Original Article

Ophthalmology and Allied Sciences
Volume 5 Number 2, May - August 2019
DOI: http://dx.doi.org/10.21088/oas.2454.7816.5219.1

Prospective Study of Visual Outcome Following Nd : YAG Laser Posterior Capsulotomy

G Adarsh Reddy[1], G Narender Reddy[2]

Abstract

Introduction: Cataract is defined as any opacity in the crystalline lens of the eye that impairs vision. It can lead to clinically significant reduction in visual acuity, impaired contrast sensitivity, glare disability and monocular diplopia. PCO can be managed in two ways- Surgical capsulotomy and Nd : YAG laser capsulotomy. *Aims:* Visual outcome, IOP changes and Complications following Nd : YAG laser capsulotomy *Materials and Methods:* This is a prospective study of 104 patients, attending the regular out-patient department of Ophthalmology, conducted in Mamata General Hospital, Khammam, from November 2015 to September 2017. *Results*: Improvement of visual acuity was excellent with 80.77% improving more than 3 lines on the snellen's chart, 1 week after the procedure. There was significant difference in IOP before and 4 hours after the laser, but the IOP returned to pre-procedure value 24 hours after laser, since we used 0.5% timolol topical eye drops to blunt the intraocular pressure spikes. There are no cases of endophthalmitis reported in the present study. 95.2% of the patients improved by 3 lines and more. 4.81% of the patients showed improvement by 2 lines. *Conclusion:* Improvement in visual acuity is excellent post Nd : YAG laser capsulotomy. It is relatively non invasive and can be performed as an out-patient based procedure. This treatment modality is cost effective and relatively safe.

Keywords: Nd : YAG laser capsulotomy; Posterior capsular opacification; Surgical capsulotomy.

How to cite this article:
G Adarsh Reddy, G Narender Reddy. Prospective study of visual outcome following Nd : YAG laser posterior capsulotomy. Ophthalmol Allied Sci. 2019;5(2):149–158

Introduction

Cataract is defined as any opacity in the crystalline lens of the eye that impairs vision. Cataract extraction is the most frequently performed surgical procedure in patients over 65 years of age. Sometimes, the left out posterior capsule after the cataract surgery, opacifies by forming a dark cloud in front of the visual field known as posterior capsular opacification. It can lead to clinically significant reduction in visual acuity, impaired contrast sensitivity, glare disability and monocular diplopia. Posterior capsular opacification is also called secondary or after cataract. The posterior capsular opacification (PCO) is the most frequent late postoperative complication associated with decreased vision following cataract surgery. The incidence of development of PCO is 25 to 50%, between 2 months and fiveyears following the initial surgery [1]. PCO in pediatric age group is a major problem where the incidence approaches 100%.

PCO can be managed in two ways- Surgical capsulotomy and Nd : YAG laser capsulotomy. Before introduction of Nd : YAG laser, only surgical cutting or polishing of the posterior capsule could manage opacification of the posterior capsule following ECCE. After the introduction of Nd : YAG laser, laser capsulotomy became the method of choice in treating PCO. Nd : YAG laser posterior capsulotomy introduced a technique for closed eye, effective and relatively safe opening of the opacified posterior capsule and laser capsulotomy became the standard of care. Nd : YAG laser capsulotomy

Author Affiliation: [1]Assistant Professor [2]Associate Professor, Department of Ophthalmology, MNR Medical College and Hospital, Sangareddy, Telangana 502285, India.

Corresponding Author: G Narender Reddy, Associate Professor, Department of Ophthalmology, MNR Medical College and Hospital, Sangareddy, Telangana 502285, India.

E-mail: dradarshreddy26@gmail.com

Received on 0.4.03.2019, **Accepted on** 25.03.2019

is usually a safe procedure but it may sometimes cause complications. Complications are more pronounced when higher single pulse energy levels are used and with large capsulotomy size.With this background knowledge which has been revised in detail in subsequent chapters, a hospital based prospective study of visual outcome following Nd : YAG laser posterior capsulotomy is done.

Materials and Methods

This is a prospective study of 104 patients, attending the regular out-patient department of Ophthalmology, conducted in Mamata General Hospital, Khammam, from November 2015 to September 2017.

Inclusion Criteria

All patients diagnosed clinically with PCO following SICS with PCIOL implantation above the age of 35 years.

Exclusion Criteria

1. Patients presenting with any other media opacity like corneal opacity etc.

2. Retinal disease accounting for visual loss.

3. Patients who are unable to fixate adequately for the procedure.

Detailed history was taken of each patient and recorded on specifically designed proforma. History was obtained with special attention to characteristic symptoms of decreased visual acuity, glare, or altered colour sensitivity, and the duration between surgery and the development of visually significant symptoms.

Visual acuity was checked using Snellens''s visual acuity chart and pinhole improvement was noted. Slit lamp examination was done to assess the cornea and also to assess the type and grade the PCO. Fundus examination was done using 90 D lens. IOP was measured using applanation tonometry before the procedure. Pupils were dilated using tropicamide 0.5% and phenylephrine 5% drops.

Assessment of PCO: Pupils were dilated and slit lamp biomicroscopy using retroillumination was performed giving special attention to posterior capsule under the IOL optic. PCO grading was done as by Madurai Intraocular Lens Study IV.

Grade 0: No posterior capsule opacification before and after pupillary dilatation. Direct ophthalmoscopy gives clear view of the optic disc, blood vessels and nerve fibre layer.

Grade 1: No central posterior capsule opacification is seen. PCO is seen only with pupil dilated to a minimum of 6mm. Dilated ophthalmoscopy gives clear view of optic disc, blood vessels and nerve fibre layer.

Grade 2: Posterior capsular opacification is present in the central visual axis detectable with an undilated pupil. With direct ophthalmoscope, there is mild obscuration of fundus detail with the optic disc clearly seen, but the blood vessels and retinal nerve fibre layer are not clearly visible.

G*rade 3:* posterior capsular opacification is present in the central visual axis with an undilated pupil. Direct ophthalmoscopy shows marked obscuration of fundus details with even the margins of the optic disc not clearly defined.

All patients with grade 2 and grade 3 PCO were subjected to Nd : YAG laser posterior capsulotomy.

Procedure

- Patient was explained the procedure and an informed consent was taken.
- Topical anesthesia achieved using 1–2 drops of proparacaine 0.5% .
- Patient was seated comfortably at NIDEK YC-1600 ophthalmic YAG laser system and an illuminated target was provided to the patient for maintaining steady fixation.
- Abraham lens (contact lens) was placed to stabilize the eye and to improve the laser optics and facilitate accurate focusing.
- A cruciate capsulotomy was created with the Nd : YAG laser, avoiding the central 4 mm of the lens and with the focus of the aiming beam slightly posterior to the posterior capsule.
- The opening was created beginning superiorly near the 12‘O clock and progressing down to and towards the 6‘O clock position. This is followed by placing the shots at 3 and 9‘O clock. Any flaps during the procedure are cut so as to cause them to retract and fall back to the periphery.
- Capsulotomy was started eccentrically with minimal energy 1 to 2 mJ/ pulse to predict the behaviour of the posterior capsule to the photodisruptive forces and to avoid pitting of

the IOL in the central position.

- Once the procedure is completed, the patient was adviced regarding the scheduled follow up of this study.

Post-procedure medications-The patients are put on topical steroids and 0.5% timolol eye drops.

Follow up

The IOP of the patient was measured 1 hour, 4 hours, 24 hours and 1 week after the procedure.

BCVA was recorded on Snellen's chart 1 week after the procedure.

The patient was followed up for 3 months after the procedure to look for any complications.

Statistical analysis to compare the pre procedure and post procedure intraocular pressure changes was done using paired t test.

Results

During the period of study from November 2015 to September 2017, 104 patients having posterior capsular opacification were identified and recorded. These 104 patients underwent Nd : YAG capsulotomy and the following observations were made.

Table 1: Demographic Distribution in study

Age	No. Of Patients	Percentage
31–40	1	0.96%
41–50	7	6.74%
51–60	42	40.38%
61–70	48	44.20%
71–80	6	5.78%
Total	104	100%
Gender		
Males	55	52.9%
Females	49	47.1%
Laterality		
Right	55	52.9%
Left	49	47.1%
Type of PCO		
Pearl	57	54.81%
Fibrous	47	45.19%
Grade of PCO		
Grade I	0	0
Grade II	78	75%
Grade III	26	25%
Duration between surgery and Nd:YAGcapsulotomy		
6 months – 1 year	21	20.19%
>1 year – 3 years	64	61.54%
>3 years – 5 years	16	15.38%
>5 years	3	2.89%

Maximum patients were in the age group of 61 – 70 years, the youngest patient being 39 years, and the oldest patient being 78 years. Out of the 104 patients, 53 were males and 47 females.

In this study, majority of PCO were encountered in the right eye. Most of the cases in this study had pearl type of posterior capsular opacification. 78 cases belong to grade II PCO and 26 to grade III. None of them are of grade I.

Maximum number of cases underwent YAG capsulotomy between a period of 1 year to 3 years. 20.19% patients presented within 1 year of surgery, 61.54% presented between 1-3 years after surgery, 15.38% between 3-5 years after surgery and 2.89% presented more than 5 years after surgery (Table 1). 2.9% of the patients have best corrected visual

Table 2: Pre-procedure and Post operativebest corrected visual acuity

Pre-Procedure BCVA	No. of Patients	Percentage
6/6	0	0%
6/9	0	0%
6/12	1	0.96%
6/18	14	13.46%
6/24	25	24.05%
6/36	15	14.43%
6/60	20	19.23%
Cf-5m	11	10.58%
Cf-4m	9	8.65%
Cf-3m	4	3.84%
Cf-2m	3	2.88%
Cf-1m	2	1.92%
Hm	0	0%
Total	104	100%
Postop BCVA		
6/6	34	32.7%
6/9	28	26.92%
6/12	15	14.42%
6/18	12	11.54%
6/24	8	7.7%
6/36	5	4.8%
6/60	2	1.92%
Cf	0	0%
Total	104	100%

acuity less than 6/60 and 14.43% have BCVA of 6/36, 24.05% patients have a BCVA of 6/24 and 14.42% patients had BCVA between 6/12 and 6/18. 14.42% of the patients had good pre procedure visual acuity between 6/6 to 6/18, 57.7% between 6/24 and 6/60 and 27.88% had poor pre laser BCVA less than 6/60. Post laser, 85.58% patients had good visual acuity between 6/6 and 6/18 and 14.42% between 6/24 and 6/60. None of the patients had post laser visual acuity of less than 6/60.

Best corrected visual acuity of all the patients who underwent YAG laser posterior capsulotomy had been done with appropriate glasses. Post laser BCVA improved for all patients showing the efficacy of the intervention applied. 32.7% of the patients improved to 6/6 BCVA (Table 2).

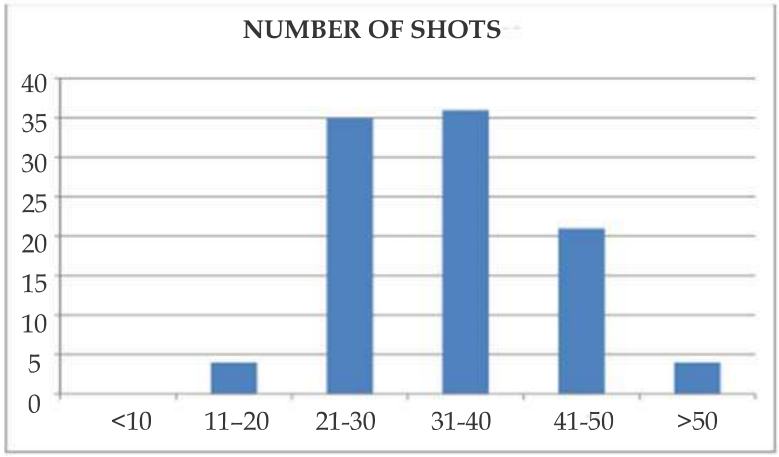

Fig. 1: Number of shots required.

Most of the patients required 31–40 laser shots. The maximum number of shots given were 59 and minimum 18 (Fig. 1).

Table 3: Laser energy per pulse and total energy

Energy per pulse	No. of Patients	Percentage
1 – 1.5	43	41.35%
1.6 – 2	49	47.11%
>2	12	11.54%
Total	104	100%
Total Energy		
<30	14	13.46%
30–60	41	39.42%
61–90	35	33.65%
91–120	12	11.55%
121–150	1	0.96%
>150	1	0.96%
Total	104	100%

Most of the patients were given laser energy per pulse between 1.6-2 mJ, the highest being 2.6 mJ and least 1.1 mJ. Most of the patients received total energy of 30–60 mJ, highest being 153.4 mJ and lowest being 22 mJ (Table 3).

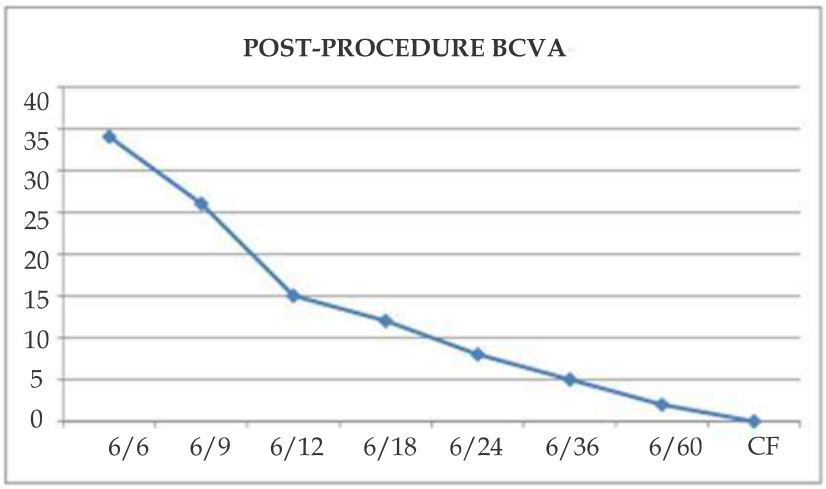

Fig. 2: Grading of pre procedure and post procedure BCVA

Table 4: Improvement in visual acuity

Improvement	No. of Patients	Percentage
No Improvement	0	0%
1 Line	0	0%
2 Lines	5	4.81%
3 Lines	15	14.42%
>3 Lines	84	80.77%
Total	104	100%

95.2% of the patients improved by 3 lines and more. 4.81% of the patients showed improvement by 2 lines (Table 4).

Table 5: Intraocular pressure changes

IOP	Pre laser		After 1 hour of laser		After 4 hours of laser		After 24 hours of laser	
	Number	%	Number	%	Number	%	Number	%
<12	3	2.89%	0	0	0	0	0	0
12–16	80	76.92%	83	79.81%	76	73.08%	81	77.88%
17–20	19	18.27%	19	18.27%	24	23.08%	21	20.20%
>20	2	1.92%	2%	1.92%	4	3.84%	2	1.92%
Total	104	100%	104	100%	104	100%	104	100%

Table 6: Complications of Nd:YAG laser capsulotomy

Complications	No. of Patients	Percentage
IOL pitting	6	5.77%
Raised IOP	1	0.96%
Iritis	4	3.84%
CME	0	0%
RD	0	0%
Hyphaema	0	0%
Total	11	10.57%

Three patients had a pre laser IOP of less than 12 mm of Hg. 80 patients had pre laser IOP between 12-16 mm Hg which increased to 83 patients after 1 hour of laser. 19 patients had IOP between 17-20 mm Hg before laser which increased to 24 patients 4 hours after laser. Only 2 patients had pre procedure IOP of more than 20 mm, Hg but 4 patients had more than 20 mm Hg IOP 4 hours after laser.

The above result shows that 59 patients showed no change in IOP after Nd : YAG laser posterior capsulotomy upto 24 hours while the remaining 45 patients showed some degree of change in IOP after Nd : YAG laser posterior capsulotomy in which most of the increase was in the range of 1-4 mm of Hg.

Only 2 cases in the present study showed an acute IOP rise upto 24mm Hg, 4 hours after the procedure.

Of the 43.26% patients with transient IOP rise, there was 2mm Hg rise in IOP, 4 hours after laser in 31.73% of the patients. The mean IOP before laser in the present study is 14.60 mm Hg which increases to 15.56 mm Hg, 4 hours post laser and returns to near baseline value 1 week after the procedure (Table 5).

The most common complication encountered in this study was IOL pitting seen in 5.77% patients. Iritis was seen in 3.84% patients. Other complications like cystoids macular edema, retinal detachment, hyphaema were not seen in this study (Table 6).

Discussion

Posterior capsular opacification is one of the most commonest cause of postoperative reduction in vision following cataract surgery. Nd : YAG laser is a non invasive, effective, relatively safe technique to treat PCO. Hence, it has established its place as a standard treatment for PCO replacing surgical capsulotomy.

Age

In the present study, the age group of the patients ranges between 39-78 years, which is similar to the study group of Cetinkaya *et al.* [2]. Wide range of age was seen in studies by Seethalakshmi *et al.* [3] and Bilal Khan *et al.* [4] as they included paediatric patients as well. The ranges of age in different studies are as follows-

In the present study, it was observed that PCO is more common in the age group of 61-70 years with 44.24% of the patients belonging in this range. This is in concordance with the study conducted by Seethalakshmi *et al.* [3] and Sandhya *et al.* [5] in which 45% patients were in the age group of 61-70 years.The mean age of PCO in the present study is 60.53 years. The mean age of occurrence of PCO in a study by Gopinath *et al.* [0] was 52 years and 71 years in the study by Hirnschall *et al.* [7] Studies by Wajeeha and Yuvaci *et al.* [8] showed the mean age of occurrence to be 66 years and 63.17 years respectively.

Sex

There was no significant sex predilection among the patients who developed PCO in the present study. Out of 104 patients in this study, 53 were males and 47 females. This is similar to the male - female ratio as seen in the study by Seethalakshmi *et al.* [3]. In the study by Khanzada *et al.* [9], 62.5% patients were males and 37.5% were females. Similar ratio was found in a study by Pankaj *et al.* [10]. This probably reflects that female populations less commonly present to hospital for their reduced vision after surgery. However, higher female to male ratio was seen in studies by Raza *et al.* [11], Bilal Khan *et al.* [4], Kim *et al.* [12] and Cetinkaya *et al.* [2]. The sex distribution of PCO in different studies is as follows-

IOL Status

In the present study, all the patients (100%) were

pseudophakic similar to the study group of Mrunal *et al.* [13]. In the study by Wajeeha *et al.* [8], 93% patients were pseudophakic and 7% were aphakic. In the study by Raza *et al.* [11] 80% of the patients were pseudophakic and 20% aphakic.

Type of PCO

The most common type of PCO in our study is the Elschnig pearl type seen in 54.81% of the patients and fibrous type was seen in 45.19%. Pearl type of PCO is also the most common type of PCO in other studies like Pankaj *et al.* [10]. However, fibrous type of PCO was more common in the study conducted by Bari K [14] with 57.04% patients showing fibrous type of PCO and 21.42 % patients having pearl type.

Duration from Surgery

In the present study, large proportion of patients, about 61.54%, had developed PCO between 1-3 years post surgery which is similar to the study by Cetinkaya *et al.* [2]. The duration from surgery in our study appears to be earlier than 3-5 years as reported by Pankaj *et al.* [10]. In the studies by Ang *et al.* [15], the duration was as less as 11 months and 3-12 months respectively.

Number of Pulses

Most of the patients required 31 - 40 laser shots. The number of pulses given in Bilal Khan [4] study was 6-19.Average number of pulses given in our study is 35.02 which is higher than the mean of 10.7 in Bilal Khan [4] study.

Energy Level

The pulse energy setting was kept as low as possible. Most of the patients were given laser energy per pulse between 1.6-2 mJ, the highest being 2.6 mJ and least 1.1 mJ. The pulse energy used in the present study was close to that used by Hirnschall *et al.* The energy level used by Bilal Khan [4] and Khanzada *et al.* [9] was 1.5-8 mJ and 1.5-5 mJ respectively. Pankaj *et al.* [10] used 2 mJ energy per laser.

Total Cumulative Energy

The total cumulative energy used was in the range of 22-154 mJ. Only few cases in our study required high energy levels. Most of the patients received total energy of 30-60 mJ.

Visual Improvement

Best corrected visual acuity of all the patients who underwent YAG laser posterior capsulotomy had been done with appropriate glasses. 14.42% of the patients had good pre-procedure BCVA between 6/6 to 6/18, 57.71% had between 6/24 and 6/60 and 27.87% had poor BCVA less than 6/60. Post laser, 85.58% patients had good BCVA between 6/6 and 6/18 and 14.42% between 6/24 and 6/60. None of the patients had post laser visual acuity of less than 6/60.

Post procedure BCVA improved for all 104 patients by atleast 2 lines or more in the Snellen's chart, showing the efficacy of the intervention applied. In the present study, 95.2% of the patients improved by 3 lines and more. 4.81% of the patients showed improvement by 2 lines.Visual improvement of 94.4% and 90% was seen in studies by Ajite *et al.* [16] and Pankaj *et al.* [10] respectively. 85.58% of the patients revealed good visual acuity between 6/6 - 6/18 after Nd: YAG capsulotomy which is similar to the study by Seethalakshmi *et al.* [3] but higher than the 73% seen in the study by Wajeeha *et al.* [3].

None of the patients in the present study had post laser BCVA less than 6/60, similar to the study by Seethalakshmi *et al* [3]. But 8.52% patients in the Bari K [14] study and 5% in the Dharmaraju *et al.* [11] study had vision below 6/60.

BCVA of 6/6 - 6/9 was achieved in 96.9% eyes in the study by Khanzada *et al.* [9] which is higher than the 58% achieved in our study.There was no improvement in visual acuity in 4% of the cases in a study by Hossain *et al.* and in other studies because of pre-existing fundus pathology which was not detected due to thick posterior capsule opacification. None of the patients in our study reported further deterioration in vision in post laser period.

IOP Changes

The above result shows that 55% of the patients showed no change in IOP upto 24 hours after Nd : YAG laser posterior capsulotomy while the remaining 45% patients showed some degree of change in IOP after Nd : YAG laser posterior capsulotomy in which most of the increase was in the range of 1-4 mm.

Only 2 cases in the present study showed an acute IOP rise upto 24 mm Hg, 4 hours after the procedure. One was a known case of glaucoma. Both the cases were successfully treated and the

pressures returned to baseline value over a period of 1 week.

In the present study, the maximum rise in IOP from the baseline value is 4 mm Hg. Khanzada *et al.* [9] reported a rise in baseline IOP of about 8-10 mm Hg in 3.1% patients during the 1st 24 hours. Bilal Khan *et al.* [4] showed a mean IOP elevation of 7.4 mm Hg above baseline.

Of the 45% patients with transient IOP rise, there was 2 mm Hg rise in IOP, 4 hours after laser in 33% of the patients which is similar to that observed in the study by Dharmaraju *et al.* [17]

An IOP rise of 4mm Hg was observed in 8% patients 4 hours after the procedure. But Pankaj *et al.* [89] showed that 37% of their patients had an IOP rise of more than 4 mm Hg, 4 hours after the procedure.The IOP levels returned to the pre procedure levels in most patients 1 week after the procedure, in contrast to the study by Karahan *et al.* [18] in which the IOP increased 1 week after Nd : YAG laser capsulotomy and declined to pre procedure levels at 4 weeks post laser.

None of the patients in our study had persistant IOP rise but 3.5% of the patients in Gore VS study 94 and 1.26% patients in Bhargava R *et al.* [19] study showed persistant rise of IOP.

The mean IOP before laser in the present study is 14.60 mm Hg which increases to 15.56 mm Hg, 4 hours post laser and returns to near baseline value 1 week after the procedure.

This shows that, in the present study, change in mean IOP 1 hour, 24 hours and 1 week post laser is not statistically significant ($p>0.05$) but the change in mean IOP 4 hours after the procedure is statistically significant ($p<0.05$).

All patients exposed to energy levels >40mJ showed increase in IOP 4 hours post laser in the study by Pankaj *et al.* [10]. But in the present study, of the 75 patients who received a total energy of >40 mJ, only 36 patients developed a transient rise in IOP post laser. A study by Waseem MA showed raised IOP in 21 out of 35 (60%) patients in high energy group as compared to raised IOP in 32 out of 113 (28.32%) patients in low energy group. In our study raised IOP was noted in 36 cases out of 73 (49.31%) in high energy group as compared to 8 cases out of 27 (29.6%) in low energy group.

Complications

Nd : YAG capsulotomy is associated with significant anterior and posterior segment complications. Some studies recommend that side effects are more pronounced when higher single pulse energy levels are used rather than higher total laser energy.

IOL Pitting

IOL damage following capsulotomy has been attributed to faulty focusing of laser beam, close proximity of the IOL to the posterior capsule and inherent properties of IOL materials. In the present study, IOL pitting has been seen in 5.77% of the cases which is comparatively less than Dawood *et al.* [20] reported IOL pitting in 0.5% of cases respectively in their studies.

Cystoid Macular Edema

It has been reported to develop on 0.55% to 2.5% of eyes between 3 weeks and 11 months following Nd : YAG laser capsulotomy.76In the present study, no case of CME was encountered similar to the study by Raza [11] reported CME in 3% of 550 patients treated with Nd : YAG laser capsulotomy.

Uveitis

Transient anterior chamber flare may be seen post - laser treatment. However, persistent iritis or vitritis is rare. In the present study, uveitis in the form of iritis is seen in 3.84% of the patients while 4.8% had uveitis in a study by Pankaj *et al.* [10]. Khanzada *et al.* [9], Bilal Khan *et al.* [4] and Seethalakshmi *et al.* [2] reported 0.6%, 1.14% and 2% of uveitis cases respectively, which is lesser than the present study.

Retinal Detachment

RD may complicate Nd :YAG laser posterior capsulotomy in 0.01-4.1% of eyes. In the present study, none of the cases showed retinal detachment similar to Gopinath *et al.* [6] it is in 2% cases of retinal detachment were reported in studies by Raza [11] and Bhargava *et al.* [19]. In the present study, this complication didnt arise probably due to the absence of risk factors in the patients.

Hyphaema

In the present study, none of the patients had hyphaema. 7.6% patients in the Pankaj *et al.* [10] study were reported to have hyphaema.

Vitreous in Anterior Chamber

In the present study, there were no cases of ruptured anterior vitreous face similar to the study by Jain *et al*. However, vitreous in anterior chamber was noted in 0.62%, 2 % patients in the studies by Khanzada *et al.* [9] and Wajeeha, [8] respectively.

Endophthalmitis

There are no cases of endophthalmitis reported in the present study. It is uncommon in other studies also. Bilal Khan [4] reported 1 case (0.22%) of endophthalmitis in his study.

Other Complications

Other uncommon complications like corneal edema, papillary block glaucoma, macular hole are not seen in any case in the present study. Pankaj *et al.* [10] reported corneal edema in 6.8% patients and pupillary block glaucoma in 8.2% cases in their study.

Conclusion

Most of the laser procedures were done using energy between 1.6-2 mJ, maximum energy used was 2.6 mJ. The average total energy used was between 30-60 mJ, minimum being 22 mJ and maximum being 153.4 mJ. At 24 hours, the improvement of visual acuity was excellent with 80.77% improving more than 3 lines on the snellen's chart, 1 week after the procedure.

There was significant difference in IOP before and 4 hours after the laser, but the IOP returned to pre-procedure value 24 hours after laser, since we used 0.5% timolol topical eye drops to blunt the intraocular pressure spikes. Out of the 104 eyes treated, 1 patient had transient rise of IOP, IOL pitting was observed in 6 patients, uveitis in 4 patients.

From present study of Nd : YAG laser capsulotomy for posterior capsular opacity, we conclude that improvement in visual acuity is excellent post Nd : YAG laser capsulotomy. It is relatively non invasive and can be performed as an out-patient based procedure. This treatment modality is cost effective and relatively safe.

References

1. Yanoff M, Duker J and Augsburger J. Ophthalmology. 3rd ed. Mosby Elsevier; 2009 .p.497.
2. Cetinkaya S, Cetinkaya YF, Yener HI, Dadaci Z, Acir NO. The influence of size and shape of Nd: YAG capsulotomy on visual acuity and refraction. Arq. Bras Ofthalmol. 2015 Aug;78(4):220–23.
3. Sita DK, Kanakpur S. A studyto determine visual outcome and complications following Nd : YAG laser therapy in posterior capsular opacification. 2017;5(2).
4. Khan B, Alam M, Shah MA, *et al.* Complications of Nd:YAG Laser Capsulotomy. Pakistan Journal Of Ophthalmology. 2014;30(3):133–36.
5. Ramachandra S, Kuriakose F. Study of early refractive changes following Nd :YAG capsulotomy for posterior capsule opacification in pseudophakia. Indian J Clin and ExpOphthalmol. 2016;2(3):221–26
6. Gopinath GS, Satish K, Srivastava N, *et al.* Visual Outcome Of YAG Laser Therapy for Posterior Capsular Opacification Following Cataract Surgery. International Journal of Scientific Study. 2015;3(3):65–68.
7. Findle O, Neumayer T, Hirnschall N, *et al.* Natural course of Elschnig pearl formation and disappearance. Invest Ophthalmol Vis Sci. 2009;51(3):1547–53.
8. Rasool W, Raza A, Ali SI. Efficacy of Laser Capsulotomy in the Treatment of Posterior Capsule Opacification. Journal of Rawalpindi Medical College. 2010;14(2):78–80.
9. Khanzada MA, Shafi MJ, Ashok Kumar N, *et al.* Is the Nd: YAG Laser a Safe Procedure for Posterior Capsulotomy? Pak J Ophthalmol. 2008;24:73–78.
10. Soni P, Srivastava A, Yadav D. Nd: YAG laser posterior capsulotomy and visual outcome. Indian Journal of Clinical and Experimental Ophthalmology. 2016 July- Sept;2(3):271-77.
11. Raza A. Complications after Nd:Yag posterior capsulotomy. Journal of Rawalpindi Medical College. 2007;11:27–29.
12. Yuvaci I, Pangal E, Yuce Y, *et al.* Optic Coherence Tomography Measurement of Choroidal And Retinal Thicknesses After Uncomplicated YAG Laser Capsulotomy. Arq. Bras. Oftalmol. 2015 Dec; 78(6):344–47.
13. Patil MS, Balwir DN, Vidhate S. A Study of Nd : YAG Laser Capsulotomy in the Management of Posterior Capsular Opacification. MVP Journal of Medical Sciences. 2016;3(1):18–24.
14. Bari K. Nd : YAG laser posterior capsulotomy and visual outcome. Delta Med Col J. 2013 Jan;1(1):16-19.
15. Ang T, Somano J, Reyes M, Cruz M, Dalacruz G, Solis C. Incidence, indications and outcomes of YAG capsulotomy in eyes implanted with an accommodating intraocular lens. Philipp J Ophthalmol. 2013;38:13–20.
16. Ramachandra S, Kuriakose F. Study of early refractive changes following Nd : YAG capsulotomy

for posterior capsule opacification in pseudophakia. Indian J Clin and Exp Ophthalmol. 2016;2(3):221–226.

17. Dharmaraju S, Vijayasree S, Sridhar K. A Clinical Study of Visual Outcome in Nd : YAG Laser Capsulotomy in Posterior Capsular Opacity. IJCMR. 2016,3(9):2665-68.
18. Karahan E, Duygu ER, Kaynak S. An Overview of Nd YAG Laser Capsulotomy. Med Hypothesis DiscovInnov Ophthalmol 2014;3(2):45–50.
19. Bhargava R, Kumar P, Phogat H, Chaudhary KP. Nd YAG Laser Capsulotomy Energy Levels for Posterior Capsule Opacification. J Ophthalmic Vis Res. 2015;10(1):37–42.
20. Dawood Z, Mirza SA, Qadeer A. Review of 560 cases of YAG laser capsulotomy. J. Liaquat Univ. Med. Health Sci. 2007;6:3–7.