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Original Research Article

Evaluation of Outcome of Cataract Surgery in Diabetic and Non- Diabetic Patients: A Comparative Study at a Tertiary Care Teaching Hospital

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ABSTRACT

Background: One of the common systemic problems affecting a variety of people worldwide is diabetes mellitus. Out of all cataract surgeries performed world-wide, approximately one-fifth of them are carried out in diabetic patients. Hence; under the light of above evidence, we planned the present study to evaluate and compare the prognosis of cataract surgeries in diabetic and non-diabetic patients.

Materials & Methods: The present study included assessment of prognosis of cataract surgery in diabetic and non- diabetic patients. We analyzed a total of 50 diabetic and 50 age-matched non-diabetic subjects. Within one week of Cataract surgery, all the patients underwent fasting blood glucose analysis. Recording of the complete intra-surgical and post-surgical complications along with visual acuity was done at one week, one month and six months' time in all the subjects. All the results were analyzed by SPSS software.

Results: A total of 50 subjects were included in the study group while another fifty subjects comprised of control group. At one week's time, the occurrence of Post- surgical visual acuity in study group and control group was found to be 0.15 and 0.21 respectively. Non- significant results were obtained while comparing the mean post- surgical visual acuity in between the two study groups at different time intervals.

Conclusion: Diabetic patients should not be refused for cataract surgeries. However, there is a need for taking of extra-precautions in such patients.

Key words: Cataract, Diabetic, Surgery.

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INTRODUCTION

Diabetes mellitus is one of the common systemic problems affecting a variety of people worldwide. Various risk factors for development of diabetes include population growth; ageing, urbanization, sedentary lifestyles and an increasing prevalence of obesity.[1] By 2030, it is estimated that global prevalence of diabetes would reach approximately 4.4 percent.[2]

Out of all cataract surgeries performed world-wide, approximately one-fifth of them are carried out in diabetic patients. As per the data of various epidemiological studies, one of the most common causes for visual impairment in geriatric diabetic patients is cataracts.[3-6]

Prognosis of cataract surgeries has improved a lot following advancements in cataract surgery. However, data in relation to diabetic patients is not same is a common topic of on-going research.[7,8] Hence; under the light of above evidence, we planned the present study to evaluate and compare the prognosis of cataract surgeries in diabetic and non-diabetic patients.

MATERIALS & METHODS

The present study was conducted in the Department of Ophthalmology, Rajshree Medical Research Institute & Hospital, Bareilly, Uttar Pradesh (India) and included assessment of prognosis of cataract surgery in diabetic and non- diabetic patients over a period of one year. Ethical approval was taken from the institutional ethical committee and consent was obtained from all the patients after explaining in detail the entire research protocol. We analyzed a total of 50 diabetic and 50 age-matched non-diabetic subjects. All those diabetic cases that underwent cataract surgery were included in the present study.

Inclusion criteria for the present study for subjects of study groups included:

- Subjects with history of diabetes
- Subjects within the age group of 30 to 60 years
- Subjects without any known drug allergy
- Subjects without any other systemic illness

Control group subjects included subjects with comparable age and sex, who had cataract extraction during the same period. Based on the fasting sugar levels of more than 120 mg/dl, diagnosis of diabetes was made.

Exclusion criteria for the present study for subjects of study group included:

- Patients with traumatic cataracts,
- Patients with uveitic or complicated cataracts.

Within one week of surgery, all the patients underwent fasting blood glucose analysis. Glycemic control in the subjects was divided as follows:[9]

- Good (<70mg/dl),
- Moderate (70-100mg/dl) or
- Poor (>100mg/dl)

Under the administration of peri-bulbar anaesthesia, extracapsular cataract extraction with posterior chamber intraocular lens implantation was done in all the subjects. Recording of the complete demographic details of all the subjects along with clinical details was done separately. Recording of the complete intra-surgical and post-surgical complications along with visual acuity was done at one week, one month and six months' time in all the subjects. Recording of the mean Snellen acuity was done in all the subjects.[9] All the results were analyzed by SPSS software. Chi-square test and student t test were used for assessment of level of significance. p value of less than 0.05 was taken a significant.

RESULTS

A total of 50 subjects were included in the study group while another fifty subjects comprised of control group. Mean age of subjects in the study group and control group was 52.3 and 54.1 years respectively (Graph 1). In study and control group 40 and 38 subjects were males respectively. At one week's time, the occurrence of Post- surgical visual acuity in study group and control group was found to be 0.15 and 0.21 respectively.(Table 1)

Graph 1: Demographic details of the subjects

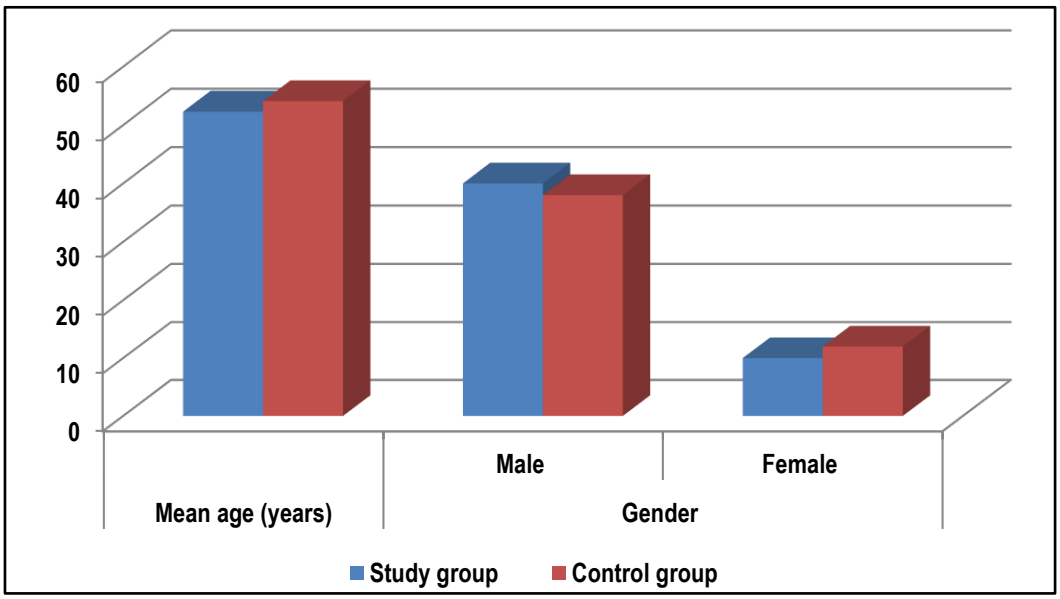


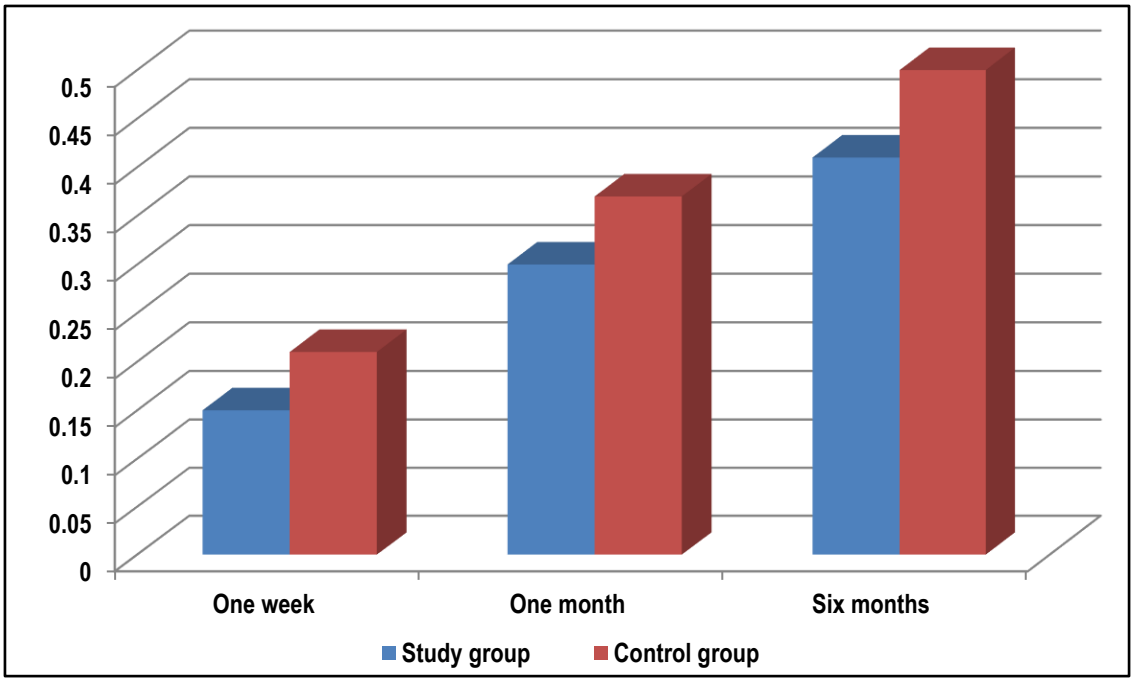
Table 1: Post- surgical visual acuity in subjects of diabetic and control group

Post- surgical period	Study group	Control group	p- value
One week	0.15	0.21	>0.05
One month	0.30	0.37	>0.05
Six months	0.41	0.50	>0.05

Table 2: Complications occurring both study groups

Complications		Study group (N)	Control group (N)
Intra- surgical	**Hyphema**	2	2
	Vitreous loss	4	2
	Posterior capsular rent	8	5
Post-operative complications	**Striate keratopathy**	8	4
	Pigment dispersion	9	4
	Raised intra-ocular pressure	3	1
	Posterior capsular opacity	2	1
	Wound dehiscence	2	1
	Intra-ocular lens displacement	1	0
	Fibrionous exudates	1	0

Graph 2: Descriptive values of post- surgical visual acuity in subjects of diabetic and control group



At one month's time, the occurrence of Post- surgical visual acuity in the study group and the control group was found to be 0.30 and 0.37 respectively (Graph 2). Non- significant results were obtained while comparing the mean.. Post- surgical visual acuity in between the two study groups at different time intervals (p value > 0.05). Pigment dispersion was the most commonly encountered post-surgical complication in the diabetic group (n= 9) and the control group (n= 4).

DISCUSSION

In diabetic patients, cataract is one of the major causes of blindness in developing countries. However, the exact pathogenesis of diabetic cataract development is not known. There is associated higher risk of development of complications in diabetic patients undergoing cataract surgery. However, exact incidence of these complications is still unknown.[10-12] Hence; under the light of above evidence, we planned the present study to evaluate and compare the prognosis of cataract surgeries in diabetic and non-diabetic patients.

In the present study, we observed non- significant results while comparing the mean post- surgical visual acuity in between the study group and the control group (*p* value > 0.05). Onakpoya OH et al determined the visual outcome of cataract surgery in diabetes mellitus with advanced cataract in a tertiary institution in Nigeria. Twenty three consecutive patients with diabetes and 23 age and sex matched non-diabetic control patients who had extracapsular cataract extraction for advanced cataract. Twenty three patients with diabetes mellitus and 23 non diabetic controls were studied; mean duration of diabetes was 8.1 ± 7.2 years. The mean post-operative visual acuity in diabetics was 0.11±0.38, 0.33±0.57 and 0.38±0.49 at one week, two months and six months compared with 0.23±0.19, 0.46±0.37 and 0.48±0.31 in non-diabetics. (p=0.207, 0.403 and 0.465 respectively). Improvement in preoperative visual acuity was noted in 84.2% and 90% in diabetics and non-diabetics respectively. Poor visual outcome in diabetics was mainly due to diabetic retinopathy, maculopathy or diabetes related surgical complications. Visual improvement was seen following surgery for advanced cataract in diabetics in this study population. Post-operative monitoring for treatment of diabetic retinopathy may enhance visual outcome.[9] Lara-Smalling A et al described preoperative risk factors associated with visual outcomes for diabetic patients undergoing cataract surgery and appropriate nursing interventions for these patients. Literature review of risk factors and cataract surgery outcomes in terms of complications, visual acuity, and visual functioning of diabetic patients was undertaken. Preoperative risk factors and postoperative complications, including inflammation and cystoid macular edema (CME), were also examined. To emphasize evidence of best practices, the role of the nurse as educator and advocate was further explored in terms of their impact on diabetes management of the patient to improve visual results. Diabetic patients of advanced age, with a history of diabetic retinopathy who are taking insulin and have elevated Hb A1C levels, may have an increased risk of intraoperative and postoperative complications and decreased postoperative visual acuity and visual functions that may affect their quality of life. High-risk factors should be identified in diabetic patients when developing a perioperative patient education plan to help reduce their risk of cataract complications and improve their visual outcomes.[13]

Smiddy WE et al determined the frequency of visually significant cataracts after vitrectomy for complications of diabetic retinopathy. They studied 40 patients and 56 concurrent control patients in a retrospective, consecutive, comparative case series in an institutional setting. The rate of cataract extraction after vitrectomy in patients with diabetes is lower than in patients without diabetes undergoing vitrectomy and suggests a lower rate of cataract formation. This inference should be considered when attributing subnormal vision in a patient who has had a diabetic vitrectomy to a cataract. This is especially significant because the risk ratio in

patients with diabetes in general and in patients with a previous vitrectomy is likely less favorable compared with the general population.[14] Kim SJ et al assessed the incidence or progression of macular edema (ME) after cataract surgery in diabetic patients using optical coherence tomography (OCT) and correlating this with degree of diabetic retinopathy or other risk factors. Fifty diabetic eyes undergoing cataract surgery were analyzed. From the results, they concluded that diabetic eyes have a high incidence of increased center point thickness on OCT after cataract surgery, associated with a loss of vision at 1 month, with limited visual recovery at 3 months. Treatment to prevent this might improve outcomes in similar individuals after surgery.[15]

CONCLUSION

From the above results, the authors conclude that diabetic patients should not be refused for cataract surgeries. However, there is need for taking extra-precautions as diabetic subjects might be more prone for surgical associated complications.

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