Original Article

Ophthalmology and Allied Sciences
Volume 3 Number 2, July - December 2017
DOI: http://dx.doi.org/10.21088/oas.2454.7816.3217.25

Management of Cataract with Different Approach

Rajeshwari M.[1], Shamshad Nadaf Begum[2], Kavita Salgar[3], Rohit Patil[4]

[1]Assistant Professor, Dept. of Ophthalmology, Gulbarga Institute of Medical Sciences, Kalaburagi, Karnataka 585101, India. [2]MS Ophthalmology, Governement General Hospital, Honnalli, Karnataka, India. [3]Assistant Professor, Dept. of Ophthalmology, M.R. Medical College, Kalaburagi, Karnataka 585105, India. [4]Senior Resident, Dept. of Ophtholmogy, ESIC Medical College, Kalaburagi, Karnataka 585106, India.

Abstract

Background and Objectives: Cataract surgery is the major cause of blindness in the world. For developing countries MSICShas come in as savior simple and effective. Surgical techniques are continually modified and improved upon to decrease postoperative astigmatism. Major factor responsible is site of the cataract incision. In old age majority of the patient will have against the rule astigmatism, which worsens if the incision is taken superiorly for MSICS. The same is reduced when incicion is taken temporally. *Objective:* of the present study is to (a) Compare the astigmatic outcome in superior V/s temporal incision in MSICS. (b) To know the visual outcome in MSICS with both superior and temporal incision. *Methods:* This study has been conducted on patients of senile mature and immarute cataract admitted to ophthalmology wards in Basaveshwar Teaching and General hospital attached to M.R Medical / College, Gulbarga from November 2007 toJune 2009. *Results:* Inthis study with temporal sclera incision had gross lower astigmatism when compared to the patients with superor incision. The final mean of astigmation in superior scleral was 0.99 +/- 0.58 SD and in temporal sclera group it was 0.66 +/- 0.43 SD. The difference in astigmatism was highly significant, z- calculated value 4.6>2.58 tabulated Z value. *Conclusion:* Superior incicsion shows ATR shift as compared to temporal sclera incision which induces WTR. SAI of <1.00 D was seen in 88% of patient with temporal incision as compared to 62% in superior incision group. Temporal incision procedure less as compared to 62% in superior incision group. Temporal incision procedure less astigmation and neutralizing the preexisting.

Keywords: Cantaract Surgery; Astigmatism; Superior Incision Group.

Introduction

Cataract is the major cause of blindness in the world. The right to sight is the common global agenda launched by WHO and aim is to reduce the present blindness ratio. There is technological explosion in the field of cataract surgery. For developing countries which can ill afford an expensive technology for masses, MSICS has come in as savior being simple and effective.

In infancy cornea is spherical. Throughout the childhood and adolescence, with the rule astigmatism develops. As the age advances cornea becomes more spherical and develops against the rule astigmatism with senescence. There is development of against the rule astigmatism after cataract surgery most of the times, which worsens the preexisting astigmatism when incision is taken superiorly.

The same is minimized and well controlled when incision is made temporally. Hence there is need of comparative study of superior versus temporal incision in manual small incision cataract surgery to reduce post operative astigmatism for good operative visual recovery.

Corresponding Author: Rajeshwari M.
Assistant Professor, Dept. of Ophthalmology
Gulbarga Institute of Medical Sciences,
Kalburgi, Karnataka 585101, India.
E-mail: drvijayanath@rediffmail.com

Received on 24.03.2017, **Accepted on** 07.04.2017

Cataract surgery incision has been known for more than a century to influence astigmatism. Only in the past decade, however cataract surgeons have mounted a serious investigation in minimizing astigmatism induced by cataract surgery.

Significant astigmatism may be visually disabling causing diminution of visual acuity, glare, monocular diplopia, asthenopia and image distortion.

Surgical techniques are continually modified and improved upon to decrease postoperative astigmatism. Preoperative factors such as location and type of incision, size, configuration of the wound, suture material, technique of wound closure etc influence the postoperative astigmatism > Out of these factors, one of the major factors responsible for postoperative astigmatism is the site of the cataract incision. It is known that flatting of the cornea occurs ultimately at a direction angles to the direction of that cataract incision.

Therefore placing the incision on the steep meridian of preexisting astigmatism can reduce post operative astigmatism. Also it has been seen that, farther the cataract incision from the visual axis, less likely is the effect on the corneal curvature at visual axis.

Temporal sclera location is farther from the visual axis, and flattering that is likely to affect the corneal curvature at visual axis is less, thus causing less post operative astigmatism.

In view of this we have endeavored to compare the astigmatism following superior scleral incision and temporal sclera incision with manual small incision cataract surgery with posterior chamber intraocular lens implantation.

Methods

Thhis is a randomized prospective study conducted to compare astigmatic outcome in superior v/s temporal scleral incision in MSICS at our Basaveshwar Teaching and General Hospital (BTGH) at M.R. Medical College, Gulbarga between November 2007 to june2009.

This study includes 200 cases of senile cataract. Out of 200 Patients, 100 pateints underwent surgery with superior scleral incision and remaining 100 patients underwent temporal scleral incision for MSICS with PCIOL, using the formula

All the cases were thoroughly examined and managed in our hospital.

A standard protocol was maintained. Patients were admitted as inpatients for cataract surgery and they had postoperative followup as outpatients at the same hospital.

It is a study of 200 cases of senile cataract who underwent MSICS with PCIOL under peribulbaranasethesia and stasticallyanalysed by unpaired t test.

Preoperative ophthalmic examination

1. The best corrected visual acuity was recorded.
2. Pupillary reaction was noted
3. Keratometry and retinoscopy readings were recorded and database estanlished.
4. IOP was recorded with Goldmann's applnanation tonometry.
5. Fundal evauation was done under full dilation of the pupil.

A Detailed Slit Lamp Examination was done Preoperatively

1. To know the type of cataract
2. To know the density of the cataract
3. To decide the size of the incision accordingly.

Intra ocular lens power was calculated by using standard SRK-2 formula, 100 cases were operated by using straight superior scleral incision while remaining 100 cases were operated by staright temporal scleral incision of 6 to 7mm.

The schedule for post operativeexamnination was post operative day 1 day 7 and day 21. In the post operative period.

1. Both unaided and best corrected visual acuity recorded.
2. Keratometry readings were recorded.

Table 1: Age Distribution

Age	Group A (superior) No. of patients	%	Grou B (Temporal) No. of patients	%
31-40	1	1.00	2	2.00
41-50	14	14.00	17	17.00
51-60	37	37.00	36	36.00
61-70	48	48.00	45	45.00
Total	100	100	100	100

Table 2: Sex Distribution

Sex	Group A (superior) No. of Patients	%	Group B (Temporal) No. of Patients	%	Total
Male	47	47.00	43	43.00	45%
Female	53	53.00	57	57.00	55%
Total	100	100	100	100	100%

Table 3: Type of incision

Type of Incision	Number of Patients	Percentage
Superior	100	50
Temporal	100	50

Table 4: Pre operative visual acuity

Visual Acuity	Superior Incisions	Temporal Incision
PL+PR+	16	15
HM+	12	10
CF-CF	12	12
CF1 mts	10	7
CF2 mts	7	7
CF3mts	10	10
CF4mts	10	12
CF5 mts	8	8
6/60	10	12
6/36	5	6

Table 5: Pre operative astigmatism

Type	Group A (superior) No, of patients	%	GroupB(temporal) No. of patients	%
ATR	55	55.00	71	71.00
WTR	27	27.00	25	25.00
NIL	18	18.00	04	04.00
Total	**100**	**100**	**100**	**100.00**

Table 6(a): 1st day post operative astigmatism

Type	Group A(superior) No. of patients	Groupb (temporal) %	No. of Patients	%
ATR	77	77.00	65	65.00
WTR	16	16.00	22	21.00
NIL	7	7.00	13	14.00
Total	100	100	100	100

Table 6(b): 7thPost operative day astigmatism

Type	Group A(Superior) No. of Patients	%	GroupB (Temporal) No. of Patients	%
ATR	85	85	59	59
WTR	10	10	28	28
NIL	5	5	13	13
Total	100	100.00	100	100.00

Tbale 6(c): 21stPost operative day astigmatism

Type	Group A(superior) No. of Patients	%	GroupB (temporal) No. of Patients	%
ATR	86	86	63	63
WTR	08	08	28	28
NIL	06	06	09	09
Total	**100**	**100.00**	**100**	**100.00**

Table 7(a): Post operative visual acuity in superior sceleral incision

Visual Acuity	1st day	7th day	21st day
>6/9	0	15	43
6/18-6/12	2	55	40
6/36-6/24	10	20	13
<6/60	88	10	4

Table 7(b): Post operative visual acuity in temporal scleral incision

Visual Acuity	1st day	7th day	21st day
>6/9	0	17	45
6/18-6/12	3	56	46
6/36-6/24	12	19	7
<6/60	85	8	2

Table 8(a): Follow up of astigmatism pattern at 21st postoperative day in superior scelaral incision

Astigmatism in Diopters	Superior No. of Patients	%
<0.5	26	26
0.6-1.0	22	22
1.1-1.5	20	20
1.6-2.0	17	17
2.1-2.5	9	9
>2.5	6	6
Total	**100**	**100.00**

Table 8(b): Follow up of astigmatism pattern at 21st postoperative day in temporal scleral incision

Astigmatism in dioptress	Temporal No. of patients	%
<0.5	55	55
0.6-1.0	27	27
1.1-1.5	11	11
1.6-2.0	4	4
2.1-2.5	3	3
>2.5	0	0
Total	**100**	**100.00**

Table 9(a): Decay of mean aastigmatism in superior scleral group

Period	Number	%	ATR Mean +/- SD	Number	%	WTR mean +/- SD
Pre-operative	55	55	0.84+/-0.26	27	27	0.95+/-0.65
1st day	77	77	1.28+/-0.26	16	16	0.88+/-0.64
7th day	85	85	1.15+/-0.73	10	10	0.85+/-0.50
21st day	86	86	1.39+/-0.85	08	08	0.94+/-0.75

Table 9(b): Decay of mean astigmatism in temporal scleral insicion

Period	Number	%	ATR Mean +/- SD	Number	%	WTR mean +/- SD
Pre-operative	71	71	1.34+/-0.75	25	25	1.03+/-0.51
1st day	65	65	1.03+/-0.58	22	22	1.11+/-0.63
7th day	59	59	0.85+/-0.21	28	28	1.04+/-0.64
21st day	65	65	0.69+/-0.44	26	26	1.09+/-0.71

Table 10: Decay of mean astigmatism in superior and temporal scleral incisions.

Post op days	Superior Scleral					
	ATR		WTR		NIL	
	NO	%	NO	%	NO	%
1st day	77	77	16	16	7	7
7th day	85	85	10	10	5	5
21ST DAY	86	86	08	08	6	6

Post Op Days	Temporal scleral					
	ATR		WTR		NIl	
	No	%	No	%	No	%
1st day	65	65	22	22	13	13
7th day	59	59	28	28	13	13
21ST DAY	65	65	65	65	9	9

At the end of 2 weeks final visual acuity and keratometry were recorded and for all patients a note of surgically induced astigmatism was made. Minor post operative complications were treated and finally appropriate spectacles to cataract residual SIA at the end of the month was given.

Inclusion Criteria

All patients of age 40-70 years of either sex with senile mature immature cataract were screened at ophthalmology OPD BTGH and admitted to Opthalmology Wards at BTGH.

Exclusion Criteria

1. Pateints with congenital and developmental cataract
2. Paeints with complicated and traumatic cataract
3. Patients with preexisting corneal opacity uveities glaucoma dacryocystits and macular degeneration which independently cause visual impairement.

Observation Results

Total numbers of 200 cases were included in this study.

Group A : 100 patientsswhi underwent superior scleral incision with posterior chamber intraocular lens implantation.

Group B: 100 patients who underwent temporal scleral incision with posterior chamber intraocular lens implantation.

Discussion

In this study an attempt has been made to analyze only one of the variable i.e incision site. The other variable have been kept constant and an attempt has been made to explain and compare changes in astigmatism following superior and temporal scleral incision.

It was found that the patients with the temporal scleral (group B) incisions had a fross astigmatism when compared to the superior incision(group A). The final mean of astigmatism in superior scleral was 0.9+/-0.58D and temporal scleral group it was 0.66+/-0.43 SD. The difference in astigmatism by superior scleral and temporal scleral group was highly significant. Z calculated (Zcat) value- 4.6>2.58- tabulated Z value.

This study was similar to Anders N et al [2] where he showed that temporal scleral had a gross astigmatism of 0.70D +/-0.35 SD in comparsion to 0.93+/- 0.42 in superior scleral incision.

The present study showed that mean astigmatism in superior scleral group was 1.28D on first post operative 1.15 D on7th post operative day and 1.139 D on 21st post operative day.

In temporal scleral group it was 1.03D on 1st post operative day 0.85D on 7th post operative day and 0.69D on 21st post operative day.

In temporal scleral group it was 1.03D on 1st post operative day 0.85D on 7th post operative day and 0.69D on 21st post operative day.

In this study at any particular time 82% of patients with temporal scleral incision had astigmatism <1.00D as compared to 48% of patients with superior scleral incision. Hence it may be stated that temporal scleral incision lesser astigmatism as compared to

the superior scleral incision.

The gross astigmatic decay for temporal scleral incision shows a significant decrease in post operative ATR astigmatism from 71% to 65%. In the study done by Joel C Axt [3] Showed that there was decrease in postoperative ATR astigmatism by temporal inciosn. His study consisted of pre operative ATR astigmatism of>2.00D. Superior scleral incision showed an increase in ATR astigmatism from 55% to 86%.

Summary

The present study included 200 cases.

Group (A): 100 cases underwent with auperior scleral incision for manual SICS

Group(B): 100 cases underwent with temporal scleral incision for manual SICS

1. In this study it was followed that majority of the patients were in the age group of 61-70 years.
2. In this study 45% were males and 55% females.
3. In this study 50% patients underwent superior scleral manual SICS and 50% underwent temporal scleral manual SICS
4. The eyes that underwent temporal scleral incision showed >2.5D astigmatism in only less than 1% cases at any particular followup time. In comparison to this 6% in superior scleral incision showed up same level of astigmatism 82% patients showed astigmatism <1.00D in temporal group as compared to 48% in the superior sclearal group.
5. In the temporal scleral group there was a constiuen reduction of preoperative against the rule astigmatism from 71% to 65% pre operative with the rule astigmatism increased from 25% to 26% at 21st post operative day following. However decay of mean astigmatism in superior scleral incision showed a distinct increase in against the rule astigmatism from 55%to86% at 21st postoperative day, and with the rule astigmatism decrased from 27% to 80% post operatively.

References

1. Fine Howard, Parker, Mark, Hoffiman Richards. Small incision cataract surgery in Mayren Yanoff Jay S Ducker'S Opthalmology 6th edition 2004;47(1):349.
2. Anders N Post Operative astigmatism and relative strengths of tunnel incisions. Journal of cataract and refractive surgery 1997:23;332-36.
3. Joel C. Axt Reduction of post operative against the rule astigmatism by lateral incision technique; Journal of cataract and refractive surgery 1993.