ORIGINAL ARTICLE

EARLY POSTOPERATIVE COMPLICATIONS OF CATARACT SURGERY IN DIABETIC PATIENTS

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Background: Progressions in technology and expertise has made cataract surgery a common and safe procedure now but this might be associated with early postoperative complications in diabetics. The objective of this study was to determine the occurrence of early postoperative complications after cataract surgery among diagnosed cases of diabetes mellitus. **Methods:** This clinical observational analytical study was carried at Department of Ophthalmology, Liaquat University Eye Hospital, Jamshoro from May to Oct 2018. Diagnosed diabetic patients who underwent cataract surgery, were enrolled for this study. The patients with early senile cataract and diagnosed cases of diabetes mellitus with normal arterial pressure and better macular function were included. Patients were enquired for early postoperative findings after cataract surgery. Data was analysed using SPSS-22. Mean±SD for quantitative variables and frequency (%) for qualitative were calculated. **Results:** Total 91 diabetic patients were included in the study. Early postoperative complications of cataract surgery in diabetic patients were compared according to duration of diabetes mellitus. Visual acuity of most patients remained between 6/6 and 6/24. Diabetics for >5 years were more prone to early postoperative complications as compared to those with <5 years. Statistically significant differences between early postoperative complications in the two groups were observed (p=0.01). **Conclusion:** Though frequency of complications after cataract surgery has decreased due to advances in surgical techniques, better preoperative assessment, and understanding of diabetes control, still early postoperative complications are common in individuals with longer duration of diabetes.

Keywords: Cataract Surgery, Complications, Diabetes mellitus

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INTRODUCTION

Cataract is one of the most common causes of blindness globally. Among all eye diseases, frequency of blindness owing to cataract was found to be 50% or more in underprivileged/distant regions and 5% among the developed countries. According to national survey on blindness in 2004, proportion of blindness was found to be 13% due to occurrence of postoperative complications of cataract surgery. Cataract with diabetes mellitus (DM) bears huge health as well as financial load, predominantly in developing countries where DM management as well as cataract surgery is found to be frequently unreachable. Cataract in diabetics must be taken as an issue worth emphasis by academics, researchers and the policymakers.[1] Frequency of type 2 DM and pre-diabetes has profusely raised than earlier supposed to be in Pakistan.[2,3] The prevalence of DM was reported as 26.3% in Pakistani populace by National Diabetes Survey of Pakistan (NDSP) 2016–2017.[4] The hazard of developing cataract among the cases of DM is 5 times greater than the general population. Cataract is found to be 2-fold as often among diabetic patients.[5] This is attributed mostly due to the speedy production of sorbitol in diabetic patients as related to non-diabetics. Inside the cell, due to polar property of sorbitol diffusion becomes difficult; this way, hyper osmotic effect is generated by accumulation of sorbitol that leads to infusion of fluid. Consequently, inside the cell polyols accumulate and lead to opacification of lens.[6] Rise in the incidence of cataract in DM patients has been observed. Progress in technology and expertise has made cataract surgery a common and safe technique now. Nevertheless, the diabetic patients bear still enhanced threat to sight-threatening problems, i.e., diabetic macular oedema, post-surgery macular oedema, advance in diabetic retinopathy as well as posterior capsular opacification.[7]

This study was carried out to determine the frequency of early postoperative complications after cataract surgery among diagnosed cases of DM in a tertiary care eye hospital.

METHODOLOGY

This clinical observational analytical study was carried at Department of Ophthalmology, Liaquat University Eye Hospital Hyderabad, and Liaquat University of Medical and Health Sciences, Jamshoro from May to Oct 2018 on diagnosed cases of diabetes mellitus, who underwent cataract surgery.

Patients with early senile cataract and diagnosed as cases of diabetes mellitus with controlled glycaemic status monitored with HbA1c, having normal arterial pressure and good macular function were

included in this study. Patients were enquired for postoperative findings after cataract surgery. Cataract patients with history of other eye surgery, secondary glaucoma, trauma to eye, posterior capsular tear or vitreous loss were not included. No preoperative medication was used.

The surgical procedures performed were extra capsular cataract extraction and phacoemulsification. After surgery on first postoperative day, all patients were evaluated for early postoperative complications by best corrected visual acuity BCVA (using Snellen's chart), slit lamp examination for anterior and posterior segment and measurement of intraocular pressure (IOP) with Goldman Applanation tonometer. The frequency of early complications like endophthalmitis, uveitis hyphema, raised IOP, macular oedema, and progression of retinopathy were noted. Fundal findings were well-thought-out as significant on the basis of occurrence of proliferative diabetic retinopathy, and clinically important macular oedema rendering to Early Treatment Diabetic Retinopathy Study Classification (ETDRS). The FFA and B-scan was done to support the diagnosis.

All data was recorded on a pre-designed proforma, and entered and analysed using SPSS-22. Mean±SD was calculated for quantitative variables, and frequency and percentage for qualitative variables. Qualitative variables were compared by applying Chi-square test, and $p<0.05$ was considered statistically significant.

RESULTS

Total 91 diabetic patients who underwent cataract surgery were included in this study. Their descriptive statistics are shown in Table-1.

Early postoperative complications of cataract surgery in diabetic patients were compared in two groups, one with diabetes <5 years and other group with diabetes for ≥5 years. Visual acuity of most patients remained between 6/6 and 6/24. Changes in fundus, raised IOP, Macular oedema, and progressive retinopathies were more frequent in patients with diabetes for >5 years than those with diabetes of <5 years duration, and the differences were significant ($p=0.01$) (Table-2).

Table-1: Descriptive statistics of study population

Variable	n (%)
Mean Age (Years)	38.14±4.06
<40 years	49 (53.8)
>40 years	42 (46.2)
Gender	
Male	33 (36.3)
Female	58 (77.3)
Duration of Diabetes Mellitus	
≥5 years	52 (57.1)
<5 years	39 (42.9)

Table-2: Association of early postoperative complications of cataract surgery with duration of diabetes mellitus (n=91) [n (%)]

Early postoperative complications of cataract surgery	Duration of diabetes mellitus		Total	*p*
	<5 years	≥5 years		
Visual acuity 6/6–6/12 and no complications	21 (23.1)	9 (9.9)	30 (33.0)	0.01*
Visual acuity 6/18–6/24	6 (6.6)	11 (12.1)	17 (18.7)	
Visual acuity 6/36–6/60	2 (2.2)	6 (6.6)	8 (8.8)	
Visual acuity <6/60	0	3 (3.3)	3 (3.3)	
Significant fundus findings	1 (1.1)	5 (5.5)	6 (6.6)	
Uveitis	7 (7.7)	8 (8.8)	15 (16.5)	
Hyphema	1 (1.1)	0	1 (1.1)	
Raised IOP	1 (1.1)	5 (5.5)	6 (6.6)	
Macular oedema	0	3 (3.3)	3 (3.3)	
Progression to retinopathy	0	2 (2.2)	2 (2.2)	
Total	39 (42.9)	52 (57.1)	91 (100)	

*statistically significant

DISCUSSION

Diabetes mellitus is a proved risk factor for developing cataract and to treat the affected eye cataract extraction is frequently performed. Cataract extraction among DM patients is allied with threat of capsular contraction with opacification, postoperative deterioration of macular oedema, and progression of diabetic retinopathy.[8,9]

In our study, majority of cataract patients were <40 years age and having diabetes mellitus for >5 years. There was significant association of early postoperative complications with longer duration of diabetes mellitus. According to recent reports by WHO, out of 51% of the worldwide visual impairment, 20 million individuals were found with loss of sight due to cataract.[10] As the figure of type 1 and 2 DM patients is on the upsurge, here is also an affiliated rise in the cataract surgery and related complications in DM cases.[10] Pascolini D *et al*[11] revealed cataract as first cause of blindness. Patients of DM develop cataracts earlier and so go for cataract surgery on earlier age as equated with healthy non-diabetics.[7,12] Hadad *et al*[8] and Heesterman *et al*[13] reported that diabetic patients undergoing cataract surgery have increased risk of developing postoperative complications compared to non-diabetics.

In this study, on first postoperative day, visual acuity of majority patients remained 6/18–6/24 and 6/6–6/12; while VA <6/60 was seen only in 3 patients. Ostri *et al*[14] expressed that VA improved significantly subsequent to phacoemulsification in DM patients irrespective of the grade of diabetic retinopathy. Oyewole K *et al*[15] found achievement of VA 6/12 or better on the first postoperative day among 76% of operated cases.

None of our patients was found with endophthalmitis in early postop period but according to Kiziltoprak H *et al.* [7] endophthalmitis has been reported as severe complication due to cataract surgery

specifically in DM patients and is allied with a deprived visual prognosis.

In this study, postoperative complications were significantly associated with >5 years duration of DM. Similarly, Yang *et al*[16] revealed that the duration, severity, type of diabetes, as well as the hardness of the lens, and HbA1c levels are threats for development of macular oedema after cataract surgery in diabetic patients. Ivancic *et al*[17] described about most common post-surgery complications, i.e., keratopathy, fibrinous uveitis as well as posterior capsular opacification among the DM patients underwent cataract surgery. In diabetic patients, endothelium might be more susceptible to trauma and have weaker compensatory capabilities. Cataract surgery in diabetic patients consequences in greater endothelial cell loss compared to non-diabetics.[18]

CONCLUSION

Though the frequency of complications after cataract surgery has decreased due to advances in surgical techniques, better preoperative assessment and understanding of diabetes control, still early postoperative complications are frequent in individuals with longer duration of diabetes.

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