



Cause of non improvement of vision in Pseudophakic Eye

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Abstract

It is seen that even after an uncomplicated cataract surgery and an uneventful post-operative period, the implant is not capable of providing visual acuity of 6/6. In this study a total of 240 cases are selected having visual acuity less than 6/6 after cataract surgery. It is seen that preoperative, intraoperative and postoperative factors are all responsible for subnormal vision after cataract surgery.

Key words: Cataract surgery, non-improvement of vision

INTRODUCTION

The history of intraocular lens (IOL) implantation has been a long saga of excitement and frustration but the ultimate outcome has been rewarding. Sir Harold Ridley performed the first IOL implant in the posterior chamber of the left eye of a 45 year old woman, after an extracapsular cataract extraction, on 24th November 1949 at St. Thomas Hospital, London. Since then there has been a number of changes in surgical techniques, lens design, lens material, lens sterilization and placement of intraocular lens implant. With the accurate estimation of the power of intraocular lens, uncomplicated cataract surgery and an uneventful post operative period, the implant is capable of providing a visual acuity of 6/6, a normal visual field with least magnification and no chromatic and spherical aberrations. However postoperative results are not always according to the expectations.

This study is an attempt to find out causes for unsatisfactory visual results amongst patients undergoing extracapsular cataract extraction with posterior chamber implantation of intraocular lens by various surgical techniques.

MATERIALS AND METHODS

This study was carried out over a period of 15 months, from July 2005 to September 2006, at Regional Institute of Ophthalmology, Guwahati Medical College, Assam. All the cases that had undergone cataract surgery were followed up for 3 months. A total of 240 patients of pseudophakia with unaided visual acuity less than 6/6 at any point of time upto 3 months were included in the study. Amongst these 101, 129 and 10 cases had undergone ECCE (Extra Capsular Cataract Extraction), SICS (Small Incision Cataract Surgery) and Phacoemulsification respectively. In all cases SRKII formula was used to calculate the power of intraocular lens.

RESULTS

Factors present before surgery, complications during surgery and post operative complications which contributed to subnormal vision and the number of cases is shown in table 1, 2

TABLE 1
SHOWING FACTORS CONTRIBUTING TO PRE OPERATIVE SUBNORMAL VISION.

Factors	No. of cases	(%)
1. Age related macular degeneration (AMRD)	06	2.5
2. Diabetic retinopathy (DR)	16	6.67
3. Hypertensive retinopathy	02	0.83
4. Chorioretinal degeneration	10	4.16
5. Vitreous haemorrhage	01	0.41
6. Ambylopia	07	2.91

TABLE NO. 2
COMPLICATIONS DURING SURGERY.

Complication during surgery	No. of cases	(%)
1. Posterior capsular rent	10	4
2. Vitreous haemorrhage	06	2.5
3. Uveal trauma	23	9.58
4. Difficulty in nucleus delivery	14	5.88



TABLE NO. 3
POST SURGICAL COMPLICATIONS.

Factors	No. of cases	(%)
11. Posterior capsular opacification (PCO)	99	41.25
2. Cystoid macular oedema	16	6.67
3. Persistent corneal oedema	8	3.33
4. Malposition of IOL	12	5.0
5. Endophthalmitis	02	0.83
6. Persistent uveitis	20	8.33
7. Secondary glaucoma	3	1.25
8. Retinal detachment	2	0.83
9. Astigmatism	80	33.33

TABLE NO. 4
TABLE SHOWING THE BEST CORRECTED VISUAL ACUITY.

Best corrected visual acuity	No. of patients	Percentage
6/6	30	12.5
6/9 to 6/12	88	36.7
6/18 to 6/24	80	33.3
6/36 to 6/60	34	14.2
>6/60	8	3.3

and 3.

DISCUSSION

Posterior capsular opacification (PCO) was the commonest complication encountered which was responsible for subnormal vision amongst the patients included in this study. It was diagnosed intraoperatively in 7.08%, at the end of 2 weeks in 17.5%, at the end of 6 weeks in 31.25% and at the end of 3 months in 41.25% cases. Sinsky and Cain¹ reported that 43% of their patients developed PCO followed up upto 26 months and ranged from 3 months to 4 years. Though it was more than the present study, it may be due to the longer postoperative follow up period in comparison to the present study.

The incidence of cystoid macular oedema (CME) following IOL implantation was found to be 6.67%. Intraoperative complications like posterior capsular rent, more so with vitre-

ous disturbance and postoperative inflammatory reactions are seen as associated findings with those patients having CME. Bergman et. al. (1994)² in their publication also reported the similar experience with such complications.

Pseudophakic bullous keratopathy, which occurs primarily due to prolonged surgery time and excessive instrumentation, was seen in 3.33% cases. In reviewing a study report by Bourne et al. 1981³, it was seen that they had also encountered similar postoperative complication.

Persistent uveitis in the form of fibrinous membrane over IOL implant, lens precipitate or keratic precipitate was present in 8.33% cases. The incidence of secondary glaucoma resulting from uveitis after lens implantation was found in 1.25% cases.

The incidence of malposition of IOL was found to be 5.0%. Complications like retinal detachment, endophthalmitis, persistent uveitis, CME etc. are found more in patients who had posterior capsular rupture and vitreous loss during surgery. Other factors which contributed to subnormal vision, but were thought to be present before the surgery include age related macular degeneration (2.51%), diabetic retinopathy (6.67%), chorioretinal degeneration (4.16%), hypertensive retinopathy (0.83%) and vitreous loss (0.41%).

Regarding final visual results, in 12.5% best corrected visual acuity achieved was 6/6, in 36.7% cases it was 6/9 to 6/12, in 14.2% it was 6/36 to 6/60. In 3.3% cases visual acuity remained less than 6/60 even after best possible refraction.

The incidence of most of the complications seen in this study was higher as compared to the earlier studies. It can be attributed to the fact that, in our study only those cases who had visual acuity less 6/6 post operatively were included. Thus, the incidence would probably have been lower if the study had included all the operated cataract cases during the study period.

CONCLUSION

The goal of cataract surgery is to improve visual functions. But the findings in this study show several possible reasons for subnormal visual function after cataract extraction. We analyzed the causes of reduced visual outcome by preoperative characteristics, intraoperative problems and postoperative complications. It is found that PCO and astigmatism are the most common causes of reduced visual outcome. Hydrodissection enhanced cortical clean-up in the bag fixation of IOL, capsulorhexis edge on the IOL surface, use of acrylic IOL, maximum IOL optic posterior capsule contact and use of truncated optic edge IOL can decrease the risk of PCO formation. Again, astigmatism is directly proportional to the length of the incision and inversely



related to the distance from the limbus. Search for surgical techniques and IOL designs to reduce these complications will continue. Let us proceed in that direction, looking into the future as newer developments and technologies evolve.

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