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RAISED INTRAOCULAR PRESSURE;
FREQUENCY AFTER Nd: YAG LASER CAPSULOTOMY

DR. MUHAMMAD KAMRAN SAEED
MBBS, FCPS
Eye Specialist
PAF Hospital Faisal, Karachi.

DR. SAMEER SHAHID AMEEN
MBBS, MCPS, FCPS
Associate Professor in Ophthalmology
Army Medical College
Classified Eye Specialist
Military Hospital, Rawalpindi.

DR. MUHAMMAD TAHIR IBRAHIM
MBBS, FCPS
Medical Specialist
PAF Hospital Faisal, Karachi.

Dr. Umar Ijaz
MBBS, MCPS, FCPS.
Eye Specialist.
CMH Mangla.

Dr. Kashif Hanif
MBBS, FCPS
Eye Specialist.
CMH Malir.

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ABSTRACT... **Objective:** To measure the rise in intraocular pressure after neodymium:yttrium-aluminum-garnet (Nd:YAG) Laser capsulotomy in pseudophakic patients aged 50 years and above. STUDY DESIGN: Prospective study. **Duration of Study:** Study was done from May 2005 to Dec 2005. (Eight months duration) Settings: Eye department Military Hospital Rawalpindi. **Material and Methods:** A total of 100 patients, presenting in Eye department, Military Hospital Rawalpindi, fulfilling inclusion and exclusion criteria were included. With a minimum number of bursts of 3.6 mj / shot energy level with Nd: YAG laser, a 3 to 4 mm hole in the posterior capsule was created. The intraocular pressure was measured 1 hour, 3 hours, 1 day and 1 week after the laser. **Results:** The rise in intraocular pressure was noticed in 6 (6%) patients after Nd:YAG laser capsulotomy. Five out of six patients had fibrous type of posterior capsular opacification while one patient had Elschnig's pearl. Male to female Ratio was 7:3. **Conclusion:** Our findings suggest that the rise in intraocular pressure is an infrequent complication of Nd:YAG Laser capsulotomy.

Key words: Nd:YAG Laser, Intraocular pressure, Capsulotomy, Pseudophakia.

INTRODUCTION

Daniele Aron- Rosa[1,2] first described the procedure of Nd:YAG in posterior capsulotomy. Nd: YAG Laser is a photo-disruptive laser, producing extreme amount of heat of about 10,000 Celcius along with an acoustic shock wave at the site being focused on.

This combination disrupts the tissues and this property is used in ophthalmology to perform capsulotomy, peripheral iridectomy in glaucoma and to cut vitreous bands[2,3]. Nd:YAG laser is widely available for posterior capsulotomy, and although complications such as transient intraocular pressure rise, retinal detachment,

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Correspondence Address:
Dr. Muhammad Kamran Saeed
Eye Specialist,
518/E-5g Officers Mess
PAF Base Faisal
Shahrah-e-Faisal, Karachi
m_kamransaeed@yahoo.com.

and cystoid macular edema, Intraocular lens(IOL) optic damage/ pitting, and IOL subluxation have been reported, it has largely supplanted traditional knife surgery of the posterior capsule [4-10].

The purpose of this prospective study was to note the effect of Nd-YAG Laser Capsulotomy in pseudophakic patients on rise in the intra-ocular pressure as sufficient data is not available for our population previously.

MATERIAL AND METHODS

This prospective study was undertaken from May 2005 to December 2005 in Department of Ophthalmology, Military Hospital Rawalpindi. One hundred pseudophakic patients with posterior chamber intraocular lens implantation with posterior capsular opacification aged 50 years and above were selected by non-probability convenience sampling technique. Patients with Diabetic Eye Disease, Corneal Diseases (Degeneration, Dystrophies and Advanced pterygium), Inflammatory eye diseases and patients undergone posterior segment surgery were excluded. Before performing Nd:YAG laser therapy, all patients underwent a thorough ophthalmic evaluation including best corrected visual acuity, slit lamp examination, gonioscopy, intraocular pressure measurement using a Goldman Applanation tonometer to rule out any preexisting anterior and posterior segment pathology. The pupils were dilated with tropicamide 1% eye drops. With a minimum number of bursts of 3.6 mj / shot energy level with Nd: YAG laser a 3 to 4 mm hole in the posterior capsule was created. In Fibrous type posterior capsular opacification the number of bursts used was 15-20 and for Elschnig's pearls posterior capsular opacification, it was 5-10 for desirable effects. The intraocular pressure was measured 1 hour, 3 hours, 1 day and 1 week after the laser. Any patient developing more than 5mm rise in intraocular pressure postoperatively was marked as having raised intraocular pressure.

The data was managed and analyzed using computer programme SPSS 10.0.

RESULTS

The mean age of patients included in the study was about 58 years(± 5.80). Thirty were females and seventy were males. Out of hundred patients 40 patients had bilateral pseudophakia and unilateral visually significant posterior capsular opacification. Sixty seven patients (67%) had Elschnig's pearls whereas thirty three patients (33%) were of fibrous posterior capsular opacification. The rise in intraocular pressure was noticed in 6 (6%) patients after YAG laser capsulotomy. (Table-I).

Table-I. Postoperative rise in intraocular pressure

Sr No.	Type of PCO	Pre Op. IOP	Post Op. IOP in mm of Hg			
			1Hr	3Hr	1Day	1Week
Patient 1	Fibrous	16	22	21	24	20
Patient 2	Fibrous	14	20	20	20	19
Patient 3	Fibrous	19	25	25	25	24
Patient 4	Elschnig pearls	19	26	25	26	24
Patient 5	Fibrous	14	20	22	21	20
Patient 6	Fibrous	14	20	21	21	20

DISCUSSION

Although cataract is the most common cause of blindness in the world, Posterior capsular Opacification|(PCO) or secondary cataract is an extremely common cause as well[11]. One of the crowning achievement of the modern cataract surgery has been a

gradual decrease in the prevalence of PCO[12]. Commonly there are two types of PCO, Primary capsular fibrosis and Elschnig's pearls, the later is the most common type[13].

The results of this study showed that five out of six patients who developed post Nd:YAG laser capsulotomy rise in intraocular pressure had fibrous type of posterior capsular opacification for which more number of laser shots were required for desirable effects thus increasing the total amount of energy delivered to the eye whereas one patient had Elschnig's pearls and the amount of laser energy delivered was not more than other cases. The rise in intraocular pressure after Nd: YAG laser posterior capsulotomy was most likely associated with the amount of total laser energy delivered to the eyes.

Silverstone[14] observed higher pressures associated with performing large capsulotomies that required higher energy levels. The mechanism for the increased intraocular pressure is believed to be a decrease in outflow secondary to the shock waves or entrapment of capsular fragments and debris in the filtration angle.

In a recent study rise in intraocular pressure after Nd:YAG laser capsulotomy was in 6.4 % patients, which were treated by anti-glaucoma medication[15]. However in another study performed on glaucoma patients having Nd: YAG laser capsulotomy, it was observed that pre-treatment with topical application of 0.5% timolol maleate is effective in preventing intraocular pressure elevation after Nd-YAG laser posterior capsulotomy[16].

The results of this study have implications that the rise in intraocular pressure is not a routine happening and it must be suspected in patients especially in those where the amount of energy applied to the eye is excessive. However intraocular pressure must be monitored in all patients as rise may occur in few other isolated cases as well.

CONCLUSION

Our findings suggest that the rise in intraocular pressure was an infrequent complication of Nd:YAG Laser capsulotomy. and it depends upon the amount of laser energy delivered to the eye.

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