senile Mature Cataract (SMC).

KEYWORDS

INTRODUCTION

- Malignant glaucoma, first described by von Graefe in 1869⁽¹⁾, refers to shallowing of the central and peripheral anterior chambers of the eye with normal to elevated intraocular pressure (IOP) despite one or more patent iridotomies.
- The disease is characterized by ciliary block or aqueous misdirection, shallowing of the anterior chamber with elevated IOP, resistance to therapy, and rapid progression to blindness⁽¹⁾. However, the exact pathologic mechanism has yet to be established.
- Malignant glaucoma typically develops after glaucoma drainage surgery in patients with a history of angle closure glaucoma (ACG). However, it can also occur after intraocular surgery^(2,3,4,5,6), topical miotic therapy⁽⁷⁾, or in eyes that have not previously undergone surgery⁽⁸⁾.
- To the best of our knowledge, there have been no reports of malignant glaucoma after immediate SICS for cataract.
- Here is a case report in which immediate SICS with PCIOL-in-the-bag for cataract caused malignant glaucoma.

Case Report

- A 63 years old patient who came with complains of diminished vision in BE was diagnosed with RE senile mature cataract and LE NS3. BCVA prior at initial presentation was RE – HM+ve and LE – 6/12. IOP measured by Goldmann Applanation Tonometry in BE was 15 mmHg. Cornea was clear, with AC depth of VH grade IV both eyes. Pupillary reaction was normal in BE.
- Fundus of RE not visualised due to Senile Mature Cataract, B-scan of RE was unremarkable. Fundus of LE with in normal limit.
- No history of glaucoma or previous intraocular surgeries.
- History of type 2 Diabetes Mellitus which was under control.
- Known alcoholic and smoker for 40 years.
- No history of Hypertension
- Patient underwent RE SICS with PCIOL under LA, which was uneventful.
- Post-operatively (POD 1)** patient on examination of RE vision – PL+ve, a well opposed wound, severe corneal edema and epithelial bullae, shallow AC of VH grade I, IOP of RE – 52 mmHg. PCIOL was in the posterior capsular bag. Fundus was not visualised.
- Bscan of RE was done, ruling out other causes of shallow or flat anterior chamber, such as suprachoroidal haemorrhage or choroidal effusions.
- Patient was admitted in intensive care.
- Patient was immediately started on I.V. MANNITOL 20% over 30 minutes TID, Tab. DIAMOX 250mg (Acetazolamide), DELZOC (Dorzolamide 2%) eye drops BD and GATE-P (Gatifloxacin 0.3% + Prednisolone 1%) eye drops hourly.

edema and epithelial bullae, with vision – PL+ve, Shallow of VH grade I, and with IOP of RE – 42mmHg.

- HOMIDE (Homatropine 2%) eye drops BD and ORAL GLYCEROL 2 teaspoons TID were added along with the previous medications.
- POD 3** – IOP of patient RE – 34 mmHg.
- Physician fitness was taken for Vitrectomy.
- POD 4** – Patient taken up for Vitrectomy.
- A preliminary core vitrectomy is initially done to debulk the vitreous, soften the eye, and deepen the anterior chamber, and finally, residual vitrectomy and hyaloidectomy was done.
- Post Vitrectomy POD 1** - Anterior segment examination showed mild corneal edema and well-formed AC with air bubble, Vision – HM+ve and RE IOP 32mmHg.

Post Vitrectomy POD 1

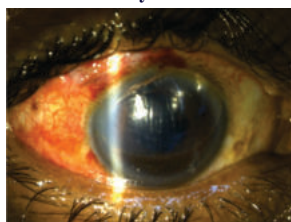


Figure: 1

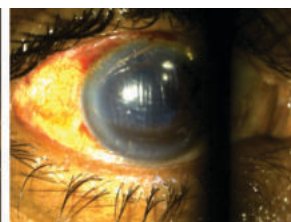


Figure: 2

- Patient was kept on HYPERSOL eye ointment TID, Tab. DIAMOX 250mg (Acetazolamide), DELZOC (Dorzolamide 2%) eye drops BD, GATE-P (Gatifloxacin 0.3% + Prednisolone 1%) eye drops hourly and followed up daily.
- Post Vitrectomy POD 3** - Anterior segment examination showed well formed AC with mild corneal edema with air bubble, Vision – CF at 3 meters and IOP 15mmHg. Fundus of RE was WNL.

Post Vitrectomy POD 3

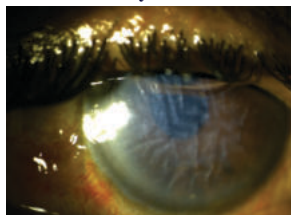


Figure: 3

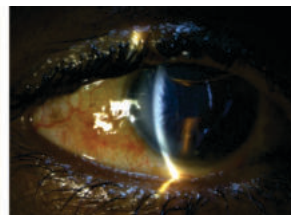


Figure: 4

- Post Vitrectomy POD 7** - Anterior segment examination showed well formed AC with mild corneal edema, Vision – 6/60 and IOP

10mmHg.

- **Post Vitrectomy POD 21** - Anterior segment examination showed well formed AC with clear cornea, Vision – 6/24 and IOP 14mmHg.

Post Vitrectomy POD 21

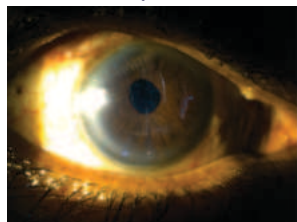


Figure: 5

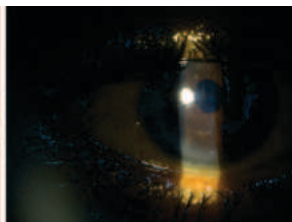


Figure: 6

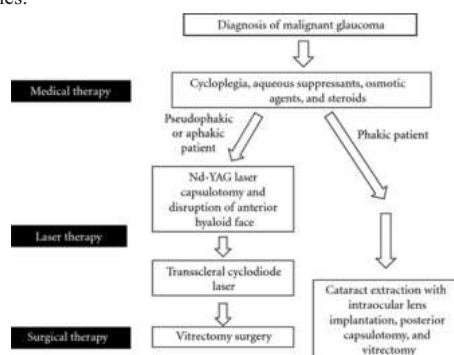
- Patient was followed up to 3 months.
- At the end of 2 months Patient's UCVA of RE was 6/9 and BCVA was 6/6.

DISCUSSION

Malignant glaucoma was initially characterized by von Graefe in 1869 as elevated intraocular pressure (IOP) associated with shallowing of the anterior chamber in the presence of a patent peripheral iridotomy^[17]. Malignant glaucoma is a multifactorial condition that is thought to occur in anatomically predisposed eyes. Although poorly understood, the pathophysiology is thought to involve an alteration in the anatomic relationship of the lens, ciliary body, anterior hyaloid face, and vitreous, which results in forward movement of the iris-lens diaphragm. However, it can also occur after any intra-ocular surgeries, including SICS.

Decompression is thought to play a role in the onset of malignant glaucoma. It may occur during incision creation or because of insufficient wound closure as instruments are passed in and out of the eye. It may also result in choroidal expansion, leading to shallowing of the anterior chamber. A normal eye may recover from this as aqueous fluid diffuses anteriorly and drains through the open angle. However, a smaller eye is susceptible to malignant glaucoma and may be unable to recover because of a combination of factors.^[18]

Poor vitreous conductivity or a reduced ability of aqueous to pass through the vitreous, combined with a limited lens-iris channel area, may limit anterior diffusion of aqueous. Thicker sclera may limit transscleral outflow, and anteriorly rotated ciliary processes may further limit aqueous access to the angle. Once the lens-iris diaphragm assumes an anterior configuration, the condition tends to progress until the original anatomic relationships are restored. Because it is rare, there are relatively few case reports of malignant glaucoma after cataract surgery (SICS) and in-the-bag IOL placement. We present a case malignant glaucoma after SICS and examining its treatment outcomes.



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