

Comparison of Post Operative Astigmatism in Superior Versus Temporal Incision in Manual Small Incision Cataract Surgery

Dr Srinivas M Ganagi¹, Dr Aadith Bhaskar², Dr Sarita Gonsalves³

^{1,2} Associate And Assistant Professor Dm Wims Meppadi, Wyanad Kerala, ³ assistant Professor, Fr Muller Medical College, Mangalore.

Abstract:

Aim: To compare the outcome of post-operative astigmatism produced in superior straight type of incision and temporal straight type of incision in patients who underwent manual SICS with PCIOL implantation

Methods: A total of 80 patients with unilateral or bilateral uncomplicated cataract were taken for the study.

Informed consent was obtained after informing the patient about the study, details of the procedure and possible complications. Only after obtaining the informed consent from the patient, he/she was included in the study.

The study group was randomly selected and was divided into two groups of 40 subjects each. For each group of subjects enrolled in group A (superior straight type of incision) there were equal number of subjects enrolled in group B (temporal straight type of incision). The purpose of randomization was to eliminate the treatment selection bias. After being investigated, they were posted for Manual SICS with posterior chamber intraocular lens (PCIOL) implantation after obtaining consent. Each patient underwent Manual SICS with posterior chamber intraocular lens (PCIOL) implantation with either superior straight type of incision or (temporal straight type of incision). Postoperative follow up was done at one week, four week and six weeks respectively. The patients were compared for pre-operative visual acuity, 4wk post-operative best corrected visual acuity (BCVA) and surgically induced astigmatism (SIA).

Results And Conclusion: This study was done on 88 patients divided equally in 2 groups, each group received a different superior and temporal incision in manual SICS. There were 44 patients in superior incision, minimum age was 24 years and maximum age was 82, the mean age was 63.47 years. There were 44 patients in temporal incision group, minimum age was 36 years and maximum age was 92 years with the mean age 63.02 years. Average age of patients were equal in both groups (63.47 & 63.02). Post operative astigmatism and better visual acuity was seen in those with temporal straight incision as compared with those who underwent manual SICS with superior sclera straight incision.

Keywords: Manual small incision cataract surgery; incisions; surgically induced astigmatism.

I. Introduction

Cataract is the most common cause of blindness all over the world. Phacoemulsification, and manual small incision cataract surgery are the most commonly done surgeries for cataract now a days. But due to economic reasons, and availability of the facility of phacoemulsification machine and skilled trained surgeon phacoemulsification is limited to big cities and institutions only. Non-phaco or manual small incision cataract surgery (SICS) by virtue of its self sealing suture-less incision is the technique commonly employed by eye surgeons. Lower cost of instrumentation and disposables in manual SICS is an added advantage. It is also better suited for advanced and mature cataracts¹.

A variety of scleral incisions are being used in manual SICS, with the aim of keeping the post operative astigmatism to a minimum². All scleral pocket incisions share the advantages of intra & post-operative stability which include early healing, faster visual restoration & superior astigmatism control. The current study was done with an aim to compare the induced astigmatism and post operative vision of TWO groups of manual SICS in superior and temporal straight incisions at 4 weeks postoperatively.

II. Subjects And Methods

It was a prospective cross sectional study, enrolling 88 patients aged 24 years and above with uncomplicated cataract till grade 4 nuclear sclerosis. The study was done in accordance to the tenets of the Declaration of Helsinki. The study was approved by the Scientific Research Committee and Institutional Ethics Committee. Informed consent was obtained from all the study participants. Patients with any other concurrent eye disease and keratometric astigmatism >1.5 D were not included in the study.

The standard clinical examination was carried out including visual acuity testing with Snellen chart, lacrimal sac syringing, Non contact tonometer (tonometry), slit lamp examination and fundoscopy. Intraocular lens (IOL) power was calculated using SRK II formula with the Sonomed A scan. Patients were randomly divided into groups Superior and Temporal incisions respectively.

On the day of surgery, pupil was dilated with 0.8% tropicamide and 5% phenylephrine drops. Ketorolac 0.4% eye drops were instilled twice to maintain intra-operative mydriasis. The surgery was performed under peribulbar anesthesia. All the surgeries were performed by a single surgeon. After making fornix based conjunctival flap, Superior, a 6 -8 mm Straight incision was made 2 mm away from the superior limbus in group A, in group B temporal 6-8 mm straight incision was made 2 mm away from the limbus. A sterile disposable 2.8 mm crescent blade was used to create a self sealing scleral corneal tunnel, extending

into the clear cornea for 1 mm. A 3.2 mm keratome was used to enter the anterior chamber through the tunnel . Can opener anterior capsulotomy was made in all the patients using a 26 G cystitome through the main tunnel under visco elastic cover. The internal wound was now enlarged to 8-10 mm length approximately which is sufficient to accommodate larger nucleus as well. None of the incisions were enlarged

per-operatively. Hydro dissection and delineation was performed. The prolapsed nucleus was engaged in the scleral tunnel and was delivered out using irrigating vectis. A single piece PMMA posterior chamber IOL was implanted in the ciliary sulcus and dialed. Self sealing wound was left suture less after checking for any wound leak .

Patients were examined on day1, day7, 4weeks, postoperatively. Tobramycin 0.3% with dexamethasone eye drops was instilled 8 times a day and mydriatic and anti-glaucoma medications were also given as and when required. Dexamethasone was tapered over 6weeks.

Uncorrected visual acuity (UCVA), best corrected visual acuity (BCVA) and slit lamp findings were recorded at each visit. Data was analyzed statistically using SPSS version 15.0 statistical analysis software.

III. Results

This study was done on 88 patients divided equally in 2 groups, each group received a different superior and temporal incision in manual SICS. There were 44 patients in superior incision, minimum age was 24 years and maximum age was 82 , the mean age was 63.47 years. There were 44 patients in temporal incision group, minimum age was 36 years and maximum age was 92 years with the mean age 63 .02 years. Average age of patients were equal in both groups(63.47 & 63.02) .

Table 1 Quantification of visual acuity

- Grade Visual acuity
 0 Visual acuity <1/60 to PL+
 1 Less than 3/60 to 1/60
 2 Less than 6/60 to 3/60
 3 Less than 6/18 to 6/60
 4 6/6 to 6/18

In group A that is in patients with superior straight incision in the post operative period the visual acuity improved to 6/6 in 13(32.5%) patients with astigmatism of less than 1D, 4(10%) had astigmatism between 1-2D. and 4(10%) had astigmatism greater than 2D. But in all the above patients the visual acuity improved to 6/6 by appropriate correction of astigmatism.

The visual acuity was 6/9in 5(12.5%) of patients with astigmatism less than 1 D. 4(10%) had astigmatism between 1-2 D. and none with astigmatism above 2D. the visual acuity improved to 6/12 in 3 (7.5%) with astigmatism between 1-2D. and 2(5%) astigmatism greater than 2D. the visual acuity was less than 6/18 in 1(2.5%) of patients with astigmatism between 1-2D. 4(10%) had astigmatism of greater than 2 D with visual acuity less than 6/18.(Table1)

In group B , in patients with temporal straight incision visual acuity of 6/6 was seen in 20(50%) patients, 7(17.5%) had astigmatism between 1-2D, 2(5%) had astigmatism greater than 2 D. Visual acuity of 6/9 was seen in 5(12.5%) of patients with astigmatism less than 1D. 1(2.5%) in astigmatism greater than 2 D. Visual acuity of 6/12 was seen in 1(2.5%) of patients with astigmatism between 1-2 D and greater than 2 D. Visual acuity less than 6/18 was seen in 1 (2.5%) of patients with astigmatism between 1-2 D and 2(5%) in patients with astigmatism greater than 2 D.(Table 2)

Table 1-Astigmatism and BCVA in Superior Straight Incision Manuel SICS

VISION	ASTIGMATISM					
	<01.00D	%	01.00-2.00D	%	>02.00D	%
6/6	13	32.5%	4	10%	4	10%
6/9	5	12.5%	4	10%	NIL	0%
6/12	NIL	0%	3	7.5%	2	5%
<6/18	NIL	0%	1	2.5%	4	10%

Table 2-Astigmatism and BCVA in Temporal Straight Incision Manuel SICS

VISION	ASTIGMATISM					
	<01.00D	%	01.00-2.00D	%	>02.00D	%
6/6	20	50%	7	17.5%	2	5%
6/9	5	12.5%	NIL	0%	1	2.5%
6/12	NIL	0%	1	2.5%	1	2.5%
<6/18	NIL	0%	1	2.5%	2	5%

IV. Discussion

It is reported from previous studies that patients undergoing manual SICS have an early visual rehabilitation . The quick visual restoration is attributed to little inflammation and less surgically induced astigmatism. Patients also have fewer complaints regarding ocular discomfort in terms of pain, foreign body sensation and redness. Zawar and Gogate in their study on 2000 eyes undergoing manual SICS found that 93.4% of eyes achieved a final BCVA better than 6/12 at 6wk postoperatively.[15] Rohatgi found 93.3% of patients had BCVA of 6/18 or better at 8wk after SICS with central frown incision³.

Our study showed surgical induced astigmatism lower and better visual acuity in group B ,Temporal incision group compared to the superior incision group. This is in agreement with previous studies.

V. Conclusion

Temporal straight incision is recommended in patients with lower preoperative astigmatism as it provides less surgically induced astigmatism as compared to superior straight incision.

References

- [1]. Roman SJ et al, Surgically induced astigmatism with superior and temporal incisions in cases of with therule preoperative astigmatism. J Cataract and ref surgery, 1998.
- [2]. Gokhale NS, Sawhney S, Reduction in astigmatism in manual small incision cataract surgery through change of incision site. Indian j ophthalmology 2005;53:201-3.
- [3]. Malik VK et al, Comparison of astigmatism following manual small incision cataract surgery: superior versus temporal approach, Nepal J Ophthalmology, 2012 jan-jun.