

Original article:

Study of intraoperative and immediate post-operative complications in cases of cataract surgery

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Abstract

Introduction: Most important goal of cataract surgery is to provide early visual rehabilitation and good unaided visual acuity. Cataract surgery has undergone a revolution since the 17th century from the time of Sushruta to Intracapsular Cataract Extraction, Extracapsular Cataract Extraction, Small Incision Cataract Surgery and Phacoemulsification.

Methodology: This was an observational and comparative hospital based study involving 60 eyes of 60 patients undergoing phacoemulsification with foldable IOL implantation for senile cataracts at the Rural Medical College and Hospital, Loni in last two years.

Results : By applying Student's Unpaired 't' test there is a significant difference in Visual acuity, Kh, Kv and SIA at 1 Month examination when group in Superior Scleral Tunnel Incision compared with Temporal Clear Corneal Incision (p=0.001).

Also, it is seen that in group Temporal Clear Corneal Incision shows more improvement in Visual acuity and SIA as compared to Superior Scleral Tunnel Incision.

Conclusion: Intra-operative and immediate post-operative complication were seen significantly less in temporal clear corneal incision as compare to superior scleral tunnel incision.

Keywords: cataract surgery, IOL implantation

Introduction:

Most important goal of cataract surgery is to provide early visual rehabilitation and good unaided visual acuity. Cataract surgery has undergone a revolution since the 17th century from the time of Sushruta to Intracapsular Cataract Extraction, Extracapsular Cataract Extraction, Small Incision Cataract Surgery and Phacoemulsification¹.

The first extracapsular cataract extraction was performed by Jacques Daviel on April 8, 1747³. He was French ophthalmologist (1698-1762), a modern European physician to successfully extract cataracts from the eye.

Refractive aspect of cataract surgery has gained lot of advancement. Phacoemulsification leads to reduced amount of surgical induced astigmatism with better and the faster wound stability and less time required for visual rehabilitation. It does not require sutures which also helps in reducing astigmatism.

Methodology:

This was an observational and comparative hospital based study involving 60 eyes of 60 patients undergoing phacoemulsification with foldable IOL implantation for senile cataracts at the Rural Medical College and Hospital, Loni in last two years. The study was approved by IEC .

Following criteria was used for inclusion in study.

INCLUSION CRITERIA

All patients of age 40 years & above of either sex with senile cataract undergoing phacoemulsification at Pravara Rural Hospital, Loni.

EXCLUSION CRITERIA

1. Patients with congenital & developmental cataract.
2. Complicated cataract .
3. Pre existing corneal opacity, uveitis, glaucoma & macular degeneration which independently cause limitation of vision.
4. Posterior segment anomalies.

Written informed consent was taken from each patient included in the study.

Results:

Statistical analysis was done by descriptive statistics as mean, SD, percentage / proportions.

Comparison was done by applying Student’s Paired and Unpaired ‘t’ at 5%(p, 0.05) and 1%(p, 0.01) level of significance.

Comparison of qualitative variables was done was by applying Z test of difference between two proportions at 5%(p, 0.05) and 1%(p, 0.01) level of significance.

Statistical analysis software namely SYSTAT version 12 (By Cranes software, Bangalore) was used to analyze the data.

Table No.1: Comparison of Visual acuity, Kh, Kv, and SIA at 1 Month examination in Superior Scleral Tunnel Incision and Temporal Clear Corneal Incision in phacoemulsification:

At 1 Month examination	Superior Scleral Tunnel Incision	Temporal Clear Corneal Incision	Student’s Unpaired ‘t’ test value	‘p’ value and significance
	Mean ± SD	Mean ± SD		
Visual acuity	0.40±0.14	0.18±0.14	8.61	p=0.001, highly significant
Kh	44.96±0.95	45.67±0.87	1.41	p=0.041, moderate significant
Kv	44.99±0.66	44.97±0.57	1.26	p=0.0131, moderate significant
SIA	0.75±0.33	0.33±0.25	7.93	p=0.001, highly significant

By applying Student’s Unpaired ‘t’ test there is a significant difference in Visual acuity, Kh, Kv and SIA at 1 Month examination when group in Superior Scleral Tunnel Incision compared with Temporal Clear Corneal Incision (p=0.001).

Also, it is seen that in group Temporal Clear Corneal Incision shows more improvement in Visual acuity and SIA as compared to Superior Scleral Tunnel Incision.

Table No.2: Comparison of Visual acuity, Kh, Kv, and SIA from Preoperative to Day 7 examination in Superior Scleral Tunnel Incision and Temporal Clear Corneal Incision in phacoemulsification:

Parameters	Superior Scleral Tunnel Incision			Temporal Clear Corneal Incision		
	Preoperative	Day 7	Student’s Paired ‘t’ test value and significance	Preoperative	Day 7	Student’s Paired ‘t’ test value and significance
	Mean ± SD	Mean ± SD		Mean ± SD	Mean ± SD	
Visual acuity	0.83±0.14	0.89±0.16	t=2.19, p=0.001, significant	0.89±.16	0.30±0.12	t=23.08, p=0.001, significant
Kh	44.40±0.93	44.92±0.67	t=1.87, p=0.097, significant	44.62±0.71	45.29±0.87	t=1.99, p=0.001, significant
Kv	44.13±1.03	44.87±0.94	t=0.47, p=0.19, not significant	44.26±0.97	44.92±0.68	t=1.29, p=0.0781, not significant
SIA	-	0.60±0.41	t=2.19, p=0.001, significant	-	0.40±0.33	t=13.28, p=0.001, significant

Discussion:

By applying Student’s Paired ‘t’ test there is a significant change in Visual acuity, Kh, Kv, and SIA from Preoperative to Day 7 examinations in Superior Scleral Tunnel Incision and Temporal Clear Corneal Incision (p=0.001).

Also, it is seen that in group Temporal Clear Corneal Incision shows more improvement in Visual acuity, Kh, Kv, and SIA as compared to Superior Scleral Tunnel Incision.

Immediate post-operative and intra operative complications like DM (Descemments membrane) detachment was seen in 2(6.6%) patients in Group A while 1 (3.3%) in Group B , corneal odema was seen in 3(10%) patients in Group A and 4(13.3%) in Group B .Post-operative iritis were seen in 3(10%) patients in groups A while 2(6.6%) in Group B. But post-operative hyphema was seen in 1(3.3%) patient in superior scleral tunnel incision group, while it was not

seen in temporal clear corneal incision group. Wound incompetence was seen in 1(3.3%) patient in temporal clear corneal group, while it was not seen in superior scleral tunnel incision group. In temporal clear corneal incision 26.5% complications were seen which were less compare to 29.9% in superior scleral tunnel incision.

By applying Z test of difference between two proportions, the proportion of DM DETACHMENT, POSTOPERATIVE IRITIS, and POST-OPERATIVE HYPHEMA is significantly higher in Group A as compared to Group B($p < 0.05$) and the proportion of CORNEAL EDEMA, and WOUND INCOMPETANCE is significantly higher in Group B as compared to Group A ($p < 0.05$)

Oshima Y et al (1997) showed that complications including corneal endothelial cell loss and wound incompetence requiring suturing were observed in the temporal clear corneal incision group.² In our study we reported 4(13.3%) cases of corneal edema in clear corneal group and 3(10%) cases in scleral tunnel group. Wound incompetence was seen in 1(3.3%) in temporal clear corneal incision.

Karp KO et al (2001) they reported vitreous loss in 6.0% with temporal clear corneal incisions and in 11.8% of with superior scleral tunnel incisions ($P < 0.02$). Posterior capsule breaks occurred in 11.5% of the temporal clear corneal incisions group versus 17.7% in the superior scleral tunnel group ($P < 0.0453$).³ In our study there were no posterior capsule breaks or vitreous loss.⁴

Conclusion:

Intra-operative and immediate post-operative complication were seen significantly less in temporal clear corneal incision as compare to superior scleral tunnel incision.

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