

Frequency of Raised Intraocular Pressure (IOP) after Nd:YAG Laser Posterior Capsulotomy

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ABSTRACT

Aim: To evaluate frequency of raised intraocular pressure after Nd:YAG laser posterior capsulotomy.

Methods: This descriptive observational study was carried at Hayatabad Medical Complex, Peshawar from 1st January 2015 to 30th June 2015. A total of 100 eyes with posterior capsular opacification and IOP between 10-20mmHg between 30-70 years of age in either gender were enrolled.

Results: There were 52 males and 48 females with mean age was 64.47±11.47 years. Mean intraocular pressure was 14.75±3.41mmHg for pre-operative and 19.62±3.11mmHg post-operatively, statistically difference was significant (P<0.05). Frequency of raised IOP after Nd:YAG laser posterior capsulotomy was recorded in 19% while 81% had normal IOP.

Conclusion: The frequency of raised IOP is higher in patients undergoing Nd:YAG laser posterior capsulotomy but it is still different with other local studies, however patients undergoing Nd: YAG laser capsulotomy should be given minimum possible laser energy.

Keywords: Posterior capsular opacification, Laser posterior capsulotomy

INTRODUCTION

Posterior capsular opacification (PCO) is a frequent complication after cataract surgery^{1,2}. Globally, incidence of Posterior capsular opacification (PCO) is reported in different studies from 7 to 31% for 2 years after the surgery.³ The formation of PCO is caused due to proliferation and migration of equatorial epithelial cells along the posterior capsule⁴. Elschnig's pearls, capsular fibrosis and wrinkling are the types of PCO.⁴ Posterior capsular opacification (PCO) is recorded for reduction in visual acuity (VA) and contrast sensitivity by hindering the view. During diagnostic procedure and therapy, it may decrease the field of view and also causes mono-ocular diplopia⁵. Opening the central part of posterior capsule either done surgically or with laser is considered as the standard treatment.⁶ Surgical capsulotomy causes drastic complications e.g. endophthalmitis⁶. Nd:YAG Laser posterior capsulotomy is a non-invasive, comparatively safer, cost effective and effective day base procedure.⁶ Raised intraocular pressure (IOP) is considered as the frequent complication of Nd:YAG laser posterior capsulotomy but usually it is a transient complication⁷.

Cystoid macular edema, IOL pitting and retinal detachment are also recorded among other complications of the procedure^{8,9,10}. Previous local studies⁶ are not agreed regarding frequency of

increased IOP followed by Nd:YAG laser posterior capsulotomy. This variation needs to be identified in our local population, as the previous studies are conducted in Sindh Province, however, our magnitude will show the frequency of this complication in Khyber Pakhtoon Khawa region.

PATIENTS AND METHODS

A total of 100 eyes with Posterior capsular opacification and IOP between 10-20mmHg between 30-70 years of age in either gender were enrolled in the study between 1st January 2015 to 30th June 2015 at Hayatabad Medical Complex, Peshawar. We excluded those cases with diabetic retinopathy, retinal detachment, corneal disease, glaucoma, trabeculectomy etc. Informed consent from the patients was obtained by explaining them to include their data in the study. Complete history and physical examination was done.

Before proceeding for Nd:YAG laser posterior capsulotomy by the same surgeon and same technique, IOP was measured and recorded for each patient. The standard protocols for the procedure were adopted. We advised Non-steroidal anti-inflammatory drugs (NSAIDs) drops three times a day for one week. We measured intraocular pressure (IOP) by using Goldmann applanation tonometer (being gold standard) at 1 week after Nd:YAG Laser posterior capsulotomy to record the change in intraocular pressure (IOP).

The collected information was entered in SPSS version 20.0 and analyzed. Age of the patients, pre and post-laser intraocular pressure (IOP) was

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recorded and presented as mean±SD. Gender distribution and raised IOP was presented as frequency and percentage. We also applied t test to compare pre-and post-procedure IOP, p value ≤0.05 was significant.

RESULTS

Age distribution of the patients was recorded, it shows that 35(35%) while 65(65%) were between 51-70 years of age with mean age was 64.47±11.47 years (Table 1). Gender distribution shows that 52(52%) were male and 48(48%) were females (Table 2). Mean intraocular pressure was recorded as 14.75±3.41mmHg for pre-operative and 19.62±3.11mmHg post-operatively. P value was calculated as 0.000 showing a significant difference (Table 3). Frequency of raised IOP after Nd:YAG laser posterior capsulotomy was recorded in 19(19%) while 81(81%) had normal IOP (Fig. 1)

Table 1: Frequency of age distribution (n=100)

Age (years)	n	%age
30-50	35	35
51-70	65	65
Mean±SD	64.47±11.47	

Table 2: Frequency of gender distribution (n=100)

Gender	n	%age
Male	52	52
Female	48	48

Table 3: Mean intraocular pressure (n=100)

IOP(mmHg)	Pre-operative	Post-operative
	14.75±3.41	19.62±3.11
P value	0.00	

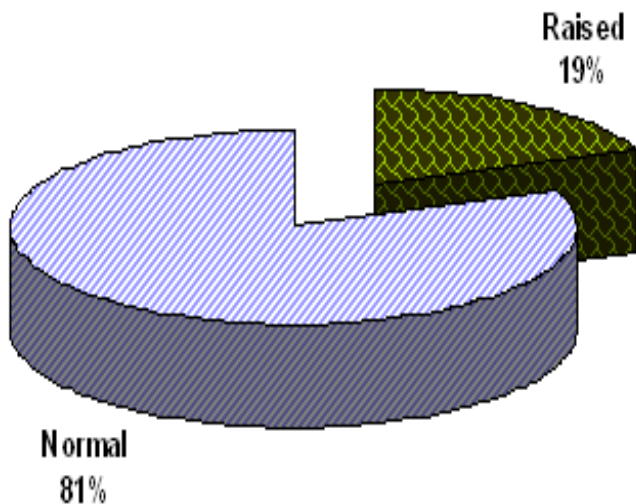


Fig.1: IOP after capsulotomy

DISCUSSION

Intraocular pressure is the most frequent, while generally transient complication after Nd:YAG laser capsulotomy. Previous local studies were not agreed regarding frequency of increased IOP followed by Nd:YAG laser posterior capsulotomy.

Even after using prophylactic treatment, increased (Intraocular Pressure) was reported in 15-30% of cases in various studies^{11,12}. Our findings are in agreement with these studies. Keates and others¹³ revealed elevation of IOP in 0, 6%, while Stark and workers¹⁴ recorded these findings in 1.0% after Nd:YAG capsulotomy. Ge and others¹⁵ recorded that rise in IOP was more evident in patients having glaucoma in those who experienced a higher rise of Intraocular Pressure within one hour of capsulotomy, while we recorded these findings after 1 weeks of the procedure.

Previous two local studies recorded these findings as 35.81%³ and 0.80%⁶ respectively, our findings significantly different with both of these findings, the difference may be due to using difference in techniques.

Another study by Channel and Beckman⁷⁷ revealed that elevated IOP is associated with larger capsulotomies and higher laser energy used during YAG procedures, Muhammad Waseem and others³ concluded that the use of higher YAG laser energy has significantly greater chances of elevated IOP. Hence, it was recommended that the patient undergoing Nd: YAG laser capsulotomy should receive minimum possible laser energy and also must be followed up for raised IOP.

CONCLUSION

In light of above, we are of the view that though the Nd:YAG laser posterior capsulotomy is a safer and cost effective procedure but the frequency of raised IOP is higher in patients under going this procedure while it is still different with other local studies, however patients undergoing Nd: YAG laser capsulotomy should be given minimum possible laser energy.

REFERENCES

1. Dewey S. Posterior capsule opacification. *Curr Opin Ophthalmol* 2006;17(1):45-53.
2. Wilson ME Jr, Trivedi RH. The ongoing battle against posterior capsular opacification. *Arch Ophthalmol* 2007;125(4):555-56.
3. Waseem M, Khan HA. Association of Raised Intraocular Pressure and its Correlation to the Energy Used With Raised Versus Normal Intraocular Pressure Following Nd: YAG Laser Posterior Capsulotomy in Pseudophakes. *J CPSP* 2010;20(8):524-27.

4. Kanski JJ, Bowling B. Clinical ophthalmology: a systemic approach. 7th Ed. China: Saunders, 2011;295-96.
5. Khanzada MA, Jatoi SM, Narsani AK, Dabir SA, Gul S. Is the Nd: YAG Laser a Safe Procedure for Posterior Capsulotomy? Pak J Ophthalmol 2008;24:2.
6. Khanzada MA, Jatoi SM, Narsani AK, Dabir SA, Gul S. Experience Of Nd: YAG Laser Posterior Capsulotomy in 500 Cases. J LUMHS 2007.
7. Burq MA, Taqui AM. Frequency of retinal detachment and other complications after neodymium: YAG laser capsulotomy. JPMA 2008;58:550.
8. Alimanovic-Halilovic E. Correlation between eye aperture diameter and complications in the posterior eye segment after Nd:YAG Laser capsulotomy. Bosn J Basic Med Sci 2008;8:106-9.
9. Peace health. Nd: YAG laser posterior capsulotomy for cataracts [Internet]. 2009 [cited 2009 Feb 17]. Available from: <http://www.peacehealth.org/kbase/topic/detail/surgical/hw36757/detail.htm>
10. Awasthi N, Guo S, Wagner BJ. Posterior Capsular Opacification. Arch Ophthalmol 2009;127(4):555-62.
11. Pereira Minello, Prata JA, de Arruda Mello PA. Efficacy of topic ocular hipotensive agents after posterior capsulotomy. Arquivos Brasileiros de Oftalmologia 2008;71:706-10.
12. Lin JC, Katz LJ, Spaeth GL, Klancnik JM. "Intraocular pressure control after Nd : YAG laser posterior capsulotomy in eyes with glaucoma. Br J Ophthalmol 2008;92:337-9.
13. Keates RH, Steinert RF, Puliafito CA, Maxwell SK. Long-term follow-up of Nd:YAG laser posterior capsulotomy. Am Intraocular Implant Soc J 1984;10:164-8.
14. Stark WJ, Worthen D, Holladay JT, Murray G. Neodymium:YAG lasers: an FDA report. Ophthalmology 1985;92:209-12.
15. Ge J, Wand M, Chiang R, Paranhos A, Shields B. "Long-term effect of Nd : YAG laser posterior capsulotomy on intraocular pressure. Arch Ophthalmol 2000;118:1334-7.