Case Report

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Ophthalmology Section

Phacolytic Glaucoma Secondary to Mature Senile Cataract in an Elderly Female: A Case Report

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ABSTRACT

Phacolytic glaucoma is a rare type of secondary open-angle glaucoma caused by leakage of high-molecular-weight lens proteins through an intact capsule of a mature/hypermature cataract. It is most frequently seen in elderly patients who defer cataract surgery and, if not recognised and managed promptly, can lead to permanent visual impairment. A 61-year-old woman presented with severe ocular pain and redness in the left eye for 20 days, along with progressive visual decline over the past 1.5 years. Detailed slit-lamp and fundus examinations revealed phacolytic glaucoma associated with a mature senile cataract in the left eye, while the right eye showed pseudophakia with Posterior Capsular Opacification (PCO). Initial management focused on controlling Intraocular Pressure (IOP) and inflammation using topical along with systemic antiglaucoma medications. Definitive treatment was achieved through cataract extraction with Posterior Chamber Intraocular Lens (PCIOL) implantation, following which the IOP normalised and ocular pain resolved. However, the final visual outcome remained guarded due to prolonged period of raised IOP prior to intervention. This case highlights diagnostic and therapeutic challenges of phacolytic glaucoma, particularly in developing regions where delayed cataract surgery is common. Early diagnosis, prompt medical stabilisation, and timely surgical removal of cataract are essential to prevent irreversible optic nerve damage.

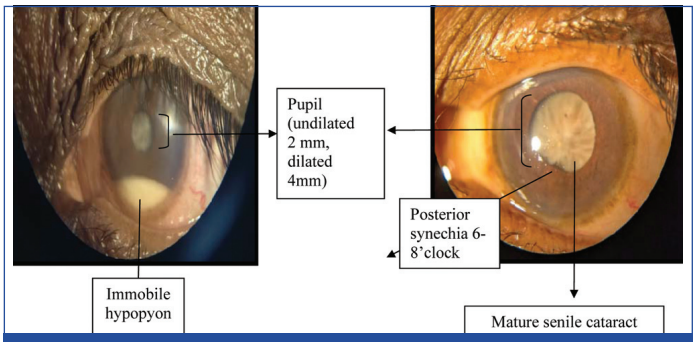
Keywords: Cataract extraction, Intraocular implant, Mature cataract, Posterior chamber intraocular lens implant, Secondary glaucoma

CASE REPORT

A 61-year-old female patient reported to the Department of Ophthalmology, with the chief complaint of diminution of vision in the left eye since 45 days and pain along with redness since last 20 days. The patient had been in her usual state of health until about 1.5 years ago, when she experienced a slow, progressive, and painless loss of vision in her left eye. Over the previous two months, she has been having sporadic episodes of redness and dull aching pain in the same eye, followed by sticky discharge, which had become more severe in the last 20 days. The patient did not report any history of coloured halos, glare, photophobia, floaters, or any ocular trauma.

Patient reported having undergone cataract extraction in the right eye one year ago. She has been taking medicines prescribed by a local practitioner since 15 days for the episodes of pain in the left eye. No relevant medical and personal history was shared by the patient. The patient was conscious and well-oriented, afebrile, with a pulse rate of 90 beats per minute and blood pressure of 140/80 mmHg. There were no signs of pallor, icterus, cyanosis, clubbing, lymphadenopathy, or pedal oedema.

The patient underwent routine check-up, and ocular examination revealed visual acuity in the left eye as Hand Movements Close to Face (HMCF), with Perception of Light present (PL+) and Projection of Rays accurate (PR acc), unaided. Edema was present on the left eyelid, along with circumcorneal and circumciliary congestion of the bulbar conjunctiva. Oedema was noted on the corneal surface of the left eye, with fine Keratic Precipitates (KPs) over the corneal endothelium and the presence of arcus senilis. The anterior chamber was shallow, with 3+ cells and a 2 mm immobile hypopyon. The pupil was the size of 2 mm and sluggishly reacting in nature, while the pupillary reflex was white. There was presence of mature senile cataract in the lens. IOP was found to be 36 mmHg using non-contact tonometry. On slit lamp examination, lid oedema was found. The anterior chamber seemed shallow, indicating Van Herick grade 3 (indicates a moderately deep anterior chamber angle, where the peripheral anterior chamber depth is approximately one-half of the corneal thickness, suggesting a low-risk of angle closure) [1]. An immobile hypopyon of around 2 mm was present. The pupil was approximately 4 mm in size, uneven in form, and dilated using tropicamide and phenylephrine eye drops. Posterior Synechia were seen from six to eight clock hours. Pigment deposits were seen on the anterior lens capsule. The lens displayed characteristics associated with a developed senile cataract [Table/Fig-1]. The fundus examination of the left eye could not be done due to presence of mature cataract. Therefore, based on the characteristic signs and symptoms, a diagnosis of phacolytic glaucoma with mature senile cataract was established in the left eye, while the differential diagnoses considered included phacomorphic

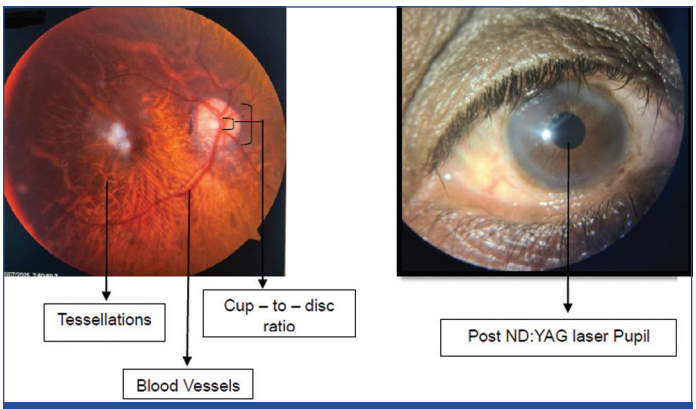


[Table/Fig-1a,b]: The left eye reveals Immobile hypopyon on day 1, & its clearance on day 5 seen on slit lamp

glaucoma, lens particle glaucoma, phacoanaphylactic (phacogenic) uveitis, acute primary angle-closure glaucoma, uveitic glaucoma, and neovascular glaucoma.

The unaided visual acuity of the right eye was counting fingers at 3 metres (CF 3 m), which improved to 6/36 (P) with pinhole. The Best Corrected Visual Acuity (BCVA) was 6/24 (P) with a refraction of 0.00 –0.75 × 90, and the near vision was N18 with a +2.75 add.

There was presence of arcus senilis, with deep anterior chamber. The size of the pupil was 2 mm, shimmering light reflex was seen. The lens showed the presence of PCIOL in situ with PCO. IOP was 15 mmHg in the right eye. Upon slit-lamp inspection, the cornea was clean and normal. The anterior chamber was found to be deep, which corresponds to Van Herick grade 3 [1]. The instillation of tropicamide and phenylephrine eye drops caused the pupil to dilate to around 6 mm. The patient was pseudophakic, with PCO seen on a comprehensive slit-lamp examination. The fundus examination of the right eye revealed mildly cloudy media. The optical disc had a cup-to-disc ratio of 0.3:1, well-defined edges, and no signs of hyperaemia. The arteriovenous ratio was 2 to 3. Peripapillary atrophy and extensive tessellations were seen. The foveal reflex was missing [Table/Fig-2a]. Pseudophakia with PCO was ruled as the diagnosis for the right eye.



[Table/Fig-2]: a) Reveals cup to disc ratio, extensive tessellations and arteriovenous ratio in fundus examination; b) reveals absence PCO post Nd:YAG laser capsulotomy.

The patient was taken in for cataract extraction for the left eye under aseptic conditions. After receiving appropriate peribulbar anaesthesia, the operating eye was cleansed and draped. A superior corneal incision was made, and a side-port entrance was established. Continuous curvilinear capsulorrhexis was conducted, followed by hydrodissection and hydrodelineation to aid with nucleus mobilisation. Phacoemulsification was performed in a controlled manner to emulsify and aspirate the cataractous lens material. The cortical matter was removed using irrigation and aspiration, leaving the posterior capsule intact. A rigid PCIOL was inserted into the capsular bag. After hydrating and securing the wound, intracameral moxifloxacin was administered. The anterior chamber was formed and stabilised by the conclusion of the treatment, and the eye was patched.

Nd:YAG laser capsulotomy was performed in the right eye under topical anaesthesia with adequate pupillary dilatation to treat PCO. The patient was comfortably seated at the Nd:YAG laser equipment, and a contact lens was used to stabilise the right eye and enhance laser delivery. Using the YAG laser, numerous focused applications were given to the opacified posterior capsule in a cruciate pattern, resulting in a central opening that restored visual axis clarity. The intraocular lens along with the ocular tissues was protected to the greatest extent possible [Table/Fig-2b]. The procedure was completed without complications, and timolol maleate 0.5% was instilled immediately afterwards to control IOP. The ocular pain resolved after the treatment. The patient was monitored for postoperative IOP spikes and advised regular follow-up visits to assess visual recovery and exclude potential complications such as cystoid macular oedema or retinal detachment. She was kept under observation for two days, with a follow-up visit scheduled after 15 days. The patient was then lost upon follow-up.

DISCUSSION

Phacolytic glaucoma is a type of secondary open-angle glaucoma induced by the leaking of high-molecular-weight lens proteins from the intact capsule of a mature or hypermature cataract into the aqueous fluid [2]. These proteins clog the trabecular meshwork, triggering an inflammatory reaction that causes significantly high IOP as well as acute ocular discomfort. It often occurs in elderly individuals with untreated cataracts and represents a potentially preventable factor in permanent vision loss unless timely management is not initiated [3].

The prevalence of phacolytic glaucoma has decreased in wealthy nations due to greater availability of cataract surgery, but it remains a substantial clinical concern in resource-constrained areas where delayed cataract extraction is widespread [4]. Patients frequently report abrupt ocular discomfort, redness, corneal oedema, photophobia, and significant vision loss in the afflicted eye [5]. Slit-lamp examination frequently indicates anterior chamber flare, floating lens protein aggregates, along with open angles on gonioscopy, separating it from angle-closure glaucoma [6].

Management consists of two important steps: 1) initial medical therapy to lower IOP and manage intraocular inflammation; 2) ultimate treatment by cataract extraction. Once IOP has been stabilised, the ideal surgical treatment is Extracapsular Cataract Extraction (ECCE) or phacoemulsification following intraocular lens implantation [7]. Delays in diagnosis or treatment may cause irreparable optic nerve injury and poor visual recovery [8].

Phacolytic glaucoma, albeit less common in the industrialised world due to prompt cataract procedures, remains a significant source of secondary glaucoma and preventable blindness in poorer nations, especially India, where cataract is still a major public health concern [9,10].

The normal clinical picture consists of a gradual, painless loss of vision accompanied by periodic ocular discomfort, redness, and photophobia. Slit-lamp examinations frequently reveal corneal oedema, flare and cells in the anterior chamber, pseudohypopyon or real hypopyon, and floating lens proteins [11]. Khokhar S et al., emphasised the need of distinguishing phacolytic glaucoma from other forms of secondary glaucoma, such as phacoanaphylactic uveitis or lens particle glaucoma, because therapeutic techniques differ [12]. In this case, the patient had characteristic phacolytic glaucoma signs such as corneal haze, hypopyon, a shallow anterior chamber, and a mature senile cataract.

Phacolytic glaucoma must be managed using both medical and surgical approaches. The initial therapy tries to reduce IOP and regulate intraocular inflammation using topical and systemic anti-glaucoma medicines, corticosteroids, and hyperosmotic agents. However, if capsular integrity is intact, final therapy consists of cataract extraction, most commonly via ECCE or phacoemulsification, followed by PCIOL installation [13]. In this case, cataract extraction with PCIOL implantation was effective in the afflicted eye, treating both the source of antigenic proteins and the glaucoma.

Nd:YAG laser capsulotomy was performed in the right pseudophakic eye to treat PCO, a typical late-stage complication after cataract surgery. YAG capsulotomy is a safe and effective outpatient surgery, however there are some minor concerns, including IOP spikes, retinal detachment, and cystoid macular oedema [14]. In this case, there were no acute difficulties, and the patient recovered well after procedure.

From a public health standpoint, this instance emphasises the necessity of early identification and appropriate care in cataract cases to avoid advanced complications such as phacolytic glaucoma. Community-based cataract screening and patient education on early surgical intervention are important techniques to minimise the prevalence of avoidable blindness in senior populations, especially in rural and resource-limited settings [15].

CONCLUSION(S)

Phacolytic glaucoma remains a vision-threatening yet preventable complication of long-standing mature cataract, particularly in elderly patients with delayed surgical intervention. This case highlights

the importance of thorough clinical evaluation, prompt recognition of characteristic signs, and early medical control of IOP and inflammation. Definitive management with timely cataract extraction is essential to relieve lens-induced pathology and prevent irreversible optic nerve damage. Simultaneous management of co-existing ocular conditions, such as PCO in the fellow eye, further optimises visual rehabilitation. Patient education and regular follow-up play a crucial role in preventing avoidable ocular morbidity.

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