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Intracameral Dexamethasone Injection at The End of Phaco-Vitrectomy Operation in Diabetic Patients

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ABSTRACT

Background: The most common endocrine condition, Diabetes mellitus (DM) affects around 100 million individuals globally, or 6% of the total population. Diabetes significantly increases the chance of developing cataracts and retinopathy. Between 8-25% of diabetics get cataracts, and diabetes patients account for around 40% of all cataract procedures. Intraocular surgery is frequently appropriate for people with diabetes. For the treatment of proliferative diabetic retinopathy, combined phaco-vitrectomy works incredibly well.

Objective: To evaluate the benefit of intracameral dexamethasone at the end of the phaco-vitrectomy operation in diabetic patients as an anti-inflammatory agent and whether it causes a significant rise in the IOP.

Patients and Methods: A randomized case-control study included 100 diabetic patients with the presence of a cataract that is suitable for phaco-vitrectomy who were admitted to Ophthalmology Department, Menoufia University Hospital, during the period study from October 2022 till April 2024. The present study was conducted in two groups: Group (A): included 50 diabetic patients who received intracameral injections of dexamethasone phosphate 0.1 % intraoperatively and Groupe (B): included 50 diabetic patients who didn't receive intracameral injections of dexamethasone phosphate 0.1 % intraoperatively.

Results: IOP preoperatively was significantly higher among cases (14.08±1.48) than control group (13.58±2.18), (P=0.044). There were significant differences among cases and control groups regarding blurring of vision, con hyperemia, aqueous flare scale, anterior chamber cells, ($p < 0.001$) and DM and HTN were significantly increased in cases group (14.46±1.46, 15.66±1.59) than control group (12.40± 1.75, 10.50±1.16), ($p<0.05$).

Conclusion: Dexamethasone did not elevate the risk of IOP rise or other problems, and dexamethasone injection reduced anesthesia-related occurrences, provided more convenience for patients, and could expedite recovery time.

Keywords: DM, Intracameral dexamethasone injection, Topical corticosteroids, Phaco-vitrectomy operation, Triamcinolone acetonide.

INTRODUCTION

The most prevalent endocrine condition, DM, affects around 100 million individuals globally, or 6% of the total population. It is brought on by insufficient or inefficient pancreatic synthesis of insulin, which causes blood glucose levels to rise or fall. It has been shown to be the source of harm to the majority of bodily systems, including the heart, kidneys, blood vessels, eyes, and nerves [1].

A major risk factor for the development of cataracts and retinopathy is diabetes. Diabetic individuals account for around 40% of all cataract procedures, while the incidence of cataracts in diabetics ranges from 8% to 25%. It has been predicted that over the next 30 years, the number of cataract surgeries performed on diabetics over 40 would rise by more than 200% due to the rising incidence of the disease [2].

Compared to people without diabetes, diabetic patients undergoing cataract surgery are more likely to experience intraoperative and postoperative problems. Careful perioperative evaluation is necessary for diabetic patients having any kind of surgery in order to enhance surgical results and minimize postoperative complications [3].

Intraocular surgery is frequently appropriate for people with diabetes. For the treatment of proliferative diabetic retinopathy, combined phaco-vitrectomy works incredibly well. It is regrettably impossible to completely eradicate the danger of secondary glaucoma, which frequently manifests in diabetes patients, as the illness progresses and the patient matures [4].

The physical stress associated with cataract surgery has decreased recently, but this hasn't stopped the synthesis and release of inflammatory mediators brought on by trauma. In the eyes during cataract surgery, surgical trauma triggers a series of inflammatory responses. Cystoid macular edema, elevated IOP, synechial development, posterior capsule opacification, and secondary glaucoma are among the consequences of uncontrolled inflammation [5].

The use of corticosteroid injections following phacoemulsification surgery has a number of uses and preferences. Although some surgeons use these injections to reduce inflammation in the first 24 hours, others use topical steroids and nothing else [6]. Injections of subconjunctival steroids continue to be one of the most often used strategies for reducing postoperative inflammation. However, they can produce chemosis and subconjunctival bleeding, and they might be unpleasant when topical anesthetic is used. This technique has been used to reduce inflammation in our clinic. A useful technique for enabling vitreous visibility and removal in complex procedures and instances with vitreous loss is the triamcinolone acetonide (TA)-assisted anterior vitrectomy [5].

Later, on the first postoperative day, it was shown that intracameral TA injections either during or after the

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procedure helped maintain a lower level of anterior chamber inflammation and corneal edema [7].

Inflammation following surgery can be avoided or reduced using topical corticosteroids. Despite their effectiveness in reducing inflammation after cataract surgery, topical steroid drops have a number of drawbacks. Compliance problems are frequently caused by the quantity of drops needed during the postoperative phase; topical treatments can be expensive for the patient and have an unfavorable effect on the cornea by rupturing the tear film and causing discomfort. Because of these factors, a number of techniques have been used in an effort to reduce the quantity of topical eyedrops required after surgery [8].

This study aimed to evaluate the benefit of intracameral dexamethasone at the end of the phaco-vitrectomy operation in diabetic patients as an anti-inflammatory agent and whether it causes a significant rise in the IOP.

PATIENTS AND METHODS

Study design

A randomized case-control study included 100 diabetic patients, with the presence of a cataract that is suitable for phaco-vitrectomy, who were admitted to Ophthalmology Department, Menoufia University Hospital, during the period study from October 2022 till April 2024. The present study was conducted on two groups: Group (A): included 50 diabetic patients who received intracameral injections of DXM phosphate 0.1 % intraoperatively and Groupe (B): included 50 diabetic patients who didn't receive intracameral injections of DXM phosphate 0.1 % intraoperatively.

Ethical Considerations

Before participating, all patients provided informed permission after being informed about the study's nature, purpose, and methods. Each patient was advised of their freedom to participate voluntarily and withdraw from the research at any time without affecting their medical care. Participants were also guaranteed of their right to receive all information about the trial, including any risks and benefits. The trial included no dangerous or invasive interventions that went beyond routine therapeutic practice. All methods followed the ethical norms established by Menoufia Faculty of Medicine's Scientific Research Committee, as well as the Declaration of Helsinki. Participant identities were retained in a password-protected database and were only connected to a study identification number for this study.

Patients' criteria

All patients were selected according to the inclusion and exclusion criteria:

Patients with diabetes who had cataracts that can be removed using phaco-vitrectomy were included. Those patients with retina affected by diabetes, vitreous hemorrhage, tractional RD, etc. usage of topical or oral anti-inflammatory drugs (steroidal or non-steroidal) at the moment were excluded. Age-related macular degeneration, pigment dispersion syndrome, glaucoma, uveitis, and steroid response history, cystoid macular edema history, and corneal disease were also excluded. Measurement tools: History taking included age, family history, medical history and ocular history. A thorough preoperative ocular assessment, including: Visual acuity assessment by decimal chart. Slit-lamp examination. Cataract morphology. IOP was measured using a Goldmann applanation tonometer (Haag-Streit Diagnostics, Bern, Switzerland). Examination of the dilated fundus.

Investigation methods

OCT of the macula before and after the surgical procedure. All study participants were imaged using OCT Spectralis (Zeiss Cirrus HD-OCT, Carl Zeiss Meditech AG, Germany).

Surgical methods:

Phacoemulsification

Through a 2.6 mm clean corneal tunnel incision, surgery was carried out. In order to remove the remaining cortex, irrigation/aspiration cannulas were used. Following that, viscoelasticum was used to construct the anterior chamber. Using a preloaded injector device, a foldable, single-piece, hydrophobic acrylic intraocular lens was placed within the capsular bag prior to fluid-air exchange. An IOL-Master from Carl Zeiss Meditech was used to collect biometry. The axial length of the macula off retinal detachment was determined using an ultrasound A-scan.

Vitrectomy

Under general anesthesia, three 23 gauge-valved ports were used for all surgical operations. Each patient had a routine core and peripheral vitrectomy procedure. Perfluorocarbon liquid followed by fluid-air exchange or direct fluid-air exchange with drainage of subretinal fluid via the primary breach were the two methods used to accomplish retinal reattachment. Endolase or transconjunctival cryocoagulation were used for retinapexy. The surgeon's choice for intraocular tamponade at the conclusion of the procedure was either silicone oil, 20% sulfur hexafluoride, or 12% octafluoropropane. When cataract surgery was performed, three ports were positioned 3.5 mm from the limbus.

0.1% dexamethasone phosphate was injected intracameral at the end of the operation in the first group.

Postoperative therapeutic regimen: Postoperatively, moxifloxacin hydrochloride 0.5% (Vigamox, Alcon, TX) eye drops (every hour daily for five days), non-steroidal anti-inflammatory (Nevenac) drops (5 times daily for 5 days).

Postoperative follow up:

To ensure uniform inflammatory grading ratings, the same surgeon (AA) conducted all postoperative evaluations. Ratings were collected at each visit and compared between the two therapy groups. The evaluation was scheduled for the first postoperative day (day 1) as well as days seven and thirty. IOP measurement, fundus and slit lamp exams, Snellen's visual acuity (VA), and patient complaints of ocular pain were all evaluated. Criteria for safety, effectiveness, and tolerance served as the foundation for the evaluations. The primary effectiveness measures evaluated clinically at each visit were anterior chamber cells, anterior chamber flare, and conjunctival hyperemia. The anterior chamber cells were evaluated as follows: 0 = <5 cells, 1 = mild (5-10 cells), 2 = moderate (11-20 cells), 3 = marked (21-50 cells), 4 = severe (>50 cells), and 5 = hypopyon.

The aqueous flare scale was rated as follows: 0 for no flare, 1 for mild flare (barely noticeable), 2 for moderate flare (precise iris features), 3 for notable flare (hazy iris details), and 4 for severe flare (loaded with fibrin deposits and clots). The narrowest slit beam (0.5 mm) at a height of 8 mm, with the slit lamp's maximum brightness and magnification, was used to calculate anterior chamber cell and flare scores. There were four classifications for conjunctival hyperemia: 0 for none, 1 for mild, 2 for moderate, and 3 for severe.

Fundus examination, IOP readings, and VA measurement were used to assess safety factors. The study eye's visual acuity was assessed using the Snellen VA chart, and the results were converted to log MAR for statistical purposes. The degree of burning, stinging, and obscured vision were the tolerance factors that were evaluated. The following criteria were used to score these symptoms: 0 signified no symptoms, 1 mild, present, and undisturbing, 2 moderate, upsetting, and not interfering with daily life, and 3 severe, extremely disturbing, and interfering with daily life.

To ensure uniform inflammatory grading ratings, the same author (AK) conducted all postoperative assessments. Every visit's scores were noted, and they were compared between the two therapy groups.

Statistical analysis

SPSS v26 was utilized to do the statistical analysis. The unpaired and paired student t-test were used to examine the quantitative data, which were shown as mean ± standard deviation (SD), median, and interquartile range (IQR). Mann-Whitney was used when comparing quantitative variables between two groups of data that are not regularly distributed. One-way ANOVA (F) was used to compare more than 2 groups. The X^2-test was used to compare the qualitative variables, which were shown as frequency and percentage (%). A result of less than 0.05 was deemed statistically significant, less than 0.01 was deemed statistically moderately significant, and less than 0.001 was deemed statistically highly significant.

RESULTS

Figure (1) shows, of the 110 patients with diabetic patients at Menoufia University Hospital, 10 patients were excluded from the study (3 patients declined consent, 7 did not meet the inclusion criteria), and 100 participated in the study, who were divided into two groups as group A (Cases) included 50 diabetic patients who received intracameral injections of dexamethasone phosphate, and other 50 diabetic patients (Control) didn't receive intracameral injections of dexamethasone phosphate (group B).

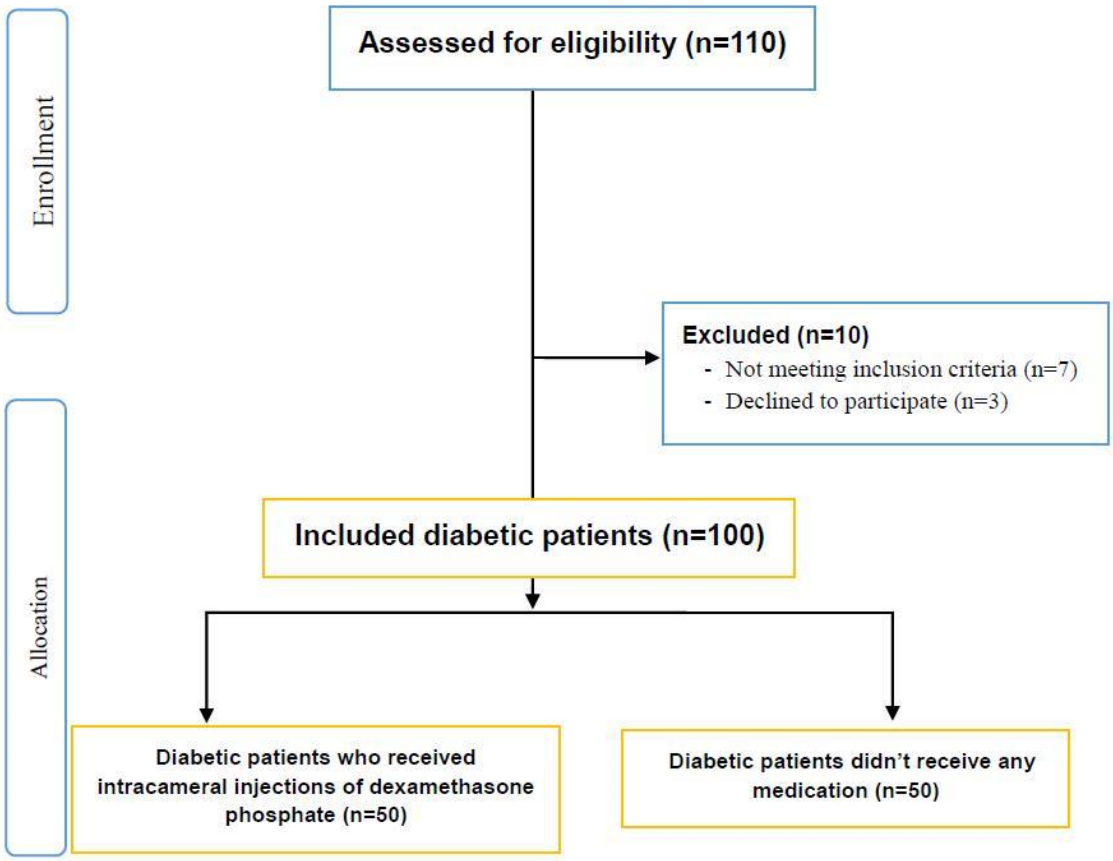

Figure (1): Flowchart of diabetic patients under study.

There was no significant difference among cases and control group regarding age and sex, and DM and HTN were significantly increased in cases group than control group **(Table1)**.

Table (1): Demographic data and medical history among cases and control group.

Variables	Groups				t	P value
	Cases group (n=50)		Control group (n=50)			
Age/year Mean ± SD.	62.68± 2.54		63.14±1.93		1.019	0.311
Sex	**N**	**%**	**N**	**%**	X^2= 0.040	0.841
Male	27	54.0	28	56.0		
Female	23	46.0	22	44.0		
DM Mean ± SD.	14.46± 1.46		12.40 ± 1.75		6.393	**<0.001***
HTN Mean ± SD.	15.66 ± 1.59		10.50±1.16		18.543	**<0.001***

t: independent test, X^2: chi-square, DM: Diabetes mellitus, HTN: Hypertension, t: Independent Test, *: significant.

There were significant differences among cases and control groups regarding blurring of vision, con hyperemia, aqueous flare scale, anterior chamber cells. Blurring of vision was significantly higher among cases (16%) than control. Con hyperemia was significantly higher among cases (14%) than control (0.00%). Aqueous flare scale was significantly higher among cases (72%) than control (14%). Anterior chamber cells were significantly higher among cases (48%) than control (0.0%). IOP preoperatively was significantly higher among cases than control group. There were no significant differences among cases and control groups regarding IOP 1st day, IOP 1st month, preoperative vision and postoperative vision **(Table 2)**.

Table (2): Comparison of inflammation scores (blurring of vision, con hyperemia**,** anterior chamber cells, flare) and mean changes of preoperative and postoperative IOP and vision among case and control groups.

Variables	**Groups**				**X^2**	***P value***
	Cases group (n=50)		**Control group (n=50)**			
Blurring of vision	**N**	**%**	**N**	**%**	37.339	**<0.001***
No	8	16.0	0	0.0		
Mild	36	72.0	15	30.0		
Moderate	6	12.0	33	66.0		
Severe	0	0.0	2	4.0		
Con hyperemia					39.302	**<0.001***
No	7	14.0	0	0.0		
Mild	33	66.0	10	20.0		
Moderate	10	20.0	30	60.0		
Severe	0	0.0	10	20.0		
Aqueous flare scale					40.313	**<0.001***
No	36	72.0	7	14.0		
Mild	12	24.0	37	74.0		
Moderate	0	0.0	6	12.0		
Severe	2	4.0	0	0.0		
Anterior chamber cells					74.243	**<0.001***
No	24	48.0	0	0.0		
Mild	25	50.0	7	14.0		
Moderate	1	2.0	33	66.0		
Severe	0	0.0	10	20.0		
IOP preoperative					965.000	**0.044***
Mean ± SD	14.08±1.48		13.58±2.18			
Median (IQR)	14.00 (12.00-17.00)		13.00 (10.00-19.00)			
IOP 1st day postoperative					1112.500	0.334
Mean ±SD	15.62± 1.60		15.34± 1.91			
Median (IQR)	15.00 (13.00-19.00)		15.00 (12.00-19.00)			
IOP 1st month					984.000	0.063
Mean ±SD	14.46± 1.46		14.00±2.10			
Median (IQR)	14.50 (12.00-17.00)		13.00 (11.00-19.00)			
Preoperative vision					1168.000	0.562
Mean ± SD	1.12± 0.15		1.13± 0.11			
Median (IQR)	1.10 (0.90-1.40)		1.10 (0.90-1.30)			
Postoperative vision					1118.000	0.332
Mean ± SD	0.54± 0.09		0.56± 0.09			
Median (IQR)	0.55 (0.40-0.70)		0.60 (0.40-0.80)			

(IOP): Intraocular pressure, *: Significant

There was a significant difference among case and control groups regarding postoperative IOP and vision compared to preoperative values. IOP preop -IOP 1st day was significantly higher among cases than control group. IOP preop -IOP 1st month was significantly higher among cases than control group. IOP 1st day -IOP 1st month was significantly higher among control group than cases. Preop vision -postop vision was significantly higher among cases than control group **(Table 3)**.

Table (3): Mean changes of postoperative IOP and vision compared to preoperative among cases and control groups.

	Paired Differences				t	*P value*
	Mean	Std. Deviation	95% CI Lower	95% CI Upper		
Among cases group						
IOP preop - IOP 1st day	-1.54	1.01	-1.83	-1.25	10.735	**<0.001***
IOP preop - IOP 1st month	-0.38	0.64	-0.56	-0.20	4.229	**<0.001***
IOP 1st day - IOP 1st month	1.16	0.71	0.96	1.36	11.548	**<0.001***
Preop vision - postop vision	0.58	0.11	0.55	0.61	37.380	**<0.001***
Among control group						
IOP preop - IOP 1st day	-1.76	0.66	-1.95	-1.57	18.956	**<0.001***
IOP preop - IOP 1st month	-0.42	0.50	-0.56	-0.28	5.957	**<0.001***
IOP 1st day - IOP 1st month	1.34	0.69	1.14	1.54	13.764	**<0.001***
Preop vision - postop vision	0.57	0.12	0.53	0.61	32.687	**<0.001***

Confidence Interval of the Difference (CI), (IOP): intraocular pressure, *: Significant.

There was no significant difference among cases group regarding IOP preoperative, IOP 1st day postoperative, IOP 1st month, preoperative vision, postoperative vision. There was no significant difference among cases group regarding IOP preoperative, IOP 1st day postoperative, IOP 1st month, postoperative vision. Preoperative vision was significantly higher among control group who had moderate blurry vision than who had mild blurry vision than who had no blurry vision. There was no significant relation between IOP and vision with conjhyperemia among cases group. There was no significant relation between IOP preoperative, IOP 1st day postoperative, postoperative vision and vision with conjhyperemia among control group. However, a significant relation was found between vision with conjhyperemia and IOP 1st month and preoperative vision. IOP 1st month was significantly higher among control group who had moderate conjhyperemia than who had mild conjhyperemia than who had no conjhyperemia. Preoperative vision was significantly higher among control group who had mild conjhyperemia than who had moderate conjhyperemia than who had no conjhyperemia **(Table 4)**.

Table (4): The relation between IOP and vision with blurring of vision and conhyperemia among cases and control groups

	Blurring of vision			F	*P value*
Among cases group	**No (n=8)**	**Mild (n=36)**	**Moderate (n=6)**		
	Mean ± SD	Mean ±SD	Mean ±SD		
IOP preoperative	14.25±0.46	13.89±1.65	15.00±0.89	1.540	0.225
IOP 1st day postoperative	15.50±1.20	15.58±1.68	16.00±1.79	0.194	0.824
IOP 1st month	14.50±0.53	14.36±1.66	15.00±0.89	0.486	0.618
Preoperative vision	1.13±0.14	1.13±0.15	1.03±0.14	1.083	0.347
Postoperative vision	0.55±0.09	0.54±0.09	0.53±0.05	0.069	0.934
Among control group	**No (n=8)**	**Mild (n=36)**	**Moderate (n=6)**		
IOP preoperative	14.40±2.53	13.30±1.98	12.00±0.00	1.929	0.157
IOP 1st day postoperative	16.13±2.07	15.00±1.82	15.00±0.00	1.912	0.159
IOP 1st month	14.80±2.46	13.76±1.87	12.00±0.00	2.337	0.108
Preoperative vision	1.16±0.14	1.10±0.09	1.30±0.00	4.251	<**0.001***
Postoperative vision	0.55±0.12	0.56±0.09	0.60±0.00	0.207	0.814
	Vision with conjhyperemia			**F**	**P value**
Among cases group	**No (n=7)**	**Mild (n=33)**	**Moderate (n=10)**		
IOP preoperative	14.29±1.80	13.88±1.39	14.60±1.58	0.986	0.381
IOP 1st day postoperative	15.86±1.35	15.39±1.46	16.20±2.15	1.063	0.354
IOP 1st month	14.57±1.81	14.27±1.38	15.00±1.49	0.975	0.385
Preoperative vision	1.11±0.09	1.14±0.17	1.06±0.08	0.986	0.381
Postoperative vision	0.60±0.08	0.54±0.08	0.50±0.09	2.859	0.067
Among control group	**No (n=7)**	**Mild (n=33)**	**Moderate (n=10)**		
IOP preoperative	12.40±0.70	13.77±2.31	14.20±2.44	2.072	0.137
IOP 1st day postoperative	14.20±0.92	15.43±2.05	16.20±1.81	3.061	0.056
IOP 1st month	12.60±0.70	14.13±2.21	15.00±2.11	3.810	<**0.001***
Preoperative vision	1.02±0.08	1.16±0.10	1.14±0.11	7.408	**0.01***

Postoperative vision	0.56±0.08	0.56±0.10	0.56±0.08	0.000	1.000

(IOP): intraocular pressure, *: Significant

There was no significant relation between IOP and vision with aqueous flare scale among cases group. Except 1st day postoperative and IOP 1st month.

IOP 1st day postoperative was significantly higher among cases group who had mild aqueous flare scale than severe aqueous flare scale than who had no aqueous flare scale. In this concern, IOP 1st month was significantly higher among cases group who had mild aqueous flare scale than severe aqueous flare scale than who had no aqueous flare scale. There was no significant relation between IOP and vision with aqueous flare scale among control group.

Except IOP preoperative and IOP 1st month. IOP preoperative was significantly higher among control group who had severe aqueous flare scale than mild aqueous flare scale than who had no aqueous flare scale. In this respect, IOP 1st month was significantly higher among control group who had severe aqueous flare scale than who had no aqueous flare scale than mild aqueous flare scale **(Table 5)**.

Table (5): The relation between IOP and vision with aqueous flare scale among cases and control groups.

	Aqueous flare scale			**F**	**P value**
Among cases group	**No (n=36)**	**Mild (n=12)**	**Severe (n=2)**		
	Mean ± SD	Mean ±SD	Mean ±SD		
IOP preoperative	13.78±1.42	14.83±1.53	15.00±0.00	2.890	0.066
IOP 1st day postoperative	15.28±1.47	16.58±1.78	16.00±0.00	3.337	**0.044***
IOP 1st month	14.11±1.39	15.42±1.38	15.00±0.00	4.236	**0.020***
Preoperative vision	1.12±0.16	1.13±0.11	1.00±0.00	0.630	0.537
Postoperative vision	0.53±0.10	0.57±0.07	0.50±0.00	0.855	0.432
Among control group	**No (n=36)**	**Mild (n=12)**	**Severe (n=2)**		
IOP preoperative	13.29±0.49	13.30±2.05	15.67±3.14	3.445	**0.040***
IOP 1st day postoperative	15.00±0.82	15.14±1.89	17.00±2.37	2.770	0.073
IOP 1st month	13.86±0.69	13.65±1.96	16.33±2.73	4.917	**0.012***
Preoperative vision	1.10±0.08	1.12±0.12	1.20±0.09	1.536	0.226
Postoperative vision	0.57±0.08	0.54±0.10	0.63±0.05	2.558	0.088

(IOP): intraocular pressure, *: Significant.

There was no significant relation between IOP and vision with anterior chamber cells among cases group; except IOP 1st day postoperative and IOP 1st month. IOP 1st day postoperatively was significantly higher among cases group who had moderate anterior chamber cells than who had mild anterior chamber cells than who no anterior chamber cells. IOP 1st month was significantly higher among cases group who had moderate anterior chamber cells than who had mild anterior chamber cells than who had no anterior chamber cells. There was no significant relation between IOP and vision with anterior chamber cells among cases group **(Table 6)**.

Table (6): The relation between IOP and vision with anterior chamber cells among cases and control groups.

	Anterior chamber cells			**F**	**P value**
Among cases group	**No (n=24)**	**Mild (n=25)**	**Moderate (n=1)**		
	Mean ± SD	Mean ±SD	Mean ±SD		
IOP preoperative	13.67±0.96	14.40±1.78	16.00± 3.21	2.498	0.093
IOP 1st day postoperative	14.92±1.28	16.24±1.64	17.00± 4.13	5.367	**0.008***
IOP 1st month	13.92±1.21	14.92±1.53	16.00± 2.95	3.865	**0.028***
Preoperative vision	1.12±0.16	1.12±0.15	1.20± 0.32	0.146	0.865
Postoperative vision	0.55±0.08	0.53±0.10	0.60± 0.12	0.609	0.548
Among control group	**No (n=24)**	**Mild (n=25)**	**Moderate (n=1)**		
IOP preoperative	13.29±0.49	13.39±1.77	14.40±3.69	0.890	0.417
IOP 1st day postoperative	15.00±0.82	15.27±1.72	15.80±2.94	0.410	0.666
IOP 1st month	13.86±0.69	13.79±1.83	14.80±3.29	0.907	0.411
Preoperative vision	1.10±0.08	1.13±0.12	1.14±0.11	0.272	0.763

Postoperative vision	0.57±0.08	0.56±0.09	0.54±0.13	0.254	0.777

*: Significant .

DISCUSSION

Patients with diabetes account for around 40% of all cataract procedures, and the incidence of cataracts in diabetics ranges from 8- 25%. It has been estimated that the rising incidence of diabetes would lead the frequency of cataract surgery among diabetics over 40 to rise by more than 200% during the next 30 years [2].

In our study, there were significant differences among cases and control groups regarding blurring of vision, con hyperemia, aqueous flare scale, and anterior chamber cells. In this concern, **Chang *et al.*** [9] demonstrated that the number of aqueous inflammatory cells in glaucomatous and normal eyes was considerably decreased one day following PE by dexamethasone therapy. According to the odds ratio's 95% CI (0.15, 0.63), dexamethasone has a significant impact on anterior chamber cell reduction even at its lowest level. Additionally, in non-glaucomatous eyes, the usage of dexamethasone was linked to a considerably lower subjective complaint of pain, blurred vision, redness, tears, and photophobia.

Additionally, **Chang *et al.*'s study** [9] mostly included glaucomatous eyes with variable degrees of visual field abnormalities; postoperative visual acuity was measured as a decrease from baseline instead of an increase. No change in postoperative visual acuity decrease was seen in eyes treated with dexamethasone using their techniques. According to research by **Hiraoka *et al.*** [10], eyes receiving intracameral dexamethasone (DXM) did not exhibit a substantially different postoperative visual acuity than eyes receiving topical steroids. The best corrected visual acuity was not lost in any eye while using topical or intracameral DXM.

Interestingly, **Albialy *et al.*** [11] discovered a considerable drop in the number of aqueous inflammatory cells in the 1st group throughout the follow-up period. One day after cataract surgery, 5 eyes had 2+ and 7 had 1+. The 2nd group had more cells: 11 eyes had 3+, 15 eyes had 2+, and 8 eyes had 1+. One week after surgery, group II had 3 eyes with +1 cells, and no other anterior chamber cells were discovered in either group at future follow-up visits. Injecting intracameral DXM has been shown in several trials to successfully decrease postoperative anterior chamber cells and flare [12]. While **Tan *et al.*** [13] reported no significant differences in anterior chamber cell and flare between eyes treated with intracameral DXM and those treated with topical DXM at any point during the surgical procedure.

In the current study, IOP preoperative was significantly higher among cases (14.08±1.48) than control group (13.58±2.18). However, there were no significant differences among cases and control groups regarding IOP 1st day, IOP 1st month, preoperative vision and postoperative vision. IOP management is one of the main issues with the administration of intraocular steroids. On the first postoperative day, the mean IOP was 16.0±2.6 mm Hg (range: 10.3-21.1 mm Hg) in the **Albialy *et al.*** [11] research. On postoperative days seven and thirty, there was no discernible change in the IOP levels. Intracameral medication usage may not raise IOP as much as topical DXM because direct injection into the anterior chamber necessitates a lower drug concentration. This might be explained by the short half-life (~3hours) of intraocular DXM and its quick aqueous volume turnover, which lowers the risk of ocular hypertension brought on by steroids.

Another study by **Gungor *et al.*** [7] contrasted intracameral triamcinolone with intracameral DXM. When triamcinolone was used in the early postoperative phase, they saw a little increase in intraocular pressure. In addition, **Chang *et al.*** [14] arrived to the similar conclusion: intracameral DXM had less of an impact on the rise in IOP than TA. Moreover, they showed that intracameral DXM can be administered safely following surgery in eyes with various forms of glaucoma with little risk of postoperative elevations in intraocular pressure; in fact, estimated IOP dropped by 1.9±1.2 mmHg in eyes treated with DXM following phacoemulsification. Similarly, **Paganelli *et al.*** [15] found that IOP was considerably decreased for up to 28 days. When compared to untreated non-glaucomatous eyes, DXM in glaucomatous eyes produced nearly little deviance (0.1±1.6 mmHg) from the calculated IOP. A small and negligible percentage of glaucomatous and DXM-treated eyes experienced IOP rises higher than 10 mmHg the day following surgery.

In line with our study **Chang *et al.* [9]** found that when glaucomatous eyes treated with DXM were compared to control, there was no discernible increase in postoperative intraocular pressure. Furthermore, two to seven weeks following phacoemulsification, 5 (11.6%) treated glaucomatous eyes did have an increase in intraocular pressure (IOP). All of these eyes reverted to baseline IOP after topical steroids were stopped and the original antiglaucoma drugs were added. While **Zhang *et al.*** [16] found that, in comparison to other research strategies, DXM also led to a reduced IOP.

CONCLUSION

DXM did not enhance the risk of elevated IOP or other complications. DXM injection reduces anesthesia events, provides more convenience for patients, and can expedite recovery time. Intracameral DXM is administered following cataract surgery, it improves subjective perceptions of recovery in non-glaucomatous

eyes and dramatically lowers postoperative AC cells in both glaucoma-affected and non-glaucoma-affected eyes. IOP increase and other complications in glaucomatous eyes did not pose any statistically significant concerns.

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