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Research article

Study of Visual Outcome after Neodymium YAG Laser Therapy in Posterior Capsular Opacity

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ABSTRACT

Purpose: Posterior capsular opacification is the most common long term complication of modern IOL surgery. Neodymium YAG laser remains the cornerstone of its treatment .In this study, an attempt was made to study the visual outcome following Neodymium YAG laser capsulotomy

Methods: This was a prospective study of 50 patients conducted in Hospital , attached to R.U.H.S.-CMS Medical College ,Jaipur. All patients aged 50 years and above, attending the regular OPD who presented with visually significant posterior capsular opacification were treated with Neodymium YAG laser capsulotomy. After capsulotomy, follow up was done 1 – 4 hour after Capsulotomy, day one, end of first week, end of first month and at the end of minimum 3 months. During follow-up the visual acuity Intra Ocular Pressure (IOP) and other relevant tests were conducted and appropriate intervention were made during the follow-up period.

Results: In my study duration of onsetofsymptoms of Posteriorcapsularopacity (PCO) is more between 2-3 years period after surgery. Pearls type of is Posteriorcapsular opacity more when compared to fibrous type. Most of the patients treated for Posterior capsular opacity with Neodymium: YAG laser capsulotomy showed an improvement in visual acuity .There was no incidence of major complications in patients treated with procedure.

Conclusion: Neodymium-YAG laser therapy presents the advantage of a non-invasive, effective, relatively safe technique to manage intact posterior capsule that opacity post operatively.

Keywords: YAG Laser; PCO; After cataract; IOL

INTRODUCTION

The most common late post-operative complication of cataract extraction is with Postierior Chamber Intra ocular lens (PCIOL) is posterior capsular opacification. It causes the deterioration of visual acuity; however there is no effective method to prevent it. Nd-YAG laser capsulotomy is the procedure of choice.

Posterior capsular opacification is the most common long term complication of modern Intra ocular lens (IOL) surgery. It occurs frequently in patients after cataract surgery, especially senile cataracts [1].

Many methods have been employed to reduce the incidence of PCO but none of these seems to be very effective on long term follow ups. Hence it has to be treated. Initially PCO used to be removed surgically but now, Nd: YAG laser is most commonly used as the best mode of treatment.

The advantage of Nd:YAG is that it's noninvasive, of short duration, very effective and relatively safe technique, to manage intact posterior capsule that opacifies post operatively [6].

In this study, I have undertaken a hospital based prospective study of visual outcome after Nd-YAG laser therapy in posterior capsular opacity after subjecting them to detailed eye examination. We study the outcome of Nd: YAG laser posterior capsulotomy in patients who have developed PCO post operatively, in terms of the best corrected visual acuity (BCVA) and the intra ocular pressure (IOP).

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OBJECTIVE

In my study patients in the age group of 50 year and above, attending RDBP Jaipuriya Hospital are diagnosed by subjecting them to detailed eye examination with the objective to study of visual outcome after Nd-YAG laser therapy in posterior capsular opacity in our setup.

MATERIAL AND METHODS

Source of data

Patients attending outpatient department Hospital, Jaipur during November,2017tojuly, 2018. Ethical clearance taken from the review board.

Methods of collection of data

It is ahospital basedprospective study of 50 eyesof 50 patients on outpatient basis who underwent cataract extraction in our hospital diagnosed PCO by red reflex evaluation by retinoscopy, slit lamp examination, direct and indirect ophthalmoscopy, when indicated after informed consent the patient undergo Nd-YAG capsulotomy. Repeated capsulotomy if needed will be done. In those patients undergo capsulotomy standard examination will include visual acuity, anterior segment examination, slit lamp examination, intra ocular pressure recording and other relevant examination. The selection was made among the patient attending ophthalmology OPD on the basis of following criteria [2,3].

Inclusion criteria

All the patients with PCO diagnosed clinically.

Exclusion criteria

Patient with significant media opacities – corneal opacity etc.,

Patient unableorunwillingto fixate adequately for the procedure.

Fifty PCO patients were selected on first come first basis from November, 2017 to July, 2018. The case notes of all PCO patients were recorded and their addresses were taken on the day of selection. Patient was briefly explained about the study and the tests they had to undergo. They were also told that they will be informed about the day they have to come to undergo the various tests [4,5].

Out of 72 patients informed, 50 patients turned upon the informed day whereas 22 patients did not turn up.

In a day about 2–3 patients / day were subjected detailed eye examination in the Hospital, Jaipur.

- The examination included Visual acuity testing
- Intraocular tension recording with schiotz/applanation/non-contact tonometer.
- Slit lamp bio microscopy Indirect/direct ophthalmoscopy Retinoscopy
- After diagnosing PCO patients were subjected to Nd-YAG
- examination, direct and indirect ophthalmoscopy.

Retinoscopy

After diagnosing PCO patients were subjected toNd-YAG capsulotomyin the affected eye. After capsulotomy, follow up wasdone1 4hourafter, capsulotomy, dayone,endof firstweek,and end of first month and at the end of minimum 3 months During follow up the visual acuity IOP and other relevant tests were conducted and appropriate intervention was made during the follow up period.

RESULTS

The study population comprise 50 patients (50 eyes) were diagnosed as PCO by red reflex evaluation byretinoscopy, slit lamp examination, direct and indirect ophthalmoscopy.

Then 50 confirmed cases of PCO were subjected to Nd-YAG capsulotomy the scheduled of post capsulotomy examination was 1 – 4 hour after capsulotomy day 1 end of first week, end of first month, and at the end of minimum 3 months. Table shows the male patients are more than female patients (Table 1).

Sex	No.of eye	%
Male	32	64
Female	18	36

Table 1: Molecular weight and amino acid frequency distribution of the protein.

My study shows PCO is more in younger age group and decreased as age increases (Table 2).

Age(Years)	No. of eyes	%
50-60	25	50
61-70	19	38
71-80	6	12

Table 2: Age distribution.

Table shows left eye is more involved than the right eye in the study (Table 3).

Eye	No.of eyes	%
Right eye	22	44
Left eye	28	56

Table 3: Laterality.

Table shows duration of onset of symptoms of PCO is more between 2-3 years period after surgery (Table4).

Duration	No.of eyes	Percentage
6 months – 1 year	19	38
2 – 3 years	28	56

4 – 9 years	3	6

Table 4: Duration.

My study shows as in the above table pearls type ofPCO is more when compared to fibrous type (Table 5).

TYPE	No of eyes	%
Fibrous	7	14
Pearls	43	68

Table5: Types of PCOs

Table shows symptoms of diminution of vision is more when compared to diminution of vision with glare (Table 6).

Symptoms	No.ofeyes	Percentage
Diminutionofvision	45	90
Diminution of vision with glare	5	10

Table 6: Distribution of symptoms.

In one case visual acuity after capsulotomy deteriorated because of low tension glaucoma. In another case due to diabetic neuropathy of the optic nerve and another case due to myopic degeneration of the retina (Table 7).

Visual outcome	No.of patients (50 eyes)	Percentage	Overall result of visual outcome
6/9 –6/6	36	72	94

Table showing complication of Nd-YAG capsulotomy in my study group (Table 8).

Complications	No.ofcases	Treatment
IncreasedIOP	2	Timolal 0.5% eye drops – twice dailyTab.Diamox 250mg.twice daily
PittingofIOL	8	

Table 8: Complications of Nd-YAG laser capsulotomy in my study group.

There was no incidence of major complications only 10 out of 50 patients had minor complications as shown in the table they were managed conservatively[7-8].

DISCUSSION

Nd-YAG laser therapy presents the advantage of a noninvasive, effective,relativelysafetechniquetomanageintactposteriorcapsule that opacify post operatively [6].It is evident that visual outcome after Nd-YAG in PCO in my study is 94%. The visual outcome of our patients has been compare with a similar study by Polak M Zarnowski. TZogorski Z, and Tariq MAslam Niall Pattonwhohave included 25&26 eyes respectively [13] . In one case visual acuity after capsulatomy deteriorates because of low tension glaucoma and in another case due to diabetic neuropathy of the optic nerve and one more case due to myopic degeneration of the retina. I did not observe any serious complications following Nd-YAG laser capsulotomy displayed by others cystoid macular oedema, retinal detachment, iridocyclitis, except transient intraocular pressure elevation in 2 cases and intraocular lens pitting in 8 cases. These were managed conservatively [9-12].

CONCLUSION

Hospital based prospective study of 50 eyes of 50 patients on outpatient basis who underwent extract capsular cataract extraction with PCIOL (PMMA) in our hospital are elsewhere diagnosed PCO by red reflex evaluation. When indicated after informed consent patient underwent Nd-YAG lasercapsulotomy. These patients were followed up for minimum of three months. Visual acuity after capsulotomy with correction were recorded. In my study shows visual outcome after Nd-YAG laser capsulotomy is 94%. This study tallies with other two studies that show 89&95% of the visualoutcome. Ididnotobserve anyserious complications following Nd-YAG laser capsulotomy displayed by others cystoid macular oedema, retinal detachment, iridocyclitis except transient intraocular pressure elevation in 2 cases and intraocular lens pitting in 8 cases. These were managed conservatively. The most common post-operative complications of cataract extraction is posterior capsularopacities. It causes the deterioration ofvisualacuity, the second most common cause of visual loss worldwide. PCO is a majorproblem in paediatric cataract surgery where the incidence approaches 100%. However, no effective methods to prevent it. Nd-YAG laser therapy presented the advantage of a noninvasive, effective, relatively safe technique to manage intact posterior capsule that opacify post operatively and it does not require patient hospitalization.

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REFERENCES

1. Norman S. Jaffe, Marks S Jaffe, Garry S. Jaffe, cataract surgery and its complications, 6th edition, India 1997, by Mosby 409 – 410.
2. Polak M, Zarnowski T, Zagorski Z, Results of Nd: YAG laser capsulotomy in posterior capsule opacification Ophthalmology, 2001, 108 (3) 505 – 518.
3. Hayashi K Hayashi H Nakas F Hayashi F, correlation between posterior capsule opacification and visual function before and after Nd-YAG laser posterior capsulotomy J Cataract Refract Surg. 2001; 27 (7)1055
4. –1060.
5. Meacock WR Spalton DJ, Boyce J Marschal J. The effect of posterior capsule opacification on visual function. Ann Univ Mariae Curie Sklodowaka (Med), 2002;57 (1) 357 – 363.

6. Cheng CY Yen MY Chen SJ, Kai SC, HSO MM Liu JH visual acuity and contrast sensitivity in different types of posterior capsule opacification. Invest Ophthalmol Vis. Sci 2003; 44 (11) 4665 – 4669.
7. Keates RH Stenurt RF Puliafilo CA et al long term follow up of Nd- YAG laser posterior capsulotomy Am. Intraocular implant SOE J 1984
8. – 10 – 164.
9. Stark WJ, Worthen D Hollady J.T et al Nd-YAG laser An FDA report Ophthalmology 1985; 92; 209.
10. Suresh K Pandey, David Apple, Liliana Werner,Anthony Maloof, M. Biomedl, Franzco et al Posterior capsule opacification: A Review of the Aetiopathogenesis, Experimental and clinical studies and factors for prevention. Indian Journal of Ophthalmology, 2004; 52; 99 – 112.
11. Tariq M Aslam and Niall Patton - Methods of assessment of patients for Nd-YAG laser capsulotomy that correlate with final visual improvement. BMC Ophthalmology, 204; 4-13.
12. Anthony J Bron, Ramesh Tripati, Brenda J Tripati, Wolff's Anatomy of the Eyeand Orbit, 8th edition, Chapman & Hall Medical London 1977 Pg:414- 416.
13. Apple DJ – Influence of intraocular lens material and design on post- operative intra capsular cellular reactivity. Trans Am Ophthalmol Soc 2000, 98; 257–83.
14. Werner L, Apple DJ, Pandey SK, Postoperative proliferation of anterior and equatorial lens epithelial cells. A comparison between various foldable IOL,designs. In Butatho L Osher R, editors, Cataract surgery in complicated Case. Thorofare, NI. Slack Line 2000 PP: 399 – 417.
15. Peng Q, Hennig, A Vasavada AR, Apple DJ, Posterior capsular plaque a common feature of cataract surgery in the developing world Am J Ophthalmol 1998, 125: 621-626.