

STUDY OF THE INTRAOCULAR PRESSURE CHANGES AFTER PHACOEMULSIFICATION IN PATIENTS WITH REFRACTIVE ERRORS

Tarek Abdelrazek Hafez, Hany Ahmed Helaly, Amr Ahmed Said, Mona Mohamed Zeid

Department of Ophthalmology, Faculty of Medicine, Alexandria University

Introduction

Cataract surgery considered as one of the most common surgical procedures performed worldwide. It has been suggested to be of clinical benefit for both cataract and glaucoma by many studies. Besides removing cataracts and restore vision, cataract surgery has been proved to reduce intraocular pressure (IOP) in patients either with or without glaucoma. Cataract surgery showed a great efficacy in IOP reduction, considering cataract surgery to be a 1st-line in management of glaucoma. Its effect on IOP is with variable magnitude and affected by many factors, including angle configuration (open-angle vs. angle-closure) and anterior chamber anatomy. Preoperative mean IOP was typically the most significant factor affecting IOP after cataract surgery. Although a notable correlation between refractive errors and IOP elevation has long been identified, the role of refractive errors in IOP after cataract surgery remains unclear. In this study, we explored the relationship between refractive conditions and post-surgery IOP.

Aim of the work

The aim of this study is to assess the changes of intraocular pressure after phacoemulsification in patients with different categories of refractive errors.

Subjects

Inclusion criteria: Patient with immature senile cataract with age more than 45years who will undergo phacoemulsification and intraocular lens implantation.
Exclusion criteria: Patients with complicated cataracts, combined cataract and glaucoma, previous ocular surgeries, history of corneal abnormalities and active ocular inflammation that might affect the IOP.

Methods

The study was designed as prospective study. It included 100 eyes of 100 patients scheduled for routine phacoemulsification and were assigned to four groups according to their refractive errors, near emmetropia (within ±1.00D), mild to moderate myope (−1.00D to −6.00D), high myope (more than −6.00D), and hyperope (more than +1.00D). All patients received a standardized comprehensive ophthalmologic examination comprising uncorrected distance visual acuity (UDVA), best-corrected visual acuity (BCVA), measurement of refractive errors and slit lamp biomicroscopy, followed by baseline intraocular pressure assessment by Goldmann applanation tonometry. The implanted IOL and axial eye length was determined by A-SCAN (Advent A/B system ultrasound). We excluded cases with mismatch between Auto Ref reading and its axial eye length. Follow-up at 1st day,1st week,1st month,3rd month postoperative. At each follow-up we examined refractive conditions and intraocular pressure (IOP).

Results

Table (1): Comparison between the different periods according to IOP

IOP	Preoperative (n = 100)	Postoperative			F(p)
		1 st week (n = 100)	1 st month (n = 100)	3 rd months (n = 100)	
.Range	25.0–9.0	22.0–8.0	20.0–9.0	19.0–8.0	*79.936 (*0.001>)
.Mean ± SD	16.40±3.41	14.09±2.66	13.95±2.34	13.30±2.26	
Median (IQR)	(19.0–13.5)16.0	(16.0–12.0)14.0	(15.0–16.0)14.0	(15.0–12.0)13.0	
P ₀		*0.001>	*0.001>	*0.001>	

Table (2): Relation between Refraction with IOP

IOP	Refraction				F	p
	Emmetrope	Mild to moderete myope	High myope	Hyperope		
Preoperative	(n = 20)	(n = 25)	(n = 15)	(n = 40)		
Range.	11.0 – 25.0	9.0 – 22.0	11.0 – 21.0	12.0 – 25.0	0.234	0.873
Mean ± SD.	16.60±3.90	16.0± 3.28	16.13±3.14	16.65±3.44		
Median	16.0	16.0	16.0	16.0		
1 st day	(n = 4)	(n = 8)	(n = 6)	(n = 6)		
Range.	12.0 – 17.0	15.0 – 23.0	14.0 – 21.0	10.0 – 22.0	2.593	0.081
Mean ± SD.	14.25±2.63	17.13±2.85	18.50±2.81	14.17±4.12		
Median	14.0	16.0	20.0	13.50		
1 st week	(n = 20)	(n = 25)	(n = 15)	(n = 40)		
Range.	8.0 – 20.0	8.0 – 21.0	10.0 – 19.0	10.0 – 22.0	1.291	0.282
Mean ± SD.	13.80±3.19	14.28±2.76	15.20±2.62	13.70±2.27		
Median	13.50	14.0	15.0	14.0		
1 st month	(n = 20)	(n = 25)	(n = 15)	(n = 40)		
Range.	9.0 – 20.0	9.0 – 18.0	11.0 – 19.0	11.0 – 20.0	0.923	0.433
Mean ± SD.	13.70±2.60	13.76±2.52	14.87±2.56	13.85±1.98		
Median	13.50	14.0	15.0	14.0		
3 rd months	(n = 20)	(n = 25)	(n = 15)	(n = 40)		
Range.	10.0 – 20.0	8.0 – 18.0	11.0 – 18.0	10.0 – 19.0	1.168	0.326
Mean ± SD.	13.35±2.68	13.08±2.31	14.27±2.40	13.05±1.91		
Median	12.50	12.0	15.0	13.0		

Conclusions

A significant lower IOP at 3rd month than that before surgery was found in emmetropic, mild to moderate myopic, high myopic, and hyperopic patients. this indicate that cataract surgery had an effect on IOP reduction despite the refractive conditions. However, high myopic patients showed a non-significant lower speed of IOP reduction at 1st week and 1st month. This conclude that refractive conditions might influence the IOP fluctuation in first 90 days after surgery.