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Research Article

VISUAL OUTCOME FOLLOWING ND:YAG LASER POSTERIOR CAPSULOTOMY

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ABSTRACT

Indroduction
Posterior capsular opacification is the most common delayed major complication following extra capsular cataract extraction where posterior capsule of the lens is preserved which permits a pocket for intraocular lens implant,the patients typically presents with gradual diminision of vision after enjoying good postoperative vision for some duration.The treatment is done by making an opening in the centre of the posterior capsule(capsulotomy) by Neodymium:Yitrium alluminum garnet(Nd:Yag) laser.

Objective
Aim of this study is to quantify and evaluate the final visual outcome and to evaluate the causes of less than desired visual outcome after Nd:Yag laser posterior capsulotomy.

Methedology
This was a prospective study in which 75 eyes of 75 different patients were observed. All patients who underwent extra capsular cataract surgery with posterior chamber intraocular lens(PMMA) implantation by a same surgeon ,patients in whom there was good post operative vision which gradually diminished over period of few months(atleast 2 months) to years which was purely or maximally attributable to PCO were included in this study. In this study the Nd:Yag laser used was a Q swithched device.A capsulotomy size of 3.5mm was intended.Best corrected visual acuity was recorded 1 hour after the procedure.Patients were followed up one day,one week and after one month – each visit best corrected visual acuity,intraocular pressure,slit lamp examination and ophthalmoscopy was done.Final spectacle correction given if needed at the end of one month.Findings recorded and resuls were analysed

Resul
Final visual out come in 25 eyes(33.33%) with 6/12 visual acuity followed by 15 eyes(20.0%) with 6/9 vision followed by 13 eyes(17.33%) with 6/18 visual acuity and 7 eyes(9.33%) with 6/6 vision.8 eyes did not show any improvement post laser : 3 eyes(4.0%) had ARMD/Chorio-Retinal degeneration,2 eyes(2.67%) had Amblyopia,2 eyes(2.67%) had Glaucoma and 1 eye(1.33%) had Optic atrophy.

Conclusion
There is excellent visual improvement following Nd;Yag posterior capsulotomy for posterior capsular opacification after extra capsular cataract extraction if there is no other significant ocular pathology.

Key words
Nd:Yag laser,Posterior Capsulotomy,Posterior Capsular Opacification(PCO).

INTRODUCTION

Cataract is the leading cause of blindness & visual impairment throughout the world.Extra capsular cataract extraction(ECCE) with posterior chamber intra ocular lens implantation where posterior capsule of the lens is preserved is the most preferred treatment.

But unfortunately few complications are encoutered of which posterior capsular opacification(PCO) is the most common delayed complication.In PCO patients typically presents with gradual dimunition of vision and in minority of cases with contrast sensitivity problems,glare difficulties or monocular diplopia after some duration of sucessful cataract extraction.The incidence was reported in the range of 18-50% in adults followed as long as 5 years and 40-44% in infants and juveniles within a period of 3 months,which varies with type of intraocular lens(meterial & design),surgeons,surgical technique and duration of surgery.PCO results from the lens epithelial material retained which then proliferate,differentiate, undergo fibrous metaplasia and then migrate towards the centre of previously acellular posterior capsule.

Patients who have PCO with significantly impaired vision needs a posterior capsulotomy which removes central part of posterior capsule and improves vision.Although this used to be surgically acheived but it has been mostly replaced by non invasive Neodymium;Yitrium Aluminum Garnet(Nd;Yag) laser as it more safe,less time consuming and painless.Nd;yag laser in pulsed mode(Q switched) mode causes tissue ionization-resulting in tissue rupture with minimal themal effect & this principle is used in posterior capsulotomy.

OBJECTIVES

Aim of this study is to quantify and evaluate the final visual outcome and to evaluate the causes of less than desired visual outcome after Nd:Yag laser posterior capsulotomy.

METHODOLOGY

This was a prospective study in which 75 eyes of 75 different patients were observed. All patients who underwent extra capsular cataract surgery with posterior chamber intraocular lens(PMMA) implantation by a same surgeon ,patients in whom there was good post operative vision which gradually diminished over period of few months(atleast 3 months) to years which was purely or maximally attributable to PCO were included in this study.

Pre-laser uncorrected and corrected visual acuity,slitlamp examination,intra ocular pressure measurement and ophthalmoscopy was done.Explanation of the procedure and informed consent taken. All the patients were willing for follow up and had good ocular fixation.

In this study the Nd:Yag laser used was a Q swithched device.A capsulotomy size of 3.5mm was intended as mean pupillary size in scotopic conditions is 3.9mm(+_0.5mm).All small pupil were dilated after giving central marking opening.The lowest energy level(0.9mj) was used initially and gradually increased till adequate opening was acheived.

Post laser antiglaucoma eye drop was given stat to prevent intraocular pressure spike.Best corrected visual acuity was recorded 1 hour after the procedure.Patients were followed up one day,one week and after one month – each visit best corrected visual acuity,intraocular pressure,slit lamp examination and ophthalmoscopy was done.Final spectacle correction given if needed at the end of one month.Findings recorded and resuls were analysed.

RESULTS

In this study pre laser visual acuity of 26 eyes (34.67%) was 6/60 followed by 20 eyes(26.67%) between 6/60 and 2 meter finger counting followed by 16 eyes(21.33%) with 6/36 snellens visual acuity.

Visual outcome – 1 hour: 21 eyes(28%) with visual acuity of 6/24 followed by 17 eyes(22.67%) with 6/18 vision and 14 eyes(18.67%) with 6/36 vision.

Visual outcome – 1 day: 24 eyes(32.0%) had visual acuity of 6/18 followed by 14 eyes(18.67%) with 6/24 vision followed by 12 eyes(16.0%) with 6/12 vision.

Visual outcome – 1 week: 24 eyes(32.0%) with 6/12 visual acuity followed by 16 eyes(21.33%) with 6/18 vision followed by 13 eyes(17.33%) with 6/9 vision.

Visual outcome – 1 month: 25 eyes(33.33%) with 6/12 visual acuity followed by 15 eyes(20.0%) with 6/9 vision followed by 13 eyes(17.33%) with 6/18 visual acuity and 7 eyes(9.33%) with 6/6 vision.

8 eyes did not show any improvement post laser : 3 eyes(4.0%) had ARMD/Chorio-Retinal degeneration,2 eyes(2.67%) had Amblyopia,2 eyes(2.67%) had Glaucoma and 1 eye(1.33%) had Optic atrophy.

DISCUSSION

In this study the pre laser visual acuity of most patients were poor as the patients in this region come for checkup only when there is a significant visual loss.One day after Nd;Yag capsulotomy there was only 9 eyes with visual acuity of 6/60 or less out of 75 eyes,while before there was 45 eyes in this group.One week after laser capsulotomy we noticed that there was a visual improvement of 6/18 or more in 58 eyes.Final visual outcome was evaluated 1 month post laser posterior capsulotomy which showed – improvement of one snellens line in 2 eyes(2.67%),two snellens line in 5 eyes(6.67%),three snellens line in 23 eyes(30.67%),four lines in 30 eyes(40.0%),five lines in 7 eyes(9.33%).In the present study done on 75 eyes there was a final visual improvement of one or more snellens line in 67eyes(89.33%) which was in accordance with many of the previous studies done by various authors – Terry AC et al (1994) – 89.8%, Margo BV et al (1997) – 92.5%,Lue LL et al(1991) – 90.32% and Hayashi.K et al (2004) – 91.09%.Only 11 eyes(13.67%) in this study had a pre laser vision of 6/24 or better but the final visual out come in this group was 66 eyes(88.0%) which is a very significant visual improvement.

In 2 eyes there was a visual improvement of only one snellens line of which one case the pre laser vision was 6/12 which improved to 6/9. 8 eyes(10.67%) did not have any visual improvement of which- 3 eyes (4.0%) had ARMD/Chorio-retinal degeneration-this was similar to observance by Apple DJ et al (1992) who reported a similar 4% incidence.2 eyes(2.67%) had amblyopia which was very much lesser than reported by previous workers like Solomon et al (1990),Birdtova et al (1995),Hiles et al (1994) but the difference could be due to the pediatric cataracts in these studies.In 2 eyes there where advanced glaucomatous fundus changes and in 1 eye disc changes suggestive of optic atrophy.

CONCLUSION

Overall we conclude that there is excellent visual improvement following Nd;Yag posterior capsulotomy for posterior capsular opacification after extra capsular cataract extraction if there is no other significant ocular pathology.

REFERENCES

1. Apple DJ, Solomon KD, Tetz MR et al; posterior capscular opacification: Surv Ophtahlmol 1992; 32:73-116.
2. Hayashi K, Hayashi H,Nakao F,Hayashi F: AM J Ophthalmol 2004 Jan,137(6):1165
3. Margo BV,Datles MB,Lasa MJ,Fujardo MR:Ophthalmology 1997 Aug 104(8) 1287-93
4. Lue LL,Chen SC,Tsai WF:J Clin Laser Med Surg 1991 Feb; 9(1) – 59-61
5. Terry A.C.,Stark W.J.:Nd :Yag laser for posterior capsulotomy.A.J.Ophthalmology Dec.1983;96:716-720.
6. Atkinson CS,Hiles DA;Treatment of secondary posterior capsular xmembrane with the Nd:yag laser in pediatric population.AM J Ppthalmol.1994 Oct 15;118(4);496-501.
7. Birdtova E,Kraus H; Implantation of intraocular lenses in children;Cesk Slov Oftalmol:1995 apr;51(2):75-82.