



## Original Research Article

## Comparison of visual outcome and complications following early and delayed cataract surgery in phacolytic glaucoma

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## ABSTRACT

**Purpose:** To compare the Visual outcome, intraoperative and post operative complications following early and delayed Cataract surgery in Phacolytic glaucoma.

**Materials and Methods:** A Prospective and interventional study in a district hospital. Confirmed cases of phacolytic glaucoma after medical control grouped into group A and group B. Group A patients underwent small incision cataract surgery (SICS) within 7 days (early) and group B patients after 7 days (delayed). They were compared for complications and post operative distant corrected visual acuity (DCVA) at the end of 8 weeks.

**Results:** There were 38 eyes from 38 patients. The demographic factors and clinical findings are comparable between two groups. Cumulative intraoperative complications like difficulty in doing continuous curvilinear capsulorhexis (CCC), Zonular dialysis and posterior capsule (PC) tear with vitreous disturbance were more in group B 55.6% (10/18) compared to group A 35.0% (7/20). Postoperative DCVA of 6/12 or more was comparable between two groups A and B 60.0% (12/20) and 55.6% (10/18) respectively. Post operative persistent corneal edema in 5.0% (1/20) in group A, 5.5% (1/18) persistent uveitis and 5.5% (1/18) optic nerve damage in group B observed.

**Conclusion:** Early surgical intervention is to be preferred choice in all cases of phacolytic glaucoma. However in patients with genuine personal, family and socio economical reasons delayed surgery will not alter final visual outcome. Adequate preoperative preparation are to be taken to reduce and handle intraoperative complication.

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### 1. Introduction

Lens induced glaucoma (LIG) is one of the complications of mature /hyper mature cataract. Four types of LIG are explained, Phacolytic glaucoma (PLLIG) due to release of heavy molecular weight (HMW) soluble proteins through microscopic capsular defect, Phacomorphic glaucoma (PMLIG) due to increased antero posterior thickness of lens, phacogenic glaucoma (PGLIG) severe inflammation due to macroscopic rupture of capsule and phacoanaphalctic glaucoma (PALIG) following cataract surgery.<sup>1-4</sup> Incidence of LIG in cataract population is 1.5%<sup>4</sup> and upto 1% in patients with mature/hyper mature cataract.<sup>5</sup> Two common

types of LIG are PMLIG and PLLIG. Reported proportion of PMLIG and PLLIG varies between 53% -72% and 28%- 47 % respectively.<sup>4,6</sup> Phacolytic glaucoma is a type of lens induced secondary open angle glaucoma commonly seen in mature/hypermature cataract and more than 90% PLLIG will have hypermature cataract.<sup>5-8</sup> Described pathophysiology of PLLIG is HMW soluble proteins seep into the anterior chamber and obstruct the trabecular meshwork leading to raised intra ocular pressure and causing optic nerve damage. It is also attributed that released HMW proteins are engulfed by macrophages which block the trabecular meshwork causing glaucoma. Another explanation is release of monocytes and macrophages to clear these HMW soluble proteins causing persistent

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inflammation and raised intraocular pressure.<sup>1</sup>

The attributed causes for increase in number of cases presenting with mature/hypermature cataract are better vision in the other eye, psychosocial acceptance of poor vision, poor eye health awareness, Systemic illness, lack of family support, socioeconomically poor conditions and more than one reasons of these.<sup>4,5</sup>

Commonly accepted findings in PLLIG are congested eye, corneal oedema, deep AC with moderate to severe flare and cells (with or without pseudohypopyon), floating lens fibers, hypermature cataract (with or without Morgagnian) and raised intraocular pressure (IOP) in addition to symptoms of pain with history of prolonged poor vision.<sup>3,5,7</sup> Recommended management protocol of PLLIG are initially with medical therapy by topical beta blockers, alpha agonist, carbonic anhydrase inhibitors and intravenous (IV) mannitol to control IOP (Intra Ocular Pressure). Topical steroid to control the inflammation, cycloplegic to stabilize blood aqueous barrier and reduce pain. Definitive treatment is by planned extra capsular cataract extraction (ECCE).<sup>2,5,7,8</sup>

One predictive factor which may alter the post operative final visual outcome, intra operative and post operative complications of phacolytic glaucoma is time interval between the onset of glaucoma and surgical intervention. One group of study found favorable outcome when the intervention was within 1-2 weeks.<sup>2,4,5,8</sup> Whereas other study did not find any difference on long term follow up.<sup>7</sup> During our clinical practice following medical control of PLLIG, 50% of our patients wanted to undergo cataract surgery after a week period. The reason being personal issues, family conditions and social commitments. Even though they were explained the consequences of delayed surgery they were helpless. However they have assured good medical compliance till surgical intervention.

Hence this comparative study was taken to compare the visual outcome, intra operative and post operative complications between patients who underwent early Small incision cataract surgery (SICS) within 7 days and patients who underwent delayed SICS after 7 days after medical control of PLLIG.

## 2. Materials and Methods

This prospective, comparative and interventional study was done in District hospital, Chamarajanagara in southern part of Karnataka, India from August 2017 to July 2019. Informed written consent was taken from all patients. The study was approved by the review and ethics committee of the hospital. The study adhered to declaration of Helsinki 1975.

Patients reported to Ophthalmology out patient department (OPD) and Emergency department of the district hospital for episode of PLLIG were included. Each patient demography, detailed history recorded. All patients underwent DCVA (distant corrected visual

acuity), detailed slit lamp examination for congestion, corneal oedema, AC depth, AC reaction, presence of lens particles, pseudohypopyon, condition of the cataract and IOP by Goldman applanation tonometer. Gonioscopic examination of both eyes, lens status of the other eye (phakic, aphakic or Pseudophakic) and IOL workup of the affected eye also recorded. Patients with all types of primary glaucoma, traumatic glaucoma, chronic uveitis and complicated cataract are excluded from study. Patients with co-morbid systemic disease like diabetes, hypertension and dysthyroidism were also excluded from the study.

Diagnosis of phacolytic glaucoma was based on, history of acute onset of pain, redness with preceded prolonged diminution of vision. Examination findings, DCVA of finger counting close to face (FCCF), hand movements close to face (HMCF) or perception of light and projection of rays (PL/PR), eye congestion, corneal oedema, deep anterior chamber (AC) with variable contents of flare and cells (with or without hypopyon), floating lens materials, mature / hypermature (Morgagnian) cataractous lens, and IOP > 21 mm of Hg. On gonioscopy open angle with or without cortical matter.<sup>3,5,7</sup> (Figure 1)

All patients were admitted and treated with topical antibiotic steroid drops 2 hourly, timolol 0.5%, Brimonidine 0.2 %, Cyclopentolate 2% and oral acetazolamide 250 mg 8 hourly. In patients with high IOP of > 40 mmHg IV (Intra venous) mannitol was used. Once the acute episode controlled and based on patients request grouped into A and B group. Group A Patients will undergo SICS within 7 days (early) and group B patients after 7 days (delayed). This cut off period of 7 days was based on earlier report.<sup>7</sup> Only those patients who continued their medical treatment till the time of surgery were included in the study. Both groups were not matched in age, sex, eye, duration of symptoms, Preoperative DCVA.

All patients underwent standard SICS with Poly methyl methacrylate Intraocular lens (PMMA IOL) (Freedom CMC Medical devices & Drugs S.L, Malaga, Spain). Under peribulbar anaesthesia with 5 ml 2% lignocaine, superior bridge suture put and fornix based conjunctival flap made either in temporal or superotemporal quadrant. Frown incision of 6-7 mm size 2mm from the limbus taken. Sclerocorneal tunnel main wound and two paracentesis 90 degree apart from the main wound are completed. With the help of air, Ocular visco elastic devices (OVD) and trypton blue 6-7 mm size Continuous curvilinear capsulorhexis (CCC) done. Where CCC not possible converted to can opener capsulotomy. Nucleus delivered by visco expression, cortical wash done, all PMMA posterior chamber IOL (PC-IOL) implanted in the bag/sulcus. Where there was rent in the PC (Posterior Capsule) with vitreous disturbance triamcinolone assisted anterior vitrectomy followed by Scleral fixation IOL (Freedom CMC Medical devices & Drugs S.L, Malaga, Spain) implantation done. All patients

received 20 mg of gentamycin and 2 mg of dexamethasone subconjunctival injection at the end of the surgery.

Postoperatively all patients received antibiotic - steroid drop, cycloplegic, antiglaucoma drops for required period. Oral steroid was given to cases where ever required for a week period and tapered. During each post operative visit patients were evaluated for DCVA and complications on 1st day, 1st week, 3rd week, 6 week and monthly for 4 months.

The result after 8 weeks of follow up are tabulated and analyzed by 2020 Statistical Software (2020). NCSS, LLC. Kaysville, Utah, USA, and displayed in mean with standard deviation (SD), proportion with absolute number and group mean compared with Fisher's exact test and statically significance by P value

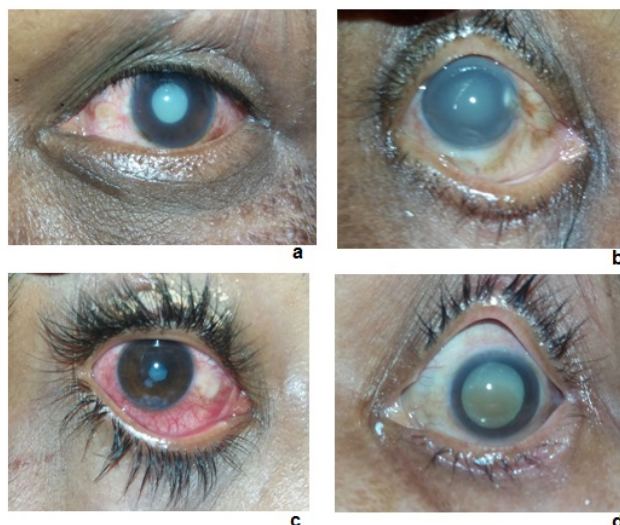
All patients in group B had LIG under control before the surgery with variable DCVA of HMCF to inaccurate PL/PR, clear cornea, AC grade 1 reaction, semi dilated pupil, hypermature cataract with IOP <20 mm Hg.

### 3. Results

There were total 38 eyes from 38 patients, 20 eyes in group A and 18 eyes in group B. Mean age of the patients 55.4 SE 10.5 yrs. Female male ratio is 1.4:1. Right eye was involved in 47.4%(18/38) cases and left eye in 52.6%(20/38) cases. Preoperative DCVA was HMCF in 63% (24/38), accurate PL/PR in 31.5% (12/38) and inaccurate PL/PR in 5.5% (2/38) cases. Commonest finding in AC was flare, cells, fibers of lens matter in 97% (37/38) cases and hypopyon in 3% (1/38) case. Corneal edema of various grade was present 100% (38/38) cases. The mean IOP was 41.5 +/- 10.6 mm Hg. IOP was <30 mm Hg in 26% (10/38) and >30 mm Hg in 74% (28/38) cases. Regarding the status of the fellow eye 58% (22/38) cases had pseudophakia and 42%(16/38) cases with different stages of cataract. (Table 1) Observed cumulative intraoperative capsular complications is 44.7%(17/38). Difficulty in doing CCC in 52.9%(9/17), Zonular dialysis 29.4% (5/17)and PC tear with vitreous disturbance 17.7%(3/17) (Table 2). Post operative DCVA at the end of 8 weeks was 6/12 or more in 58% (22/38), 6/18 - 6/60 in 34% (13/38) and <6/60 in 8% (3/38) cases. (Table 3). Rate of postoperative cumulative complication is 7.9% (3/38) with one case each with persistant uveitis, corneal edema and case optic nerve head total cupping.

Mean age of the patients in group A was 56.65+/- 2.37yrs and 54.22yrs +/- 2.46 in group B and the difference is significant (P<0.50). There is no difference in gender difference female/ male ratio 1.4:1 v/s 1.2:1, laterality of eye involvement right eye:left eye 1:1 v/s 1:1.8 between group A and Group B respectively. Preoperative DCVA, degree of inflammation and raised IOP between two group are comparable. One case each in group B presented with pseudohypopyon and IOP of > 50 mm Hg.(Table 1) Cumulative number of cases with intropertive complications appears to be more in group B 55.5% (10/18)

compare to 35%(7/20) in group A but the difference is not significant (P=0.32) (Table 2). Post operative DCVA of 6/12 or more observed in 60% (12/20) cases in group A and 55.5% (10/18) cases in group B, DCVA of <6/60 observed in 5%(1/20) cases in group A and 11% (2/18) in group the difference is not significant (P=1.0 and P=0.59 respectively) (Table 3). Post operatively 5% (1/20) case group A had persistent corneal edema. In group B 5.5% (1/18) case with persistent uveitis and 5.5% (1/18) with total cupping of optic nerve head.



**Fig. 1:** a: Left eye phacolytic glaucoma with mild grade corneal oedma, b: Right eye Phacolytic glaucoma with moderate grade corneal edema, c: Right eye phacolytic glaucoma with lens particles in anterior chamber d: Left eye clearly visible Morgagnian cataract after phacolytic glaucoma control.

### 4. Discussion

Incidence of LIG in cataract population is 1.5%<sup>4</sup> and up to 1% in patients with mature cataract.<sup>5</sup> Two common type of LIG are PMLIG and PLLIG. Reported proportion of PMLIG and PLLIG varies between 53% -72% and 28%-47 % respectively.<sup>4,6</sup> The attributed causes for increase in number of presentation of mature/hypermature cataract are better vision in the other eye, psychological acceptance of poor vision, poor eye health awareness, Systemic illness, lack of family support, socioeconomically poor conditions, more than one reasons of these.<sup>4,5</sup> Factors which are predictable in the visual outcome and complications after surgical intervention of PLLIG are age of the patient, gender, time interval between the onset of LIG and treatment, preoperative vision and level of raised IOP in the involved eye.<sup>4-9</sup>

Increase in age of cataract patients increases the chances for going to mature/ hyper mature stage of cataract. These mature/hypermature cataracs have more concentration of

**Table 1:** Patients' demography, preoperative DCVA, AC reaction and IOP

	Total (n= 38)	Group A (n=20)	Group B (n=18)	P ( Between group A and B)
Age in years with standard deviation	55.4 +/- 10.6 yrs	56.65 +/- 10.6	54.2 +/-10.5	P= 0.96
Sex F:M	1.4 :1	1.4:1	1.2 :1	P= 1.00
Eye RE: LE	18 :20	10:10	8:10	P=0.75
DCVA HMCf	24 (63.2%)	12(60%)	12 (66.7%)	P=0.74
Accurate PL/PR	12 (31.6%)	07(35%)	05(27.8%)	P=0.73
In accurate PL/PR	02 (5.2%)	01(5%)	01 (5.5%)	P=1.0
AC reaction				
Flare/Cells/Floating Lens particles	37 (97.3%)	19(95%)	18 (100%)	P =1.0
Pseudohypopyon	01 (2.7%)	01(5%)	00 (0%)	P =1.0
IOP				
< 30 mm Hg	14 (36.8%)	08 (40%)	06 (33.3%)	P=0.74
>30m Hg	24 (63.2%)	12 (60%)	12(66.7%)	P=0.74
Lens status of other eye.				
Pseudophakia	22 (58%)	12 (60%)	10 (55.6%)	P=1.00
Cataract	16 (42%)	08 (40%)	08 (44.4%)	P=1.00

**Table 2:** Showing Intra operative related complications

Complications	Total (n= 38)	Group A (n=20)	Group B (n=18)	P . Between group A and B
Difficulty in doing CCC	09 (23.7%)	04 (20 %)	05 (27.8%)	P=0.70
Zonular Dialysis	05 (13.2%)	02 (10%)	03 (16.7%)	P =0.62
PC rent	03 (8%)	01 (5%)	02 (11.0 %)	P=0.59

**Table 3:** Showing Post operative DCVA after 8 weeks

DCVA	Total (n=38)	Group A (20%)	Group B (18 %)	P . Between group A and B
6/12 or more	22 (58%)	12 (60%)	10 (55.6%)	P=1.0
6/18 – 6/60	13 (34.2%)	07 (35 %)	06 (33.3%)	P=1.0
< 6/60	03(7.8%)	01 (5%)	02 (11.1%)	P=0.59

HMW soluble proteins. These HMW proteins percolate through microscopic defects of capsule into AC and vitreous cavity causing more intraocular inflammation, more chances for raised IOP leading to corneal decompensation, AC inflammation and optic nerve damage.<sup>1,7,8</sup> This study had more number of patients below 60yrs of age with mean age of 55.4 +/- 10.5yrs which is less than previous reports of the mean age of the patients was more than 60 yrs.<sup>6,8</sup> In a prospective study by Pranja NV et al.<sup>6</sup> 93 cases of LIG 44 cases were PLLIG and they were more than 60yrs of age and another prospective study by Singh G et al.<sup>8</sup> All 5 cases of PLLIG were more than 60 years. Whereas in a prospective study by Hegde SP et al.<sup>5</sup> Among 30 cases of LIG 26 cases were PLLIG and 42% (11/26) were less than 50 years. More number of middle aged patients in our study and previous study report from Hegde SP et al.<sup>5</sup> suggest PLLIG can be seen in middle and younger age patients. This aspect needs further study with larger sample.

Incidence of age related cataract and presentation of mature /hypermature cataract in the other eye is more in

female gender than male. Psychological acceptance, family condition, illiteracy and socio economical restrain are the accepted factors.<sup>4,5</sup> The Female: male ratio in our study is 1.4:1 and comparable to earlier report of 1.1:1 to 1.7:1.<sup>4-6</sup> (P=0.50). This confirms that the incidence of PLLIG is more in female gender. Our study did not find any difference in the laterality of the eye in PLLIG. In 47.4% (18/38) cases right was eye affected and 52.6% (20/38) cases left eye. In a prospective study of 30 cases of LIG cases by Hegde S P et al.<sup>5</sup> 26 cases were PLLIG and in 69%(18/26) cases right eye was involved. (P=0.11). Even thou no scientific explanation given, the default practice in ophthalmology is to start most of the procedure in right eye may be the reason.

It was assumed that PLLIG with inaccurate PL eyes will have poor post operative visual prognosis.<sup>4</sup> In a prospective study by Pradhan D et al.<sup>4</sup> 413 LIG patients 20.0% (82/413) patients were with inaccurate PL and not operated. In this study there were 28%(115/413) cases with PLLIG and 72%(298/413) cases with PMLIG. More number PMLIG may be the reason for not operating cases with inaccurate

PL. Where as in Braganza A et al.<sup>7</sup> study there were 15% (20/135) PLLIG patients with inaccurate PL and they were operated. All of them gained visual benefit. Among these 20 cases 75%(15/20) with vision of > 6/24 and 25% (5/20) with vision of <6/60 post operatively. In our study preoperative DCVA was HMCF in 63.1% (24/38), accurate PL/PR in 31.7% (12/38) and inaccurate PL/PR in 5.2% (2/38). Two patients with inaccurate PL were operated and having post operative DCVA of > 6/24. This support Surgical intervention to be performed in Patients even with inaccurate PL/PR.

The mean IOP in our study was 41.6 +/- 10.6 mmHg with 36.8% (14/38) having <30 mm Hg and 63.2% (24/38) > 30 mmHg. Postoperatively 97.3% (37/38) had IOP of < 21 mmHg at the end of 8 weeks and comparable to previous reports.<sup>2,7</sup> In a prospective study by Mandal AK et al.<sup>2</sup> 37 cases of PLLIG with IOP > 30 mm Hg were operated and all case had normal IOP within 3 weeks. In an another retrospective study by Braganza et al.<sup>7</sup> There were 135 cases of PLLIG with mean IOP of 42.5 +/-11.4 mmHg, one group with 89 patients under went ECCE + trabeculectomy and other group with 46 cases only ECCE. At the end of 6 months all were having normal IOP with no difference between two group. Our observation supports that extracapsular cataract extraction alone is effective in normalizing the IOP in PLLIG patients.

Many studies have correlated the time interval between episode of PLLIG and intervention. Longer the duration (> 2 weeks) reduces the postoperative visual outcome and increases intra operative and post operative complication.<sup>4-7</sup> Presence of more HMW soluble proteins in cataract of PLLIG patients increases the AC inflammation, fragility of capsule and zonules, microscopic defect in the PC causing posterior segment inflammation, vitreous degeneration.<sup>3,8</sup> These factors may contribute in intra operative capsule related complication like difficulty in doing CCC, Zonular dialysis and PC tear with/ without vitreous disturbances. In a retrospective study of 93 patients with LIG by Pranja VN et al.<sup>6</sup> Forty four cases were having PLLIG and in 55% (24/44) cases PC IOL was not implanted due to the disturbances to capsule, zonules and vitreous. Another prospective study on LIG by Pradhan D et al.<sup>4</sup> 67% (209/311) cases had intraoperative complications and IOL was not implanted. In a recent study by Hegde SP et al.<sup>5</sup> 26 cases of PLLIG underwent cataract surgery and 8%(2/26) cases had intraoperative capsular complications and IOL was not implanted. In our study we have observed 44.7% (17 /38) cases with various intraoperative complications; In 53% (9/17) cases difficulty in doing CCC, 17% (3/17) cases PC rent with vitreous disturbance and 30% (5/17) cases with zonular dialysis. All patients had primary IOL implantation. The observed Intra operative complication rate in our study appears to be less when compared to earlier reports by Pradhan D et al.<sup>4</sup> and Pranja NV et

al.<sup>6</sup> and stastically significant (P=0.08). In the above two studies by Pradhan D et al.<sup>4</sup> and Pranja NV et al.<sup>6</sup> there were both PMLIG and PLLIG, majority of the patients presented at delayed time of >2 weeks and non availability of better OVD (Ocular viscoelastic devices), Tryptan blue, advanced surgical gadgets could be the reason for higher rate of intraoperative complications. In a recent study by Hegde SP et al.<sup>5</sup> 26 cases of PLLIG underwent cataract surgery and in 8%(2/26) cases had intraoperative capsular complications of PC tear with vitreous disturbance and IOL was not implanted and the difference is stastically significant (P=0.05). In Hegde SP et al.<sup>5</sup> study all cases were operated immediately after control of glaucoma where as in our study 47.3% (18/38) cases were operated after 7 days with continued medical treatment following the control of glaucoma. It has been assumed that even thou there is macro level control of LIG after medical treatment, there will be continued micro level damage to lens capsule, zonules and vitreous inflammation. These changes may increases fragility of the capsule and zonules.<sup>3,8</sup> This may be reason for more number of cases with intra operative complications in our study. However all patient had primary IOL implantation. This was possible due to availability of preservative free triamcinolone injection, vitrectomy machine, Scleral fixation \IOLs and Sutures.

Our observation in presentation of PLLIG in relation to lens condition of the other eye is in concordance with earlier report.<sup>9</sup> In our study 58% (22/38) cases were having pseudophakia and 42%(16/38) cases with different stages cataract. In a prospective study by Gujjala C et al.<sup>9</sup> 44%(22/50) cases with pseudophakia, 42% (21/50) cases immature senile catarac, 12% (6/50) aphakia and 2% (1/50) clear lens and the difference is statistically not significant. (P=0.28)

All studies have supported the positive correlation between post operative Visual prognosis with the shorter time interval between onset of PLLIG and intervention. The proportion of this visual gain differs from study to study.<sup>2,5-9</sup> The post operative DCVA of 6/12 or better in 58% (22/38) cases in our study appears to be less than earlier reports.<sup>2,7,8</sup> In a prospective study of 37 cases with PLLIG by Mandal AK et al.<sup>2</sup> 84.%(31/37) cases had DCVA of 6/12 or more and in another prospective study by Braganza A et al.<sup>7</sup> 135 cases of PLLIG post operatively 85% (114/135) had Vision of 6/12. Singh G et al.<sup>8</sup> in their prospective study of 5 cases with PLLIG, 80% (4/5) gained DCVA 6/12 or more. Even thou the higher success rate in these studies appears to be more statistically not significant (P= 0.19). However post operative DCVA of 6/12 or more in 58% (22/38) in our study is comparably to the previous reports of 53.3% - 61%.<sup>6,9</sup> Pranja NV et al.<sup>6</sup> in their retrospective study of 93 cases of LIG 44 cases were PLLIG and only 61%(27/44) gained post operative DCVA of 6/12 or more and in an another Prospective study by Gujjala

C et al.<sup>9</sup> among 12 cases of PLLIG only 50% (6/12) had post operative DCVA of 6/12 or more (P=0.41). In above studies surgery was performed immediately after medically controlled PLLIG.<sup>2,5-9</sup> In our study 47.4% (18/38) cases had delayed surgery (group B) and 55.6% (10/18) had DCVA of 6/12 or more. This support the assumption of delayed surgical intervention after continued medical treatment in PLLIG has relatively equal visual prognosis compare to early surgical intervention. This aspect needs further studies with larger sample size.

It has been assumed that the constant release of HMW soluble protein into the eye in PLLIG causes raised IOP, Corneal oedema and AC inflammation.<sup>3,8</sup> Following cataract surgery the source of HMW soluble proteins is removed as a result IOP will returns to normal, cornea clears and AC becomes quiet with in a period of 2-4 weeks.<sup>2,7,8</sup> However some authors have suggested presence of HMW soluble proteins in trabecular mesh work and vitreous cavity even after removal of cataract. This retained HMW protein may continue to cause corneal oedema, raised IOP and AC inflammation.<sup>2,4</sup> Many studies have reported post operative persistent complications like corneal edema, uveitis and optic nerve damage.<sup>4,7</sup> Pradhan D et al.<sup>4</sup> reported 8% (32/413) cases with optic atrophy, 6% (25/413) cases with corneal oedema and 6% (25/413) cases with uveitis. Braganza A et al.<sup>7</sup> have observed persistent post operative uveitis in 13% (18/135) cases. The observed persistent post operative complications rate in our study are corneal edema in 2.6% (1/38) case, persistent uveitis in 2.6% (1/38) case and total optic nerve cupping in 2.6% (1/38) case. Even thou the observation appears lesser than earlier studies but stastically not significant. (P= 0.75). Interesting observation was, one case with post operative persistent uveitis had preoperative pseudohypopyon. Another case with post operative total optic nerve cupping had preoperative IOP of > 50 mm Hg and both these cases are from group B

There was no significant difference in the mean age, gender, laterality of eye involvement, Preoperative DCVA, IOP, AC reaction and corneal oedema between two group (Table 1). One case each of pseudo hypopyon and of IOP > 50 mm Hg were present in group B.

The incidence of cumulative of intra operative complication between group A and group B is 35.0% (7/20) and 55.5% (10/18) cases respectively and the difference is statistically not significant (P=0.32). Difficulty in doing CCC 20% v/s 27.8%, zonular dialysis 10% v/s 16.7% and PC rent with vitreous disturbance 5% v/s 11% (Table.2).Mature/Hyper mature cataracts with PLLIG have more concentration of HMW soluble proteins. Following medical treatment IOP and inflammation are controlled with macroscopically eye appears normal. However HMW soluble proteins continue to induce microscopic inflammation in AC and vitreous inflammation. These changes cause subclinical capsule fragility, zonular weakness and vitreous degeneration. All these changes

are the probable reasons for more intraoperative capsule related complications.<sup>3,8</sup> May be delayed surgery in group B patients could be the reason for more intraoperative complications compare to group A. However the difference is stastically not significant. (P=0.32).

When post operative DCVA compared between two groups we did not find any difference. In group A 60% (12/20) patients gained 6/12 or better DCVA and 55.6% (10/18) patients in group B. (P=1.0) DCVA of 6/18 - 6/60 in 35% (7/20) cases in group A and 33% (6/18) cases in group B. (P=1.0). In group A 5% (1/20) case and in group B 11.1% (2 /18) case in group B had DCVA of < 6/60 (P=0.59). (Table 3 )This support our assumption of delayed surgery with continued medical treatment in PLLIG may be considered in needy patients.

There was no difference in the incidence of postoperative persistent complications between two groups even after 8 weeks of follow up. Among 20 cases 5% (1/20) from group A remained with persistent corneal oedema in spite controlled IOP and inflammation. In group B 11.1% (2/18) cases each one with persistant uveitis and total cupping of the optic nerve head.

## 5. Conclusion

Considering the personal, family and socio economical conditions of Indian rural population delayed surgical intervention (after continued medical treatment) has same visual outcome and post operative complications compare to early surgical intervention of PLLIG. However intraoperative capsule related complications like difficulty in doing CCC, Zonular dialysis and capsular rent with vitreous disturbance are more likely to occur in surgery delayed group. Preoperative precautionary preparations to be taken before operating in such cases. A long term studies with larger sample size are needed on this aspect.

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None.

## 7. Conflict of Interest

None.

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