

Original article:

Study of Surgical Induced Astigmatism on Post op Day 7 and at 1 month post-operative in cataract cases

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Abstract

Introduction: There are two commonly used techniques are-phacoemulsification by clear corneal incision and phacoemulsification by scleral tunnel incision. Recently preference has been shifted from scleral tunnel incision to clear corneal incision. It is the most important step during surgery affecting ocular integrity and corneal stability.

Methodology: This was a Prospective, 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: It is seen that in group Temporal Clear Corneal Incision shows more improvement in Visual acuity as compared to Superior Scleral Tunnel Incision.

Conclusion: We may conclude that temporal incision induces WTR type of astigmatism which is useful as most elderly patients show ATR astigmatism.

Keywords: phacoemulsification , Temporal Clear Corneal Incision

Introduction:

There are two commonly used techniques are-phacoemulsification by clear corneal incision and phacoemulsification by scleral tunnel incision. Recently preference has been shifted from scleral tunnel incision to clear corneal incision. It is the most important step during surgery affecting ocular integrity and corneal stability. Sutureless clear corneal incision technique has major advantages like less ocular tissue manipulation and surgical time. Also a corneal incision does not require cauterization of the sclera at the limbus. Cauterization can contribute to astigmatism by causing contraction of the adjacent scleral and corneal lamellae¹.

In last two decades there has been a rapid advancement in cataract wound architecture. With improvisation in the technology of cataract surgery, the trend has gradually shifted towards smaller incisions, moving from superior sclera to temporal clear corneal incision, in an attempt to reduce intraoperative complications and postoperative astigmatism¹.

Methodology:

This was a Prospective, 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.

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 ATR/WTR type at Preoperative, Day 7 and 1 Month examination in Superior Scleral Tunnel Incision and Temporal Clear Corneal Incision in phacoemulsification:

Type	Superior Scleral Tunnel Incision			Temporal Clear Corneal Incision		
	Preoperative	Day 7	1 Month	Preoperative	Day 7	1 Month
ATR	20	25	24	22	15	12
WTR	10	5	6	8	10	12
NIL	0	0	0	0	5	6
TOTAL	30	30	30	30	30	30

Table No.2: Comparison of Visual acuity from Preoperative to Day 7, and 1 Month examination in Superior Scleral Tunnel Incision and Temporal Clear Corneal Incision in phacoemulsification:

Visual acuity	Preoperative	Day 7	1 Month	Student's Paired 't' test value and significance Preoperative to Day 7	Student's Paired 't' test value and significance Preoperative to 1 Month
	Mean ± SD	Mean ± SD	Mean ± SD		
Superior Scleral Tunnel Incision	0.83±0.14	0.47±0.13	0.40±0.14	t=2.19, p=0.001, significant	t=23.08, p=0.001, significant
Temporal Clear Corneal Incision	0.89±0.16	0.30±0.12	0.18±0.14	t=2.09, p=0.001, significant	t=29.54, p=0.001, significant

Discussion:

By applying Student's Paired 't' test there is a significant decrease in Visual acuity from Preoperative to Day 7 examinations and from Preoperative to 1 Month 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 as compared to Superior Scleral Tunnel Incision.

Barequet IS et al (2004) concluded that cataract surgery using a horizontal clear corneal incision induced WTR astigmatism 6 weeks and 12 months postoperatively.²

Study by **Reddy B et al (2007)** concluded that incisions placed temporally tend to decrease pre-existing against the rule astigmatism mostly prevalent in the adult population due to the absence of the lid tone in both phaco and MSICS.³

Table shows ,the mean pre-operative visual acuity in Group A was 0.83±0.14 which was not significantly different from that in Group B which was 0.89±0.16.

However, significant improvement was seen in post-operative uncorrected visual acuity in both the groups. After comparison of post-operative uncorrected visual acuity of both the groups, we found that the temporal clear corneal incision group showed a mean uncorrected visual acuity of 0.30±0.12(LogMAR) i.e 6/12 (Snellen's equivalent) and 0.18±0.14 (LogMAR) i.e. 6/9 (Snellen's equivalent) on POD 7 and at 1 month respectively, which was found to be significantly better than the mean uncorrected visual acuity of 0.47±0.13 (LogMAR) i.e 6/18 (Snellen's equivalent) and 0.40±0.14 (LogMAR) i.e. 6/15 (Snellen's equivalent) on POD 7 and at 1 month respectively found in the superior scleral tunnel incision group.^{4,5}

Conclusion:

We may conclude that temporal incision induces WTR type of astigmatism which is useful as most elderly patients show ATR astigmatism.

References:

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