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Research Article

A RESEARCH TO ASSESS THE SUTURED AND NON-SUTURED PHACOEMULSIFICATION INCISION POSTOPERATIVE ASTIGMATISM OUTCOMES AMONG CATARACT PATIENTS: A RANDOMIZED CONTROL TRIAL¹Maryam Javed, ²Dr. Zain Talat, ³Dr Fizza Agha¹WMO, RHC Chak # 469/GB Sumundri Faisalabaad²Madina Teaching Hospital Faisalabad³King Edward Medical University**Abstract:**

Objective: We aimed to compare patient's postoperative astigmatism experiencing anterior limbal phacoemulsification incision whether sutured or non-sutured.

Material and methods: Our RCT (Randomized Controlled Trial) research completed at Jinnah Hospital, Lahore (March to August 2017) on a total of 200 patients selected through non-probable and consecutive sampling strategy.

Results: In the course of this research from March 2017 to August 2017; we assessed two hundred patients who were in the mean age group of (57.66 ± 7.35) years. The total research was further distributed in two different groups namely Group – I and II. A total of 74 patients were found with astigmatism after six weeks of operation. Whereas, in the population of second group a total of 12 patients were found with astigmatism after six weeks of operation. Both groups possessed a highly significant P-Value of (0.000).

Conclusion: The outcomes of our research showed that more common incidence is of surgically induced astigmatism in phacoemulsification with an application of wound closure suture. It also affects the significant visual outcomes which are discouraged in the present era. There is a need to improvise on the phacoemulsification surgical methods and there is also no need for wound closure suture.

Keywords: Astigmatism, Phacoemulsification, Incision, Cataract, Sutured Wound and Non-Sutured Wound.

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INTRODUCTION:

Cataract refers to an acquired opacity or congenital in lens substance or capsule, without any affecting the vision irrespective of the effect on vision [1]. Cataract is one of the leading cause of avoidable blindness which affects about twenty million individuals all over the world which will reach up to a total of fifty million in the coming years till 2020 in the absence of tangible work in the field [2]. African and Asian countries pose seventy-five percent of the blindness in the total world estimations [3]. Cataract is a major cause contributing in total blindness (66.7%) in Pakistan [3]. The most of the intraocular surgeries performed at present are because of an onset of Cataract [5]. In the present era the introduction of sutureless small incision of the cataract has undoubtedly revolutionized surgical interventions producing a minimum of patient's mobility, postoperative complications and swift visual recovery [6]. A better postoperative visual acuity was reported by the patients experiencing phacoemulsification in comparison to those who underwent a cataract extracapsular extraction in all the postoperative time intervals. Phacoemulsification has become a universal procedure at present [7, 8].

An individual having an incorrect astigmatism requires contact lens or spectacles. Moreover, they also face issues with glass tolerance, reduced vision quality, reduced vision field and various other optical aberrations. There are also associated side effects of contact lenses which include inflammations and ocular infection [9]. Surgical induced astigmatism is losing interest with the advent in the surgical interventions. Preoperative astigmatism affects SIA as well as with anterior chamber incision length and shape, wound healing and technique of the suture [10]. SIA poses no significant difference after on-axis incision or clear corneal temporal [11].

Tight suture causes vertical meridian wound compression which produces an earlier astigmatism and after three months this astigmatism becomes against the suture loosening rule. The superior incision is better having (1.5) astigmatism diopters and ninety degrees' steep axis. The temporal incision is also better with (< 1.5) astigmatism diopters having 180 degree's steep axis. Whereas, a nasal incision is better having (0.75) astigmatism diopters with 180 degree's steep axis [12].

We aimed to compare patient's postoperative astigmatism experiencing anterior limbal phacoemulsification incision whether sutured or non-sutured.

MATERIALS AND METHODS:

Our RCT (Randomized Controlled Trial) research completed at Jinnah Hospital, Lahore (March to August 2017) on a total of 200 patients selected through non-probable and consecutive sampling strategy. Hospital ethical committee and patient's prior permission was secured before research commencement. We included both male and female patients after evaluating them for uncomplicated cataract surgery. We did not include patients having slit lamp observed corneal scarring, preoperative astigmatism, pterygium, corneal degenerative conditions, corneal opacities, intraocular dislocation and intraocular subluxation. Total research sample was further distributed in Group – I and II.

We also asked the patients for their duration, symptoms, surgical history and then performed a detailed evaluation through fundal assessment and slit lamp assessment. Patients were also assessed for IOP (Intraocular Pressure, VA (Visual Acuity) and BSR (Blood Sugar Level). We also measured diopters for preoperative astigmatism with the help of Keratometry.

Surgeons operated all the patients with phacoemulsification for the implantation of the intraocular lens. We carried out an incision from one millimeter posterior to limbus and also made stab incision to penetrate the anterior chamber through tunnel end. We also performed continuous curvilinear capsule or hexes, phacoemulsification, hydro dissection, capsular bag refilling, cortex aspiration after the injection of viscoelastic material. Group – I received a (10 – 0) monofilament nylon suture wound closure; whereas, Group – II received no suture having stromal hydration.

Patient was not discharged from the hospital till the removal of eye pad. The eye pad removal was carried out on the very first day after the operation. We removed the patient's stitches on third day after the operation in Group – I; every patient also received two eye drops (chloramphenicol and dexamethasone; 0.5% and 0.1%) for a dose of four times a day. Analgesia was also used on need basis with a follow up after six weeks of operation. Statistical analysis was completed on SPSS software. Astigmatism frequency comparison was made through Chi-Square Test (P-Value < 0.005).

RESULTS:

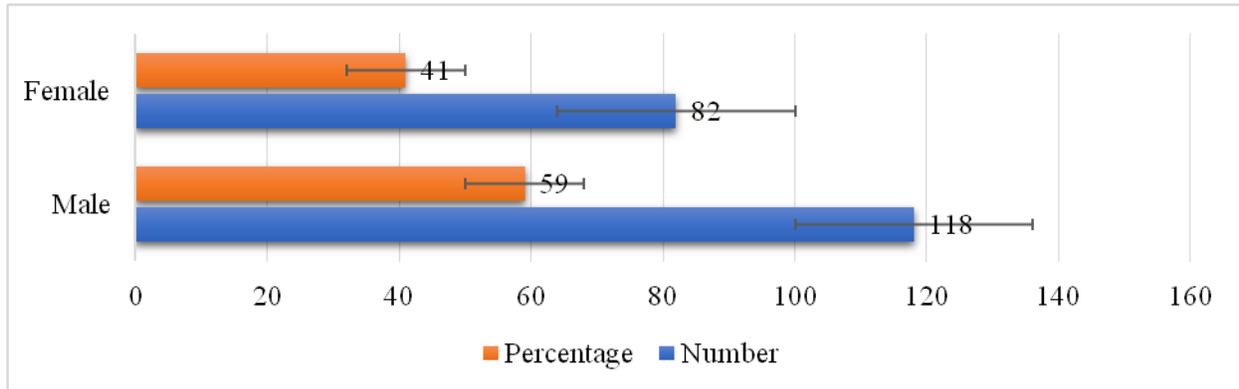
In the course of this research from March 2017 to August 2017; we assessed two hundred patients who were in the mean age group of (57.66 ± 7.35) years. The total research was further distributed in two different groups namely Group – I and II. A total of

74 patients were found with astigmatism after six weeks of operation. Whereas, in the population of second group a total of 12 patients were found with astigmatism after six weeks of operation. Both groups possessed a highly significant P-Value of

(0.000). Research included 118 male patients (59%) and 82 female patients (41%) as shown in Table – I. The male population dominated the overall female population.

Table – I: Gender Distribution

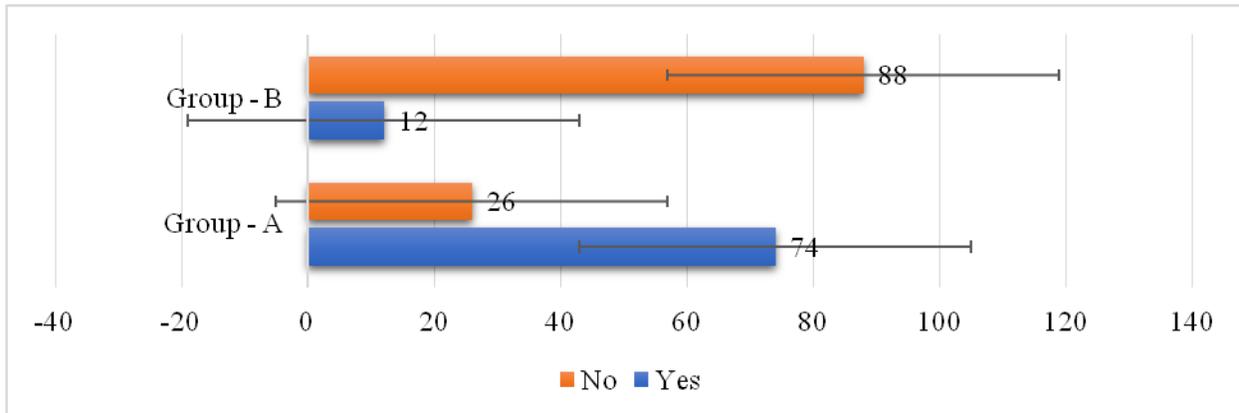
Gender	Number	Percentage
Male	118	59
Female	82	41



The outcomes of the group-wise distribution of astigmatism are given in Table – II.

Table – II: Group Wise Astigmatism Distribution

Group	Yes	No
Group – A	74	26
Group – B	12	88



DISCUSSION:

Primarily, modern Cataract Surgery aims at better and desirable postoperative refractive outcomes [13]. A number of clinicians have made experiments on various surgical interventions by using non-suture methods and methods of astigmatism calculation [14]. Various surgical interventions underlying differences make it difficult to draw conclusion about the efficacy of sutured and non-sutured phacoemulsification [15].

In the early part of 1980s, clinicians used to operate the patients of cataract through scleral tunnel incision for improved healing of wounds and reduce astigmatism. Incision length remained in the limit of five to eight millimeters even than it was known to small incision as its design was non-sutured and incision was self-sealing [16]. The astigmatic change quantification presents increased degree of justified precision. Whereas, there may be variations in the normal cornea astigmatism axis and diopters as measured through serial keratometric measurement. It is possible to eliminate and remove errors with better reproducibility and accuracy through Computerized topography (CT) [17].

Postoperative astigmatism also depends on few factors that include incision width and incision size in both cases of non-sutured wound and sutured wound. Preoperative astigmatism affects SIA as well as with anterior chamber incision length and shape, wound healing and technique of the suture [18]. SIA poses no significant difference after on-axis incision or clear corneal temporal [19]. A local research suggests about the 5.5 mm implantation on rigid IOLs after a non-sutured phacoemulsification which is safe and also produced acceptable postoperative astigmatism levels [20]. Further astigmatism can also be reduced through preoperative corneal incision relaxation. Whereas, foldable IOLs small incision surgery is revolutionary. It has also produced better research outcomes. These outcomes may vary with the hurdles produced by astigmatism. In the present practice of cataract small incision suturing technique, the procedure has revolutionized by presenting reduced morbidity, swift visual recovery and reduced postoperative outcomes [6].

A total of 74 patients were found with astigmatism after six weeks of operation. Whereas, in the population of second group a total of 12 patients were found with astigmatism after six weeks of operation. Both groups possessed a highly significant P-Value of (0.000). Another local research conducted by Mirza shown an interval of six postoperative weeks among sutured eye group (62.5%) and no case in the

non-sutured group with an SIA above two diopters. Variation of the outcomes may have an association with surgeon's experience, incision site, healing of wound and surgical techniques [20].

CONCLUSION:

The outcomes of our research showed that more common incidence is of surgically induced astigmatism in phacoemulsification with an application of wound closure suture. It also affects the significant visual outcomes which are discouraged in the present era. There is a need to improvise on the phacoemulsification surgical methods and there is also no need of wound closure suture.

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