Original Article

A RANDOMIZED STUDY TO EVALUATE SIA IN PATIENT OF SICS OPERATED BY CHEVRON AND FROWN INCISION

Dr. D Balwir, Dr. S Yadav

Authors

Dr. Dhiraj Balwir, Professor, Department of Ophthalmology, MVPS’s DVP Medical College, Nashik.

Dr. Sidhdharth Yadav, Senior resident, Department of Ophthalmology, MVPS’s DVP Medical College, Nashik.

Number of pages: Three

Number of tables: One

Number of photographs: Nil

Corresponding author: Dr. Dhiraj Balwir, Professor, Department of Ophthalmology, MVPS’s DVP Medical College, Nashik.
**Original Article**

**A RANDOMIZED STUDY TO EVALUATE SIA IN PATIENT OF SICS OPERATED BY CHEVRON AND FROWN INCISION**

Dr. Dhiraj Balwir, Dr. Siddhharth Yadav

**Introduction:**

In today’s era, where cataract surgery is being considered a form of refractive surgery offering improvements in both best corrected and uncorrected visual acuity, one important aspect is post operative astigmatism. In small incision cataract surgery, the scleral pocket technique with different incision remains one of the best ways to have small, stable and secure incision. The importance of mastering the cataract incision cannot be overemphasized. A well constructed wound is the first step in successful surgery for both surgeon and the patient.

Geometric shape of the external incision affects the astigmatism significantly which is explained by incisional funnel. It is bound by a pair of lines whose shape is based upon the relationship between astigmatism and two characteristics of incision length and the distance from the limbus. Any incision made within this funnel will be astigmatically stable. Obviously, in SICS, parallel incision goes out of the funnel. A sight pulling causes big tension on its lips and brings a gaping of the wound and appearing of astigmatism against the rule. On the contrary, frown and chevron incisions lie entirely within the funnel so these are astigmatically more stable incisions a big amount of force is required to produce a small gap of angular incision.

In our institute, we observed 100 eyes to study incision induced astigmatism with 2 different shapes Chevron and Frown of same size and we demonstrated that Chevron incision has more stable configuration in terms surgically induced astigmatism. Chevron Incision was described by Pallin. Frown incision was popularised by Singer.3

**Key Words:** Astigmatism, SIA, SICS, Chevron incision, Frown incision

**Materials and Methods:**

The study was prospective and all the patients selected had cataract range from nuclear sclerosis grade I to grade IV and V with normal anterior and posterior segments. To find a more homogeneous population all patients were operated by single surgeon and all patients underwent similar preoperative, intra operative & postoperative surgical protocols. Patients with any ocular disease other than cataract, any intra operative complication, wound related problems and eye with ‘against the rule astigmatism’ were excluded from the study.

Eyes to be operated were divided into 2 groups. In Group A 50 eyes were operated with SICS with Chevron incision and in Group B 50 eyes were operated with SICS with Frown incision. All eyes were operated under peri bulbar anaesthesia with 2% Lignocaine. Superior sclero corneal pocket tunnel with external incision of 2 different configuration Chevron and Frown were made.

In cases of frown incision a parabolic groove convex towards limbus was made 1.0 mm behind the limbus centered at 12 o’clock and in cases chevron incision; triangular inverted ‘V’ incision was created with its apex placed 1.0 mm from the limbus. The angle between the limbs had to be 100°-110°. A dissection was done on each side of the tunnel. The measurement and the configuration of scleral corneal tunnel created a pocket large enough with sufficient place for the nucleolus to pass through. Anterior capsular hexis was made.
anterior chamber was entered and hydro-dissection was done. The nucleus was brought to the anterior chamber and delivered out. Cortex was removed with simcoe cannula and rigid PMMA 6.0 mm IOL was put using visco elastic, which was aspirated out at last and a/c was formed with normal saline. Self sealing incision was not sutured and checked for its stability and leakage and conjunctiva was reposited back. Postoperatively, eyes were treated with antibiotic steroid combination with tapering dose and cycloplegic drug which was stopped after a week. Post operative follow up was at one week, 3 weeks and 6 weeks and astigmatism was assessed in each follow up with keratometry and topography

Results:
At the end of 6 weeks, chevron incision was found to be more stable in terms of induced astigmatism. Following are the results

Surgically Induced Group-A Group-B Astigmatism (Chevron) (Frown)

<table>
<thead>
<tr>
<th>Groups</th>
<th>0--0.5</th>
<th>0.51--1</th>
<th>1.01--1.5</th>
<th>1.51--2</th>
<th>2.01--2.5</th>
<th>&gt; 2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chevron</td>
<td>3</td>
<td>13</td>
<td>27</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Frown</td>
<td>0</td>
<td>10</td>
<td>20</td>
<td>18</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Study shows that chevron incision gives very little amount of induced astigmatism up to 1.5 D in major proportion of eyes (86%) had vision better than or equal to 1.5D and only 4% eyes were found to have induced astigmatism > 2.0 D. On the contrary, with frown incision, 36% eyes had induced astigmatism between 1.51 – 2.0 D and 4% eyes showed > 2.0
D induced astigmatism. The mean SIA of Chevron incision was 1.17 ± 0.41 and of Frown Incision was 1.40 ± 0.45 the difference between the two mean SIA was statistically significant. (p= 0.006).

Discussion:
Though in non stitch small incision non Phaco cataract surgery, both chevron incision and frown incision are comparable because both incisions lie entirely within the incisional funnel, our study shows that chevron incision gives minimal amount of induced astigmatism. This is because of its triangular configuration which is geometrically more stable incision causing minimum sliding of the tips of the incision postoperatively. Majority of cases (86 %) show minimal amount of induced astigmatism with chevron incision of up to 1.5D induced astigmatism with 6.5 mm and only 4 % eyes were found to have significant induced astigmatism >2.0 D.

In Chevron incision group only 14% of patients had SIA of more than 1.5D while in Frown Incision Group this number went up to 40%.
The results are comparable to the study of IsakovItzhak et al and also the study of Journal of Cataract Refractive Surgery 1990 Nopv, 10(6) 179-81. The results were also similar to the study conducted by JigishaRanderiet al.

Today, where the phaco surgery is not feasible, SICS with chevron incision is the best alternative which meets the surgeon’s challenge for early postoperative rehabilitation and management of astigmatism.

References:
5. Dr. JigishaKiranRanderi , Dr. Rupam J. Desai , Dr. Falguni S. Mehta , Dr. O.P. Billore, Dr. Aruna Gupta , DrGautamKukadia “Incision induced astigmatism – A Comparative study of Chevron Incision and Frown Incision in SICS; AIOC 2008 proceedings.