

CORRELATION OF VISUAL QUALITY WITH SATISFACTION IN A NORMAL COHORT OF PSEUDOPHAKIC PATIENTS

Aditya Pachauri^A, Kishor Badhe^B, Sanket Nisale^C

^A - Senior resident, Department of Ophthalmology, Rural Medical College, Pravara Institute of Medical Sciences, Loni, Ahmednagar, Maharashtra

^B - Professor, Department of Ophthalmology, Rural Medical College, Pravara Institute of Medical Sciences, Loni, Ahmednagar, Maharashtra

^C - Junior resident, Department of Ophthalmology, Rural Medical College, Pravara Institute of Medical Sciences, Loni, Ahmednagar, Maharashtra

Ophthalmology

Manuscript reference number
NJMDR_5107_16

Article submitted on: 08 Nov. 2016
Article accepted on: 19 Nov. 2016

Corresponding Author

Dr Aditya Pachauri
Room No. 229 NRI Hostel,
PMT Campus,
Loni, Ahmednagar
413736
Mobile Number 9837056141,
Email – adityapachaurimed@
hotmail.com

Abstract:

Purpose - To select a normal post cataract surgery cohort, determine the visual quality parameters and correlate them with visual function and satisfaction.

Aims and Objectives-

1. To assess visual function in a normal cohort of pseudophakic patients.
2. To assess complaints of pseudophakicdysphotopsias after eliminating other ophthalmic confounding variables.
3. To correlate parameters of visual function with pseudophakicdys photopsia.
4. To correlate pseudophakicdysphotopsias with overall satisfaction of the patients.

Materials and Methods - Study Design- Retrospective Cohort Study

Methods- A cohort of 30 pseudophakic patients was selected based on uneventful surgery, good corrected distance visual acuity (not worse than 6/12) and no associated ocular complaints or pathology(eg. dry eye, posterior capsular opacification).

Inclusion Criteria- Patients above 50 years of age, at least 1 year out of cataract surgery, a single piece high refractive index acrylic IOL used were inclusion criteria.

Exclusion Criteria- Corneal pathology that affected vision, glaucoma, macular pathology except minimal hard drusens without retinal pigment epithelial pathology, diabetic retinopathy, dry eye defined as any corneal fluorescein staining at the examination, central PCO.

Eligible patients underwent testing that included careful refraction and corrected distance visual acuity recording, contrast sensitivity testing, visual function questionnaire, pseudophakicdysphotopsia survey and an overall satisfaction questionnaire rated on a scale of 0 to 10. Correlation was determined between these parameters.

Results – Pseudophakicdysphotopsias were found to have significant correlation with the visual quality and overall satisfaction of the patient post operatively as proved by the chi square test having value of 13.34, $p < 0.05$ which is highly significant. No other significant correlation was found between visual quality parameters such as residual refractive error or contrast sensitivity with satisfaction of the patient.

Conclusion- After evaluating a highly controlled population with expected high satisfaction after cataract surgery, pseudophakicdysphotopsia was found to be the most significant cause for dissatisfaction. Symptoms of pseudophakicdysphotopsias also correlated with visual function questionnaire thus indicating of them also having functional significance pertaining to visual quality.

Keywords- Visual Function, Dysphotopsia, Visual Acuity

Introduction:

Cataract has been documented to be the most significant cause of bilateral blindness in India. From 1.2 million cataract surgeries performed in 1980's the number of cataract surgery output due to national coordinated efforts has increased to 3.9 million in 2008. In present day phacoemulsification technique is the gold standard for performing cataract surgeries. Success in terms of visual acuity mostly is so good that it is still surprising to see so many 'unhappy' pseudophakic patients who have undergone uncomplicated perfect cataract removal and intraocular lens implantation. Major reasons for this include dry eye syndrome, posterior capsule opacification and macular pathology. Over time complain of dysphotopsias has taken a prominent place in list of pseudophakic patients visual complaints. Pseudophakic dysphotopsias are non useful patterns projected onto patient's retina in positive or negative form. Positive dysphotopsias appear as glare, halos, arcs or streaks of light. Negative dysphotopsias are mostly dark shadows or spots in temporal field of vision.

This study has tried to understand the complaints of dysphotopsias experienced by pseudophakic patients and tried to correlate it to the overall visual quality of the patient by assessing the different visual quality parameters such as the visual acuity for far and near vision, contrast sensitivity testing and also to correlate it to the overall satisfaction of the patients in carrying out his daily activities post surgery.

This study would allow us to understand the gravity of dysphotopsia complaints often heard by ophthalmologists from their patients and brushed aside because of the patient having good post operative visual quality and everything being objectively perfect on slit lamp examination and fundus examination. This would further motivate us to look and research for solutions to these complaints either conservative in nature or to go for aggressive modalities such as secondary intervention surgery.

Materials and Methods:

Study Design – Retrospective Cohort study
Study Period – 3 months (April – June 2016)
Site of study – Department of ophthalmology, Pravara Rural Hospital.
Sample size – Total 30 patients were enrolled in the study after fulfilling inclusion and exclusion criteria.

Statistical Analysis – Data was analysed by using Chi square test.

Inclusion Criteria:

Age 50 years or more of either sex having undergone uneventful cataract surgery (phacoemulsification technique). Implantation of single piece foldable hydrophilic acrylic IOL.
At least 3 months out of surgery.
Best corrected visual acuity of 6/6 (Snellen's chart).

Exclusion Criteria:

Corneal pathology affecting vision.
Glaucoma.
Macular pathology except minimal hard drusens.
Dry eye defined as any corneal fluorescein staining at examination.
Central PCO.
It was a hospital based study and post operative patients visiting ophthalmology OPD fulfilling the inclusion and exclusion criteria were enrolled for the study after obtaining due consent. All patients underwent a complete ophthalmic evaluation and examination with slitlamp biomicroscopy and fundus examination with direct ophthalmoscopy.

Visual function parameters measured were BCVA after refraction on snellen's chart, contrast sensitivity on pelliobson chart and visual function questionnaire.

Pseudophakic dysphotopsia complaints were noted with dysphotopsia survey questionnaire. Structured proforma was used for documentation.

Study Proforma :

Name -
Age-
Gender- M/F
OPD NO. -
Address -
Phone -
Chief ocular complaints
Past Ocular History-
Ocular Surgical History-

Personal History / Family History

General Examination :

General condition-
Temperature-
Pulse-
B.P-
R.R-

Systemic Examination :

Cardiovascular System-
Respiratory System-
Central nervous system-
P/A-

Local Examination :

	Right Eye	Left Eye
Visual Acuity		
Anterior Segment		
Fundus		
Refractive error		
BCVA		
Contrast Sensitivity		
IOL Power used intra operatively		

Visual Function (modified Questionnaire NEI VFQ) :

Do you have difficulty, even with glasses

Q 1. Reading small print, such as labels on medicine bottles, food packets?

0 - No
1 - A moderate amount
2 - A great deal

Q 2. Reading a newspaper or a book?

0 - No
1 - A moderate amount
2 - A great deal

Q 3. Reading traffic signs, street signs, store signs?

0 – No
1 – A moderate amount
2 – A great deal

Dysphotopsia Questionnaire Survey :

With this survey we ask to rate your satisfaction in terms of your vision after your cataract surgery. Please score each question from 0 (no problem noticed) to 10 (find situation debilitating) .

Q 1. Since surgery, oncoming headlights while driving at night have been a problem.

Q 2. Since surgery, I am bothered by halos around bright light

Q 3. Since surgery, I have noticed a dark or grey shadow to side of my vision.

Q 4. Since surgery, I have noticed a semi circular shadow in my vision.

Overall Satisfaction Question :

Q. My overall satisfaction with my vision since my surgery 0 (totally unsatisfied) to 10 (totally satisfied) -

Ethics :

The study followed clearance from the ethical committee of the institution and was a retrospective study based on personal interview with the patients and questionnaire filling. No invasive procedure was performed during the course of the study. The study was in accordance of Helsinki declaration.

Results :**Patient characteristics and IOL power –**

Parameter	Value
IOL POWER	
Mean +/- SD	20.4 +/- 2.7 D (Dioptre)
Range	14.00, 25.5
Median	20.25
AGE	
Mean +/- SD	61.06 +/- 7.23
Range	50.00, 72.00
Median	61.00
GENDER	
Male	56.66%
Female	43.33%

Visual Testing parameters and visual function questionnaire results :

Parameter	Mean Value +/- SD	Minimum Value	Maximum Value
Spherical Equivalent (Dioptre)	0.93 +/- 0.53	0.0	-2.50 (spherical equivalent taken)
Cylindrical (Dioptre)	0.43 +/- 0.68	0.0	- 2.00 (spherical equivalent taken)
Best corrected Visual Acuity (Snellen)		6/5	6/6
Best corrected visual acuity (LogMar)	- 0.015 +/- 0.03	-0.079	0.0
Contrast sensitivity (Pelli Robson Test)	1.61 +/- 0.34	0.95	2.0
Visual Function Questionnaire	1.6 +/- 1.35	0.0	4.0
Dysphotopsia Questionnaire	11.6 +/- 5.96	4.0	22
Overall Satisfaction	6.8 +/- 1.74	4.0	10.0

Results of Dysphotopsia Questionnaire :

Dysphotopsia Survey Question	0 - 3	3 - 6	> 6
Q.1	6 (18%)	16 (52%)	8 (30%)
Q.2	6 (20%)	18 (60%)	6 (20%)
Q.3	11 (36%)	14 (48%)	5 (16%)
Q.4	9 (28%)	17 (58%)	4 (14%)

Statistical Test :

Value of chi square test applied is 13.34, $p < 0.05$ which is significant. Chi square test applied displays significant association of complaints of Pseudophakic dysphotopsias on the basis of survey questions with patient satisfaction as well as with visual quality.

Results of present Study :

- No visual acuity parameter, including amount of refractive error, astigmatic error correlates with patient satisfaction.
- Visual function questionnaire results correlate with overall patient satisfaction.
- Pseudophakic dysphotopsias questionnaire survey strongly correlates with patient satisfaction and visual quality.

Discussion :

Although all cataract surgeons hear complaints from their patients it has been surprisingly difficult to pin down what is root cause for complaints in the pseudophakic state alone and what is the result of many confounding ophthalmic diseases common in geriatric pseudophakic population. Our study has tried to create a normal study population with elimination of as many confounding ophthalmic disease states as possible and to pin down the cause for patients dissatisfaction with visual quality. After the selected eligible patients underwent testing and results were tabulated it became clear that patients satisfaction was not related with the residual sphere or cylindrical error but with the pseudophakic dysphotopsias experienced by the patients postoperatively.

- This paper addresses the challenge of understanding the ‘unhappy 6/6’ patient’s visual complaints.
 - Although the study being performed in rural setting the amount of unaided refractive error has not been found to correlate with satisfaction, other population groups might be more demanding especially those going for premium IOL’s.
 - Correlation of dysphotopsia complaints with satisfaction is particularly relevant as only those patients were enrolled in the study who did not verbally report these complaints.
 - In a previous study, Masket and Fram suggest that IOL being in capsular bag is an important causal factor for the temporal darkness form of negative dysphotopsias while Cooke suggests that the distance in between the IOL surface and iris is responsible for it.
 - In this study we have used a shortened version of NEI VF11 and DPQ but it provided the same results with full version used in previous similar studies in the U.S
 - Strength and weakness of this study lies in its retrospective nature which allowed us to create as normal a pseudophakic cohort as possible but also leads to a sampling bias.
 - No previous study to our knowledge in this regard has been performed in a rural setting in Indian population.
 - Only 1 in a 1000 patients may require an IOL exchange due to dysphotopsia complaint but every 1 in 10 patients has these complaints.
- just an annoyance and have an impact on everyday visual function.
- More research is required in this regard to understand the specific cause for it in relation to IOL’s used, their refractive index, size of optic, shape of the edge, size of capsulotomy

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Conclusion :

- At least 3 months postoperatively, pseudophakic dysphotopsias were found to have the only statistically significant correlation with satisfaction in population of normal pseudophakic patients.
- Thus pseudophakic dysphotopsias are more than