

A study to assess the effect of cataract surgery on the visual acuity among diabetic patients

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Abstract

Background: Blindness due to cataract presents an enormous problem in India not only in terms of human morbidity but also in terms of economic loss and social burden. The annual incidence of cataract blindness in India is about 3.8 million³. About one sixth of world 's total blind with visual acuity >3/60, lives in India. **Objective:** To assess the effect of Cataract Surgery on the visual acuity among Diabetic Patients. **Methodology:** It is a comparative study conducted on 100 diabetic patients and 100 non diabetic patients undergoing planned manual small incision cataract surgery attending Ophthalmology Department in Navodaya Medical College Hospital and Research Centre, Raichur during November 2010-April 2012. Visual acuity of the subjects were examine pre operative and after six months of follow up. **Results:** More than 50% of the patients were under 65 years in both the groups, females were more in number than males. Post operative visual acuity improved in both group , no statistically significant difference was obtained in visual acuity outcome in both the group at the end of 6 month follow up, with $p=0.28$ (>0.05). **Conclusion:** With adequate blood sugar control, careful preoperative planning, atraumatic surgical techniques, appropriate postoperative medicines and close postoperative supervision, diabetic patients can achieve excellent vision after cataract surgery just like our other cataract patients.

Key Words: Cataract, Diabetic, Surgery, Visual Acuity.

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INTRODUCTION

Diabetes is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of different organs, especially the eyes, kidneys, nerves, heart, and blood vessels.¹ Diabetes is the single most important metabolic disease which can affect nearly every organ system in the body.² Blindness due to

cataract presents an enormous problem in India not only in terms of human morbidity but also in terms of economic loss and social burden. The annual incidence of cataract blindness in India is about 3.8 million³. About one sixth of world 's total blind with visual acuity >3/60, lives in India.⁴ Cataract surgery in diabetics is indicated for visual improvement or to allow assessment and treatment of retinopathy. Poor visual outcome in diabetics has been Introduction 2 linked with the severity of retinopathy and maculopathy prior to cataract surgery . Diabetic patients are more prone to preoperative and postoperative complications such as pigment dispersion, fibrinous reaction, posterior synechiae, capsule rupture, vitreous loss and pupillary block. Diabetics have higher incidence of PCO. Rubeus's, neovascular glaucoma, macular edema, severe inflammation, vitreous hemorrhage, synechiae to IOL, retinal detachment and corneal decompensation can occur postoperatively.^{5,6,7,8} Hence in the present study the visual acuity of the diabetic patients before and after cataract surgery.

MATERIALS AND METHODS

The present prospective study was done at Navodaya Medical College Raichur from November 2010 to April 2012 in the Department of Ophthalmology. A total of 100 study subjects who met the inclusion criteria were selected for the purpose of the study as cases and 100 cases were selected as controls who did not had any kind of comorbidities.

INCLUSION CRITERIA

- All patients diagnosed with cataract and diabetes mellitus.
- Patients presenting with all types of cataracts i.e. Cortical, Nuclear, Sub capsular and Capsular.
- 100 non diabetic patients with cataract age matched as control were taken

EXCLUSION CRITERIA

- Previous ocular trauma, subluxation of the cataractous lens.
- Previous intraocular surgery.
- Previous intraocular laser treatment.
- Patients with complicated cataract and anterior uveitis.
- Patients with uncontrolled hypertension.
- Patients below the age of 18 years.
- Patients with glaucoma

All cases underwent manual small incision cataract surgery done by consultant ophthalmologist. All cases were done under local peribulbar anesthesia and followed up at the end of six months. Descriptive statistics such as mean, SD and percentage was used to present the data. Comparison between control and diabetic groups was done using chi-square test for qualitative data and t-test for quantitative data. A p-value less than 0.05 was considered as significant. Data was analyzed by using software SPSS v21.

RESULTS

A total of 100 study subjects both in case and control group were selected and analyzed.

Table 1: Social Profile of the study participants

Profile	Diabetic		Non Diabetic	
	Frequency	%	Frequency	%
Age Group				
< 50 Years	12	12 %	7	7 %
50- 59 Years	30	30 %	28	28 %
60-69 years	48	48 %	50	50 %
>70 Years	10	10 %	15	15 %
Mean Age	60.15± 8.32		58.43 ± 7.78	
Gender				
Male	41	41 %	44	44 %
Female	59	59 %	56	56 %

The Mean age of the Patients in Diabetic Group was 60.15 Years and in Control group it was 58.43 years of age. Nearly 48 % of them in Diabetic group were aged between 60 to 69 years of age and in the control group nearly 50 % of them were in the same age group in control group. Among Diabetic group nearly 59% of them were female and 41 % were male and in control group Female were 56% and Male were 44 %.

Table 2: Pre-Operative Visual Acuity in Diabetic and Control group

Visual Acuity	Diabetic		Non Diabetic	
	Frequency	%	Frequency	%
PL + or PR+	15	15 %	12	12 %
HM to 6/60	75	75 %	77	77 %
6/36	6	6 %	7	7 %
6/24	4	4 %	4	4 %

Chi Square = 0.437 p=0.933

In this study in diabetic group 15% had vision of light perception, 75% had vision from HM-6/60, 6% had vision of 6/36 and only 4% had vision of 6/24. In control 12% of the patients had vision of light perception, 77% had vision of HM6/60, 7% had vision of 6/36 and only 4% had 6/24.

Table 3: Post-Operative Visual Acuity in Diabetics and Control at 6 Month

Visual Acuity	Diabetic		Non Diabetic	
	Frequency	%	Frequency	%
<6/60	8	8 %	2	2 %
6/36	9	9 %	10	10 %
6/24	13	13 %	18	18 %
6/18	26	26 %	18	18 %
>6/12	44	44 %	50	50 %

Chi Square = 3.79 p= 0.28

In this study, post-operative visual acuity in 8% of Diabetics and 2% of Control was < 6/60. 9% of Diabetics and 10% of Control was 6/36. 13% of Diabetics and 18% of Control was 6/24. 26% of Diabetics and 18% of Control was 6/18. 44% of Diabetics and 52% of Control was greater or equal to 6/12. The Association was found to be statistically non-significant.

DISCUSSION

In this study, highest number of patients were in the age group of 60-64 years that is 35% in diabetics and 29% in control. 10% in diabetics and 15% of the non-diabetic patients were above 70 years. Remaining 42% of the patients in diabetics and 35% of the patients in control were below 60 years. The mean age group of the patients in diabetic group was 58.43 ± 7.78 yrs. and 60.15± 8.32 yrs. in control group. The Framingham and other eye studies indicate a 3-4 fold increased prevalence of cataract in patients with diabetes under 65 and up to a twofold excess prevalence in patients above age group.^{9,10} In this study, in diabetic group 59% were female and 41% were male. In

control 44% were male and 56% were female. This coincides with the fact that prevalence of cataract itself is more common in females than males. In the Framingham eye study also senile lens changes were more common in women.¹¹ In this study majority of the patients had poor pre-operative visual acuity. 15% of the diabetic and 12% of the control patients had vision of PL PR, 75% of the diabetics and 77% of the control had visual acuity ranging from HM to 6/60. 6% of the diabetic and 7% of the control had vision of 6/36. Only 4% of diabetic and control patients in this study had vision of 6/24. In this study, visual acuity at the end of 6 month showed, 8% of the diabetic and 2% of the control patients had vision < 6/60. 9% in diabetics and 10% in control had vision of 6/36, 13% of the diabetics and 18% of the control had a vision of 6/24, 26% of the diabetics and 18% of the control had a vision of 6/18. 44% of the diabetics and 52% of the control had a vision of greater or equal to 6/12. No statistically significant difference was found in this study between the 2 groups with a p-value=0.28(p>0.05). Similar observations were made in the following studies. Study by Onakpoya H Oluwatoyin *et al.* has shown that there is no statistically significant difference in visual acuity outcome in diabetic and control group.⁵ Study by N D George, *et al.* showed that there was no statistically significant difference in visual outcome between control and diabetic group without retinopathy. This study also showed significantly poor visual acuity outcome in diabetics with retinopathy compared to control group. The cause of poor visual acuity outcome in diabetic group was CSME, CMO, grade IV PCO. The cause of poor visual acuity outcome in patients in control group was age related macular degeneration, macular scar and optic atrophy.⁸

CONCLUSION

The diabetic patients with cataract have an overall good visual out come. With adequate blood sugar control, careful preoperative planning, atraumatic surgical techniques, appropriate postoperative medicines and close postoperative supervision, diabetic patients can achieve

excellent vision after cataract surgery just like our other cataract patients. With adequate blood sugar control, careful preoperative planning, atraumatic surgical techniques, appropriate postoperative medicines and close postoperative supervision, diabetic patients can achieve excellent vision after cataract surgery just like our other cataract patients.

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