

## OUTCOMES OF EARLY TRABECULECTOMY WITH CATARACT SURGERY IN TRAUMATIC SECONDARY GLAUCOMA - A CASE SERIES

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### Abstract

We report management and outcome of 3 cases of traumatic glaucoma with associated lens injury post blunt trauma. Cases included in the study had history of blunt trauma, presented to ophthalmology department. All cases underwent routine detailed clinical examination, all cases had uncontrolled Intraocular Pressure (IOP) after maximum medical management. Combined trabeculectomy with cataract surgery which was planned within 2 months of blunt trauma in all patients. Patients were followed up for 6 months. Vision, intraocular pressure (IOP) post-operative outcome were the variables assessed. All patients had postoperative vision more than 6/18 and qualified success of trabeculectomy was achieved. Early trabeculectomy with cataract extraction led to better visual prognosis and good Intraocular pressure control at end of 6 months.

## INTRODUCTION

Post traumatic glaucoma associated with lens injury always presents with a surgical challenge whether to perform only trabeculectomy or lens extraction or combined surgery. Secondary Glaucoma following closed globe injury occurs due to coup-counter coup injury to the Lens.

Early predictors of chronic glaucoma after closed globe Injury are Increased pigmentation of the angle, Elevated baseline IOP, Hyphema, Lens displacement and Angle recession of more than 180 degrees. Early intervention in reducing intraocular pressure is needed to prevent irreversible damage to optic nerve. There are few case studies suggesting management of post traumatic glaucoma and related lens injury.<sup>[1]</sup> Our study deals with lens injury in post-traumatic glaucoma and its surgical outcome which has been rarely described previously to our knowledge.

Secondary glaucoma was observed more frequently in patients with blunt trauma.<sup>[2]</sup>

### CASE 1

28 years old male presented with chief complaints of Diminution of vision (DOV), pain and photophobia in left eye (LE) after blunt trauma by stone. On examination (OE) Right eye (RE), was within normal limits (WNL). LE BCVA 1/60, LE

showed circumcorneal congestion, stromal corneal edema with epithelial defect superonasally, 1 mm hyphema, cells 2+ and flare 2+, pupillary sphincter tear and mydriatic pupil, anterior lens capsule rupture about 2 mm located centrally with ruffled cortex seen through it with cataractous lens, IOP by Goldmann applanation (GAT) was 32 mm of hg, Gonioscopy showed ruptured anterior capsule in the superiorly, with Shaffer's Grade IV angle inferiorly and superiorly, Grade 1 in nasal and temporal angle. Medical management consisted of combination of steroid antibiotic drop, tablet (tab) acetazolamide, tab Prednisolone 1mg/kg body weight, and Brimonidine+Timolol eyedrop antiglaucoma medications (agm). Considering lens rupture and raised IOP, Lens Particle Glaucoma was diagnosed. Combined trabeculectomy with antimetabolite + Phacoemulsification with Intraocular lens implantation was planned.

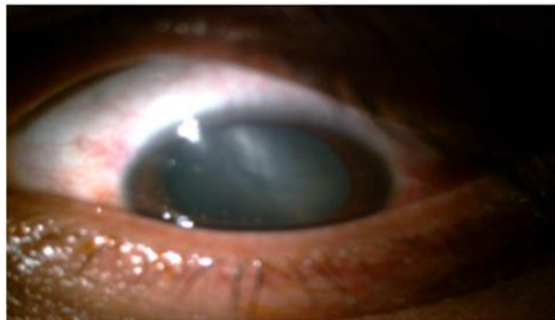
Post Operative:

Post op Day 1, BCVA 6/60, bleb formed, congestion + blood tinged aqueous with inflammatory membrane on IOL.

Day 7, BCVA 6/24, IOP 18, LE thin inflammatory membrane, anterior membranectomy was done by ND YAG laser.

Day 30, BCVA 6/12, Bleb was diffuse, parafoveal edema noted, IOP 28 mmhg, considering steroid response Prednisolone eyedrops were then changed

to dexamethasone eyedrops. Brimonidone+Timolol eye drop added.  
Day 90, BCVA 6/9, IOP 14 with agm, fundus LE 0.8 cup with resolution of parafoveal edema.



**Figure 1: Day 2 picture, Cornea clear, Anterior capsule Rupture, total cataractous lens.**



**Figure 3: Post Op Day 1**



**Figure 2: Gonioscopy Left Eye**

## CASE 2

52 years old male complained of DOV and pain RE since 3 weeks, history of blunt trauma to RE by first 3 weeks back. RE BCVA was 6/36 circumcorneal congestion, stromal edema, Irregular anterior chamber, Iridocorneal touch at 6'o clock, vitreous along pupillary border, sphincter loss from 2 to 8 clock, mydriatic pupil with sluggishly reacting to light, Anterior and inferior subluxation from 4'- 8' clock of cataract, Gonioscopy showed grade 2 by shafters in superior and temporal angles with inferior and nasal closed angle grade 0. RE CDR 0.7 NRR thinning. IOP RE was 58. Left eye was WNL, RE Trabeculectomy+MitomycinC+Cataract extraction+ Anterior vitrectomy+ Iris claw under mannitol was performed.

**Table 1: Post-operative Clinical Findings**

Clinical Findings	Total
Iritis	2
Membrane over IOL	1
Steroid responder	2
PCO	1
RPE alteration at macula	1
Parafoveal edema	1

**Table 2: Clinical Signs at end of 6 months**

Sr No	Preop Vision	Preop IOP	Gonioscopy	Diagnosis	Surgery	Post op vision at 6th month	Post op IOP	Post op agm Medications
1	1/60	50	Cortex in superior angle	Lens particle glaucoma	Trabeculectomy with Mitomycin C with cataract extraction with PCIOL implantation	6/9	14	2
2	6/36	58	Inferior angle closed	Anterior subluxated cataract with secondary glaucomaa	Trabeculectomy + Mitomycin C + Cataract extraction+ Anterior vitrectomy+ Iris claw	6/18	14	1
3	6/24	28	Angle Recession > 270'	Angle recession glaucoma with traumatic cataract	Trabeculectomy+Mitomycin C+ Cataract extraction with PCIOL	6/12	12	nil

### Post-operative management:

Day 1, RE 6/18 vision, bleb diffuse. Iris claw in place, IOP 10. Day 14, IOP 22, considering steroid responder patient was shifted to dexamethasone eyedrop from prednisolone eyedrops. Day 30 6/18 vision. IOP 20 mmHg cup disc ratio (CDR) of 0.7 with Retinal Pigment alteration at macula. Day 90, IOP of 14 mm of Hg with addition of travaprost eyedrop.

### CASE 3

11 years old male presented with DOV RE since 3 weeks post cricket ball injury. OE RE vision 6/24, Gonioscopy showed angle recession 270°, posterior sub capsular cataract IOP 28 with 3 antiglaucoma drugs, CDR 0.6, Combined surgery trabeculectomy+MMC+cataract surgery was planned, Trabeculectomy was done in superonasal site, phacoemulsification was performed temporally. Post op Day 1 Vision 6/9, bleb elevated, IOP of 10mm hg, Day 30 Vision 6/9, bleb elevated, minimal torsuity, Day 90 Vision 6/12 minimal PCO with IOP 10mmhg with no agm.

### DISCUSSION

Blunt trauma due to sports-related injuries, including airbags, elastic cords injuries, bottle caps and corks, airsoft pellets, and paintball guns have been reported.<sup>[3,4,5,6,7]</sup> We defined Early trabeculectomy as surgery done within 1 month of trauma. Primary outcome measure was defined as complete success if an IOP was  $> 5$  and  $\leq 21$  mm Hg without any glaucoma medications or re-surgery. Qualified success was defined as IOP  $\leq 21$  mm Hg with or without anti-glaucoma medications. Failure was defined as IOP  $\geq 22$  mm Hg despite medications or  $\leq 5$  mm Hg (on 2 or more examinations) with hypotony maculopathy and if there was loss of light perception.<sup>[8]</sup> Lens particle glaucoma is disruption of the lens capsule due to ocular trauma ,permits release of lens particles into the anterior chamber, obstructing the aqueous outflow pathway and elevating IOP days to weeks after the original injury.<sup>[9]</sup> When IOP cannot adequately be controlled despite medical therapy, the residual lens material should surgically be removed promptly.<sup>[10,11]</sup> In our case early trabeculectomy was performed along with lens aspiration. Angle recession glaucoma had IOP less than 20 and complete success was achieved at end of 6 months. Reduction in IOP was noted after change of steroids from prednisolone eyedrops to dexamethasone eyedrops. Long term follow is must for all cases of trauma. In our study limitation were number of cases. Steroid-induced glaucoma typically occurs within weeks of initiation of topical steroid therapy, with pressures as high as 60 mm Hg reported following prolonged use.<sup>[12]</sup>

Fuller et al suggested that traumatic glaucoma would be best managed by trabeculectomy combined with anti-metabolites or the use of an artificial draining device, with frequent follow ups.<sup>[13]</sup> Our findings correlate with study done by Charu et al in paediatric group they found elevated IOP following Closed globe injury develops much earlier and is more severe, difficult to treat, and requires more surgical interventions to control IOP than eyes with Open globe injury.<sup>[14]</sup> Our findings suggests that early trabeculectomy combined with cataract surgery prevented further disc damage due to better IOP control. Thus, visual prognosis was better in long term follow up. Assessment after ocular trauma, it is important to identify and treat secondary conditions such as post-traumatic glaucoma that may adversely affect visual outcome and to minimize any additional damage that may occur.<sup>[15]</sup>

### CONCLUSION

In secondary glaucoma due to trauma, the success rate of the surgical complications is expected to be higher, but if treated with vigilance and on time, most of it can be managed with a favorable prognosis.

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