



## AN UNUSUAL PRESENTATION OF PHACOLYTIC GLAUCOMA

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**ABSTRACT** Phacolytic glaucoma is a type of lens induced glaucoma which occurs due to leakage of lens proteins through the capsule in hypermature cataracts and the patient usually presents with decreased vision and a painful red eye. Here we report a case of Phacolytic glaucoma in a 70 yr old male patient, which was managed initially with medications to control Intra ocular pressure, followed by manual small incision cataract surgery and IOL implantation, after which the patient had good post operative visual recovery.

**KEYWORDS :** Phacolytic glaucoma, hypermature cataract, manual small incision cataract surgery

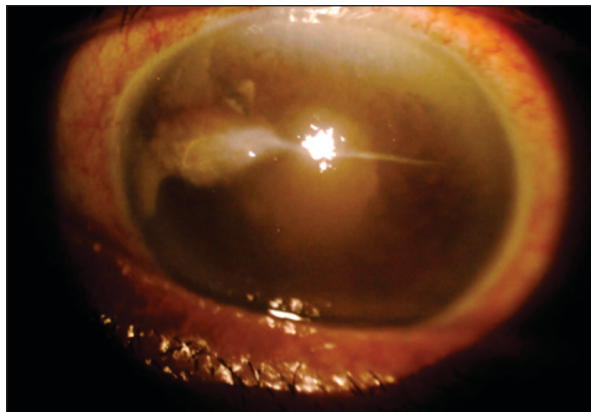
**INTRODUCTION:**

Lens induced glaucoma refers to a type of secondary glaucoma where there is rise in intraocular pressure due to the crystalline lens, either due to an increase in its thickness, change in its position or by an inflammatory process. [1]. Phacomorphic glaucoma forms a majority of LIG followed by phacolytic glaucoma [2]. Phacolytic glaucoma, a rare secondary open-angle glaucoma, is caused by leakage of high molecular weight proteins through the capsule of a hypermature cataract. The clinical presentation usually consists of a painful eye, decreased vision and conjunctival hyperemia [3].

**CASE REPORT:**

A 70 yr old male patient presented with pain, redness, swelling and decreased vision in right eye since 1 week, which was sudden in onset, was first noticed when he woke up in the morning. He gives history of trauma to the right eye 40 yrs ago with a stone while at work. He does not give history of any systemic illness.

On examination of the right eye, the best corrected visual acuity (BCVA) was counting fingers close to face with perception of light and an accurate projection of rays. Circumcorneal congestion was noted. Cornea showed diffuse stromal edema with a horizontal leucomatous opacity at 9 o'clock position, extending upto the pupillary margin. Anterior chamber was of irregular depth with inflammatory exudates and peripheral anterior synechiae at 9 o'clock position. Pupil was just visualized with sluggish pupillary reaction, Lens showed a mature cataract. (Figure 1) Fundus could not be visualized in view of corneal edema and lenticular opacity. CCT corrected IOP was 44mmHg with GAT. B scan was within normal limits. The Left eye showed early cortical cataract with no other positive findings. From the above findings, a diagnosis of phacolytic glaucoma in the right eye was made.



**Figure1:** Showing Corneal Scar And Edema, Anterior Chamber Inflammation With A Mature Cataract

In view of the raised IOP, the patient was administered 200ml IV mannitol BD to lower the IOP. He was also started on T. Acetazolamide 250mg 1-0-1 and Brinzolamide and Timolol combination eye drops in the right eye twice a day.

Patient was taken up for Small Incision Cataract Surgery the next day. Biometry was done and a monofocal rigid IOL of +21D was selected for Intraocular implantation.

Prior to surgery, local anaesthesia was achieved by Peribulbar block. Intraoperatively, a superior rectus bridle suture was put, followed by conjunctival peritomy and cautery. A sclerocorneal tunnel was fashioned. A side port entry was made. The pupil dilatation was inadequate inspite of using Intracameral epinephrine 1ml (0.001%) and hence iris hooks were used to achieve adequate pupil dilatation. The anterior capsule was stained with Trypan blue and a CCC was attempted but could not be completed in view of fragile capsule and Vannas scissors was used to complete the rhexis. Gentle Hydrodissection was performed and the nucleus was prolapsed in the AC and removed by Sandwich technique. Cortical matter was aspirated using Simcoe's canula and the bag was inflated using viscoelastic substance, followed by implantation of the IOL in the capsular bag. The iris hooks were removed and the viscoelastic material was washed out. The side port was hydrated with saline and the main wound was sutured using a single 10-0 nylon suture after forming the AC with an air bubble. Subconjunctival injection of Gentamicin and Dexamethasone was given and the eye was patched. (Figures 2 to 5)

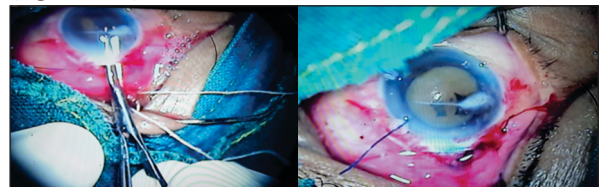


Figure 2

Figure 3

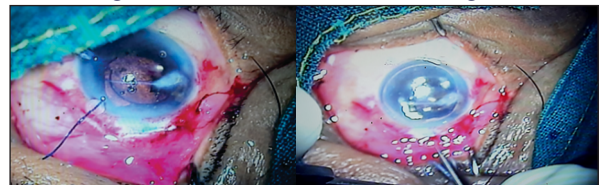


Figure 4

Figure 5

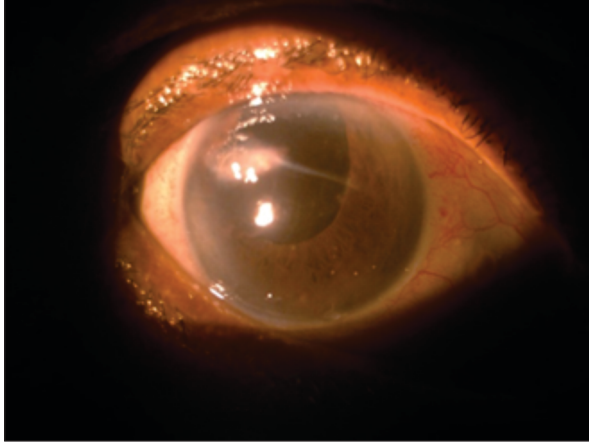
(Figures 2 to 5: showing the various steps of the surgery)

On the first postoperative day, the patient had a mild subconjunctival haemorrhage, corneal haze associated with mild stromal oedema, Descemet's folds and the IOL was well positioned into the capsular bag. The IOP was 16 mmHg with GAT and the patient had a BCVA of 6/36. The red reflex was present, but fundus details could not be visualised in view of corneal haze.

The patient was started on antibiotic steroid combination eye drops to protect against endophthalmitis and a nonsteroidal anti-inflammatory drug to complement the steroid in controlling inflammation and to prevent the developing of cystoid macular oedema. A hypertonic sodium chloride (5%) eye drop was recommended in order to decrease

corneal oedema. The cataract removal normalized the IOP so that ocular hypotensive drugs were no longer required.

At the 1 week follow up, the patient had a BCVA of 6/12. On examination, the corneal was clear except for the corneal opacity, AC was of irregular depth, cells and flare were noted. PCIOL was in place. CCT corrected IOP was 14mmHG with GAT (**Figure 6**). Fundus examination revealed a normal disc with a cup disc ratio of 0.4:1 with normal vessels and background. The patient was advised to taper the antibiotic steroid eye drops over a period of 6 weeks.



**Figure 6:** Showing The Post Operative Picture After 1 Week

#### DISCUSSION:

Lens-induced glaucoma (LIG) is an important cause of secondary glaucoma in the developing world [4] and comprises several different glaucomatous processes that share the role of the lens in their pathogenesis [5]. LIG can be divided into two major categories, presenting as either secondary angle-closure or secondary open-angle glaucoma. The first category relates to a blockage of the aqueous humour flow from the posterior to the anterior chamber and can be caused by lens swelling (phacomorphic glaucoma) or lens dislocation (ectopia lentis). The second category is characterized by trabecular meshwork blockage from lens proteins (phacolytic glaucoma), liberated fragments of lens material after capsular disruption following cataract extraction, lens trauma, or Nd:YAG posterior capsulotomy (lens particle glaucoma) or from an inflammatory reaction directed against own lenticular antigens (phacoantigenic glaucoma) [5].

Phacomorphic glaucoma is the main cause of lens-induced glaucoma, followed by phacolytic glaucoma [2,6,7]. This latter condition is rare in developed countries with adequate access to ophthalmologic care and more common in under-developed countries. One study from Nepal diagnosed phacolytic glaucoma in 0.4% of presenting cataracts [2,8].

Phacolytic glaucoma occurs primarily in the setting of a senile hypermature, Morgagnian, cataract [9]. Over time, the cortical lens fibers degenerate into hydrosoluble protein aggregates. These high-molecular-weight lens proteins leak through a grossly intact lens capsule into the anterior chamber, where they induce macrophage activity [8,10]. A key defining feature of phacolytic glaucoma has been the presence of an intact lens capsule. However, a 2014 study that used electron microscopy to evaluate the capsule of a patient found multiple full thickness dehiscences and holes despite an intact appearance both macroscopically and histologically [8,11]. The combination of protein-laden macrophages and high-molecular-weight proteins in the anterior chamber leads to trabecular meshwork obstruction resulting in intraocular pressure elevation and secondary open-angle glaucoma [9].

Multiple studies showed females outnumbered males in both phacomorphic and phacolytic glaucoma [5,12,13].

Typically, the clinical presentation is that of an elderly patient who complains of an acute onset of severe pain, redness, and worsening of vision [8]; he has a history of a gradual decrease of visual acuity over the preceding months or years, reflecting the slow maturation of the cataract. On examination, the IOP is very high, accounting for the resented pain [9].

Slit lamp biomicroscopy usually shows microcystic corneal oedema, a hypermature cataract and a deep anterior chamber. The cellular

reaction in the AC is variable, from mild cells and flare to an intense reaction [9]. Large floating white particles, consisting of lens protein and protein-containing macrophages may impart a milky appearance to the aqueous if very dense and can form a pseudohypopyon. If a reasonable view can be obtained, gonioscopy shows an open angle with lens-derived material and inflammatory cells that are most substantial inferiorly [14].

Although the diagnosis is based upon clinical features, microscopic examination of aspirated aqueous humour can aid in suspected cases. Biochemical studies can help identify high-molecular-weight lens proteins that have leaked out of the cataractous lens [9].

Phacolytic glaucoma is typically handled as an emergency. After the IOP is controlled medically with topical aqueous suppressants (beta-blockers, alpha-2 agonists, and carbonic anhydrase inhibitors) and, if needed, with systemic carbonic anhydrase inhibitors and osmotic agents, the proteinaceous material is washed out from the anterior chamber and the cataract is removed [9].

Though curable, cataract remains the most important cause of blindness in developing countries, mostly affecting the elderly. Delayed presentation for treatment ends up in serious complications such as lens-induced glaucoma, which may cause irreversible sight loss. Cataract surgery is the most effective treatment for lowering the IOP and visual recovery in these patients. In a prospective observational study conducted by Calcutta National Medical College in 2012-2013, most of the patients (72.2%) had a postoperative best corrected visual acuity of more than 20/125 after complete follow-up [15]. In this case report, the sudden onset of intense pain forced the patient to seek medical help and by doing so, further damage of the optic nerve was prevented and a good visual acuity was obtained following cataract surgery.

#### CONCLUSION:

Phacolytic glaucoma is a complication of a hypermature cataract and typically occurs in elderly patients. The prognosis for a good visual recovery depends on an early diagnosis and management that aids IOP control and prevents optic nerve damage.

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