

Outcome of Neodymium-doped Yttrium Aluminum Garnet Laser Posterior Capsulotomy for Posterior Capsular Opacification: A Prospective Study

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Abstract

Introduction: Posterior capsular opacification is the opacity developing in posterior capsule of lens after cataract surgery commonly and rarely with crystalline lens primarily.

Aim: To study the visual outcome and analyze the complications in posterior capsular opacification treated with neodymium-doped yttrium aluminum garnet (Nd:YAG) laser posterior capsulotomy.

Materials and Methods: A prospective study of 100 patients attending our outpatient department with visual deterioration due to posterior capsular opacification after cataract surgery.

Results: Visual acuity improved in 96% of patients, 4% showed no improvement, which was related to previous retinal problems and thick posterior capsule.

Conclusion: Nd:YAG laser posterior capsulotomy is safe and effective procedure for creating capsular opening compared to invasive surgical techniques. The post-operative results are very good and the complication rate is low.

Key words: Posterior Capsular Opacification, Nd:YAG laser, Capsulotomy, Visual acuity

INTRODUCTION

A laser is the major technological advance in the medical field to give better results with less invasive method. Neodymium-doped yttrium aluminum garnet (Nd:YAG) laser posterior capsulotomy is one of the breakthroughs, for opening the posterior capsular opacities, the non-invasive characteristics of it provide an excellent outcome.¹⁻⁴

MATERIALS AND METHODS

This prospective clinical study was done to analyze the results of Nd:YAG laser posterior capsulotomy in posterior

capsular opacification following cataract surgery. This study was conducted in Government Theni Medical College and Hospital, Theni.

Eyes of 100 patients who underwent Nd:YAG laser posterior capsulotomy were studied. Eight patients were aphakic, 89 patients had posterior chamber intraocular lens, and 3 patients had anterior chamber intraocular lens. An informed consent was obtained from all patients.

The posterior capsulotomies were performed with Nd:YAG laser, usually starting with 1-2 mJ/pulse and gradually increased until the desired responses were obtained.

During each visit, the following data were recorded.²

- Visual acuity with Snellen chart
- Intraocular pressure with Schiottz tonometry
- Slitlamp examination
- Fundus examination with direct and indirect ophthalmoscopy
- Post-laser complications.

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www.ijss-sn.com

Month of Submission : 05-2016
Month of Peer Review : 06-2016
Month of Acceptance : 07-2016
Month of Publishing : 07-2016

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RESULTS

Visual acuity profile reveals that 75% of patients had visual acuity in the range between 6/60 and 3/60 and 10% of patients had visual acuity < 3/60 before doing YAG laser capsulotomy.

Immediately after doing YAG laser capsulotomy within 1 h, 57% of patients had improved. Visual acuity had improved gradually during follow-up period at 24 h, 1 week, 1 month, and 3 months. The vision of four patients not improved. Among four 2 patients had optic atrophy and other 2 patients had thick posterior capsule (Tables 1-3).⁵

DISCUSSION

The documented visual improvement of the subjects in this study confirms the efficacy of Nd:YAG laser for the production of posterior capsulotomy. This non-invasive surgical laser allows omission of primary intraoperative capsulotomy, with its increased risk of the intraocular lens and vitreous displacement, cystoid macular edema and retinal detachment.²

CONCLUSION

Following extracapsular cataract surgery, increased incidence of posterior capsular opacification has been noted. The opening of posterior capsule by surgical methods has been noted to cause certain complications such as cystoid macular edema and retinal detachment.³ The Nd:YAG laser is a non-invasive surgical tool that provides excellent posterior capsulotomies.

From the above study, it is clear that Nd: YAG laser posterior capsulotomy is a safe and effective procedure for creating capsular opening. The post-operative results are very good and the complication rate is low.²

Table 1: Laser power distribution

Total energy (mJ)	Cases
10-20	29
21-40	34
41-60	26
61-80	7
81-100	3
>100	1

Table 2: Post-laser visual acuity improvement

Follow-up	<3/60	6/60-3/60	6/18-6/36	6/6-6/12
1 h	4	12	57	27
24 h	4	10	45	41
1 week	4	1	39	56
1 month	2	2	31	65
3 months	2	2	30	66

Table 3: Complications following Nd:YAG laser capsulotomy

Complications	Cases
Intraocular pressure elevation	2
Iris bleeding	4
Intraocular lens damage	23
Vitreous in anterior chamber	4
Uveitis	1
Cystoid macular edema	0
Retinal detachment	0
Endophthalmitis	0

Nd: YAG: Neodymium-doped yttrium aluminum garnet

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How to cite this article: Suriyakumar C, Sharmila N, Kavitha K, Rajesh SG. Outcome of Neodymium-doped Yttrium Aluminium Garnet Laser Posterior Capsulotomy for Posterior Capsular Opacification: A Prospective Study. *Int J Sci Stud* 2016;4(4):66-67.

Source of Support: Nil, **Conflict of Interest:** None declared.